

Economic Impact Reports

CAC Airports



CANADIAN
AIRPORTS
COUNCIL

CONSEIL DES
AÉROPORTS DU
CANADA

CAC Economic Impact Report Introduction

In 2017, the Canadian Airports Council undertook a study of the economic impact of Canadian airports. The results were impressive. In 2016, Canada's airports served 140 million passengers, contributed 19 billion to Canada's GDP, \$6.9 billion in taxes, and generated 355,000 jobs – about 195,000 direct.

These numbers continued to grow until the end of 2019, which saw 160 million travellers transit our airports on their way to and from communities across our country – but these numbers are the tip of the iceberg.

This package includes economic impact studies from 29 of Canada's airports, ranging from the largest, Toronto-Pearson, to some of the smallest, such as Sydney, N.S. or Muskoka, ON. But regardless of size, they have much in common.

Each airport makes a unique economic contribution to its region. More than just air transportation nodes, Canada's airports are often in the heart of industrial parks or business clusters, an integral part of international supply chains and local entrepreneurship in equal measure. They bring the world to Canada, and Canada to the world.

Since March 2020 airports – and their communities – have been dealing with the serious impact of COVID-19 on travel. The current situation may be dire, but the future remains bright. Travel may have been suspended, but it is not going away. It may take a few years, but we can see the day when air travel returns to pre-COVID levels and airports can once again take their central role as economic generators and gateways.

Economic Impact:

Canada's Airports in 2016



Toronto Pearson International Airport

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INTRODUCTION

Vancouver International Airport

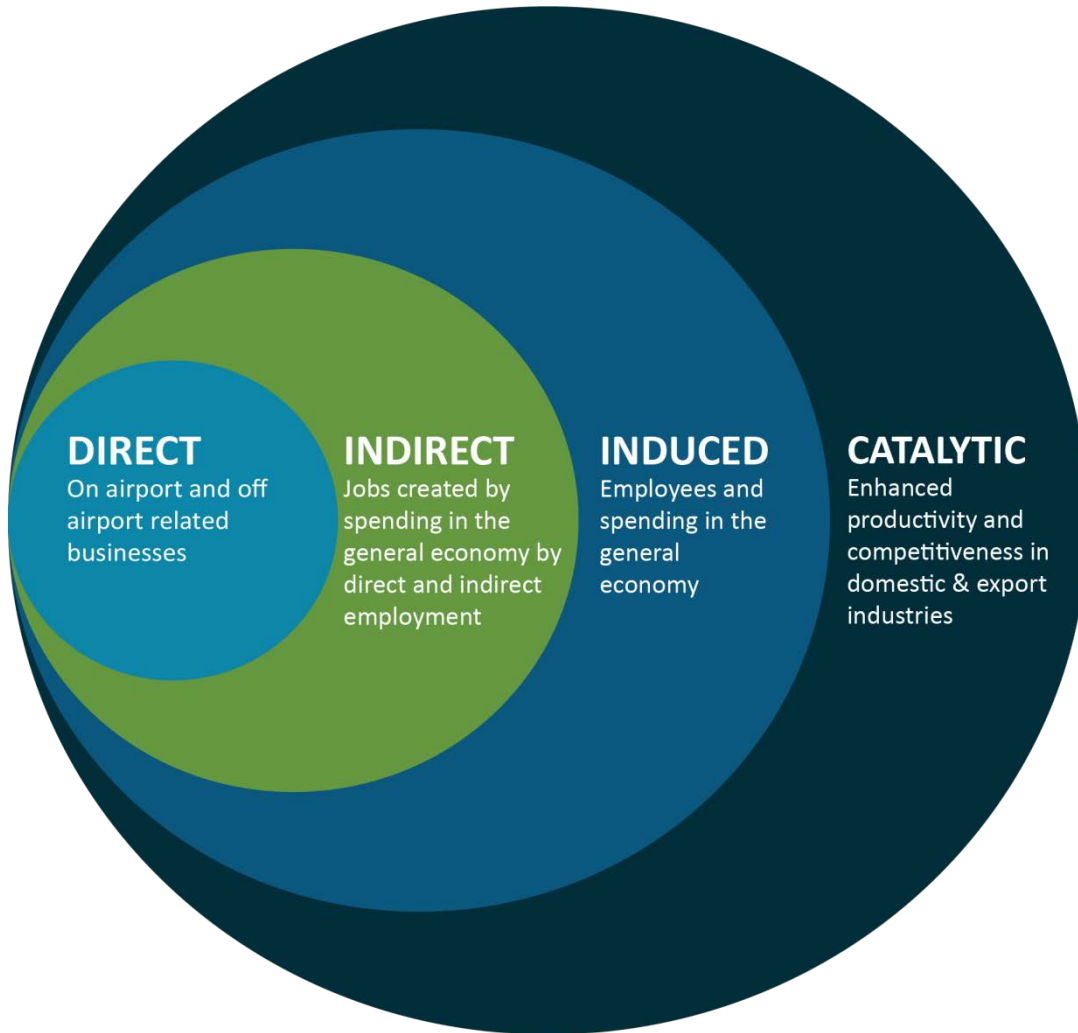
Overview of the Canadian Airports Council

- The Canadian Airports Council (CAC), a division of Airports Council International-North America, is the voice for Canada's airports. Formed in 1991, as the devolution of airports to local control was beginning, the CAC has established itself as the reliable and credible federal representative for airports on a wide range of significant issues and concerns.
- Canada's airports are engines for economic development in the communities they serve and one of their most important elements of local infrastructure. They provide communities with vital links to intra-provincial, national and international trade, and commerce. CAC's 52 members represent more than 100 Canadian airports, including all of the National Airports System (NAS) airports and most passenger service airports in every province and territory. Defined by the federal government's National Airports Policy, the 26 NAS airports link Canada from coast to coast and internationally.
- Canada's airports are collaborative world leaders in safe, high-quality, economically prosperous air transport. Working together in positive ways with industry partners and government, Canada's airports promote better knowledge about the industry and their contribution to the economy.

Study Scope: Economic Impact of Canada's Airports

- CAC commissioned InterVISTAS Consulting to conduct an economic impact study that quantitatively determines the current economic impact of the current ongoing operations of CAC member airports. Prior studies were conducted in 2013 and 2010.
- A macro economic impact study of the country's airports was conducted. Of the 100 Canadian airports represented by the CAC's 52 members, 61 airports were included in the analysis. See *Appendix A* for the list of airports. These airports handle approximately 98% of all commercial air passenger traffic in Canada.
- The analysis provides an overview of the economic impact of the current cumulative ongoing operations of CAC's member airports in terms of employment, wages, Gross Domestic Product (GDP) and economic output.
- The estimated taxation impact of the airports to all levels of government is also assessed.
- The results of the study can be used by the Canadian Airports Council to convey the economic impact of the ongoing operations of its member airports to stakeholders and the public to demonstrate their role as an economic engine, nationally.

What is Economic Impact?



- *Economic impact studies are an important tool in communicating the significance and role of Canada's airports to Canada.*
- Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project (e.g. the construction of new infrastructure), or a change in government policy or regulation.
- In this case, economic impact refers to the economic contribution associated with the ongoing operations and activities of airports in Canada located both on-airport and off-airport.

Categories of Economic Impact

- **Direct** impact includes the employment base at airports, which includes airline employees, fixed base operators, aircraft maintenance, ground handling, customer service, and airport authority staff, etc. that are employed at Canada's airports.
- **Indirect** impact involves employment in downstream industries that arise from the direct operational activities at Canada's airports. For instance, indirect employment includes the portion of employment in supplier industries that are dependent on sales to the sector, e.g. food wholesalers that supply food for catering on flights.
- **Induced** impact is generated from expenditures by individuals employed directly or indirectly by the airport. For instance, if an airline employee at one of Canada's airports decides to renovate her home, this would result in induced employment hours in the general economy as the renovation would support hours of employment in the construction industry, the construction materials industry, etc. Induced impact is often referred to as the "household-spending effect."
- **Catalytic** impact captures the way in which the airport facilitates the business of other sectors of the economy. As such, air transportation facilitates employment and economic development in the economy through a number of mechanisms: tourism effects, trade effects, investment effects and productivity effects.

Measures of Economic Impact



Employment (Full-time Equivalents or Person Years)

The number of full-time equivalents (FTEs) or person years generated by a particular source. Because certain jobs may only be part-time or seasonal, the number of jobs is generally greater than the number of FTEs.



Wages

The income (i.e. wages, salaries, bonuses, benefits and other remuneration) earned by the associated workforce.



Gross Domestic Product (GDP)

GDP is a measure of the **value added** by labour and capital used to produce final goods and services. This measure is the **net** value (i.e. cost) of intermediate goods and services used in the production of the final goods and services. GDP can thus be thought of as economic output less intermediate inputs.



Economic Output

Economic output is the **gross** dollar value of industrial output produced. Sometimes referred to as “economic activity,” it reflects the spending (i.e., capital improvement plus revenue) by firms, organizations and individuals.



CANADA'S AIRPORTS BY THE NUMBERS

Ottawa International Airport

Canada's Airports: A Thriving Sector

- In 2016, Canada's airports handled over **140 million** enplaned/deplaned passengers.
- There were **2.2 million** total flight frequencies.
- There were **6.2 million** aircraft movements.



Region of Waterloo International Airport

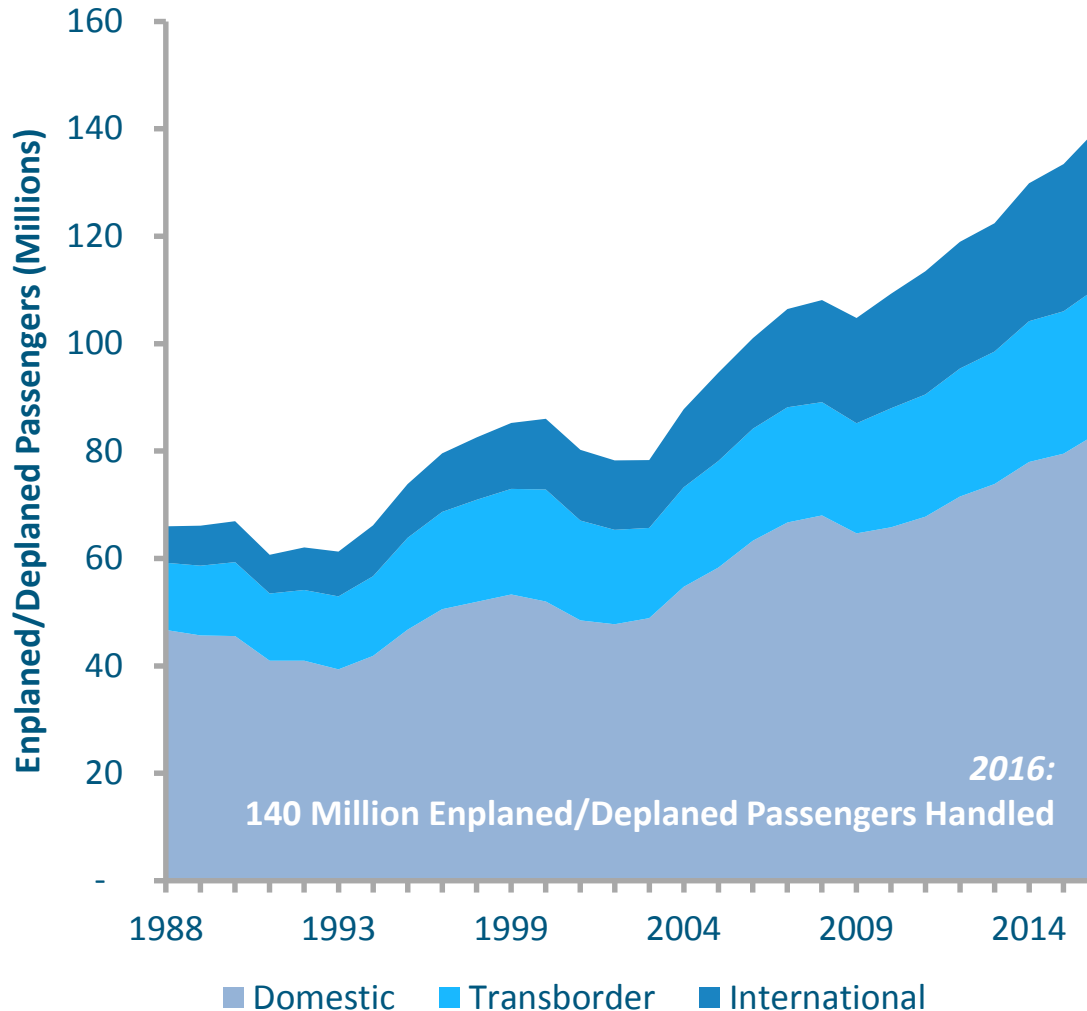


Halifax Stanfield International Airport



Kelowna International Airport

Air Passenger Traffic (1988-2016) at Canada's Airports

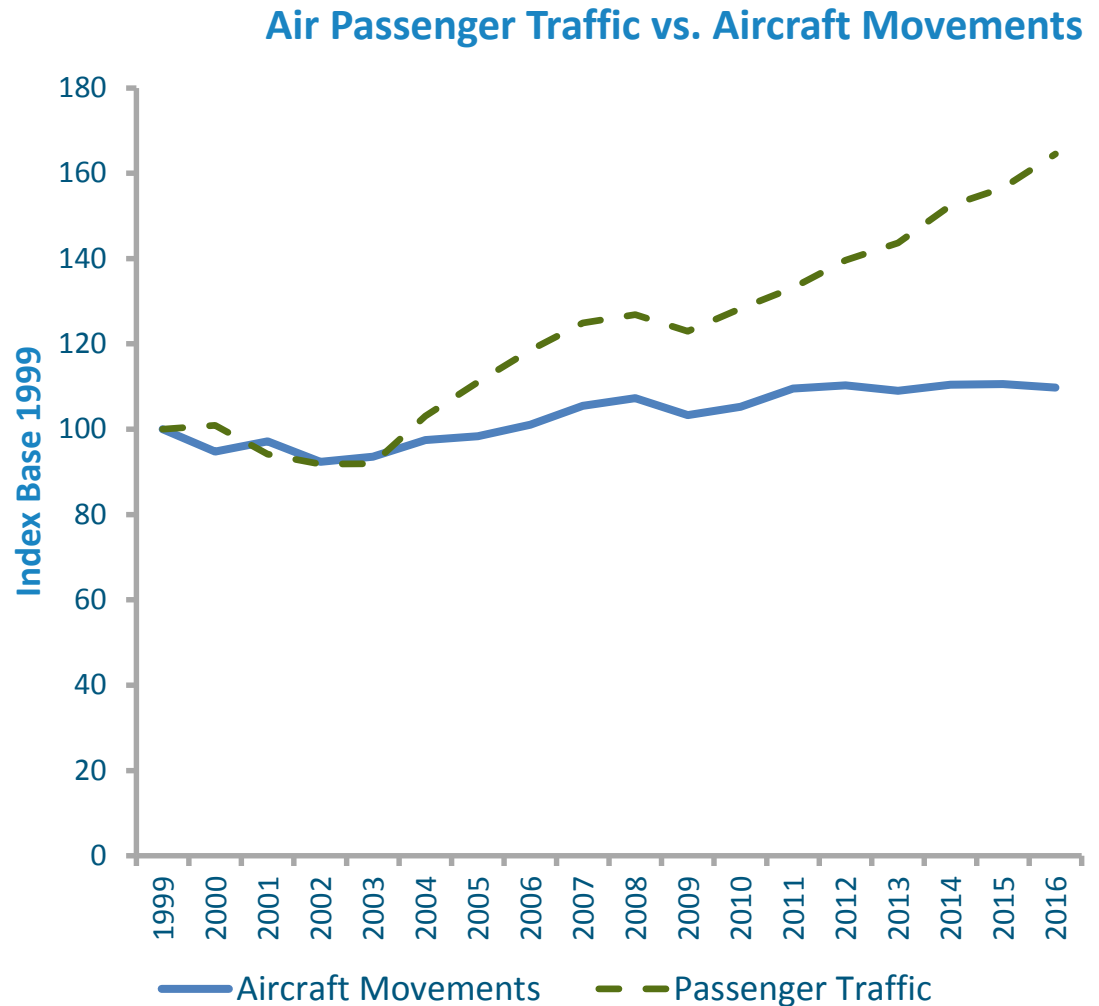


Source: Air Carrier Traffic at Canadian Airports. Statistics Canada

- Air passenger traffic in Canada has increased from **66 million** enplaned/deplaned passengers in 1988 to over **140 million** enplaned/deplaned passengers in 2016.
- Up **112%** in 28 years, or a compound annual growth rate of **3%**.

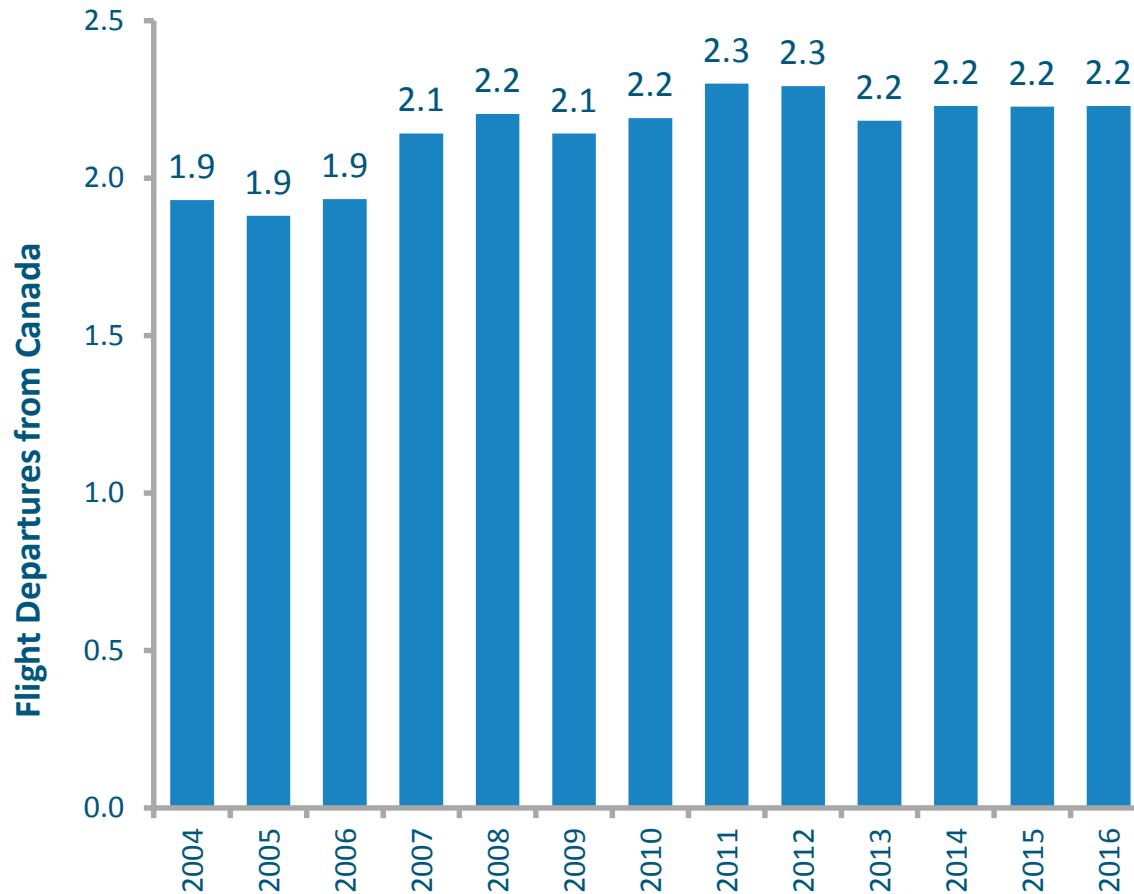
Air Passenger Traffic vs Aircraft Movements

- There has been significant growth in air passenger traffic in Canada from 1999 to 2016.
- This compares to relative stability in the total number of aircraft movements in Canada over the same time frame.
- Larger aircraft with increased seat capacity and higher load factors have contributed to growth in air passenger traffic against relatively flat volume of aircraft movements.



Source: Air Carrier Traffic at Canadian Airports. Statistics Canada

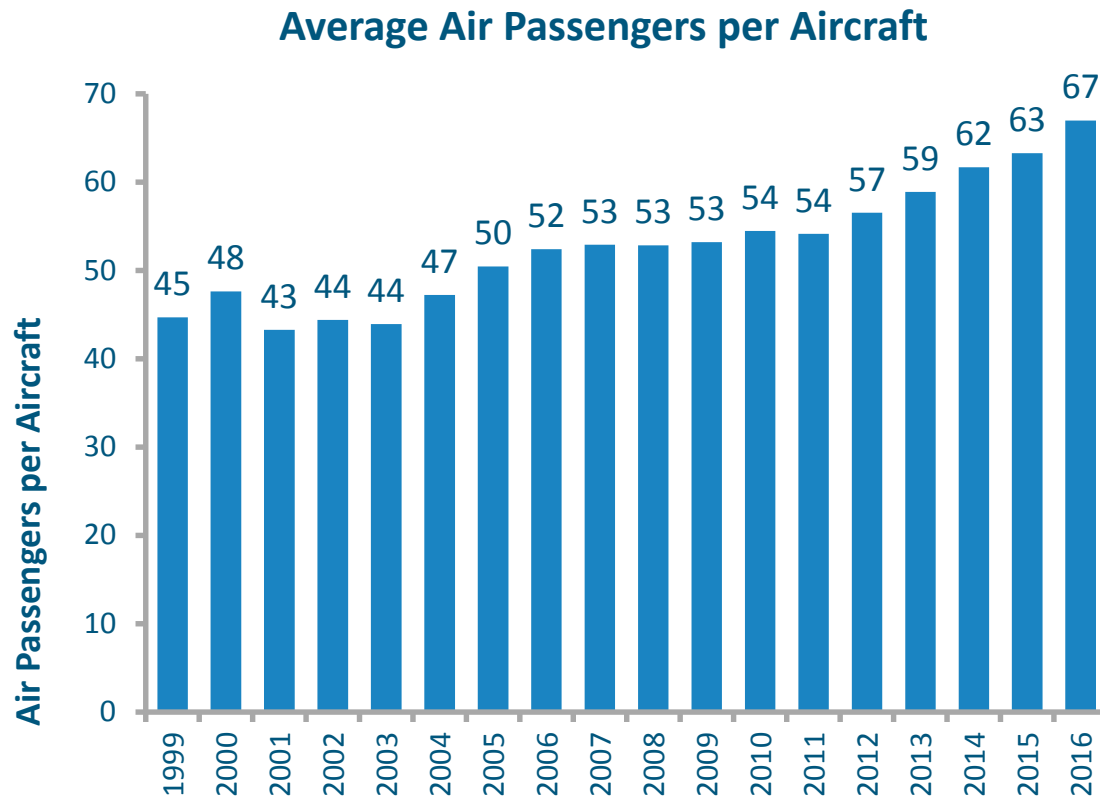
Flight Frequencies to/from Canada: 2004-2016



Source: DII/O

- The number of flight frequencies to/from Canada has held steady over the past decade, with roughly 2.2 million in 2016.

Air Passengers per Aircraft in Canada: 1999-2016

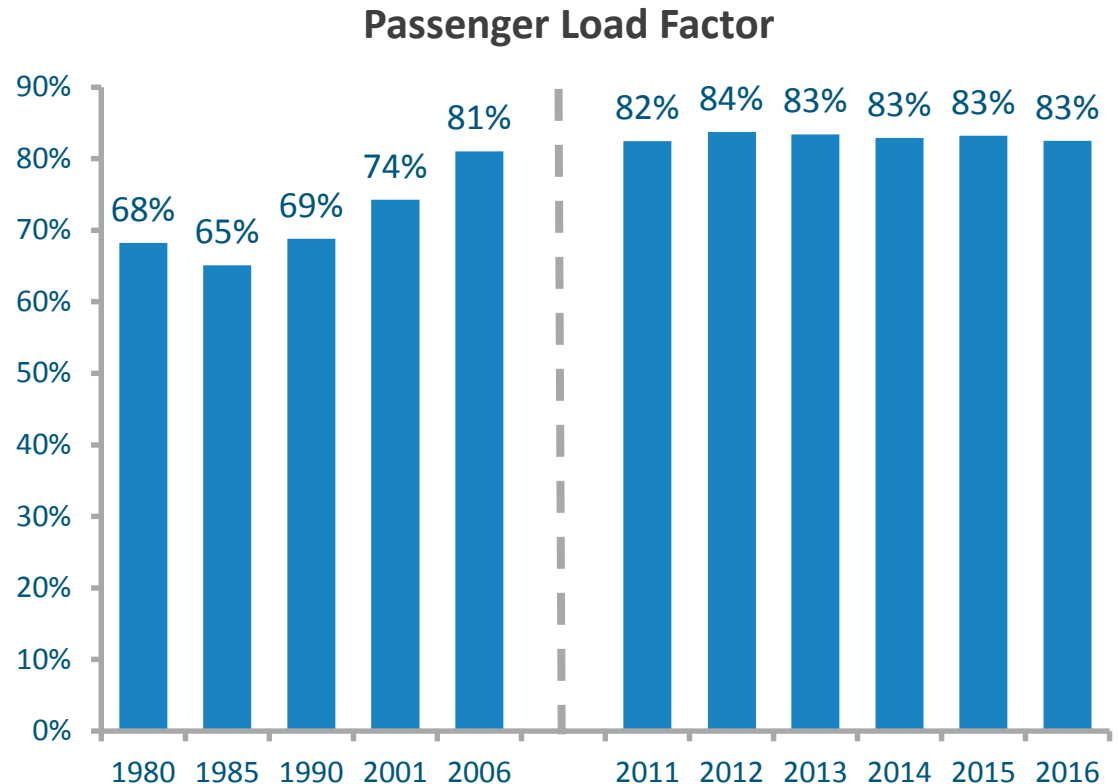


Source: InterVISTAS Calculations with data from:
Table 401-0009, Statistics Canada
Air Carrier Traffic at Canadian Airports, Statistics Canada.

- Over roughly the past two decades, the average number of air passengers per aircraft has increased from 45, in 1999 to 67 in 2016, up nearly **50%**.
- During the same time frame, aircraft movements in Canada have increased from 1.9 million in 1999 to 2.1 million in 2016, up **10%**.

Load Factors in Canada: 1980-2016

- Passenger load factors in Canada have been increasing since the 1980s.
- Over the past decade, load factors have averaged consistently over **80%**.



Source: *Aviation in Canada*, Statistics Canada. Transport Canada.

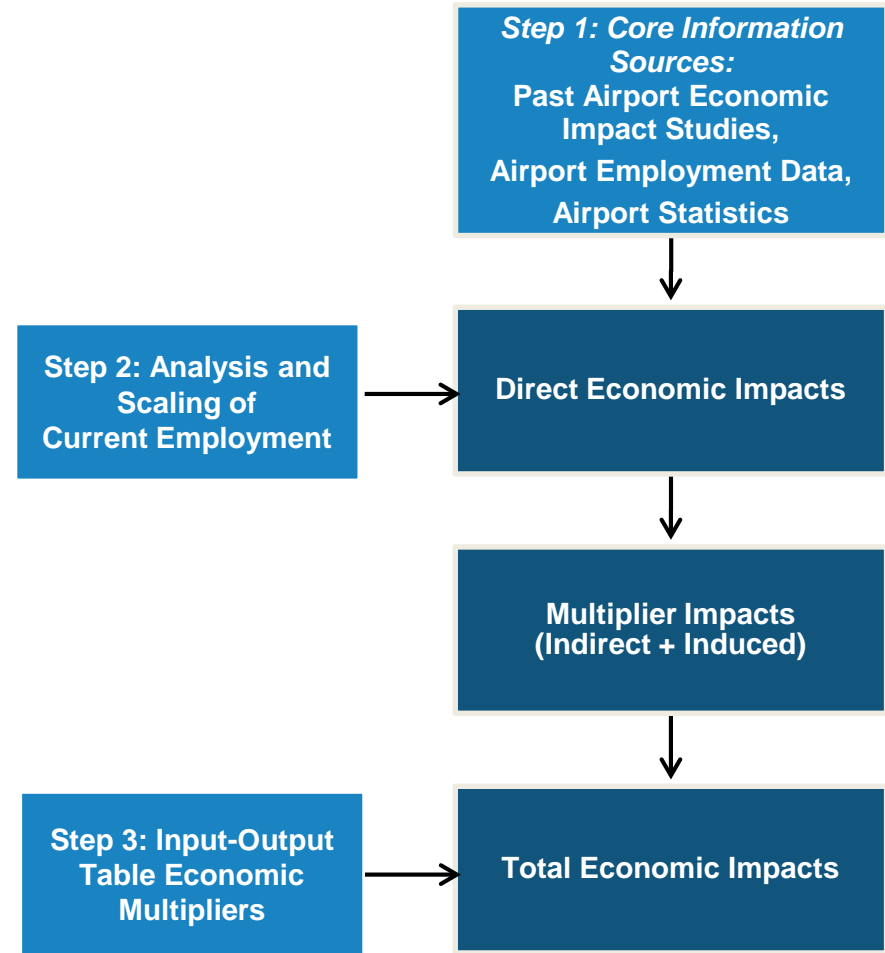
A photograph of the St. John's International Airport terminal at dusk. The building features a large, curved, metallic roof structure supported by several tall, slender poles with cables. The sky is a deep blue, and the building's interior lights are visible through the glass windows. The text "STUDY METHODOLOGY" is overlaid in white, bold, sans-serif font on the left side of the image.

STUDY METHODOLOGY

St. John's International Airport

Study Methodology

- InterVISTAS conducted this economic impact study during the third quarter of 2017. The study estimates the economic impact of Canada's airports for 2016.
- A data driven methodology was applied to estimate the economic impact of the **CAC's member airports**.
- Reliable and recognised data sources were used as the basis for the analysis, and established quantitative techniques were used to generate the estimates.
- Specific information sources used include past airport economic impact studies, airport employment data and airport site statistics on passenger volumes, air cargo volumes and aircraft movements.



Study Methodology

Direct Impacts

- The first step in estimating the direct impact of Canada's airports is to determine the level of employment at the member airports in 2016. This was done using data from past economic impact studies and airport statistics, as a baseline.
- Each study that was received from the airports was reviewed in detail with respect to the methodology that was undertaken to compute the economic impact. A common base for all studies was sought to ensure the boundaries of the economic impact analysis are consistent.
- After the review of past studies, the direct employment impact results for each airport were adjusted to a common year – 2016. This was done by taking into account traffic at the airports in the year of the study, and bringing the information forward using airport statistics for 2016.
- InterVISTAS estimated a relationship between airport direct employment and passenger traffic, and found a unitary elasticity (0.99) which was statistically significant. Thus, employment was scaled up from the most recent study to 2016 based on the growth in passenger traffic.

Study Methodology

Indirect and Induced Impacts

- The indirect and induced impacts were estimated using economic *multipliers and ratios*, as is common practice for economic impact studies. In addition, the *direct* wage, GDP and economic output impacts were also estimated using economic multipliers.
- The ratios and multipliers used in this study were based on the 2013 Input-Output multipliers maintained by Statistics Canada for each of the provinces and Canada nationwide. These were the most current I-O multipliers available at the time of the study. The economic ratios and multipliers have been updated to reflect current price levels, but no structural changes have been assumed.
- *Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity.* When they are reported, it is recommended that the reader should be aware of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment.

Study Methodology

Tax Revenue Impacts

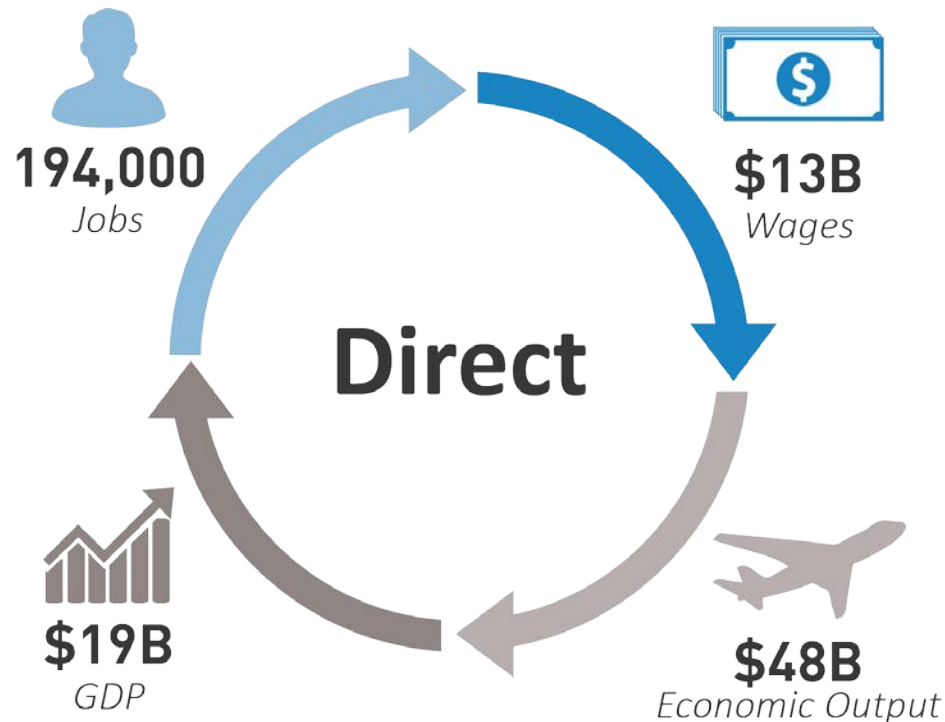
- InterVISTAS used the direct employment estimates to calculate the estimated tax impacts (government revenue) generated by the operations of Canada's airports.
- The tax revenue contributions to the federal, provincial, and municipal levels of government that are associated with airport operations are also estimated. This includes taxes paid by employers and employees (such as payroll taxes), and the airports (such as federal rent, property taxes and PILT - payments in lieu of taxes).
- Estimated tax revenues are for calendar year 2016.

A yellow Horsch snowplow is shown clearing a snowy runway at an airport. The plow is moving from left to right, leaving a clean path behind it. The background is a bright, overcast sky. The plow has 'Horsch' and 'EBCOM' written on its side. The runway has white lines and is wet from the snow being cleared.

ECONOMIC IMPACT OF CANADA'S AIRPORTS

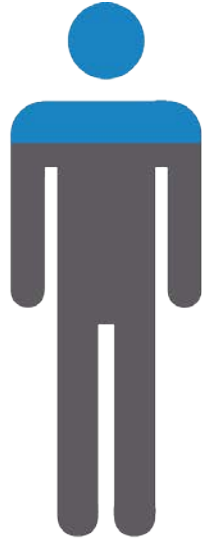
Greater Moncton Romeo LeBlanc International Airport

Direct Impact of Canada's Airports



- It is estimated that Canada's airports directly account for **194,000 jobs** in 2016, earning **\$13 billion in wages**. The list of airports is included in Appendix A.
- Furthermore, the airports directly contribute an estimated **\$19 billion** and **\$48 billion**, in GDP and economic output, respectively.

Direct Impact of Canada's Airports



21% of Canada's transportation & warehousing sector employment



26% of Canada's transportation & warehousing sector GDP

- **Relative Scale of Impacts:**

The **direct employment impacts** equate to roughly 21% of total employment in Canada's transportation and warehousing sector and 26% of the sector's GDP.

Total Impact of Canada's Airports

- Including multiplier impacts, Canada's airports support **355,000 jobs** nationwide and contribute **\$35 billion in GDP** to the national economy.

Type of Impact	Employment	Wages	GDP	Economic Output
	(Jobs)	(\$ Billions)	(\$ Billions)	(\$ Billions)
Direct	194,000	\$13	\$19	\$48
Indirect	99,000	\$6	\$10	\$20
Induced	62,000	\$3	\$6	\$11
Total Impacts	355,000	\$22	\$35	\$79

Note: Figures may not sum, due to rounding.

Source: InterVISTAS analysis using multipliers and ratios from Statistics Canada Interprovincial Input-Output Model, which is current for Year 2013.

Direct Value Impact of Canada's Airports



direct value
added (GDP)



total direct value of
Canada's airports

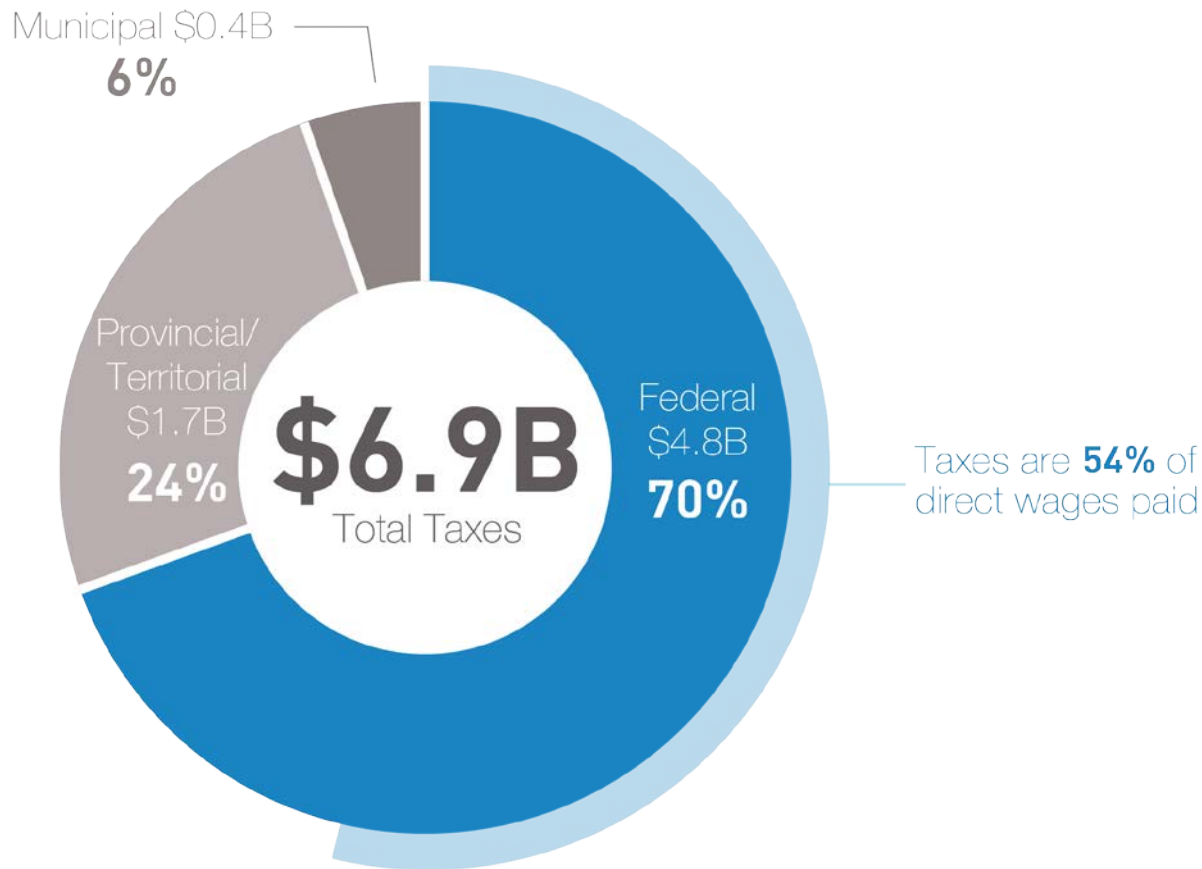
- Canada's airports directly contribute a total of \$19 billion to national GDP.
- Including indirect and induced impacts, Canada's airports contribute an estimated \$35 billion in total GDP.

Catalytic Impacts of Canada's Airports



- The connectivity provided by Canada's airports helps attract tourists, facilitates trade and investment, and contributes to the growth of the economy.
- Role of Canada's airports in air transport in facilitating other economic sectors may include:
 - *Trade competitiveness*
 - *Business productivity improvements*
 - *Enhanced supply chain performance*
 - *Sustainable small communities/regional economies*
 - *Cost reduction*
- Industries and activities that would otherwise not exist in a region can be attracted by improved air transport connectivity.

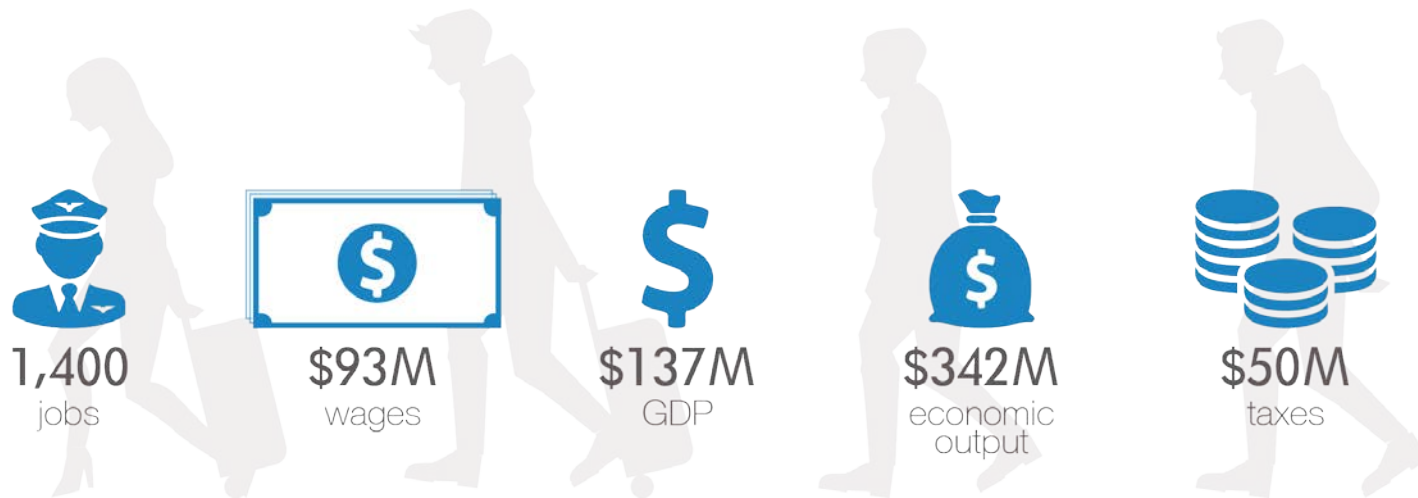
Taxation Impact of Ongoing Operations of Canada's Airports



- Canada's airports are also important generators of taxation revenues to all levels of government.
- Total taxes paid on an annual basis, by airport employers and employees, are estimated at **\$6.9 billion** in 2016.

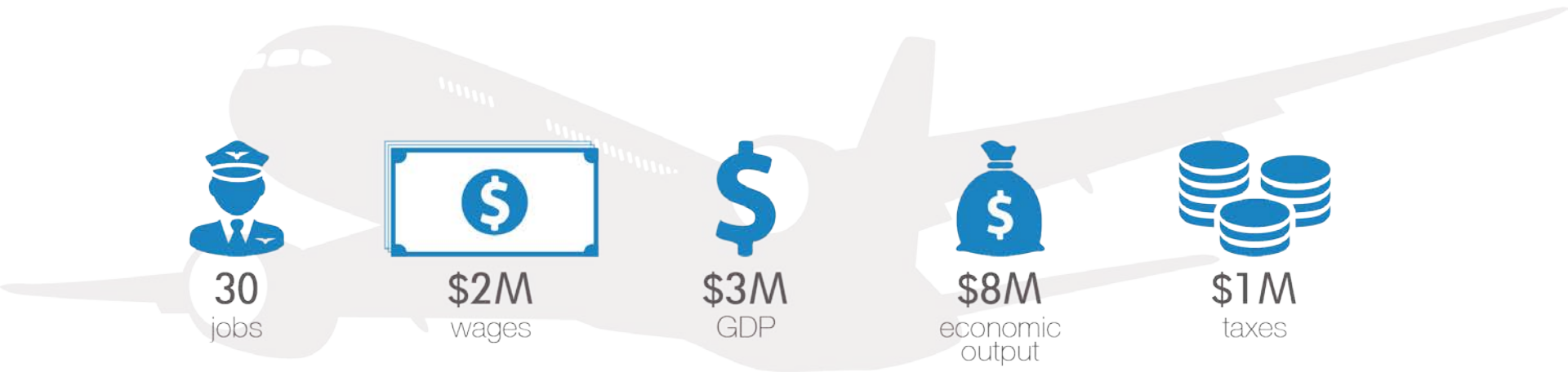
Note: Tax impact analysis is based on 2016 federal and provincial tax rates.

Direct Impact of 1 Million Air Passengers Handled



- Every 1 million air passengers moving through Canada's airports directly support **1,400 jobs** and contribute **\$137 million in GDP** in Canada and **\$50 million in taxes** to all levels of government.

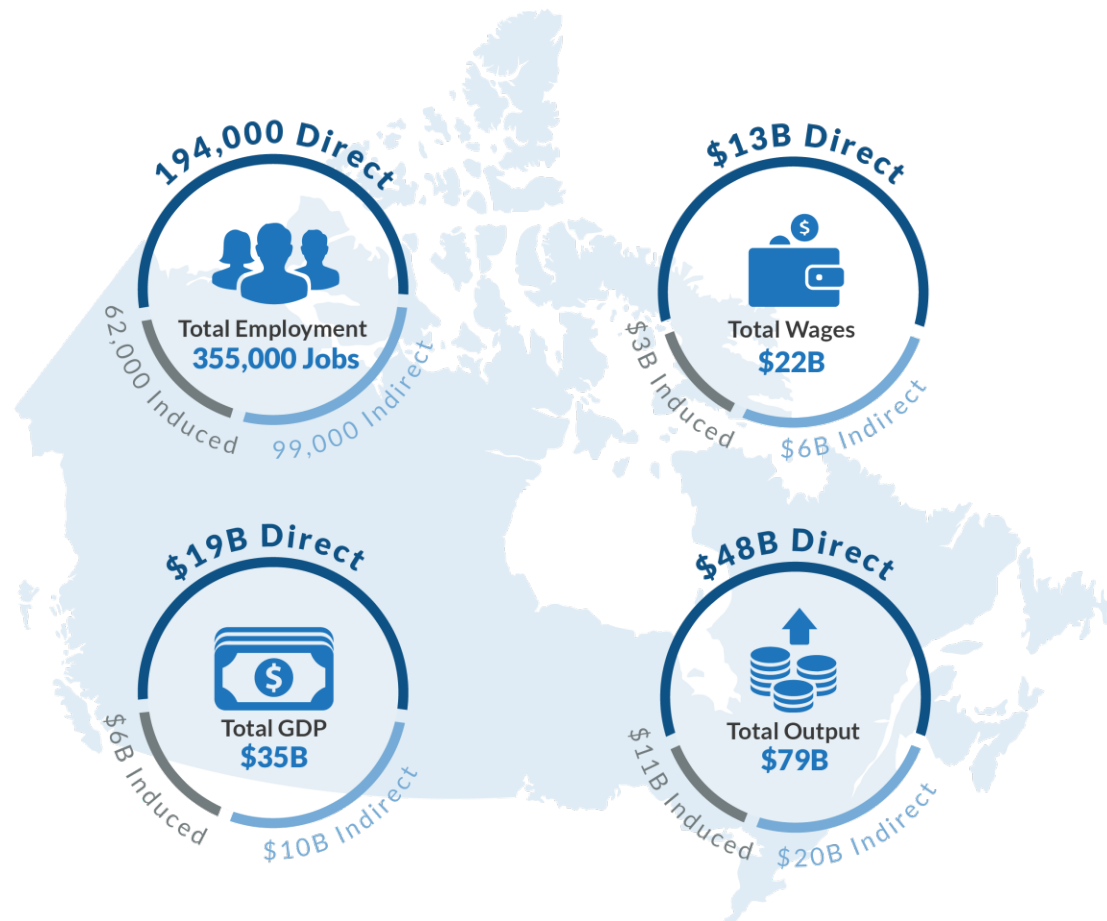
Direct Impact of 1,000 Aircraft Take-offs & Landings



- For every 1,000 aircraft take-offs and landings at Canada's airports, approximately **30 jobs** are required, generating **\$3 million in GDP** and **\$1 million in taxes** to all levels of government.

Summary Economic Impact of Canada's Airports

- A vital component to the country's transportation infrastructure, Canada's airports support **194,000 direct jobs** and generate **\$48 billion in direct economic activity**.



Summary Economic Impact of Canada's Airports

- Canada's airports are **essential** to Canada's transportation network and an important facilitator of economic development.
- Canada's airports and economic activity are closely associated, and in the context of an increasingly global market, air transport is key to **economic growth**.
- The economic impacts presented are substantial. The scope of air services currently offered at airports across the country facilitates significant impacts to the national economy. Because of these air services, Canada is able to host tourists from all over the globe, attract as many carriers to operate services, increase the overall volume of trade, and enable companies to locate or expand in Canada. The net effect of this is a bigger, faster-growing economy.

Glossary of Terms

- **Direct Employment:** Direct employment is employment that can be directly attributable to the operations in an industry, firm, etc. It is literally a head count of those people who work in a sector of the economy. In the case of airports, all of those people who work in an airport-related capacity would be considered direct employment.
- **Economic Activity:** (also Output, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, the process of transforming the factors of production into goods and services desired for consumption.
- **Economic Output:** (also Economic Activity, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, it is defined as the process of transforming the factors of production into goods and services desired for consumption.
- **Employment Impact:** Employment impact analysis determines the economic impact of employment in terms of jobs created and salaries and wages paid out. In the case of the airports, the direct, indirect, induced and total number of jobs or full-time equivalents created at the airport is examined to produce a snapshot of airport operations in Canada.

Glossary of Terms

- **Full-time Equivalent (FTE):** (also Person Year) One full-time equivalent (FTE) year of employment is equivalent to the number of hours that an individual would work on a full-time basis for one year. In this study, we have calculated one full-time equivalent year to be equivalent to 1,832 hours. Full-time equivalent years are useful because part-time and seasonal workers do not account for one full-time job.
- **Gross Domestic Product:** (GDP, also value-added) A measure of the money value of final goods and services produced as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.
- **Indirect Employment:** Indirect employment is employment which results because of direct employment. For the airports, it would include that portion of employment in supplier industries that are dependent on sales to the air transport sector related to airport operations. In some cases, contract work would be considered indirect employment.
- **Induced Employment:** Induced employment is employment created because of expenditures by direct and indirect employees.

Glossary of Terms

- **Multiplier Analysis:** Analysis using economic multipliers in which indirect and induced economic impacts is quantified. Essentially, a multiplier number is applied to the "directly traceable economic impact" to produce indirect, induced and total effects.
- **National Airports System (NAS):** The federal government's National Airports Policy (NAP) provides a framework that clearly defines the federal government's role with airports. That role is defined through two main levels of federal involvement in airports with scheduled passenger traffic: nationally-significant airports that form a National Airports System (NAS), and regional/local airports. The NAS comprises 26 airports that link the country from coast to coast to coast and internationally. The NAS includes those airports considered essential to Canada's air transportation system, supporting both domestic prosperity and international competitiveness. (Source: Transport Canada, <https://www.tc.gc.ca/eng/programs/airports-policy-nas-1129.htm>)

Appendix A: Airports Included in the Analysis

	Airport	IATA Code	Province	Category
1	Abbotsford International Airport	YXX	BC	Regional/Local Airport
2	Billy Bishop Toronto City Airport	YTZ	ON	Regional/Local Airport
3	Calgary International Airport	YYC	AB	NAS
4	Calgary Springbank Airport	YBW	AB	Satellite airport
5	Canadian Rockies International Airport	YXC	BC	Regional/Local Airport
6	Charlottetown Airport	YYG	PE	NAS
7	Comox Valley Airport	YQQ	BC	Regional/Local Airport
8	Dawson City Airport	YDA	YT	Regional/Local Airport
9	Deer Lake Regional Airport	YDF	NL	Regional/Local Airport
10	Edmonton International Airport	YEG	AB	NAS
11	Edmonton/Villeneuve Airport	n/a	AB	Satellite airport
12	Erik Nielsen Whitehorse International Airport	YXY	YT	NAS
13	Fort McMurray International Airport	YMM	AB	Regional/Local Airport
14	Gander International Airport	YQX	NL	NAS
15	Goose Bay Airport	YYR	NL	Regional/Local Airport
16	Greater Fredericton International Airport	YFC	NB	NAS
17	Greater Moncton International Airport	YQM	NB	NAS
18	Halifax Stanfield International Airport	YHZ	NS	NAS
19	Hay River/Merlyn Carter Airport	YHY	NT	Small Airport
20	Inuvik (Mike Zubko) Airport	YEV	NT	Small Airport
21	Iqaluit Airport	YFB	NU	NAS

Appendix A: Airports Included in the Analysis

	Airport	IATA Code	Province	Category
22	John C. Munro Hamilton International Airport	YHM	ON	Regional/Local Airport
23	Kamloops Airport	YKA	BC	Regional/Local Airport
24	Kelowna International Airport	YLW	BC	NAS
25	Kingston/Norman Rogers Airport	YGK	ON	Small Airport
26	London International Airport	YXU	ON	NAS
27	McCurdy Sydney Airport	YQY	NS	Regional/Local Airport
28	Medicine Hat Airport	YXH	AB	Small Airport
29	Montréal–Mirabel International Airport	YMX	QC	NAS
30	Montréal–Pierre Elliott Trudeau International Airport	YUL	QC	NAS
31	Nanaimo Airport	YCD	BC	Regional/Local Airport
32	Norman Wells Airport	YVQ	NT	Small Airport
33	North Bay Jack Garland Airport	YYB	ON	Regional/Local Airport
34	North Peace Regional Airport	YXJ	BC	Regional/Local Airport
35	Northwest Regional Airport, Terrace-Kitimat	YXT	BC	Small Airport
36	Old Crow Airport	YOC	YT	Small Airport
37	Oshawa Executive Airport	YOO	ON	Small Airport
38	Ottawa Macdonald–Cartier International Airport	YOW	ON	NAS
39	Prince Albert (Glass Field) Airport	YPA	SK	Regional/Local Airport
40	Prince George Airport	YXS	BC	NAS
41	Prince Rupert Airport	YPR	BC	Small Airport

Appendix A: Airports Included in the Analysis

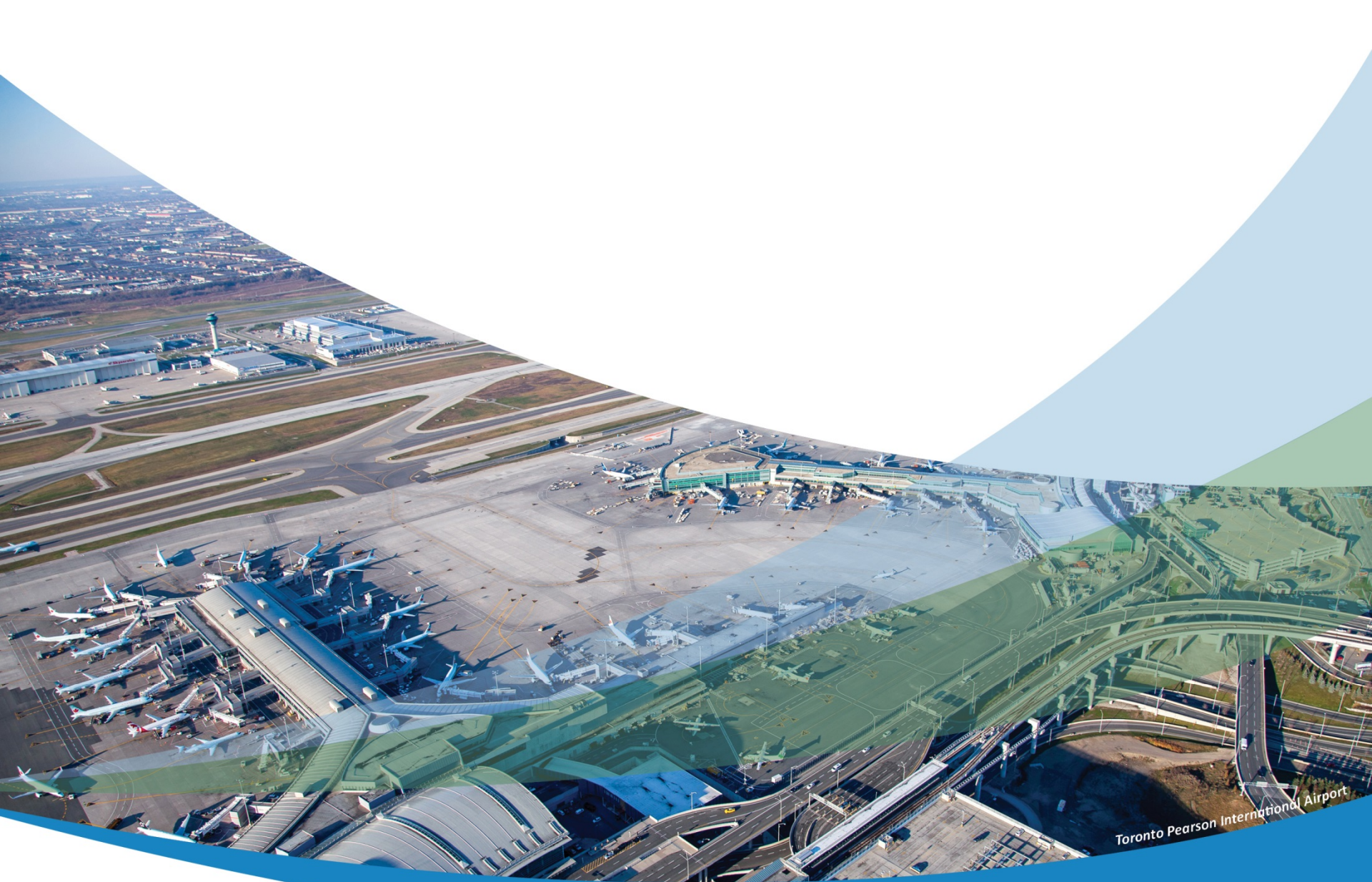
	Airport	IATA Code	Province	Category
42	Québec City Jean Lesage International Airport	YQB	QC	NAS
43	Red Deer Regional Airport	YQF	AB	Small Airport
44	Regina International Airport	YQR	SK	NAS
45	Region of Waterloo International Airport	YKF	ON	Small Airport
46	Saint John Airport	YSJ	NB	NAS
47	Saskatoon John G. Diefenbaker International Airport	YXE	SK	NAS
48	Sault Ste. Marie Airport	YAM	ON	Regional/Local Airport
49	St. John's International Airport	YYT	NL	NAS
50	Stephenville Airport	YJT	NL	Regional/Local Airport
51	Sudbury Airport	YSB	ON	Regional/Local Airport
52	Thunder Bay International Airport	YQT	ON	NAS
53	Toronto Pearson International Airport	YYZ	ON	NAS
54	Trail Airport	YZZ	BC	Small Airport
55	Tuktoyaktuk/James Gruben Airport	YUB	NT	Small Airport
56	Vancouver International Airport	YVR	BC	NAS
57	Victoria International Airport	YYJ	BC	NAS
58	Watson Lake Airport	YQH	YT	Small Airport
59	Windsor International Airport	YQG	ON	Regional/Local Airport
60	Winnipeg James A. Richardson International Airport	YWG	MB	NAS
61	Yellowknife Airport	YZF	NT	NAS

Appendix B: Breakdown of Tax Impacts Related to Ongoing Operations at Canada's Airports

SUMMARY OF TAX CONTRIBUTIONS BY CANADA'S AIRPORTS - 2016

	Federal		Provincial		Municipal		All Gov'ts
	Tax	Amount (\$ M)	Tax	Amount (\$ M)	Tax	Amount (\$ M)	Amount (\$ M)
Paid by Passengers	Air Traveller Security Charge	\$758	PST on Concession Revenue	\$71			
	GST on Air Traveller Security Charge (ATSC)	\$38					
	GST on Airport Improvement Fee (AIF)	\$66					
	GST on Concession Revenue	\$52					
	Total	\$915	Total	\$71			\$986
Paid by Employers or Employees	Personal Income Tax	\$1,810	Personal Income Tax	\$982			
	Corporate Income Tax	\$445	Corporate Income Tax	\$293			
	EI - Employer	\$233	Workplace Safety and Insurance Board	\$222			
	EI - Employee	\$166	Health Insurance	\$135			
	CPP - Employer	\$443					
	CPP- Employee	\$443					
	GST on Aeronautical Fees	\$65					
	Total	\$3,605	Total	\$1,632			\$5,237
Paid by Airports	Federal Ground Lease Payment	\$324			Property Taxes & Payments-in-Lieu of Taxes	\$439	
	Total	\$324			Total	\$439	\$763
Grand Total		\$4,844	Grand Total	\$1,702	Grand Total	\$439	\$6,986

*Note: Development charges are not included as tax impacts pertain to ongoing airport operations only and does not include the impact of capital investment.



Toronto Pearson International Airport

BILLY BISHOP TORONTO CITY AIRPORT

2017 Economic Impact Study

FINAL REPORT



Executive Summary

Billy Bishop Toronto City Airport (BBTCA) contributes significantly to employment and economic development in both the local community and throughout the Province of Ontario. This study examines the current economic impacts generated from the airport's operations, based on a review of the business in 2017.

Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project, or a change in government policy or regulation. In this case, economic impact refers to the economic contribution associated with the ongoing activities of BBTCA. The three major components of economic impact are classified as *direct, indirect and induced impacts*.¹ Together, they provide a snapshot of how the operations of the airport can impact the local and provincial economy.

BBTCA is an economic generator for the community of Toronto and Ontario. The airport's impact is reflected in the 2,080 direct jobs, equivalent to over 1,950 direct full-time equivalents (FTEs)² of employment that are supported or facilitated by the airport and nearly \$130 million in direct wages paid. Including indirect and induced impacts, BBTCA generated a total of 4,740 total jobs and nearly \$280 million in total wages throughout the province in 2017.



The economic impact of Billy Bishop Toronto City Airport includes 2,080 direct jobs of employment and \$130 million in direct wages in 2017.

Photo credit: www.zasa.com

¹ Direct impacts account for the economic activity of the target sector itself. Indirect impacts are those that result because of the direct impacts, which involve employment in downstream industries that arise from the presence of BBTCA. Induced employment is generated from expenditures by individuals employed directly or indirectly by the airport.

² FTE = full-time equivalent of employment. For purposes of this study, one full-time equivalent of employment corresponds to 1,832 hours of work annually. See **Appendix C** for further details.

Ongoing Economic Impacts

The current economic impact of Billy Bishop Toronto City Airport, which includes the impact related to the airport's ongoing operations, is summarized in **Figure ES-1**.³ *Direct* economic impact measures the employment and economic impact directly associated with the operations of the airport. This includes employment of all tenants located at BBTCA and also relevant employment of firms that are located off airport. *Indirect* and *induced* impacts are multiplier impacts in the wider economy stimulated by the airport's activities (e.g., other businesses that supply goods and services to the airport and spending by airport employees). The multiplier impacts are derived from Statistics Canada economic multipliers and ratios for Ontario for 2013.⁴ Emphasis is placed on the direct economic impacts as these are based on data from the employer survey and are clearly identifiable.

The *direct* impacts of BBTCA in 2017 are estimated to be 2,080 jobs, equal to 1,950 *direct* FTEs or person years of employment, earning approximately \$130 million in *direct* wages. Direct employment generates \$190 million in *direct* GDP and \$670 million in *direct* economic output annually.

Total impacts are calculated by adding together the *direct*, *indirect* and *induced* impacts. Including indirect and induced multiplier impacts, current economic impacts of BBTCA include a *total* of 4,740 jobs or 4,450 FTEs. *Total* wage of all employees amounts to \$280 million in wages. Furthermore, BBTCA's operations contributed an estimated \$470 million and \$1.2 billion in *total* GDP and *total* economic output, respectively, to the provincial economy.

Ongoing Economic Impacts of BBTCA





Annual Direct Impacts:

- 2,080 jobs
- 1,950 full-time equivalents
- \$130 million in wages
- \$190 million in gross domestic product (GDP)
- \$670 million in economic output

³ The results of this study are based on a review of 2017 operations.

⁴ Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. The most current Statistics Canada multipliers and ratios for Ontario for Year 2013 are used in this study.

Figure ES-1:
Annual Total Ongoing Economic Impact of Billy Bishop Toronto City Airport Operations, 2017

Impact	 Employment		 Wages (\$ Millions)	 GDP (\$ Millions)	 Output (\$ Millions)
	Jobs	FTEs			
Direct	2,080	1,950	130	190	670
Indirect	1,780	1,670	110	190	350
Induced	880	830	40	90	150
Total	4,740	4,450	280	470	1,170

Note: Totals may not sum due to rounding.

Annual Tax Contributions

Billy Bishop Toronto City Airport is also an important generator of taxation revenues to all levels of government. Total taxes paid on an annual basis, by airport employers and employees, are estimated at nearly \$60 million per year, with the remaining \$24 million paid by air passengers. The total estimated tax contribution of BBTCA amounts to roughly \$6 million.

The majority of taxes accrue to the federal government at 55% overall, while the provincial government receives 37% of tax revenue generated by BBTCA. The municipal government also benefits from BBTCA through the collection of property taxes amounting to over \$7 million paid by BBTCA and its tenants.

Figure ES-2 provides a summary of the taxes collected.

Annual Tax Impact of BBTCA

Total Tax Contribution:

- \$90 million

Federal Government:

- \$49 million (55% of total)

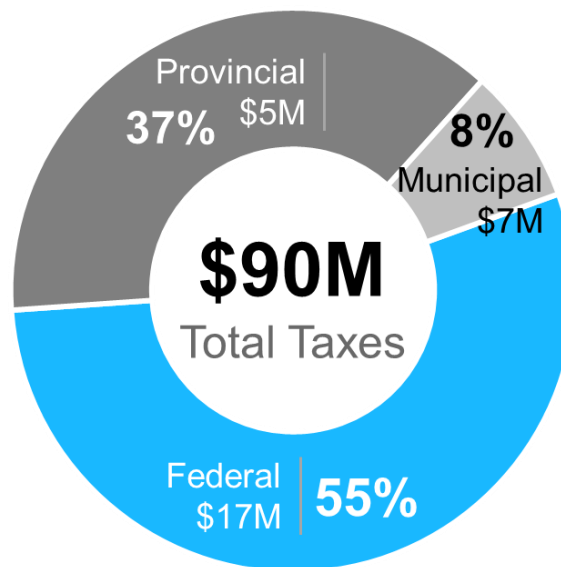
Provincial Government:

- \$34 million (37% of total)

Municipal Government:

- \$7 million (8% of total)

Figure ES-2:
Annual Estimated Tax Revenues of Billy Bishop Toronto City Airport by Level of Government

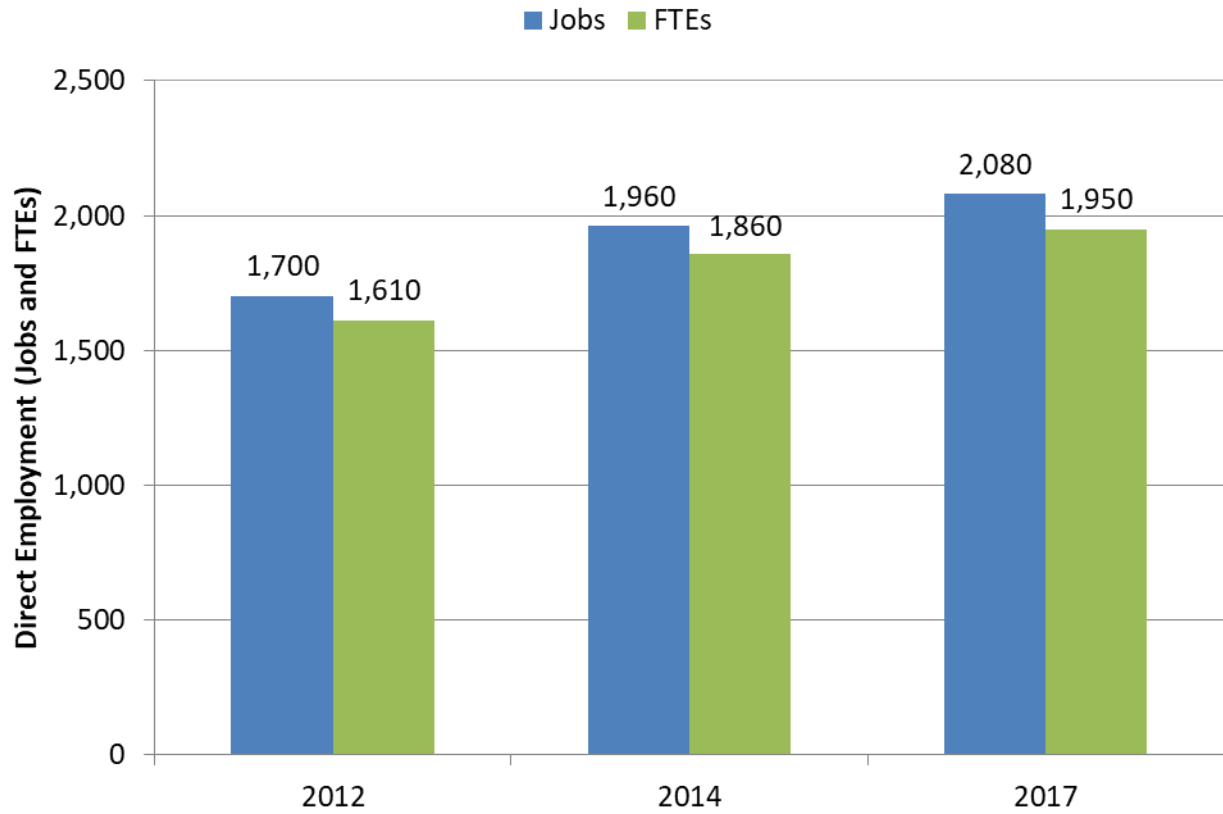


Note: Taxation impacts are based on 2016 tax rates. Total may not sum due to rounding.

Growth of Direct Employment at BBTCA

Economic impact studies were commissioned by Port Toronto in 2012, 2014 and 2017. Over the three time periods, there has been traffic growth at the airport from handling 2 million enplaned/deplaned passengers in 2012 to 2.7 million enplaned/deplaned passengers in 2016, up 35% over the past five year time frame. Correspondingly, direct employment at the airport has grown over 20% between 2012 and 2017, as shown in **Figure ES-3**.

Figure ES-3: Growth in Direct Employment at BBTCA



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1 Introduction

Ports Toronto commissioned InterVISTAS Consulting Inc. to conduct an economic impact study of its current operations at Billy Bishop Toronto City Airport (BBTCA) in Ontario. The information and analysis provided in this report serves as an update to the previous impact studies conducted in 2012 and 2014.

Airports make substantial contributions to regional economies. They facilitate the movement of people, goods, and services throughout the nation and the world, allowing the economy to operate more efficiently. Airports also provide vital links to economic opportunities locally and abroad. The airport and associated air transportation also serves to bring in tourists from the province and across Canada, as well as from the United States, who spend money on accommodation, food, entertainment and other items. BBTCA itself is a center of economic activity, supporting the activities necessary to provide passenger and cargo air travel.

Economic impact studies are a critical tool in communicating the importance and role of an airport and the local community. Toronto is home to 2.8 million people; it is the largest city in Canada and the fourth largest in North America.⁵ Toronto has nearly 90,000 businesses in operation that have access to a skilled, diverse and multilingual workforce of 1.4 million people.⁶ Toronto is Canada's financial centre, employing over 245,000 people, while the IT sector is also strong employing nearly 160,000 individuals.⁷

1.1 Billy Bishop Toronto City Airport

With its proximity to the city's downtown core, Billy Bishop Toronto City Airport provides links to business centres and destinations across North America. Through available air services, the airport has become a critical facilitator of the growth of trade and tourism between Toronto and North American centres. In 2014, the airport celebrated the 75th anniversary of commercial air service;⁸ the airport has grown over those 75 years to service over 2.7 million passengers annually in 2016.⁸

BBTCA offers air service to over 20 cities in Canada and the United States, and connections to 80 destinations around the world. Porter Airlines has served the airport since 2006, and offers service to 20 cities in Canada and the United States, including Ottawa, Montréal, New York, Boston, Chicago and Washington, D.C. Since May 2011, Air Canada has provided service with flights to Montréal. BBTCA also supports air charter operations, general aviation, helicopter operations, flight training, air ambulance services, maintenance and repair services, airborne sensing and sightseeing tours. It is the ninth busiest airport in Canada and has been recognized by Sktrax in 2016 (as well as in previous years) as one of the best small airports in the world. In March 2017, the airport was named the "Best Airport in North America" by Airports Council International's 2016 Airport Service Quality Awards.⁹

⁵ Source: Toronto City Hall
(<https://www1.toronto.ca/wps/portal/contentonly?vgnextoid=41e067b42d853410VgnVCM10000071d60f89RCRD&vgnextchannel=57a12cc817453410VgnVCM10000071d60f89RCRD>)

⁶ Ibid.

⁷ Ibid.

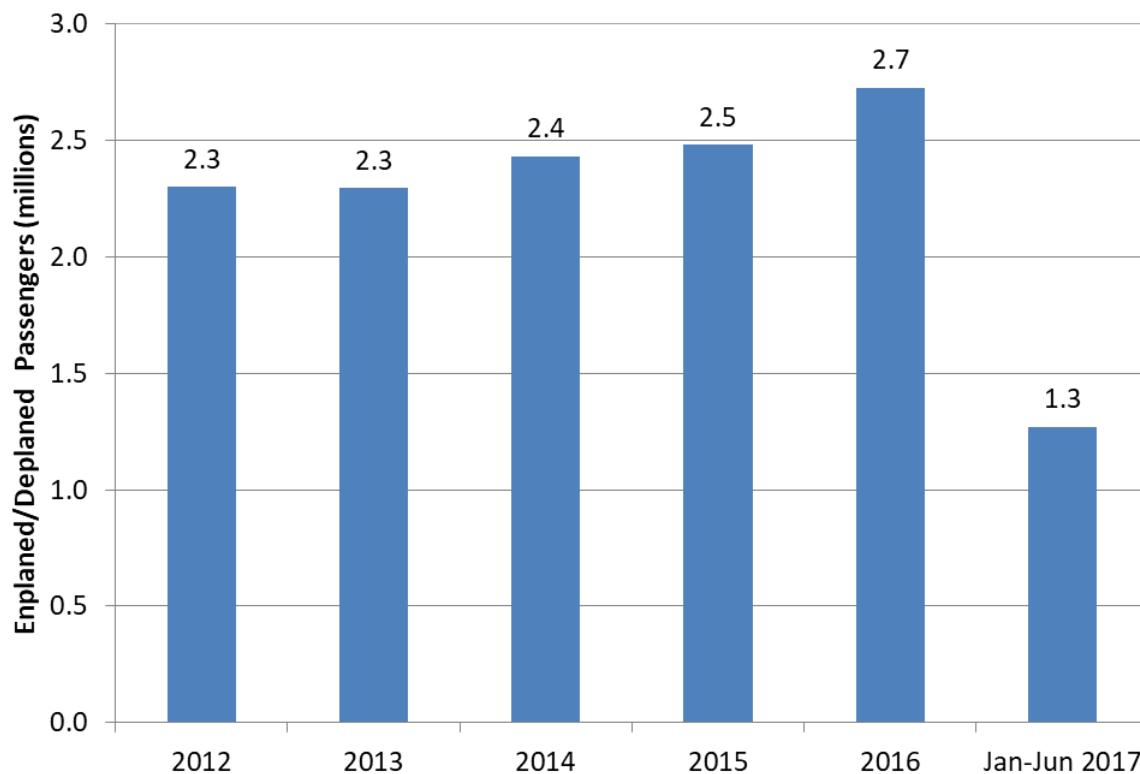
⁸ Billy Bishop Toronto City Airport, Ports Toronto, <https://www.portstoronto.com/airport.aspx>

⁹ Billy Bishop Toronto City Airport, Ports Toronto, <https://www.portstoronto.com/airport.aspx>

1.2 Passenger Traffic

The convenience and accessibility of Billy Bishop Toronto City Airport, coupled with its air services to major business and financial centres, make the airport an attractive choice for travellers. Approximately 2.7 million passengers travelled via the airport in 2016.¹⁰ **Figure 1-1** illustrates the volume of passenger traffic at BBTCA at between 2013 and the first six months of 2017. Passenger volume hit a high of 2.7 million in 2016 at the airport.

Figure 1-1:
Total Enplaned/Deplaned Passenger Traffic at BBTCA, 2013-YTD2017



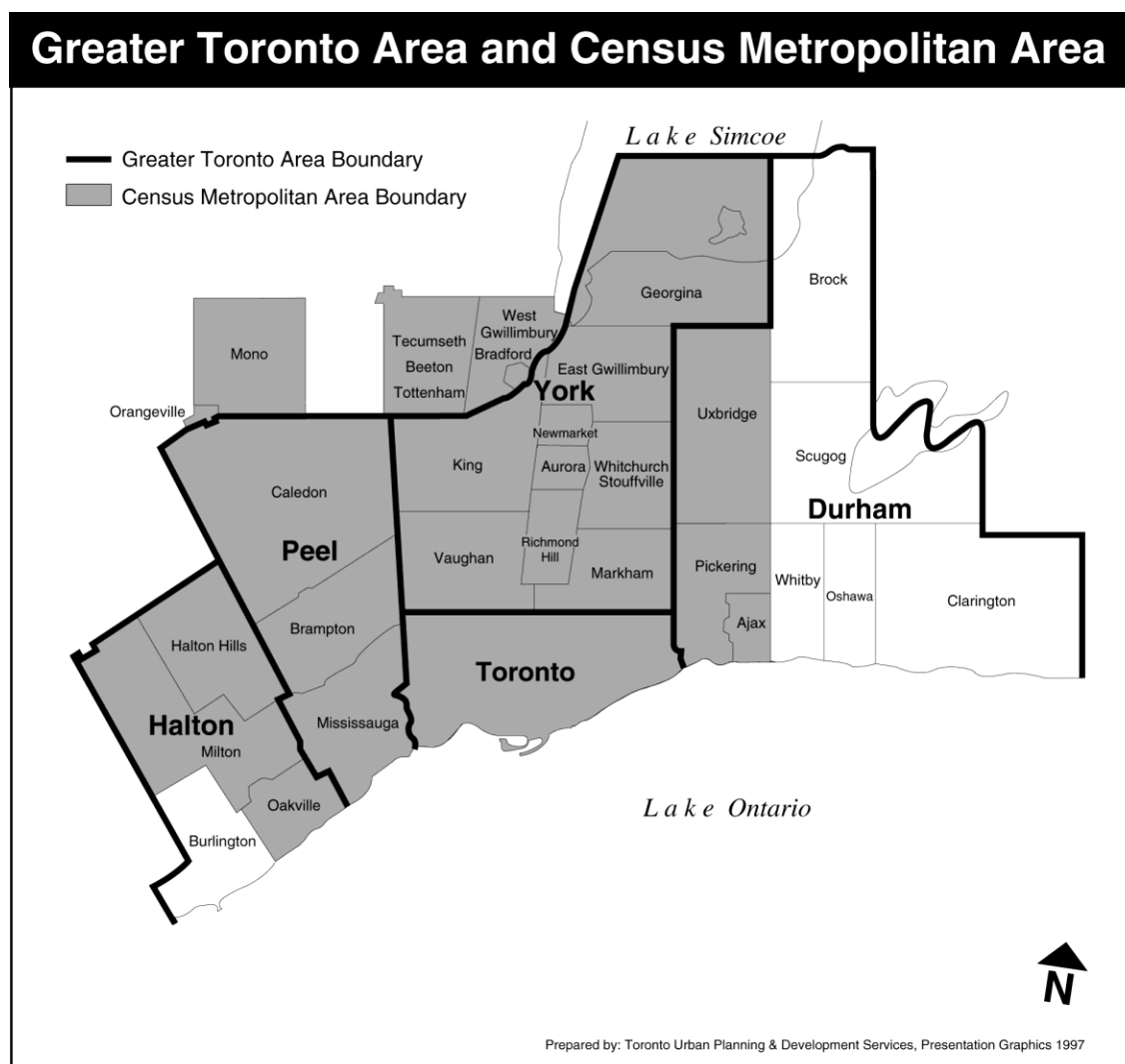
Source: Ports Toronto.

¹⁰ Passenger traffic figures include connecting passengers.

1.3 Local and Provincial Industry and Economy

In 2016, the Toronto metropolitan area had a population of approximately 6.2 million people (the largest in Canada), while the city itself had a population of approximately 2.8 million people. The total labour force of Toronto amounts to over 1.4 million people (one sixth of the country's workforce), with the top industries in Toronto including financial services, business & professional services, education, aerospace, fashion, film & television, food & beverage, design, technology, green and life sciences, and tourism. The median income for all employment in Toronto amounted to \$75,270 per annum in 2014.¹¹

Figure 1-2: Map of Metropolitan Toronto Area



Source: City of Toronto website.

¹¹ Statistics Canada, Population of census metropolitan areas and City of Toronto, Toronto Facts.

The City of Toronto is recognized as the business capital of Canada, and ranks among the top financial centres in the world. Many leading companies and institutions have their corporate headquarters in Toronto. The City of Toronto achieved GDP equivalent to \$168 billion in 2016, comprising approximately 10% of Canada's national GDP.¹²

1.4 What is Economic Impact?

Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project (e.g. the construction of new infrastructure), or a change in government policy or regulation. In this case, economic impact refers to the economic contribution associated with the ongoing operations and activities of Billy Bishop Toronto City Airport by its tenants and related firms operating off-site.

Economic impact can be measured in several ways including employment, income, Gross Domestic Product (GDP) and economic output, as summarized in **Figure 1-3**. All of these measures help quantify the gross level of economic activity being generated by the source. As a result, they can be useful in developing an appreciation for projects, investments and economic sectors.¹³

¹² City of Toronto website, General Economic Statistics.

¹³ Economic impact is different from a cost-benefit analysis that weighs benefits against costs.

**Figure 1-3:
Measures of Economic Impact**

Employment (Full-time Equivalents or Person Years)	<ul style="list-style-type: none"> • The number of full-time equivalents (FTEs) or person years generated by a particular source. Because certain jobs may only be part-time or seasonal, the number of jobs is generally greater than the number of FTEs.
Wages	<ul style="list-style-type: none"> • The income (i.e. wages, salaries, bonuses, benefits and other remuneration) earned by the associated workforce.
Gross Domestic Product (GDP)	<ul style="list-style-type: none"> • GDP is a measure of the value added by labour and capital used to produce final goods and services. This measure is net of the value (i.e. cost) of intermediate goods and services used in the production of the final goods and services. GDP can thus be thought of as economic output less intermediate inputs.
Economic Output	<ul style="list-style-type: none"> • The gross dollar value of industrial output produced. Sometimes referred to as “economic activity,” it reflects the spending (i.e., capital improvement plus revenue) by firms, organizations and individuals.

The two most common measures of economic contribution (in addition to employment) are gross domestic product (GDP) and economic output. GDP a measure of the value added by labour and capital services used to produce final goods and services, as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services. Economic output is the dollar value of industrial output produced and roughly corresponds to the gross revenue of goods or services produced by an economic sector. As such, GDP removes the revenues to suppliers of intermediate goods and services and only includes the revenues from value-added production. Alternatively, economic output adds all revenues at each stage of production together as a measure of total production in the economy. Economic output will always be greater than GDP (also termed value-added).¹⁴ In service industries and the public sector, economic output is often simplified to equate to total wages paid.

¹⁴ In some industries such as urban transit, which is highly subsidized by government, GDP may be greater than economic output.

To estimate economic output for a sector, one might add up the gross revenues of the various firms in that sector. However, to find GDP for a sector, care must be taken to avoid double-counting. The revenues of one firm providing service to another are not incremental GDP. For example, in the automobile sector, one cannot add the value (gross revenue) of a finished auto to the value of the tires. The tires are already included in the value of the automobile.

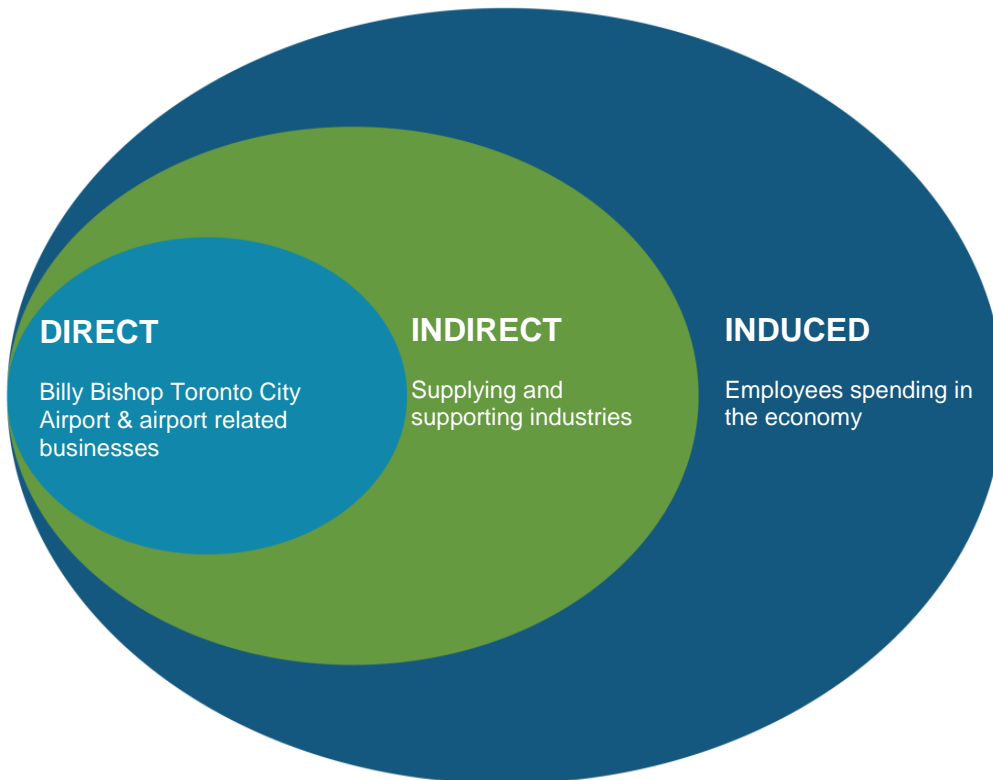
1.5 Categories of Economic Impact

The three major components of economic impact are *direct, indirect, and induced impacts*, as described in the sections below. These distinctions are used as a base for the estimation of the total economic impact of Billy Bishop Toronto City Airport. Each of these three components requires different tools of analysis. Employment impact analysis determines the economic impact in terms of jobs created and salaries and wages paid out. In the case of the airport, the direct, indirect, induced, and total numbers of person years created at the airport are examined to produce a snapshot in time of airport operations.

- **Direct** impacts account for the economic activity of the target sector itself. For instance, all employment that is directly related to the operation and management of BBTCA, including businesses located onsite at the airport as well as airport-dependent businesses located offsite, would be considered direct employment. Thus, the direct employment base includes airline employees, fixed base operators, aircraft maintenance, ground handling, customer service, and Ports Toronto staff, etc.
- **Indirect** impacts are those that result because of the direct impacts. This involves employment in downstream industries that arise from the presence of BBTCA. For instance, indirect employment includes the portion of employment in supplier industries which are dependent on sales to the air transport sector, e.g. food wholesalers that supply food for catering on flights.
- **Induced** impacts are generated from expenditures by individuals employed directly or indirectly by the airport. For instance, if an airline employee in Toronto decides to renovate her home, this would result in induced employment hours in the general economy as the renovation would support hours of employment in the construction industry, the construction materials industry, etc. Induced impact is often called the “household-spending effect”.

Total impacts are the sum of direct, indirect, and induced effects. These three categories of impacts are summarised in **Figure 1-4**.

Figure 1-5:
Categories of Economic Impact Generated and Facilitated by Billy Bishop Toronto City Airport



2 Methodology

The following chapter outlines the methodology used to estimate the economic impact of annual ongoing operations at Billy Bishop Toronto City Airport in 2017.

2.1 Introduction

InterVISTAS conducted this economic impact study during the spring of 2017. The study estimates the economic impact of Billy Bishop Toronto City Airport's operations in 2017.

The study is based on data collected from an employment survey of all employers associated with the operation of BBTCA (e.g. airlines, ground transport firms, airport concessions, etc.) which is used as an input to assess the direct impacts of the airport's operations. The survey produced estimates of the number of people employed in directly-related occupations, as well as the total amount of earnings paid to these employees. The firms surveyed as part of this study are located on-site. The employment survey was used to classify the total employment and average wages paid by business type.

InterVISTAS estimates the indirect and induced effects using economic multipliers developed by the Statistics Canada that are derived from models of the Canadian national and provincial economies.¹⁵ InterVISTAS utilizes a proprietary economic model in order to conduct multiplier analysis and estimate indirect and induced impacts.

Data collected from the employment survey is also used to calculate the associated tax impacts (government revenue) generated by the airport's operations.

Survey Response Rate

- 82% of tenants responded to the survey
- 84% of total direct full-time equivalents covered by the survey

Study Time Frame

- 2017 operations

Economic Multiplier Source

- Statistics Canada, Year 2013, released in June 2017

2.2 Estimating Current Economic Impact of Airport Operations

The direct employment base related to ongoing operations at BBTCA is measured first. Employment figures are generally more understandable by the public than more abstract measures, such as economic output or GDP. Employment figures also have the advantage of being a more accurate measure, both because the firms are more likely to provide data on employment, as opposed to information on revenues, wages and other monetary amounts, and because there is less chance of double counting economic activity.

¹⁵ The multipliers used for the analysis are based on Statistics Canada economic multipliers for Ontario from the 2013 Interprovincial Input-Output model. These multipliers were updated with Consumer Price Indices to account for inflation. See **Appendix G** for more information on the Statistics Canada Multipliers used in this analysis.

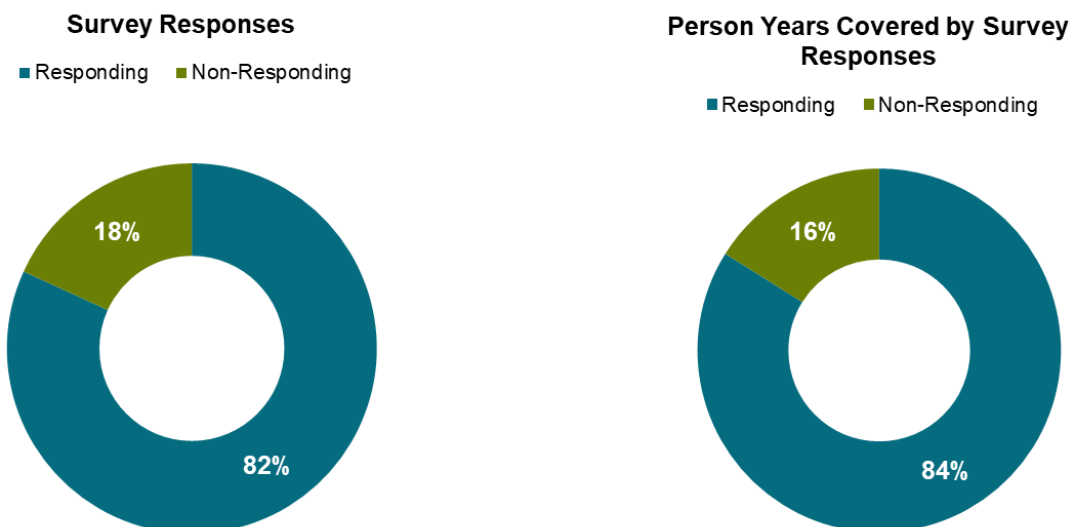
The economic impact study then assesses the indirect and induced (or “multiplier”) employment supported by BBTCA’s operations, as well as economic activity in terms of economic output and GDP using the Statistics Canada economic multipliers and ratios for Ontario that are representative of 2013.

The tax revenue generated annually by operations at BBTCA is also estimated for 2017, based on tax rates for 2016.

2.3 Surveying Direct Employment

Employment attributable to ongoing Billy Bishop Toronto City Airport operations was measured by surveying all tenants. Specifics of the survey methodology, including questions and a description of the sampling techniques, are contained in **Appendix A**. E-mail and telephone follow-ups were conducted to ensure a strong response rate. In total, 82% of the businesses and organizations contacted responded to the survey, representing 84% of total FTEs or person years of employment covered by the survey. A summary of the survey response rate is provided in **Figure 2-1**.

Figure 2-1:
Response Rate for Billy Bishop Toronto City Airport Economic Impact Employment Survey



2.4 Inferring Employment

For non-responding firms, employment was conservatively estimated using a proven and accepted methodology.¹⁶ This includes referencing the survey results for firms of similar business types and other public research, if available. Relevant surveys completed for prior study time periods were also consulted, if applicable.

2.5 Estimating Indirect and Induced Impacts using Economic Multipliers

Measurement of indirect and induced economic activity is difficult. While it might be possible to conduct a survey of downstream employers, the survey would need to cover thousands of firms in order to completely measure indirect employment. For induced employment, the entire economy would need to be scrutinised. In addition to the time and financial resources needed to conduct such surveys, the quality of responses would be suspect.

As an alternative to costly and inaccurate surveys, indirect and induced effects are typically measured by the use of *economic multipliers and ratios*.¹⁷ Multipliers are derived from economic/statistical/accounting models of the general economy. They come in a variety of forms and differ greatly in definition and application. Thus, great care must be exercised in choosing the appropriate set of multipliers to use. In addition, the use of multiplier analysis is limited by a number of factors, these being:

- the accuracy of the structure and parameters of the underlying model;
- the level of unemployment in the economy;
- the assumption of constant returns to scale in production;
- the assumption that the economy's structure is static over time; and
- the assumption that there are no displacement effects.

Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers.

Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment, with emphasis nonetheless placed on the direct economic impacts as these are based on data from the employer survey and are clearly identifiable.

¹⁶ The methodology employed in this study to infer for non-respondents is similar to that used by the federal government for estimating the national income and product accounts.

¹⁷ The multipliers used for the analysis are based on 2013 Statistics Canada economic multipliers and ratios for Ontario, the most recent data available. These multipliers were updated with Consumer Price Indices to account for inflation.

2.6 Study Time Frame

The employment survey was conducted between April and August 2017. The results in this report reflect employment and operations from 2017.

2.7 Jobs versus Full-Time Equivalents or Person Years

Traditionally, one measures employment by the number of jobs. However, when part-time and/or seasonal workers are used, this can be a misleading measure resulting in an overstatement of economic impact. Whenever possible, employment impacts are measured both in terms of the number of jobs and the number of full-time (FTE) equivalents, also called person years.¹⁸ In our model, hours worked by part-time and/or seasonal employees are converted into FTEs.

2.8 Estimating Tax Revenue Impacts

The tax revenue contributions to the federal, provincial, and municipal levels of government that are associated with airport operations are also estimated. This includes taxes paid by employers and employees (such as payroll taxes), passengers (such as sales taxes on expenditures), and Billy Bishop Toronto City Airport (such as property tax). Tax rates for 2016 are used in the analysis.

¹⁸ One full-time equivalent job is equivalent to 1,832 hours of work. See **Appendix C** for a detailed calculation of the number of hours per full-time equivalent job. Person years are the same as full time equivalents (FTEs).

3 Economic Impact of Billy Bishop Toronto City Airport

SUMMARY

- Annual operations at BBTCA support 2,080 direct jobs, 1,950 direct FTEs, and \$130 million in direct wages
- Indirect employment impacts of BBTCA include 1,670 indirect FTEs and \$110 million in indirect wages across the province
- Induced employment impacts of BBTCA include 830 induced FTEs and \$40 million in induced wages across the province
- Annual tax contributions of BBTCA amount to over \$90 million
- Total employment impacts of BBTCA include 4,740 jobs or 4,450 FTEs and \$280 million in wages across the province

3.1 Direct Economic Impacts

This section describes the total employment, in terms of both jobs and FTEs or person years of employment, and estimated payroll attributable to employers directly related to ongoing operations at Billy Bishop Toronto City Airport.

This section also examines the employment due to ongoing operations at BBTCA in more detail. FTEs or person years of employment are broken down by:

- Full-time versus part-time and seasonal employment; and
- Employment by industry.

Through its business and commercial activities and operations, Billy Bishop Toronto City Airport contributes directly to employment and the economy in Toronto and area. It also acts as an economic catalyst, facilitating the growth of regional businesses and industrial sectors. Every arrival of a flight at BBTCA generates employment hours for individuals with jobs involved in handling passengers, their baggage, cargo and the aircraft. This employment includes customer service, airline crew, ground handling, cleaning, maintenance functions etc. It also includes some overhead labour (e.g., clerical and administrative staff), and the associated employment of ground transportation firms and accommodation providers that service passengers of the airport. The direct impacts are the employment generated largely within the aviation sector associated with the operating and servicing of air services.

Direct employment related to ongoing operations at BBTCA amounts to 2,080 direct jobs. After adjusting for part-time and seasonal employment, the 2,080 jobs equate to 1,950 FTEs or person years of direct employment.

Direct employment at BBTCA and related firms receive an estimated \$130 million in wages, providing an average of \$65,940 per FTE. This compares to the average national wage of \$47,800 per FTE, per annum.¹⁹ Direct employment figures are summarized in **Figure 3-1** for employment, wages, GDP and output.

In addition to employment and wages, the airport directly contributes a \$190 million to direct provincial GDP and over \$670 million in direct economic output.

Figure 3-1:
Direct Employment and Income at Billy Bishop Toronto City Airport, 2017



Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	Jobs	FTEs			
Direct	2,080	1,950	130	190	670

Note: Employment figures (jobs and FTEs) are rounded to the nearest ten. Dollar figures (wages) are rounded to the nearest million.

3.1.1 Direct Full-Time, Part-Time and Seasonal Employment

A total of 2,080 direct jobs or 1,950 FTEs are attributable to Billy Bishop Toronto City Airport operations and other airport related businesses. Based on information provided by the survey of employers, 98% of the jobs are permanent jobs while seasonal employment represented 2% of jobs. Approximately 85% of all direct jobs (or 92% of all direct FTEs) are full-time positions. This demonstrates that BBTCA and its related businesses are a source of stable, year-round employment.

¹⁹ Based on Statistics Canada's data on average hourly wages, and assuming 1 FTE = 1,832 hours.
(<http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/labr69j-eng.htm>); (<http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/labr69a-eng.htm>)

Figure 3-2:
Permanent versus Seasonal Employment at Billy Bishop Toronto City Airport, 2017

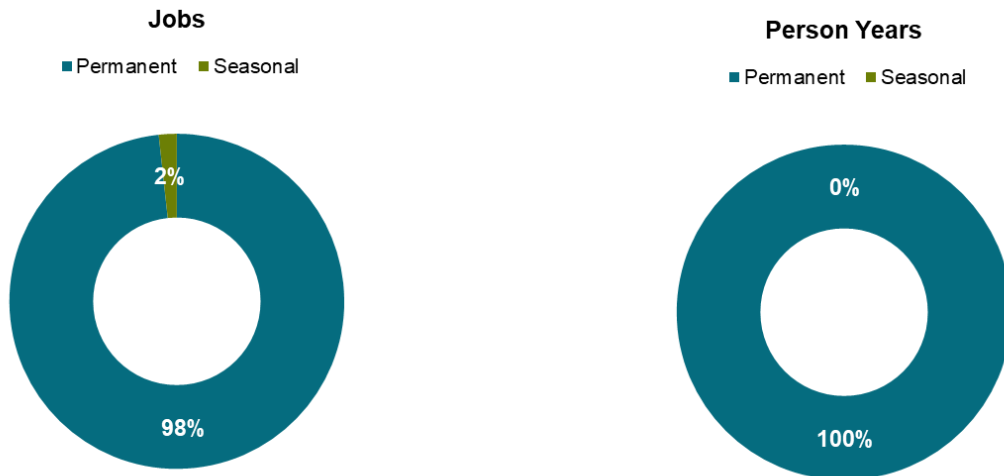
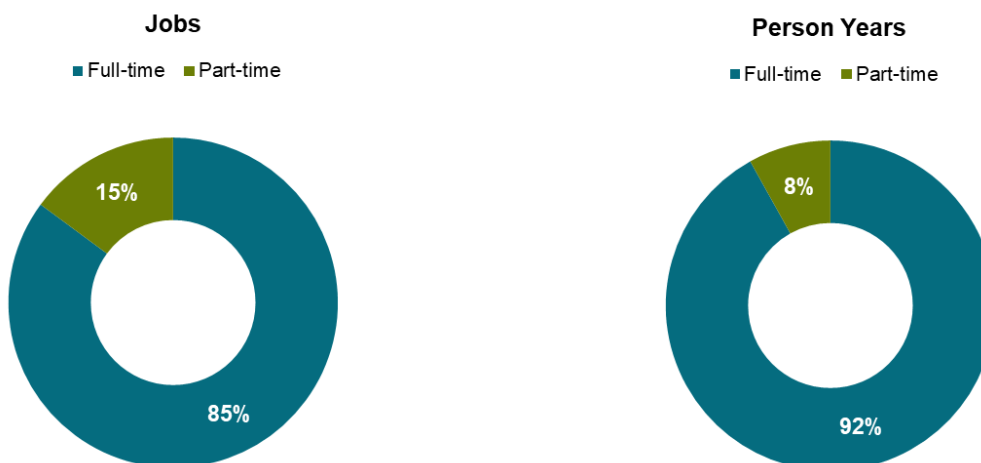


Figure 3-3:
Full-Time Versus Part-Time Employment at Billy Bishop Toronto City Airport, 2017



3.1.2 Direct Employment by Business Category

Billy Bishop Toronto City Airport is a source of a wide variety of business types operating at the airport. The largest share of direct jobs is attributed to the air carriers. A breakdown of direct employment at BBTCA by business category is illustrated in **Figure 3-4**.

- **Air Carriers** include the airlines, helicopter services, air taxi and charter air services, makes up 1,379 jobs or 67% of the total employment base at BBTCA.
- **Ground Transportation** employment accounts for 230 jobs or 11% of direct employment at BBTCA. These jobs support the transport of passengers to/from BBTCA to utilise air services offered.
- **Ports Toronto** employs over 70 jobs or nearly 4% of the direct employment at the airport.
- **Support Activities for Aviation** include the FBO and air traffic control services make up 72 jobs or 4% of direct employment at BBTCA.
- **Hotel and Car Rental** businesses support a further 53 jobs (3% of direct employment) and 27 jobs (1% of direct employment), respectively.
- **Airport Concession** businesses amount to a total of 15 jobs in total.

Figure 3-4:
Direct Employment by Occupation at Billy Bishop Toronto City Airport, 2017



3.2 Indirect and Induced Economic Impact

The previous sections discussed how direct employment related to ongoing operations at Billy Bishop Toronto City Airport was measured. However, the employment impact of the airport does not end there, as other sectors of the economy are dependent on these employers' businesses. Indirect employment is generated by suppliers to the businesses directly related to the airport. In addition, there may be additional impacts to the province-wide economy when direct (and indirect) employees spend their wages. These employment effects are referred to as induced employment. Total employment impacts therefore equal the sum of direct, indirect and induced effects.

The indirect and induced effects have been calculated using Statistics Canada economic multipliers and ratios for Ontario from the Interprovincial Input-Output model for 2013, the most recent available.²⁰

²⁰ The multipliers used for the analysis are based on Statistics Canada economic multipliers for Ontario from the 2013 Interprovincial Input-Output model, the most recent available at the time of this study. These multipliers were updated with Consumer Price Indices to account for inflation. See **Appendix G** for more information on the Statistics Canada Multipliers used in this analysis.

3.2.1 Economic Multiplier Limitations

Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment, noting that these impacts have not been directly measured by the surveys conducted as part of the study.

The economic multipliers are derived from the Statistics Canada economic multipliers for Ontario from the 2013 Interprovincial Input-Output model, the most recent version available.

3.2.2 Indirect Impacts

Indirect impacts are generated by industries that provide or supply services to firms located onsite at BBTCA. Based on the analysis of the employer survey results and the application of economic multipliers, it is estimated that 1,670 *indirect* FTEs are associated with ongoing operations at BBTCA in 2017. This suggests that 1,670 FTEs are indirectly generated in industries that supply the businesses at the airport. The labour income associated with the indirect employment is estimated at \$110 million annually. The *indirect* GDP contribution is \$190 million alongside an *indirect* economic output of \$350 million on an annual basis.





3.2.3 Induced Impacts

Induced impacts are produced because of expenditures by individuals employed directly and indirectly by airport businesses. It represents the demand for goods and services generated by wage earnings from direct economic activity at the airport. *Induced* employment attributable to BBTCA is estimated at 830 FTEs, which is associated with *induced* labour earnings totalling \$40 million. The *induced* GDP contribution sums to \$90 million, with an economic output of \$150 million.

3.3 Total Ontario Impacts

Ongoing Billy Bishop Toronto City Airport operations, including induced and indirect effects, support 4,740 total jobs (equivalent to 4,450 FTEs), and \$280 million in wages across the province. Including multiplier effects, operations at the airport support \$470 million in total GDP and \$1.1 billion in total economic output contributions.

Figure 3-5:
Annual Total Ongoing Economic Impact of Billy Bishop Toronto City Airport Operations, 2017

					
Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	Jobs	FTEs			
Direct	2,080	1,950	130	190	670
Indirect	1,780	1,670	110	190	350
Induced	880	830	40	90	150
Total	4,740	4,450	280	470	1,170

Note: Totals may not add up due to rounding.

3.4 Tax Revenue Impacts

This section documents the current contribution to government revenues resulting from current operations at Billy Bishop Toronto City Airport and associated economic activity. This includes revenues received by federal, provincial and municipal governments.²¹

Revenue contributions are divided into three groups, based on who is making the payment:

- **Taxes paid airport employers and employees.** These are taxes paid by airport employers and employees. They include income and payroll taxes, social insurance contributions (such as employment insurance premiums) and the federal and provincial fuel taxes.
- **Taxes paid by passengers.** Visitors pay various taxes and fees. For example, these include taxes on personal expenditures at BBTCA such as taxes on food and beverages, as well as the Airport Improvement Fee (AIF).
- **Taxes and Payment-In-Lieu Taxes paid by Ports Toronto.** BBTCA pays taxes in the form of property taxes. Government revenues paid by Ports Toronto also include the Gross Revenue Charge and Payments-in-Lieu of Taxes (PILT).

For each category, taxes paid to the federal, provincial and local levels of government are separately identified.²²

²¹ Taxation impacts are based on 2016 tax rates.

²² For the most part, this study **estimates** (some tax envelopes were measured directly, e.g., tenant property taxes) taxes paid from information on the passengers, employers and employees at the airport. In a few situations, such as the corporate income tax paid by employers, an approximate method was used to estimate taxes paid. In every case conservative methods were used. No major tax has been excluded.

The purpose of this section is to present the tax revenue contributions resulting from the activity attributable to Billy Bishop Toronto City Airport. As with all such studies, a conceptual decision has to be made as to how broad a definition of *economic activity* should be used in measuring the impacts. For this study, a relatively narrow definition has been taken, for example, the following have **not** been included:

- Taxes associated with indirect or induced employment (i.e. multiplier effects).
- Consumption taxes (e.g., GST) paid by airport employees when they spend their income.
- Excise or import taxes on cargo.
- Taxes paid by airport users outside of the airport.

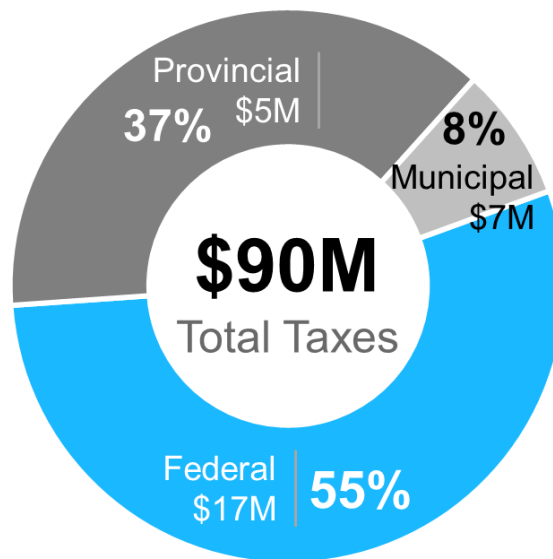
It would be exceedingly complex to broaden the scope of the tax base in this analysis to include taxes generated by indirect and induced employment. The level of detail collected on direct employment by the survey is critical to the analysis while such information is not available for the indirect and induced employment. This being the case, impacts and speculation about the general economy would be complex and averages would not necessarily be precise or accurate. Therefore, the tax analysis in this report is limited to revenues attributable to direct employment only.

3.5 Tax Contributions by Level of Government

Ongoing economic activity at Billy Bishop Toronto City Airport generates tax revenue for all levels of government. In 2016, total tax contributions from BBTCA related *direct* employment to all levels of government were approximately \$90 million. **Figure 3-6** provides a rounded breakdown of tax impacts by level of government.

- The federal government was the largest recipient of tax revenue, receiving \$49 million (55% of total tax revenue impacts). The vast majority of that total is attributable to taxes paid by employers and employees such as income tax, corporate income tax, CPP contributions, and the like.
- The provincial government received approximately \$34 million (37% of total tax revenue impacts). This total is from income taxes, contributions to health insurance, and the Provincial portion of the GST paid by passengers.
- The municipal governments collected nearly \$7 million in tax revenue (8% of total tax revenue impacts) in the form of property taxes from tenants or Ports Toronto.

Figure 3-6:
Annual Estimated Tax Revenues of Billy Bishop Toronto City Airport by Level of Government



3.6 Summary of Tax Contributions by Taxpayer

Ongoing economic activity at Billy Bishop Toronto City Airport generates tax revenue from different tax payers, as summarized in **Figure 3-7** below.

Figure 3-7:
Annual Estimated Tax Contributions by Taxpayer at Billy Bishop Toronto City Airport (\$ millions)

Taxpayer	Federal	Provincial	Municipal	Total
Passengers	\$11.1	\$13.5	\$0	\$24.6
Ports Toronto and Other Airport Employers/Employees	\$38.1	\$20.2	\$7.1	\$65.4
Total	\$49.2	\$33.7	\$7.1	\$90.0

3.7 One-Time Economic Impact of Capital Expenditures

Section to come, when base data received.

4 Summary of Results

4.1 Economic Impacts

The ongoing operations at Billy Bishop Toronto City Airport support a total of 4,740 FTEs or person years of employment in the province, including multiplier impacts. Of this total employment figure, 1,950 FTEs are attributable to *direct* employment located onsite at the airport. As jobs related to the airport extend far beyond its boundaries, the bottom line total also includes 1,670 FTEs of *indirect* employment and 830 FTEs of *induced* employment.

The *direct* employment associated with annual ongoing operations at Billy Bishop Toronto City Airport grew slightly to 1,950 FTEs in 2017 from 1,860 FTEs in 2014, resulting in approximately 5% growth in employment overall.

The provincial economy benefits significantly from the day-to-day operations of Billy Bishop Toronto City Airport. Annually, the airport contributes an estimated total of \$470 million in GDP, alongside an estimated \$1.1 billion in economic output. All impacts relating to employment, wages, GDP and output are illustrated in **Figure 4-1**.

Figure 4-1:
Total Economic Impacts of Billy Bishop Toronto City Airport Operations in 2017

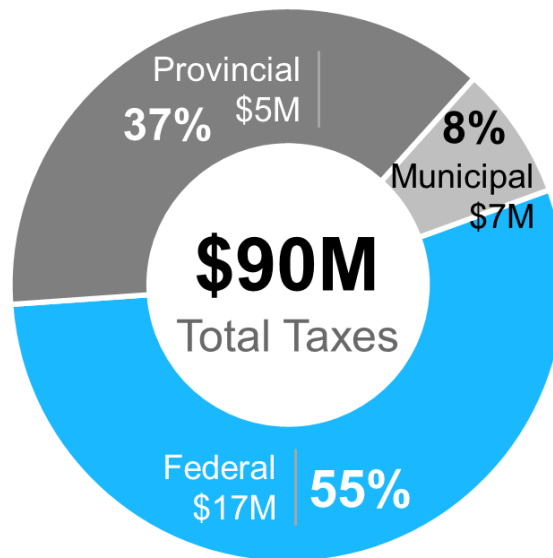
Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	Jobs	FTEs			
Direct	2,080	1,950	130	190	670
Indirect	1,780	1,670	110	190	350
Induced	880	830	40	90	150
Total	4,740	4,450	280	470	1,170

Note: Totals may not add up due to rounding.

4.2 Tax Revenue Impacts

Billy Bishop Toronto City Airport generates considerable tax revenues across all levels of government. On an annual basis an estimated \$90 million in tax is contributed by airport employers, employees and passengers. A large portion of the tax generated accrues to the federal government (55%), with 37% attributable to the province, and the remaining 8% to the municipalities. The breakdown of these earnings is highlighted in **Figure 4-2**.

Figure 4-2:
Annual Estimated Tax Revenues of Billy Bishop Toronto City Airport by Level of Government



4.3 One-Time Economic Impact of Capital Expenditures

Section to come, when base data received.

Appendix A: Employment Survey

Questionnaire Design

The basic questionnaire was designed to obtain information, and to be as clear and easy to understand as possible for respondent firms. The basic questionnaire provided to airport tenants contained questions in the following areas:

General Information

- Name of firm, address
- Contact person's name and title
- Phone and fax numbers
- Email and website address
- Principal business activity

Total Employment Numbers

- % Business related to YTZ and % Business related air cargo
- Total employees (2017)
- Number of on-site employees
- Number of off-site employees
- Potential future employment levels in 2017

Part-time and Full-time Employment

- Full-time permanent employees
- Part-time permanent employees
- Full-time seasonal employees
- Part-time seasonal employees
- Average hours and weeks for part-time and seasonal employees

Payroll and Wage

- Total payroll excluding benefits; or
- Average wage per employee

Employment by Occupation

- A selection of job trades was provided to categorize employment

Outsourcing and Contracting Out

- Number of individuals on contract
- Average hours and weeks for individuals on contract
- Number and names of firms on contract
- Average annual hours for firms on contract

Property Taxes & Other Taxes

- Total property taxes paid (2016)
- Other federal and provincial taxes paid (2016), if applicable

Conducting the Survey

The survey was mailed out electronically by InterVISTAS Consulting, with a cover letter from Ports Toronto. The letter explained the purpose of the study, the confidentiality of responses and encouraged members of the airport business community to participate.

Following the initial electronic mail-out of the surveys and throughout the following weeks, non-responding firms were contacted by telephone to follow-up on the completion of the survey. BBTCA staff coordinated with InterVISTAS to handle the follow-ups. In some cases, BBTCA staff made site visits to various tenants to encourage responses. Firms were encouraged to return the survey and new copies were offered if the originals were lost. The replacement surveys were emailed once again. Some survey responses were collected via a telephone interview with firms.

Appendix B: Sample Survey



Toronto – Billy Bishop Toronto City Airport
Air Carrier Employment Survey

May 2017

The figures you provide in the following sections are **strictly confidential**. Only aggregate survey totals will be published in the final report.

Please complete this survey as soon as possible.

For the purposes of this study, it is important that the figures you provide are as accurate as possible. However, where it is not possible to provide precise information, we would appreciate estimates rather than no response at all. When answering the questions below regarding your business, please include all related subsidiary businesses.

Name of Company: _____

Address of Company: _____

Contact Person: _____ Phone number: _____

Email: _____

Q1. Principal Business Activity

Please indicate your principal business activity. If you are involved in more than one of the business types below, please choose the one that best describes your business (i.e., contributes the largest proportion of revenues).

Air Carriers

- | | |
|--|--|
| <input type="checkbox"/> 1. Scheduled Canadian Carrier | <input type="checkbox"/> 5. Air Taxi |
| <input type="checkbox"/> 2. Scheduled Non-Canadian Carrier | <input type="checkbox"/> 6. Cargo Carrier |
| <input type="checkbox"/> 3. Charter Carrier | <input type="checkbox"/> 7. Courier / Integrator |
| <input type="checkbox"/> 4. Helicopter | <input type="checkbox"/> 8. Other: _____ |

Other Business Types

- | | |
|--|--|
| <input type="checkbox"/> 9. Airport Operator | <input type="checkbox"/> 18. Aviation Related Manufacturing |
| <input type="checkbox"/> 10. Freight Forwarder, Cargo Agent, etc. | <input type="checkbox"/> 19. Aviation Related Training |
| <input type="checkbox"/> 11. Warehousing | <input type="checkbox"/> 20. In-flight Catering Company |
| <input type="checkbox"/> 12. Customs Broker | <input type="checkbox"/> 21. Security Services |
| <input type="checkbox"/> 13. Aircraft Maintenance, Repair and Overhaul | <input type="checkbox"/> 22. Airport Retail Outlet, Restaurant, etc. |
| <input type="checkbox"/> 14. Airport Ground Handler | <input type="checkbox"/> 23. Government Agency/Department |
| <input type="checkbox"/> 15. Fuelling Company | <input type="checkbox"/> 24. Car Rental |
| <input type="checkbox"/> 16. Fixed Base Operator | <input type="checkbox"/> 25. Taxi, Bus, Limousine, Shuttle |
| <input type="checkbox"/> 17. Aircraft Parts Supplier | <input type="checkbox"/> 26. Hotel |
| | <input type="checkbox"/> 27. Other: _____ |



Toronto – Billy Bishop Toronto City Airport
Air Carrier Employment Survey

May 2017

Q2. Business Related to Billy Bishop Toronto City Airport (YTZ)

Please estimate the proportion of your company's business revenues that is related to activities at Billy Bishop Toronto City Airport (YTZ).

*For example, a freight forwarder or customs broker might attribute only 20%, as that is the proportion of their business that involves shipping out of YTZ (the other 80% of their business uses truck or rail for carriage of shipments to other exit and entry points). **Alternatively, if your firm is located onsite at YTZ or if your firm's existence is completely dependent on YTZ's operations, please indicate a 100% relationship.***

Airport	% Related Business Revenue (2016)
YTZ	%

Q3. Employment at Your Company Related to YTZ

Please provide the number of **permanent & seasonal** staff currently employed by your company. Please only report employees involved with operations related to Billy Bishop Toronto City Airport. This should include employees both on-site at Billy Bishop Toronto City Airport and off-site (**only** where off-site employees are involved with **directly** providing service to Billy Bishop Toronto City Airport, e.g. catering employees at an off-site location). **Airlines only: for pilots and flight crew, please report their employment figures only if they are based at Billy Bishop Toronto City Airport.**

Please break down the employment into permanent, seasonal, full-time and part-time. *This should not include employment for work done on contract.*

Location	PERMANENT EMPLOYEES		SEASONAL EMPLOYEES	
	Full-Time	Part-Time	Full-Time	Part-Time
YTZ				
Off-Site				

Please indicate how many hours per week **part-time employees** work on average.

	Number of Weeks per Year	Number of Weekly Hours
Part-time Employees		

For **seasonal employees** in general, please indicate how many weeks per year and how many hours per week **seasonal employees** worked on average.

	Number of Weeks per Year	Number of Weekly Hours
Seasonal Employees		



Toronto – Billy Bishop Toronto City Airport
Air Carrier Employment Survey

May 2017

Q4. Payroll and Wages

Please state the current total gross payroll paid by your company, i.e. as of May 2017, for the employees included in the question regarding **Employment at Your Company Related to YTZ**.

This figure should include all full-time, part-time and seasonal employees. If you are unable to estimate current payroll, please provide figures for your last financial period, and indicate which period that was.

Total Payroll (as of May 2017):	\$
Financial Period (if not 2017):	

Note: Total payroll includes gross (pre-tax) wages or salaries, including overtime pay, commissions, allowances and bonuses.

Alternatively, if you are unable to answer this question, please provide an estimate of the average annual wage/salary **per employee** (including overtime pay, commissions, allowances and bonuses), or select one of the options below.

Average Annual Salary/Wage per Employee: \$ _____ per annum.

Or: Estimate of the average annual salary range per employee

- | | |
|--|--|
| <input type="checkbox"/> Less than \$20,000 | <input type="checkbox"/> \$60,000 - \$79,999 |
| <input type="checkbox"/> \$20,000 - \$39,999 | <input type="checkbox"/> \$80,000 - \$99,999 |
| <input type="checkbox"/> \$40,000 - \$59,999 | <input type="checkbox"/> \$100,000 or more |

Q5. Employment by Occupation

Please estimate the number of employees included in Question 3 that are in the following occupation categories.

The figures entered below should sum to the same total as Question 3.

Employment by Occupation		Number of Employees
General	Managerial/Supervisory	
	Administrative & Clerical	
	Craft Trades (Electricians, Steam Fitters, etc.)	
Airline & Airline Servicing Trades	Pilots	
	Flight Attendants	
	Aircraft & Vehicle Mechanics	
	Customer Service Agents	
	Aircraft Servicing	
Support Trades	Security Guards	
	Drivers / Delivery / Couriers	
	Call Center / Reservations/Dispatchers	
	Food Service Workers	



Toronto – Billy Bishop Toronto City Airport
General Employment Survey

May 2017

Other (Please specify)		

Q6. Outsourcing and Contracting Out

Since we do not want to exclude any employment from the airport, we would like you to briefly comment on whether your firm contracts out any important services.

Individuals on Contract: If you pay some individuals through a contract, as opposed to through payroll, please indicate the number of such employees, how many hours per week worked, as well as how many weeks worked per year, on average.

	Number of Contract Employees	Number of Weeks per Year	Number of Weekly Hours
Contract Employees			

Firms on Contract: If you outsource or contract out any work to other companies (e.g., cleaning services, IT, ground handling, etc.), please complete the following table, indicating the functions you outsource to third party companies, and provide an estimate of the total contracted hours of work per annum. Also, please specify the company's name(s) and indicate whether they are located at the airport (i.e. located on-site). This will allow us to avoid any double counting of work performed by other companies which may also be surveyed as a part of this study.

Function	Name of Firm	Located On-site? (Check if Yes)	Number of Hours Performed by the Company in 2016
<i>Example: Cleaning services</i>	<i>Spic and Span Cleaners</i>	<input type="checkbox"/>	<i>100 hours per year (2 hours per week)</i>
		<input type="checkbox"/>	
		<input type="checkbox"/>	
		<input type="checkbox"/>	



Toronto – Billy Bishop Toronto City Airport
General Employment Survey

May 2017

Q7. Future Employment

We would like to be able to estimate forecasted employment levels for the end of 2017. Please help us by indicating the number or proportion of additional employees your firm plans to hire at YTZ by the end of 2017, over and above your current employment.

	Increase	Decrease	Unchanged	Number of Additional Employees
Additional Employment (2017) <i>Estimated New Employees since May 2017</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Alternatively, if you are unable to answer this question, please provide an **estimated percentage growth in employment** in 2017.

% Anticipated Growth in Workforce in 2017	%
---	---

Q8. Business Revenue Related to Air Cargo

We would like to be able to document the impact of air cargo services. Please help us by indicating the proportion of your business revenues that is related to servicing air cargo at YTZ.

% Business Revenue Related to Air Cargo (2017):	%
---	---

Note: The percentage entered should be the same or less than that entered in Question 2.

Q9. Provincial & Local Taxes

Please indicate the amount of property and/or other provincial and municipal taxes paid by your firm in Ontario in 2016.

Property Taxes Paid in Ontario (2016):	\$
Other Provincial & Municipal Taxes (2016):	\$

Additional Comments

If you have any questions, please call
Doris Mak / Kathryn Tooley at 1-877-717-6246.

Appendix C: Calculation of Full-Time Equivalent or Person Years of Employment

The following are details of calculations for the average number of hours per full-time equivalent (FTE) or person year of employment.

Table C-1:
Full-time Equivalent Hours per Year

Calculation of FTE hours per year:		
	365	days per year
Less:	(104)	weekend days
	(11)	legal holidays
	(15)	average vacation days
	(6)	sick leave
	229	days per person year
	* 8	hours per work day
	1,832	hours per person year

Workdays vary anywhere from 6.5 to 8 hours; however, in order to be conservative, an 8 hour workday was assumed.²³ Similarly, numbers of vacation and sick leave days may also vary.

²³ Essentially, we are using a measure of paid hours per year. Using a measure of productive hours per year with 6.5 hour workdays (8 hours less 1 hour for lunch less two 15 minute work breaks) would give 1,489 hours per person year. Using this lower figure would result in inferring a greater number of FTEs from seasonal and part-time jobs. Using the 1,832 figure, we infer a lower number of FTEs.

Appendix D: Inferred Employment

For the very few non-respondents encountered during the survey phase, statistical inferences had to be made regarding the employment levels.

As a general rule of thumb, InterVISTAS' approach bases inferred estimates provided by respondents for each business type, and validates this information with publically available sources of data.

The employment data in this report was compiled from two sources:

1. Employment reported by employers on surveys submitted to InterVISTAS.
2. Employment inferred for employers who did not provide a survey response. Inferred employment was based on employment information from those firms in each business type that did respond to the survey. The mean employment of respondents in each business type was calculated, excluding outliers, and then conservatively adjusted downwards. For instance, those firms with especially large employment levels were excluded from the "mean without outliers" to obtain conservative results. This "adjusted mean" employment for each business type was then applied to those firms who did not respond to the survey.

Appendix E: Contract Employment

Some firms contract out services that they do not have expertise in providing or when there are cost advantages to doing so. For example, many airport firms contract out janitorial and/or general maintenance services. The employment survey asked firms to identify whether they contracted out some of their work, and to estimate the number of annual hours involved.

Contract work was separated into two distinct categories in the employment survey: 1) individual “employees” paid through a contract, rather than via payroll, and 2) contracting out services to other firms.

The employment results for individuals on contract were derived by counting the number of individual positions for the number of *jobs* and dividing the total hours of employment by 1,832 to estimate a FTE or one person year of employment. The employment results for firms on contract were derived by dividing the total hours of employment by 1,832 to estimate FTEs or person years.

Appendix F: Methodology using Economic Multipliers

Measurement of indirect and induced economic activity is difficult. While it might be possible to conduct a survey of such employers, the survey would need to cover thousands of firms for indirect employment. For induced employment, the entire provincial economy would need to be scrutinised. In addition to the time and financial resources needed to conduct such surveys, the quality of responses would be suspect.

As an alternative to costly and inaccurate surveys, indirect and induced effects are typically measured by the use of economic multipliers. Multipliers are derived from economic/ statistical/accounting models of the general economy.²⁴ They come in a variety of forms and differ greatly in definition and application. Thus, great care must be exercised in choosing the appropriate set of multipliers to use. In addition, the use of multiplier analysis is limited by a number of factors, these being:

- the accuracy of the structure and parameters of the underlying model;
- the level of unemployment in the economy;
- the assumption of constant returns to scale in production;
- the assumption that the economy's structure is static over time; and
- the assumption that there are no displacement effects.

Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment.

²⁴ The multipliers used for the analysis are based on 2011 Alberta Treasury Board and Finance economic multipliers for Alberta, the most recent data available. These multipliers were updated with Consumer Price Indices to account for inflation.

Appendix G: Tax Revenues Attributable to Airport Employers

{to come}

Appendix H: Tax Revenues Attributable to Airport Users

{to come}

Appendix I: Glossary of Terms

Air Traveller Security Charge (ATSC): A fee collected by the Federal Government from air travellers to help fund security improvements at Canadian airports. The fee varies by region of travel and is charged to the passenger per enplanement.

Contract Work: Any work which is done for a company by an individual who is not on the payroll or work done for a company by another company. Generally speaking, firms will contract out work in areas in which they do not have expertise or when there are cost advantages to doing so.

Direct Employment: Direct employment is employment that can be directly attributable to the operations in an industry, firm, etc. It is literally a head count of those people who work in a sector of the economy. In the case of the airport, all of those people who work on airport property and in an aviation related capacity would be considered direct employment.

Economic Activity: (also Output, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, the process of transforming the factors of production into goods and services desired for consumption.

Economic Output: (also Economic Activity, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, it is defined as the process of transforming the factors of production into goods and services desired for consumption.

Employment Impact: Employment impact analysis determines the economic impact of employment in terms of jobs created and salaries and wages paid out. In the case of the airport, the direct, indirect, induced and total number of jobs or person years created at the airport is examined to produce a snapshot of airport operations.

Full Time Equivalent (FTE): (also Person Year) One full time equivalent (FTE) year of employment is equivalent to the number of hours that an individual would work on a full time basis for one year. In this study we have calculated one full time equivalent year to be equivalent to 1,832 hours. Full time equivalent years are useful because part time and seasonal workers do not account for one full time job.²⁵

GDP: (also value-added) A measure of the value added by labour and capital services used to produce final goods and services, as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.

Ground Transportation: Ground Transportation at the airport includes any vehicles which transport passengers from the airport to the cities or from the cities to the airport. This would include taxicab service, limousine service and hotel van service. Valet services as well as skycaps are included in this category.

Indirect Employment: Indirect employment is employment which results because of direct employment. For the airport, it would include that portion of employment in supplier industries which are dependent on sales to the air transport sector. In some cases, contract work would be considered indirect employment.

²⁵ *The Dictionary of Modern Economics*, David W. Pearce, General Editor, The MIT Press, Cambridge Mass., 1984

Induced Employment: Induced employment is employment created because of expenditures by direct and indirect employees.

Multiplier Analysis: Analysis using economic multipliers in which indirect and induced economic impacts is quantified. Essentially, a multiplier number is applied to the "directly traceable economic impact" to produce indirect and total effects (see Multiplier.)

Multiplier: Economic multipliers are used to infer indirect and induced effects from a particular sector of the economy. They come in a variety of forms and differ in definition and application. A multiplier is a number which would be multiplied by direct effects in order to calculate indirect or induced effects. In the case of the airport, as in many other cases, multipliers can lead to illusory results, and thus must be used with great care.

Airport Improvement Fee (AIF): A fee collected by the airport authority from passengers to help with funding capital improvements at the airport. In some regions of Canada, this is also referred to as the Passenger Facility Charge (PFC).

Seasonality: Seasonality results when the supply and demand for a good is directly related to the season in which is consumed. For example, ski resorts experience changes in net income as a result of seasonality. Airports and airport services also experience seasonality as a result of vacation times for families (typically during the summer) and/or temperatures abroad (typically at Christmas time). As a result of seasonality in demand for flights, some air carriers increase frequency of flights to certain areas during the busy season.

Tenant: A firm which pays a lease to a leasing company or to the airport authority directly.

Value-Added: (also GDP) A measure of the money value of final goods and services produced as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.



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The 2017
Economic
Impact
of the
Calgary International Airport

Prepared for:

YYC CALGARY
INTERNATIONAL
AIRPORT

(February 2018)



THE 2017 ECONOMIC IMPACT OF THE CALGARY INTERNATIONAL AIRPORT

prepared for



**RP ERICKSON & ASSOCIATES
AVIATION CONSULTANTS**

(FEBRUARY 2018)

EXECUTIVE SUMMARY

This report documents the 2017 economic impact activity generated by the roughly 400+ on-site firms and government agencies operating at the Calgary International Airport. Significant additional benefits are generated by the spending of non-resident visitors arriving by air and from the construction activity associated with airport capital projects.

The economic impact is reported in terms of jobs, full-time equivalents (FTEs), Labour Income and Economic Output. Direct, indirect and induced forms of activity have been considered.

The response rate to the interview process and survey questionnaire was exceptional: a 94 percent completion rate for the data sought, with a 98 percent return rate related to core employment data.

In 2017, the Calgary International Airport supported a significant level of economic activity:

Direct Impact

<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
28,497 †	\$1.74 billion	\$2.27 billion	\$4.01 billion

Total Impact

<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
49,863	\$3.27 billion	\$4.40 billion	\$7.67 billion

† including part-time workers, YYC created 24,614 on-airport jobs.

**In 2017, YYC generated \$7.67 billion of Economic Output,
equivalent to 7% of Calgary's GDP for the year.**

The economic benefits are distributed:

	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
Air Carriers	39%	50%	43%	46%
ATB Concessionaires	7%	4%	7%	6%
General Aviation	4%	5%	4%	4%
Air Cargo & Logistics	10%	8%	6%	7%
Airport Support & Gov't	5%	4%	7%	5%
Corporate & Workforce	5%	5%	4%	5%
On-Airport, Non-Aviation	4%	3%	3%	3%
Non-resident Spending	24%	20%	24%	22%
'One-time' Construction	2%	2%	3%	2%

Each 1000 E&D YYC passengers supports 3 full time jobs.

Each 1000 E&D YYC passengers supports \$201,000 of annual labour income.

Each 1000 E&D YYC passengers supports \$471,000 of economic output.

**Each time a B787 lands at YYC, it supports 1 FTE;
\$67,000 of annual labour income; and \$157,000 of economic output.**

**Each time a B737-MAX lands at YYC, it supports 0.5 FTE;
\$34,000 of annual labour income; and \$80,000 of economic output.**

**Each time a Bombardier C Series lands at YYC, it supports 0.5 FTE;
\$30,000 of annual labour income; and \$71,000 of economic output.**

In 2017, the Calgary International Airport generated \$3.511 billion in taxes.

This total is divided:

Federal Government	\$2.070 billion
Province of Alberta	\$1.030 billion
Calgary Area Municipal Gov'ts	\$410 million

THE 2017 ECONOMIC IMPACT OF THE CALGARY INTERNATIONAL AIRPORT

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Chapter I

Introduction

1.1 About this report

The report was undertaken by RP Erickson & Associates for YYC - The Calgary Airport Authority. The purpose of this study is to document the economic impact of the Calgary International Airport during the 2017 calendar year. The report utilizes an evolving methodology as employed beginning with the first YYC economic impact evaluation undertaken in 1998 and every 3 years thereafter, with the exception of a 4-year hiatus between the 2013 study and this report.

The consultants have contracted Econometric Research Limited to assess the 2017 tax impact of the Calgary airport. These findings are included in the Executive Summary, with the entire tax report contained in Appendix III.

Airport impact assessments are valuable in that they serve to heighten business, community and political awareness as to the economic importance of the facility within a local economy. This study can also be viewed as a base-line against which future developments may be measured.

Any questions arising from this report should be directed to Mr. Robert Palmer, Vice-President & CFO, YYC – the Calgary Airport Authority (403) 735-1207.

1.2 Background

The Calgary International Airport is an economic engine pumping billions of dollars of economic activity into the provincial economy, predominantly within the greater Calgary and southern Alberta region. 2017 was a record-breaking year for YYC with the airport handling over 16 million passengers and 148 thousand tonnes of air cargo, both new annual totals. The airport sits on a 21.34 square km site – one of the largest industrial sites in the city.

The Calgary and Alberta economies have endured a slowdown commencing with the collapse of world oil prices in 2015. After two years of recession the situation is now improving. From an airline and an airport perspective, the Calgary economy continues to exhibit a full range of air traffic ‘attractors’. By example: Calgary features Canada’s second largest number of Fortune 500 Corporate head offices; a well-educated workforce with comparatively high levels of disposable income; alongside southern Alberta’s attractive location as a strong convention and international tourism destination. These enduring constants underpin a stable base of demand for the complete range of air carrier products. As such, these attributes have maintained modest passenger growth at YYC during this period of economic uncertainty.

The Calgary International airport has become a critical air gateway serving western Canada and as this study will again demonstrate, YYC generates a substantial economic ‘footprint’ within the community and province.

1.3 Methodology

The economic impact of the Calgary International Airport has been measured in terms of employment [full-time equivalents or FTEs], labour income, other expenditures and economic output. These leading indicators are expressed in dollar values and person-years of employment. Direct, indirect and induced forms of activity have been considered for employment and economic output. Data was obtained for the 2017 calendar year.

The data compiled in this study was obtained via a questionnaire circulated amongst some 365 firms that operate on the airport. It is noted that a number of companies, particularly the airport terminal building (ATB) concessionaires, often include subsidiary

businesses operating separate venues, as do a number of other on-site firms. In all cases, data was sought for an entire operation even though a business entity may have more than one on-airport company or outlet presence.

The survey population was separated into 9 sub-categories; the impacts associated with :

- the air carriers & their support services;
- the airport terminal building concessionaires;
- the general aviation sector;
- the air cargo & logistics sector;
- airport support & government agencies;
- the corporate aviation & workforce transportation sector;
- on-airport, non-aviation firms;
- the impact associated with the spending activities of non-resident air passengers visiting the Calgary area; and,
- the 'one-time' economic impacts of new construction projects on the Calgary International Airport.

Each of the above categories is described in more detail in Chapter II (Sections 2.1 through 2.9). Section 2.10 displays the aggregate economic impact of the Calgary International Airport for 2017.

In conducting the interview/questionnaire process, key principals at each firm were visited by the consultants, where: the underlying rationale for undertaking the study was explained; the objectives of the study could be examined; the value of their participation fully explored; and, the confidentiality of their data assured. This approach resulted in an exceptional 94 percent response rate with 98 percent of firms providing core

employment data. Incomplete returns were estimated comparing the completed results of similar-sized firms involved in like commercial pursuits.

The impact of off-airport passenger spending was undertaken by utilizing the Conference Board of Canada's TEAM econometric model, as explained in Section 2.8. The impact of new on-airport construction was undertaken using Alberta Finance Industry Intensity Ratios for Construction, as contained in Section 2.9.

One last important consideration is worth imparting : this report represents a 'snap-shot' of economic activity in time. The data herein represents the economic activity for the Calgary International Airport for calendar year 2017.

1.4 The economic impact modelling process

Economic impact analysis is based on the premise that operations within various industries in an economy are closely related or linked to each other; that is, an increase in the activity levels in one industry will produce a positive 'domino' or rippling effect on other industries. Economists discuss the impact that one sector has on another in terms of indirect and induced effects. The total economic impact is the sum of the direct, indirect and induced effects.

The most common economic measures used in economic impact surveys are: employment in terms of jobs and labour come alongside economic output – essentially, the contribution made to gross domestic product. For this study, the consultants have chosen to display labour income as a separate category of economic output.

In this report:

Direct economic effects are the benefits attached to labour and expenditure activities within Alberta;

Indirect economic effects are the result of the increase in goods and services produced largely within the Alberta economy in support of direct activities;

Induced economic effects arise from the spending power of direct and indirect employees and largely benefiting local businesses;

Employment is measured in terms of full-time equivalents (FTEs) in terms of a 40 hour work week. FTEs are expressed in person-years and labour income by dollar value. Employment multipliers have been used to generate the associated indirect and induced impacts;

Labour Income is the total payroll expense including wages, salaries and employee benefits. Labour income multipliers have been used to generate the associated indirect and induced impacts;

Other Expenditures is defined as the amount of dollar value to the local economy created through expenditure activity. A multiplier has been used to generate the indirect and induced impacts; and,

Economic Output is an aggregate of labour income and other expenditure totals, and can be considered as a contribution to gross domestic product (GDP). No multiplier effort has been applied to this category.

The aviation industry is a good example of a highly integrated sectoral activity which has significant linkages throughout a domestic economy. The multipliers associated with aviation are higher than most primary sectors and, as such, the potential impact to an economy linked to an increase or expansion in aviation activity is significant.

1.5 A word about the multipliers used in this report

Multipliers are used to *infer* indirect and induced economic activity from a measure of direct economic activity. Multipliers are not directly observed; they are inferred from an economic model. By far the direct measure is the most accurate. Readers are advised that multiplier analysis remains an imprecise econometric technique and that caution be used in interpreting the indirect and induced impacts contained in this report. However, multipliers are virtually the only cost-effective tool available to identify the overall impact of a sectoral activity within an economy.

The consultants have chosen a multiplier set produced by Alberta Treasury Board and Finance, August, 2017. These multipliers are Alberta-specific; that is, they have been purposely tailored to interpret the interaction between various sectors within the provincial economy. Additionally, we have been able to select multipliers which are expressly applicable to those on-airport activities which may not be aviation related.

Multipliers have been selected in the following categories: 'Air Transportation' (used for aviation activities); 'Retail Trade' (used for ATB Concessionaires); 'Professional and Similar Structures' (used for Airport Support & Government Services and Non-Aviation, On-airport Firms); and, 'Warehousing and Storage' (used for the Logistics component of the Air Cargo & Logistics section).

As noted, the Alberta Finance Closed (Direct, Indirect and Induced Impacts) model only accounts for economic activity occurring within the province. It is fair to note that 'leakage' of benefits created by YYC is also occurring outside the province (eg. aviation components repaired in Winnipeg, Toronto or Montreal, retail trade merchandise sourced from wholesalers in eastern Canada, non-Alberta originating construction materials, etc). We have made no effort to capture the impacts of such leakage, which reinforces our premise of undertaking a conservative approach in assessing the economic contribution created by YYC.

It is with confidence that we present the minimum economic impact attached to the Calgary International Airport's activities for calendar year 2017.

Chapter II

The 2017 Economic Impact of the Calgary International Airport

2.1 Economic Impact of the Air Carrier & Support Services Sector at the Calgary International Airport : 2017

As could be expected, the air carrier sector dominates the economic activity generated at YYC accounting for 46 percent of the overall impact. The major firms operating within this category include the scheduled and charter airlines serving YYC, alongside a range of ground and passenger handling firms, airport security, food catering, aircraft grooming, maintenance firms, and the re-fuelling consortia – all of which are active in supporting the operational requirements of the airline sector.

The number of carriers providing direct service to the Calgary market has grown to more than 50 airlines. Not all carriers provide a full spectrum of in-house operational personnel – many choose the offerings of third-party service providers, a speciality sub-sector which has shown substantial growth at YYC and elsewhere as air carriers continue to seek the most cost-effective manner of maintaining a presence in many markets.

Table 1 depicts the economic impact activity undertaken by the Air Carrier & Support Services sector in 2017.

Table 1.

**Air Carrier & Support Services Sector :
2017 Economic Impact**

(in millions, except FTEs)

<i>Direct Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	9,378	\$834.993	\$1,000.612	\$1,835.605
<i>Total Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	19,309	\$1,627.401	\$1,868.143	\$3,495.544

For calendar year 2017, a total of 9378 annual full-time equivalent employees can be attributed to the Air Carrier & Support sector operating at the Calgary airport; when part-time workers are included, a total of 11,252 air carrier and support services jobs are situated on the airport. The aggregate labour income of this workforce was identified at \$834.993 million. Other Expenditures for this sector were \$1,000.612 million. The total direct Economic Output for this sector was \$1,835.605 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the consequential impact of Calgary's air carrier sector can be realized. Within the Calgary area 19,309 full-time jobs are dependent upon it, generating an annual labour income of \$1,627.401 million. Other Expenditures in this sector were \$1,868.143 million. In 2017, the total Economic Output created by air carriers and their support activities at the Calgary airport was \$3,495.544 million.

2.2 Economic Impact of the Airport Terminal Building Concessionaire Sector : 2017

Within the Calgary Airport Terminal Building (ATB), 89 firms were identified as providing retail services to passengers, visitors, meeters & greeters and other employees of the airport. The number of firms canvassed does not correlate with the number of storefronts providing services where retail providers may have multiple outlets throughout the ATB. The economic benefits attached to this sector are dominated by the activities of the food and beverage providers and the taxicab, limousine and coach service firms; important too are the car rental firms alongside two major on-site hotels.

Table 2 depicts the economic impact activity undertaken by the ATB concessionaire sector in 2017.

Table 2.

Airport Terminal Building Concessionaire Sector : 2017 Economic Impact

(in millions, except FTEs)

<i>Direct Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	2,720	\$93.677	\$176.294	\$269.971
<i>Total Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	3,658	\$137.143	\$310.630	\$447.773

For calendar year 2017, a total of 2720 annual full-time equivalent employees can be attributed to the concessionaires presence within the Calgary ATB; including part-time workers, a total of 3678 jobs are provided by this sector. The aggregate labour income

of this workforce was identified at \$93.677 million. Other Expenditure activities were \$176.294 million. The total direct Economic Output of the ATB Concessionaires was \$269.971 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the overall economic impact of the ATB Concessionaires can be realized. Within the Calgary area 3658 full-time jobs are dependent upon this sector, generating an annual labour income of \$137.143 million. Other Expenditure activities were \$310.630 million. In 2017, the Economic Output created by ATB Concessionaire activities was \$447.773 million.

2.3 Economic Impact of the General Aviation Sector at the Calgary International Airport : 2017

The Calgary International Airport supports a diverse general aviation (GA) community. Virtually all of this activity is located on-site at the 'south end' of the airport, with most firms located in either the McCall South or McKnight aviation parks, with a few GA supply companies now residing in the Global Logistics industrial parks.

GA firms undertake a diverse range of aviation-related activities, including: training; aircraft sales and leasing; and, a variety of specialized aviation support services for both fixed wing and rotary wing aircraft. Aerospace manufacturing is an important contributor to the aviation mix at the Calgary airport, as is a third-party maintenance sector specializing in commuter, regional & medium-sized commercial jet aircraft. The Southern Alberta Institute of Technology operates a major training facility on-airport.

Table 3 depicts the economic impact activity undertaken by the GA sector in 2017.

Table 3.

General Aviation Sector : 2017 Economic Impact

(in millions, except FTEs)

<i>Direct Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	1,078	\$76.765	\$88.788	\$165.553
<i>Total Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	2,220	\$149.615	\$165.768	\$315.383

For calendar year 2017, a total of 1078 annual full-time equivalent employees can be attributed to the General Aviation sector operating on the Calgary International Airport; including part-time workers, within this category a total of 1108 jobs are situated on the airport. The aggregate labour income of this workforce was identified at \$76.765 million. Other Expenditure activities were \$88.788 million. The direct Economic Output of the sector was \$165.553 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the significant impact of Calgary's GA sector can be realized. Within the Calgary area 2220 full-time jobs are dependent upon GA, generating an annual labour income of \$149.615 million. Other Expenditures activity was \$165.768 million. In 2017, the total Economic Output created by general aviation at the Calgary airport was \$315.383 million.

2.4 Economic Impact of the Air Cargo & Logistics Sector at the Calgary International Airport : 2017

Calgary's air freight industry continues to display remarkable growth handling a record 147,791 tonnes in 2017. This activity is linked to the substantial cargo infrastructural growth which has been undertaken at YYC over the past few years. Two new air cargo handling facilities have been built alongside an adjacent 500,000 sq ft dedicated cargo apron which is capable of simultaneously handling 4 wide-bodied freighter aircraft. CBSA and CFIA maintain an on-site presence to facilitate the clearance of cargoes. A state-of-the-art 30,000 sq ft animal handling facility contributes to what is widely viewed as the best air freight infrastructure in western Canada.

Table 4 depicts the economic impact activity undertaken by the Air Cargo sector in 2017.

Table 4.

Air Cargo & Logistics Sector : 2017 Economic Impact

(in millions, except FTEs)

<i>Direct Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	2,670	\$143.753	\$106.219	\$249.972
<i>Total Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	4,810	\$248.797	\$266.704	\$515.501

For calendar year 2017, a total of 2670 annual full-time equivalent employees work on-airport in the Air Cargo sector; including part-time workers, within this category a total of

3112 jobs are situated on the airport. Their aggregate labour income was identified at \$143.753 million. Other Expenditure activities were \$106.219 million. The total Economic Output for this sector was \$249.972 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the overall impact of Calgary's air freight sector can be realized. Within the Calgary area 4810 full-time jobs are dependent upon the on-airport movement of air cargo, generating an annual labour income of \$248.797 million. Other Expenditure activity was \$266.704 million. In 2017, the total Economic Output created by air cargo, courier and airmail activities at the Calgary airport was \$515.501 million.

2.5 Economic Impact of the Airport Support & Government Services Sector at the Calgary International Airport : 2017

This sector includes YYC - the Calgary Airport Authority, its third-party contractors and all government agencies operating on the airport. Included in this later group is the Canada Border Services Agency, the US Customs & Border Protection, the RCMP, NAV CANADA, Environment Canada, STARS - air ambulance, Transport Canada, the Calgary Firefighters and Policing services and a small contingent of Royal Air Force staff. The locational advantages of YYC has attracted a number of firms to the airport, including a major federal government call centre that is included in this group.

In total, 30 agencies were canvassed. Table 5 depicts the economic impact activity undertaken by the Airport Support and Government Services sector in 2017.

Table 5.

**Airport Support & Government Services Sector :
2017 Economic Impact**

(in millions, except FTEs)

<i>Direct Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	1,971	\$86.051	\$219.520	\$305.571
<i>Total Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	2,677	\$116.943	\$298.328	\$415.271

For calendar year 2017, 1,971 annual full-time equivalent employees can be attributed to Airport Support & Government Services; including part-time workers, within this category a total of 2,506 jobs are situated on the airport. The aggregate labour income of this workforce was identified at \$86.051 million. Other Expenditure activities were \$219.520 million. The Economic Output of this sector was \$305.571 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the impact of the airport & government support sector can be realized. Within the Calgary area 2,677 full-time jobs are dependent upon it, generating an annual labour income of \$116.943 million. Other Expenditures activity was \$298.328 million. In 2017, the total Economic Output created by the airport support and government services sector was \$415.271 million.

2.6 Economic Impact of the Corporate Aviation & Workforce Transportation Sector at the Calgary International Airport : 2017

Calgary supports an active corporate aviation sector - which should not be surprising given the aviation interests of the Fortune 500, oil & gas, natural resource, financial and transportation firms headquartered within the City. Supporting the multi-billion dollar activities of these interests are a number of corporate flight departments clustered amongst three major on-site FBO terminals. Of note, are the larger charter operators transporting construction workers to and from airfields in the Fort McMurray Oil Sands region, although growth in the sector has moderated since our last study. Most of YYC's corporate and workforce transportation flight departments are co-located amongst the general aviation community in the McCall South and McKnight aviation parks.

Table 6 depicts the economic impact activity undertaken by the Corporate Aviation sector in 2017.

Table 6.

Corporate Aviation & Workforce Transportation Sector : 2017 Economic Impact

(in millions, except FTEs)

<i>Direct Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	1,266	\$89.170	\$99.347	\$188.517
<i>Total Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	2,607	\$173.792	\$185.481	\$359.273

For calendar year 2017, 1266 annual full-time equivalent employees can be attributed to the Corporate Aviation & Workforce Transportation sector operating on the Calgary International Airport; including part-time workers within this category a total of 1325 jobs are situated on the airport. Their aggregate labour income was identified at \$89.170 million. Other Expenditure activities were \$99.347 million. The total direct Economic Output of this sector was \$188.517 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the significant impact of Calgary's corporate sector can be realized. Within the Calgary area 2607 full-time jobs are dependent upon corporate aviation and workforce transportation, generating an annual labour income of \$173.792 million. Other Expenditures activity was \$185.481 million. In 2017, the total Economic Output created by the corporate aviation & the workforce transportation sector at the Calgary airport was \$359.273 million.

2.7 Economic Impact of the On-Airport, Non-Aviation Sector at the Calgary International Airport : 2017

The attractiveness of the location of the Calgary airport near the crossroads of two transportation corridors serving the growing NE industrial parks of the City is reflected in the growing importance of the On-Airport, Non-Aviation sector. This section has grown so significantly that in this study we have chosen to include those firms involved in warehousing and logistics with the air cargo sector totals. Even then we have witnessed substantive growth in this sector, now comprising 86 firms - a 30 percent increase from the 2013 numbers and a 375 percent increase from 2007 when we first starting tracking this sector. The Airport Crossing development centred on McKnight Blvd and 11 St NE has witnessed spectacular recent growth, where a number of restaurant franchises and specialized retail firms have chosen to locate.

Table 7 depicts the economic impact activity identified in the On-Airport, Non-Aviation sector in 2017.

Table 7.

On-Airport, Non-Aviation Sector : 2017 Economic Impact

(in millions, except FTEs)

<i>Direct Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	1,328	\$67.448	\$72.140	\$139.588
<i>Total Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	1,803	\$91.662	\$143.414	\$235.076

For calendar year 2017, a total of 1328 annual full-time equivalent employees can be attributed to On-Airport, Non-Aviation companies; including part-time workers, within this category a total of 1633 jobs are situated on the airport. The aggregate labour income of this workforce was identified at \$67.448 million. Other Expenditure activities were \$72.140 million. The Economic Output of this sector was \$139.588 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the significant impact of the On-Airport, Non-Aviation sector can be realized. Within the Calgary area 1803 full-time jobs are dependent upon it, generating an annual labour income of \$91.662 million. Other Expenditures activity was \$143.414 million. In 2017, the total Economic Output created by the sector at the Calgary airport was \$235.076 million.

2.8 Economic Impact generated by Airport Visitor Spending in the Calgary area : 2017

Spending by non-resident visitors travelling by air to the Calgary area is an important contribution to the aggregate economic impact of the airport. Visitors are identified under domestic (from elsewhere in Canada), transborder (United States) and international (other countries) categories; noteworthy is that each group has differing per diem spend and length of stay attributes. Two sub-categories of additional visitor expenditures are provided by airline cockpit and cabin crews who overnight or 'lay-over' at airport hotels for operational or crew rest reasons; and, oilfield workforce transportation passengers who connect at YYC on flights from Oil Sands work sites to/from their home residences which are generally out of the province.

In capturing the impact attributable to this sector, the consultants have chosen the Conference Board of Canada's Tourism Economic Assessment Model [TEAM]. The TEAM model is a sophisticated, computer-based econometric tool designed to assess the impact of non-resident spending upon a local or provincial economy. For this initiative, it is fortunate that a purposefully-constructed TEAM model has been created for the Calgary market by the Canadian Tourism Research Institute - a sub-agency of the Conference Board, to reflect the unique structure of the Calgary economy and its catchment area.

It is with confidence that the results of the TEAM model are presented and integrated into the overall study results.

From Table 8 an input total of \$966.038 million of non-resident visitor/overnight aircrew/workforce transportation spending was entered into the TEAM model utilizing Tourism Calgary-derived average length of stay and per diem rates for domestic/transborder/international travellers arriving by air alongside air crew and workforce expenditures. The model produced the results displayed in Table 9.

Table 8.

**Spending in the Calgary area by Non-Resident
Visitors arriving by Air : 2017**

<u>Non-resident Visitors</u>	<u>2017 Visitor Totals</u> [†]	<u>Total Spending</u> ^{††}
Domestic visitors	1,209,200	\$286,641,000
Transborder visitors	532,200	\$260,507,000
International visitors	452,500	\$391,290,000
Flight crew & workforce transportation expenditures ^{†††}		<u>\$27,600,000</u>
	Total	\$966,038,000

[†] Calgary Airport Authority.

^{††} Tourism Calgary.

^{†††} RP Erickson & Associates.

Note: This spending is attributable to passengers arriving at the Calgary airport in 2017; an unknown number of the non-resident visitors likely continue from the immediate Calgary market to the mountain parks and beyond. It is safe to assume that a proportion of this spending finds its way into the northern Alberta economy and elsewhere in western Canada but that figure is unknown.

Table 9 depicts the economic impact attributable to non-resident, airport visitor spending in the Calgary area in 2017.

Table 9.

**Spending in the Calgary area by Non-Resident
Visitors arriving by Air : 2017 Economic Impact**

(in millions, except FTEs)

<i>Direct Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	7,507	\$304.982	\$430.526	\$735.508
<i>Total Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	11,983	\$661.475	\$1,036.612	\$1,698.087

For calendar year 2017, a total of 7507 annual full-time equivalent employees can be attributed to non-resident, visitor spending. The aggregate labour income was identified at \$304.982 million. Other Expenditure activities were \$430.526 million. The direct Economic Output of this sector was \$735.508 million.

When the TEAM-generated multipliers are applied to the above direct economic activity, the significant impact of non-resident, airport visitor spending can be realized. This spending generated 11,983 full-time jobs, generating an annual labour income of \$661.475 million. Other Expenditure activity was \$1,036.612 million. In 2017, the Economic Output created by this sector on largely the Calgary and area economy was \$1,698.087 million.

2.9 The Economic Impact of New Construction at the Calgary International Airport : 2017

The economic contribution accompanying capital spending on the airport is consequential. Capital spending arises from the Airport Authority's capital construction program alongside a range of tenant facility new construction, expansion or renovation projects. This investment has provided work for the local construction and building materials sector - economic activity which would not have occurred in the absence of this activity on the airport.

From the 2017 questionnaire survey, \$121.729 million of on-airport capital construction was identified – where the Authority's on-going restoration and rehabilitation program accounted for some 11 percent of this total.

Table 10 depicts the economic impact activity associated with capital spending on the Calgary airport in 2017.

Table 10.

One-Time, Impacts of New Construction at the Calgary International Airport : 2017 Economic Impact

(in millions, except FTEs)

<i>Direct Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	579	\$44.978	\$76.330	\$121.308
<i>Total Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	816	\$58.413	\$125.054	\$183.467

For calendar year 2017, a total of 579 annual full-time equivalent employees can be attributed to on-airport capital construction spending. The aggregate labour income was identified at \$44.978 million. Other Expenditure activities were \$76.330 million. The Economic Output of this sector was \$121.308 million.

When the indirect and induced multipliers are applied, new on-airport construction spending generated 816 full-time jobs, creating an annual labour income of \$58.413 million. Other Expenditure activity was \$125.054 million. In 2017, the Economic Output created by this sector was \$183.467 million.

2.10 The Aggregate Economic Impact of the Calgary International Airport : 2017

At the Calgary International Airport, some 365 commercial firms or government agencies operating within 7 different categories of activity were interviewed and their 2017 economic activities assessed. It is noted that in practice a larger number of companies exist at YYC where a number of firms operate separate commercial ventures under a single administrative or corporate umbrella.

Additionally, the impact of 2017 visitor spending in the Calgary area by non-resident passengers arriving by air alongside the economic benefits attached to 2017 capital construction expenditures have been combined with the data fields in Sections 2.1 through 2.9 to produce Table 11.

Table 11 depicts the aggregate economic impact of YYC upon the Calgary area for 2017.

Table 11.

Aggregate Economic Impact of the Calgary International Airport : 2017

(in millions, except FTEs)

<i>Direct Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	28,497	\$1,741.817	\$2,269.776	\$4,011.591
<i>Total Impact</i>				
	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
	49,863	\$3,265.241	\$4,400.134	\$7,665.375

For calendar year 2017, a total of 28,497 direct full-time equivalent employees can be attributed to the Calgary International Airport; a total of 24,614 jobs are located on the airport. The aggregate labour income of this workforce was identified at \$1,741.817 million. Other Expenditure activity was \$2,269.776 million. The Economic Output created by this sector on the Calgary International Airport was \$4,011.591 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the consequential impact of YYC can be realized. The airport creates 49,863 full-time jobs, generating an annual labour income of \$3,265.241 million. Other Expenditure activity was \$4,400.134 million. In 2017, the Economic Output activity created by the Calgary airport was \$7,665.375 million.

2.11 Discussion

In addition to providing nearly 50,000 full-time jobs, YYC's GDP 2017 contribution to Calgary and southern Alberta's Economic Output was over \$7.665 billion. This sum amounted to 7 percent of Calgary's 2017 economy of \$106.474 billion¹.

The distribution of the Economic Impact by sub-category is presented in Table 12. Not surprisingly for an airport, the Air Carrier & Support Services segment continues to lead all categories with a 46 percent share of YYC's overall impact.

Table 12.

Distribution of Economic Impacts

On a percentage basis by sub-category, the economic benefits of the airport are distributed :

	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
Air Carriers	39%	50%	43%	46%
ATB Concessionaires	7%	4%	7%	6%
General Aviation	4%	5%	4%	4%
Air Cargo & Logistics	10%	8%	6%	7%
Airport Support & Gov't	5%	4%	7%	5%
Corporate & Workforce	5%	5%	4%	5%
On-Airport, Non-Aviation	4%	3%	3%	3%
Non-resident Spending	24%	20%	24%	22%
'One-time' Construction	2%	2%	3%	2%

When the economic impact totals are compared against Calgary's 2017 enplaned and deplaned [E&D] passenger movement data (16.275 million), the results provide some interesting generalities.

¹ 2017 GDP Forecast provided by the City of Calgary, January 2018.

Within the Calgary area ² :

Each 1000 E&D passengers supports 3 full time jobs.

Each 1000 E&D passengers supports \$201,000 of annual labour income.

Each 1000 E&D passengers supports \$471,000 of economic output.

* * * * *

Each time a B787 lands, it supports 1 FTE;
\$201,000 of annual labour income; and \$471,000 of economic output.

Each time a B737-MAX lands, it supports 0.5 FTE;
\$34,000 of annual labour income; and \$80,000 of economic output.

Each time a Bombardier C Series 300 lands, it supports 0.5 FTE;
\$34,000 of annual labour income; and \$71,000 of economic output.

* * * * *

A new daily B787-900 service linking Calgary to Asia
would support annual benefits of :
278 FTEs; \$19 million of labour income; and, \$44 million of economic output.

A new daily A350-900 service linking Calgary to Europe
would support annual benefits of :
297 FTEs; \$20 million of labour income; and, \$47 million of economic output.

A new daily B737-MAX service linking Calgary to a US transborder destination
would support annual benefits of :
162 FTEs; \$11 million of labour income; and, \$25 million of economic output.

² See Appendix II for a methodology for the above data.

In addition to the quantifiable economic benefits displayed in this report, the Calgary International Airport provides a wide range of ancillary, qualitative benefits to residents of the Calgary area and the province as a whole. These range from the societal advantages attached to the travel, tourism and transportation functions of the airport, through expansive career and hobby development possibilities to opportunities for volunteerism. The Calgary airport also provides access for air-related environmental and emergency response services; none more importantly than in providing all Albertans with air access to Calgary's extensive health care resources.

Volunteerism - 2017

YYC's Calgary White Hatters organization assist visitors and passengers using the ATB, and in the process provided over 87,000 hours of volunteer opportunity from its 449 members. The Aviation Interfaith Ministry note some 3200 hours of volunteerism from its members over the year. The Calgary Aerospace Museum identified over 10,000 hours of volunteerism from its member base. STARS air ambulance volunteers provided some 1500 hours of effort in support of its goals. In short, volunteerism at the Calgary airport provides like-minded individuals with the opportunity to serve their community.

2.12 Conclusions

In 2017, the Calgary International Airport supported a considerable level of economic activity, primarily in the Calgary area but also throughout the province and, to a lesser extent, the national economy.

In direct terms, YYC :

- contributed over 28,000 full-time jobs;
- generated over \$1.7 billion in labour income; and,
- created over \$4 billion in economic output.

When indirect and induced forms of economic activity are included, the airport generates :

- nearly 50,000 full-time jobs;
- over \$3 billion in annual labour income; and,
- nearly \$8 billion dollars of economic output, some 7% of Calgary's economy.

***Clearly – the Calgary International Airport is
an important economic and social contributor
to the City of Calgary and the Province of Alberta.***

APPENDIX I

DATA BREAKDOWN

Direct Impact

	<u>Jobs</u>	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Exp'tures</u>	<u>Economic Output</u>
Air Carriers & Support Services	11,252	9378	\$834.993	\$1,000.612	\$1,835.605
ATB Concessionaires	3678	2720	\$93.677	\$176.294	\$269.971
General Aviation	1108	1078	\$76.765	\$88.788	\$165.553
Air Cargo & Logistics	3112	2670	\$143.753	\$106.219	\$249.972
Airport Support & Gov't	2506	1971	\$86.051	\$219.520	\$305.571
Corporate & Workforce Aviation	1325	1266	\$89.170	\$99.347	\$188.517
On-Airport, Non-Aviation	1633	1328	\$67.448	\$72.140	\$139.588
Non-resident Spending	n/a †	7507	\$304.982	\$430.526	\$735.508
New Construction Spending	<u>n/a †</u>	<u>579</u>	<u>\$44.978</u>	<u>\$76.330</u>	<u>\$121.308</u>
Totals	24,614	28,497	\$1,741.817	\$2,269.776	\$4,011.591

(in millions, except Jobs and FTEs)

† Neither the TEAM model nor the Alberta Finance Construction Model calculate part-time worker numbers.

Total Impact

	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Exp'tures</u>	<u>Economic Output</u>
Air Carriers & Support Services	19,309	\$1,627.401	\$1,868.143	\$3,495.544
ATB Concessionaires	3658	\$137.143	\$310.630	\$447.773
General Aviation	2200	\$149.615	\$165.768	\$315.383
Air Cargo & Logistics	4810	\$248.797	\$266.704	\$515.501
Airport Support & Gov't Services	2677	\$116.943	\$298.328	\$415.271
Corporate & Workforce Aviation	2607	\$173.792	\$185.481	\$359.273
On-Airport, Non-Aviation	1803	\$91.662	\$143.414	\$235.076
Non-resident Spending	11,983	\$661.475	\$1,036.612	\$1,698.087
New Construction Spending	<u>816</u>	<u>\$58.413</u>	<u>\$125.054</u>	<u>\$183.467</u>
Totals	49,863	\$3,265.241	\$4,400.134	\$7,665.375

(in millions, except FTEs)

The Direct data was collated from the survey questionnaire: as detailed in Section 1.3, with the exception of the Non-resident Spending category which was derived from inputs from the Airport Authority, Tourism Calgary and RP Erickson & Associates, as described in Section 2.9;

The Total Impact data was derived from the multiplier process; Non-Resident Spending impacts were assembled using the TEAM model; and New Construction Spending impacts were assembled using an Alberta Finance Construction impact model, as discussed in Section 2.10.

APPENDIX II

GENERALITIES METHODOLOGY

Each 1000 E&D passengers creates 3 full time jobs.
(49,863 FTEs ÷ 16.27 million annual E&D passengers x 1000)

Each 1000 E&D passengers creates \$201,000 of annual labour income.
(\$3.27 billion annual labour income ÷ 16.27 million annual E&D passengers x 1000)

Each 1000 E&D passengers creates \$471,000 of Economic Output activity.
(\$7.67 billion total GDP ÷ 16.27 million annual E&D passengers x 1000)

**Each time a B787 lands, it generates 1 FTEs;
\$67,000 of labour income; and \$157,000 of Economic Output activity.**
(B787-900 at 298 seats or a multiple of .30 applied against the 1000 E&D passenger data set)

**Each time a B737-MAX lands, it generates 0.5 FTEs;
\$34,000 of labour income; and \$80,000 of Economic Output activity.**
(B737-MAX at 174 seats or a multiple of .17 applied against the 1000 E&D passenger data set)

**Each time a Bombardier C Series lands, it generates 0.5 FTEs;
\$30,000 of labour income; and \$71,000 of Economic Output activity.**
(C Series 300 at 145 seats or a multiple of .15 applied against the 1000 E&D passenger data set)

In arriving at the estimates for new daily services, the following multiples were applied to the 1000 E&D passenger data set for full-time jobs, annual labour income and GDP activity :

B787-900 at 298 passengers x 365 days at 85 percent load factor = 92,455
annual passengers a multiple of 92.5

A350-900 at 319 passengers x 365 days at 85 percent load factor = 98,970
annual passengers a multiple of 98.9

B737-MAX at 174 passengers x 365 days at 85 percent load factor = 53,985
annual passengers a multiple of 53.9

APPENDIX III

THE TAX IMPACTS OF YYC

The Tax Impacts of the Calgary International Airport: 2017

Introduction

Econometric Research Limited has been retained by RP Erickson & Associates to estimate the tax impacts of aviation activities on the federal, provincial and local treasuries in 2017.

The impact model used to estimate the tax impacts is a special application of a generic model (DEIM: Alberta) developed by Econometric Research Limited. It is a unique model that captures the tax impact of program or activity expenditures at the local level (counties or municipal regions), the provincial level (Alberta) and the national level. The model is based on a methodology that integrates input-output analysis and location theory.

The model utilizes a large set of economic and technical databases that are regularly published by Statistics Canada. A short list includes the inter-provincial input-output tables, employment by sector, taxes by type of tax and the level of government collecting it, prices of products, energy used in physical and energy units, etc.

The DEIM model generates a range of taxes (income taxes, GST, liquor and tobacco taxes, property taxes, etc.) each of which is linked with the level of government receiving it. For example, the Federal government receives the proceeds from the GST tax, the Provincial government receives Indirect Business Taxes and local governments receives both Property and Business taxes.

The Results

The three levels of government derive substantial revenues from the impacts associated with the aviation sector. For this report, the model details a total of \$3.83 billion in taxes (in 2017 dollars) generated by the Total Economic Output Impact of the Calgary International Airport. The Federal government derives annual tax revenues of roughly \$2.07 billion, whereas the provincial government derives a total of \$1.03 billion. Local municipal governments in the Calgary area collect \$410 million. The largest contributions are made by Personal Income Taxes (PIT) and the GST. Municipal governments – largely the City of Calgary and to a lesser extent the surrounding Municipal Districts, collect revenue on the employment income sustained by the airport which is capitalized into property values and also on business activities supported by incomes sustained by the airport economic activities.

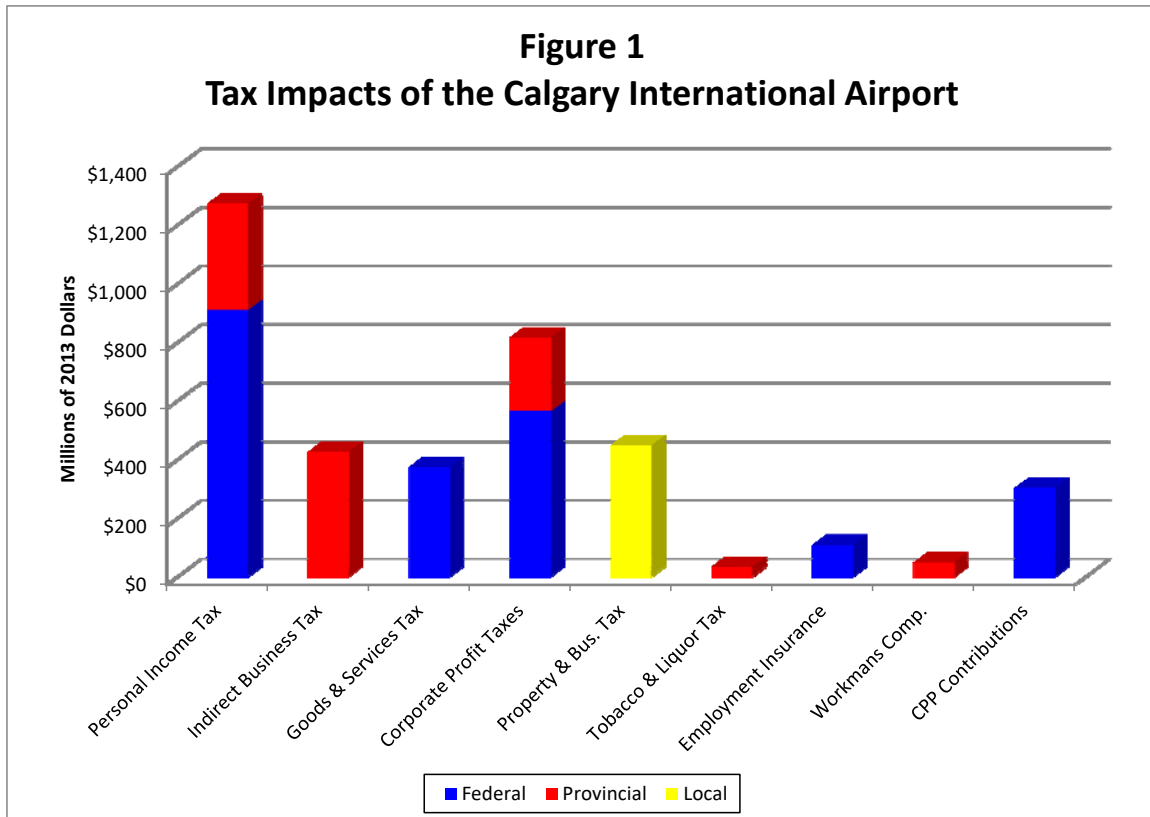
The impact results are presented in Table1 below. All impacts are in thousands of 2017 dollars.

Table 1
Tax Impacts of the Calgary International Airport
(Thousands of 2013 Dollars)

	Federal	Provincial	Local	Total
Personal Income Tax	\$908,927	\$362,778	\$0	\$1,271,705
Indirect Business Tax	\$0	\$425,466	\$0	\$425,466
Goods & Services Tax	\$373,383	\$0	\$0	\$373,383
Corporate Profit Taxes	\$564,342	\$251,839	\$0	\$816,181
Property & Bus. Tax	\$0	\$0	\$447,023	\$447,023
Tobacco & Liquor Tax	\$0	\$34,359	\$0	\$34,359
Employment Insurance	\$108,467	\$0	\$0	\$108,467
Workmans Comp.	\$0	\$48,213	\$0	\$48,213
CPP Contributions	\$301,671	\$0	\$0	\$301,671
Total	\$2,256,790	\$1,122,655	\$447,023	\$3,826,468

Source: Econometric Research Limited

Figure 1
Tax Impacts of the Calgary International Airport



Charlottetown Airport

2018

Economic Impact Report



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Executive Summary

In 1999, the Department of Transport transferred operational and financial responsibility for the Charlottetown Airport to the Charlottetown Airport Authority (CAA) under a 60-year lease arrangement. The airport is located north of the Charlottetown Perimeter Highway in a suburban part of the City of Charlottetown with access from Brackley Point Road. CAA is not-for-profit corporation with a Board of Directors appointed by various levels of government and other stakeholders. The Federal Government through Transport Canada remains the property owner.



The Charlottetown Airport is the only commercial airport on Prince Edward Island (PEI). It is a key transportation link for business, residents and visitors and is essential to the Island's future growth and prosperity. To understand the scope of the airport's impacts on PEI, the Charlottetown Airport Authority retained Chris Lowe Group to determine the 2018 economic and fiscal impacts. The study relied upon a survey of major airport tenants, operating and financial results from CAA and other sources.

The airport provides year-round scheduled service to Halifax, Montreal and Toronto, and seasonal service to Ottawa and Puerto Plata, Dominican Republic. There is also an active General Aviation (GA) community and a business park on some of the lands. The GA community operates out of Skyplex (location of the old Air Terminal Building).

Regular scheduled service is dominated by Air Canada. In July 2019, there were 752 regular scheduled arrivals and departures with the distribution of flights being Halifax (36%), Toronto (32%), Montreal (16%) and Ottawa (16%).



In 2018, the airport and business park had 552 full-time equivalent (FTE) employees in 28 government and business operations, plus FTE jobs associated with taxis and limousines. The major employers by FTE jobs are: BioVectra (220), Canada Post (64), Vogue Optical (28), CATSA (28), D. P. Murphy (26) and the Charlottetown Airport Authority (23).

The economic impacts of the airport and business park are classified as direct, indirect, induced and total. Direct economic activity refers to airport-related and business park activity of those firms or industries located at the Charlottetown Airport. Indirect economic activity refers to activity generated in a sector that supplies material and other inputs to businesses associated with direct economic activity. Induced economic

activity refers to economic activity by individuals employed in the direct or indirect activity sectors who spend a portion of their household income on consumer goods or services on the Island.

The economic impact of the Charlottetown Airport on the PEI economy is significant. In 2018, it contributed \$103.4million to PEI's economic output, \$62 million to gross domestic product (GDP) and \$41.7 million to wages and salaries with 788 FTE jobs.

In addition to these four measures, other economic impacts were assessed.

The number of passengers at the airport in 2018 was 370,730 with 103,024 (preliminary estimate) or 28% being non-residents. Visitors who enter PEI at the airport tend to stay longer and spend more



money than non-residents arriving by other modes of transportation. In 2018, the direct and spin-off (indirect and induced) impacts of these pleasure visitors on the PEI economy were significant. They contributed \$135.1 million to economic output, \$77.8 million to GDP at basic price and \$53.9 million in labour income. Many jobs in the tourism and hospitality sectors are seasonal and these jobs were adjusted to full-time employment values. The impact of air visitors is 2,151 FTE jobs.

Since the 1999 transfer of the airport land from Transport Canada, the Charlottetown Airport Authority and tenants have invested over \$92 million in new capital development projects and the maintenance of capital. These projects created 1,510 FTE jobs.



The Charlottetown Airport Authority's 10-year capital plan and tenant investments plans will see additional expenditures to 2028 of \$205 million. Of this total, tenants identified over \$186 million of future capital projects with the majority being at BioVectra and Tronosjet.

Capital projects since 1999, ongoing and planned future projects to 2028 represent \$297 million of expenditures. These projects impact the Island economy by \$431.7 million in economic output, \$252.5 million in GBP and have wages of \$177.4 million for 4,135 FTE jobs.

The Charlottetown Airport also has a positive fiscal impact on the City of Charlottetown, Province of Prince Edward Island and Government of

Canada. They include income tax, property tax on airport land and buildings, HST on employee purchases of goods and services, taxes on aviation fuel, and HST on food purchases and car rentals at the Air Terminal Building. These sources generated more than \$13 million in taxes during 2018.

SUMMARY OF ECONOMIC ACTIVITY IMPACTS CHARLOTTETOWN AIRPORT - 2018				
Impact	Direct	Indirect	Induced	Total
Total Gross Economic Output (\$Millions)	\$75.2	\$12.0	\$16.2	\$103.4
GDP Basic Price (\$Millions)	\$44.5	\$6.9	\$10.6	\$62.0
Total Employment (Full-Time Equivalent)	552	96	140	788
Wages and Salaries (\$Millions)	\$33.7	\$3.9	\$4.1	\$41.7



CHARLOTTETOWN AIRPORT - PLEASURE VISITORS EXPENDITURES (MILLIONS) IN 2018				
	Direct	Indirect	Induced	Total
Output	\$92.6	\$22.5	\$20.0	\$135.1
GDP Basic Price	\$52.3	\$12.4	\$13.1	\$77.8
Labour Income	\$40.1	\$7.0	\$6.8	\$53.9
FTE Jobs	1,557	348	246	2,151
Sources: Chris Lowe Group estimates based upon Overnight Pleasure Visitors' Travel Expenditures, Length of Stay, and Party Size by Mode of Transportation: Results from the PEI 2014 Exit Surveys, Department of Economic Development and Tourism and Centre for Tourism Research at TIAPEI, December 2015; and Statistics Canada Catalogue No. 15F0046XDB: Provincial Input-Output Multipliers, 2014.				



1 Introduction

1.1 Context



The Charlottetown Airport is the only commercial airport on Prince Edward Island (PEI). The arrival of every flight generates more economic activity at the Air Terminal Building (ATB) and other surrounding facilities. These jobs involve the handling of passengers, the removal of baggage and the servicing of the aircraft. In addition, each flight will bring in new non-residents (business and pleasure travelers) who will spend money on accommodation, taxis or car rentals, food and beverage, retail purchases and entertainment.

The Charlottetown Airport is a key transportation link for business, residents and visitors and is essential to the Island's future growth and prosperity. To understand the scope of the airport's impacts on PEI, the Charlottetown Airport Authority (CAA) retained Chris Lowe Group to determine the 2018 economic and fiscal impacts. The study relied upon a survey of major airport tenants, operating and financial results from CAA and other sources.

The report contains five sections. Section 1, Introduction, contains an overview of the airport. Section 2, Study Approach, outlines how the 2018 economic and fiscal impacts are measured. Section 3, Economic Impacts, presents the findings of the airport's 2018 economic impacts on PEI. Section 4, Fiscal Impacts, defines the income, consumption, retail and aviation fuel tax impacts for 2018. Section 5, Summary, presents the 2018 highlights.

1.2 Airport Overview

In 1999, the Department of Transport transferred operational and financial responsibility for the Charlottetown Airport (IATA: YYG, ICAO: CYYG) to the Charlottetown Airport Authority (CAA) under a 60-year lease arrangement. The Federal Government (Canada) through Transport Canada remains the property owner. The airport is located at elevation AMSL 149 metres (60 feet) with co-ordinates 46° 17' 24" N, 63° 7' 16" W. It is one of 26 National Airport System (NAS) facilities in Canada and the only commercial airport on Prince Edward Island.

CAA is not-for-profit corporation with a Board of Directors appointed by various levels of government and other stakeholders. CAA's mission is to operate a safe, efficient, competitive and financially viable, high quality airport that facilitates the air transportation needs of PEI, the travelling public and aviation users. The mission is carried out by strategic priorities and goals that focus on maintaining existing air service and pursuing growth with a high-quality passenger experience, community engagement, prudent financial management, and a high-quality workplace.

The airport's major features are two asphalt runways (03-21 at 7,000 feet and 10-28 at 7,000 feet), an Air Terminal Building (around 40,000 square feet), customs facilities and aviation fueling services on 1,600 total acres.

The airport has year-round scheduled service to Halifax, Montreal and Toronto, and seasonal service to Ottawa and Puerto Plata, Dominican Republic. There is an active General Aviation (GA) community and a business park on some of the lands. The GA community operates out of Skyplex (location of the old Air Terminal Building).

The airport is located north of the Charlottetown Perimeter Highway in a suburban part of the City of Charlottetown with access from Brackley Point Road. The main access to the Air Terminal Building (ATB) is an extension of Sherwood Road.

The Transport Canada lease includes lands not required for airport operations. In 2000, the Airport Business Park was established with the construction of Maple Hills Avenue south of Sherwood Road. The park is managed by the Charlottetown Airport Authority. The initial phase of development focused non airside lots with a new entrance along Brackley Point Road opposite MacAleer Drive. This new road linked into the airport's main access road and ATB. Serviced lots along Maple Hills Avenue have seen positive market uptake with only four airside and no groundside fully serviced lots remaining vacant.

Another section of the business park is north of Sherwood Road and is accessed by Aviation Avenue. This road was rebuilt and serviced in 2012. Current tenants are BioVectra and Coca-Cola with five large lots (20 acres) remaining in inventory.

Beyond the business park, there is another 90 acres of unserviced greenfield land available for future development.

Exhibit 1.1
REGIONAL SETTING



1.3 Airport and Business Park Tenants

In 2018, the airport and business park had 552 FTE employees or an increase of 13% from 488 in 2015. The number of employees by business are listed in Exhibit 1.2.



The Charlottetown Airport Authority had 23.0 FTE employees. The airports operations are supported by CATSA (28.0 FTEs), the Corps of Commissionaires (15.0 FTEs), Nav Canada (7 FTEs) and the Canada Border Services Agency (3.5FTEs).



The carriers at Charlottetown Airport are Air Canada, WestJet and Sunwing Airlines. Both Air Canada Jazz (14.1 FTEs) and WestJet (3.9 FTEs) provide regular scheduled year-round or seasonal service to Halifax, Montreal, Ottawa and Toronto while Sunwing is a seasonal charter operation that is staffed by ATS (Airport Terminal Services, Inc.) with 6 FTEs. Fueling services are provided by ASIG Fuellers. This firm has 3 FTEs.



Services in the Air Terminal Building include car rental outlets and a restaurant/gift shop. Four rental car operations (Avis, Budget, Hertz, National/Enterprise) have a combined 19 FTEs and the restaurant/gift shop has 9.0 FTEs. Cleaning services add another 5 FTEs associated with the ATB.



The largest employers are located in the Airport Business Park. BioVectra is an Island-based company that has been in business for over 40 years. It is owned by UK-based Mallinckrodt Pharmaceuticals and its pharmaceutical ingredients manufacturing facility on Aviation Avenue has 220 FTEs or an increase of 33% from 165 FTEs in 2015.



Canada Post has a major facility with 64 FTEs. The other delivery service is ICS Courier with 5 FTEs. Vogue Optical is a PEI-based business that started in 1979. It now has more than 60 locations across Atlantic Canada and in British Columbia and Saskatchewan. The Vogue Optical Manufacturing Laboratory opened in the Airport Business Park in 2008. It has 28 FTEs.

D. P. Murphy Inc. is a Charlottetown-based hospitality and food service firm that is based in the Skyplex. It operates Tim Horton and Wendy's Restaurants, a Leon's Furniture outlet and various hotels and suites on PEI and in New Brunswick and Nova Scotia. It has 26 FTEs.



Tronos is an aircraft leasing, major modification centre and aircraft maintenance services provider. It owns or manages on behalf of third parties, a fleet of approximately 20 BAe 146 aircraft, as well as engines and spare parts. In the fall of 2016, the firm opened a new machine shop in the business park. It has 8.0 FTEs.

There are two professional service firms based in the business park. Edmonton-based Stantec is a global engineering and project management firm with 16 FTEs. Island-based Corkum Arsenault Crozier Chartered Accountants has 6.0 FTEs.

Other business park tenants include Coca Cola (3.0 FTEs), the Department of Veterans Affairs (11 FTEs at a file storage facility) and York-based Veseys Seeds (14 FTEs).



One sector that relies on passengers is ground transportation. In 2018, there were 16,585 taxi and limousine pickups at the ATB. Interviews with operators (2015 study) were used to calculate 9.0 FTE jobs in 2018 are a direct result of airport activity.

Victory Gymnastics also carries on recreational and competitive artistic classes, summer camps and Saturday birthday parties from 165 Maple Hills Avenue in the business park. It has 4.0 FTEs.

**Exhibit 1.2
CHARLOTTETOWN AIRPORT -
MAJOR EMPLOYERS 2018**

Employer	2018 Full-Time Equivalent (FTE) Employees
BioVectra	220
Canada Post	64
Vogue Optical	28
CATSA	28
D. P. Murphy	26
Charlottetown Airport Authority	23
Stantec	16
Corps of Commissioners	15
Air Canada	14.1
Veseys Seed	14
Department of Veterans Affairs	11
Air Terminal Building – Restaurant/Gift Shop	9
Hertz	9
Taxi / Limousine (Various)	9
Avis/Budget	8
Tronosjet	8
Nav Canada	7
Corkum Arsenault Crozier	6
ATS	6
ICS Courier	5
United Janitorial (Cleaners)	5
Victory Gymnastics	4
WestJet	3.9
Canada Border Services Agency	3.5
ASIG Fuellers	3
Coca Cola	3
National/Enterprise	2
TOTAL (Rounded)	552
Source: Chris Lowe Group and Charlottetown Airport Authority.	

1.4 Airport Operations

Exhibit 1.3 lists passenger and aircraft movement activity between 2011 and 2018. Over this period, total enplaned and deplaned passengers increased by 30% from 285,158 to a record high of 370,730 while total aircraft movements increased by 9.1% from 13,358 to 14,578. Over this eight-year period, the average number of passengers per aircraft movement ranged from 21.3 in 2011 to a record high of 25.4 in 2018.

Exhibit 1.3 CHARLOTTETOWN AIRPORT - AIR TRAFFIC STATISTICS 2011 to 2018			
Enplaned / Deplaned Passengers:		Total Aircraft Movements:	Passenger Average Per Movement:
2011	285,158	13,358	21.3
2012	297,329	12,597	23.6
2013	296,301	12,890	23.0
2014	317,827	13,491	23.6
2015	316,628	14,439	21.9
2016	354,234	15,737	22.5
2017	370,688	17,213	21.5
2018	370,730	14,578	25.4
Source: Charlottetown Airport Authority.			

Exhibit 1.4 presents the 2012 to 2018 concession sales and car rentals at the ATB. Total sales and car rentals in 2018 were a record high of almost \$8.2 million or \$22.11 per passenger (above levels for previous years).

Regular scheduled service is dominated by Air Canada. Exhibit 1.5 lists the July 2019 destinations of flights. There were 752 regular scheduled arrivals and departures during this period. The distribution of flights is: Halifax (36%), Toronto (32%), Montreal (16%) and Ottawa (16%).

Exhibit 1.4
CHARLOTTETOWN AIRPORT -
CONCESSION SALES & CAR RENTALS 2012 to 2018

Year	Enplaned / Deplaned Passengers	Total Concession Sales & Car Rentals	Sales Per Passenger
2012	297,329	\$4,833,670	\$16.26
2013	296,301	\$5,015,655	\$16.93
2014	317,827	\$5,757,580	\$18.12
2015	316,628	\$5,972,091	\$18.86
2016	354,234	\$7,035,620	\$19.86
2017	370,688	\$7,974,944	\$21.51
2018	370,730	\$8,195,650	\$22.11

Source: Charlottetown Airport Authority.



Exhibit 1.5
CHARLOTTETOWN AIRPORT -
WEEKLY ACTIVITY JULY 2019

Arriving: Airline/Flight	Time	From	Frequency
Air Canada 7750	9:01am	Halifax YHZ	Daily
Air Canada 8624	10:07 am	Ottawa YOW	Daily
Air Canada 1706	11:17 am	Toronto YYZ	Daily
WestJet 152	11:36 am	Toronto YYZ	Thursday and Saturday
Air Canada 7752	3:26 pm	Halifax YHZ	Daily
Air Canada 1688	4:02 pm	Montreal YUL	Daily
Air Canada 8628	5:11 pm	Ottawa YOW	Daily
Air Canada 7754	6:01 pm	Halifax YHZ	No Saturday Service
WestJet 654	6:24 pm	Toronto YYZ	Daily
Air Canada 7756	7:21 pm	Halifax YHZ	Daily
Air Canada 1686	10:59 pm	Montreal YUL	Daily
WestJet 378	11:48 pm	Toronto YYZ	Daily
Air Canada 1708	12:56 am	Toronto YYZ	Daily
Departing: Airline/Flight	Time	Destination	Frequency
Air Canada 1709	5:05 am	Halifax YHZ	Daily
Air Canada 1687	6:25 am	Montreal YUL	Daily
WestJet 377	6:30 am	Toronto YYZ	Daily
Air Canada 7751	9:20am	Halifax YHZ	Daily
Air Canada 8621	10:40 am	Ottawa YOW	Daily
Air Canada 1707	12:10 pm	Toronto YYZ	Daily
WestJet 153	12:25 pm	Toronto YYZ	Thursday and Saturday
Air Canada 7753	3:45 pm	Halifax YHZ	Daily
Air Canada 1689	4:55 pm	Montreal YUL	Daily
Air Canada 8627	5:45 pm	Ottawa YOW	Daily
Air Canada 7755	6:20 pm	Halifax YHZ	No Saturday Service
WestJet 387	7:15 pm	Toronto YYZ	Daily
Air Canada 7757	7:40 pm	Halifax YHZ	Daily

Source: Charlottetown Airport Authority.

2 Study Approach

2.1 Introduction

This section outlines the approach used to calculate the impacts of the Charlottetown Airport on Prince Edward Island.

2.2 Economic Impact

To establish a framework for measuring the economic impacts of the Charlottetown Airport, the following were defined:

- The types of economic activity being considered
- The units of measurement of economic impact used
- The methods used to measure or estimate economic impacts

The types of economic activity are grouped into three categories: direct, indirect and induced. They represent the total impacts when combined.

Direct Economic Activity

The Charlottetown Airport's economic activity is calculated by direct, indirect, induced and total impacts. Indirect and induced activity show the effect that the direct expenditures have as they "ripple" through the Island's economy. The measure is referred to as the multiplier effect or spinoff impacts.

This activity refers to airport-related and business park activity of those firms or industries located at the Charlottetown Airport. These businesses fit into three categories: those with primary linkage to the airport (aviation-related); those with a secondary linkage (generally not aviation-related); and other business park tenants.

Primary linkage businesses or organizations include those listed below.

Air Carriers: This refers to companies offering scheduled year-round and seasonal air service from the airport.

Air Support Services: This refers to companies whose business is primarily or wholly aviation-related, or who provide direct support to air carriers or general aviation businesses. Air support services include fuelling services and contracted airport terminal services.

Airport Operations and Administration: This category includes CAA, Nav Canada, CATSA and the Canada Border Services Agency.

Secondary linkage businesses include:

Commercial Services: These include retail businesses operating in the ATB.

Ground Transportation: These include car rental, taxi and limousine service.

Tourist/Travel/Hotel Industry: This group of secondary linkage businesses includes hotels/motels, food and beverage operators and other retail or service operations providing service to passengers travelling by air for business or pleasure.

Indirect Economic Activity

Direct economic activity is accompanied by indirect and induced economic activity. Indirect economic activity refers to activity generated in a sector that supplies material and other inputs to businesses associated with direct economic activity (airport and tenants in the business park). Indirect activity occurs as a result of direct activity.

The terms "direct" and "indirect" depend on the chosen reference point. In this context, Statistics Canada's Provincial (PEI) Input-Output Multipliers, 2014 (Catalogue No. 15F0046XDB) were used. This input-output system of the Island's economy was released in April 2018 and replaced an older model based upon 2010 conditions. The older model did not include direct indicators for some sectors associated with the airport and business park. In a 2015 study of the airport's economic impacts, Statistics Canada data gaps in the 2010 model were filled by a survey of tenants, public filings for tenants associated with publicly traded companies and public entities, values for other provinces or economic models developed for other airports. In some cases, confidential data or information were provided for both the 2015 and 2018 impact assessments and then aggregated to ensure confidentiality.

With the application of the 2014 Statistics Canada model released in April 2018 for the 2018 impacts, comparisons to the 2015 study should be made in the context of different models. Another change also occurred in fiscal impacts when the Province of Prince Edward Island increased the provincial component of the harmonized sales tax (HST) from 14% to 15% on October 1, 2016.

Induced Economic Activity

Induced economic activity refers to economic activity by individuals employed in the direct or indirect activity sectors who spend a portion of their household income on consumer goods or services on the Island.

Measures of indirect and induced activity show the effect that the direct expenditures at the airport and business park have as they “ripple” through the PEI economy. The measure is referred to as the multiplier effect or spinoff impacts.

Total Economic Activity

The total economic activity of the airport and business park is the sum of direct, indirect and induced effects. The multipliers (indirect and induced) are the total maximum potential stimulus of direct activity on the PEI economy.

2.3 Study Area

The total economic activity and impacts are defined for Prince Edward Island.

2.4 Economic Impacts Measured and Methods of Measurement

Four measures of the airport’s economic impact on PEI are defined as follows:

Economic Output or Gross Revenue: This measure is calculated in terms of total annual gross revenue from all airport-related and business park activity, and those same total gross revenues, less any revenue transferred from one airport-related or business park activity (primary or secondary) to another airport-related or business park activity.

Gross Domestic Product (GDP) Basic Price: This measure is the broadest quantitative measure of PEI’s total economic activity. It represents the monetary value of all goods and services produced at the airport and business park in one year. The concept of GDP at basic prices includes net indirect taxes (indirect taxes less subsidies) attached to factors of production.

Employment: This measure is defined as the total amount of full-time equivalent (FTE) employment created by airport and business park activity.

Wages and Salaries: This measure is defined as the total amount of wages and salaries created due to airport and business park activity. Average wages per business were based upon 2018 (third quarter) wages by sector from Statistics Canada (Table 14-10-0216-01 Average Weekly Earnings Including Overtime), a survey of tenants and other industry sources.

Direct, indirect and induced economic impacts associated with the above four measures of economic activity were calculated as follows:

Direct Economic Impact: Economic output, GDP, employment, and wages and salaries were obtained by means of surveys of the airport tenants and the other sources listed above.

Indirect and Induced Economic Impact: These impacts were estimated by means of economic multipliers from Statistics Canada's 2014 Provincial (PEI) Input-Output Model and other referenced sources.

In addition to the four measures, other economic impacts were determined. ATB retail and concession sales, construction activity (from transfer in 1999 plus forecasts to 2018 and tourists accessing PEI at the airport) were also identified. These impacts are assessed separately and represent major contributions to the Island's economy.

2.5 Fiscal Impact

Fiscal impacts are defined under personal income taxes, retail sales taxes, aviation fuel and excise taxes, and municipal taxes. No impact multipliers (spinoffs) are applied to municipal taxes.

The fiscal impact measures include the following:

Personal Income Taxes: This measure refers to the personal income taxes paid to Canada and the Province of Prince Edward Island by individuals employed due to airport and business park activity. This impact was calculated from Statistic Canada's 2017 Atlantic Canada hstSurvey of Household Spending (Table 11-10-0222-01).

Retail Sales Taxes: This measure refers to retail sales taxes generated by purchases of retail goods and services by individuals who earn wages and salaries due to their employment stemming from airport and business park activity. In 2018, the HST rate was 15% (5% federal part and 10% provincial part). The percentage of household income that is spent on taxable retail-type goods and services was derived from Statistic Canada's 2017 Survey of Household Spending. The HST rate for purchases in the ATB (food, retail, car rentals) was calculated from actual sales.

Aviation Fuel and Excise Taxes: The provincial aviation fuel tax (\$0.07 per litre) and federal aviation fuel excise tax (\$0.04 per litre) were calculated based upon litres sold.

Property Taxes: Property Taxes (net) paid to the Province, City of Charlottetown and others were determined for both CAA and tenants.

Fiscal impacts are measured for PEI in a similar manner as economic impacts in terms of direct, indirect and induced activity. Spinoffs were not calculated for property taxes.

3 Economic Impacts

3.1 Introduction

This section presents the economic impacts of the airport and business park on Prince Edward Island. The impacts are defined by direct, indirect, induced and total for four measures (economic output, GDP basic price, labour income and full-time equivalent jobs). Separate discussions and calculations are included for ATB retail and concession sales, construction activity (from transfer and forecasts) and expenditures of tourists accessing PEI at the airport.

3.2 Economic Output

The first measure of economic impact is total economic output. This measure is also referred to as gross revenue. Economic impacts related to the airport and business park, in terms of economic output on PEI, are summarized in Exhibit 3.1. The economic impact is separated into direct, indirect and induced. The economic output from the airport and business park on the Island's economy was \$103.4 million. This is composed of \$75.2 million in direct output, \$12.0 million in indirect output and \$16.2 million in induced output. Around 33% of economic output results from the airport with the remainder associated with the business park.

Exhibit 3.1 CHARLOTTETOWN AIRPORT - GROSS ECONOMIC OUTPUT (MILLIONS) IN 2018				
	Direct	Indirect	Induced	Total
Prince Edward Island	\$75.2	\$12.0	\$16.2	\$103.4

3.3 GDP Basic Price

Gross Domestic Product (GDP) at basic price is the monetary value of all goods and services produced at the airport and business park. It includes indirect taxes attached to factors of production. In 2018, the total value of GDP basic price was \$62 million. This total is comprised of \$44.5 million in direct impacts, \$6.9 million in indirect impacts and \$10.6 million in induced impacts. One quarter of the impacts are associated with the airport and the remaining portion relates to the business park.

Exhibit 3.2 CHARLOTTETOWN AIRPORT - GDP BASIC PRICE (MILLIONS) IN 2015				
	Direct	Indirect	Induced	Total
Prince Edward Island	\$44.5	\$6.9	\$10.6	\$62.0

3.4 Employment

Employment is another measure of economic impact. It is defined as full-time equivalent (FTE) jobs or person-years of employment. The numbers in Exhibit 3.3 are 2018 averages and not peaks, and they include spinoff (indirect and induced) FTE employment estimates for all of PEI.



In 2018, 788 FTE direct and spinoff jobs were created on PEI from airport and business park activity. This is an increase of over 15% from 681 in 2015. There were 26,220 people with employment income in Charlottetown during 2016 (source: Statistics Canada, Census Profile, 2016 Census) and it is reasonable to assume many spinoff jobs are in Charlottetown. Based upon this assumption, the airport and business park accounted for 3% of the total.

Direct employment from airport and business park activity is 552 FTE jobs (up from 488 in 2015), indirect employment accounts for 96 FTE jobs and induced employment represents another 140 FTE jobs. Of the total employment, 28% is associated with the airport and 72% with the business park.

Exhibit 3.3 CHARLOTTETOWN AIRPORT - EMPLOYMENT (FULL-TIME EQUIVALENT) IN 2018				
	Direct	Indirect	Induced	Total
Prince Edward Island	552	96	140	788

3.5 Wages and Salaries

Wages and salaries are another measure of economic impact. Exhibit 3.4 lists the wage and salary impact of the airport and business park on PEI in 2018. The total wages and salaries created by airport and business park activity on the Island was \$41.7 million or an increase of 14% from \$36.5 million in 2015. Of this total, 25% is related to the airport and 75% to the business park. The direct wage and salary portion is \$33.7 million, the indirect impact is \$3.9 million and the induced impact is \$4.1 million. The average direct wage for FTE employees is \$61,000 (up from \$59,000 in 2015). The overall average wage is \$52,900 and this lower value is a result of induced jobs being concentrated in the lower wage retail and service sectors.

Exhibit 3.4 CHARLOTTETOWN AIRPORT - WAGES AND SALARIES (MILLIONS) IN 2018				
	Direct	Indirect	Induced	Total
Prince Edward Island	\$33.7	\$3.9	\$4.1	\$41.7

3.6 Renovation and New Construction Impact

Capital Improvements and New Projects Since 1999

Since the 1999 transfer of the airport land from Transport Canada, the Charlottetown Airport Authority and tenants have invested over \$92 million in new capital development projects and the maintenance of capital. Of this total, during 2018 CAA invested \$19.3 million and tenants more than \$28 million. The major CAA expenditure completed in 2018 was the runway improvement project while BioVectra had the majority of tenant expenditures.

Projects by CAA and tenants from 1999 to 2018 created over 1,510 FTE jobs (person-years of employment) with the direct portion being 1,090 FTEs.

Future Capital Projects

The 10-Year Capital Budget approved by the CAA's Board of Directors contains over \$18.9 million of new expenditures on the airport from 2019 to 2028. CAA's expected expenditures by year to 2025 are:

2019	\$1,720,000
2020	\$2,295,000
2021	\$4,418,188
2022	\$3,524,750
2023	\$2,561,875
2024	\$2,617,140
2025	\$530,000
2026	\$711,250
2027	\$400,000
2028	\$180,000
Total	\$18,958,203

The tenant survey included a question on expected future capital expenditures at the airport, Skyplex and business park over the five-years from 2019 to 2023. The survey is not a full disclosure of approved tenant budgets nor a complete indication of the total dollars that will be spent to 2023. Tenants identified over \$186 million of future capital projects with the majority being at BioVectra and Tronosjet. Combined with CAA's 10-year capital plan, expenditures to 2025 are in the range of \$205 million. These future projects will require 2,625 FTE jobs (person-years of employment) to complete with the direct portion being 2,980 FTEs.

Completed capital projects since 1999, ongoing and planned future projects to 2028 represent \$297 million of expenditures. These projects impact the Island economy by \$431.7 million in economic output, \$252.5 million in GBP and have wages of \$177.4 million for 4,135 FTE jobs.

Exhibit 3.5 CHARLOTTETOWN AIRPORT - CAPITAL PROJECTS IMPACTS (1999 to 2018 and PLANNED FUTURE)				
	Direct	Indirect	Induced	Total
Output (\$Millions)	\$297.0	\$69.6	\$65.1	\$431.7
GDP Basic Price (\$Millions)	\$172.2	\$37.6	\$42.7	\$252.5
Labour Income (\$Millions)	\$138.9	\$22.0	\$16.5	\$177.4
FTE Jobs	2,980	575	580	4,135
Sources: Chris Lowe Group estimates based upon CAA capital budgets, survey of airport tenants (summer 2019), Statistics Canada Construction Wages 1999 to 2018 from Table 281-0027 and Statistics Canada Catalogue No. 15F0046XDB: Provincial Input-Output Multipliers, 2014.				

3.7 Tourist/Visitors Impacts



Tourism is an important sector of the PEI economy. In 2014, the PEI Department of Economic Development and Tourism, and the Centre for Tourism Research at the Tourism Industry Association of PEI (TIAPEI), conducted a detailed survey of overnight pleasure visitors to the Island. This research excluded cruise ship visitors as they are day visitors only with ships typically departing in the evening for other itinerary ports in Atlantic Canada or the St. Lawrence River.

The 2014 overnight market had 1,134,827 visitors in the air, auto, mix of air and auto, and motorcoach segments. Of this total, 6.6% (73,317) were air visitors. The estimated number of air visitors has increased to:

- 99,550 in 2016
- 106,448 in 2017
- 103,024 in 2018.

The 2018 value is a preliminary estimate.

In 2014, visitors entering and leaving PEI by air had a different expenditure profile than other visitors. On average, they stayed longer (7.5 days versus an average of 4.73 days for other modes excluding motorcoach) and spent more (\$2,148 per party visit versus an average of \$1,214).

Assuming a similar profile for 2018 and adjusting for inflation, the direct and spin-off (indirect and induced) impacts of the preliminary estimated pleasure visitors on the PEI economy entering and leaving the Island at the Charlottetown Airport was calculated. Pleasure air visitors contributed \$135.1 million to economic output, \$77.8 million to GDP at basic price and \$53.9 million in labour income. While many jobs in the tourism and hospitality sectors are seasonal, the impact of air visitors is 2,151 FTE jobs. The direct portion of is \$92.6 million to economic output, \$52.3 million to GDP at basic price, \$40.1 million in labour income and 1,557 FTE jobs.

Exhibit 3.6
CHARLOTTETOWN AIRPORT -
PLEASURE VISITORS EXPENDITURES (MILLIONS) IN 2018

	Direct	Indirect	Induced	Total
Output	\$92.6	\$22.5	\$20.0	\$135.1
GDP Basic Price	\$52.3	\$12.4	\$13.1	\$77.8
Labour Income	\$40.1	\$7.0	\$6.8	\$53.9
FTE Jobs	1,557	348	246	2,151

Sources: Chris Lowe Group estimates based upon Overnight Pleasure Visitors' Travel Expenditures, Length of Stay, and Party Size by Mode of Transportation: Results from the PEI 2014 Exit Surveys, Department of Economic Development and Tourism and Centre for Tourism Research at TIAPEI, December 2015; and Statistics Canada Catalogue No. 15F0046XDB: Provincial Input-Output Multipliers, 2014.

Exhibit 3.7
PEI 2014 EXIT SURVEYS -
OVERNIGHT PLEASURE VISITORS EXPENDITURES

	Air ¹⁾		Auto ¹⁾		Mix of Air and Auto ¹⁾		Total ¹⁾		Motor Coach ²⁾	
Number of Overnight Pleasure Parties (%)	29,176	(8.0%)	326,359	(90.0%)	7,190	(2.0%)	362,725	(100.0%)	10,991	(100.0%)
Number of Individual Visitors (%)	73,317	(6.6%)	1,022,004	(91.8%)	18,504	(1.7%)	1,113,825	(100.0%)	21,002	(100.0%)
Estimated Total Direct Expenditures	\$62,671,370 (14.1%)		\$372,968,901 (84.0%)		\$8,165,287 (1.8%)		\$443,805,558 (100.0%)		\$7,402,885 ³⁾ (100.0%)	
Average Spending per Party per Visit	\$2,148.03		\$1,142.82		\$1,135.62		\$1,213.87		\$673.54 ³⁾	
Travel package (Tour package in PEI)	\$143.57		\$16.96		\$36.90		\$26.52		\$494.89	
Accommodations	\$640.39		\$396.52		\$246.58		\$410.64		\$0.77	
Food and beverage at restaurants, bars, etc.	\$425.63		\$223.52		\$234.02		\$238.05		\$47.08	
Food and beverage at stores	\$135.00		\$92.93		\$76.94		\$95.53		\$10.57	
Vehicle operation	\$92.13		\$126.98		\$126.33		\$124.24		n/a	
Car rentals in PEI and local transportation	\$218.69		\$8.17		\$41.09		\$24.09		\$0.45	
Shopping	\$245.64		\$153.62		\$166.90		\$160.32		\$100.50	
Recreation and entertainment	\$122.79		\$78.84		\$66.37		\$81.66		\$11.41	
Other expenditures	\$124.18		\$45.28		\$140.48		\$52.82		\$7.87	
Average Spending per Person per Night	\$113.98		\$81.56		\$83.46		\$83.51		\$178.32 ³⁾	
Travel package	\$7.62		\$1.21		\$2.71		\$1.82		\$131.02	
Accommodations	\$33.98		\$28.30		\$18.12		\$28.25		\$0.20	
Food and beverage at restaurants, bars, etc.	\$22.59		\$15.95		\$17.20		\$16.38		\$12.46	
Food and beverage at stores	\$7.16		\$6.63		\$5.65		\$6.57		\$2.80	
Vehicle operation	\$4.89		\$9.06		\$9.28		\$8.55		n/a	
Car rentals in PEI and local transportation	\$11.60		\$0.58		\$3.02		\$1.66		\$0.12	
Shopping	\$13.03		\$10.96		\$12.27		\$11.03		\$26.61	
Recreation and entertainment	\$6.52		\$5.63		\$4.88		\$5.62		\$3.02	
Other expenditure	\$6.59		\$3.23		\$10.32		\$3.63		\$2.08	
Average Number of Nights Stayed in PEI	7.50		4.47		5.29		4.73		1.98	
Average Party Size	2.51		3.13		2.57		3.07		1.91	

Sources: Overnight Pleasure Visitors' Travel Expenditures, Length of Stay, and Party Size by Mode of Transportation: Results from the PEI 2014 Exit Surveys, Department of Economic Development and Tourism and Centre for Tourism Research at TIAPEI, December 2015.

4 Fiscal Impacts

4.1 Introduction

The Charlottetown Airport has a positive impact on the Province of Prince Edward Island and the Government of Canada. This section highlights the fiscal benefits from employee (direct and spinoff) income tax, employee (direct and spinoff) purchases of goods and services, aviation fuel purchased at the airport, food and retail purchases in the Air Terminal Building (ATB) and car rentals at the ATB. As this section will show, the Charlottetown Airport Authority, tenants, employees and purchasers of food/retail goods and car rentals at the ATB, and aviation fuel sales generated over \$13 million in taxes during 2018.

4.2 Employee Income and Consumption Taxes

The percentage of wages and salaries paid to the Province of Prince Edward Island and Canada were calculated using the 2017 Survey of Household Spending (Table 11-10-0222-01) from Statistic Canada. According to this source, around 45% of household income is spent on food service, food, department store type merchandise (DSTM) and private auto operations. The harmonized sales tax (HST) rate on these types of purchases is 15% (10% provincial plus 5% federal rate).

The 2018 Survey of Household Spending also determined that around 18% of total household expenditures go towards income taxes (Federal and Provincial)

Exhibit 4.1 summarizes the 2018 personal income and consumption tax impacts of the airport and business park on Canada and the Province of Prince Edward Island. The total personal income and consumption taxes resulting from airport and business park employment amounts to \$10.3 million. This consists of \$8.4 million in direct personal income and consumption taxes and \$1.9 million in indirect and induced taxes.

4.3 Air Terminal Building: Retail, Food and Car Rental Taxes

Another fiscal impact measure of Charlottetown Airport is sales taxes generated by the purchase of food and retail goods, and car rental at the Air Terminal Building. The HST increased by over 80% from from \$676,714 in 2012 to \$1,229,348 in 2018.

Exhibit 4.1
CHARLOTTETOWN AIRPORT -
PERSONAL INCOME & CONSUMPTION TAXES (MILLIONS) IN 2018

	Direct	Indirect & Induced	Total
Income Tax	\$6.1	\$1.4	\$7.5
HST	\$2.3	\$0.5	\$2.8
Total	\$8.4	\$1.9	\$10.3

Exhibit 4.2
CHARLOTTETOWN AIRPORT -
CONCESSION SALES & CAR RENTALS 2012 to 2018

Year	Total Concession Sales & Car Rentals	HST
2012	\$4,833,670	\$676,714
2013	\$5,015,655	\$702,192
2014	\$5,757,580	\$806,061
2015	\$5,972,091	\$836,093
2016	\$7,035,620	\$995,145
2017	\$7,974,944	\$1,196,242
2018	\$8,195,650	\$1,229,348

Source: Charlottetown Airport Authority.

Note: Effective October 1, 2016, the Province of Prince Edward Island increased the provincial component of the harmonized sales tax (HST) from 14% to 15%. The new HST rate consists of the provincial component of 10 per cent and the federal component of 5 per cent for a combined rate of 15 per cent.

4.4 Aviation Fuel Taxes

Aviation fuel purchased at the Charlottetown Airport is taxed on litres purchased. The Province of Prince Edward Island's rate is \$0.07 per litre and the Federal Aviation Fuel Excise Tax is \$0.04 per litre. In 2018, the result is annual taxes in the range of \$1.0 million.

4.5 Property Taxes

The Charlottetown Airport Authority pays property taxes while the Authority receives a grant in lieu of taxes for unleased airport lands to reduce the tax burden. Tenants also pay property taxes. In 2018, the combined taxes paid by CAA and tenants to the City of Charlottetown and the Province of PEI was close to \$766,700 or an increase of nearly 20% from around \$640,000 in 2015.

5 Summary



In 2018, the airport and business park had 552 FTE employees in 28 government and business operations, plus FTE jobs associated with taxis and limousines. The major employers were BioVectra (220), Canada Post (64), Vogue Optical (28), CATSA (28), D. P. Murphy (26) and the Charlottetown Airport Authority (23).

The economic impact of the Charlottetown Airport on the PEI economy is significant. In 2018, it contributed \$103.4 million to PEI's economic output, \$62 million to GDP and \$41.7 million to wages and salaries with 788 FTE jobs.

In addition to these four measures, other economic impacts were assessed. The number of passengers at the airport in 2018 was 370,730 with 103,024 (preliminary estimate) or 28% being non-residents. Overall, these visitors stay longer and spend more money than non-residents arriving by other modes of transportation. In 2018, the direct and spin-off (indirect and induced) impacts of these pleasure visitors on the Island economy was \$135.1 million to economic output, \$77.8 million to GDP at basic price and \$53.9 million in labour income for 2,151 FTE jobs.

Since the 1999 transfer of the airport land from Transport Canada, the Charlottetown Airport Authority and tenants have invested over \$92 million in new capital development projects and the maintenance of capital. These projects created 1,510 FTE jobs.

The Charlottetown Airport Authority's 10-year capital plan and tenant investments plans will see additional expenditures to 2028 of \$205 million. Of this total, tenants identified over \$186 million of future capital projects with the majority being at BioVectra and Tronosjet. Capital projects since 1999 to 2018 and planned future projects to 2028 represent \$297 million of expenditures. These projects impact the Island economy by \$431.7 million in economic output, \$252.5 million in GDP and have wages of \$177.4 million for 4,135 FTE jobs.

The Charlottetown Airport also has a positive fiscal impact on the City of Charlottetown, Province of Prince Edward Island and Government of Canada. They include income tax, property tax on airport land and buildings, HST on employee purchases of goods and services, taxes on aviation fuel, and HST on food purchases and car rentals at the Air Terminal Building. These sources generated over \$13 million in taxes during 2018.

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1. Executive Summary

Airports provide significant economic and transportation benefits and have become an important part of local, regional and national economies. Generally airports support local commerce, government and recreation, industry and tourism. They are also key catalysts for economic growth through employment and as such they also have a profound influence on the quality of life. This is certainly the case with Deer Lake where the airport has been shown to provide significant economic and transportation benefits. The Airport acts as a major economic engine for the region. Air accessibility has led to economic growth through the transportation services it provides and the visitors that arrive on flights into the airport. The airport is an important support to the tourism industry. The Deer Lake Regional Airport (DLRA) (managed by the Deer Lake Regional Airport Authority (DLRAA)) is a strong economic driver for the communities (local and beyond) that it serves. The airport creates employment and generates revenues that ripple through the regional economy.

The total economic impact of an airport is the sum of on-airport (direct) and off-airport (indirect and induced) impacts. The direct impact is generated at the site of economic activity - in this case the Deer Lake Regional Airport. The indirect impact occurs off-site in supplying industries that provide the services, materials, or machinery to support the initial direct economic activity. Every airport operation yields direct benefits through jobs in airlines, cargo and ground handling, passenger terminal services and a myriad of activities related to airport operations. The distinguishing feature of a direct impact is that it has an immediate consequence of airport economic activity. The airport's economic value also results in spin-off jobs, related to accommodation, purchases and expenditures in both the local and provincial economy. These indirect and induced impacts are the result of successive rounds of spending in the community as a result of all the other airport activity.

In 2008, the economic impact of the Deer Lake Regional Airport, direct, indirect and induced, could be summarized as:

The Deer Lake Regional Airport generated \$214.7 million in revenue.

The Deer Lake Regional Airport also generated 1,289 full-time equivalent jobs.

The Deer Lake Regional Airport generated \$33.5 million in total in wages and salaries.

Did you know?

- International call letters of the Deer Lake Regional Airport are YDF.
- Deer Lake Regional Airport is Newfoundland & Labrador's second busiest airport.
- It is Atlantic Canada's fourth largest airport by passenger movements.
- Ranked twenty-first overall in Canada.

This Study of the Economic Impact of the Deer Lake Regional Airport found:

- YDF accounts for approximately 358 direct full-time equivalent (FTE) jobs in the local economy annually;
- The airport total community direct FTE employment has grown from approximately 117 in 2003 to 358 in 2008 - an increase of more than 200% over 5 years or approximately 40% per year;
- YDF activity creates an additional 931 indirect and induced jobs (using multipliers) for a total impact of 1,289 jobs in the community at large;
- The total direct wages and salary impact for the airport was \$11.9 million;
- The direct economic output of YDF employment base is \$87.6 million annually or \$240,158 per day;
- The total economic output attributable to the airport in 2008 (including indirect and induced outputs) was \$214.7 million annually or approximately \$588,388 per day;
- Administration and Operations (DLRAA and tenants) made up the highest proportion of direct employment, employing 113 full-time equivalents (approximately 31% of the total direct employment).

The Deer Lake Regional Airport Economic Impact Study - 2008 found that in that year, ten different carriers, providing passenger service on a regular or seasonal basis or seasonal operators, operated from the Airport and provided service to destinations in Canada and beyond. Passenger travel continued to grow.

The Economic Impacts of Deer Lake Regional Airport are summarized below:

	Employment (FTE)	Wages (\$M)	Business Revenue (\$M)
Direct	358	11.9	87.6
Indirect and Induced	931	21.5	127.1
TOTAL	1,289	33.5	214.7

Note: due to rounding numbers may not necessarily add.

Overall, with more than 1,289 full-time equivalent jobs associated with the operation of the airport complex and \$214.7 million in direct, indirect and induced revenue, the Deer Lake Regional Airport is a powerful economic generator for the community and beyond. It plays a major role in supporting business, tourism and the overall quality of life in local and larger community.

Indeed the symbiotic relationship that exists between the DLRA and the communities it serves is based on the reality that not only does the airport grow as the region grows, but the region's growth is heavily dependent upon the airport's ability to improve air accessibility.

2. Introduction

2.1 About this Report

The Deer Lake Regional Airport Economic Impact Study - 2008 (December 1, 2007 - November 30, 2008) was undertaken for the Deer Lake Regional Airport by Hatch Mott MacDonald.

The Airport acts as a major economic engine for the region. The economic impact of Deer Lake Regional Airport occurs mainly through the transportation services it provides and the visitors that arrive on the passenger flights into the airport. Every airport operation yields direct benefits through jobs in airlines, cargo and ground handling, passenger terminal services and a myriad of activities related to airport operations. The distinguishing feature of a direct impact is that it has an immediate consequence of airport economic activity. The airport's economic value also results in spin-off jobs, related to accommodation, purchases and expenditures in both the local and provincial economy. These indirect and induced impacts are the result of successive rounds of spending in the community as a result of all the other airport activity.

The purpose of this study is to document the Deer Lake Regional Airport's economic impact on Newfoundland and Labrador from the Northern Peninsula, Western and Southwestern Newfoundland, Green Bay and White Bay and Grand Falls-Windsor - the western Newfoundland and Labrador area and the Province of Newfoundland & Labrador for the year 2008. This measurement of the airport's economic impact should also heighten the business and community awareness of the airport and its contributions to the economic well-being of the community, locally and provincially.

The study utilizes a range of information sources including business surveys, annual reports and Statistics Canada census, employment, wages and revenue figures. Statistics Canada multipliers were also used to help assess the fuller economic impact of the economic indicators on the wider community.

2.2 Deer Lake Regional Airport

2.2.1 *The Airport and Airport Setting:*

The Deer Lake Regional Airport is an economic engine affecting an area larger than the site upon which it sits. It is the second busiest airport in Newfoundland and Labrador and has experienced strong and steady growth in passenger travel.

"The transfer of the Deer Lake Regional Airport from Transport Canada to the Deer Lake Regional

Airport Authority in December 1998 was the direct result of the National Airports Policy of the Federal



Government in July 1994. The intent of the policy was for the government to remove itself from airport operation/ownership by April 1, 2000. The government created classes of airports based on annual passenger volumes, and offered airports to local interests on terms specific to each class. The Deer Lake Airport was classified as a Regional Airport as its traffic volume was, at the time, less than 200,000 passengers per annum. The transfer mechanism for this class was the outright sale of the lands, assets and chattels to local interests.” (www.deerlakeairport.com) The airport has grown to become the second busiest airport in Newfoundland and Labrador and the fourth largest in Atlantic Canada by passenger movements. From an aircraft movement/passenger volume perspective, the airport was ranked 24th in Canada. In 2008, the Deer Lake Regional Airport handled 293,847 total passengers (enplaned and deplaned passengers - detailed in Table 4); and 18,179 aircraft movements (detailed in Figure 7).

The Deer Lake Regional Airport is located 8 km east of the Town of Deer Lake and 45 km east of the City of Corner Brook. It is strategically located to serve a major part of the Northern Peninsula, Western and Southwestern Newfoundland, Green Bay and White Bay, as far east as Grand Falls-Windsor and all points in between. It functions as a mini hub serving areas east, west and north with direct service to St. John’s, Goose Bay, as well as Halifax and Toronto with connections to destinations elsewhere in Canada and beyond.

The location of Deer Lake Regional Airport in relation to the rest of Newfoundland and Canada is shown on Figure 1 through 3.

Figure 1: Location of Deer Lake Regional Airport within Canada



(source: www.deerlakeairport .com)

Figure 2: Location of Deer Lake Regional Airport within Newfoundland & Labrador



(source: www.deerlakeairport .com)

Figure 3: Location of Deer Lake and the Regional Airport



(source: www.deerlakeairport .com)

Deer Lake Regional Airport is only minutes away from the Town of Deer Lake and a half hour drive to the City of Corner Brook on the Trans Canada Highway. The airport is situated in an area of rugged natural beauty and some of Canada and the world's most attractive tourism destinations, including L'Anse aux Meadows, the Viking Trail on the Northern Peninsula and Gros Morne National Park, a

UNESCO World Heritage site as well as newer tourism destinations and resort development including Marble Mountain ski resort and Humber Valley Resort. The airport also supports other more traditional forms of tourism like fly-in hunting, fishing, ATV touring, kayaking, cycling, skiing and snowmobiling.

The airport serves Western Newfoundland with regularly scheduled passenger service by several major carriers to and from destinations throughout eastern and central Canada with connections worldwide.



2.2.2 **Population:**

The population of the area served by the Deer Lake Regional Airport includes an area of western Newfoundland and Labrador which is home to approximately 138,433 people (Table 1). It includes the City of Corner Brook, with over 20,000 people, Deer Lake, with 5,000 people, Pasadena, with 3,100 people, Stephenville with 6,588 people, Port aux Basques, with 4,319 people, Humber Arm south, with 2,000 people, Grand Falls-Windsor, with 13,558 people, Irishtown-Summerside with 1,400 people and all other points in between.

Table 1: Population Served by the Deer Lake Regional Airport

Population	
Rural Secretariat Region	2006
Corner Brook - Rocky Harbour Region	45,730
St Anthony - Port au Choix Region	13,140
Stephenville - Port aux Basques Region	30,955
Grand Falls-Windsor - Baie Verte - Harbour Breton Region	48,608
TOTAL	138,433

Source: Economic and Statistics Branch, Newfoundland and Labrador Statistics Agency, 2007

2.2.3 **Regional Economy:**

The Newfoundland and Labrador economy is a key influence on air traffic demand and therefore overall economic impacts. In 2008 the Newfoundland economy showed a stable population (as shown in Table 2) with some real economic growth. During the period 2006-2008 the Province experienced a decline in population. This seems to have turned around with Newfoundland and Labrador's population having increased from 2006 to 2008. The population grew from 505,460 to 507,900.

Table 2: Newfoundland and Labrador Population by Year

	2001	2006	2007	2008
Newfoundland & Labrador	512,930	505,469	506,500	507,900

Source: Statistics Canada, 2009

Generally, airports support local commerce, government and recreation and industry. This is certainly the case with the Deer Lake Regional Airport where the airport provides significant economic and transportation benefits. As the airport creates linkages to the rest of the world the ability to transport people - increasingly the recreational and tourist traveller - will be of key importance.

Indeed the symbiotic relationship that exists between the airport and the communities it serves is based on the reality that not only does the airport grow as the region grows, but the region's growth is heavily dependent upon the airport's ability to improve air accessibility.

2.2.4 *Airport Infrastructure*

In the fall of 1955 the Deer Lake Regional Airport became operational with a gravel strip 4,000 ft by 200 ft. The Department of Transport lengthened the gravel strip to 5,000 feet in 1959, paved the runway and constructed a terminal in 1963 and undertook other improvements in 1975 and 1980. Eastern Provincial Airways commenced scheduled service in 1956 using Lockheed 10A aircraft and in July 1969, jet service was inaugurated using Boeing 737 aircraft.

In September 1989, a decision was made to construct a new terminal building to handle future traffic levels and to improve service for the travelling public. This terminal building was opened on July 19, 1991. Much has happened to the Deer Lake Regional Airport and the area it services since these early beginnings.

In early 2004, the Board of Directors commissioned a facility analysis study in response to the steady increase in passenger traffic and the need to improve the facilities and services to meet the needs of the traveling public. This study served as the basis to develop a terminal building design to accommodate the current and future peak hour traffic levels for both domestic and international service by more than doubling the existing building footprint to 49,700 square feet. The self-financed expansion and renovation commenced in late 2005 at a cost of approximately \$12 million.



The new terminal building opened in June, 2007 (Figure 4). It features a new dedicated international arrivals area with state-of-the-art Customs and Immigration facilities and a new domestic arrivals area with two new baggage conveyors. Five new spacious car rental counters and a new ground transportation kiosk were also added to the arrivals area.



Figure 4: Terminal (Constructed in 2007)

The new departures area was reconfigured with two new pre-board screening lanes and a new 250 seat departure lounge with three new departure gates capable of accommodating eight airlines.

A new television lounge, a new gift shop, and an internet café style area completed the expansion. The existing facility has been completely refurbished with new lighting, furnishings and finishes to match the new construction.

In addition to the terminal building renovations and expansion project, the airport constructed a new 530 space long term car parking area and enhanced the short term and rental car parking facilities at a cost of approximately one million dollars.

In 2008, the airport also completed a \$1.4 million apron expansion and taxiway improvement project.



The official Land Use Plan for the airport was prepared by Transport Canada in April 1994. The Airport Land Use Plan Review in July of 2004 was undertaken to update existing conditions at the airport. The review serves as an interim guide to future growth and development and to support a marketing strategy to attract new users and commercial operators to the airport and to formulate requirements for future development and land uses.

Figure 5 depicts the ultimate land uses and Figure 6 outlines the terminal area plan.

Figure 5: Land Use Development Plan

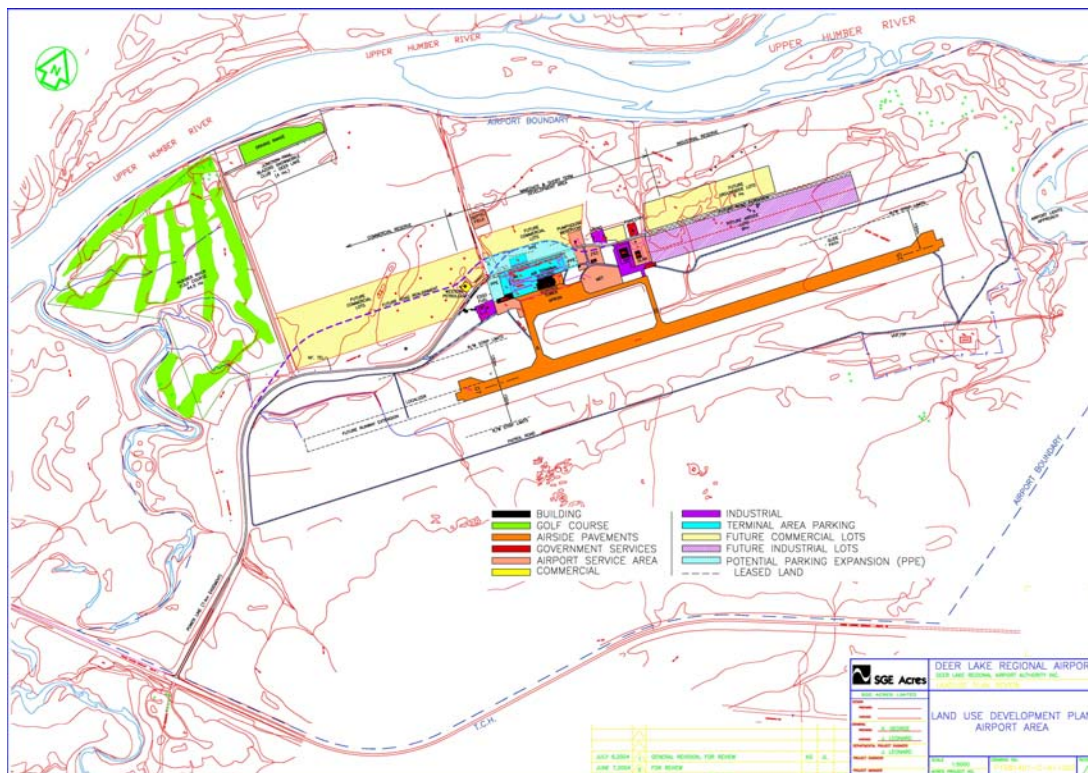
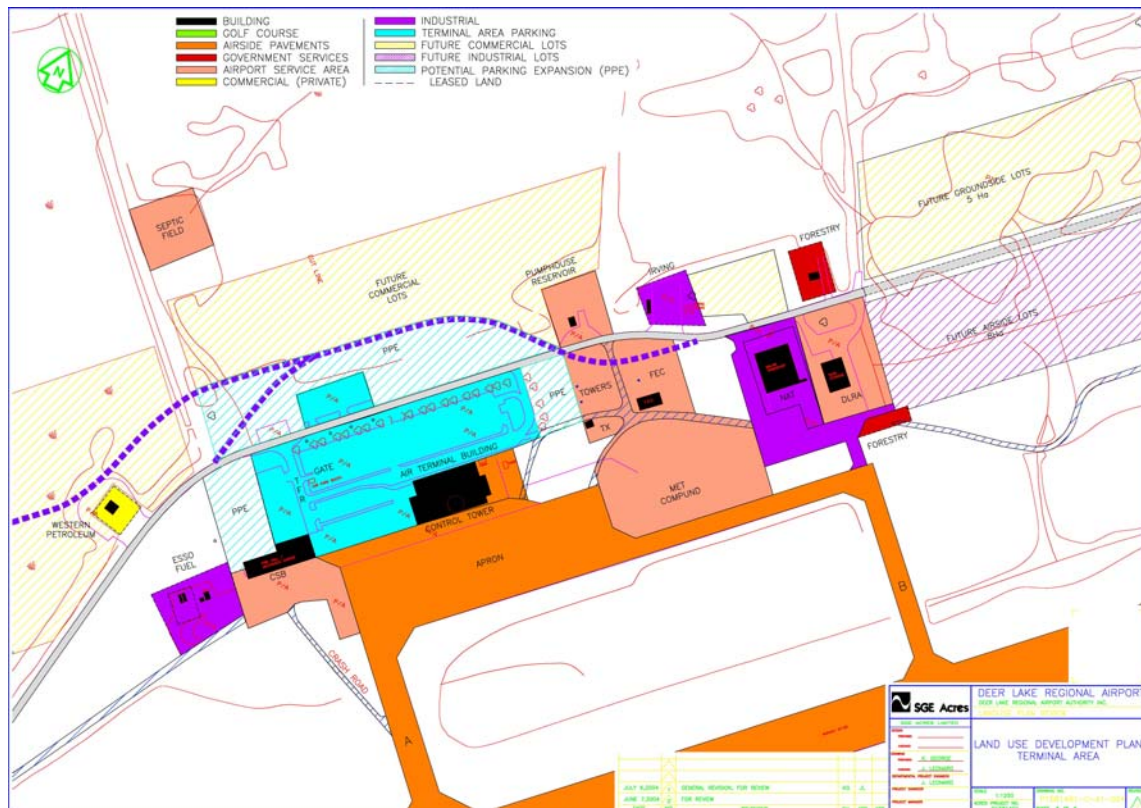


Figure 6: Development Plan – Terminal Area



Source: Airport Land Use Plan Review - Final Report, July 2004

The facilities and services provided at the Deer Lake Regional Airport in 2008 are detailed in Table 3.

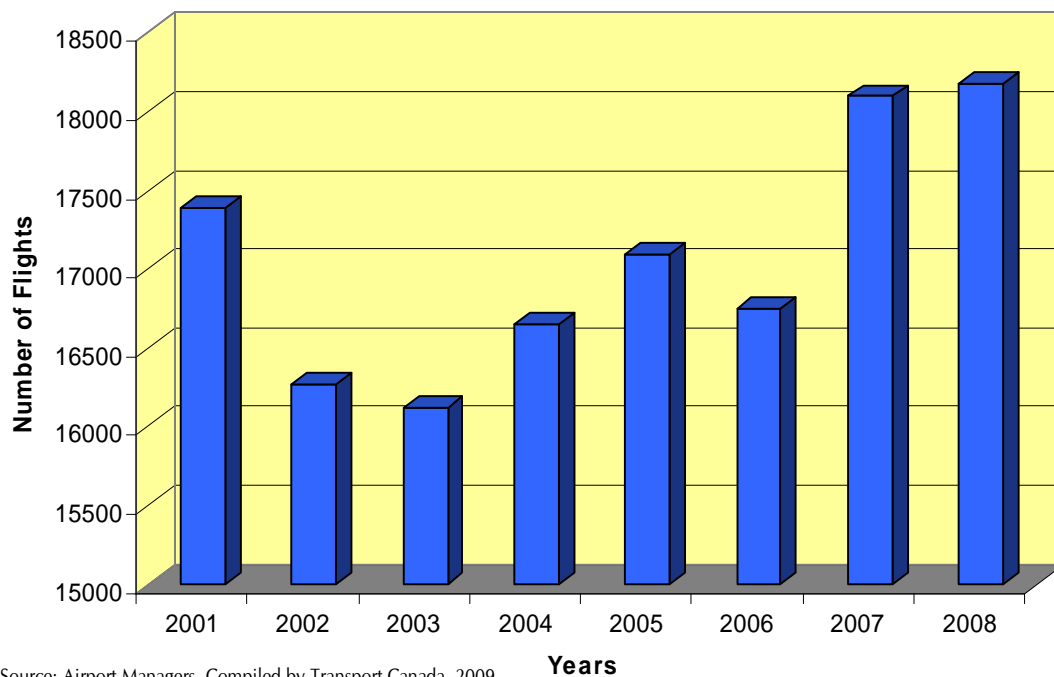
Table 3: Facilities and Services Accessed at DLRA - 2008

<p>1. Air Carriers/Air Transportation Air Canada / Jazz / EVAS Air Air Labrador Prince Edward Air WestJet Provincial Airlines Sunwing Airlines Monarch Airlines Ltd Astraeus Limited Canadian North/Flair Air Sky Service/CanJet</p> <p>2. Aviation Support Services AirConsol Aviation PAL Ground Services Tamalik NFLD & Labrador Transport (NALAIR)</p>	<p>3. Airport Administrations / Operations / Construction DLRAA NAV CANADA Spectrum Security G & M Cleaners Shannahan's -CATSA CBSA Marine Contractors John Hearn – Architect /Contractor</p> <p>4. Commercial Operations Westons Concessions Premium Enterprises Humber River Golf Club</p>	<p>5. Ground Transportation Avis Rental Budget Dollar/Thrifty Hertz National Deer Lake Taxi Star Taxi & Shuttle</p> <p>6. Tourism/Hotel/Travel Industry Visitor Information (Hotels, Travel agencies- accessed from airport)</p> <p>7. Government Air Services Province Nfld Water Bombing Dept Forest Resources & Food - Insect Spraying</p>
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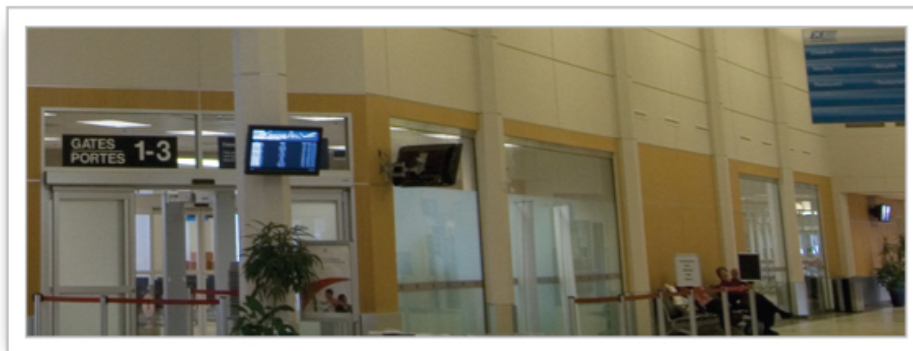
2.2.5 Aircraft Movements:

Aircraft movements recorded at the Deer Lake Regional Airport for the period between 2001 and 2008 are summarized in Figure 7. The trends indicate that the annual aircraft movements per year have fluctuated over this time period but in an increasing fashion. Aircraft movements increased by over 7.9 percent from a low in 2003 to 2008. In 2008 these aircraft movements were generated by 10 different airlines who provided services through Deer Lake Regional Airport this year. The air activity at the Deer Lake Regional Airport is of increasing importance as an air connection to the Province of Newfoundland and Labrador for both air accessibility for life in the Province as well as for the growing tourism industry.

Figure 7: Aircraft Movements Per Year



Source: Airport Managers, Compiled by Transport Canada, 2009



2.2.6 *Passengers:*

The number of passenger movements per year recorded at the Deer Lake Regional Airport from 2001 to 2008 (including enplaned and deplaned passengers) are detailed in Table 4 and illustrated in Figure 8.

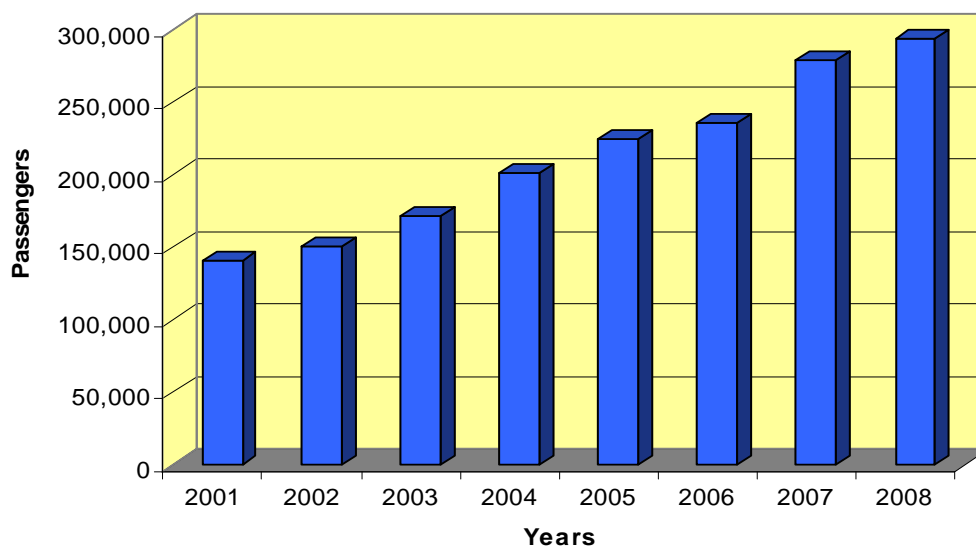
Table 4: Passenger Movements 2001 - 2008

Year	Passengers
2001	140,425
2002	150,556
2003	171,634
2004	200,961
2005	225,094
2006	235,286
2007	278,532
2008	293,847

Source: Airport Managers, Compiled by Transport Canada, 2009

Considering the challenges of accessing a predominately island market, and the shift in travel from road to air, the airline industry has never been more important to the Province of Newfoundland and Labrador. Improved air services have resulted in more passengers and as the Deer Lake Regional Airport has grown and improved its delivery of services so has the number of passenger movements increased.

Figure 8: Passenger Movements per Year



Source: Airport Managers, Compiled by Transport Canada, 2009

These figures, combined with the aircraft movements per year figures in 2.2.5 also suggest that because aircraft movement rates have not experienced the same growth rates as the passenger traffic, the passenger growth has to have been the result of better load factors and more use of larger aircraft.

Despite an important linkage between business/tourism travel by air and hotel, resort and attraction usage, these are not generally considered a direct result of airport operation. A direct linkage between hotels and airport operations exists in the area of airline flight crew overnight stays and some connecting passengers requiring an overnight stay. However the passenger travel is also notable because a large percentage of it was non-resident visits.



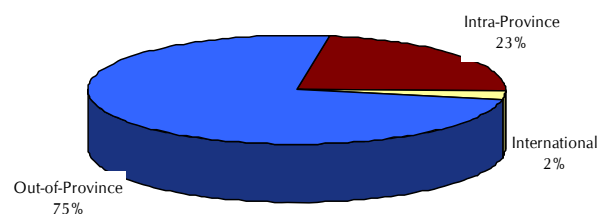
According to the Newfoundland Department of Tourism, Culture and Recreation Backgrounder Year Tourism Performance 2008, non-resident visitation to Newfoundland and Labrador increased on average by 2% per year from 2003 through 2008. According to the Province's figures the majority of these non-resident visits were for leisure purposes. This non-resident visitation translated to Western Newfoundland and Labrador having the Province's highest rate of hotel accommodation over the year.

It is important to note (as has the recent Provincial Study, Setting Direction: Study of Air Transportation, Newfoundland and Labrador, 2009) that Western Newfoundland and Labrador offers tourism opportunities year round including adventures with unique cultural, historic and world heritage resources and opportunities including hunting and fishing. These opportunities are well documented in the Province's tourism strategy and include such offerings as the Acadian influence of Port au Port, the Viking settlement at Lance aux Meadows, Gros Morne National Park, Marble Mountain, and Humber Valley Resort.



Deer Lake Regional Airport experienced a 5.5% increase in passenger movements in 2008. According to airport data and illustrated in Figure 9, over 219,000 of enplaning/deplaning passengers were travelling out-of-Province, 67,000 were travelling within the Province and over 7,000 of the passengers were travelling to or from international destinations.

**Figure 9: Passenger
Origins/Destinations**



Source: DLRAA, 2009

2.2.7 Flight Activity:

As stated earlier in this report, the DLRA is strategically located to serve a major part of the Northern Peninsula, Western and Southwestern Newfoundland, Green Bay and White Bay, as far east as Grand Falls-Windsor and all points in between. It functions as a mini hub serving areas east, west and north with direct service to St. John's, Goose Bay as well as Halifax and Toronto with connections to destinations elsewhere in Canada and beyond. Table 5 lists the air carriers operating through YDF and their respective destinations. Many of the passengers on these flights are connecting to further legs of their journeys on flights out of Goose Bay, Halifax, and Toronto. Almost thirty percent of the flights to/from YDF are provided by Air Canada and its operators, Air Canada Jazz and EVAS Air. Air Canada is generally considered the larger commercial passenger airline while WestJet and Sunwing operate flights through YDF through the summer connecting to and from Toronto or further within their network. Prince Edward Air also operates flights through YDF, offering cargo service throughout Atlantic Canada. Canadian North and Flair Air were dedicated to Northern Alberta traffic while Monarch and Altraeus would be Gatwick, UK traffic heading to Humber Valley resort. Both Provincial and Air Labrador would have flown passengers to and from St John's and Goose Bay with connections to coastal communities as well as Wabush, Sept Isles, Quebec City and Montreal. Sunwing also provided a sun destination program to Cuba during the winter.



Table 5: Air Carriers and Destinations

Air Carrier	2008 Destinations
Air Canada/Jazz	Halifax, Toronto-Pearson and beyond
Air Canada/EVAS Air (beech 1900)	St John's
Provincial Airlines	Atlantic Canada destinations including St John's & Goose Bay wt connections to coastal communities & Wabush, Sept Isles, Quebec City & Montreal
Air Labrador	Atlantic Canada destinations including St John's & Goose Bay wt connections to coastal communities & Wabush, Sept Isles, Quebec City & Montreal
Canadian North and Flair	Charters to Northern Alberta
Monarch/Astraeus	Gatwick, UK
WestJet	Connecting to & from Toronto or beyond
Sunwing (seasonal charter)	Toronto and beyond and Cuba
SkyService/CanJet	Fort McMurray and military destinations

Source: DLRAA, 2009

3. Economic Impact

3.1 Introduction

The three most common measures of the airport's economic impact on the Deer Lake area and Western Newfoundland include revenue/economic output, employment, and wages and salaries. These measures are commonly used to evaluate an airport's economic contribution to an area and include all the regular business activity of the airport as well as the spin-off activities that occur in the community beyond the airport, but which are fuelled by the airport's ongoing economic activity.

3.2 Revenue/Economic Output

Revenue or economic output is the first common measure of economic impact. In 2008 the Deer Lake Regional Airport generated an estimated \$214.7 million for the local and provincial economies as detailed in Table 6. This measure was determined by the total gross revenue from all airport related activity and includes direct, indirect and induced impact. Of this total, the business revenues (gross output) generated directly by businesses at the DLRA in 2008 are estimated to be \$87.6 million. The Air Carrier / Air Transportation sector contributed the largest component, generating an estimated \$47.5 million of direct revenue in 2008.

The direct revenues for the DLRA businesses were calculated using data provided by the business and other operations located at the airport (or providing services through and for air travel). As expected, some participants could not provide details regarding their operating revenue due to confidentiality issues. The scheduled carriers fell into this category and detailed estimates of their annual revenues were calculated using such things as numbers of outbound passengers (by destination), surveys of the fares available at random dates throughout the year and payroll figures. Other methods of revenue calculations included applying industry sector averages and FTE output averages from respondent firms to non-respondent firms.

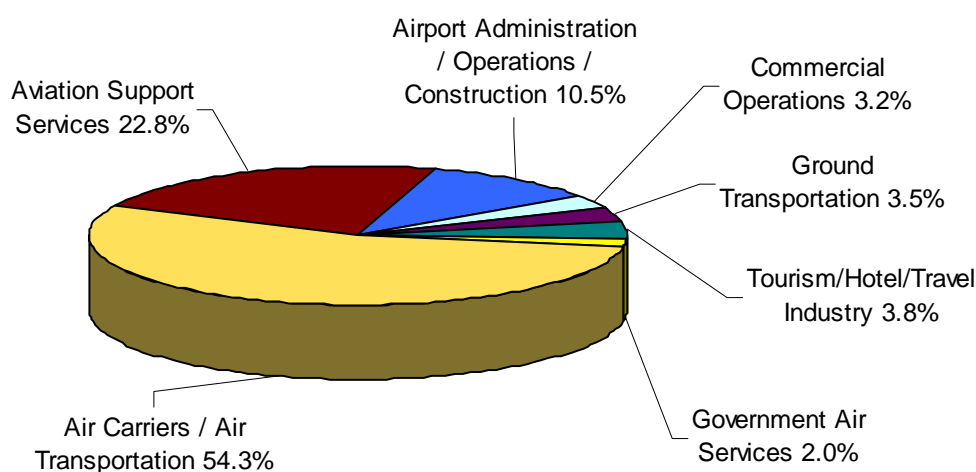
Table 6: Revenue / Economic Output

Business Type	Revenue / Economic Output	2003
Air Carriers / Air Transportation	\$ 47,573,400	NA
Aviation Support Services	\$ 19,944,300	NA
Airport Administration and Operations	\$ 9,176,800	NA
Commercial Operations	\$ 2,846,500	NA
Ground Transportation	\$ 3,046,800	NA
Tourism/Hotel/Travel Industry	\$ 3,316,900	NA
Government Air Services	\$ 1,753,190	NA
TOTAL DIRECT IMPACT:	\$ 87,657,890	\$ 23,000,000*
INDIRECT and INDUCED IMPACT	\$ 127,102,900	
TOTAL ECONOMIC OUTPUT/REVENUE	\$ 214,716,790	

* calculated using regression analysis - figure represents the sum of direct revenue only. This figure does not reflect indirect or induced airport activity.

Figure 10 compares the direct economic output for the various business types operating out of the airport.

Figure 10: Direct Economic Output by Business Type



3.3 Employment

Employment provides a second measure of economic impact. For the Study's purposes this measure is defined as the total amount of full-time employment (FTE) created by airport activity. Table 7 presents the estimated total employment impact of the airport on the Deer Lake area and the Province of Newfoundland and Labrador. In 2008, 358 direct FTE jobs existed in the Deer Lake and Western Newfoundland area due to airport activity. In order to be included as a component of direct employment, off-site employers must perform airport or aviation related duties for airport companies. Almost all of the direct employment at the airport was based at the airport, making the airport an important economic entity in its own right.

The direct employment figure was derived from the responses on the business surveys from the airport community and tourism operators. In some cases, FTE employment was calculated from the person-hours per year dedicated to airport-supported activities. Indirect and induced employment was based on applying a multiplier to the direct employment number. Employment figures are presented as full-time equivalent jobs (FTE). It should be noted that the employment figures are yearly averages and they include estimates of offsite and onsite employment related to the airport.

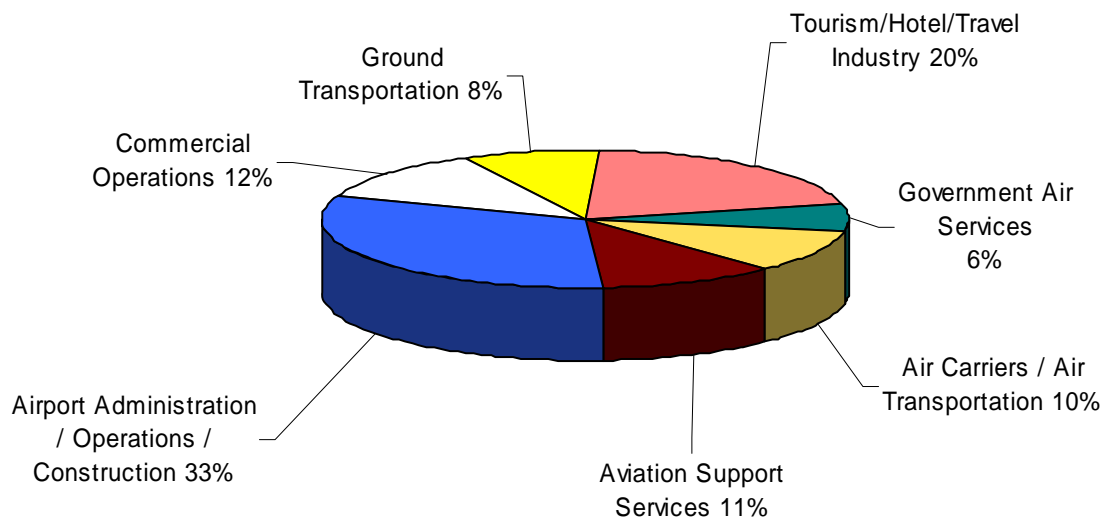
Figure 11 illustrates the direct employment by business type. Airport Administration and Operations and Aviation Support Services businesses made up the highest proportion of direct employment representing approximately 33%.

Table 7: Employment

Business Type	Employment (Full-Time Equivalents) 2008	Employment (Full-Time Equivalent) 2003
Air Carriers / Air Transportation	37	NA
Aviation Support Services	39	NA
Airport Administration and Operations	113	NA
Commercial Operations	43	NA
Ground Transportation	30	NA
Tourism/Hotel/Travel Industry	73	NA
Government Air Services	23	NA
TOTAL DIRECT IMPACT:	358	117*
INDIRECT and INDUCED IMPACT	931	
TOTAL IMPACT (employment)	1,289	

* calculated using regression analysis - figure represents the sum of direct employment only. This figure does not reflect indirect or induced airport activity.

Figure 11: Direct Employment by Business Type



3.4 Wages and Salaries

Wages and salaries provide a third measure of economic impact. This measure is defined as the total amount of wages and salaries created due to airport activity. For direct employment, the wages and salaries were based on survey data where available or Statistics Canada average hourly wages per industry. The average yearly wage in Newfoundland and Labrador in 2008 was \$38,900 and this was applied where industry data was unavailable. It should be noted that aviation and transportation support industries, nationally and provincially, have a higher average wage than the provincial average.

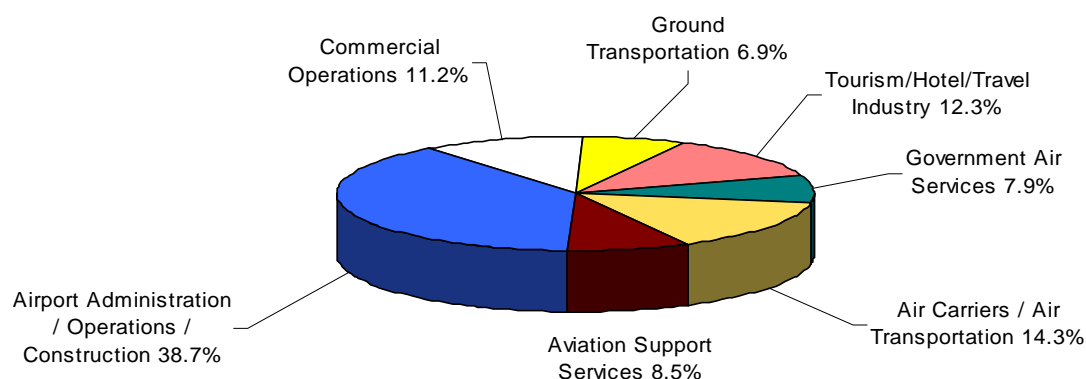
Table 8 details the wages and salaries generated by activity at the airport. Figure 12 illustrates the division of wages and salaries between different business types. Airport Administration and Operations contributed the highest proportion of wages and salaries to the direct wages and salaries total for the airport in 2008, representing 38.7% of the total wages and salaries.

Table 8: Wages and Salaries

Business Type	Wages and Salaries 2008	Wages and Salaries 2003
Air Carriers / Air Transportation	\$ 1,719,100	NA
Aviation Support Services	\$ 1,016,000	NA
Airport Administration and Operations	\$ 4,646,700	NA
Commercial Operations	\$ 1,349,200	NA
Ground Transportation	\$ 830,200	NA
Tourism/Hotel/Travel Industry	\$ 1,480,500	NA
Government Air Services	\$ 953,190	NA
TOTAL DIRECT IMPACT:	\$ 11,995,490	\$ 4,100,000*
INDIRECT and INDUCED IMPACT	\$ 21,591,900	
TOTAL IMPACT	\$ 33,587,390	

* estimated total wages and salaries earned at the airport in 2003

Figure 12: Direct Wages and Salaries by Business Type



3.5 Fiscal Impact - Taxes

As part of the economic impact to society in Deer Lake/Western Newfoundland, the impacts to government (provincial and federal) were assessed. The components of this fiscal impact include:

Commercial Property Taxes - In 2002 the total property tax paid by the DLRAA was approximately \$16,000. In 2008 the total value of property taxes paid by the DLRAA had risen to \$34,000.

Fuel Tax - Aviation fuel sold in Newfoundland and Labrador in 2008 was subject to a per litre federal excise tax as well as a \$.07 per litre provincial tax.

Personal income and consumption taxes - In order to estimate some measure of the personal income and consumption taxes (provincial and federal) generated by activity at the Deer Lake Regional Airport, the percentage of wages and salaries paid to the Province of Newfoundland and Labrador and the federal government were evaluated. Using the wages and salaries determined for this assessment, standard personal deductions in 2008, and the personal income tax rates provincially and federally in 2008, a personal income tax impact was approximated for the airport operation.

Retail Sales Tax (HST) - A second measure of the fiscal impact of the Deer Lake Regional Airport activity is the retail sales tax impact from the purchase of goods by individuals who earned wages and salaries through their employment in airport activity. Statistics Canada estimates that in Canada one third (33%) of an individual's wages are spent on consumable goods. The Harmonized Sales Tax (HST) would be applied to most purchases and therefore was divided as 8% provincial sales tax and 5% of federal Goods and Services Tax (GST). The total wages and salary (including direct, indirect and induced impacts) that generated these retail sales taxes was \$33.5 million.

Table 9 estimates some of the fiscal impact of the Deer Lake Regional Airport activity (including aviation fuel tax, personal income and consumption tax) to the Deer Lake area, the Province of Newfoundland and Labrador and the Federal Government in 2008.

Table 9: Fiscal Impact

FISCAL IMPACT COMPONENT	DIRECT	INDIRECT & INDUCED	TOTAL
Impact to Newfoundland & Labrador			
Property Taxes for Airport Lands	\$ 34,000	—	\$ 34,000
Aviation Fuel Tax/Provincial	\$ 805,000	—	\$ 805,000
Personal Income Taxes	\$ 888,648	\$1,599,566	\$ 2,488,213
Provincial Sales Tax on Personal Purchases	\$ 316,700	\$ 570,000	\$ 886,700
TOTAL Newfoundland & Labrador IMPACT	\$ 2,044,348	\$ 2,169,566	\$4,213,913
Impact to Federal Government			
Aviation Fuel Tax/Federal Excise Tax	\$ 1,265,000	—	\$ 1,265,000
Personal Income Taxes	\$ 1,573,700	\$ 2,591,000	\$ 4,164,700
GST on Personal Purchases	\$ 197,900	\$ 356,300	\$ 554,200
TOTAL FEDERAL IMPACT	\$ 3,036,600	\$ 2,947,300	\$ 5,983,900
TOTAL FISCAL IMPACT	\$ 5,080,948	\$5,116,866	\$ 10,197,813

The total personal income and consumption taxes and aviation fuel tax remitted by airport activity in the Province of Newfoundland and Labrador amounted to over \$5.0 million. The total property tax, personal income and consumptive taxes and aviation fuel tax (total fiscal impact to all levels of government) remitted by airport activity amounts to over \$10.1 million. This was made up of \$5.0 million in direct property, income and consumption taxes and another \$5.1 million in indirect and induced taxes.



Source: [http://en.wikipedia.org/wiki/Deer_Lake_Airport_\(Newfoundland\)](http://en.wikipedia.org/wiki/Deer_Lake_Airport_(Newfoundland))

4. Comparisons and Conclusions

The economic impact of the Deer Lake Regional Airport continues to grow both locally and provincially. In 2003 airport activities contributed \$23 million output/revenue and identified 117 direct full-time equivalent jobs. In 2008, the airport activities contribution had grown to over \$214.7 million in economic output/revenue and accounted for approximately 1,289 full-time equivalent jobs, through direct, indirect and induced employment, resulting in \$33.5 million in wages and salaries.

This 2008 study of the total impact of the Deer Lake Regional Airport measured the three types of economic impact: direct, indirect and induced. The sum of these three measurements equals the total economic impact of the airport in terms of the three indicators - revenue/economic output, employment and wages and salaries. Table 10 summarizes the findings of the 2008 economic impact assessment for the DLRA.

Table 10: Summary of DLRA Economic Impacts

	Employment (FTE)	Wages (\$M)	Business Revenue (\$M)
Direct	358	11.9	87.6
Indirect and Induced	931	21.5	127.1
TOTAL	1,289	33.5	214.7
2003 results	117*	NA	23.0**

* calculated using regression analysis - figure represents the sum of direct employment.

**calculated using regression analysis - figure represents the sum of direct, indirect and induced revenues

Generally airports support local commerce, government, tourism and industry. Airports provide significant economic and transportation benefits and become an integral part of the local, regional and national economies. This is certainly the case in DLRA where the airport has been shown to provide significant economic and transportation benefits. The Deer Lake Regional Airport is a strong economic driver for the communities (local and beyond) that it serves. The DLRA creates employment and generates revenues that ripple through the local economy. Indeed the symbiotic relationship that exists between the airport and the communities it serves is based on the reality that not only does the airport grow as the region grows, but the region's growth is heavily dependent upon the airport's ability to improve air accessibility.

This is one of the distinct advantages for communities that are within the reach of efficient air transportation. By facilitating the activity of industrial and service sectors - connecting them to global economic activity - airports play a key role in a community's ability to attract and retain business. As the Deer Lake Regional Airport grows, so does the region.

Appendix A Study Approach - Methodology

A.1 Study Approach

A.1.1 Introduction

The purpose of this section of the report is to outline the methods used in the Deer Lake Regional Airport Economic Impact Study - 2008 in order to calculate the airport's economic impact.

This study evaluated the economic impact of the airport by first surveying the businesses and commercial activity that physically takes place at the airport or where aviation comprises at least a portion of total business activity. The data gathered from the surveys was combined with other information sources to develop estimates of the total economic impact to the Deer Lake /Western Newfoundland area and the Province of Newfoundland and Labrador in terms of:

- Economic output
- Employment
- Wages and salaries
- Fiscal Impact - taxes

A.1.2 Methodology

The primary data collection tool were survey questionnaires. Surveys were prepared for each of the key impact groups: airport businesses/tenants, targeted local hotel and resorts, local travel agencies and cab companies. A cover letter was prepared on behalf of the DLRAA outlining the purpose and importance of participating in the survey.

Approximately fifty (50) surveys were distributed by mail, fax and email. Follow-up calls were made and some responses were phoned in. Information was obtained for 72 percent of respondents and over 80 percent of DLRA tenants. In order to protect the confidentiality of the survey respondents, figures were amalgamated where necessary.

A.2 Study Area

The economic impacts were analyzed for the areas that derive a benefit from the airport or airport related activity and include the Northern Peninsula, Western and Southwestern Newfoundland, Green Bay and White Bay, and as far east as Grand Falls-Windsor, the Province of Newfoundland and Labrador and Canada.

A.3 Economic Impacts Defined

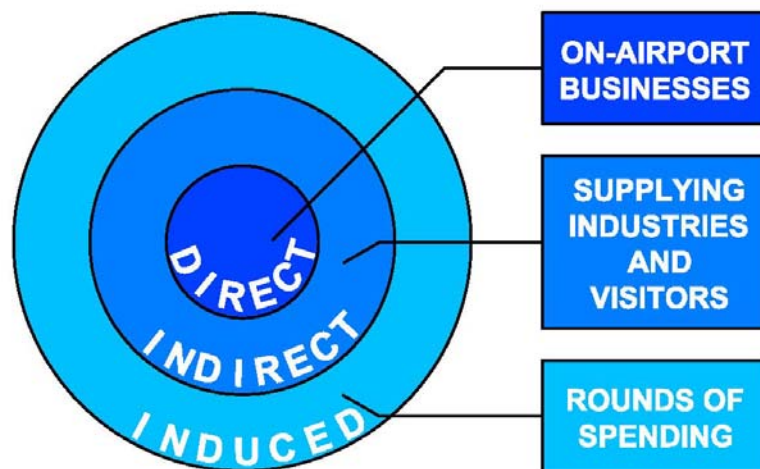
The total economic impact of the airport is the sum of related direct, indirect and induced impacts. Indirect and induced impacts are derived from direct impacts through the "multiplier" effect. The types of economic activity related to the airport can be divided into three categories:

- a) *Direct economic impact:* The direct economic impact of the airport is the impact generated on-site, including the employment, payroll, local expenditures and taxes of all businesses or firms located at the airport or for which the airport or its activities constitute at least a portion of the firm's business activity. This includes the airlines, terminal concessions, general aviation businesses, ground transportation providers, government agencies and other businesses. These enterprises have a direct impact on the economy of the region served by

the airport. These businesses or firms can be divided into two groups: those with primary linkages to the airport (generally aviation related firms) and those with secondary linkages (and therefore less directly aviation related firms).

- a. *Primary linkage business* - include Air Carriers, General Aviation companies and Air Support Services.
- b. *Secondary linkage business* - include such business as commercial services, ground transportation and tourist/travel/hotel industry.

Figure 13: Relationship Direct/Indirect/Induced Impacts



- b) *Indirect economic impact:* The indirect economic impact of the airport is the off-airport impact resulting off-site and includes the employment, payroll, expenditures, and taxes of supplying industries that provide the services, materials or machinery to support on-airport businesses, such as wholesale food distributors, office supply firms and jet fuel suppliers and businesses serving visitors arriving at the airport such as hotels, restaurants, rental car companies, travel agencies and taxi companies. It is a measure of the value of goods and services purchased by the airport from other firms, in terms of the employment and revenues resulting from their operations in support of airport operations. This economic activity is accounted for by multipliers (see note re: multipliers at end of section) which attempt to quantify the interactive linkages within the local economy impacted by direct activity at the Deer Lake Regional Airport.
- c) *Induced economic impact:* The induced economic impact of the airport is the off-airport impact above and beyond the combined direct and indirect impacts of an economic activity where successive rounds of spending, known as the “multiplier” effect, create additional income. The jobs sustained by the direct and indirect airport activity generate an increase in household income. This drives the induced economic impact that results from an increase in purchases at local businesses. For example, the auto mechanic or barbershop whose services are in demand by an employee of an airport firm benefits from the disposable income of

airport workers. As in the case of calculating the indirect benefits, multipliers are used to identify induced activity.

- d) *Multiplier Effect:* The “multiplier” effect is the process by which re-spending of income from direct and indirect activities results in additional income within the area. A majority of the take home income earned by employees is spent on local goods and services. This spending becomes new income for others in the regional economy, who in turn, re-spend some portion of what they earn. Successive rounds of spending create more jobs and increase business sales, income and tax revenue.

The multipliers used to calculate indirect and induced economic impacts were supplied by Statistics Canada. The outputs of the multipliers are estimates of total revenues, or economic outputs and employment generated throughout the area, by the commercial activity conducted by the airport operator, its tenants and others at the airport. Multipliers are derived from economic and statistical models of the general economy of the area.

Appendix B Sample Survey Questionnaire



The Deer Lake Regional Airport has retained Hatch Mott MacDonald to conduct a 2008 Economic Impact Study to quantify and document the economic impacts of the airport. Please assist us by completing the following brief survey with your information for the 12 month period December 1st, 2007 to November 30th, 2008 or your fiscal year most closely matching this time period.

All data will be treated with the strictest confidence and will not be released in a disaggregated form to any individual or agency. When we report the results, industry data will only be displayed in an aggregate form so that the figures from any individual firm cannot be revealed.

Please answer the questions as completely as you can. If you are not entirely certain of an answer, please give your best estimate – your estimate will be much more accurate than our best guess.

Please return your completed survey by Tuesday, April 14, 2009.

- By email to janice.brewster@hatchmott.com
- By fax to 857-8989

Please feel free to direct any questions pertaining to this survey questionnaire or our study to either:

Janice Brewster – Office Administrator
Hatch Mott MacDonald
Moncton, NB
Phone: 857-8708

Jamie Schwartz – Airport Manager
Deer Lake Regional Airport
Deer Lake, NL
Phone: 709-635-3601

General Information

1. Name of Firm, Contact Person, and Telephone Number:

2. Please indicate letter of classification that best describes your firm's activities:
 - a) Air Carrier – regularly scheduled passenger or charter services;
 - b) General Aviation (charter services, corporate aviation, private operators);
 - c) Air courier services;
 - d) Government Air Services (medivac, water bombing and forest spray program);
 - e) Air Support Services (customs, couriers & Freight forwarders, flight catering services, re-fuelling services, ground support, maintenance & shipping/cargo);
 - f) Airport Operations and Administration (DLRAA, NAVCan, CATSA & other related government functions);
 - g) Commercial Services (all retail and personal service businesses operating at the airport);
 - h) Ground Transportation (long/short term parking, car rental, bus transportation/taxi services);

- i) Tourist/Hotel Industry (travel agencies, tour operators, hoteliers, Marble Mountain Ski Resort, Gros Morne National Park & other operators providing a service to passengers);
- j) International Tourism Industry (Humber Valley Resort, other resort developments);
- k) Mobile Work Force (individual commuting to work outside the Province);
- l) Non-commercial land-lease activity (Humber River Golf Club).

Employment and Expenditures

We are tracking the impact from that portion of **your firm's business activity which is related to the presence of the Deer Lake Regional Airport**. Please round all financial data to the nearest \$1000.

3. Employment & Labour Expense – 2006

- a. How many employees do you have at the airport – please estimate in full-time equivalents (e.g. 1 part-time workers @ 20 hours/week = 0.5 full-time equivalents) _____
- b. Do you have other employees off the airport who are integral to your airport operations – how many? _____
- c. *For Airlines only* – How many staff on each flight? _____
- d. Approximate annual payroll at the airport including all employee benefits (very rounded estimates will do) _____

4. Total Operating Expenditures for goods and services but not including annual payroll and employee benefits (again very rounded estimates would suffice). _____

5. Total Capital Expenditures for building or construction in 2008 (Dec.1/07-Nov30/08) (again very rounded estimates would suffice) _____

General Comments:

Please provide any comments you might like to add regarding the value of the Deer Lake Regional Airport to the community and/or its economic impact upon the local economy.

Thank you very much for your time and information



**EIA propels the Edmonton Metro Region
economy, generating \$3.2 billion
in economic output and 26,000 jobs.**



EIA – OUR IMPACT

Edmonton International Airport (EIA) is an economic powerhouse. That is EIA's job: to drive the Edmonton Metro Region's prosperity through aviation and commercial development. Our runways connect people and products to the rest of the world, spurring trade and tourism. Our ample land base is sprouting numerous aviation-related and non-aviation commercial developments.

This gathering of entertainment, e-commerce, retail, hospitality, cargo/logistics, bio-pharma, light manufacturing and many other industries is propelling new jobs, economic diversification and a destination in and around EIA – we call it Airport City.

All of these activities combined **generate a total \$3.2 billion in annual economic output. EIA supports 26,000 full-time jobs in the region, including jobs located directly at the airport and spin-off jobs. In 2018, EIA will add up to 2,000 jobs at the airport through new developments such as the 100-store Premium Outlet Collection, boosting EIA's total economic output to an expected \$4 billion annually.**

As our economic base expands, we care about our social and environmental impacts. We are committed to sustainability. EIA achieved LEED gold certification for our expanded terminal and Central Tower. We are aligning with municipal, provincial and federal government sustainability goals and strategies as we plan future developments and strive toward carbon-neutral growth.

By developing in a way that promotes sustainability, EIA will continue driving EIA's economy over the long term.

From tourists visiting Edmonton flying in from Europe on our non-stop international services to Atlantic Canada lobsters moving through EIA to Asia, to new tech start-ups, EIA is moving our region's economy.



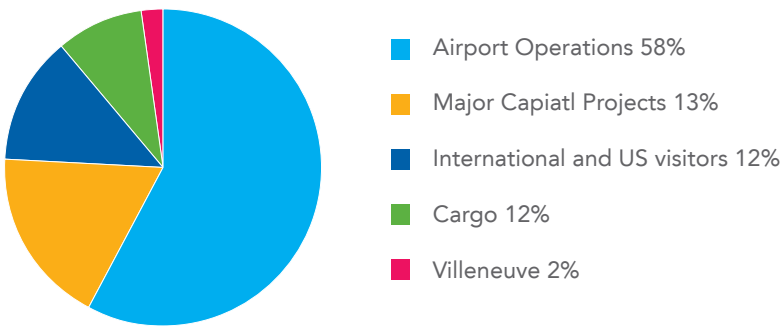
OUR IMPACT – THE BIG PICTURE

EIA’s economic benefit to the region and Alberta is assessed by reviewing the employment generated and supported by the following:

- EIA’s day-to-day operational impacts
- International and US visitors arriving at EIA
- Air cargo exported from EIA
- Major construction projects on EIA lands

General aviation activity at Villeneuve Airport is also an important contributor to the local rural economy and included in the overall economic impact assessment.

	ECONOMIC OUTPUT	GDP	LABOUR INCOME	FTEs
Edmonton Airports Total value (direct, Indirect, induced)	3.22 billion	2.82 billion	2.04 billion	26,000
Visitor Impacts	432.00 million	423.93 million	304.66 million	5,610
EIA Air Cargo Impacts	286.71 million	222.46 million	153.41 million	1,900
Villeneuve Impacts	61.86 million	30.59 million	19.80 million	235
Combined Operational Impacts	1.86 billion	1.68 billion	1.21 billion	14,045
Combined Capital Projects Impacts	588.38 million	478.63 million	363.29 million	4,275



AIRPORT 24/7

EIA runs 24/7, and it takes many people to keep it running smoothly. More than 5,600 people are employed directly at EIA by dozens of different companies and organizations. These jobs include security, ground handling, airport maintenance, retail and food services, air traffic control and many others.

Over 1,000 of the workers at EIA are employed in accommodations, trucking, parking, freight forwarding, car rentals, couriers, travel services and packaging/crating.

Workers at EIA live in and contribute to communities across the region with over 41 per cent of employees living outside of the City of Edmonton. For example, over 14 per cent of EIA employees live in the City of Leduc.

Salaries and wages from direct employment at EIA and VA totals \$398 million. When spin-off jobs across the region are factored in, labour income is over \$1.2 billion.

Indirect and induced activity shows how direct expenditures “ripple” through the economy. The measure is sometimes referred to as the multiplier effect. For example, a metal fabricator in the Nisku Business Park makes parts that are assembled by another firm in Leduc County for a drilling rig system that is exported to the North Sea. Employee salaries at the metal fabricator are indirect impacts. When these employees shop or attend an Edmonton Eskimos game, these expenditures are induced impacts.

CARGO EXPORTS

EIA's cargo services and support operations give Alberta companies quick access to markets across North America, Europe and Asia. Exports shipped from EIA contribute \$286.7 million to Alberta's total economic output. Machinery, boilers, mechanical appliances, engines and agriculture products make up a large portion of exports through EIA.

A Boeing 767-300 ER fully loaded with Alberta products at EIA creates two-person years of employment and contributes \$285,000 to the province's economic output.





Alberta *Honey* to Asia

Safely produced high-quality honey from Alberta is in high demand in Asia. EIA is able to ship a lot of honey through its Asian charter cargo services. This increased access to an important market supports local producers and further growth in Alberta's vital agricultural sector.

Boosting *Atlantic* Canada fisheries

EIA's international cargo network is a boon to Canada, as well. For example, lobster is shipped from Halifax to EIA, where it is then shipped to Asia. With EIA's cargo services, Atlantic Canada fisheries have a new way to match their supply with world market demand.



INTERNATIONAL TOURISM

Tourism is an important contributor to the Edmonton Metro Region economy. In 2016, EIA welcomed 163,157 visitors from the US and 73,609 international passengers. These tourists to Edmonton and Alberta produced \$432 million in economic output.

Over 5,600 direct and spin-off jobs were produced from US and international travellers to our region and Alberta.

A single transatlantic flight on an Airbus 330-200 with 250 European visitors landing at EIA generates over \$530,000 of economic benefits to the tourism sector in the Edmonton Metro Region and others areas in Alberta. Each flight represents seven full-time jobs.

Over a third of expenditures are for accommodations and about a quarter are for food and beverage. Retail purchases and car rentals are also significant.

One of Edmonton's **showcase events attracting visitors from across the world is the Edmonton International Fringe Festival. Take, for example, a family of four flying with KLM on the Edmonton-Amsterdam non-stop visiting the 2017 festival, August 17-27.**

The family would have spent \$4,250 in the Edmonton Metro Region on hotels, restaurants, shopping, entertainment and transportation. The direct and spin-off impacts of the visit are more than \$7,250.





Up to 2,000 more jobs
at EIA in 2018, *boosting economic
impact* to an expected
\$4 BILLION ANNUALLY.





AIRPORT CITY

EIA's Airport City is a rapidly expanding centre of organizations building new facilities on EIA lands, driving innovation, new jobs, economic diversification and prosperity for the Edmonton Metro Region. Over the past four years, EIA has attracted \$750 million in investment.

In 2017 alone, new commercial development at EIA and VA generated over \$588 million in investment and 1,000 construction employment. New development at EIA and VA spurred 4,275 direct jobs and 1,000 spin-off jobs in 2017.

Announced and underway projects in 2017 included:

- Premium Outlet Collection – 100-store shopping centre just west of QEII
- Costco – 154,000-square-foot warehouse outlet that will include a gas station and liquor store
- Fairfield Inn By Marriott – 135 rooms and suites
- Century Mile Racing Entertainment Centre – horse racing and entertainment centre
- Aurora Sky – 800,000 square-foot medical cannabis production facility, the world's largest and most advanced

In 2018, EIA's total economic output is expected to reach \$4 billion with the addition of 2,000 jobs spurred by new developments such as the Premium Outlet Collection.



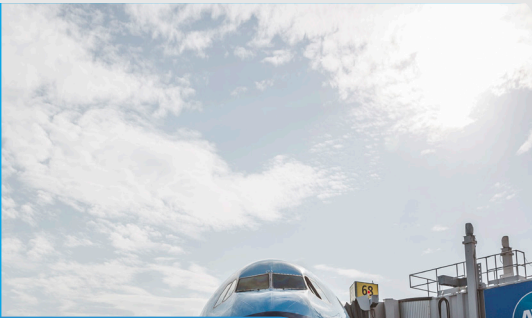
YOU CAN GO PLACES. OR YOU CAN STAY.

ROSI TRAM

- Weste

AEROTERM

- One of the newest members of our cargo village
- Huge international company
- Toronto include



STARS AIR AMBULANCE & ALBERTA HEALTH SERVICES

- Moved to EIA in 2013
- In addition to air ambulance and transportation, there is an advanced triage centre on site to treat life-threatening injuries.
- Access to 65th Avenue critical for AHS to be more efficient in serving our region



ALBERTA AEROSPACE & TECHNOLOGY CENTRE

- Canadian North 737 simulator
- Canadian Helicopters helicopter flight training device
- Aerium Analytics - first unmanned aerial vehicle operations at an airport in the world
- Promethean Labs - low-orbit satellites to study emissions and climate

EIA TERMINAL

RORA SKY

world's largest and most advanced

ALBERTA MOTOR SPORT ASSOCIATION

opening late 2018
new test track and simulation trainer
100,000 square-foot facility for driver education

1d spa
Airport City



VILLENEUVE AIRPORT

Villeneuve Airport is the region's primary general aviation airport, complementing EIA. Over 20 businesses call the airport home, including corporate services, flight training, recreational aviation, helicopter services and aviation maintenance.

Villeneuve Airport also hosts the Edmonton Airshow. In 2017, over 40,000 people attended.

The airport's total economic output is nearly \$62 million with 235 direct and spin-off jobs.

ABOUT THE REPORT

This document is an overview of an economic impact study by Chris Lowe Planning and Management Group, commissioned by EIA. The economic impacts of EIA and Villeneuve are grouped by direct, indirect and induced, as defined by Statistics Canada's System of National Accounts for Alberta.

Direct activity refers to airport-related activity of those firms, industries or government service providers for which aviation or airport activity is a portion of total business activity. Indirect economic activity refers to activity generated in a sector that supplies raw materials and other inputs to businesses associated with direct economic activity.

Induced economic activity refers to economic activity generated by individuals employed in the direct or indirect activity sectors who spend a portion of their household income on consumer goods.

Due to data availability at the time the report was prepared, cargo and visitor numbers are based on 2016 data.



Technology

The Alberta Aerospace and Technology Centre at EIA expanded by adding a number of advanced technology companies in 2017. New partners included Promethean Labs, a satellite technology start-up; Aerium Analytics drone operations (including the Robird robotic falcon); Absolute Combustion; Alberta Centre for Advanced Micro and Nano Technology Products; and the Alberta Motor Transport Association, who will build a new training facility, driving simulator and track.



AATC
ALBERTA AEROSPACE
& TECHNOLOGY CENTRE



CONTACT US

For more information about EIA, visit flyeia.com.

For a copy of the full report, email communications@flyeia.com.



FINAL REPORT

Fort McMurray International Airport (YMM) Economic Impact Study 2016



PREPARED FOR
Fort McMurray Airport Authority

PREPARED BY
InterVISTAS Consulting Inc.

15 August 2017

Executive Summary

Fort McMurray International Airport (YMM) contributes significantly in both supplying and facilitating economic prosperity in the province of Alberta. This study examines the current economic impacts generated from the airport's operations and development activities, based on a review of the business in 2016. Aviation is a major economic generator and airports play a significant role within the industry. Air transportation also facilitates the business of other sectors of the economy. The industry facilitates employment and economic development in the national economy through a number of mechanisms, including trade in goods and services, investment, tourism and productivity.

Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project, or a change in government policy or regulation. In this case, economic impact refers to the economic contribution associated with the ongoing activities of Fort McMurray International Airport (YMM). The three major components of economic impact are classified as *direct, indirect and induced impacts*.¹ Together, they provide a snapshot of how the operations of the airport can impact the local and provincial economy.

YMM is an economic generator for the community of Fort McMurray and Alberta. The airport's impact is reflected in the 760 direct full-time equivalents (FTEs)² of employment that are supported or facilitated by the airport and the \$46 million in direct wages paid. Including indirect and induced impacts, YMM generated a total of 1,580 FTEs of employment and \$96 million in total wages throughout the province in 2016.



The economic impact of Fort McMurray International Airport includes 760 direct FTEs of employment and \$46 million in direct wages in 2016.

¹ Direct impacts account for the economic activity of the target sector itself. Indirect impacts are those that result because of the direct impacts, which involve employment in downstream industries that arise from the presence of YMM. Induced employment is generated from expenditures by individuals employed directly or indirectly by the airport.

² FTE = full-time equivalent of employment. For purposes of this study, one full-time equivalent of employment corresponds to 1,832 hours of work annually. See **Appendix C** for further details.

Ongoing Economic Impacts

The current economic impact of YMM, which includes the impact related to the airport's ongoing operations, is summarized in **Figure ES-1**.³ *Direct* economic impact measures the employment and economic impact directly associated with the operations of the airport. This includes employment of all tenants located at YMM and also relevant employment of firms that are located off airport. *Indirect* and *induced* impacts are multiplier impacts in the wider economy stimulated by the airport's activities (e.g., other businesses that supply goods and services to the airport and spending by airport employees). The multiplier impacts are derived from Alberta Treasury Board and Finance, which is based on Statistics Canada data.⁴

Emphasis is placed on the direct economic impacts as these are based on data from the employer survey and are clearly identifiable.

The *direct* impacts of YMM in 2016 are estimated to be 760 *direct* FTEs or person years of employment, earning approximately \$46 million in *direct* wages. Direct employment generates \$78 million in *direct* GDP and \$193 million in *direct* economic output annually.

Total impacts are calculated by adding together the *direct*, *indirect* and *induced* impacts. Including indirect and induced multiplier impacts, current economic impacts of YMM include a *total* of 1,860 jobs or 1,580 FTEs. *Total* wage of all employees amounts to \$96 million in wages. Furthermore, YMM's operations contributed an estimated \$170 million and \$354 million in *total* GDP and *total* economic output, respectively, to the provincial economy.

Ongoing Economic Impacts of YMM

Annual Direct Impacts:

- 900 jobs
- 760 full-time equivalents
- \$46 million in wages
- \$78 million in gross domestic product (GDP)
- \$193 million in economic output

³ The results of this study are based on a review of 2016 operations.

⁴ Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity.

Figure ES-1:
Annual Total Ongoing Economic Impact of Fort McMurray International Airport (YMM) Operations, 2016

Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	Jobs	FTEs			
Direct	900	760	46	78	193
Indirect	660	560	37	62	109
Induced	300	260	13	31	52
Total	1,860	1,580	96	170	354

Note: Totals may not sum due to rounding.

Annual Tax Contributions

YMM is also an important generator of taxation revenues to all levels of government. Total taxes paid on an annual basis, by airport employers and employees, are estimated at nearly \$22 million per year, with the remaining \$3.5 million paid by air passengers. The total estimated tax contribution of YMM amounts to roughly \$25 million.

The majority of taxes accrue to the federal government at 66% overall, while the provincial government receives 19% of tax revenue generated by YMM. The municipal government also benefits from YMM through the collection of property taxes amounting to over \$4 million paid by YMM and its tenants.

Figure ES-2 provides a summary of the taxes collected.

Annual Tax Impact of YMM

Total Tax Contribution:

- \$25 million

Federal Government:

- \$17 million (66% of total)

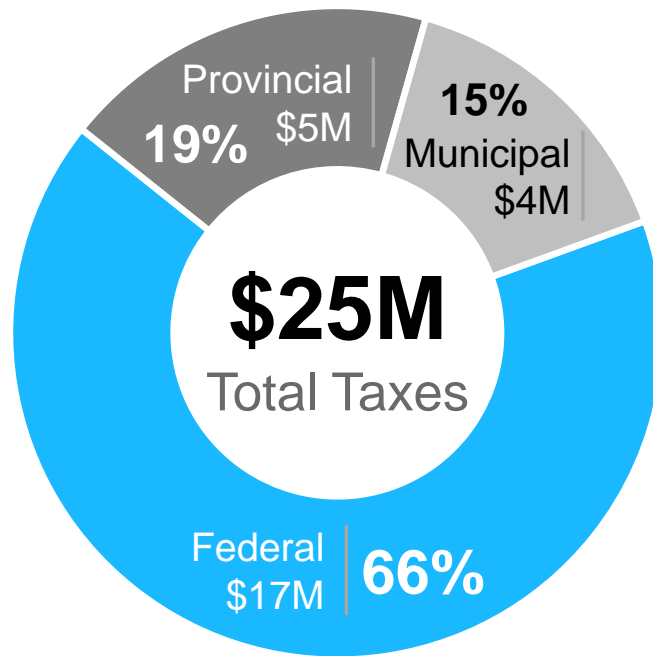
Provincial Government:

- \$5 million (19% of total)

Municipal Government:

- \$4 million (15% of total)

Figure ES-2:
Annual Estimated Tax Revenues of Fort McMurray International Airport (YMM)
by Level of Government



Note: Taxation impacts are based on 2016 tax rates. Total may not sum due to rounding.

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1 Introduction

Fort McMurray International Airport (YMM) commissioned Inter VISTAS Consulting Inc. to conduct an economic impact study of its current operations in Alberta. The information and analysis provided in this report serves as an update to the previous impact study conducted in 2014.⁵

Airports make substantial contributions to regional economies. They facilitate the movement of people, goods, and services throughout the nation and the world, allowing the economy to operate more efficiently. Airports also provide vital links to economic opportunities locally and abroad. For example, Fort McMurray International Airport (YMM) facilitates the movement of a significant transient work force to remote oil and gas operations in the Regional Municipality of Wood Buffalo (RMWB). The airport and associated air transportation also serves to bring in visitors from both the province and across Canada who spend money on accommodation, food, entertainment and other items. Fort McMurray International Airport (YMM) itself is a center of economic activity, supporting the activities necessary to provide passenger and cargo air travel.

Economic impact studies are a critical tool in communicating the importance and role of an airport and the local community. While economic times have been challenging in Fort McMurray during recent years, it is indeed a crucial time to consider the benefits and air access that Fort McMurray International Airport (YMM) continues to provide to residents, visitors and transient workers in the region.

1.1 Fort McMurray International Airport (YMM)

Fort McMurray International Airport (YMM) is located approximately 13km south east of the City of Fort McMurray. It provides scheduled passenger services to five domestic locations across Canada including: Calgary, Edmonton, Fort Chipewyan, Toronto and Vancouver.⁶ Providing these services, alongside others as needed (e.g., charter flights), are the following carriers/operators: Air Canada, WestJet, McMurray Aviation and Northwestern Air.

Fort McMurray International Airport (YMM) was first incorporated as an Airport Authority in 2009, with the first Airport Authority Board created in 2010. Thus the Fort McMurray Airport Authority (FMAA) was formed, and the acquisition of the airport from the municipality was made.⁷ The airport enjoyed considerable passenger growth in the following years, which coincided with the growth of the oil and gas industry, and necessitated the construction and completion of a new passenger terminal in 2014.⁸ The new terminal provides critical passenger capacity and key infrastructure including aircraft bridges, parking stands, baggage carousels and space for additional concessions and lounge space.

⁵ The 2014 study was completed by SNC Lavalin, which was based on 2013 operations.

⁶ <http://www.flyymm.com/flights/destinations>

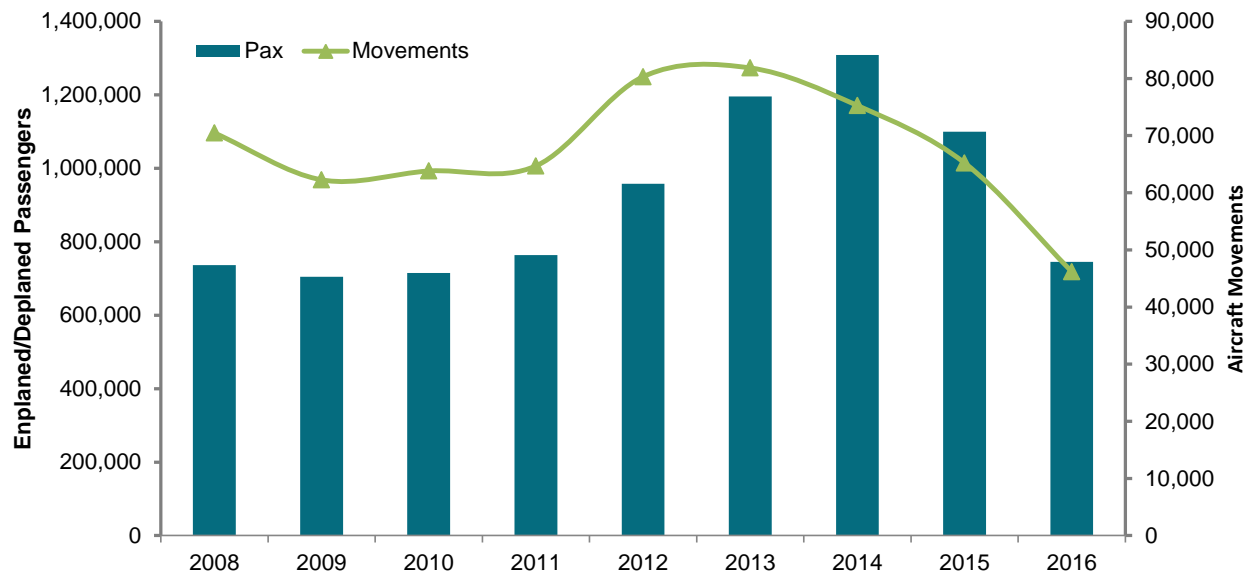
⁷ <http://www.flyymm.com/about-ymm/our-history>

⁸ <http://www.flyymm.com/about-ymm/new-terminal>

1.2 Passenger Traffic

Figure 1-1 illustrates the volume of passenger traffic and number of aircraft movements at Fort McMurray International Airport (YMM) between 2008 and 2016. The airport enjoyed five consecutive years of growth between 2010 and 2014 before encountering a declining trend in the years following. Aircraft movements have followed a similar trend between 2008 and 2016, with declines observed following the drop in oil prices and the uncontrolled wildfire in 2016.

Figure 1-1:
Total Enplaned/Deplaned Passenger Traffic & Aircraft Movements at Fort McMurray International Airport (YMM), 2008-2016



Source: Fort McMurray Airport Authority

1.3 Local and Provincial Industry and Economy

Fort McMurray resides within the Regional Municipality of Wood Buffalo (RMWB), which is an expansive region covering approximately 61,800 square kilometers. The region is home to considerable oil and gas operations, but also offers a wide range of activities for visitors to enjoy such as hiking, fishing, hunting, canoeing/kayaking northern lights, snowshoeing, WildPlay Parks and oil and gas field tours.⁹

Figure 1-2:
Regional Municipality of Wood Buffalo



Source: Regional Municipality of Wood Buffalo

In 2016, the Forestry, Fishing, Mining, Quarrying and Oil and Gas industry accounted for over a quarter of all employment in the Wood Buffalo-Cold Lake region (21,100 employees).¹⁰ The next largest industries include Trade (10,100), Construction (8,200), and Health Care and Social Assistance (7,100). With the price of oil hovering around \$50 throughout 2016, the construction and rapid growth observed in previous years has now steadied, with oil and gas companies opting to maintain the status quo of current

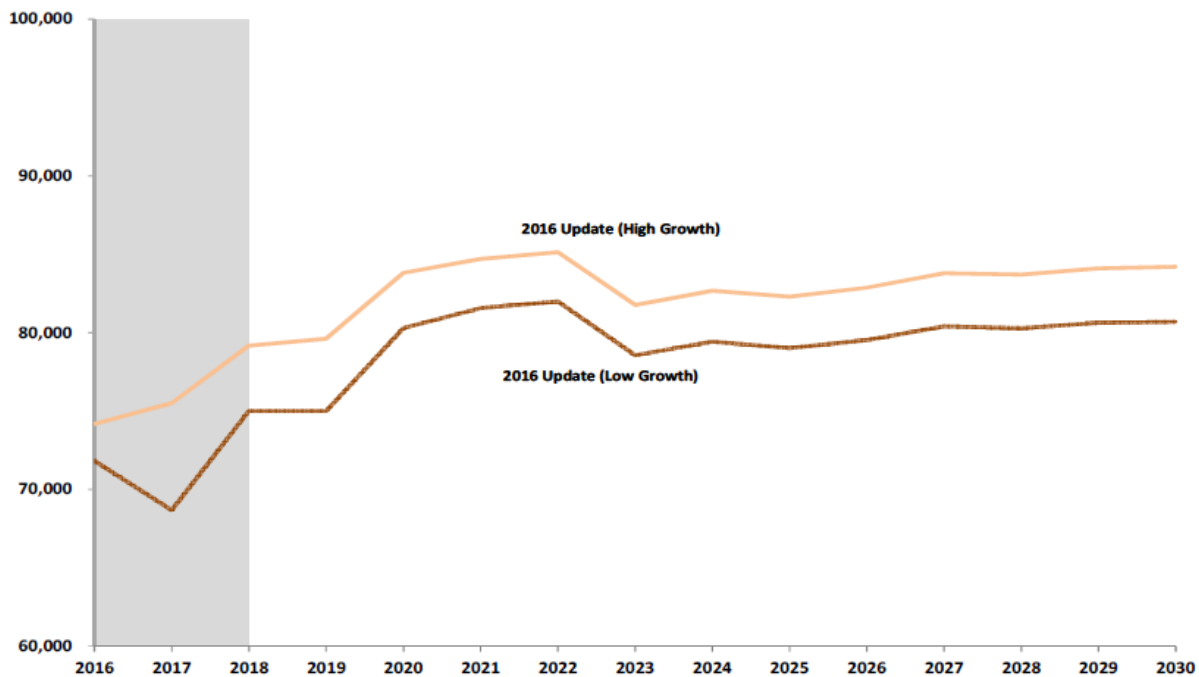
⁹ Fort McMurray Tourism

¹⁰ <https://work.alberta.ca/documents/annual-alberta-regional-labour-market-review.pdf>

operations.¹¹ The Capital Investment & Drilling Forecast Update report by the Canadian Association of Petroleum Producers (CAPP) predicts that capital spending in the Oil Sands will dip to \$15 billion in 2017, down from \$17 billion in 2016 and \$23 billion in 2015.

The shift in demand of transient workers in the region makes strategic planning for the Municipality a challenge. To assist with municipal decision making, the Oil Sands Community Alliance released a Regional Population Model in early 2016 that forecasts RMWB population through to 2030. The model estimates that the population of Fort McMurray in late 2016 fell somewhere between 72,000 and 74,000.¹² This estimate is expected to grow between 2016 and 2018 at an annual average rate of 2-3.5%, in part due to the wildfire recovery, rebuild and filling of previously vacated jobs.

**Figure 1-3:
RMWB Urban Population Projection (2016-2030)**



Source: OSCA Population Projections Model

¹¹ <http://www.capp.ca/publications-and-statistics/statistics/basic-statistics>

¹² OSCA Population Projections Model (2016-2030)

1.4 What is Economic Impact?

Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project (e.g. the construction of new infrastructure), or a change in government policy or regulation. In this case, economic impact refers to the economic contribution associated with the ongoing operations and activities of Fort McMurray International Airport (YMM) by its tenants and related firms operating off-site.

Economic impact can be measured in several ways including employment, income, Gross Domestic Product (GDP) and economic output, as summarized in **Figure 1-4**. All of these measures help quantify the gross level of economic activity being generated by the source. As a result, they can be useful in developing an appreciation for projects, investments and economic sectors.¹³

Figure 1-4:
Measures of Economic Impact

Employment (Full-time Equivalents or Person Years)	<ul style="list-style-type: none"> • The number of full-time equivalents (FTEs) or person years generated by a particular source. Because certain jobs may only be part-time or seasonal, the number of jobs is generally greater than the number of FTEs.
Wages	<ul style="list-style-type: none"> • The income (i.e. wages, salaries, bonuses, benefits and other remuneration) earned by the associated workforce.
Gross Domestic Product (GDP)	<ul style="list-style-type: none"> • GDP is a measure of the value added by labour and capital used to produce final goods and services. This measure is net of the value (i.e. cost) of intermediate goods and services used in the production of the final goods and services. GDP can thus be thought of as economic output less intermediate inputs.
Economic Output	<ul style="list-style-type: none"> • The gross dollar value of industrial output produced. Sometimes referred to as “economic activity,” it reflects the spending (i.e., capital improvement plus revenue) by firms, organizations and individuals.

¹³ Economic impact is different from a cost-benefit analysis that weighs benefits against costs.

The two most common measures of economic contribution (in addition to employment) are gross domestic product (GDP) and economic output. GDP is a measure of the value added by labour and capital services used to produce final goods and services, as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services. Economic output is the dollar value of industrial output produced and roughly corresponds to the gross revenue of goods or services produced by an economic sector. As such, GDP removes the revenues to suppliers of intermediate goods and services and only includes the revenues from value-added production. Alternatively, economic output adds all revenues at each stage of production together as a measure of total production in the economy. Economic output will always be greater than GDP (also termed value-added).¹⁴ In service industries and the public sector, economic output is often simplified to equate to total wages paid.

To estimate economic output for a sector, one might add up the gross revenues of the various firms in that sector. However, to find GDP for a sector, care must be taken to avoid double-counting. The revenues of one firm providing service to another are not incremental GDP. For example, in the automobile sector, one cannot add the value (gross revenue) of a finished auto to the value of the tires. The tires are already included in the value of the automobile.

1.5 Categories of Economic Impact

The three major components of economic impact are *direct*, *indirect*, and *induced impacts*, as described in the sections below. These distinctions are used as a base for the estimation of the total economic impact of Fort McMurray International Airport (YMM). Each of these three components requires different tools of analysis. Employment impact analysis determines the economic impact in terms of jobs created and salaries and wages paid out. In the case of the airport, the direct, indirect, induced, and total numbers of person years created at the airport are examined to produce a snapshot in time of airport operations.

Direct Impact

Direct impacts account for the economic activity of the target sector itself. For instance, all employment that is directly related to the operation and management of Fort McMurray International Airport (YMM), including businesses located onsite at the airport as well as airport-dependent businesses located offsite, would be considered direct employment. Thus, the direct employment base includes airline employees, fixed base operators, aircraft maintenance, ground handling, customer service, and airport authority staff etc.

Indirect Impact

Indirect impacts are those that result because of the direct impacts. This involves employment in downstream industries that arise from the presence of Fort McMurray International Airport (YMM). For instance, indirect employment includes the portion of employment in supplier industries which are dependent on sales to the air transport sector, e.g. food wholesalers that supply food for catering on flights.

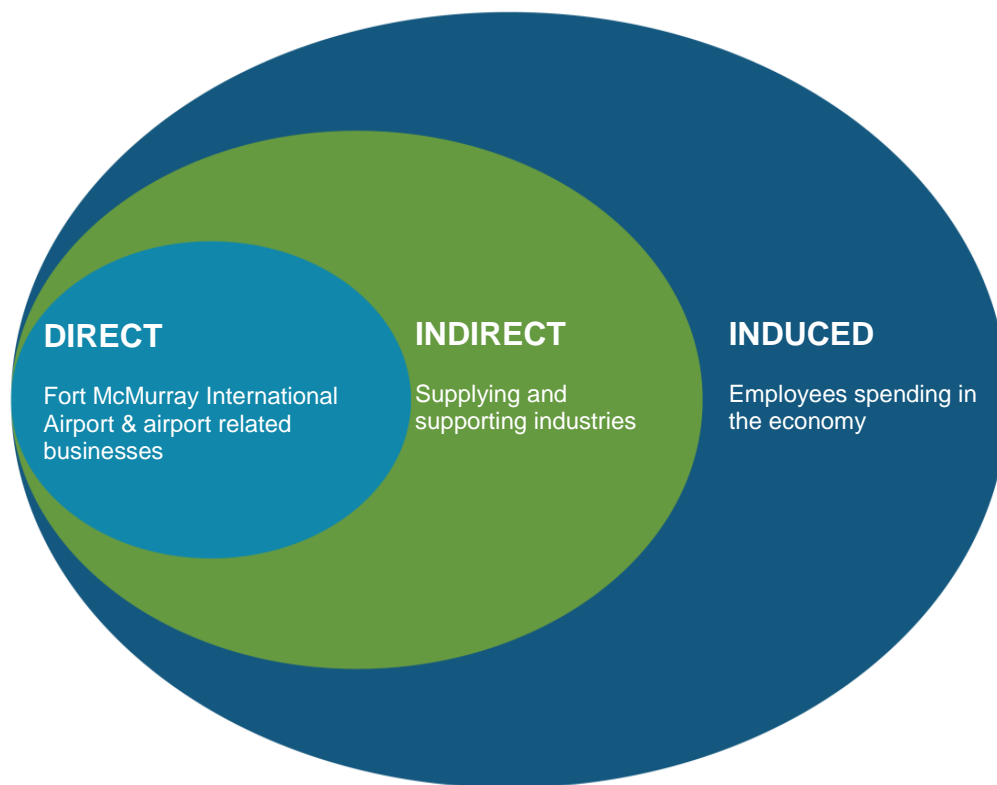
¹⁴ In some industries such as urban transit, which is highly subsidized by government, GDP may be greater than economic output.

Induced Impact

Induced employment is generated from expenditures by individuals employed directly or indirectly by the airport. For instance, if an airline employee in Fort McMurray decides to renovate her home, this would result in induced employment hours in the general economy as the renovation would support hours of employment in the construction industry, the construction materials industry, etc. Induced impact is often called the “household-spending effect”.

Total impacts are the sum of direct, indirect, and induced effects. These three categories of impacts are summarised in **Figure 1-5**.

Figure 1-5:
Categories of Economic Impact Generated and Facilitated by
Fort McMurray International Airport (YMM)



2 Methodology

SUMMARY

- 98% of tenants responded to the employment survey
- 99% of total direct full-time equivalents covered by the survey
- The study time frame covered 2016 operations at Fort McMurray International Airport
- Alberta Treasury Board and Finance (2011) multipliers were used in the analysis to generate the economic impact results for GDP, economic output and for multiplier impacts for indirect and induced

2.1 Introduction

The following chapter outlines the methodology used to estimate the economic impact of annual ongoing operations at Fort McMurray International Airport (YMM) in 2016.

InterVISTAS conducted this economic impact study during the spring of 2017. The study estimates the economic impact of Fort McMurray International Airport's (YMM) operations in 2016.

The study is based on data collected from an employment survey of all employers associated with the operation of Fort McMurray International Airport (YMM) (e.g. airlines, ground transport firms, accommodations, etc.) which is used as an input to assess the direct impacts of the airport's operations. The survey produced estimates of the number of people employed in directly-related occupations, as well as the total amount of earnings paid to these employees. The firms surveyed as part of this study are located on-site. The employment survey was used to classify the total employment and average wages paid by business type.

InterVISTAS estimates the indirect and induced effects using economic multipliers developed by the Alberta Treasury Board and Finance that are derived from models of how the Canadian national and provincial economies operate, that are developed by Statistics Canada.¹⁵ InterVISTAS utilizes a proprietary economic model in order to conduct multiplier analysis and estimate indirect and induced impacts.

Data collected from the employment survey is also used to calculate the associated tax impacts (government revenue) generated by the airport's operations.

¹⁵ <https://open.alberta.ca/publications/alberta-economic-multipliers>

2.2 Estimating Current Economic Impact of Airport Operations

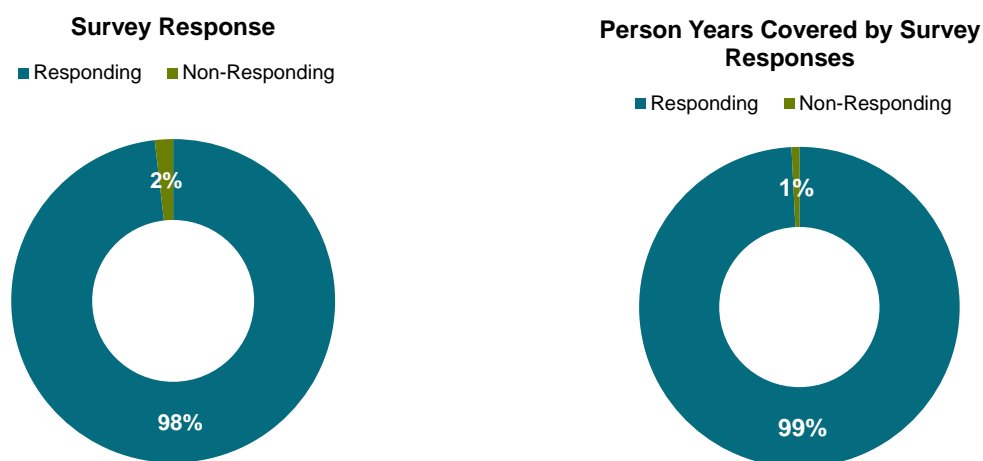
The direct employment base related to ongoing operations at Fort McMurray International Airport (YMM) is measured first. Employment figures are generally more understandable by the public than more abstract measures, such as economic output or GDP. Employment figures also have the advantage of being a more accurate measure, both because the firms are more likely to provide data on employment, as opposed to information on revenues, wages and other monetary amounts, and because there is less chance of double counting economic activity.

The economic impact study then assesses the indirect and induced (or “multiplier”) employment supported by Fort McMurray International Airport’s (YMM) operations, as well as economic activity in terms of economic output and GDP using the Alberta Treasury Board and Finance multipliers. The tax revenue generated annually by operations at Fort McMurray International Airport (YMM) is also estimated.

2.3 Surveying Direct Employment

Employment attributable to ongoing Fort McMurray International Airport (YMM) operations was measured by surveying all tenants. Specifics of the survey methodology, including questions and a description of the sampling techniques, are contained in **Appendix A**. E-mail and telephone follow-ups were conducted to ensure a strong response rate. In total, 98% of the businesses and organizations contacted responded to the survey, representing 99% of total FTEs or person years of employment covered by the survey. A summary is provided in **Figure 2-1**.

Figure 2-1:
Response Rate for Fort McMurray International Airport (YMM)
Economic Impact Employment Survey



2.4 Inferring Employment

For non-responding firms, employment was conservatively estimated using a proven and accepted methodology.¹⁶ This includes referencing the survey results for firms of similar business types and other public research, if available.

2.5 Estimating Indirect and Induced Impacts using Economic Multipliers

Measurement of indirect and induced economic activity is difficult. While it might be possible to conduct a survey of downstream employers, the survey would need to cover thousands of firms in order to completely measure indirect employment. For induced employment, the entire economy would need to be scrutinised. In addition to the time and financial resources needed to conduct such surveys, the quality of responses would be suspect.

As an alternative to costly and inaccurate surveys, indirect and induced effects are typically measured by the use of *economic multipliers*.¹⁷ Multipliers are derived from economic/statistical/accounting models of the general economy. They come in a variety of forms and differ greatly in definition and application. Thus, great care must be exercised in choosing the appropriate set of multipliers to use. In addition, the use of multiplier analysis is limited by a number of factors, these being:

- the accuracy of the structure and parameters of the underlying model;
- the level of unemployment in the economy;
- the assumption of constant returns to scale in production;
- the assumption that the economy's structure is static over time; and
- the assumption that there are no displacement effects.

Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment, with emphasis nonetheless placed on the direct economic impacts as these are based on data from the employer survey and are clearly identifiable.

¹⁶ The methodology employed in this study to infer for non-respondents is similar to that used by the federal government for estimating the national income and product accounts.

¹⁷ The multipliers used for the analysis are based on 2011 Alberta Treasury Board and Finance economic multipliers for Alberta, the most recent data available. These multipliers were updated with Consumer Price Indices to account for inflation.

2.6 Study Time Frame

The employment survey was conducted between March and April 2017. The results in this report reflect employment and operations from 2016.

2.7 Jobs versus Full-Time Equivalents or Person Years

Traditionally, one measures employment by the number of jobs. However, when part-time and/or seasonal workers are used, this can be a misleading measure resulting in an overstatement of economic impact. Whenever possible, employment impacts are measured both in terms of the number of jobs and the number of full-time (FTE) equivalents, also called person years.¹⁸ In our model, hours worked by part-time and/or seasonal employees are converted into FTEs.

2.8 Estimating Tax Revenue Impacts

The tax revenue contributions to the federal, provincial, and municipal levels of government that are associated with airport operations are also estimated. This includes taxes paid by employers and employees (such as payroll taxes), passengers (such as sales taxes on expenditures), and Fort McMurray International Airport (YMM) (such as property tax).

¹⁸ One full-time equivalent job is equivalent to 1,832 hours of work. See **Appendix C** for a detailed calculation of the number of hours per full-time equivalent job. Person years are the same as full time equivalents (FTEs).

3 Economic Impact of Fort McMurray International Airport (YMM)

SUMMARY

- Annual operations at Fort McMurray International Airport (YMM) support 900 direct jobs, 760 direct FTEs, and \$46 million in direct wages
- Indirect employment impacts of Fort McMurray International Airport (YMM) include 560 indirect FTEs and \$37 million in indirect wages across the province
- Induced employment impacts of Fort McMurray International Airport (YMM) include 260 induced FTEs and \$13 million in induced wages across the province
- Annual tax contributions of Fort McMurray International Airport (YMM) amount to over \$25 million
- Total employment impacts of Fort McMurray International Airport (YMM) include 1580 FTEs and \$96 million in wages across the province

3.1 Direct Economic Impacts

This section describes the total employment, in terms of both jobs and FTEs or person years of employment, and estimated payroll attributable to employers directly related to ongoing operations at Fort McMurray International Airport (YMM).

This section also examines the employment due to ongoing operations at Fort McMurray International Airport (YMM) in more detail. FTEs or person years of employment are broken down by:

- Full-time versus part-time and seasonal employment;
- Employment by industry; and
- Employment by job category.

Every arrival of a flight at Fort McMurray International Airport (YMM) generates employment hours for individuals with jobs involved in handling passengers, their baggage, cargo and the aircraft. This employment includes customer service, airline crew, ground handling, cleaning, maintenance functions etc. It also includes some overhead labour (e.g., clerical and administrative staff), and the associated employment of ground transportation firms and accommodation providers that service passengers of the airport. The direct impacts are the employment generated largely within the aviation sector associated with the operating and servicing of air services.

Direct employment related to ongoing operations at Fort McMurray International Airport (YMM) amounts to 900 direct jobs. After adjusting for part-time and seasonal employment, the 900 jobs equate to 760 FTEs or person years of direct employment.

Direct employment at Fort McMurray International Airport (YMM) and related firms receive an estimated \$46 million in wages, providing an average of \$60,700 per FTE. This compares to the average provincial wage of \$54,700 per FTE, per annum and the average national wage of \$47,800 per FTE, per annum.¹⁹ Direct employment figures are summarized in **Figure 3-1** for employment, wages, GDP and output.

In addition to employment and wages, the airport directly contributes a total of \$78 million to provincial GDP and over \$190 million in direct economic output.

Figure 3-1:
Direct Employment and Income at Fort McMurray International Airport (YMM), 2016

Impact	 Employment		 Wages	 GDP	 Output
	Jobs	FTEs	(\$ Millions)	(\$ Millions)	(\$ Millions)
Direct	900	760	46	78	193

Note: Employment figures (jobs and FTEs) are rounded to the nearest ten. Dollar figures (wages) are rounded to the nearest million.

3.1.1 Direct Full-Time, Part-Time, Seasonal and Contract Employment

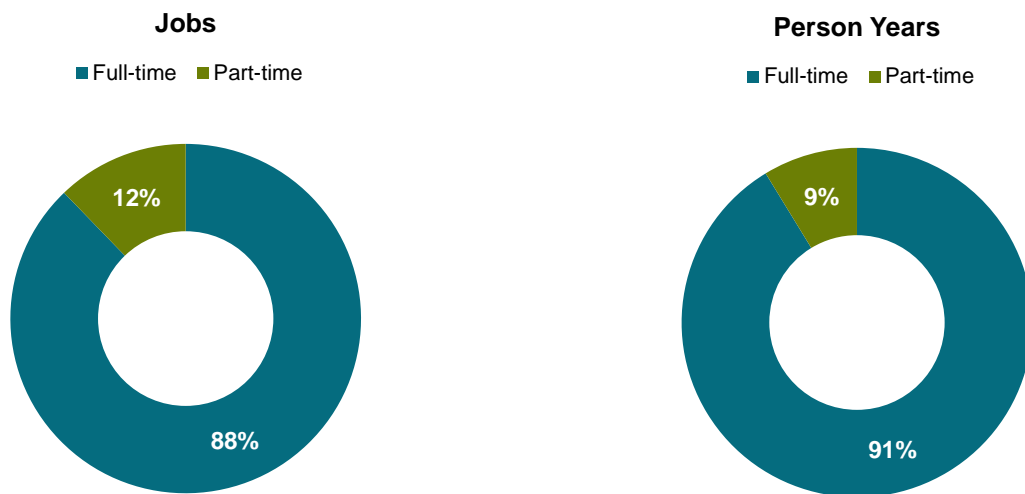
A total of 900 direct jobs or 760 FTEs are attributable to Fort McMurray International Airport (YMM) operations and other airport related businesses. Based on information provided by the survey of employers, 83% of the jobs are permanent jobs while seasonal employment represented 17% of jobs. Approximately 88% of all direct jobs are full-time positions. This demonstrates that Fort McMurray International Airport (YMM) and its related businesses are a source of stable, year-round employment.

¹⁹ Based on Statistics Canada's December 2017 data on average hourly wages, and assuming 1 FTE = 1,832 hours. (<http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/labr69j-eng.htm>); (<http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/labr69a-eng.htm>)

Figure 3-2:
Permanent versus Seasonal Employment at Fort McMurray International Airport (YMM), 2016



Figure 3-3:
Full-Time Versus Part-Time Employment at Fort McMurray International Airport (YMM), 2016



3.1.2 Direct Employment by Job Category

Fort McMurray International Airport (YMM) is a source of a wide variety of job categories, with different positions spread on-site across the airport. A significant proportion of this employment is attributed to firms and employees supporting Fort McMurray International Airport (YMM) air service, air cargo, and terminal operations. The various occupations associated with Fort McMurray International Airport (YMM) can be grouped into the following job categories:

- **Food & Retail** includes in-terminal food and beverage staff, salespeople, and cashiers. This category accounts for 143 person years (19%) of direct employment.
- **Airline Services** includes employment of pilots and flight attendants working at Fort McMurray International Airport (YMM). Also considered are the labour hours of airline employees within the terminal, including check-in agents, gate agents, escorts (e.g., for wheelchairs), supervisors, and the airline's overhead staff. Airline services comprise the majority of direct employment at Fort McMurray International Airport (YMM) with 135 FTEs or person years (22% of direct employment).
- **Managerial and Clerical** employment accounts for management staff as well as clerical positions which could include administrative and office support workers. Managerial and clerical employment includes 127 direct person years at Fort McMurray International Airport (YMM), equivalent to 17% of direct employment.
- **Support Trades** includes security, food services, and dispatch. This category comprises 95 person years (13%) of direct employment at Fort McMurray International Airport (YMM).
- **Craft Trades** include other support functions such as electricians, steam fitters, etc. and account for 85 person years (11%) of direct employment.
- **Airline Support Services** includes employment of aircraft maintenance and related airline servicing trades, including mechanics based at Fort McMurray International Airport (YMM). Airline support accounts for 71 person years (9%) of direct employment.
- **Freight Forwarding, Couriers, and Drivers** comprise 58 person years at Fort McMurray International Airport (YMM) (8% of direct employment).
- **Other** accounts for other non-airline workers within the terminal and onsite including maintenance specialists, consultants and firefighters. Other employment comprises 46 person years (6%) of direct employment.

A breakdown of direct employment at Fort McMurray International Airport (YMM) by occupation is illustrated in **Figure 3-4**.

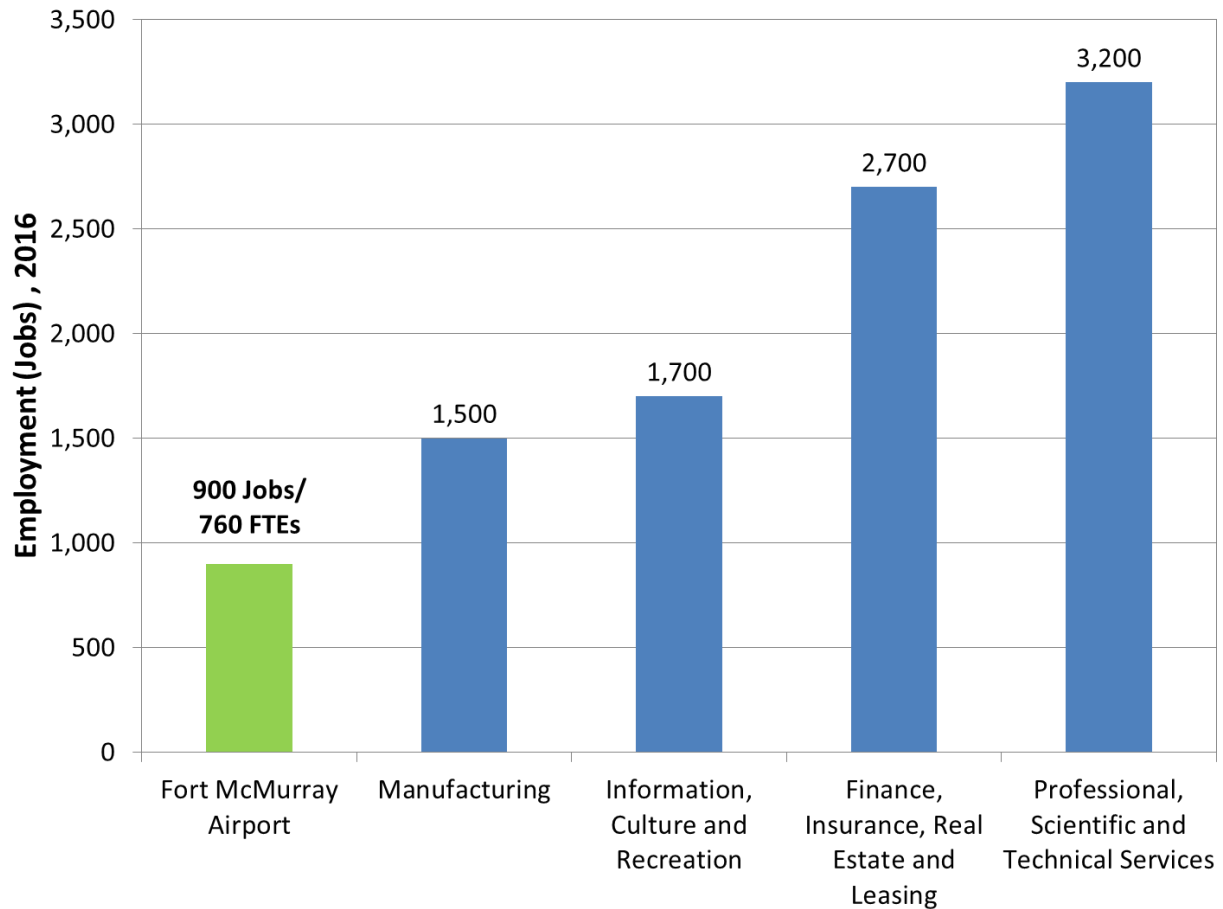
Figure 3-4:
Direct Employment by Occupation at Fort McMurray International Airport (YMM), 2016



3.2 Fort McMurray International Airport (YMM) Direct Employment Relative to Other Industries in Wood Buffalo-Cold Lake, AB

Figure 3-5 shows the employment level of Fort McMurray International Airport (YMM) relative to other industry sector employment levels in Wood Buffalo-Cold Lake region in Alberta. The airport has direct employment of 900 jobs (760 FTEs) and the size of the employment is roughly 60% the size of the region's manufacturing sector. The airport plays an important roll in facilitating the movement of people and cargo resources to further economic growth and development in a variety of sectors in the province and and nationally.

Figure 3-5:
Fort McMurray Airport and Other Industry Employment Levels in Wood Buffalo-Cold Lake, AB 2016



Source:
2016 Annual Alberta Regional Labour Market Review, Government of Alberta
(<https://work.alberta.ca/documents/annual-alberta-regional-labour-market-review.pdf>)

3.3 Indirect and Induced Economic Impact

The previous sections discussed how direct employment related to ongoing operations at Fort McMurray International Airport (YMM) was measured. However, the employment impact of the airport does not end there, as other sectors of the economy are dependent on these employers' businesses. Indirect employment is generated by suppliers to the businesses directly related to the airport. In addition, there may be additional impacts to the province-wide economy when direct (and indirect) employees spend their wages. These employment effects are referred to as induced employment. Total employment impacts therefore equal the sum of direct, indirect and induced effects.

The indirect and induced effects have been calculated using Alberta Treasury Board and Finance economic multipliers and ratios for the Province of Alberta.²⁰

3.3.1 Economic Multiplier Limitations

Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment, noting that these impacts have not been directly measured by the surveys conducted as part of the study.

The economic multipliers are derived from the 2011 Alberta Treasury Board and Finance Input-Output model, the most recent version available. The previous study conducted in 2013 used Alberta Treasury Board and Finance multipliers from the 2009.

3.3.2 Indirect Impacts

Indirect impacts are generated by industries that provide or supply services to firms located onsite at Fort McMurray International Airport (YMM). Based on the analysis of the employer survey results and the application of economic multipliers, it is estimated that 560 *indirect* FTEs are associated with ongoing operations at Fort McMurray International Airport (YMM) in 2016. This suggests that 560 FTEs are indirectly generated in industries that supply the businesses at the airport. The labour income associated with the indirect employment is estimated at \$37 million annually. The *indirect* GDP contribution is \$62 million alongside an *indirect* economic output of \$109 million on an annual basis.

3.3.3 Induced Impacts





Induced impacts are produced because of expenditures by individuals employed directly and indirectly by airport businesses. It represents the demand for goods and services generated by wage earnings from direct economic activity at the airport. *Induced* employment attributable to Fort McMurray International Airport (YMM) is estimated at 260 FTEs, which is associated with *induced* labour earnings totalling \$13 million. The *induced* GDP contribution sums to \$31 million, with an economic output of \$52 million.

3.4 Total Alberta Impacts

Ongoing Fort McMurray International Airport (YMM) operations, including induced and indirect effects, support 1,860 total jobs (equivalent to 1,580 FTEs), and \$96 million in wages across the province. Including multiplier effects, operations at the airport support \$170 million in total GDP and \$354 in total economic output contributions.

²⁰ The multipliers used for the analysis are based on 2011 Alberta Treasury Board and Finance economic multipliers for Alberta, the most recent data available. These multipliers were updated with Consumer Price Indices to account for inflation.

Figure 3-6:
Annual Total Ongoing Economic Impact of Fort McMurray International Airport (YMM) Operations, 2016

					
Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	Jobs	FTEs			
Direct	900	760	46	78	193
Indirect	660	560	37	62	109
Induced	300	260	13	31	52
Total	1,860	1,580	96	170	354

Note: Totals may not add up due to rounding.

3.5 Tax Revenue Impacts

This section documents the current contribution to government revenues resulting from current operations at Fort McMurray International Airport (YMM) and associated economic activity. This includes revenues received by federal, provincial and municipal governments.²¹

Revenue contributions are divided into two groups, based on who is making the payment:

- **Taxes paid by FMAA, airport employers and employees.** These are taxes paid by FMAA as well as other airport employers and employees. They include income and payroll taxes, social insurance contributions (such as employment insurance premiums) and the federal and provincial fuel taxes.
- **Taxes paid by passengers.** Visitors pay various taxes and fees. For example, these include taxes on personal expenditures at Fort McMurray International Airport (YMM) such as taxes on food and beverages, as well as the Airport Improvement Fee (AIF).

For each category, taxes paid to the federal, provincial and local levels of government are separately identified.²²

²¹ Taxation impacts are based on 2016 tax rates.

²² For the most part, this study **estimates** (some tax envelopes were measured directly, e.g., tenant property taxes) taxes paid from information on the passengers, employers and employees at the airport. In a few situations, such as the corporate income tax paid by employers, an approximate method was used to estimate taxes paid. In every case conservative methods were used. No major tax has been excluded.

The purpose of this section is to present the tax revenue contributions resulting from the activity attributable to Fort McMurray International Airport (YMM). As with all such studies, a conceptual decision has to be made as to how broad a definition of *economic activity* should be used in measuring the impacts. For this study, a relatively narrow definition has been taken, for example, the following have **not** been included:

- Taxes associated with indirect or induced employment (i.e. multiplier effects).
- Consumption taxes (e.g., GST) paid by airport employees when they spend their income.
- Excise or import taxes on cargo.
- Taxes paid by airport users outside of the airport.

It would be exceedingly complex to broaden the scope of the tax base in this analysis to include taxes generated by indirect and induced employment. The level of detail collected on direct employment by the survey is critical to the analysis while such information is not available for the indirect and induced employment. This being the case, impacts and speculation about the general economy would be complex and averages would not necessarily be precise or accurate. Therefore, the tax analysis in this report is limited to revenues attributable to direct employment only.

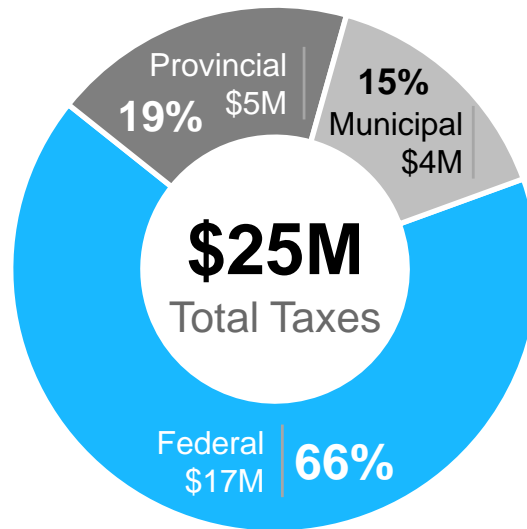
3.5.1 Tax Contributions by Level of Government

Ongoing economic activity at Fort McMurray International Airport (YMM) generates tax revenue for all levels of government. In 2016, total tax contributions from Fort McMurray International Airport (YMM) related *direct* employment to all levels of government were approximately \$25 million. **Figure 3-7** provides a rounded breakdown of tax impacts by level of government.

- The federal government was the largest recipient of tax revenue, receiving nearly \$17 million (66% of total tax revenue impacts). The vast majority of that total is attributable to taxes paid by employers and employees such as income tax, corporate income tax, CPP contributions, and the like.
- The provincial government received approximately \$5 million (19% of total tax revenue impacts). This total is from income taxes, contributions to health insurance, and the Provincial portion of the GST paid by passengers.

The municipal governments collected nearly \$4 million in tax revenue (15% of total tax revenue impacts) in the form of property taxes from tenants or FMAA.

Figure 3-7:
Annual Estimated Tax Revenues of Fort McMurray International Airport (YMM) by Level of Government



3.5.2 Summary of Tax Contributions by Taxpayer

Ongoing economic activity at Fort McMurray International Airport (YMM) generates tax revenue from different tax payers, as summarized in **Figure 3-8** below.

Figure 3-8:
Annual Estimated Tax Contributions by Taxpayer at Fort McMurray International Airport (YMM)
(\$ millions)

Taxpayer	Federal	Provincial	Municipal	Total
Passengers	3.5	0	0	3.5
FMAA and Other Airport Employers/Employees	13.2	4.7	3.8	21.8
Total	16.7	4.7	3.8	25.2

4 Summary of Results

SUMMARY

- Annual operations at Fort McMurray International Airport (YMM) support 900 direct jobs, 760 direct FTEs, and \$46 million in direct wages
- Total employment impacts of Fort McMurray International Airport (YMM) include 1580 FTEs and \$96 million in wages across the province
- Annual tax contributions of Fort McMurray International Airport (YMM) amount to over \$25 million

4.1 Economic Impacts

The ongoing operations at Fort McMurray International Airport (YMM) support a total of 1,580 FTEs or person years of employment in the province, including multiplier impacts. Of this total employment figure, 760 FTEs are attributable to *direct* employment located onsite at the airport. As jobs related to the airport extend far beyond its boundaries, the bottom line total also includes 560 FTEs of *indirect* employment and 260 FTEs of *induced* employment.

The *direct* employment associated with annual ongoing operations at Fort McMurray International Airport (YMM) grew slightly to 760 FTEs in 2016 from 746 FTEs in 2013, resulting in approximately 2% growth in employment overall.²³

The provincial economy benefits significantly from the day-to-day operations of Fort McMurray International Airport (YMM). Annually, the airport contributes an estimated total of \$170 million in GDP, alongside an estimated \$354 million in economic output. All impacts relating to employment, wages, GDP and output are illustrated in **Figure 4-1**.

²³ The 2014 study was completed by SNC Lavalin, which was based on 2013 operations.

Figure 4-1:
Total Economic Impacts of Fort McMurray International Airport (YMM) Operations in 2016

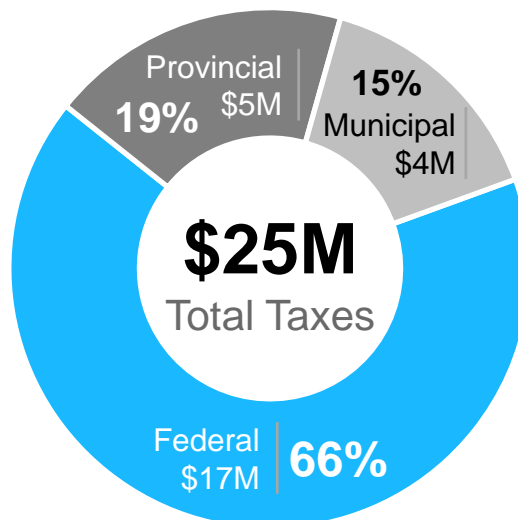
Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	Jobs	FTEs			
Direct	900	760	46	78	193
Indirect	660	560	37	62	109
Induced	300	260	13	31	52
Total	1,860	1,580	96	170	354

Note: Totals may not add up due to rounding.

4.2 Tax Revenue Impacts

Fort McMurray International Airport (YMM) generates considerable tax revenues across all levels of government. On an annual basis an estimated \$25 million in tax is contributed by airport employers, employees and passengers. A large portion of the tax generated accrues to the federal government (66%), with 19% attributable to the province, and the remaining 15% to the municipalities. The breakdown of these earnings is highlighted in **Figure 4-2**.

Figure 4-2:
Annual Estimated Tax Revenues of Fort McMurray International Airport (YMM) by Level of Government



Appendix A: Employment Survey

Questionnaire Design

The basic questionnaire was designed to obtain information, and to be as clear and easy to understand as possible for respondent firms. The basic questionnaire provided to airport tenants contained questions in the following areas:

General Information

- Name of firm, address
- Contact person's name and title
- Phone and fax numbers
- Email and website address
- Principal business activity

Total Employment Numbers

- Total employees (2016)
- Number of on-site employees
- Number of off-site employees

Part-time and Full-time Employment

- Full-time permanent employees
- Part-time permanent employees
- Full-time seasonal employees
- Part-time seasonal employees
- Average hours and weeks for part-time and seasonal employees

Payroll and Wage

- Total payroll excluding benefits; or
- Average wage per employee

Employment by Occupation

- A selection of job trades was provided to categorize employment

Outsourcing and Contracting Out

- Number of individuals on contract
- Average hours and weeks for individuals on contract
- Number and names of firms on contract
- Average annual hours for firms on contract

Property Taxes & Other Taxes

- Total property taxes paid (2016)
- Other federal and provincial taxes paid (2016)

Business Related to Fort McMurray International Airport (YMM)

- Proportion of firm's business revenues related to Fort McMurray International Airport (YMM) (2016)

Conducting the Survey

The survey was mailed out electronically by InterVISTAS Consulting, with a cover letter from Fort McMurray International Airport (YMM). The letter explained the purpose of the study, the confidentiality of responses and encouraged members of the airport business community to participate.

Following the initial electronic mail-out of the surveys and throughout the following weeks, non-responding firms were contacted by telephone to follow-up on the completion of the survey. Fort McMurray International Airport (YMM) staff coordinated with InterVISTAS to handle the follow-ups. In some cases, Fort McMurray International Airport (YMM) staff made site visits to various tenants to encourage responses. Firms were encouraged to return the survey and new copies were offered if the originals were lost. The replacement surveys were emailed once again. Some survey responses were collected via a telephone interview with firms.

Appendix B: Sample Survey



Fort McMurray International Airport
On-site Employment Survey

March 2017

The figures you provide in the following sections are strictly confidential and will be viewed only by InterVISTAS Consulting and reported only in an aggregate form. For the purposes of this study, it is important that the figures you provide are as accurate and current as possible.

When answering the questions below regarding your business, please include all related subsidiary businesses.

Please complete this survey electronically by responding directly into the form.

Name of Firm: _____

Address of Firm: _____

City, Province: _____ Postal Code: _____

Contact Person: _____ Phone number: _____

Email: _____

Q1. Location of Firm

Please indicate the general location of your firm:

- ☐ Fort McMurray International Airport (YMM), *we are an airport tenant and are located on airport lands.*
- ☐ Other, please specify: _____

Q2a. Business Related to Fort McMurray International Airport

Please estimate the amount of your business (revenue) that is related to Fort McMurray International Airport.

YMM Related Business: (as of March 2017)	%
--	---

Q2b. Cargo Related Business

We would like to be able to document the impact of the airport's air cargo services. Please help us by indicating the portion of your business that is involved in servicing air cargo.

Please estimate the proportion of your business (revenue) that can be attributed to air cargo related activities?

Air Cargo Related Business: (as of March 2017)	%
--	---



Q3. Type of Business (check one)

If you are involved in more than one of the businesses below, please choose the one that best describes your business.

Air Carriers

- ☐ 1. Scheduled Canadian Carrier
- ☐ 2. Scheduled Non-Canadian Carrier
- ☐ 3. Charter Carrier
- ☐ 4. Helicopter
- ☐ 5. Air Taxi
- ☐ 6. Cargo Carrier
- ☐ 7. Courier
- ☐ 8. Other Type of Air Carrier: _____

Other Business Types

- | | |
|---|--|
| <input type="checkbox"/> 9. Facility Operator | <input type="checkbox"/> 19. Aviation Related Training |
| <input type="checkbox"/> 10. Freight Forwarder, Cargo Agent, etc. | <input type="checkbox"/> 20. Caterer |
| <input type="checkbox"/> 11. Warehousing | <input type="checkbox"/> 21. Security Firm |
| <input type="checkbox"/> 12. Customs Broker | <input type="checkbox"/> 22. Hotel |
| <input type="checkbox"/> 13. Aircraft Maintenance | <input type="checkbox"/> 23. Taxi, Bus |
| <input type="checkbox"/> 14. Aircraft Ground Handler | <input type="checkbox"/> 24. Car Rental |
| <input type="checkbox"/> 15. Fuelling Company | <input type="checkbox"/> 25. Airport Retail Outlet, Restaurant, etc. |
| <input type="checkbox"/> 16. Fixed Base Operator | <input type="checkbox"/> 26. Government Agency/Department |
| <input type="checkbox"/> 17. Aircraft Parts Supplier | <input type="checkbox"/> 27. Air Traffic Control |
| <input type="checkbox"/> 18. Aviation Related Manufacturing | <input type="checkbox"/> 28. Other: _____ |

Q4. Total Employment

Please state the total number of employees that you have at present. This figure should include all full-time, part-time and seasonal work but should not include employment for work done on contract.

Total Number of Employees: (as of March 2017)	
Total Estimated 2016 Annual Payroll: (Excluding employee benefits)	



Fort McMurray International Airport
On-site Employment Survey

March 2017

- OR,** Provide an estimate of the average annual salary per employee \$ _____
- ☐ Less than \$20,000
 - ☐ Between \$20,000 and \$40,000
 - ☐ Between \$40,000 and \$60,000
 - ☐ Between \$60,000 and \$80,000
 - ☐ Between \$80,000 and \$100,000
 - ☐ More than \$100,000

Q5. On-site versus Off-site Employees

For the purpose of this study, on-site workers are employees who work on airport land. Off-site employees are those who do not work on airport land, but are primarily performing airport or aviation related duties (e.g., airline sales representatives at a downtown office). Of the total number of employees listed in Q4, how many work on-site and how many work off-site?

Number <i>or</i> % of Employees On-Site:	
Number <i>or</i> % of Employees Off-Site:	

Q6. Part-Time and Full-Time Employees

- A. Permanent Employees:** A permanent employee is one who works year round. In reference to the number of total employees in Q4, how many are permanent employees and how many are full-time and how many are part-time?

Number of Full-Time <u>Permanent</u> Employees:	
Number of Part-Time <u>Permanent</u> Employees:	
Total <u>Permanent</u> Employees:	

For part-time employees, on average, how many hours per week will they work this year?

# of Weekly Hours:	
--------------------	--

If it is difficult to obtain this information or if there is great variation, you may provide a range of weekly hours (i.e., less than 10 hours, 10-15 hours, etc).

- B. Seasonal Employees:** A seasonal employee is one who is hired for work during peak or specific time periods only. In reference to the number of total employees in Q4, please indicate how many are seasonal full-time and part-time employees (March 2017)?

Number of Full-Time <u>Seasonal</u> Employees:	
Number of Part-Time <u>Seasonal</u> Employees:	
Total <u>Seasonal</u> Employees:	



Fort McMurray International Airport
On-site Employment Survey

March 2017

For seasonal workers, on average, how many **weeks** will they work this year (2017)?

Number of Weeks Per Year:	
----------------------------------	--

For part-time seasonal workers, on average, how many **hours per week** will they work this year (2017)?

Number of Weekly Hours:	
--------------------------------	--

If it is difficult to obtain this information or if there is great variation, you may provide a range of weekly hours (i.e., less than 10 hours, 10-15 hours, etc).

THE SUM OF THE PERMANENT AND SEASONAL EMPLOYEES LISTED IN Q6A AND Q6B SHOULD EQUAL THE NUMBER OF TOTAL EMPLOYEES IN Q4.

Q7. Employment by Trade

In order to reflect the diversity of employment at the airport, please provide us with a breakdown of your total payroll employees, by position.

Employment by Trade		Number or % of Employees
General	Managerial/Supervisory	
	Clerical	
	Craft Trades (Electricians, Steam Fitters, etc.)	
	Pilots	
Airline & Airline Servicing Trades	Flight Attendants	
	Aircraft & Vehicle Mechanics	
	Customer Service Agents	
	Aircraft Servicing	
Support Trades	Security Agents	
	Food Service Workers	
	Drivers / Delivery / Couriers	
	Dispatchers	
	Call Centre / Reservations	
	Air Traffic Control	
Retail Trades	Sales / Cashiers	
	Food & Beverage Staff	
Other (Please specify)		



Q8. Outsourcing and Contracting Out

Since we do not want to exclude any employment from the airport, we would like you to briefly comment on whether your firm contracts out any important services.

A. Individuals on Contract: If you pay some individuals through a contract, as opposed to through payroll, please indicate the number of such employees.

Number of <u>Contract</u> Employees:	
--------------------------------------	--

Of these employees on contract, how many **weeks**, on average, will they work this year? And, on average, how many **hours per week** do they work?

Number of Weeks Per Year:	
Number of Weekly Hours:	

B. Firms on Contract: Do you contract any work out to other firms? For example, janitorial services, ground handling, etc.

☐ **No.** (continue to next question)

☐ **Yes.** If yes, please complete the following table indicating the functions you contract out to other firms and an estimate of the annual hours on contract. Also include the names of the firms you use so we can ensure that we do not double count any work performed by other firms that we are surveying as a part of this study.

Function	Name of Firm	Estimated Number of Hours to be Performed by Firm in 2012
<i>Example: Janitorial</i>	<i>Spic and Span Cleaners</i>	<i>100 a year (2 hours per week)</i>

Q9. Future Employment Base at Fort McMurray International Airport

Over the next 5 years, do you expect your firm's employment base to:

☐ **Increase.** If so, by approximately how many employees? _____ employees

☐ **No change.** Remain at current levels.

☐ **Decrease.** If so, by approximately how many employees? _____ employees



Fort McMurray International Airport
On-site Employment Survey

March 2017

Q10. Property Taxes Paid in 2016

Please indicate the amount of property taxes paid by your firm in 2016.

Total Property Taxes Paid (2016)	
-------------------------------------	--

Thank you for your assistance in completing this survey.

Please return the completed survey by email / fax to:

Attention: Noel Szelewski

Email: Noel.Szelewski@InterVISTAS.com

Fax: 604-717-1818

If you have any questions, please call
Noel Szelewski at 1-877-717-6246 (ext. 1808).

Appendix C: Calculation of Full-Time Equivalent or Person Years of Employment

The following are details of calculations for the average number of hours per full-time equivalent (FTE) or person year of employment.

Table C-1:
Full-time Equivalent Hours per Year

Calculation of FTE hours per year:		
	365	days per year
Less:	(104)	weekend days
	(11)	legal holidays
	(15)	average vacation days
	(6)	sick leave
	229	days per person year
	* 8	hours per work day
	1,832	hours per person year

Workdays vary anywhere from 6.5 to 8 hours; however, in order to be conservative, an 8 hour workday was assumed.²⁴ Similarly, numbers of vacation and sick leave days may also vary.

²⁴ Essentially, we are using a measure of paid hours per year. Using a measure of productive hours per year with 6.5 hour workdays (8 hours less 1 hour for lunch less two 15 minute work breaks) would give 1,489 hours per person year. Using this lower figure would result in inferring a greater number of FTEs from seasonal and part-time jobs. Using the 1,832 figure, we infer a lower number of FTEs.

Appendix D: Inferred Employment

For the very few non-respondents encountered during the survey phase, statistical inferences had to be made regarding the employment levels.

As a general rule of thumb, InterVISTAS' approach bases inferred estimates provided by respondents for each business type, and validates this information with publically available sources of data.

The employment data in this report was compiled from two sources:

1. Employment reported by employers on surveys submitted to InterVISTAS.
2. Employment inferred for employers who did not provide a survey response. Inferred employment was based on employment information from those firms in each business type that did respond to the survey. The mean employment of respondents in each business type was calculated, excluding outliers, and then conservatively adjusted downwards. For instance, those firms with especially large employment levels were excluded from the "mean without outliers" to obtain conservative results. This "adjusted mean" employment for each business type was then applied to those firms who did not respond to the survey.

Appendix E: Contract Employment

Some firms contract out services that they do not have expertise in providing or when there are cost advantages to doing so. For example, many airport firms contract out janitorial and/or general maintenance services. The employment survey asked firms to identify whether they contracted out some of their work, and to estimate the number of annual hours involved.

Contract work was separated into two distinct categories in the employment survey: 1) individual “employees” paid through a contract, rather than via payroll, and 2) contracting out services to other firms.

The employment results for individuals on contract were derived by counting the number of individual positions for the number of *jobs* and dividing the total hours of employment by 1,832 to estimate a FTE or one person year of employment. The employment results for firms on contract were derived by dividing the total hours of employment by 1,832 to estimate FTEs or person years.

Appendix F: Methodology using Economic Multipliers

Measurement of indirect and induced economic activity is difficult. While it might be possible to conduct a survey of such employers, the survey would need to cover thousands of firms for indirect employment. For induced employment, the entire provincial economy would need to be scrutinised. In addition to the time and financial resources needed to conduct such surveys, the quality of responses would be suspect.

As an alternative to costly and inaccurate surveys, indirect and induced effects are typically measured by the use of economic multipliers. Multipliers are derived from economic/ statistical/accounting models of the general economy.²⁵ They come in a variety of forms and differ greatly in definition and application. Thus, great care must be exercised in choosing the appropriate set of multipliers to use. In addition, the use of multiplier analysis is limited by a number of factors, these being:

- the accuracy of the structure and parameters of the underlying model;
- the level of unemployment in the economy;
- the assumption of constant returns to scale in production;
- the assumption that the economy's structure is static over time; and
- the assumption that there are no displacement effects.

Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment.

²⁵ The multipliers used for the analysis are based on 2011 Alberta Treasury Board and Finance economic multipliers for Alberta, the most recent data available. These multipliers were updated with Consumer Price Indices to account for inflation.

Appendix G: Tax Revenues Attributable to Airport Employers

Introduction

This appendix describes the employment and other assumptions on which tax revenues calculations are based. As well, the approaches used to estimate employer and employee contributions to local, provincial and federal governments are presented.

Some of the taxes pose conceptual questions about how much, or if any, tax revenue from a particular source should be attributed to firms serving Fort McMurray International Airport (YMM). These questions are highlighted and simplifying assumptions are put forth.

Employment at Fort McMurray International Airport (YMM)

The majority of tax calculations in this report depend on direct employment and total wages. The total direct employment, in person years, used for these calculations is 760 person years. The total payroll is estimated at \$46 million.

Personal Income Tax (Federal and Provincial)

Tax Base and Rates

Under the *Income Tax Act* federal income tax is paid on taxable income at a rate that increases with taxable income.

Provincial income tax was formerly calculated as a percentage of federal tax, but most provincial governments have begun collecting taxes on a sliding scale.

Estimation Method and Results

Because the tax rate is progressive, the tax paid by a group of employees depends on the distribution of income among those employees. Unfortunately, the distribution of income is not known and average incomes must be used.

Each employee is assumed to pay tax as a single tax filer. Estimated personal income tax payable is \$6.0 million in federal tax and \$2.9 million in provincial tax.

The average tax rates used are derived from the more detailed calculations of taxes payable shown in **Figure G-1**. In those calculations, assumptions have been made about income from non-employment sources, tax deductions from income (e.g. RPP and RRSP contributions), and tax credits applied against tax otherwise payable (e.g. CPP, EI and charitable contributions). Average credits are calculated from Revenue Canada, *General Income Tax Forms*, 2016.

**Figure G-1:
Alberta Single Tax Filer Income Tax Calculation – 2016**

Alberta Single Tax Filer Income Tax Calculation																				
Income																				
Employment	5,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000	55,000	60,000	70,000	80,000	90,000	100,000	150,000	250,000	350,000	
TOTAL	5,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000	55,000	60,000	70,000	80,000	90,000	100,000	150,000	250,000	350,000	
Deductions																				
RRSP	1,824	284	196	189	232	298	398	529	671	882	1,151	645	687	779	844	843	1,231	2,031	6,686	
RPP	374	56	51	42	62	98	159	240	364	541	746	972	1,274	1,635	2,143	3,309	2,847	1,929	1,638	
Union	521	46	71	50	46	49	62	75	95	121	150	183	222	263	323	445	405	300	130	
Carrying Charges	937	178	80	65	68	72	77	91	95	113	127	146	162	192	218	239	351	809	5,145	
TOTAL	3,657	660	403	346	407	517	696	935	1,226	1,657	2,175	1,946	2,345	2,869	3,528	4,835	4,835	5,068	13,599	
Taxable Income	1,343	9,340	14,597	19,654	24,593	29,483	34,304	39,065	43,774	48,343	52,825	58,054	67,655	77,131	86,472	95,165	145,165	244,932	336,401	
Credits																				
Basic Federal	####	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	
Basic Provincial	####	18,451	18,451	18,451	18,451	18,451	18,451	18,451	18,451	18,451	18,451	18,451	18,451	18,451	18,451	18,451	18,451	18,451	18,451	
CPP	2,694	1,186	882	717	744	824	977	1,135	1,297	1,533	1,754	1,858	1,938	1,970	2,052	2,126	2,127	2,086	1,902	
EI	3,101	746	447	327	320	346	399	455	511	598	649	676	692	702	725	755	740	696	565	
Charity	26	9	13	22	41	50	64	77	90	95	107	119	132	149	163	186	227	399	2,672	
Fed. Total	17,296	13,415	12,816	12,539	12,579	12,695	12,914	13,140	13,372	13,700	13,983	14,128	14,236	14,295	14,414	14,540	14,568	14,655	16,613	
Prov. Total	24,273	20,392	19,793	19,516	19,556	19,672	19,891	20,117	20,349	20,677	20,960	21,105	21,213	21,272	21,391	21,517	21,545	21,632	23,590	
Federal Tax Credit Rate	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	
Provincial Tax Credit Rate	10.0%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	
Federal Credits	2,594	2,012	1,922	1,881	1,887	1,904	1,937	1,971	2,006	2,055	2,098	2,119	2,135	2,144	2,162	2,181	2,185	2,198	2,492	
Provincial Credits	2,427	2,039	1,979	1,952	1,956	1,967	1,989	2,012	2,035	2,068	2,096	2,110	2,121	2,127	2,139	2,152	2,155	2,163	2,359	
Tax Payable																				
Federal - Bracket 1	202	1,401	2,189	2,948	3,689	4,422	5,146	5,860	6,566	7,292	7,922	8,582	9,242	9,902	10,562	11,222	11,882	12,542	13,202	
Federal - Bracket 2	0	0	0	0	0	0	0	0	0	673	1,660	2,810	4,922	7,007	9,062	9,962	9,962	9,962	9,962	
Federal - Bracket 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,196	12,955	12,955	12,955	
Federal - Bracket 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,385	17,287	17,287	
Federal - Bracket 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14,827	45,012	
Federal Total	202	1,401	2,189	2,948	3,689	4,422	5,146	5,860	6,566	7,466	8,452	9,602	11,714	13,799	15,854	17,951	31,094	61,824	92,009	
Basic Federal	0	0	267	1,067	1,802	2,518	3,209	3,889	4,560	5,411	6,354	7,483	9,579	11,655	13,692	15,770	28,909	59,625	89,517	
Alberta - Bracket 1	134	934	1,460	1,965	2,459	2,948	3,430	3,906	4,377	4,834	5,283	5,805	6,766	7,713	8,647	9,516	12,500	12,500	12,500	
Alberta - Bracket 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,419.8	3,000	3,000	
Alberta - Bracket 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,500	6,500	
Alberta - Bracket 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62,90.4	14,000	
Alberta - Bracket 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,460.2	
Alberta Total	134	934	1,460	1,965	2,459	2,948	3,430	3,906	4,377	4,834	5,283	5,805	6,766	7,713	8,647	9,516	14,920	28,290	41,460	
Basic Provincial	0	0	0	14	504	981	1,441	1,895	2,343	2,767	3,186	3,695	4,644	5,586	6,508	7,365	12,765	26,127	39,101	
TOTAL TAX PAYABLE	0	0	267	1,081	2,306	3,499	4,650	5,783	6,903	8,177	9,541	11,178	14,223	17,241	20,200	23,134	41,674	85,752	128,618	
Average Rate of Tax	0.0%	0.0%	1.8%	5.5%	9.4%	11.9%	13.6%	14.8%	15.8%	16.9%	18.1%	19.3%	21.0%	22.4%	23.4%	24.3%	28.7%	35.0%	38.2%	
Federal	0.0%	0.0%	1.8%	5.4%	7.3%	8.5%	9.4%	10.0%	10.4%	11.2%	12.0%	12.9%	14.2%	15.1%	15.8%	16.6%	19.9%	24.3%	26.6%	
Provincial	0.0%	0.0%	0.0%	0.1%	2.0%	3.3%	4.2%	4.9%	5.4%	5.7%	6.0%	6.4%	6.9%	7.2%	7.5%	7.7%	8.8%	10.7%	11.6%	

Corporate Income Tax (Federal and Provincial)

All corporations are liable to pay federal income tax under the *Income Tax Act*. The tax rate varies by type and size of company and by province. Provincial governments also levy a corporation income tax on any company having a permanent establishment in that province.

Estimation Method and Results

1. To calculate tax liability precisely is very difficult. It requires knowledge of the total tax base, and the proportion of the tax base attributable to the provinces. Therefore, an approximate method has been used.
2. In Alberta, the federal corporate income tax collected per employee was \$2,292 and the provincial corporate income tax collected per employee was \$1,853 in 2016.
3. Assuming all companies pay tax at the average rate per employee calculated above, the 2016 corporation income tax liability of the Fort McMurray International Airport (YMM) employment sector is estimated to be \$1.5 million toward federal revenues and \$1.2 million toward provincial revenues. The estimated total corporate income tax revenue is about \$2.8 million as shown in **Figure G-2**.

Figure G-2:
Estimated Corporate Income Tax Paid by Firms within Fort McMurray International Airport (YMM)

Government	Revenue (\$Million)
Federal	1.5
Provincial	1.2
Total	2.8

Note: Amounts may not add to total due to rounding.

Employment Insurance Premiums

Tax Base and Rates

In 2016, employees in Canada paid employment insurance (EI) premiums equal to 1.88% of earnings up to a maximum of \$955 per year. (Maximum insurable earnings are \$50,800). Employers paid EI premiums equal to 1.4 times employee premiums.

Estimation Method and Results

The employee premium rate is applied to total payroll costs for employees earning less than \$50,800 per year. The maximum contribution was used for employees earning more than \$50,800 per year. Estimated employee payments were about \$0.6 million in 2016.

The employer rate is applied to the employee payments. Estimated employer payments were about \$0.9 million in 2016.

Canada Pension Plan Contributions

Tax Base and Rates

In 2016, employee contributions for the Canada Pension Plan (CPP) were 4.95% of pensionable earnings. Pensionable earnings are actual earnings less \$3,500, to a maximum of \$54,900. The maximum annual employee contribution is \$2,544.30. The employer contribution is the same as the employee contribution.

Estimation Method and Results

The employee contribution rate is applied to average payroll for employees who are earning less than \$54,900 a year. The maximum contribution was used for employment earning more than the maximum pensionable earnings.

Estimated employer and employee contributions are about \$1.7 million each, for a total of \$3.4 million.

Workers' Compensation Board of Alberta Contributions

Tax Base and Rates

Employers in Alberta are required to make contributions to the province's government-regulated workers' compensation institution, WCB Alberta, to help offset the cost of on-the-job injuries. Employers are classified into industry groups. The contribution rate for each group is based on the injury costs associated with all companies in that group.²⁶ The group contribution rate varies widely among industries and provinces. Some major companies are not included in the general "rateable" method of contribution but simply pay the actual cost of their claims plus an allowance for WCB Alberta administration costs. As it is not generally known which firms contribute in this manner, nor the value of their claims, an estimate based on reported payroll has been made for all firms.

Conceptual Issues

It is possible that some companies are self-insured and their payments could be viewed as a business expense rather than a tax. However, we have chosen to include their contribution because they are required to be part of this government-mandated program.

Estimation Method and Results

The contribution rates for each employment classification at the airport have been applied to the total payroll for that group. Fort McMurray International Airport (YMM) employees paid an estimated \$0.5 million to WCB Alberta in 2016.

²⁶ Subject to Experience Rating Adjustment for individual companies.

Health Insurance Premiums

Tax Base and Rates

There are no Medical Services Plan (MSP) premiums for single filers in Alberta.

Aviation Fuel Tax

The federal and provincial governments levy taxes on jet fuel. The aviation fuel tax rates are shown in **Table G-3**.

Table G-3:
Federal & Provincial Fuel Tax Rates, 2016

Federal	Provincial
\$ /Litre	
\$0.04	\$0.015

Estimation Method and Results

The amount of aviation fuel sold at Fort McMurray International Airport (YMM) in 2016 was approximately 12.8 million litres.²⁷ The total aviation fuel tax revenues at Fort McMurray International Airport (YMM) amount to approximately \$0.7 million. Of this total, about \$0.5 million went to the Federal government and the government of Alberta collected \$0.2 million.

The total GST tax revenues from fuel sales at Fort McMurray International Airport (YMM) amount to an estimated \$0.3 million. There is no provincial sales tax in Alberta.

Property Taxes Paid to Government

Governments levy property taxes to help them finance local services. Property taxes paid to the Municipality by FMAA amounted to \$3.2 million in 2016.

²⁷ Provided by the Fort McMurray International Airport FBO's

Appendix H: Tax Revenues Attributable to Airport Users

Fort McMurray International Airport (YMM) Passengers, 2016

Based on 2016 traffic, approximately 350,000 passengers enplaned at Fort McMurray International Airport (YMM). **Table H-1** shows the passenger movements used in this study including breakdown into commercial and charter service passengers at Fort McMurray International Airport (YMM).

Table H-1:
Passenger Movements, 2016

Passenger Type	Enplaned 2016
Commercial	355,005
Charter	17,394
<i>Total</i>	<i>372,399</i>

Notes: Based on passenger traffic information provided by FMAA

NAV CANADA Charges

Prior to November 1, 1998, the Canadian government collected the Air Transportation Tax (ATT) to fund aviation programs, including air navigation services. The ATT was levied on all tickets purchased in Canada as well as those purchased internationally for trips that included an enplanement in Canada. ATT rates were adjusted frequently, reaching a high in May 1995 of 7% + \$6 (to a maximum of \$55) for domestic and transborder flights, and a flat rate of \$55 for international flights.

When control of air navigation services was privatised and passed to NAV CANADA on November 1, 1996, the ATT was gradually replaced by NAV CANADA charges. These fees, collected under authority of the Civil Air Services Commercialisation Act, are not taxes on ticket sales; they are service charges billed to aircraft operators. In order to recover these costs, airlines usually pass these charges on to passengers, though NAV CANADA does not dictate how this is done. Most carriers apply a flat rate NAV CANADA surcharge to tickets they sell.

NAV CANADA fees consist of two parts: en route charges and terminal charges. En route charges are based on the maximum permissible takeoff weight of the aircraft (metric tonnes) and the distance being flown in Canadian-controlled airspace. Terminal charges are dependent only on aircraft weight.

Conceptual Issues

Because the ATT is no longer collected and the fees that NAV CANADA now charges are service fees, rather than taxes, no taxes for air navigation services will be included in total taxes paid.

GST on Air Fares and the Airport Improvement Fee (AIF)

Tax Base and Rates

The 5% Goods and Services Tax (GST) applies to the base fare of all domestic tickets purchased in Canada, and to the base fare of all transborder tickets purchases.

The airport authority charges all passengers originating their journey at Fort McMurray International Airport (YMM) an Airport Improvement Fee (AIF) that is collected for the sole purpose of funding capital improvements at the airport. The 5% GST is levied on the fee.

Conceptual Issues

Taxes levied on the air fare should be shared among airports in Canada associated with the journey. The estimation method builds in a sharing assumption (50% Fort McMurray International Airport (YMM) and 50% other Canadian airports).

Estimation Method and Results

The GST is levied on all domestic air fares; however, due to the sharing assumption stated above, only 50% of the estimated taxes per departing domestic passenger are attributable to Fort McMurray International Airport (YMM). Total tax on airfares is estimated to be over \$2.3 million.

The airport authority collected over \$11 million through the AIF in 2016.²⁸ Tax revenue on this amount is approximately \$0.6 million, allocated to the federal government.

GST on Air Traveller Security Charge

The Canadian Government enacted the Air Traveller Security Charge (ATSC) on April 1, 2002 to help fund security improvements at airports across Canada, as a result of the terrorist attacks on September 11, 2001. As of April 1, 2010, these rates were increased. There is a flat rate fee of \$7.48 for each chargeable enplanement for domestic travel.

Tax Base and Rates

The GST applies to the domestic ATSC.

Estimation Method

The volume of enplaned traffic at Fort McMurray International Airport (YMM) was determined, based on data provided by FMAA. Each enplaned passenger pays the ATSC. A total of \$0.1 million in taxes was collected on the ATSC.

GST on Airport Concessions, Ground Transportation and Parking

The GST rate applies to airport concessions, ground transportation and parking fees at the airport.

²⁸ Source: 2016 Fort McMurray International Airport Statement of Operations & Net Assets

Estimation Method and Results

Based on the information provided by the airport authority as well as the airport's 2016 annual report, concession, ground transportation and parking revenue was approximately \$1.2 million, \$3.1 million and \$3.3 million, respectively. Tax on these combined expenditures is estimated at \$0.4 million.

Appendix I: Glossary of Terms

Air Traveller Security Charge (ATSC): A fee collected by the Federal Government from air travellers to help fund security improvements at Canadian airports. The fee varies by region of travel and is charged to the passenger per enplanement.

Contract Work: Any work which is done for a company by an individual who is not on the payroll or work done for a company by another company. Generally speaking, firms will contract out work in areas in which they do not have expertise or when there are cost advantages to doing so.

Direct Employment: Direct employment is employment that can be directly attributable to the operations in an industry, firm, etc. It is literally a head count of those people who work in a sector of the economy. In the case of the airport, all of those people who work on airport property and in an aviation related capacity would be considered direct employment.

Economic Activity: (also Output, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, the process of transforming the factors of production into goods and services desired for consumption.

Economic Output: (also Economic Activity, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, it is defined as the process of transforming the factors of production into goods and services desired for consumption.

Employment Impact: Employment impact analysis determines the economic impact of employment in terms of jobs created and salaries and wages paid out. In the case of the airport, the direct, indirect, induced and total number of jobs or person years created at the airport is examined to produce a snapshot of airport operations.

Full Time Equivalent (FTE): (also Person Year) One full time equivalent (FTE) year of employment is equivalent to the number of hours that an individual would work on a full time basis for one year. In this study we have calculated one full time equivalent year to be equivalent to 1,832 hours. Full time equivalent years are useful because part time and seasonal workers do not account for one full time job.²⁹

GDP: (also value-added) A measure of the value added by labour and capital services used to produce final goods and services, as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.

Ground Transportation: Ground Transportation at the airport includes any vehicles which transport passengers from the airport to the cities or from the cities to the airport. This would include taxicab service, limousine service and hotel van service. Valet services as well as skycaps are included in this category.

Indirect Employment: Indirect employment is employment which results because of direct employment. For the airport, it would include that portion of employment in supplier industries which are dependent on sales to the air transport sector. In some cases, contract work would be considered indirect employment.

²⁹ *The Dictionary of Modern Economics*, David W. Pearce, General Editor, The MIT Press, Cambridge Mass., 1984

Induced Employment: Induced employment is employment created because of expenditures by direct and indirect employees.

Multiplier Analysis: Analysis using economic multipliers in which indirect and induced economic impacts is quantified. Essentially, a multiplier number is applied to the "directly traceable economic impact" to produce indirect and total effects (see Multiplier.)

Multiplier: Economic multipliers are used to infer indirect and induced effects from a particular sector of the economy. They come in a variety of forms and differ in definition and application. A multiplier is a number which would be multiplied by direct effects in order to calculate indirect or induced effects. In the case of the airport, as in many other cases, multipliers can lead to illusory results, and thus must be used with great care.

Airport Improvement Fee (AIF): A fee collected by the airport authority from passengers to help with funding capital improvements at the airport. In some regions of Canada, this is also referred to as the Passenger Facility Charge (PFC).

Seasonality: Seasonality results when the supply and demand for a good is directly related to the season in which is consumed. For example, ski resorts experience changes in net income as a result of seasonality. Airports and airport services also experience seasonality as a result of vacation times for families (typically during the summer) and/or temperatures abroad (typically at Christmas time). As a result of seasonality in demand for flights, some air carriers increase frequency of flights to certain areas during the busy season.

Tenant: A firm which pays a lease to a leasing company or to the airport authority directly.

Value-Added: (also GDP) A measure of the money value of final goods and services produced as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.



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**The runway is
clear for a more
prosperous
New Brunswick.**


**La piste est libre
vers la prospérité
du Nouveau-
Brunswick.**





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**When the
airport thrives,
our entire region
takes off.**

**La croissance de
l'aéroport permet
à toute notre
région de prendre
son envol.**

The powerful impact of YFC in our region.

Our purpose may be moving people and goods, but the Fredericton International Airport (YFC) is much more than an air transportation gateway. The strength of our community—our local economy—is inextricably linked to the success of our region's international airport. As such, the airport is a key driver of our community's vitality. YFC and the Fredericton region enjoy a symbiotic relationship, each contributing to the success of the other, creating significant economic prosperity for all our communities.

In this document, we're proud to detail exactly how much financial impact YFC has on our local economy. Join us for an inspiring journey.



L'influence positive de YFC dans notre région.

Notre objectif est peut-être de transporter des gens et des biens, mais l'aéroport international de Fredericton (YFC) est bien plus qu'une passerelle de transport aérien. La force de notre communauté, c'est-à-dire notre économie locale, est inextricablement liée au succès de l'aéroport international de notre région. C'est pourquoi l'aéroport est essentiel à la vitalité de notre communauté. L'aéroport YFC et la région de Fredericton profitent d'une relation symbiotique. Ils contribuent à leur succès mutuel et créent une importante prospérité économique pour toutes nos communautés.

Dans le présent document, nous sommes fiers d'expliquer en détail l'incidence économique de l'aéroport YFC sur notre économie locale. Embarquez avec nous pour un voyage inspirant.



The success of the airport is rooted in relationships.

To local New Brunswickers, YFC is simply “the airport.” A single entity. A place on the map. But the organization and operation of YFC is actually a little more complicated.

Think of YFC as the physical infrastructure of the airport. This infrastructure is managed, operated, and developed by the not-for-profit corporation of the Fredericton International Airport Authority Inc. (FIAA). Most commercial and public services and products at the airport are delivered by independent businesses operating from within the YFC structure.

The airport is, therefore, the sum of many parts, including hundreds of committed people. It's the relationship between these three groups of economic actors that creates the complete experience of “the airport” that we all feel and see when we travel. And it's the relationship between these groups that cultivates growth for the airport and our communities.

La prospérité de l'aéroport repose sur la qualité des relations.

Pour les gens vivant au Nouveau-Brunswick, YFC est simplement « l'aéroport ». Une seule entité. Un lieu sur une carte. Mais l'organisation et le fonctionnement de l'aéroport YFC sont un peu plus complexes en réalité.

Il faut considérer YFC comme étant l'infrastructure physique de l'aéroport. Cette infrastructure est gérée, exploitée et développée par une société à but non lucratif : Fredericton International Airport Authority Inc. La plupart des services commerciaux et publics à l'aéroport sont fournis par des entreprises indépendantes exploitées au sein de la structure de YFC.

L'aéroport est donc constitué de nombreux éléments, notamment des centaines de personnes engagées. La relation entre ces trois groupes d'acteurs économiques crée ultimement l'expérience que les voyageurs vivent lorsqu'ils se déplacent. Et c'est cette relation qui favorise la croissance de l'aéroport et de nos communautés.



397,741
TRAVELLERS IN 2017

That's equal
to half the
population of
New Brunswick.

397 741
VOYAGEURS EN 2017

Il s'agit de la moitié
de la population du
Nouveau-Brunswick.

↑ 33% 2013-2017

Our region's global connection.

YFC connects.

We connect our residents with the world; we connect local markets with global ones; we connect a world of tourists with the joys of a New Brunswick vacation; and we connect a large part of New Brunswick with economic benefits that improve lives province-wide.

In 2017, we served **397,741** travellers, but no matter how often you fly, YFC is an essential asset to the communities of central and western New Brunswick. But of course that's only half of the story. Because YFC also makes significant financial contributions to the health and vibrancy of New Brunswick.

La connexion mondiale de notre région.

YFC relie.

Nous relions nos résidents au reste du monde, nous relions nos marchés locaux aux marchés internationaux, nous relions une foule de touristes aux merveilles du Nouveau-Brunswick et nous relions une grande partie de la province à des avantages économiques qui améliorent la qualité de vie dans l'ensemble du Nouveau-Brunswick.

En 2017, nous avons desservi **397 741** voyageurs, mais peu importe la fréquence à laquelle vous prenez l'avion, l'aéroport YFC est une ressource essentielle pour les communautés du centre et de l'ouest du Nouveau-Brunswick. Évidemment, ce n'est qu'une partie de l'histoire : l'aéroport YFC fait d'importantes contributions financières pour assurer la prospérité et le dynamisme de la province.



Our region profits from YFC.

A strong airport is a strong community. YFC makes many contributions to the economy of a large part of New Brunswick. The total economic impact can be broken down into such things as GDP (Gross Domestic Product), taxes, employment (and employment income), and the reinvestment the airport makes in the regional economy.

In all, the economic impact of YFC is so large, you may better understand it by considering it in the context of more relatable situations. With that in mind, the following illustrations summarize just how substantial YFC's economic impact is.

Notre région bénéficie de la présence de l'aéroport YFC

Un aéroport fort signifie une communauté forte. L'aéroport YFC contribue à l'économie d'une grande partie du Nouveau-Brunswick. L'incidence économique totale peut être divisée en éléments comme le produit intérieur brut, les impôts et les taxes, l'emploi (revenus d'emploi) et les sommes que l'aéroport réinvestit dans l'économie régionale.

L'incidence économique de l'aéroport est si grande qu'il faut l'analyser selon des composantes plus évocatrices. En ce sens, les illustrations qui suivent résument la grande incidence économique de l'aéroport YFC.





\$38.8M CONTRIBUTED TO GDP ANNUALLY

Equal to the cost of building a community centre each year.

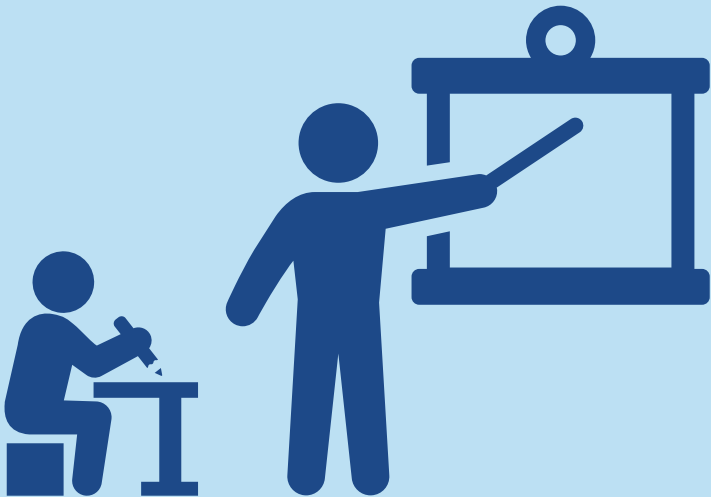
38,8 M\$ CONTRIBUTION ANNUELLE AU PIB

Cela équivaut au coût de construction d'un centre communautaire chaque année.

Gross Domestic Product (GDP) is the broadest possible measure of total economic activity – it's the monetary value of all goods and services produced within a region.

Le produit intérieur brut (PIB) est la principale mesure de l'activité économique totale. Il s'agit de la valeur monétaire de tous les biens produits et les services offerts dans une région.

Annual economic impact of YFC / Incidence économique annuelle de l'aéroport YFC		
	Direct Impacts Impacts directs	Total Impacts (Direct + Indirect + Induced) Impacts totaux (directs + indirects + secondaires)
Economic Output Produit économique	\$28,466,655 28 466 655 \$	\$44,105,679 44 105 679 \$
GDP Contribution Contribution au PIB	\$17,494,085 17 494 085 \$	\$38,868,688 38 868 688 \$



\$8M CONTRIBUTED THROUGH TAXES EACH YEAR
Equal to the salaries of 176 full-time teachers.

8 M\$ EN IMPÔT CHAQUE ANNÉE
Ce qui équivaut au salaire de 176 enseignants à temps plein.

Thanks to the successful operation of YFC, all levels of government see an impressive amount of annual economic impact.

Grâce à l’exploitation prospère de l’aéroport YFC, tous les paliers de gouvernement constatent une incidence économique impressionnante.

YFC’s annual economic value due to taxes Valeur économique annuelle de l’aéroport YFC découlant des impôts et taxes.				
	Accruing from Direct Impacts Engendrée par les impacts directs		Accruing from Total Impacts Engendrée par les impacts totaux	
	N.B./Municipal N.-B./Municipal	Federal Fédéral	N.B./Municipal N.-B./Municipal	Federal Fédéral
Totals Totaux	\$2,909,320 2 909 320 \$	\$1,450,301 1 450 301 \$	\$4,516,430 4 516 430 \$	\$3,529,151 3 529 151 \$
Aggregated Totals Totaux agrégés	\$4,359,621 4 359 621 \$		\$8,045,581 8 045 581 \$	



SUPPORTS **662** FTE JOBS

Enough people to fill 29 NHL active team rosters.

CRÉATION DE **662** EMPLOIS (ETP)

Ce nombre permettrait de former 29 équipes de la LNH.

FTE = Full time equivalent ETP = Équivalent temps-plein

A growing YFC represents more jobs – both directly at the airport, and in our community.

La croissance de l’aéroport YFC signifie plus d’emplois, tant directement à l’aéroport que dans la communauté.

YFC’s annual impact on employment Incidence annuelle de l’aéroport YFC sur l’emploi		
	Direct Impacts Impacts directs	Total Impacts (Direct + Indirect + Induced) Impacts totaux (directs + indirects + secondaires)
Total Labour Income Revenus d’emploi totaux	\$12,452,034 12 452 034 \$	\$25,842,087 25 842 087 \$
Total Jobs (FTE) Total d’emplois (ETP)	327 FTE 327 ETP	662.5 FTE 662,5 ETP



\$25.8M

ANNUAL EMPLOYMENT INCOME

= The yearly grocery bill
of 3,823 N.B. households.

25,8 M\$

REVENUS D'EMPLOI ANNUEL

= montant de l'épicerie annuelle
de 3 823 ménages du N.-B.

Of course, more jobs means more employment income.

The annual employment income associated with YFC is \$25.8M – equal to the yearly grocery bill of **3,823** New Brunswick households.

Évidemment, l'augmentation du nombre d'emplois signifie une augmentation des revenus d'emploi.

Les revenus d'emploi annuels associés à l'aéroport YFC s'élèvent à 25,8 M\$, ce qui équivaut à un montant suffisant pour payer l'épicerie annuelle de **3 823** ménages de la province.



SECTION 4.5: REINVESTMENT INTO REGIONAL ECONOMY / RÉINVESTISSEMENT DANS NOTRE ÉCONOMIE RÉGIONALE

12



\$19M REINVESTED
INTO OUR
ECONOMY

Equal to the cost of hiring
280 Registered Nurses.

19 M\$ RÉINVESTI
DANS NOTRE
ÉCONOMIE

Ce qui équivaut au montant pour
embaucher 280 infirmières
autorisées.

With over \$25M a year in employment income, \$19M is recirculated in our local economy each and every year through consumption/purchases.

To put it into perspective, total annual consumption of housing, household operations, and household furnishings is equal to a dollar amount that could buy, outfit, and operate 35 average Fredericton area homes every year. And total transportation consumption is equal to a dollar value sufficient to buy 203 mid-size sedans every year.

Avec plus de 25 M\$ de revenus d'emploi par année, 19 M\$ sont réinvestis dans l'économie locale chaque année grâce à la consommation et aux achats.

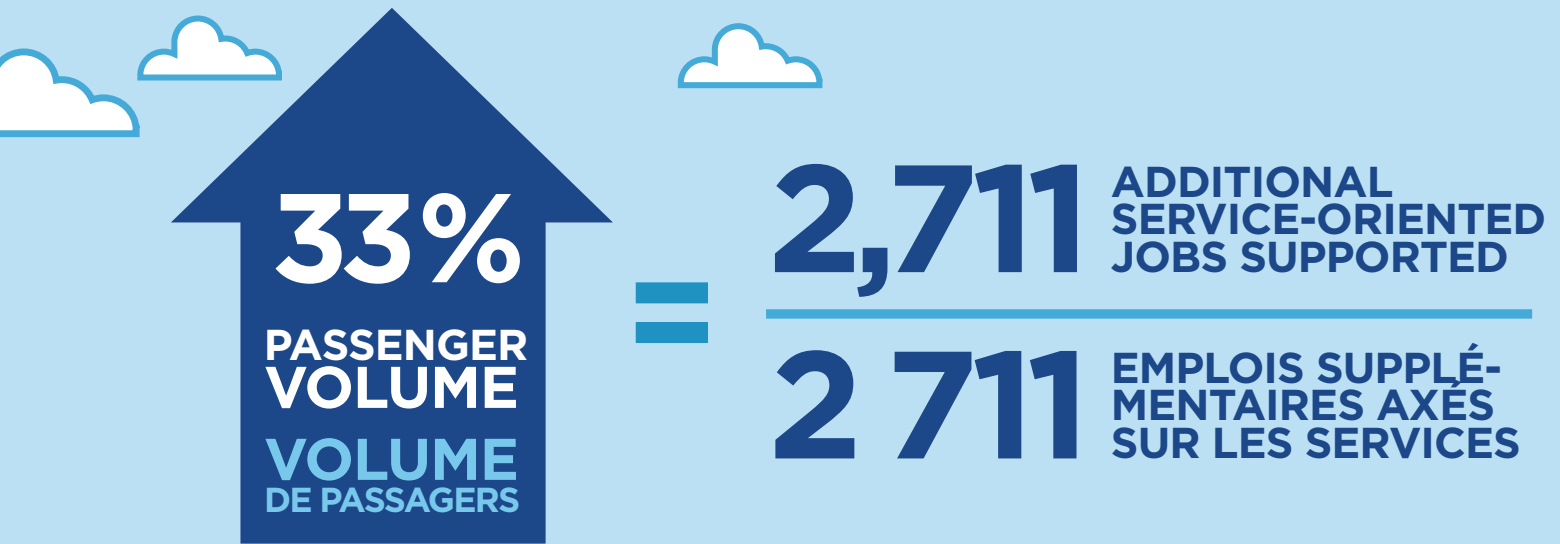
Pour mettre les choses en contexte, la consommation totale annuelle en frais de logement, d'entretien et d'ameublement s'élève à un montant suffisant pour acheter, équiper et entretenir 35 maisons moyennes dans la région de Fredericton chaque année. Et la consommation totale en transport équivaut à un montant suffisant pour acheter 203 voitures intermédiaires neuves par année.



**We're in the business
of boosting other
businesses.**

**Notre objectif est
d'aider les autres
entreprises.**





YFC connects local and global economic opportunities.

An international airport brings the global economy close to home, making YFC a critical asset to the central and western New Brunswick business community. Research shows that a 10% increase in annual passenger volume at a regional airport like YFC can result in a 1% increase in service-oriented employment within the business community of that region.*

From 2012 to 2016, passenger volume grew by more than 33%, resulting in the support of an additional 2,711 service-oriented jobs in the business community. This indirect employment boost is in addition to the direct employment influence presented in the previous section.

*Brueckner, J.K. (2003) Airline Traffic and Urban Economic Development. Urban Studies, 40(8): 1455-1469

L'aéroport YFC relie des possibilités économiques locales et mondiales.

Un aéroport international rapproche l'économie mondiale et la rend plus accessible. L'aéroport YFC est donc une ressource essentielle pour le secteur des affaires du centre et de l'ouest de la province. Les recherches démontrent qu'une augmentation de seulement 10 % du volume annuel de passagers dans un aéroport régional comme YFC peut entraîner une augmentation de 1 % de l'emploi dans le domaine des services dans la région.*

De 2012 à 2016, le volume de passagers a augmenté de plus de 33 %, ce qui a permis de créer 2 711 emplois axés sur les services dans le milieu des affaires de notre communauté. Cette augmentation indirecte du nombre d'emplois s'ajoute à l'incidence directe sur l'emploi que nous avons présenté dans la section précédente.

*Brueckner, J.K. « Airline Traffic and Urban Economic Development », Urban Studies, volume 40, numéro 8, p. 1455-1469.

**YFC and you –
partners in creating
a more vibrant New
Brunswick.**

**YFC et vous :
un partenariat
pour assurer
le dynamisme du
Nouveau-Brunswick.**



The runway is clear for takeoff.

We value the community we call home, and we're proud that our airport helps make our communities a stronger economic force. The future of our region becomes even brighter when YFC succeeds.

Fasten your seatbelts. Together, we're really going places!



La piste est libre.

Nous avons le bien-être de notre communauté à cœur et nous sommes fiers que notre aéroport aide à augmenter la force économique de votre localité. Le brillant avenir de notre région est assuré grâce à la prospérité de l'aéroport YFC.

Attachez vos ceintures. Et c'est un départ !





Aéroport international de
Fredericton
International **Airport**

YFC

Fredericton International Airport Authority Inc.
22-2570 Route 102, Lincoln NB Canada
YFCFredericton.ca



2018 Economic Impact Study
Étude sur l'incidence économique 2018

FINAL DRAFT REPORT

Gander International Airport

Economic Impact Study



PREPARED FOR
Gander International Airport Authority

PREPARED BY
InterVISTAS Consulting Inc.

Draft of 10 September 2014

Executive Summary

Gander International Airport (YQX) contributes directly to employment and the economy in the region through its operations and activities. The economic contribution of the airport to the community is termed the Economic Impact of YQX. This study examines the current economic impacts of the airport on the regional economy.

Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project, or a change in government policy or regulation. The three major components of economic impact are classified as direct, indirect, and induced impacts. These classifications are used as a basis for the estimation of the total economic impact of YQX.

In 2001, the Gander International Airport Authority (GIAA), a local not-for-profit corporation, assumed operation of Gander International Airport under a 60-year lease agreement signed with Transport Canada. GIAA is responsible for the management, operation and development of the airport.

Ongoing Economic Impact

Direct economic impact measures the employment directly associated with the airport. This includes employment from organizations such as airlines, ground handling, airport operations, airport concessionaires, and air traffic control firms. Direct economic impacts are calculated based on employment data provided by employers directly related to the airport.

The annual direct impacts of ongoing operations at YQX are estimated to be 1,260 direct person years,¹ earning approximately \$90 million in direct wages and salaries. Direct employment generates nearly \$140 million in direct gross domestic product and \$240 million in direct economic output in the regional economy annually.

Ongoing Economic Impacts of YQX

Annual Direct Impacts:

- 1,260 person years
- \$90 million in wages
- \$140 million in gross domestic product (GDP)
- \$240 million in economic output

Note: Results are based on a review of 2014 operations.

¹ Dating back to the 1930s, the affiliation and linked nature of Gander International Airport, the military, and NavCanada's air navigation services with the town of Gander was apparent and continues today. 9 Wing is located at YQX and NavCanada's Gander Area Control Centre is located off-airport. Combined, these entities contribute nearly 600 person years of employment.



Total impacts are calculated by adding together the direct operations impacts, indirect impacts, and induced impacts. Including indirect and induced multiplier impacts, ongoing economic impacts of YQX include a total of 1,940 person years. Total earnings of all employees amount to \$130 million in wages and salaries. Furthermore, YQX operations contribute an estimated \$210 million and \$360 million, in total gross domestic product (GDP) and total economic output, respectively, to the provincial economy. The total economic impacts of ongoing operations at YQX on the regional economy are summarized in **Figure ES-1**.

Figure ES-1: Annual Total Ongoing Economic Impacts of YQX

Type of Impact	Employment (Person Years)	Wages (\$Millions)	GDP (\$Millions)	Economic Output (\$Millions)
Direct Impacts	1,260	90	140	240
Indirect	390	20	40	70
Induced	290	10	30	50
Total Impacts	1,940	120	210	360

Notes:

Wages, GDP, and Economic Output are in 2014 prices

Results are based on a review of 2014 operations

Comparison of Employment with Previous Studies

The 2014 economic impact study shows that on-going operations at YQX continue to make a considerable contribution to the local the provincial economy. The employment is strong, increasing 10% 2006 and 2014 from approximately 1,140 person years to 1,260 person years. Average earnings per person year of employment have increased from \$61,000 to \$70,000. **Figure ES-2** shows the comparison of employment of on-going operations at YQX for this period.

Annual Tax Impacts

YQX is also an important generator of taxation revenues to all levels of government. Total taxes paid on an annual basis, by passengers, employers, and employees at YQX, are estimated at \$46.7 million per year.

The majority of taxes collected (57%) accrue to the federal government. The provincial government received \$18.9 million in tax revenues (40% of total). Municipal governments also benefit from YQX through the collection of property taxes amounting to approximately \$995,000 paid by YQX and its tenants (2.1% of total), as shown in **Figure ES-3**.

Tax Impacts of YQX

Federal Government:

- \$26.8 million (57% of total)

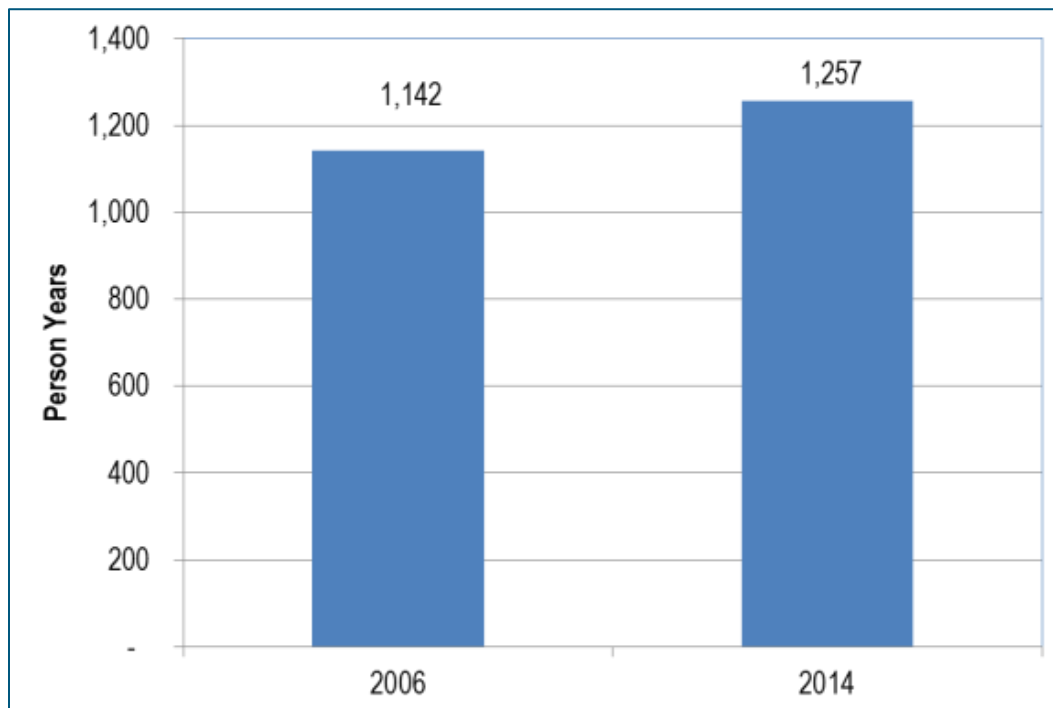
Provincial Government:

- \$18.9 million (40% of total)

Municipal Government:

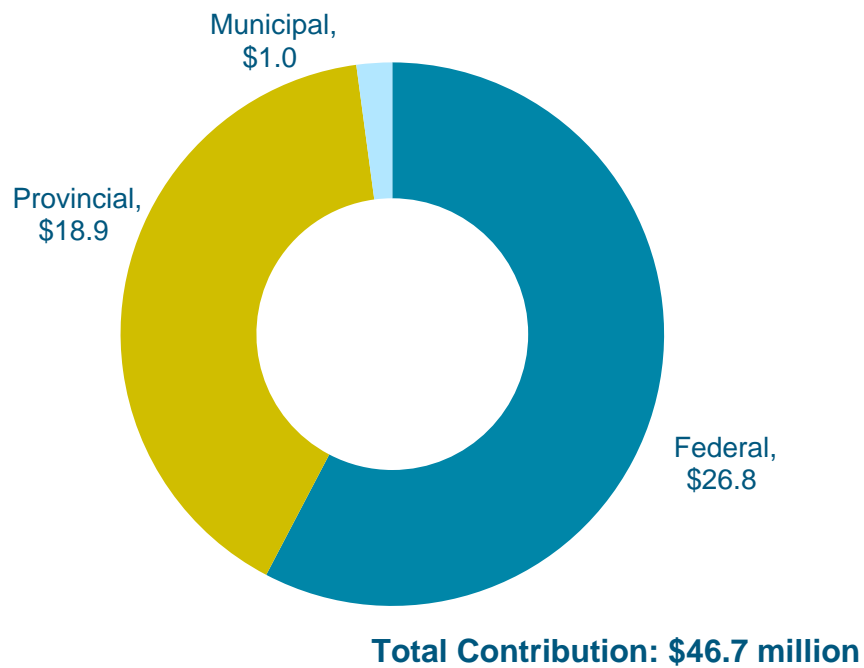
- \$995,000 (2.1% of total)

Figure ES-2: Person Years at YQX, 2006 and 2014



Source: InterVISTAS Consulting Gander International Airport Economic Impact Studies (2006 and 2014).

Figure ES-3: Annual Estimated Tax Revenues of YQX (\$millions)



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1 Introduction

Gander International Airport (YQX) generates important employment and economic contributions to the regional economy. The best way to show these impacts is through an economic impact study. Economic impact studies are an important tool in communicating the significance and role of an airport, like YQX, to the community. This study examines the current economic impacts of the operations and activities of the airport.

1.1 Gander International Airport

The airport has a long history which began in 1932 at the Imperial Economic Conference held in Ottawa in order to create a Trans-Atlantic Air Service for mail delivery. This agreement, between the Canadian and the UK governments, was signed in 1935 with construction beginning in 1936 and completed in 1937, creating the largest commercial airport at that time. On July 5th, 1937 the first commercial Atlantic flights landed; a Clipper from Botwood for Pan American and Imperial Airways Caledonia from Foyes.

With the outbreak of World War II, the Gander Airport acquired notable strategic importance as the only operational airport in the Atlantic Provinces. Accordingly, in 1940 the Royal Canadian Air Force took control of the airport, establishing a military base in 1942.

Post war, the Government of Newfoundland regained control of the airport and refocused it on commercial flights. Pan-American, Trans-World, Trans Canada and British Overseas Airways all routed flights between North America and Europe through Gander which required airport expansion with a runway extension and a new terminal building. Air navigation services located in Gander also gained importance in monitoring transatlantic flights. As the airport was expanding so too was the town of Gander.

Dating back to the 1930s, the affiliation and linked nature of Gander International Airport, the military, and NavCanada's air navigation services with the town of Gander was apparent and continues today.

In 2001, the Gander International Airport Authority (GIAA), a local not-for-profit corporation, assumed operation of Gander International Airport under a 60-year lease agreement signed with Transport Canada. GIAA is responsible for the management, operation and development of the airport.

Gander International Airport

- 133,500 enplaned/deplaned passengers in 2013
- 33,500 aircraft movements in 2013

Gander, NL

- CMA population is approximately 12,900 in 2014

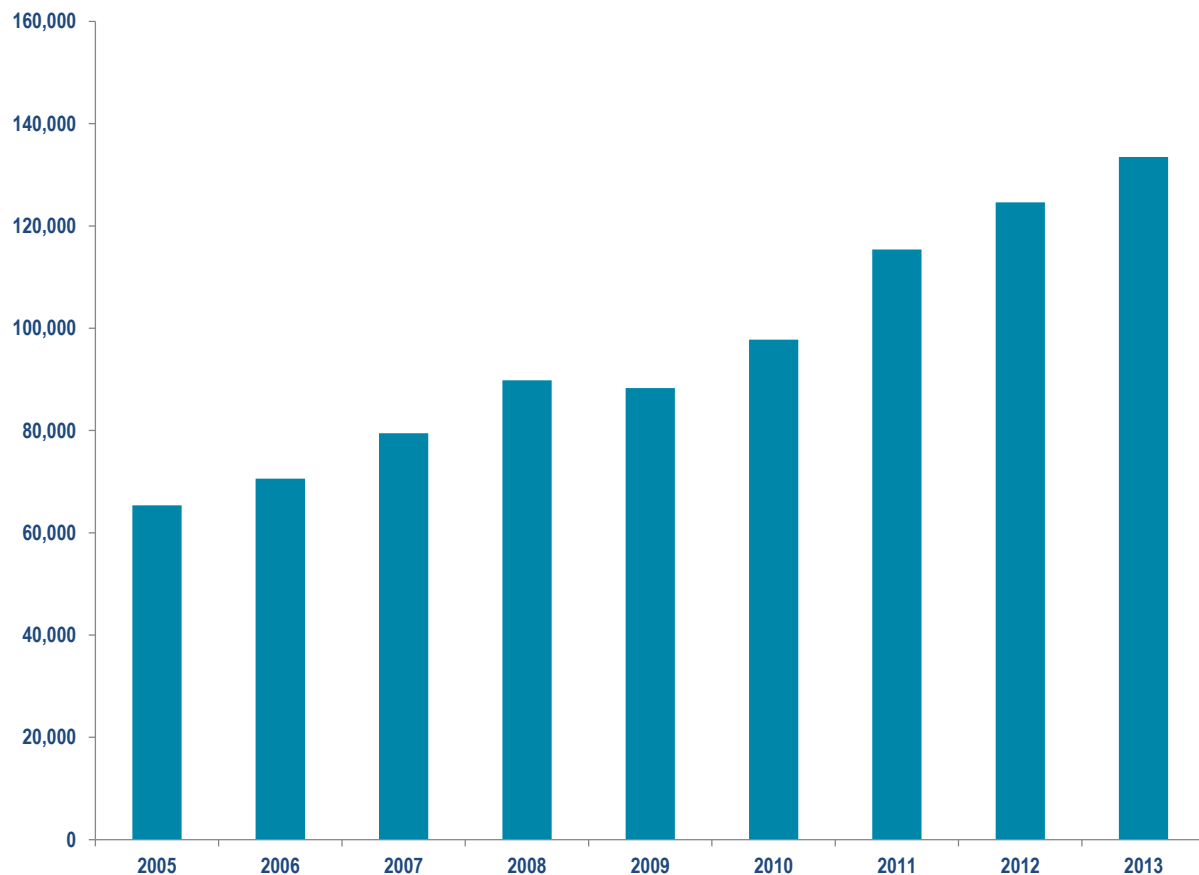
Measurements of Economic Impact

- Employment (Jobs & Person Years)
- Earnings
- Gross Domestic Product (GDP)
- Economic Output

1.2 Passenger Traffic and Cargo Operations

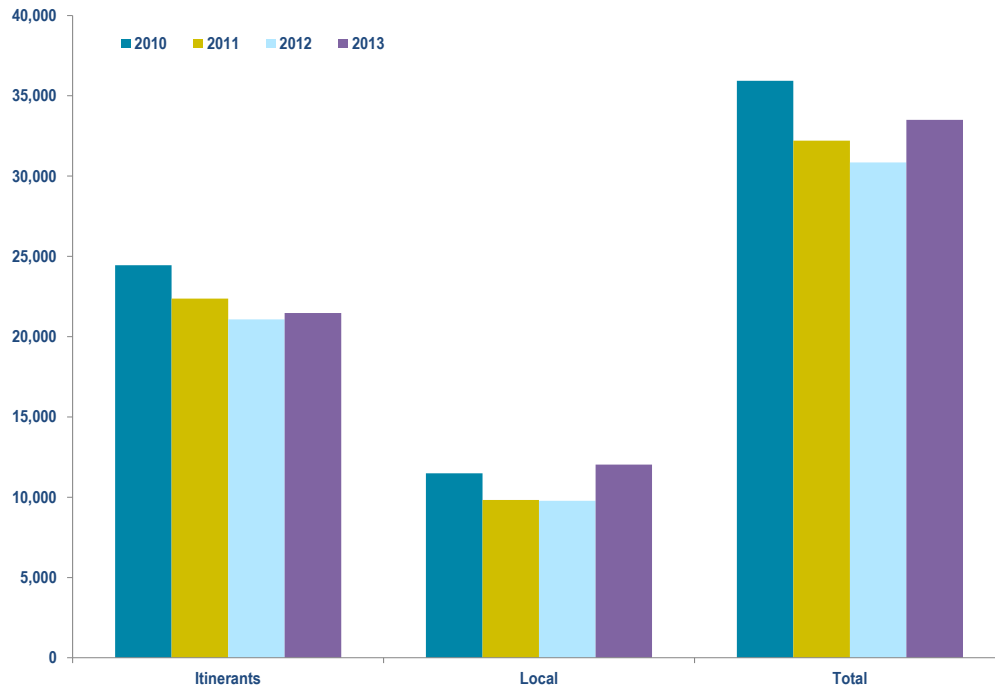
Figure 1-1 illustrates passenger traffic at YQX from 2005 to 2013. YQX has generally had yearly increases in passenger traffic through the past nine years, with the exception of 2009 where traffic levels were slightly below that of 2008. The decline could be attributed to the global economic downturn. Over the time period from 2005 to 2013, passenger traffic has more than doubled from 65,400 e/d passengers to 133,500 e/d passengers. **Figure 1-2** shows the volume of aircraft movements at YQX from 2010 to 2013 and **Figure 1-3** shows the total landings at the airport from 2011 to 2013.

Figure 1-1: Total Enplaned/Deplaned Passenger Traffic at YQX, 2005-2013



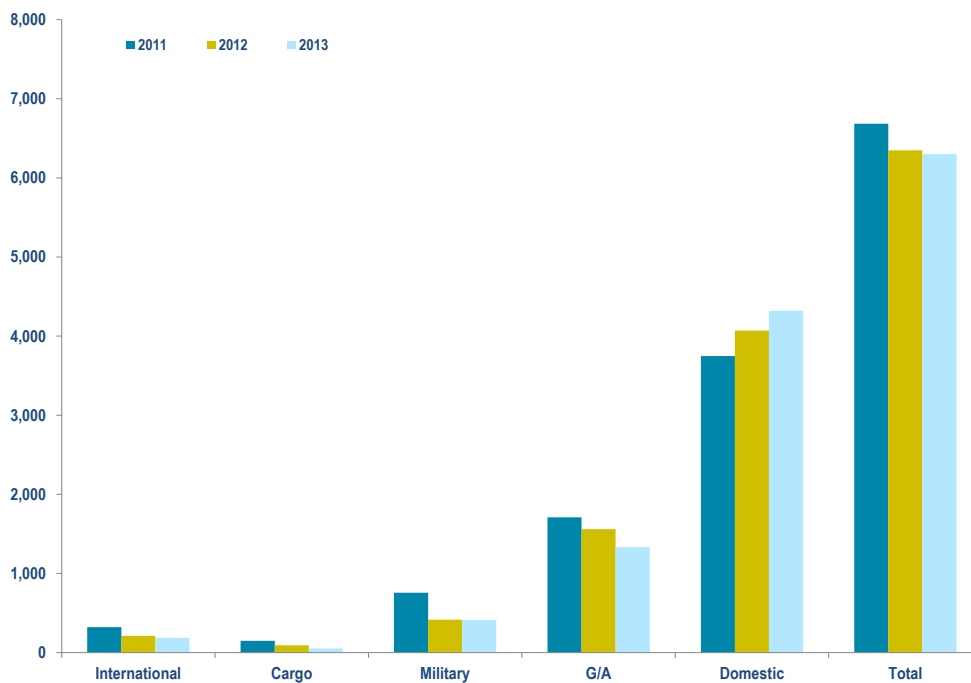
Source: Data for 2005 to 2011, from Air Carrier Traffic at Canadian Airports, Statistics Canada Catalogue no. 51-203-X (2005-2011). Data for 2012 to 2013, from Gander International Airport Authority.

Figure 1-2: Total Aircraft Movements at YQX, 2010-2013



Source: Gander International Airport Authority.

Figure 1-3: Total Landings at YQX, 2011-2013



Source: Gander International Airport Authority.

1.3 Gander Industry and Economy

A map of Gander International Airport is shown in **Figure 1-4**. In 2014, Gander had a population of approximately 12,900, which is up 37% from 9,400 in 2006. The total labour force of Gander amounts to 5,900 people, with the top industries in Gander including the retail trade, health care and public administration. The median income for all employment in Gander amounts \$50,300 per annum in 2010. At the provincial level, Newfoundland & Labrador have a population of approximately 427,500 (11,100 in Gander Census Subdivision) and a real GDP of nearly \$34 billion in 2012.

Air transportation plays a significant role in the region by providing the necessary transportation access and linkages to major industries for with Gander International Airport is a major employer of related organizations which contributes to the growth of the overall economy of the Gander area.

Figure 1-4: Map of Gander International Airport and Surrounding Area



1.4 What is Economic Impact?

Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project, or a change in government policy or regulation. Economic impact is most commonly measured in several ways, including employment, income, gross domestic product (GDP), and economic output, as explained in **Figure 1-5**.

Figure 1-5: Measurements of Economic Impact

Employment <i>(Person Years)</i>	<ul style="list-style-type: none">• Full-time equivalents (FTE) or person years of employment generated. Because many jobs may be only part-time or seasonal, the number of jobs is greater than the number of person years.
Earnings	<ul style="list-style-type: none">• Includes wages, salaries, and benefits associated with employment tied to the sector, project or policy/regulatory change.
Gross Domestic Product (GDP)	<ul style="list-style-type: none">• A measure of the money value of final goods and services produced locally as a result of economic activity. This measure does not include the value of intermediate goods and services used up to produce the final goods and services.
Economic Output	<ul style="list-style-type: none">• The dollar value of industrial output produced. Sometimes referred to as “economic activity,” it reflects the spending (i.e., capital improvement plus revenue) by firms, organizations and individuals. In the case of organizations that do not generate revenue (e.g., government-provided air traffic control services), annual operating expenses are counted.

1.5 Gander Airport Economic Impact

The three major components of economic impact are direct, indirect, and induced impacts. These distinctions are used as a base for the estimation of total economic impact of an airport. Each of these three components requires different tools of analysis. Employment impact analysis determines the economic impact in terms of jobs created and salaries and wages paid out. In the case of the airport, the direct, indirect, induced, and total numbers of person years created at the airport are examined to produce a snapshot of airport operations.

- **Direct** impacts account for the economic activity of the target sector itself. Direct employment impacts are measured by counting those individuals who work in a particular sector of the economy. In the case of an airport, all of those people who work in an aviation-related capacity either on-site or off-site would be considered direct employment (e.g. customer service, airline crew based at Gander, ground handling, cleaning, maintenance, and airport staff members, etc.).
- **Indirect** impacts are those that result because of the direct impacts. For an airport, indirect impacts encompass the economic activities of off-site firms that serve airport users. Indirect employment includes the portion of employment in supplier industries which are dependent on sales to the air transport sector. An example would be food wholesalers that supply food for catering on flights.
- **Induced** impacts are economic impacts created by the spending of wages, salaries, and profits earned in the course of the direct and indirect economic activities. Induced employment is employment generated from expenditures by individuals employed indirectly or directly. For instance, if an airline maintenance firm employee decides to re-model his/her home, this would result in additional (induced) employment hours in the general economy. The home renovation project would support hours of induced employment in the construction industry, the construction materials industry, etc. Induced impact is often called the household-spending effect.
- **Total** impacts are the sum of direct, indirect, and induced effects.

2 Methodology

2.1 Introduction

InterVISTAS conducted this economic impact study during the spring/summer of 2014. The study estimates the economic impact of YQX's operations in May 2014.

To calculate the direct employment impacts, the study team surveyed all the employers associated with the operation of YQX (e.g., airlines, ground handling firms, accommodations, ground transport firms, etc.). The survey produced estimates of the number of individuals employed in directly-related occupations, as well as the total amount of earnings paid to all employees. The firms surveyed as part of this study are located both on the airport (on-site) and off the airport site (off-site). The employment survey was used to classify the total employment and average wages paid by business type.

InterVISTAS estimates the indirect and induced effects using economic multipliers developed by Statistics Canada. InterVISTAS utilizes a proprietary model in order to conduct multiplier analysis and estimate indirect and induced impacts.

We used the data from the survey to calculate the associated tax impacts (government revenue) generated by the airport's operations.

Survey Response Rate

- 100% of tenants responded to the survey
- 100% of total person years covered by the survey

Study Time Frame

- 2014 operations

Economic Multiplier Source

- Statistics Canada, Industry Accounts Division: Input-Output Multipliers for Newfoundland & Labrador, 2010

2.2 Estimating Current Economic Impact

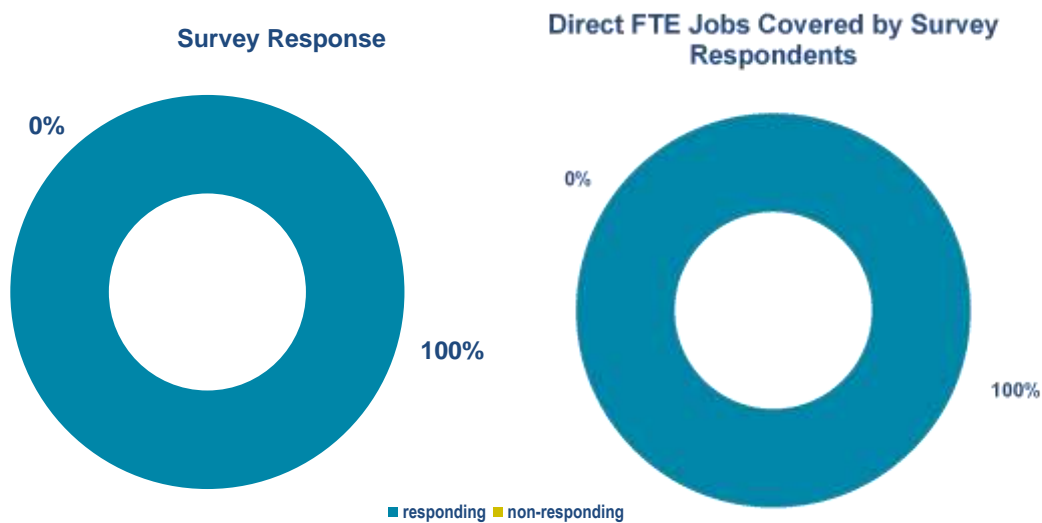
The direct employment base related to ongoing operations at YQX is measured first. Employment figures are generally more understandable by the public than more abstract measures, such as economic output or GDP. Employment figures also have the advantage of being a more accurate measure, both because the firms are more likely to provide data on employment, as opposed to information on revenues, wages and other monetary amounts, and because there is less chance of double counting economic activity.

The economic impact study then assesses the indirect and induced (or “multiplier”) employment supported by YQX's operations, as well as economic activity in terms of economic output and GDP using Statistics Canada multipliers. The tax revenue generated annually by operations at YQX is also estimated.

2.3 Surveying Direct Employment

Employment attributable to ongoing YQX operations was measured by surveying 47 tenants and also other related businesses and organizations economically linked to the airport. The surveyed firms included on-site and off-site businesses that fall under three categories: general,² air carrier and accommodation. Specifics of the survey methodology are contained in the Appendices, including a description of the sampling techniques in **Appendix A**. E-mail and telephone follow-ups were conducted to ensure a strong response rate. In total, 100% of the businesses and organizations contacted responded to the survey, representing 100% of total person years covered by the survey. A summary is provided in **Figure 2-1**.

Figure 2-1: Response Rate for YQX Economic Impact Employment Survey



2.4 Inferring Employment

For firms where their survey was fully completed, employment and other metrics were conservatively estimated using a proven and accepted methodology. This includes referencing the survey results for firms of similar business types, or using past employment surveys. There may be firms that were not surveyed because their existence was not known. Employment for these non-surveyed firms was not estimated because there was no basis for assessment. We expect that the volume of missed employment would be minimal. For this study, no employment was inferred.

² The general survey category is comprised of a variety of firm types including but not limited to: federal government agencies (CBSA, for example), fixed base operators, aircraft sales, airport terminal services, airport operators, airport retail services, construction, and building maintenance.

2.5 Estimating Indirect and Induced Impacts Using Economic Multipliers

Measurement of indirect and induced economic activity is difficult. While it might be possible to conduct a survey of such employers, the survey would need to cover thousands of firms for indirect employment. For induced employment, the entire economy would need to be scrutinised. In addition to the time and financial resources needed to conduct such surveys, the quality of responses would be suspect.

As an alternative to costly and inaccurate surveys, indirect and induced effects are typically measured by the use of economic multipliers.³ Multipliers are derived from economic/ statistical/accounting models of the general economy. They come in a variety of forms and differ greatly in definition and application. Thus, great care must be exercised in choosing the appropriate set of multipliers to use. In addition, the use of multiplier analysis is limited by a number of factors, these being:

- the accuracy of the structure and parameters of the underlying model;
- the level of unemployment in the economy;
- the assumption of constant returns to scale in production;
- the assumption that the economy's structure is static over time; and
- the assumption that there are no displacement effects.

Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment.

2.6 Study Time Frame

The employment survey was conducted between May 2014 and Aug 2014. The results reflect employment and operations as a current snapshot of 2014.

2.7 Jobs versus Person Years

Traditionally, one measures employment by the number of jobs. However, when part-time and/or seasonal workers are used, this can be a misleading measure resulting in an overstatement of economic impact. Whenever possible, employment impacts are measured both in terms of the number of jobs and

³ The multipliers used for the analysis are based on Statistics Canada economic multipliers for Newfoundland and Labrador from the 2010 Interprovincial Input-Output model, the most recent data available. These multipliers were updated with Consumer Price Indices to account for inflation.

the number of also called person years.⁴ In our model, hours worked by part-time and/or seasonal employees are converted into person years.

2.8 Estimating Tax Revenues

The tax revenue contributions to the federal, provincial, and municipal levels of government that are associated with airport operations are also estimated. This includes taxes paid by employers and employees (such as payroll taxes), passengers (such as sales taxes on expenditures), and YQX (such as special assessment user fees). Estimated tax revenues are for calendar year 2013.

⁴ One person year is equal to 1,832 hours of work. See **Appendix C** for a detailed calculation of the number of hours per full-time equivalent. Person years are the same as full time equivalents (FTEs).

3 Direct Employment Impacts of Airport Operations

3.1 Introduction

This section describes the total employment, in both jobs and person years, and estimated payroll attributable to employers directly related to ongoing operations at YQX.

Person years are broken down by:

- Full-time versus part-time and seasonal employment;
- Employment by industry; and
- Employment by job category.

3.2 Direct Employment and Wages

Direct employment related to ongoing operations at YQX amounts to 1,300 direct jobs, including contract employment. After adjusting for part-time and seasonal employment, the 1,300 jobs equate to 1,260 person years.⁵

Employees at YQX and related firms receive an estimated \$90 million in wages, providing an average of \$70,000 per person year. Employment figures are summarized in **Figure 3-1** for wages, as well as jobs and person years.

Annual Operations at YQX support:

- 1,300 direct jobs
- 1,260 direct person years
- \$90 million in wages

Direct employment related to YQX operations includes:

- 95% permanent jobs
- 5% seasonal jobs

The larger employers at YQX are:

- Services Sector (16%)
- Airlines, Airline Support Services, and General Aviation (50%)
- Government Agencies (30%)

⁵ Dating back to the 1930s, the affiliation and linked nature of Gander International Airport, the military, and NavCanada's air navigation services with the town of Gander was apparent and continues today. 9 Wing is located at YQX and NavCanada's Gander Area Control Centre is located off-airport. Combined, these entities contribute nearly 600 person years of employment.

Figure 3-1: Annual Direct Employment and Wages of Operations at YQX

Type of Impact	Employment (Jobs)	Employment (Person Years)	Wages (\$ Millions)
Direct Impacts	1,300	1,260	90

Notes:

Wages are in 2014 prices

Total employment includes persons on contract.

3.3 Direct Full-time, Part-Time, Seasonal and Contract Employment

A total of 1,300 direct jobs are attributable to YQX operations and other airport related businesses. Based on information provided by the survey of employers, 95% of the jobs are permanent jobs while seasonal employment represented the remaining 5% of jobs. Approximately 95% of these permanent jobs are full-time positions. This demonstrates that YQX and its related businesses are a source of stable, year-round employment.

Figure 3-2: Permanent versus Seasonal Employment at YQX

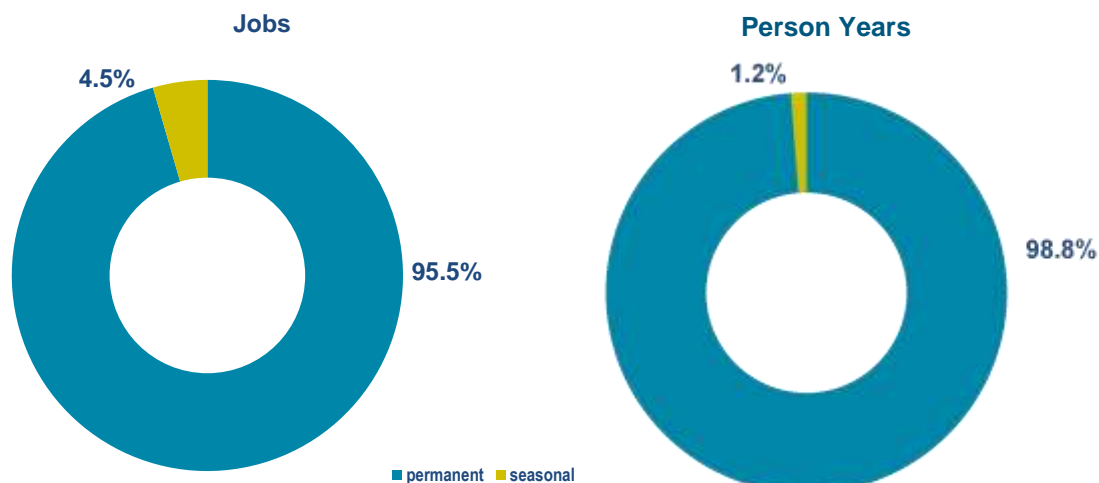
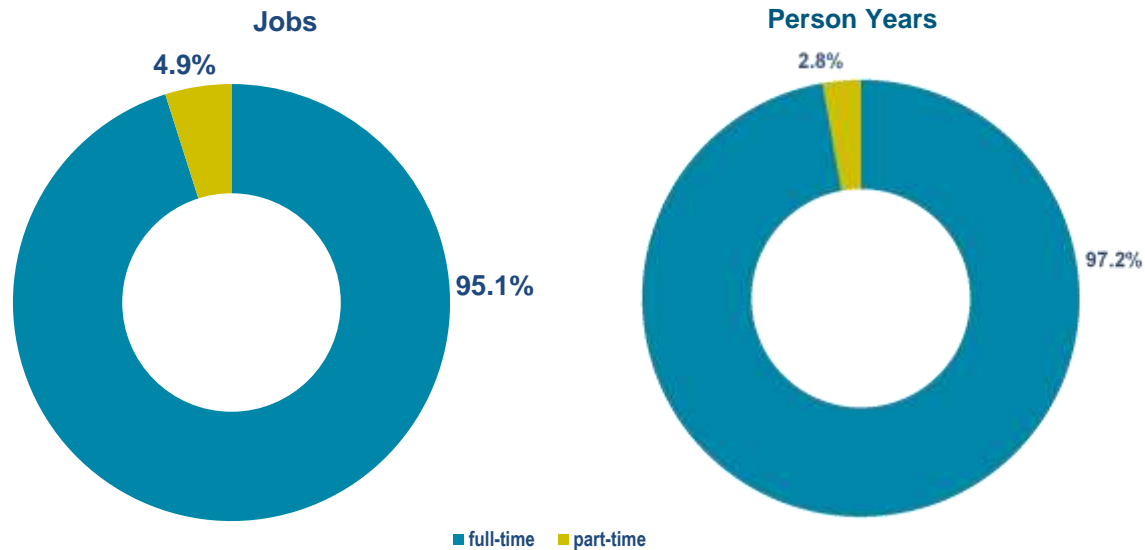


Figure 3-3: Full-Time Versus Part-Time Permanent Employment at YQX



Some employers contract out services to individuals and other firms. Based on responses to the survey, it is estimated that contracted individuals account for 22 person years of employment.

3.4 Direct Employment by Industry Type

A breakdown of direct employment at YQX, by industry type, provides insight into the different industries directly related to the airport. The following summary details direct employment of each industry:

- **Air Cargo Carriers, Couriers, and Integrators** account for 49 person years at YQX with 4% of direct employment. Trucking firms delivering or picking up goods from the airport are also included in this category.
- **Airlines, Airline Support Services, and General Aviation** combine to support 623 direct person years (50% of direct employment). Contributions to this employment figure are provided by passenger charter and scheduled carriers, air navigation and general aviation.
- **Government Agencies** account for the third highest proportion of direct employment at YQX (375 direct person years or 30% of direct employment). These organizations provide essential services for the airport such as air traffic control, customs and border control, and policing and fire services. YQX airport operating staff is also included in this category.



- **Services and Entertainment** contribute a total of 198 direct person years (16% of direct employment). This group includes retail and concessions, car rental, and the museum.
- **Accommodations** provide the remaining 12 direct person years (1% of direct employment) by directly supporting overnighting airline flight crews and accommodating overnight visitors.

A breakdown of direct employment at YQX, by industry, is illustrated in **Figure 3-4**. The specific economic impacts by industry type can be found in **Appendix H**.

Figure 3-4: Direct Employment by Industry Type at YQX



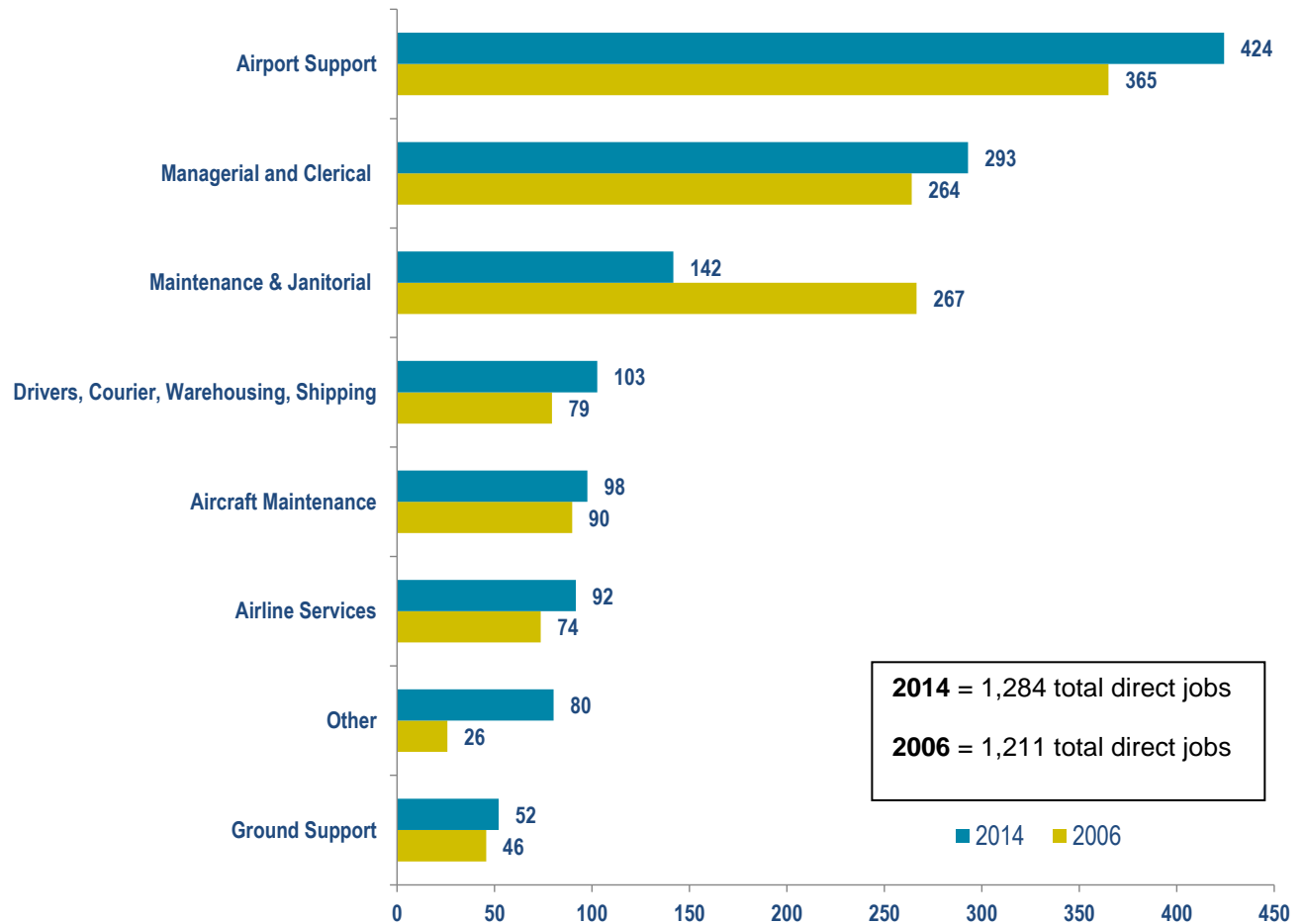
3.5 Direct Employment by Job Category

YQX is a source of a wide variety of job categories and positions. A significant proportion of this employment is attributed to firms and employees supporting YQX air cargo, terminal, and air service operations. **Figure 3-5** shows a comparison of direct jobs by job category in 2006 vs. 2014. The various occupations associated with YQX can be grouped into the following job categories:

- **Drivers, Courier, Warehousing, and Shipping** employment comprises the majority of direct employment at YQX with 103 direct jobs (8% of direct employment).
- **Managerial and Clerical** employment accounts for management staff, as well as clerical positions which could include administrative and office support workers. Managerial and clerical employment includes 293 direct jobs at YQX, equivalent to 23% of direct employment.
- **Airline Services** includes employment of pilots and flight attendants working at YQX. Also considered are the labour hours of airline employees within the terminal, including check-in agents, gate agents, escorts (e.g., for wheelchairs), supervisors, and the airline's overhead staff. Airline services accounts for 92 direct jobs at YQX (7% of direct employment).
- **Airport Support** accounts for employment of other non-airline workers within the terminal, including employees in air traffic control, security screening, customs and border protection, retail and restaurant, car rental, and the airport operations attributed to air service. Airport support employment comprises of 424 direct jobs at YQX (33% of direct employment).
- **Ground Support** includes jobs in ramp crew, bag room, fuelling, grooming, and catering. Also considered in this category are cargo agents and cargo supervisors. There are 52 direct jobs within this category at YQX (4% of direct employment).
- **Aircraft Maintenance** provides employment of mechanics based at YQX. Aircraft maintenance accounts for 98 direct jobs at YQX, equivalent to (8% of direct employment).
- **Maintenance & Janitorial** includes employment of maintenance and janitorial staff located on-site at the airport. There are 142 direct jobs within this category at YQX (11% of direct employment).
- **Other** includes jobs such as engineers, IT specialists, project managers and waste collectors. Other employment comprises 80 direct jobs at YQX (6% of direct employment).



Figure 3-5: Direct Employment by Job Category at YQX: 2006 vs 2014



4 Indirect and Induced Employment Impacts of Airport Operations

4.1 Introduction

The previous sections discussed how direct employment related to ongoing operations at YQX was measured. However, the employment impact of the airport does not end there, as other sectors of the economy are dependent on these employers' businesses. Indirect employment is generated by suppliers to the businesses directly related to the airport. In addition, there may be a general stimulus to the province-wide economy when direct (and indirect) employees spend their wages. These employment effects are referred to as induced employment. Total employment effects therefore equal the sum of direct, indirect and induced effects.

4.2 Indirect Employment

Indirect employment is employment in non-airport industries that supply or provide services to this industry. Based on an analysis of the results of our survey of employers and the application of the regional economic multipliers, it is estimated that 390 indirect person years are related to YQX's operations. In other words, 390 person years are indirectly generated in industries that supply the businesses directly related to YQX. Wages associated with the total indirect employment are estimated at \$20 million per annum.

4.3 Induced Employment

Induced employment is employment created because of expenditures by individuals employed both directly and indirectly by businesses directly related to the airport. It represents the demand for goods and services generated by wage earnings from economic activity directly related to the airport. Induced employment attributable to YQX is estimated at 290 person years, generating \$10 million per annum in earnings.

Indirect employment impacts of YQX include:

- 390 indirect person years
- \$20 million in indirect wages

Induced employment impacts of YQX include:

- 290 induced person years
- \$10 million in induced wages

Total employment impacts of YQX include:

- 1940 total person years
- \$130 million in total wages

4.4 Total Employment

Ongoing YQX airport operations generate a total of 1,940 person years and \$130 million in wages, including induced and indirect effects.

Figure 4-1 summarizes the direct, indirect, induced, and total impact of employment and wages in the surrounding regional economy attributable to ongoing operations at YQX.

Figure 4-1: Annual Direct, Indirect, Induced and Total Employment Impacts of YQX

Type of Impact	Employment (Person Years)	Wages (\$ Millions)
Direct	1,260	90
Indirect	390	20
Induced	290	10
Total Impacts	1,940	120

Notes:

Wages are in 2014 prices

5 Other Economic Impacts of Airport Operations

5.1 Introduction

Previous sections of the report focused on the employment impacts of operations at YQX. This section turns to the broader economic impacts of YQX that are measured using dollar values.

The two most common measures of economic contribution (in addition to employment) are gross domestic product (GDP) and economic output. GDP is a measure of the money value of final goods and services produced as a result of economic activity, and measures only value-added revenues. Economic output is the dollar value of industrial output produced and roughly corresponds to the gross revenue of goods or services produced by an economic sector. As such, GDP removes the revenues to suppliers of intermediate goods and services and only includes the revenues from value-added production. Alternatively, economic output adds all revenues at each stage of production together as a measure of total production in the economy. Economic output will always be greater than GDP (also termed value-added). In service industries and the public sector, economic output is often simplified to equate to total wages paid.

To estimate economic output for a sector, one might add up the gross revenues of the various firms in that sector. However, to find GDP for a sector, care must be taken to avoid double-counting. The revenues of one firm providing service to another are not incremental GDP. For example, in the automobile sector, one cannot add the value (gross revenue) of a finished auto to the value of the tires. The tires are already included in the value of the automobile.

One approach to measuring economic output and value-added GDP is to ask firms in a survey to provide information on their gross revenues, payments to suppliers, etc. However, there are several problems with this approach. First, it is much too expensive. Second, the double counting problem makes this approach impractical.

An alternative is to infer economic output and GDP for an economic sector from employment data using economic multipliers. Statistics Canada produces economic multipliers on a national and provincial level. Using these economic multipliers is both cost effective and more accurate than obtaining the data from surveys. This method is the approach adopted here.

Direct other economic impacts of YQX:

- \$140 million in direct GDP
- \$240 million in direct Economic Output

Indirect other economic impacts of YQX:

- \$40 million in indirect GDP
- \$70 million in indirect Economic Output

Induced other economic impacts of YQX:

- \$30 million in induced GDP
- \$50 million in induced Economic Output

Total other economic impacts of YQX:

- \$210 million in indirect GDP
- \$360 million in indirect Economic Output

5.2 Gross Domestic Product and Economic Output

The direct employment from ongoing YQX airport operations generates \$140 million in direct GDP and \$240 million in direct economic output. Including multiplier effects, operations at YQX support \$210 million total (direct, indirect and induced) GDP and \$360million in economic output. **Figure 5-1** summarizes the GDP and economic output contributions of ongoing airport operations at YQX to the regional economy.

Figure 5-1: GDP and Economic Output Impacts at YQX

Type of Impact	GDP (\$Millions)	Economic Output (\$Millions)
Direct	140	240
Indirect	40	70
Induced	30	50
Total Impacts	210	360

Notes:

GDP and Economic Output are in 2014 prices

6 Tax Impacts

6.1 Introduction

This part of the report documents the current contribution to government revenues resulting from current operations at YQX and associated economic activity. This includes revenues received by federal, provincial and municipal governments.

Revenue contributions are divided into two groups, based on who is making the payment:

- **Taxes paid by employers and employees.** These are taxes paid by the airport employers and employees. They include income and payroll taxes, social insurance contributions (such as employment insurance premiums) and the federal and provincial fuel taxes. This also includes property taxes paid by Gander International Airport Authority and tenants to the municipal government.
- **Taxes paid by passengers.** Visitors pay various taxes and fees. For example, these include taxes on personal expenditures at YQX such as taxes on food and beverages, taxes on airline tickets and taxes on single night hotel stays by connecting passengers and overnight flight crews, as well as the Airport Improvement Fee (AIF).

For each category, taxes paid to the federal, provincial and local levels of government are separately identified.

The purpose of this section is to present the tax revenue contributions resulting from the activity attributable to YQX. As with all such studies, a conceptual decision has to be made as to how broad a definition of economic activity should be used in measuring the impacts. For this study, a relatively narrow definition has been taken, for example, the following have not been included:

- Taxes associated with indirect or induced employment (i.e. multiplier effects).
- Consumption taxes (e.g., HST) paid by airport employees when they spend their income.
- Excise or import taxes on cargo.
- Taxes paid by airport users outside of the airport.

Annual tax contributions of YQX amount to:

- \$46.7 million

Annual tax contribution of YQX by level of government:

- \$26.8 million to the federal government (57%)
- \$18.9 million to the provincial government (40%)
- \$995,000 to the municipal governments (2.1%)

Annual tax contributions of YQX by level of tax payer:

- \$8.8 million by passengers
\$37.9 million by employers and employees

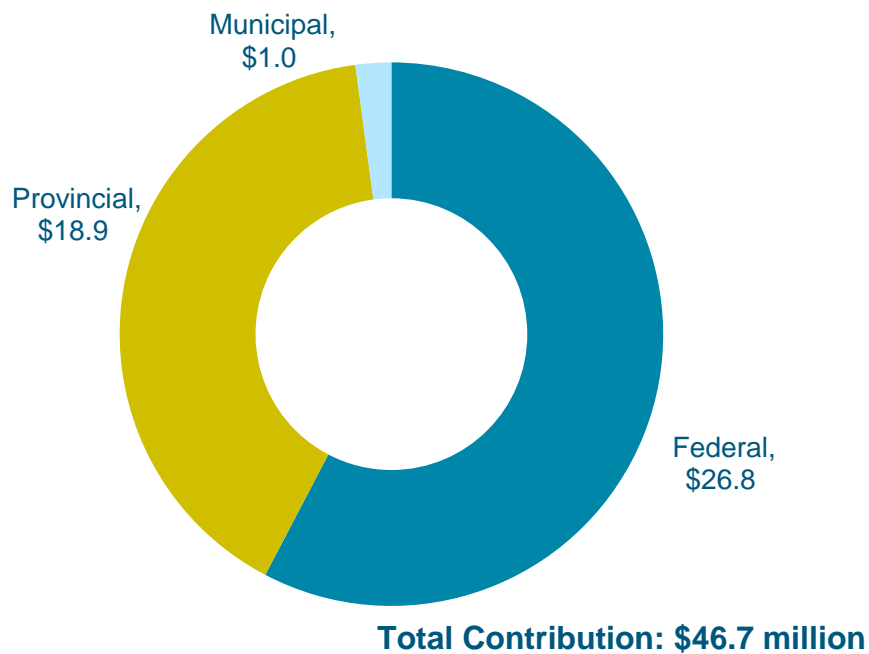
It would be exceedingly complex to broaden the scope of the tax base in this analysis to include taxes generated by indirect and induced employment. The level of detail collected on direct employment by the survey is critical to the tax analysis while such information is not available for the indirect and induced employment. This being the case, impacts and speculation about the general economy would be complex and averages would not necessarily be precise or accurate. Therefore, the tax analysis in this report is limited to revenues attributable to direct employment only.

6.2 Tax Contributions by Level of Government

Ongoing economic activity at YQX generates tax revenue for all levels of government. In 2013, total tax contributions from YQX-related direct employment to all levels of government were approximately \$46.8 million. **Figure 6-1** provides a breakdown of tax impacts by level of government.

- The federal government was the largest recipient of tax revenue, receiving approximately \$26.8 million (57% of total tax revenue impacts). The vast majority of that total is attributable to taxes paid by employers and employees such as income tax, corporate income tax, CPP contributions, and the like.
- The provincial government received \$18.9 million (40% of total tax revenue impacts). This total is from income taxes, aviation fuel taxes and the PST portion of the HST paid by passengers various products and services.
- The municipal governments collected the remaining \$995,000 in tax revenue (2.1% of total tax revenue impacts) from the airport authority and its tenants in the form of property, water/sewer and business taxes.

Figure 6-1: Annual Estimated Tax Revenues of YQX by Level of Government (in \$millions)



6.3 Summary of Tax Contributions by Tax Payer

Ongoing economic activity at YQX generates tax revenue from different tax payers is presented in **Figure 6-2**.

Figure 6-2: Estimated Tax Revenue, by Level of Government and Taxpayer

Taxpayer	Federal (\$Million)	Provincial (\$Million)	Municipal (\$Million)	Total (\$Million)
Passengers	\$3.4	\$5.4	\$0	\$8.8
Employers or Employees	\$23.4	\$13.5	\$1.0	\$37.9
Total	\$26.8	\$18.9	\$1.0	\$46.7

7 Summary and Comparison to Previous Studies

7.1 Ongoing Economic Impact

Ongoing operations at YQX support a total of 1,940 person years in the region, when multiplier impacts are included. Of this employment, 1,260 person years are directly related to the airport. Because jobs related to the airport extend far beyond YQX, the total also includes both indirect (approximately 390 person years) and induced employment (290 person years).

YQX contributes significantly to the regional economy, as well. The significance of the airport is demonstrated by the direct economic impact of the airport on GDP and economic output, measured at \$140 million and \$240 million, respectively. Including indirect and induced impacts, the total impacts are approximately \$210 million and \$360 million, respectively.

Figure 7-1 summarizes the ongoing economic impacts of YQX.

Total economic impacts of YQX include:

- 1,940 total person years
- \$130 million in total wages
- \$140 million in direct GDP
- \$240 million in direct Economic Output

Figure 7-1: Annual Total Ongoing Economic Impacts of YQX

Type of Impact	Employment (Person Years)	Wages (\$ Millions)	GDP (\$ Millions)	Economic Output (\$ Million)
Direct Impacts	1,260	90	140	240
Indirect	390	20	40	70
Induced	290	10	30	50
Total Impacts	1,940	120	210	360

Notes:

Wages, GDP, and Economic Output are in 2014 prices

7.2 Annual Tax Contribution

YQX is also an important generator of taxation revenues to all levels of government. Total taxes paid on an annual basis, by passengers, employers and employees, and YQX are estimated at \$46.7 million per year. The majority of taxes collected accrue to the federal and provincial governments at 57% and 40%, respectively. The municipal governments also benefit from YQX, such as through the collection of property taxes from the airport and its tenants amounting to \$995,000, as shown in **Figure 7-2**.

7.3 Comparison to Previous Economic Impact Studies

The 2014 economic impact study shows that on-going operations at YQX continue to make a considerable contribution to local employment and the provincial economy. **Figure 7-3** provides a comparison of the on-going operations at YQX in 2006 and 2014. In comparison to the 2006 Economic Impact Study that InterVISTAS conducted, YQX has increased its employment base to 1,260 person years, up from 1,140 person years in 2006. Wages per person year have also increased from \$61,000 to \$70,000.

Figure 7-2: Annual Estimated Tax Revenues of YQX

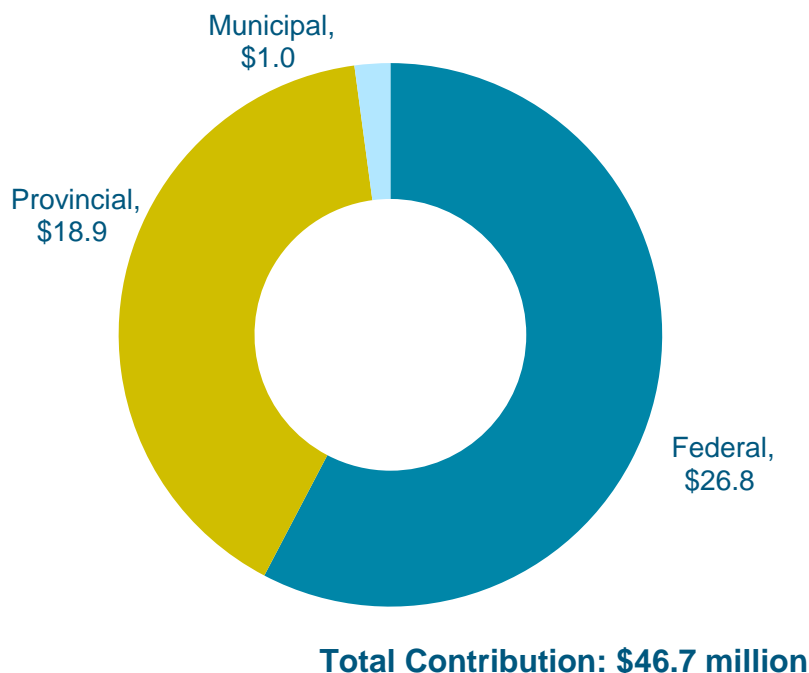
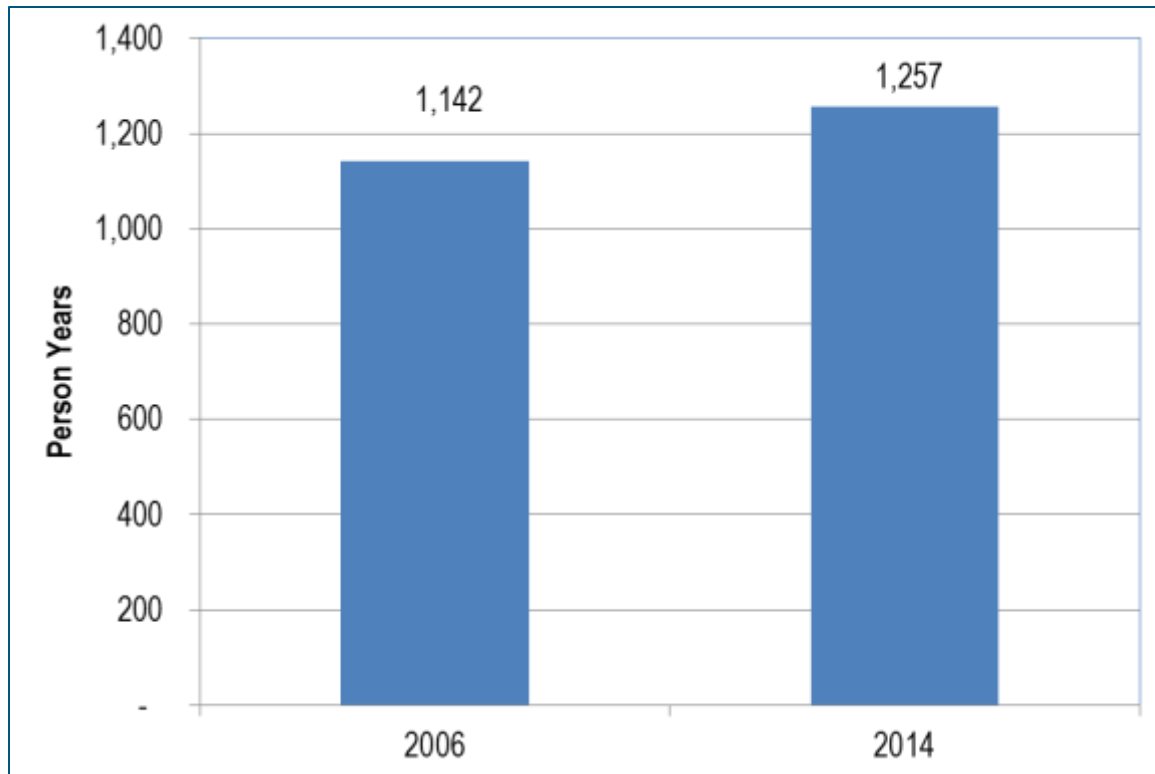


Figure 7-3: Person Years at YQX, 2006 and 2014



Source: InterVISTAS Consulting Gander International Airport Economic Impact Studies (2006 and 2014).

Appendix A: Employment Survey

Identification of the Survey Population

A total of 47 firms received employment surveys for the YQX economic impact study. The different types of employment surveys distributed to tenants located on-site at YQX and directly related employers located off-site include: General Survey, Air Carrier Survey, Accommodations Survey and Ground Transport Survey.

Figure A-1: Total Number of Firms Surveyed

Type of Survey	Number of Firms Surveyed	Number of Responding Firms	Response Rate
General	38	38	100%
Air Carrier	1	1	100%
Accommodation	5	5	100%
Ground Transportation	3	3	100%
Total	47	47	100%

Questionnaire Design

The basic questionnaire was designed to obtain information, and to be as clear and easy to understand as possible for respondent firms. The basic questionnaire provided to airport tenants contained questions in the following areas:

General Information

- Name of firm, address
- Contact person's name and title
- Phone and fax numbers
- Email and website address
- Principal business activity

Total Employment Numbers

- Total employees (2014)
- Number of on-site employees
- Number of off-site employees

Part-time and Full-time Employment

- Full-time permanent employees
- Part-time permanent employees
- Full-time seasonal employees
- Part-time seasonal employees
- Average hours and weeks for part-time and seasonal employees

Payroll and Wage

- Total payroll excluding benefits; or
- Average wage per employee

Employment by Occupation

- A selection of job trades was provided to categorize employment

Outsourcing and Contracting Out

- Number of individuals on contract
- Average hours and weeks for individuals on contract
- Number and names of firms on contract
- Average annual hours for firms on contract

Property Taxes & Other Taxes

- Total property taxes paid (2013)

- Other federal and provincial taxes paid (2013)

Business Related to YQX

- Proportion of firm's business revenues related to YQX (2013)

Business Revenue Related to Air Cargo

- Proportion of firm's business revenues related to air cargo servicing at YQX (2013)

Conducting the Survey

The survey was mailed out electronically by InterVISTAS Consulting, with a cover letter from YQX. The letter explained the purpose of the study, the confidentiality of responses and encouraged members of the airport business community to participate.

Following the initial electronic mail-out of the surveys and throughout the following weeks, non-responding firms were contacted by telephone to follow-up on the completion of the survey. InterVISTAS staff managed the survey follow-up for onsite tenants and offsite firms. Firms were encouraged to return the survey and new copies were offered if the originals were lost. The replacement surveys were emailed once again. Some survey responses were collected via a telephone interview with firms.

Appendix B: Sample Survey



May 2014

To All Members of the Gander International Airport Business Community:

Re: Gander International Airport Economic Impact Study

A key factor in winning community and government support for current and future initiatives that benefit all airport-related businesses is our ability to demonstrate the significant economic impact of Gander International Airport (YQX) upon our community and province.

The Gander International Airport Authority (GIAA) has therefore commissioned an economic impact study. The results of the study will be used to raise public awareness of the airport, airlines and other airport businesses' contribution to local employment and economic activity. It is important that the public understands and appreciates the benefits of YQX to the economy of Gander and Central Newfoundland. Our airport last commissioned an economic impact study in 2006 and we are looking to update the results based on current airport operations.

YQX has commissioned InterVISTAS Consulting (InterVISTAS) to conduct the economic impact study on our behalf. InterVISTAS has completed similar economic impact studies for airports across Canada (including our study from 2006) and internationally. In order to execute this study, we are seeking your cooperation through participation in the attached employment survey. In order to keep this initiative on time and on budget, we request that you complete this survey as soon as possible, so that InterVISTAS can compile the results efficiently. The completed survey can be submitted directly to InterVISTAS via **one** of the following methods:

- **Electronically** by email to noel.szelewski@intervistas.com; or
- **Fax** to 604-717-1818 to the attention of Noel Szelewski

We appreciate that some of the information requested in the survey may be of a sensitive nature to your firm. Please be assured that InterVISTAS will maintain the confidentiality of your survey response, and that the completed surveys will not be viewed by any other party other than researchers at InterVISTAS. InterVISTAS will maintain the confidentiality of your survey response and will not provide individual firm results to YQX. Only the aggregate survey totals will be provided in the final report. The published document will not reveal employment figures or other data for any individual firm.

The economic impact survey is under the supervision of Doris Mak, Director, Special Projects at InterVISTAS. Should you have any questions regarding the study, please contact her at 1-877-717-6246 (ext. 1838). If you have a question about the survey, please contact Noel Szelewski, Project Analyst at 1-877-717-6246 (ext. 1808).

Thank you for your cooperation in this important study. We all look forward to the results as they will benefit all members of the Gander International Airport business community.

Sincerely,

Gary Vey
President & CEO
Gander International Airport Authority

Gander International Airport Authority
Economic Impact of Gander International Airport - Employment Survey



The figures you provide in the following sections are **strictly confidential** and will be viewed only by InterVISTAS Consulting. Only aggregate survey totals will be published in the final report.

For the purposes of this study, it is important that the figures you provide are as accurate as possible. However, where it is not possible to provide precise information, we would appreciate estimates rather than no response at all.

Please complete this survey electronically by responding directly into the form.

Name of Company: _____

Address of Company: _____

Contact Person: _____ Phone number: _____

Email: _____

Q1. Principal Business Activity

Please indicate your principal business activity. If you are involved in more than one of the businesses below, please choose the one that best describes your business (i.e., contributes the largest proportion of revenues).

Air Carriers

- ☐ 1. Scheduled Air Passenger Carrier
- ☐ 2. Charter Air Passenger Carrier
- ☐ 3. Dedicated Cargo Carrier
- ☐ 4. Courier / Integrator
- ☐ 5. General Aviation Operator
- ☐ 6. Other: _____

Other Business Types

- | | |
|--|--|
| <input type="checkbox"/> 7. Airport Operator | <input type="checkbox"/> 16. Aviation Related Manufacturing |
| <input type="checkbox"/> 8. Freight Forwarder, Cargo Agent, etc. | <input type="checkbox"/> 17. Aviation Related Training |
| <input type="checkbox"/> 9. Warehousing | <input type="checkbox"/> 18. In-flight Catering Company |
| <input type="checkbox"/> 10. Customs Broker | <input type="checkbox"/> 19. Security Services |
| <input type="checkbox"/> 11. Aircraft Maintenance, Repair and Overhaul | <input type="checkbox"/> 20. Airport Retail Outlet, Restaurant, etc. |
| <input type="checkbox"/> 12. Airport Ground Handler | <input type="checkbox"/> 21. Government Agency/Department |
| <input type="checkbox"/> 13. Fuelling Company | <input type="checkbox"/> 22. Car Rental |
| <input type="checkbox"/> 14. Fixed Base Operator | <input type="checkbox"/> 23. Taxi, Bus, Limousine, Shuttle |
| <input type="checkbox"/> 15. Aircraft Parts Supplier | <input type="checkbox"/> 24. Hotel |
| | <input type="checkbox"/> 25. Other: _____ |

May 2014

1

Gander International Airport Authority
Economic Impact of Gander International Airport - Employment Survey



Q2. Business Related to Gander International Airport

Please estimate the proportion of your company's business revenues that is related to activities at Gander International Airport. For example, some businesses will derive all their business from airport related activities, while others will do business in other sectors of the economy (e.g., maritime shipping). *Public sector organizations should enter 0%.*

Business Revenue Related to YQX (2013):	%
---	---

Q3. Business Revenue Related to Air Cargo

We would like to be able to document the impact of the airport's air cargo services. Please help us by indicating the proportion of your business revenues that is related to servicing air cargo at Gander International Airport.

Business Revenue Related to Air Cargo at YQX (2013):	%
--	---

Note: The percentage entered should be the same or less than that entered in Question 2.

Q4. Employment at Your Company

Please state the number of staff (permanent and seasonal staff on the company payroll) employed in 2013 by your company both on-site at Gander International Airport (YQX) and off-site (but within the Gander area *and directly related to operations at YQX*, e.g. administrative employees at a downtown office). Please break down the employment into permanent, seasonal, full-time and part-time. *This should not include employment for work done on contract.*

Location	Permanent Employees		Seasonal Employees	
	Full-Time	Part-Time	Full-Time	Part-Time
On-Site (YQX)				
Off-Site (Gander area, not located at YQX)				

Note: For employees that split their time between on-site and off-site locations, please allocate them to the location where they spend the most time.

Gander International Airport Authority
Economic Impact of Gander International Airport - Employment Survey



Q4. Employment at Your Company (continued)

Please indicate how many hours per week **part-time employees** worked in 2013, as well as how many weeks **seasonal employees** worked in 2013, on average.

Part-Time Employees	Number of Weeks per Year	Number of Weekly Hours
Permanent Part-Time	52	
Seasonal Part-Time		

Q5. Payroll and Wages

Please state the total payroll paid by your company in 2013 for the employees included in Question 4 above.

This figure should include all full-time, part-time and seasonal employees. If you are unable to estimate payroll for 2013, please provide figures for your last financial year, and indicate which year that was.

Total Annual Payroll (2013):	\$
Financial Year (if not calendar year 2013):	

Note: Total payroll includes gross (pre-tax) wages or salaries, including overtime pay, commissions, allowances and bonuses.

Alternatively, if you are unable to answer this question, please provide an estimate of the average annual wage/salary **per employee** (including overtime pay, commissions, allowances and bonuses), or select one of the options below.

Average Annual Salary/Wage per Employee: \$ _____ per annum.

Or: Estimate of the average annual salary range per employee

- | | |
|--|--|
| <input type="checkbox"/> Less than \$20,000 | <input type="checkbox"/> \$60,000 - \$79,999 |
| <input type="checkbox"/> \$20,000 - \$39,999 | <input type="checkbox"/> \$80,000 - \$99,999 |
| <input type="checkbox"/> \$40,000 - \$59,999 | <input type="checkbox"/> \$100,000 or more |

Gander International Airport Authority
Economic Impact of Gander International Airport - Employment Survey



Q6. Employment by Occupation

Please estimate below the number of employees included in Question 4 that are in the following occupation categories. *The figures entered below should sum to the same total as Question 4 or sum to 100%.*

Employment by Occupation		Number or % of Employees
General	Managerial/Supervisory	
	Clerical	
	Craft Trades (Electricians, Steam Fitters, etc.)	
Airline & Airline Servicing Trades	Pilots	
	Flight Attendants	
	Aircraft & Vehicle Mechanics	
	Customer Service Agents	
	Aircraft Servicing	
Support Trades	Security Agents	
	Food Service Workers	
	Drivers / Delivery / Couriers	
	Dispatchers	
	Call Center / Reservations	
	Air Traffic Control	
Retail Trades	Sales / Cashiers	
	Food & Beverage Staff	
Other (Please specify)		

Gander International Airport Authority
Economic Impact of Gander International Airport - Employment Survey



Q7. Outsourcing and Contracting Out

Since we do not want to exclude any employment from the airport, we would like you to briefly comment on whether your firm contracts out any important services.

Individuals on Contract: If you pay some individuals through a contract, as opposed to through payroll, please indicate the number of such employees, how many hours per week worked in 2013, as well as how many weeks worked in 2013, on average.

	Number of Contract Employees	Number of Weeks per Year	Number of Weekly Hours
Contract Employees			

Firms on Contract: If you outsource or contract out any work to other companies (e.g., cleaning services, IT, ground handling, etc.), please complete the following table, indicating the functions you outsource to third party companies, and provide an estimate of the annual contracted hours of work completed in 2013. Also, please specify the company's name(s) and indicate whether they are located at the airport. This will allow us to avoid any double counting of work performed by other companies which may also be surveyed as a part of this study. *Feel free to attach another sheet of paper if the space provided below is insufficient.*

Function	Name of Firm	Located at YQX? (Check if Yes)	Number of Hours Performed by the Company in 2013
<i>Example: Cleaning services</i>	<i>Spic and Span Cleaners</i>	<input type="checkbox"/>	<i>100 hours per year (2 hours per week)</i>
		<input type="checkbox"/>	
		<input type="checkbox"/>	
		<input type="checkbox"/>	
		<input type="checkbox"/>	
		<input type="checkbox"/>	

Gander International Airport Authority
Economic Impact of Gander International Airport - Employment Survey



Q8. Municipal Property Taxes Paid

Please indicate the amount of municipal property taxes paid by your firm in 2013.

Total Property Taxes Paid (2013):	\$
Other Taxes Paid – Province & Local (2013):	\$

Thank you for your assistance in completing this survey.

The survey can be sent automatically by clicking
the [Submit Form] icon on the top right hand corner,
or it can be sent by email / fax to:

Email: noel.szelewski@intervistas.com

Fax: 1-604-717-1818, Attention: Noel Szelewski

If you have any questions, please call
Doris Mak at 1-877-717-6246 (ext. 1838).
or Noel Szelewski at 1-877-717-6246 (ext. 1808).

Appendix C: Summary of Total Jobs and Person years, Airport Operations Only

The table below includes a summary of the total surveyed employment, total inferred employment for non-respondents and total contract employment. Employment is presented in both jobs and person years.

Figure C-1: Total Jobs and Person Years, Airport Operations Only

Employment Source	Jobs	Person Years
Surveyed employment ¹	1,280	1,240
Inferred employment for non-respondents ²	0	0
Contract employment ³	20	20
Total	1,300	1,260

Notes:

1 Appendix A

2 Appendix D

3 Appendix E

Appendix D: Calculation of Person Years

The following are details of calculations for the average number of hours per person year or full-time equivalent (FTE).

Table C-1: Full-time Equivalent Hours per Year

Calculation of FTE hours per year:		
	365	days per year
Less:	(104)	weekend days
	(11)	legal holidays
	(15)	average vacation days
	(6)	sick leave
	229	days per person year
	*8	hours per work day
	1,832	hours per person year

Workdays vary anywhere from 6.5 to 8 hours; however, in order to be conservative, an 8 hour workday was assumed.⁶ Similarly, numbers of vacation and sick leave days may also vary.

⁶ Essentially, we are using a measure of paid hours per year. Using a measure of productive hours per year with 6.5 hour workdays (8 hours less 1 hour for lunch less two 15 minute work breaks) would give 1,489 hours per person year. Using this lower figure would result in inferring a greater number of FTEs from seasonal and part-time jobs. Using the 1,832 figure, we infer a lower number of FTEs.

Appendix E: Inferred Employment

Because not all employers could fully respond to our requests for information in the survey, we statistically inferred some employment data to replace that which otherwise would be missing. This allows us to estimate the total amount and type of employment, which provides the basis for other estimates of economic impact.

In general, InterVISTAS' approach bases these inferred estimates on information provided by responding firms for each business type and validated against information from other publicly available sources of data.

The employment data in this report was compiled from a combination of two sources:

1. Employment reported by employers on surveys submitted to InterVISTAS.
2. Employment and other data was inferred for employers who did not provide a completed survey response. Inferred employment was based on employment information from those firms in each business type that did respond to the survey. The mean employment of respondents in each business type was calculated, excluding outliers, and then conservatively adjusted downwards. For instance, those firms with especially large employment levels were excluded from the "mean without outliers" to obtain conservative results. This "adjusted mean" employment for each business type was then applied to those firms who did not respond to the survey.

Appendix F: Contract Employment

Some firms contract out services that they do not have expertise in providing or when there are cost advantages to doing so. For example, many airport firms contract out janitorial, elevator and maintenance services. The employment survey asked firms to identify whether they contracted out some of their work, and to estimate the number of annual hours involved.

Contract work was separated into two distinct categories in the employment survey: 1) individual “employees” paid through a contract, rather than via payroll, and 2) contracting out services to other firms.

The employment results for individuals on contract were derived by counting the number of individual positions for the number of *jobs* and dividing the total hours of employment by 1,832 to estimate person years. The employment results for firms on contract were derived by dividing the total hours of employment by 1,832 to estimate person years.

At YQX in 2014, there were a total of 20 person years of contract employment.

Appendix G:

Tax Revenues Attributable to Airport Employers

Introduction

This appendix describes the employment and other assumptions on which tax revenue calculations are based. As well, the approaches used to estimate employer and employee contributions to local, provincial and federal governments are presented. All estimates are for the 2013 calendar year, unless otherwise stated.

Some of the taxes pose conceptual questions about how much, or if any, tax revenue from a particular source should be attributed to firms serving YQX. These questions are highlighted and simplifying assumptions are put forth.

Employment at YQX

The majority of tax calculations in this report depend on direct employment and total wages. The total direct employment, in person years, used for these calculations is 1,260 person years. The total payroll is estimated at \$90 million.

Personal Income Tax

Tax base and rates. Under the *Income Tax Act* federal income tax is paid on taxable income at a rate that increases with taxable income.

Provincial income tax was formerly calculated as a percentage of federal tax, but most provincial governments have begun collecting taxes on a sliding scale.

Estimation Method and Results

Because the tax rate is progressive, the tax paid by a group of employees depends on the distribution of income among those employees. Unfortunately, the distribution of income is not known and average incomes must be used.

Each employee is assumed to pay tax as a single tax filer. Estimated income tax payable is \$12.8 million in federal tax and about \$7.6 million in provincial tax.

The average tax rates used are derived from the more detailed calculations of taxes payable shown in **Table G-1**. In those calculations, assumptions have been made about income from non-employment sources, tax deductions from income (e.g., RPP and RRSP contributions), and tax credits applied against tax otherwise payable (e.g., CPP, EI and charitable contributions). Average credits are calculated from Revenue Canada, *General Income Tax Forms, 2013*.

Table G-1: Newfoundland Single Tax Filer Income Tax Calculation – 2013

Newfoundland and Labrador Single Tax Filer Income Tax Calculation																			
Income																			
Employment	5,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000	55,000	60,000	70,000	80,000	90,000	100,000	150,000		
TOTAL	5,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000	55,000	60,000	70,000	80,000	90,000	100,000	150,000		
Deductions																			
RPP	424	79	51	37	61	107	221	598	663	1,017	1,166	1,473	1,933	2,734	3,252	2,998	2,468		
RRSP	2,067	673	304	201	217	277	363	376	501	520	606	677	678	681	638	883	1,227		
Carrying Charges	291	60	19	15	16	20	28	39	53	62	78	87	100	106	118	711	677		
Union	467	113	52	42	50	67	93	183	205	270	314	358	457	615	703	711	677		
TOTAL	3,248	925	425	294	344	471	704	1,197	1,452	1,869	2,165	2,595	3,168	4,136	4,711	5,302	5,050		
Taxable Income	1,752	9,075	14,575	19,706	24,656	29,529	34,296	38,803	43,548	48,131	52,835	57,405	66,832	75,864	85,289	94,698	144,950		
Credits																			
Basic Federal	11,038.00	11,038	11,038	11,038	11,038	11,038	11,038	11,038	11,038	11,038	11,038	11,038	11,038	11,038	11,038	11,038	11,038		
Basic Provincial	\$ 8,451.00	8,451	8,451	8,451	8,451	8,451	8,451	8,451	8,451	8,451	8,451	8,451	8,451	8,451	8,451	8,451	8,451		
CPP	2,906	656	392	380	459	575	706	983	1,113	1,382	1,514	1,610	1,715	1,864	1,943	1,932	1,901		
EI	2,409	582	242	201	222	266	313	419	468	545	577	612	640	684	707	700	677		
Charity	27	14	15	41	41	48	57	63	74	77	89	92	104	108	132	136	175		
Fed. Total	16,380	12,290	11,687	11,659	11,760	11,927	12,113	12,503	12,693	13,042	13,218	13,352	13,497	13,694	13,820	13,806	13,791		
Prov. Total	13,793	9,703	9,100	9,072	9,173	9,340	9,526	9,916	10,106	10,455	10,631	10,765	10,910	11,107	11,233	11,219	11,204		
Federal Tax Credit Rate	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%		
Provincial Tax Credit Rate	7.7%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%		
Federal Credits	2,457	1,844	1,753	1,749	1,764	1,789	1,817	1,875	1,904	1,956	1,983	2,003	2,025	2,054	2,073	2,071	2,069		
Provincial Credits	1,062	747	701	699	706	719	734	764	778	805	819	829	840	855	865	864	863		
Tax Payable																			
Federal - Bracket 1	263	1,361	2,186	2,966	3,698	4,429	5,144	5,820	6,532	6,593	6,593	6,593	6,593	6,593	6,593	6,593	6,593		
Federal - Bracket 2	0	0	0	0	0	0	0	0	-99	919	1,954	2,959	5,033	7,021	9,094	9,670	9,670		
Federal - Bracket 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,766	12,574		
Federal Total	263	1,361	2,186	2,966	3,698	4,429	5,144	5,820	6,443	7,512	8,547	9,552	11,626	13,613	15,687	18,028	28,837		
Basic Federal	0	0	433	1,207	1,934	2,640	3,327	3,945	4,539	5,556	6,564	7,550	9,602	11,559	13,614	15,958	26,769		
NFL - Bracket 1	135	699	1,122	1,517	1,899	2,274	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,638	2,638		
NFL - Bracket 2	0	0	0	0	0	0	5	569	1,162	1,735	2,323	2,894	4,072	4,282	4,282	4,282	4,282		
NFL - Bracket 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10,167		
NFL Total	135	699	1,122	1,517	1,899	2,274	2,643	3,206	3,799	4,372	4,960	5,531	6,487	7,898	9,151	10,403	17,086		
Basic Provincial	0	0	422	819	1,192	1,555	1,909	2,443	3,021	3,567	4,142	4,703	5,647	7,042	8,206	9,539	16,223		
TOTAL TAX PAYABLE	0	0	855	2,026	3,127	4,195	5,237	6,388	7,560	9,123	10,706	12,252	15,249	18,602	21,900	25,496	42,992		
Average Rate of Tax	0.0%	0.0%	5.9%	10.3%	12.7%	14.2%	15.3%	16.5%	17.4%	19.0%	20.3%	21.3%	22.8%	24.5%	25.7%	26.9%	29.7%		
Federal	0.0%	0.0%	3.0%	6.1%	7.8%	8.9%	9.7%	10.2%	10.4%	11.5%	12.4%	13.2%	14.4%	15.2%	16.0%	16.9%	18.5%		
Provincial	0.0%	0.0%	2.9%	4.2%	4.8%	5.3%	5.6%	6.3%	6.9%	7.4%	7.8%	8.2%	8.4%	9.3%	9.7%	10.1%	11.2%		

Corporate Income Tax (Federal and Provincial)

All corporations are liable to pay federal income tax under the *Income Tax Act*. The tax rate varies by type and size of company and by province. Provincial governments also levy a corporation income tax on any company having a permanent establishment in that province.

Estimation Method and Results

1. To calculate tax liability precisely is very difficult. It requires knowledge of the total tax base, and the proportion of the tax base attributable to the provinces. Therefore, an approximate method has been used.
2. In Newfoundland, the federal corporate income tax collected per employee was \$1,830 and the provincial corporate income tax collected per employee was \$2,920 in 2013.
3. Assuming all companies pay tax at the average rate per employee calculated above, the 2014 corporation income tax liability of the YQX employment sector is estimated to be \$1.6 million toward federal revenues and \$2.5 toward provincial revenues. The estimated total corporate income tax revenue is roughly \$4.1 million as shown in **Table G-2**.

Table G-2: Estimated Corporate Income Tax Paid by Firms within YQX

Government	Revenue (\$Million)
Federal	1.6
Provincial	2.5
Total	4.1

Employment Insurance Premiums

Tax base and rates. In 2013, employees in Canada paid employment insurance (EI) premiums equal to 1.88% of earnings up to a maximum of \$891 per year. (Maximum insurable earnings are \$47,400). Employers paid EI premiums equal to 1.4 times employee premiums.

Estimation Method and Results

The employee premium rate is applied to total payroll costs for employees earning less than \$47,400 per year. The maximum contribution was used for employees earning more than \$47,400 per year. Estimated employee payments were approximately \$1.1 million in 2013.

The employer rate is applied to the employee payments. Estimated employer payments were nearly \$1.5 million in 2013.

Canada Pension Plan Contributions

Tax base and rates. In 2013, employee contributions for the Canada Pension Plan (CPP) were 4.95% of pensionable earnings. Pensionable earnings are actual earnings less \$3,500 to a maximum of \$49,000. The maximum annual employee contribution is \$2,425. The employer contribution is the same as the employee contribution.

Estimation Method and Results

The employee contribution rate is applied to average payroll for employees who are earning less than \$52,500 a year. The maximum contribution was used for employment earning more than the maximum pensionable earnings.

Estimated employer and employee contributions are about \$2.8 million each, for a total of \$5.7 million.

Workplace Health, Safety & Compensation Commission of Newfoundland and Labrador (WHSCC)

Tax base and rates. Employers in each province are required to make contributions to the WHSCC to help offset the cost of on-the-job injuries. Employers are classified into industry groups. The contribution rate for each group is based on the injury costs associated with all companies in that group. The group contribution rate varies widely among industries and provinces. Some major companies are not included in the general “rateable” method of contribution but simply pay the actual cost of their claims plus an allowance for WHSCC administration costs. As it is not generally known which firms contribute in this manner, nor the value of their claims, an estimate based on reported payroll has been made for all firms.

Conceptual issues. It is possible that some companies are self-insured and their payments could be viewed as a business expense rather than a tax. However, we have chosen to include their contribution because they are required to be part of this government-mandated program.

Estimation Method and Results

The contribution rates for each employment classification at the airport have been applied to the total payroll for that group. YQX employees paid an estimated \$1.9 million to the WHSCC in 2013.

Aviation Fuel Tax

The federal and provincial governments levy taxes on jet fuel. The aviation fuel tax rates are shown in **Table G-3**.

Table G-3: Newfoundland Fuel Tax Rates, 2013

Federal	Newfoundland
\$/Litre	
0.015	0.007

Estimation Method and Results

The amount of aviation fuel recorded as sold at YQX under the lease agreements in 2013 was approximately 25.9 million litres, with 19.6 million for domestic use. Estimated aviation fuel tax revenues at YQX are based on the domestic fuel volume and amount to approximately \$360,000. Of this total, nearly \$223,000 went to the Federal government and the government of Newfoundland collected the remaining \$137,000.

HST of 13% was also collected from domestic aviation fuel recorded as sold at the airport. The total HST revenues from fuel sales at YQX amount to approximately \$2.0 million. For presentation purposes, the GST and PST portions are presented as separate tax envelopes that accrue to the Provincial and Federal levels of government.

Property Taxes Collected to Government

Governments levy property taxes to help them finance local services. Property taxes paid by Gander International Airport Authority and all airport tenants amounted to \$995,000 in 2012.⁷

⁷ Data on property taxes paid by GIAA and YQX tenants are current as of 2012, as stated in the 2013 Annual Report.

Appendix H:

Tax Revenues Attributable to Airport Users

YQX Passengers in 2013

In 2013, approximately 176,000 passengers enplaned and/or deplaned at YQX. **Table H-1** shows the passenger movements used in this study including breakdown into sectors and percentage of connecting passengers at YQX.

Table H-1: Passenger Movements 2013*

Sector	Enplaned Plus Deplaned 2013	Percent Connecting
Domestic	133,500	0%
Transborder	NA	NA
International	43,000	35%
<i>Total</i>	<i>176,500</i>	
Daily Average	483	

*Passenger movement numbers as provided by Gander International Airport Authority.

NAV CANADA Charges

Prior to November 1, 1998, the Canadian government collected the Air Transportation Tax (ATT) to fund aviation programs, including air navigation services. The ATT was levied on all tickets purchased in Canada as well as those purchased internationally for trips that included an enplanement in Canada. ATT rates were adjusted frequently, reaching a high in May 1995 of 7% + \$6 (to a maximum of \$55) for domestic and transborder flights, and a flat rate of \$55 for international flights.

When control of air navigation services was privatised and passed to NAV CANADA on November 1, 1996, the ATT was gradually replaced by NAV CANADA charges. These fees, collected under authority of the Civil Air Services Commercialisation Act, are not taxes on ticket sales; they are service charges billed to aircraft operators. In order to recover these costs, airlines usually pass these charges on to passengers, though NAV CANADA does not dictate how this is done. Most carriers apply a flat rate NAV CANADA surcharge to tickets they sell.

NAV CANADA fees consist of two parts: en route charges and terminal charges. En route charges are based on the maximum permissible take-off weight of the aircraft (metric tonnes) and the distance being flown in Canadian-controlled airspace. Terminal charges are dependent only on aircraft weight.

Conceptual Issues. Because the ATT is no longer collected and the fees that NAV CANADA now charges are service fees, rather than taxes, no taxes for air navigation services will be included in total taxes paid.

Tax on Air Fares and the Airport Improvement Fee (AIF)

Tax Base and Rate

The 13% Harmonized Sales Tax (HST) applies to all tickets purchased in Canada and includes all domestic and international flights.

Several North American carriers have also included an insurance surcharge on top of the air fare paid by passengers for all tickets purchased to account for the rising costs of aviation insurance. Air Canada levies a \$3.00 insurance surcharge each way for domestic trips within Canada. HST is levied on the surcharge.

Gander International Airport Authority charges all passengers originating their journey at YQX an Airport Improvement Fee (AIF) that is collected for the sole purpose of funding capital improvements at the airport. HST is levied on the fee.

Conceptual Issues. Taxes levied on the air fare should be shared among airports in Canada associated with the journey. The estimation method builds in a sharing assumption (50% YQX and 50% other Canadian airports).

Estimation Method and Results

HST is levied on all air fares; however, due to the sharing assumption stated above, only 50% of the estimated taxes per departing passenger are attributable to YQX. Total tax on airfares is estimated to be nearly \$8.2 million.

Gander International Airport Authority collected \$1.5 million through the AIF in 2013. Tax revenue on this amount collected by the Federal government is approximately \$192,000. For presentation purposes, the GST and PST portions are presented as separate tax envelopes that accrue to the Provincial and Federal levels of government.

Tax on Air Traveller Security Charge

The Canadian Government enacted the Air Traveller Security Charge (ATSC) on April 1, 2002 to help fund security improvements at airports across Canada, as a result of the terrorist attacks on September 11, 2001. As of April 1, 2011, these rates were increased. There is a flat rate fee of \$7.48 for each chargeable enplanement for domestic travel, \$12.71 for transborder travel, and \$25.91 for international travel.

Tax Base and Rate

The HST applies to the domestic and transborder ATSC.

Estimation Method

The volume of origin/destination traffic at YQX was determined. It was assumed that 50% was origin traffic at YQX. Each origin passenger pays the ATSC. A total of \$65,000 in taxes was collected on the ATSC in 2013. For presentation purposes, the GST and PST portions are presented as separate tax envelopes that accrue to the Provincial and Federal levels of government.

Tax on Concession Purchases

Tax Base and Rate

The HST rate applies to most retail concession purchases by travellers at the airport.

Estimation Method and Results

HST based on sales of \$911,000 (including airport restaurant/gift shop sales) is \$118,000. For presentation purposes, the GST and PST portions are presented as separate tax envelopes that accrue to the Provincial and Federal levels of government.

Tax on Ground Transportation, Parking, and Car Rentals

The HST rate applies to taxi, limousine and bus transportation, as well as to parking fees and car rentals.

Estimation Method and Results

Based on the information provided by Gander International Airport Authority and related businesses, parking and ground transportation revenues were \$570,000 in 2013. Tax on these expenditures is estimated at over \$74,000. For presentation purposes, the GST and PST portions are presented as separate tax envelopes that accrue to the Provincial and Federal levels of government.

Tax on Accommodation Costs

Tax Base and Rates. The Harmonized Sales Tax (HST) rate of 13% applies to accommodation costs by non-local visitors to Gander staying in hotels.

The Newfoundland & Labrador Ministry of Tourism, Culture and Sport indicate that the average daily room rate in Newfoundland in 2014 was \$127.

Estimation Method and Results

In order to estimate the total accommodation costs of non-local visitors in Gander, NL the average daily room rate was applied to the estimated total crew layover nights and connecting passenger nights determined from the hotel survey conducted. HST based on the expenditure for airline crew accommodation is approximately \$16,000. HST paid by connecting passengers is approximately

\$250,000. For presentation purposes, the GST and PST portions are presented as separate tax envelopes that accrue to the Provincial and Federal levels of government.

Appendix I: Glossary of Terms

Air Traveller Security Charge (ATSC): A fee collected by the Federal Government from air travellers to help fund security improvements at Canadian airports. The fee varies by region of travel and is charged to the passenger per enplanement.

Airport Improvement Fee (AIF): A fee collected by the airport authority from passengers to help with funding capital improvements at the airport. In some regions of Canada, this is also referred to as the Passenger Facility Fee (PFF) or Passenger Facility Charge (PFC).

Contract Work: Any work which is done for a company by an individual who is not on the payroll or work done for a company by another company. Generally speaking, firms will contract out work in areas in which they do not have expertise or when there are cost advantages to doing so.

Direct Employment: Direct employment is employment that can be directly attributable to the operations in an industry, firm, etc. It is literally a head count of those people who work in a sector of the economy. In the case of the airport, all of those people who work in an aviation related capacity would be considered direct employment.

Economic Activity: (also Output, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, the process of transforming the factors of production into goods and services desired for consumption.

Economic Output: (also Economic Activity, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, it is defined as the process of transforming the factors of production into goods and services desired for consumption.

Employment Impact: Employment impact analysis determines the economic impact of employment in terms of jobs created and salaries and wages paid out. In the case of the airport, the direct, indirect, induced and total number of jobs or person years created at the airport is examined to produce a snapshot of airport operations.

Full Time Equivalent (FTE): (also Person Year) One full time equivalent (FTE) year of employment is equivalent to the number of hours that an individual would work on a full time basis for one year. In this study, we have calculated one full time equivalent year to be equivalent to 1,832 hours. Full time equivalent years are useful because part time and seasonal workers do not account for one full time job.⁸

Gross Domestic Product: (GDP, also value-added) A measure of the money value of final goods and services produced as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.

⁸ *The Dictionary of Modern Economics*, David W. Pearce, General Editor, The MIT Press, Cambridge Mass., 1984

Ground Transportation: Ground Transportation at the airport includes any vehicles which transport passengers from the airport to the cities or from the cities to the airport. This would include taxicab service, limousine service and shuttle service.

Indirect Employment: Indirect employment is employment which results because of direct employment. For the airport, it would include that portion of employment in supplier industries which are dependent on sales to the air transport sector. In some cases, contract work would be considered indirect employment.

Induced Employment: Induced employment is employment created because of expenditures by direct and indirect employees.

Multiplier Analysis: Analysis using economic multipliers in which indirect and induced economic impacts is quantified. Essentially, a multiplier number is applied to the "directly traceable economic impact" to produce indirect, induced and total effects (see Multiplier.)

Multiplier: Economic multipliers are used to infer indirect and induced effects from a particular sector of the economy. They come in a variety of forms and differ in definition and application. A multiplier is a number which would be multiplied by direct effects in order to calculate indirect or induced effects. In the case of the airport, as in many other cases, multipliers can lead to illusory results, and thus must be used with great care.

Seasonality: Seasonality results when the supply and demand for a good is directly related to the season in which is consumed. For example, ski resorts experience changes in net income as a result of seasonality. Airports and airport services also experience seasonality as a result of vacation times for families (typically during the summer) and/or temperatures abroad (typically at Christmas time). As a result of seasonality in demand for flights, some air carriers increase frequency of flights to certain areas during the busy season.

Tenant: A firm which pays a lease to a leasing company or to the airport authority directly.

Value-Added: (also GDP) A measure of the money value of final goods and services produced as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and service.



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GREATER MONCTON INTERNATIONAL AIRPORT
AÉROPORT INTERNATIONAL DU GRAND MONCTON

A member of

VANTAGE
AIRPORT GROUP

Economic Impact Study: Greater Moncton International Airport

Final Version: December 16, 2015

Study conducted by GMIA, in collaboration with Vantage Airport Group, the Statistics Canada and an independent consultant.

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Introduction

Background and Purpose

Vantage Airport Group is conducting economic impact studies of its airports to help demonstrate the contributions that the airports make to their respective communities. This study looks at the economic impact of the Greater Moncton International Airport (YQM).

Vantage engaged consultant Ian Smedley to estimate the economic impact of YQM in 2014, using the Statistics Canada Input Output model.

It is the understanding of the consultant that the material in this report will be used by Vantage in its communications to media, the public and airport stakeholders.

Approach

In preparing this report, the consultant, in partnership with Vantage, carried out the following activities:

- Reviewed previous economic impact studies from YQM and from other Vantage airports
- Conducted an online survey of organizations located at YQM or with operations directly tied to YQM.
- Collected data from representatives of YQM and from other businesses at YQM.
- Engaged Statistics Canada to run their Input-Output model using the data collected at YQM through the surveys.

Scope

Included in the scope of this project were

- Quantification of direct, indirect, and induced economic impacts of YQM in 2014. Business Revenue, Employment, Labour Income, Gross Domestic Product, and Taxes were used as the measures of economic impact.
- Preparation of a report summarizing the survey results and the results of the Statistics Canada Input-Output model.

About the Airport

Greater Moncton International Airport (YQM) is located in the city of Dieppe, 6.5 km east of downtown Moncton, New Brunswick, Canada. It is the primary aviation gateway to the Greater Moncton urban area (City of Moncton, the City of Dieppe, the Town of Riverview) which is one of the fastest growing in Atlantic Canada. Greater Moncton is located in the geographic center of the Atlantic region and has strong air, road, rail, and telecommunications infrastructure. With all its transportation and telecommunications assets, Greater Moncton acts as a retail, recreation and services hub for the Atlantic Provinces and a gateway to the north eastern United States.

Report Limitations

This economic impact study of the airport was conducted on behalf of Vantage Airport Group by independent consultant Ian Smedley, MBA. It has been prepared for internal use by Vantage airport group and is not intended for general distribution.

In preparing the report, the consultant has relied upon the completeness, accuracy, and fair representation of all information and data obtained from secondary sources and YQM. The accuracy and completeness of this report is conditional upon the completeness, accuracy and fair presentation of the information underlying it. Where direct information was not available, approximations were made using alternate data sources.

Economic Impact

To estimate the economic impact, the Statistics Canada input-output model was used in combination with data collected through surveys and interviews with businesses located on airport property. Input-output modeling is a widely-used and widely-accepted approach to estimating economic impact, making it recognizable by many different stakeholders and audiences. The Statistics Canada model reports results for impact at the national and provincial level. To help with comparisons, the results provided in this report only reflect the impacts on the province of New Brunswick.

The economic impact of any activity is measured using three categories; Direct, Indirect, and Induced

- Direct impact measures the activities directly at the airport, from the person loading a bag on a plane, to the person renting a passenger a car. Associated with these activities, there will also be direct impacts on GDP, jobs, and taxes.
- Indirect impact measures the activities that respond to the demands created by the activities of the direct activities. An example would be the mechanic offsite who maintains the baggage loading machine, or the person at the car rental company that maintains the cars. These activities includes all the chain reactions up the supply chain since each of the products purchased by a business in the supply chain will require, in turn, the production of various inputs.
- Induced impact measures the changes in the production of goods and services in response to consumer expenditures induced by households' incomes (i.e., wages) generated by the production of the direct and indirect requirements. For example the groceries that one of the people employed in a direct or indirect activity buys on the way home is an induced impact

Each of these three categories can be measured in several different ways. This report will measure economic impact using five of the most common.

- Revenue/Economic Output is the total gross value of goods and services produced by a given set of industries – in this case all the businesses located on YQM land.
- Gross Domestic Product (GDP), or value added, refers to the additional value of a good or service over the cost of inputs used to produce it.
- Employment is the number of additional jobs created. Employment is measured in terms of Full time equivalents of “FTEs”. One FTE is the equivalent of a single person working full time for one year. Another example of 1 FTE would be two people each working half time for a full year.
- Labour Income refers to the total wages of the direct FTE’s
- Taxes are the total amount of tax revenues collected by the three levels of government arising from the economic activity.

Revenue/Economic Output

The Revenue or Economic Output measure of economic impact was determined by estimating total gross revenue from all businesses located at the Greater Moncton International Airport, based on responses from the economic impact survey. For 2014, total revenue is estimated at \$428.7 million.

<u>Industry Type</u>	<u>Direct Revenue/Economic Output</u> <u>(Thousands \$)</u>
Air passenger and freight transportation services	\$401,481
Ground transportation	\$9,621
Administrative and support services	\$331
Security Services	\$2,760
Federal government services	\$2,768
Retail, food and beverage, and training.	\$11,714
Total	\$428,675

Unsurprisingly the majority of direct revenue generated by businesses at YQM is in Air passenger and freight transportation industries. The majority of this revenue is generated by the passenger airlines serving YQM.

The next largest generators of revenue at the airport are that provide retail, food and beverage services, and training services. These have been deliberately grouped because there were too few individual companies in any one particular industry type to preserve the anonymity of their revenue data.

The third largest generator of revenue at YQM is from the ground transportation industries. These include the car rental and taxicab companies that serve the airport.

For comparison to previous years, the next table shows the different direct, indirect and induced, and total revenue generated by businesses at YQM between this survey and the previous surveys completed in 2006 and 1999. The table also shows the multipliers used for each survey. In both cases these multipliers were supplied by Statistics Canada.

<u>Measures</u>	<u>2014</u> <u>(Thousands \$)</u>	<u>2006</u> <u>(Thousands \$)</u>	<u>1999</u> <u>(Thousands \$)</u>
Direct Revenue/Economic Output	\$428,675	\$154,616	
Economic Multiplier	1.55	2.45	
Indirect and Induced Revenue/Economic Output	\$237,267	\$224,193	
Total Revenue/Economic Output	\$665,942	\$378,810	\$78,500

GDP

The GDP measure of economic impact is generated by the Statistics Canada Input Output model. For 2014, the direct GDP generated in New Brunswick by activities at YQM is \$138.8 million. The table below shows how that total GDP is broken down by Industry Type.

<u>Industry Type</u>	<u>GDP at basic prices, direct impact (Thousands \$)</u>
Transportation and warehousing	\$122,878
Finance, insurance, real estate, rental and leasing and holding companies	\$4,518
Administrative and support, waste management and remediation services	\$2,260
Federal government services	\$1,981
"Other"	\$7,197
Total	\$138,834

The Statistics Canada Model also provides indirect and Induced GDP economic impact. The total GDP generated in New Brunswick by activities at YQM is \$247.7 million. The table below shows the top 10 industry types generating the most direct, indirect, and induced economic impact in New Brunswick, measured by GDP.

<u>Industry Type</u>	<u>Total GDP at basic prices, including direct, indirect, and induced impact (Thousands \$)</u>
Manufacturing	\$9,283
Retail trade	\$9,471
Transportation and warehousing	\$137,544
Information and cultural industries	\$6,346
Finance, insurance, real estate, rental and leasing and holding companies	\$26,829
Owner occupied dwellings	\$11,917
Professional, scientific and technical services	\$6,412
Administrative and support, waste management and remediation services	\$6,938
Educational services	\$6,053
Accommodation and food services	\$5,749
"Other"	\$21,120
Total	\$247,662

The "Other" category represents all the other sectors that were not in the top 10.

Employment

Direct FTE's at YQM are based on responses from the economic impact survey. Based on the survey results, the total number of direct FTE's generated by YQM is 538.

<u>Airport Businesses</u>	<u>2014 Direct Employment (FTEs)</u>
Air Carriers	53
Aviation Support Services	154
Ground Transportation	50
Cargo	122
Airport Operations and Administration	142
Retail	17
Total	538

Total FTE's, including indirect and induced FTE's, are calculated using the Statistics Canada Model which has its own business sector descriptions. The table below shows the top 10 industry types generating the most direct, indirect, and induced economic impact in New Brunswick, measured by FTE's.

<u>Statistics Canada FTE sectors</u>	<u>2014 Total Employment (FTEs)</u>
Manufacturing	69
Wholesale trade	35
Retail trade	182
Transportation and warehousing	1,458
Information and cultural industries	34
Finance, insurance, real estate, rental and leasing and holding companies	188
Professional, scientific and technical services	86
Administrative and support, waste management and remediation services	154
Educational services	166
Accommodation and food services	167
"Other"	259
Total	2,798

The main FTE generating sector is the Transportation and warehousing sector. This sector would include the jobs created by the air carriers and Aviation Support Services. Other notable induced and indirect jobs are created in the Manufacturing and Professional, Scientific, and Technical services sectors. The "Other" category represents all the other sectors that were not in the top 10.

The table below offers a comparison between the direct, indirect and induced, and total FTE's generated by YQM based on the past three surveys.

<u>Measures</u>	<u>2014 FTE's</u>	<u>2006 FTE's</u>	<u>1999 FTE's</u>
Direct FTE	538	425	-
Indirect and Induced FTE	2260	1,102	-
Total FTE	2,798	1,527	549

To add some context, in New Brunswick, the total number of persons of working age (15 years or older) in 2014 was 353,900. Therefore the 2,798 direct, indirect, and induced FTE's generated by the airport represents approximately 0.8% of the jobs in the province.

Labour Income

Direct labour income is estimated by using responses from the survey. In 2014, the 538 FTE's were paid a total income of \$22.9 million. The table below illustrates the direct income earned by the different business lines at the airport and also illustrates the average salary for each business line.

<u>Airport Businesses lines</u>	<u>Direct Labour Income (Thousands \$)</u>	<u>2014 Direct Employment (FTEs)</u>	<u>Average Salary</u>
Air Carriers	\$2,216	53	\$41,811
Aviation Support Services	\$5,677	154	\$36,864
Ground Transportation	\$1,518	50	\$30,360
Cargo	\$3,920	122	\$32,131
Airport Operations and Administration	\$9,144	142	\$65,314
Retail	\$430	17	\$25,294
Total	\$22,907	538	\$42,578

For context, the average salary for all New Brunswick is \$44,044. When employment numbers are compared to the previous studies we can see that there was an increase in total FTE's and salary, but the average salary has declined a small amount. This is consistent with other airports as much of the jobs increases in the past several years have come in the retail and Aviation Support business lines, which have slightly lower average salaries. The table below compares the most recent results to the previous economic impact report

<u>Measures</u>	<u>2014 (Thousands \$)</u>	<u>2006 (Thousands \$)</u>
Total Salary	\$22,907	17,633

Direct FTE's	538	425
Average Salary	\$42.6	\$45.2

Taxes

Taxes are calculated using the Statistics Canada Input Output model. In 2014, \$22.8 million direct and indirect taxes were generated for the three different levels of government. The total tax generated which includes direct, indirect, and induced taxes was \$36.8million. The table below breaks down how much each level of the government received.

<u>Level of Government</u>	<u>2014 Direct and Indirect Taxes Remitted (Thousands \$)</u>	<u>2014 Total Taxes Remitted (Thousands \$)</u>
Federal Government	\$2,173	\$6,032
Provincial Government	\$13,107	\$21,629
Municipal Government	\$7,498	\$9,185
Total	\$22,778	\$36,847

The main sources of direct and indirect Federal Tax are from the Federal gas tax (\$1.5 million) and the Federal Sales Tax (\$448 thousand). The main source of direct and indirect Provincial tax is the provincial gas tax (\$4.9 million).

The table below compares some of the taxes generated in 2014 to those in 2006. Because the two reports calculated taxes in different ways, this table compares those amounts that are consistent across the two reports.

<u>Tax Collected</u>	<u>2014 Taxes Remitted (Thousands \$)</u>	<u>2006 Taxes Remitted (Thousands \$)</u>
Total Federal Government sales tax (GST)	\$3,080	\$1,059
Total Provincial Government sales tax (HST)	\$4,762	\$1,303

*These totals include direct, indirect, and induced taxes.

To add some context, here are examples of services that these total taxes could be funding.

- The \$2.1 million generated in direct and indirect federal taxes would cover 4 months of the annual capital and infrastructure costs for the New Brunswick RCMP provincial detachment.
- The \$13.1 million generated in direct and indirect provincial taxes would provide 2 months of school bus operations for the whole province.
- The \$7.5 million generated in direct and indirect municipal taxes would cover the city of Dieppe's recreation department budget for 9 months, or 9 months of the city of Moncton's sewer treatment and maintenance budget.

Appendix A

Additional Sources

<http://www.rcmp-grc.gc.ca/en/nb/2014-annual-report-in-your-community#a8>

<http://www2.gnb.ca/content/dam/gnb/Departments/fin/pdf/Budget/2014-2015/MainEstimates2014-2015BudgetPrincipal.pdf>

<https://www.moncton.ca/Assets/Government+English/Publications+English/yourmunicipaltaxdollarsatwork.pdf>

<http://www.dieppe.ca/en/hoteldeville/resources/2014-financialstatements-CityofDieppe.pdf>

<http://www.statcan.gc.ca/daily-quotidien/150226/t150226b001-eng.htm>

<http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/labor21a-eng.htm>

Select Statistics Canada Output

Table 1.4 Ratios and multipliers*		
(Thousands \$)		
	New Brunswick	Total
Output		
Direct impact	428,675	428,675
Total impact, open model	596,291	765,928
Total impact, closed model	665,942	923,965
Simple multiplier	1.39	1.79
Total multiplier	1.55	2.16
GDP at basic prices		
Direct impact	138,834	138,834
Total impact, open model	205,917	292,577
Total impact, closed model	247,662	382,423
Simple multiplier	0.48	0.68
Total multiplier	0.58	0.89
Type I multiplier	1.48	2.11
Type II multiplier	1.78	2.75
Jobs - full-time equivalent (FTE)		
Direct impact	1,569	1,569
Total impact, open model	2,356	3,209
Total impact, closed model	2,798	4,138
Simple multiplier	0.01	0.01
Total multiplier	0.01	0.01
Type I multiplier	1.50	2.05
Type II multiplier	1.78	2.64

*Notes

- To better compare between years this report used the Direct FTE's estimated from the survey results, rather than the ones calculated by the model. Indirect and Induced FTE's are from the model
- Total impact in open model is equal to the sum of the direct and indirect impacts.
- Total impact in closed model is equal to the sum of the direct, indirect and induced impacts.

EMPLOYMENT RELATED TO ONGOING OPERATIONS OF GREATER MONCTON INTERNATIONAL AIRPORT

Greater Moncton International Airport Authority receives many requests for economic impact information and it is important that the community continues to appreciate the benefits of the Greater Moncton International Airport to the regional, provincial and national economy. To answer these questions, we are conducting a survey of members of the Greater Moncton International Airport business community. The questionnaire should take approximately 20 minutes to complete. All information we collect from you will be held confidential and will be reported only in summary form with the responses of other individuals and businesses we survey. The published document will not reveal employment figures or other data for any individual organizations.

Should you have any questions or concerns with respect to this study, please feel free to contact Ian Smedley, Project Manager at 604-276-7782 or ian_smedley@yvr.ca for clarification.

BACKGROUND OF THE ORGANIZATION

Name of Organization	
Address of Organization	
Organizations Primary Activity (NAICS Code)	
Contact Name	
Contact Position	
Telephone	
Email	

EMPLOYMENT IN CALENDAR YEAR 2014

This survey is intended to collect data on the number of people you employed in calendar year 2014, either onsite at Greater Moncton International Airport or elsewhere in the Moncton area, directly related to ongoing operations of the Airport. Please do not include employment related to capital projects.

Employees	#	Average Hours/Year/Employee	Total Payroll \$ (Excluding Benefits)
Full Time Permanent			
Part Time Permanent			
Seasonal			
Contract ¹			
Total			

THANKS FOR YOUR PARTICIPATION!

¹ This would include contract employees and functions you outsource, for example, IT or janitorial services. Please only include out-sourced functions that you use weekly, for example, do not include auditors.

2018 ECONOMIC IMPACT REPORT

HALIFAX STANFIELD INTERNATIONAL AIRPORT



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Executive Summary

Halifax Stanfield International Airport (HSIA) is both internationally recognized and the largest airport in Atlantic Canada. In 2018, records were set for both passenger and cargo volume. Passenger growth included a record high air visitors to Nova Scotia.

This study by Canmac Economics Limited provides an economic and fiscal impact analysis/overview of Halifax Stanfield including several economic impacts on the airport's operations and associated value chain. In sum, these impacts provide a comprehensive assessment of the airport's contribution to the Nova Scotia economy.

The total (direct and spinoff) economic value of Halifax Stanfield is calculated by four measures: Economic Output, Gross Domestic Product (GDP) Basic Price, Employment (defined as Full-Time Equivalent Jobs), and Wages and Salaries. Impacts were estimated using input-output models of the Nova Scotia economy developed from Statistics Canada's latest input-output data.

Direct activity refers to operations of those firms, industries and government service providers for which aviation or airport activity is a portion of total business activity. These businesses can be divided into two groups: those with primary linkage to airports (aviation-related) and those with a secondary linkage. Aerospace and hotels around Halifax Stanfield are included as part of the direct activity. Also included are the passenger carriers and cargo carriers that provide non-stop and connecting passenger and cargo service across Canada, transborder service into the United States and international links to the Caribbean, Europe, the Middle East and Asia.

Direct economic activity at Halifax Stanfield creates indirect and induced economic impacts. Indirect economic activity refers to activity generated in a sector that supplies inputs to businesses associated with direct economic activity. Induced economic activity refers to economic activity generated by individuals employed in the direct or indirect activity sectors who spend a portion of their household income on consumer goods purchased in Nova Scotia. The sum of the indirect and induced activity is defined as the spinoff impact.

In 2018 Halifax Stanfield provided an impressive economic impact. The airport region has a direct output of \$2.3 billion with direct employment of 14,756 persons and creation of \$0.7 billion in labour income and provincial output GDP of \$1.1 billion.

The total economic impact of the airport consists of the following:

- total economic output of \$3.8 billion
- total provincial output of \$1.9 billion
- total labour income of \$1.1 billion
- total employment (full time equivalents) of 24,470

Open economies like Nova Scotia are dependent on trade as their key to long-term economic growth. Halifax Stanfield contributes to the sustainability of Nova Scotia's growth by providing access to the global economy. The world economy is increasingly interdependent and to ensure success in the global economy requires a modern, competitive airport.

Halifax Stanfield provides its economic impact through several channels. First is the airport cluster impact. The airport's geographic location provides an economic magnet for forward and backward linkages plus an incentive for industry such as the aerospace product manufacture sector to locate near the airport. The cluster provides an economic impact as follows:

- total provincial output of \$999.1 million
- total labour income of \$590.3 million
- total employment of 10,739

The airport is a component of the value chain that in 2018 provided for international exports of Nova Scotia goods of \$343.3 million. This economic activity provided:

- total provincial gross domestic product of \$277.8 million
- total labour income of \$143.8 million
- total employment of 3,238.

The airport is also a critical component that supports the province's tourism sector. In 2018, air non-resident travelers spent an estimated \$680.3 million. This economic activity resulted in:

- total provincial gross domestic product of \$552.0 million
- total labour income of \$373.0 million
- total employment of 9,919.

In addition to these ongoing activities, construction and renovation projects by Halifax International Airport Authority and tenants totaled \$50.2 million in 2018. These projects contributed \$92.9 million to economic output, \$42.4 million to GDP and created 574 FTE jobs with wages and salaries of over \$29.7 million.

Halifax Stanfield has a positive fiscal impact on the Province of Nova Scotia. The total personal income in 2018 to the Province of Nova Scotia resulting from airport activity, air cargo exporters and visitors entering Nova Scotia at the airport amounts to \$198.7 million. In 2018, \$62.7 million in retail sales taxes were created due to airport activity.

In 2018, the total value of taxes paid to Halifax Regional Municipality by HIAA and tenants on land covered by the HIAA - Transport Canada Ground Lease was \$4.7 million.

The distribution of total 2018 economic output impacts are provided in Chart E1 with airport cluster accounting for 53% of the total.

Table E1 provides a summary of the 2018 economic impact and comparison to 2017. The 2017 comparison is based on revised numbers developed by Canmac for the 2017

Halifax Stanfield economic impact. Since the original study was completed, Statistics Canada provided updated input-output data. The results reported in E1 are based on the updated model.

As shown in Table E1, the economic impact of Halifax Stanfield saw an increase of 5.2% in economic output. This resulted in an increase in provincial gross domestic product of 2.4%, labour income of 2.3% and employment of 2.4%.

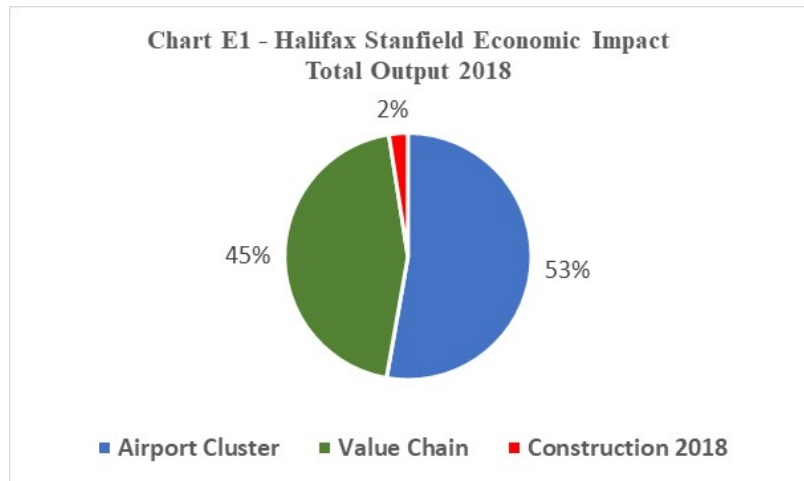


TABLE E1 - SUMMARY OF ECONOMIC IMPACTS				
	DIRECT	SPINOFF	TOTAL	TOTAL % CHANGE 2017 - 2018
2018 Economic Impacts				
Economic Output (\$Millions)	2,285.0	1,467.1	3,752.1	5.2%
GDP Basic Price (\$Millions)	1,062.8	807.6	1,870.4	2.4%
Labour Income (\$Millions)	684.8	452.1	1,136.9	2.3%
Employment (FTE)	14,756	9,714	24,470	2.4%

In conclusion, Halifax Stanfield provides significant economic impact to the Nova Scotia economy directly and indirectly through its services and linkages to Nova Scotia's growth sectors.

1 Introduction

1.1 Context

Canmac Economics Limited was retained by Halifax International Airport Authority (HIAA) to determine the 2018 economic impact of Halifax Stanfield on the Halifax Regional Municipality (HRM) and the Province of Nova Scotia. The 2018 study applied the input-output tables of Statistics Canada's System of National Accounts to determine the impacts of:

- Halifax Stanfield and associated cluster.
- Nova Scotia exporters using Halifax Stanfield air cargo services.
- Visitors (non-resident business and leisure travelers) entering Nova Scotia at the airport.
- Airport and tenant construction projects.



The study used several sources of data and information to calculate the impacts, including a survey of major airport tenants, operating and financial results from HIAA, government and industry statistics and economic impact models of Nova Scotia developed by Canmac Economics Limited.

1.2 Airport Overview

Halifax Stanfield opened in 1960 with Instrument Flight Rule (IFR) operations and a 16,900 square metre Air Terminal Building (ATB). During 2000, management and operation were transferred from Transport Canada to HIAA under a lease that was extended in 2014 by Transport Canada to 2080. The airport has two runways (05/23 at 10,500 feet and 14/32 at 7,700 feet), which can accommodate the largest passenger and cargo planes in use today. The ATB has 32 operating gates and 13 loading bridge positions. Today, Halifax Stanfield is one of 26 airports in Canada's National Airports System and the eighth busiest.

Halifax Stanfield is located 35 kilometers northwest of the HRM beside Highway 102; the major route to New Brunswick, Prince Edward Island and beyond. Surrounding land uses include the AeroTech Business Park. In 2016, Halifax Regional Council amended their land use policies and controls to limit residential and non-compatible development near the airport to not restrict 24/7 operations.

Halifax Stanfield is the largest airport in Atlantic Canada and accounts for more than half of all air passengers and air cargo activity in the region. Since 2006, it is the only airport east of Montréal to enable transborder passengers to be processed by U.S. Customs and Border Protection Services prior to departure on U.S. non-stop flights.

The international passenger catchment area is Atlantic Canada and the domestic catchment area is Nova Scotia, Southern New Brunswick and Prince Edward Island. Halifax Stanfield is unique in the national airport system as it serves four provinces, making it the hub for Atlantic Canada.

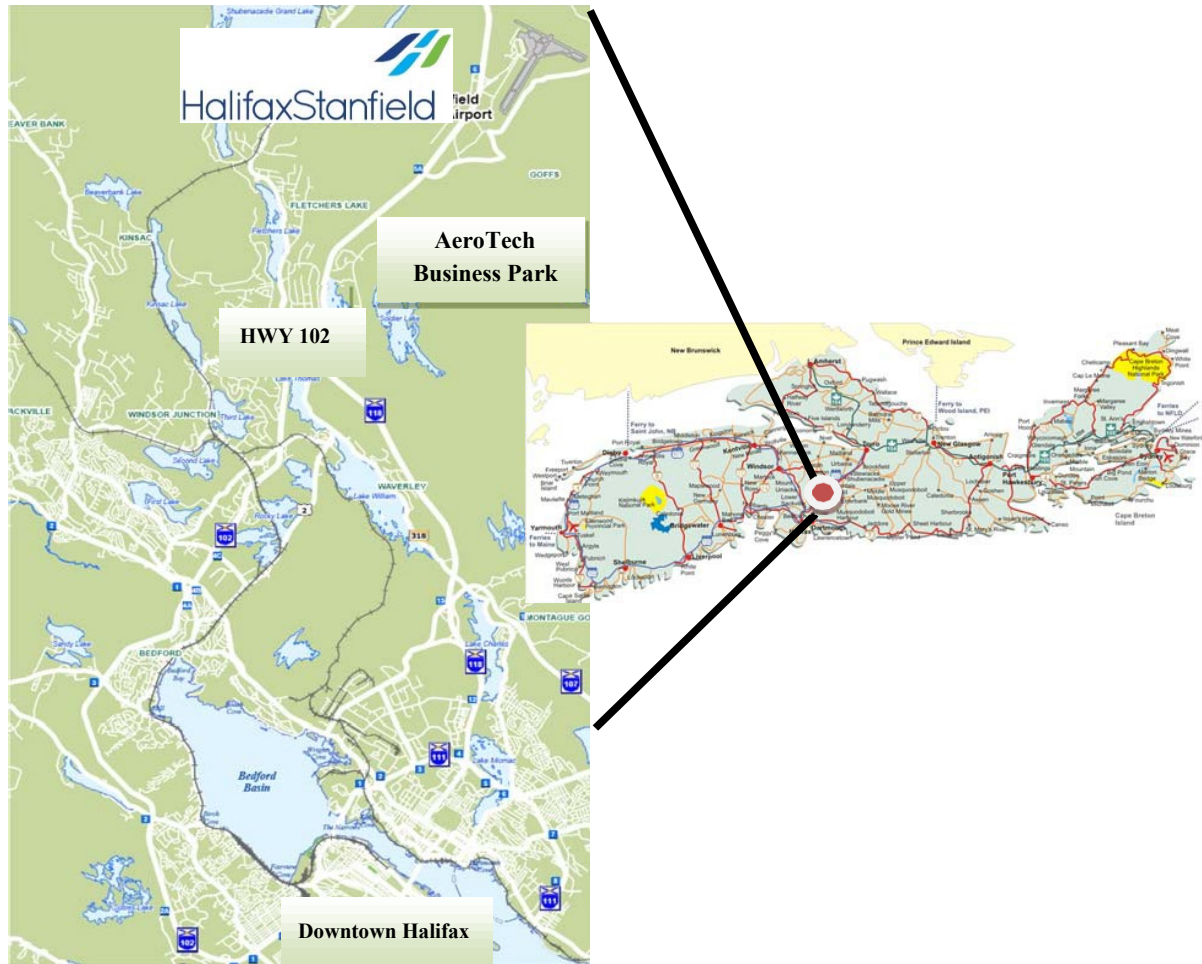


EXHIBIT 1.1 - REGIONAL SETTING

Seventeen passenger carriers and 19 cargo carriers provide non-stop and connecting passenger and cargo service across Canada, transborder service into the U.S. and international links to the Caribbean, Europe, the Middle East and Asia. The following passenger and cargo carriers operated from the airport in 2018:

17 Passenger Carriers

Air Canada
 Air Saint-Pierre
 Air Transat
 Condor Flugdienst
 Delta Air Lines
 EVAS
 Flair Airlines
 Icelandair
 Jazz
 PAL Airlines
 Porter Airlines
 Sky Regional
 Sunwing Airlines
 Swoop
 United Airlines
 WestJet
 WestJet Encore

19 Cargo Carriers

Air Canada
 Air Saint-Pierre
 Atlas Air
 Cargojet
 Cargolux
 Cargo Logic Air
 Condor Flugdienst
 Constanta Airlines
 EVAS
 Federal Express
 (FedEx)
 Icelandair
 Kalitta Air
 Korean Air Cargo
 National Air Cargo
 PAL Airlines
 Qatar Airways Cargo
 Sky Lease Cargo
 Suparna Airlines
 WestJet

Halifax Stanfield provides direct access to the United States. This transborder service is available to Boston and New York. The airport provides service to 16 international destinations over and above the 7 USA destinations (Table 1.2) Halifax Stanfield provides access to 20 domestic destinations, 7 trans-border destinations and 16 international destinations.

TABLE 1.2 - 2018 SCHEDULED AND SEASONAL PASSENGER SERVICES

20 Domestic Destinations	7 Transborder (USA) Destinations	16 International Destinations
Calgary, AB Charlo, NB Charlottetown, PE Deer Lake, NL Edmonton, AB Fredericton, NB Gander, NL Goose Bay, NL Hamilton, ON Moncton, NB Montreal, QC Ottawa, ON Saint John, NB St. John's, NL Stephenville, NL Sydney, NS Toronto, ON Toronto City Centre, ON Vancouver, BC Winnipeg, MB	Boston, Massachusetts Fort Lauderdale, Florida Newark, New Jersey New York (LGA), New York Orlando, Florida St. Petersburg, Florida Tampa, Florida	Cuba - Cayo Coco, Holguin, Santa Clara, Varadero Dominican Republic – Puerto Plata, Punta Cana, Samana France – Paris Germany – Frankfurt Iceland – Reykjavik Jamaica – Montego Bay Mexico – Cancun Scotland - Glasgow St. Pierre et Miquelon – St. Pierre United Kingdom – London (Heathrow) London (Gatwick)
Source: 2018 Annual Report, Halifax International Airport Authority.		

1.3 Airport Facilities

HIAA has a 20-Year Master Plan that is applied for land planning, infrastructure, services and new development projects. The Land Use Plan was prepared in 1996, amended in 2002 and updated in 2011. The airport's various land uses are classified as:

- Airfield District
- Future Airfield District
- Operational Services
- Air Terminal District
- Aviation Services
- Airport Industrial
- Airport Commercial
- Airport Reserve
- Future Roads/Runways/Taxiways



The major parts of the airport are the airfield, commercial development and terminal complex.

Airfield

The airport has simultaneous intersecting runway operations that enable traffic efficiency with fewer delays and lower carrier fuel costs. Runway 05/23 is 10,500 feet by 200 feet with an asphalt/concrete base and Runway 14/32 is 7,700 feet by 200 feet with an asphalt base. The majority of taxiways have an average width of 75 feet. There are seven aprons with areas ranging from 67,713 square feet to 597,070 square feet.

Commercial Development

Commercial land at the airport is leased and there were over 20 major commercial and industrial tenants in 2018. Airside taxiway access land is leased to tenants involved in air cargo and courier services, aircraft overhaul and repair, helicopter transport and aircraft servicing. Non-taxiway access land is leased to companies involved with airline catering and provisioning, brokering, airport services, car rentals and vehicle maintenance. A gas station, fast food and vehicle maintenance operations are also present.

The airside subdivision contains 17 parcels with airside access. Lots are designated for aircraft maintenance facilities, air cargo, offshore oil and gas supply and aircraft servicing and maintenance activities. Major tenants include IMP's 40,000 square foot aerospace hangar and Gateway Facilities ULC multi-tenant cargo facility.

Air Terminal Building

The original ATB was opened in 1960 with numerous expansions and upgrades over the past 58 years. Since the facility's transfer from Transport Canada to HIAA in 2000, over \$200 million has been invested in terminal infrastructure. Improvements and upgrades include groundside improvements for access and parking, a new parking structure with direct ATB and Alt Hotel access, expanded domestic and international arrival areas, and additional retail space.

The ATB has 32 operational gates and 13 aircraft loading bridge positions that can handle aircraft up to and including the Boeing 747. Passenger services and amenities include a visitor information centre, first aid facility, flight information display system, baggage carts, lounges, duty free shops, retail outlets and restaurants, and direct access to car rental concessionaires in the adjacent parking structure.

In 2018, 34 permanent tenant leased spaces were in the ATB:

Main Level

A&W
Airport Gallery
Amos Pewter
Clearwater Seafoods
Hudson Aeromart
Hudson News
Little Blue House
International Currency Exchange
Hudson News
Maritime Ale House
Millers Gourmet Kettle Corn
Pannizza
Starbucks
Subway
Tim Hortons

US Preclearance Departure Level

Hudson News
The Loop Duty Free
Spirit of the Maritimes

Domestic/International Departure Level

Best Buy Express
Bia Mara
Booster Juice
Classic Backrub
Connections Coffee
East Coast Lifestyle
Firkin Flyer
Halifax Market Island Beach Company
Liquid Assets
New Scotland Clothing Company
Metalsmiths Sterling
The Loop Duty Free
Starbucks
The Nova Scotia Store Travel + Leisure Travel Store
Tim Hortons
Vino Volo

Source: <https://halifaxstanfield.ca/park-shop-dine/shopping>

2 Study Approach

2.1 Introduction

This chapter provides an overview of the types of economic impact that in total determine the economic impact of the airport area.

2.2 Impact Type

Halifax Stanfield area represents a significant economic activity for the Nova Scotia economy. Figure 2.1 provides a schematic of the economic impacts that sum to the total economic impact. As shown in Figure 2.1, the airport generates three general impact types as follows:

- 1) Airport Cluster Impacts
- 2) Airport Value Chain Impacts
- 3) Construction Impacts

2.3 Airport Cluster Impacts

The Halifax Airport Authority's geographic area hosts several economic activities that constitute the airport complex.

Air Carriers: This refers to companies offering scheduled air service within Nova Scotia (local), scheduled or charter air service to other points in Canada (domestic) to United States (transborder) or international destinations.

General Aviation: This refers to companies engaged in charter air operations (fixed and rotary), corporate aviation operations and aviation-related organizations or educational institutions.

Air Support Services: This refers to companies whose business is primarily or wholly aviation-related, or who provide direct support to air carriers or general aviation businesses. Air support services include:

- General services (such as fixed base operators)
- Fueling services
- Flight catering services
- Customs brokers, couriers or freight forwarders
- Sales, rentals or aircraft leasing businesses
- Parts and maintenance services
- De-Icing Ground Service
- Ground handling



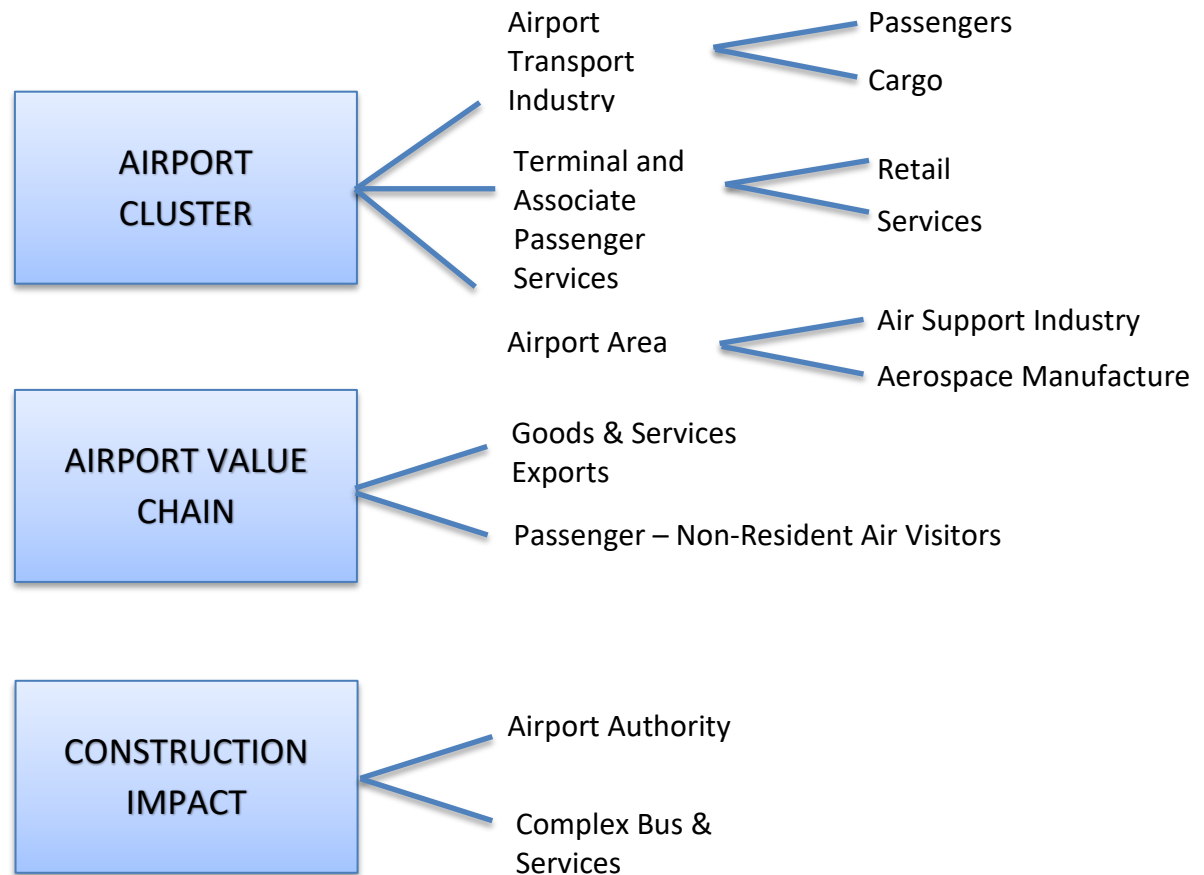
Airport Operations and Administration: This category includes HIAA, NavCanada, CATSA, Canada Border Services Agency, Public Health Canada, Halifax Regional Police (Aviation Security Unit), Canadian Food Inspection Agency, Canada Revenue Agency, U.S. Customs and Border Protection and other government functions that are involved in the direct operation of the airport or which provide support services at the airport. Excluded from the impact analysis are volunteers at the airport that include the Tartan Team and St. John Ambulance Therapy Dog Program.

Commercial Services: These include aviation-related retail and personal service businesses operating at Halifax Stanfield.

Ground Transportation: These include car rental, taxi and limousine service, Halifax Transit and other bus transportation operations that service the airport. The offices for these businesses are both on-site and off-site.

Tourist/Travel/Hotel Industry: This group of secondary linkage businesses includes travel agencies, tour operators, hotels/motels and other food and beverage operators who provide service to passengers travelling by air for business or pleasure.

Aerospace Product Manufacturing: This group includes manufacturers in the airport region. The location decision is due in part to the existence of the airport.

EXHIBIT 2.1 – Halifax Stanfield Economic Impact Types

2.4 Airport Value Chain

Halifax Stanfield is a critical component of the value chain that delivers goods and services to the world and that welcomes visitors from outside the region to Nova Scotia. Each of these activities generate significant economic benefits to the Nova Scotia economy.

2.5 Construction Impact

Construction activity is the third major economic impact generated by the airport construction activity provided in 2018 that provides significant economic benefits. The study also provides a projection of future construction activities and their economic impact on the Nova Scotia economy.



2.6 Total Economic Impacts

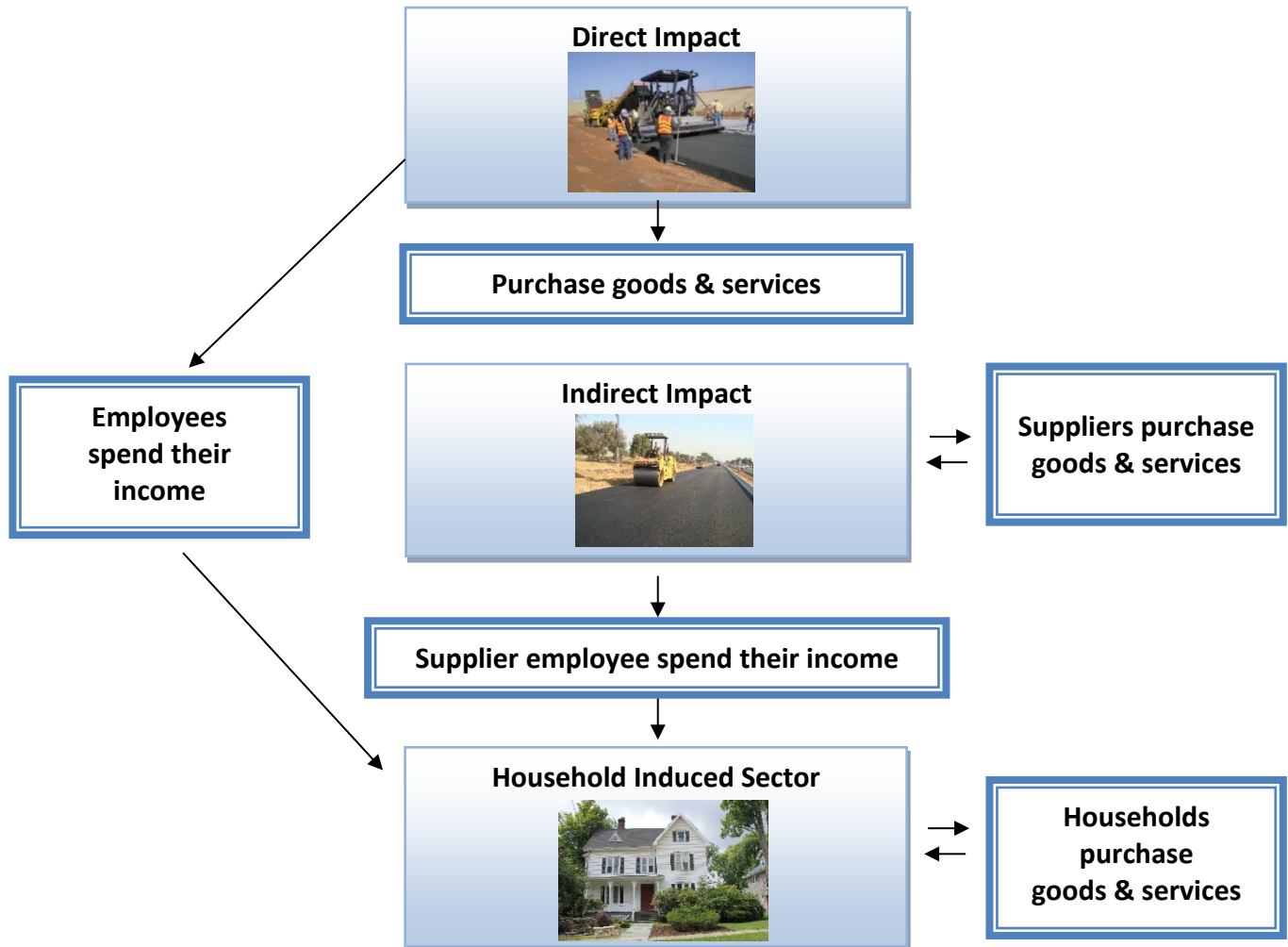
Each of the economic impacts in Figure 2.2 are referred to as direct impacts. Each of these direct impacts create spinoff impacts. Figure 2.2 illustrates the process.

As shown in Figure 2.2, the direct impact creates further economic activity through an indirect phase and an induced phase. The indirect phase refers to the economic activity created as



firms in the direct phase purchase goods and services from suppliers including suppliers of suppliers etc. The induced phase refers to the expenditure made by households that have earned their wages in the direct and indirect phase. These purchases also create further rounds of economic activities as household purchases work their way through the economy in a manner similar to the indirect phase. These activities are measured using the I-O model of the Nova Scotia economy.

EXHIBIT 2.2 - I-O Model Process



2.7 Impact Metrics

The input-output model provides four metrics of economic activity. The four measures of Halifax Stanfield's economic impacts are defined as follows:

Economic Output or Gross Revenue: This measure is determined in terms of total gross revenue from all airport-related activity, and those same total gross revenues, less any revenue transferred from one airport-related activity (primary or secondary) to another airport-related activity.

Gross Domestic Product (GDP) Basic Price: This measure is the broadest quantitative measure of Nova Scotia's total economic activity. It represents the monetary value of all goods and services produced at the airport in 2018 or enabled by exporters and non-resident visitors who used the airport. The concept of GDP at basic prices includes net indirect taxes (indirect taxes less subsidies) attached to factors of production.

Employment: This measure is defined as the total amount of full-time equivalent (FTE) employment created by airport activity (excluding volunteers). Security and government inspection is defined as employees and is not classified as either full or part time.

Wages and Salaries: This measure is defined as the total amount of wages and salaries created due to airport activity.

Direct, indirect and induced economic impacts associated with the above four measures of economic activity were calculated as follows:



Direct Economic Impact: In terms of economic output, GDP, employment, wages and salaries were obtained by means of surveys of the major airport tenants. In addition, financial statements of publicly traded companies, I-O tables of Statistics Canada's System of National Accounts and other data sources were used to arrive at the final values.

2.8 Fiscal Impact

The fiscal impact measures include the following:

Personal Income Taxes: This measure refers to the personal income taxes paid to the Province of Nova Scotia by individuals employed due to airport activity. This impact was calculated from Statistics Canada's financial management system and other sources.

Retail Sales Taxes: This measure refers to retail sales taxes created by purchases of retail goods and services within Nova Scotia by individuals who earn wages and salaries due to their employment stemming from Halifax Stanfield activity. In 2018, the HST rate in Nova Scotia was 15% (5% federal and 10% provincial).

Property tax revenue to HRM is reported for HIAA and its tenants.

3 Economic Impacts

3.1 Introduction

This chapter sets out the value of the economic impacts for Halifax Stanfield airport complex. Each impact is measured in terms of four metrics. The economic impact metrics are as follows:

- Economic Output
- Gross Domestic Product (Basic Prices)
- Employment (Full Time Equivalents)
- Wages and Salaries

3.2 Airport Cluster Impact

Halifax Stanfield region is an integrated complex of economic activities. It's economic impact on the Nova Scotia economy is significant – both its direct economic impacts at the airport and the spinoff economic activities created as a result of this direct impact.

In 2018, there were 120 firms operating in the airport complex. The dominant industry type is retail and general services at 39.2% of the total. The airport transport industry accounts for 24.7% of the total, followed by 11.7% for support services for airport transport (Table 3.1)

TABLE 3.1 – Industry Type 2018	
Industry Type	% of Total
Retail & General Services	39.2
Air Transport	24.7
Support Services for Air Transport	11.7
Other	24.4
Total	100.0
Source: Canmac Economics Limited	

In 2018, there were 5,606 FTE employees at Halifax Stanfield. Table 3.2 presents a list of the major employers. The head office functions of IMP and Jazz Aviation (a wholly owned subsidiary of Chorus Aviation) are the major employers. IMP had 920 FTE employees in 2018 and is part of an aerospace cluster at Halifax Stanfield that includes Pratt & Whitney Canada and L-3 Communications Electronic Systems in the adjacent 970-hectare Aerotech Park. Jazz Aviation was the second largest employer in 2018 with 795 FTE employees, an increase of 3.2% from 771 FTE employees in 2017.

Another sector dependent upon passengers is ground transportation. There were 186 active and licensed taxis and limousines (190 in 2017). Air security has required more staff since 2001 and employment in this sector now reflects the mandate of both Canadian and U.S. service providers. The major security employer is Canadian Air Transport Security Authority (CATSA) and their operator, Securitas. Other security and inspection operations include the Canada Border Services Agency, Revenue Canada, Canadian Food Inspection Agency, Health Canada, Halifax Regional Police (Aviation Security Unit), Transport Canada, U.S. Customs and Border Protection, RCMP and G4S.

TABLE 3.2 – Halifax Stanfield Economic Impact

Major Employers 2018 (excluding security)

Employer	Full-Time Equivalent (FTE) Employees
IMP	920
Jazz Aviation	795
Air Canada/Air Canada Maintenance	350
Pratt & Whitney	325
Halifax International Airport Authority	182
Swissport (Servisair)	144
Source: Canmac Economics Limited, Surveys	

Table 3.3 lists passenger and aircraft movement activity between 2009 and 2018. During this time, total enplaned and deplaned passengers increased by 26.3% from 3,417,164 to 4,316,079 while total aircraft movements declined by 6.0% from 88,477 to 83,183. The average number of passengers per aircraft movement was a record high of 51.9 in 2018 as larger aircraft were used more frequently than in the past.

TABLE 3.3 - Air Traffic Statistics 2009 to 2018			
Enplaned / Deplaned Passengers:		Total Aircraft Movements:	Passenger Average Per Movement:
2009	3,417,164	88,477	38.6
2010	3,508,153	87,349	40.2
2011	3,594,164	87,009	41.3
2012	3,605,701	84,703	42.6
2013	3,585,864	83,767	42.8
2014	3,663,039	81,574	44.9
2015	3,702,705	82,478	44.9
2016	3,908,799	84,974	46.0
2017	4,083,188	84,045	48.6
2018	4,316,079	83,183	51.9
Source: Statistics Canada.			

Table 3.4 presents the 2018 concessionaire sales at Halifax Stanfield in comparison to previous years. Total sales (excluding gas station sales) in 2018 were a record high of \$110,966,100 or \$25.71 per passenger.

TABLE 3.4 – Concessionaire Sales 2009 to 2018				
Year	Total Concessionaire Sales	Sales Per Passenger	Car Rental Concessionaire Portion	Sales Per Passenger
2009	\$71,141,091	\$20.82	\$40,385,453	\$11.82
2010	\$79,711,056	\$20.47	\$40,019,450	\$11.41
2011	\$72,706,341	\$22.42	\$39,976,260	\$11.12
2012	\$72,300,108	\$20.05	\$39,235,226	\$10.88
2013	\$72,300,108	\$20.16	\$40,223,673	\$11.22
2014	\$78,455,547	\$21.42	\$42,644,844	\$11.64
2015	\$80,601,003	\$21.77	\$44,364,681	\$11.98
2016	\$95,102,673	\$24.33	\$50,642,855	\$12.96
2017	\$110,161,817	\$24.78	\$52,783,265	\$12.93
2018	\$110,966,100	\$25.71	\$57,473,138	\$13.32
Source: Halifax International Airport Authority.				
Note: Total concessionaire sales exclude gas station sales from 2009 to 2018. In previous reports, gas station sales were included in past economic impact reports. From 2009 to 2013, annual gas station (gas and concessionaire sales) average \$7.8 million.				

The economic impact of Halifax Stanfield economic cluster is presented in Tables 3.5 to 3.8. The impact model takes the estimated direct impacts and simulates their transmission through the Nova Scotia economy to provide the total economic impacts. The spinoff impact (indirect plus induced) is the difference between the total impact and the direct impact. The total economic impact metrics for 2018 are as follows:

- Total economic output of \$2.0 billion
- Total GDP of \$999.1 million
- Total labour income of \$590.3 million
- Total employment of 10,739

**TABLE 3.5 – Airport Cluster
Total Output (millions) 2018**

Economic Impact	Direct	Spinoff	Total
Air Transport Industry	\$289.8	\$157.0	\$446.8
Passenger Services	\$122.0	\$80.3	\$202.3
Air Transport Support	\$119.4	\$84.3	\$203.7
Aerospace Manufacturing	\$680.1	\$447.6	\$1,127.7
Total	\$1,211.2	\$769.2	\$1,980.4

**TABLE 3.6 – Airport Cluster
Gross Domestic Product (millions) 2018**

Economic Impact	Direct	Spinoff	Total
Air Transport Industry	\$91.0	\$89.4	\$180.4
Passenger Services	\$68.0	\$46.0	\$114.0
Air Transport Support	\$61.7	\$47.5	\$109.2
Aerospace Manufacturing	\$342.7	\$252.7	\$595.4
Total	\$563.5	\$435.6	\$999.1

**TABLE 3.7 – Airport Cluster
Labour Income (millions) 2018**

Economic Impact	Direct	Spinoff	Total
Air Transport Industry	\$72.0	\$49.0	\$121.0
Passenger Services	\$36.7	\$24.9	\$61.6
Air Transport Support	\$37.3	\$25.7	\$63.0
Aerospace Manufacturing	\$209.7	\$135.0	\$344.7
Total	\$355.7	\$234.6	\$590.3

TABLE 3.8 – Airport Cluster Employment 2018			
Economic Impact	Direct	Spinoff	Total
Air Transport Industry	1,075	1,125	2,200
Passenger Services	1,394	619	2,013
Air Transport Support	607	619	1,226
Aerospace Manufacturing	2,530	2,770	5,300
Total	5,606	5,133	10,739

Note 1: A portion of the Air Transport Industry spinoff has been transferred to Air Transport Support to eliminate double counting.

Source: Canmac Economics Limited

Charts 3.1 to 3.4 provide the relative contribution of each economic activity's contribution to the overall economic impact. The Aerospace Product Manufacture industry is the largest contributor to the Airport Cluster Impact. However, the other three cluster activities are more economically interdependent and in this sense more important to the cluster.

Chart 3.1 - Halifax Stanfield Economic Impact
Airport Cluster- Economic Output 2018

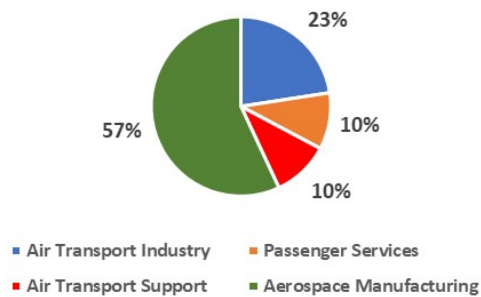


Chart 3.2 - Halifax Stanfield Economic Impact
Airport Cluster - Gross Domestic Product 2018

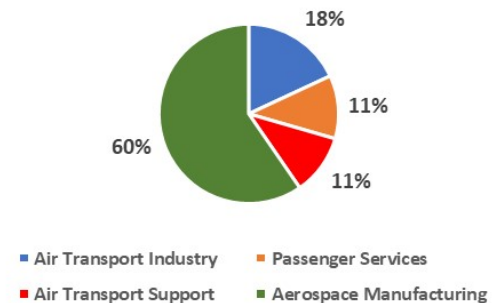


Chart 3.3 - Halifax Stanfield Economic Impact
Airport Cluster - Labour Income 2018

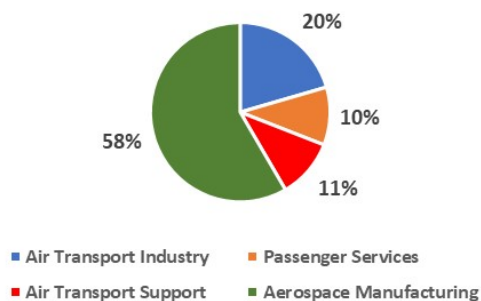
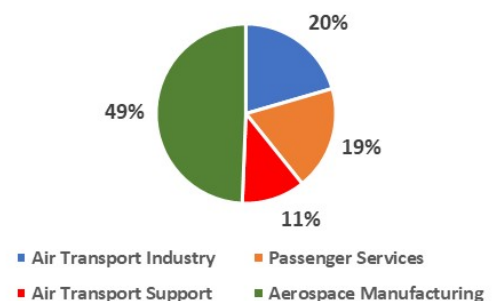


Chart 3.4 - Halifax Stanfield Economic Impact
Airport Cluster - Employment 2018



3.3 Value Chain Economic Impacts

The Air Transport industry is a critical component in the export of goods from Nova Scotia. It is the final component in the value chain. In a similar manner, Halifax Stanfield is a component of the economic value chain that brings air travel non-residents to visit Nova Scotia. This section measures the economic importance of these value chains to the Nova Scotia economy.

Air Cargo Exports

Exports are the lifeblood of the Nova Scotia economy. In 2018, the total value of commodities and products exported from the airport was \$447.1 million. The estimated Nova Scotia produced exports through Halifax Stanfield in 2018 totaled \$370.3 million, an increase of 6.1% over 2017. Table 3.9 shows that five commodities account for 92.7% of total Nova Scotia exports. The dominant export commodity is seafood (primarily lobster) which accounts for a staggering 60.1% of total exports in 2018. Halifax Stanfield's ability to handle larger cargo aircraft, combined with new free trade agreements with South Korea, Europe and Asia, will assist Nova Scotia businesses to effectively pursue global markets.

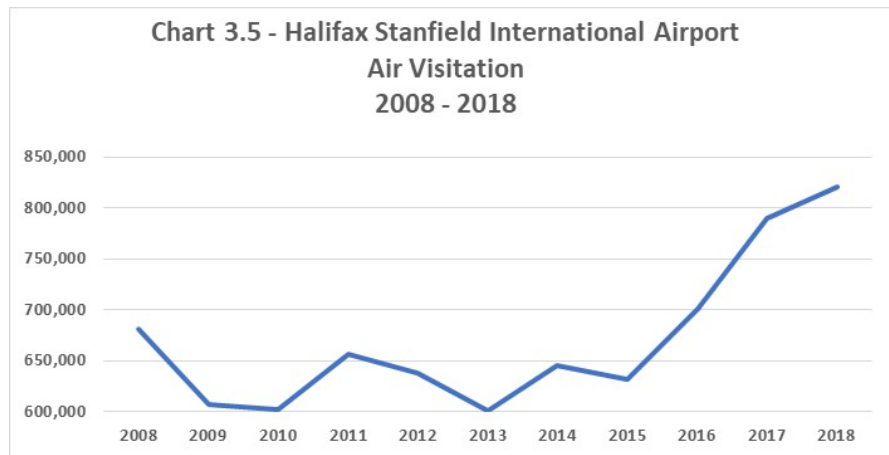
TABLE 3.9 – 2018 Nova Scotia Exports

Commodity	Amount	% of Total
Fish, Crustaceans & Aquatic Invertebrates	222,469,149	60.1%
Electric Machinery etc., Sound Equipment, TV Equipment	34,184,354	9.2%
Optic, Photo etc., Medic or Surgical Instruments, etc.	33,363,958	9.0%
Aircraft, spacecraft, and parts thereof	27,001,999	7.3%
Industrial machinery, including computers	26,208,288	7.1%
Other	27,031,427	7.3%
Total	370,259,175	100.0%
Source: HIAA		

Air Visitor Economic Impact

The number of visitors to Nova Scotia via Halifax Stanfield represents an important and growing market segment for the Nova Scotia tourism industry. As shown in Chart 3.5 total air visitation has grown from 681,700 in 2008 to 832,700 in 2018. Air visitors were up (832,700) in 2018 compared to 2017 (789,400). Air visitation continues to be a growing market share. In 2017, air visitors represented 32.5% of the market and in 2018, the market share rose to 34.1%.

Air visitors generate a larger portion of tourism revenue. In 2018, air visitors spent \$169 per visitor per day and stayed on average 7.0 days. Road visitors spent \$101 per visitor per day and stayed on average 4.3 days.



Tables 3.10 to 3.13 provide the economic impacts for the value chain. The impacts are derived from simulation with the Nova Scotia Input-Output Model developed by Canmac Economics Limited.

In 2018 exports of goods created the following economic impact:

- Total economic output of \$514.1 million (direct \$343.2 million)
- Provincial gross domestic product \$277.8 million (direct \$182.3 million)
- Labour income \$143.8 million (Direct of \$91.4 million)
- Employment 3,238 (FTE) (Direct 1,975)

In 2018, non-resident air travel visitors created significant economic impact in the Nova Scotia economy. Visitors provided increases as follows:

- Total economic output increase to \$1,164.7 million (direct \$680.4 million)
- Provincial GDP increased to \$552.1 million (direct \$298.9 million)
- Labour income increased to \$373.0 million (direct \$222.1 million)
- Employment increased by 9,919 FTEs (direct 6,922 FTEs)

TABLE 3.10 – Value Chain 2018 Economic Output (millions)			
Economic Impact	Direct	Spinoff	Total
Exports	\$343.2	\$170.9	\$514.1
Air Travel Non-Resident	\$680.4	\$484.3	\$1,164.7
Total	\$1,023.6	\$655.2	\$1,678.8

TABLE 3.11 – Value Chain 2018 Gross Domestic Product (Basic Prices) (millions)			
Economic Impact	Direct	Spinoff	Total
Exports	\$182.3	\$95.5	\$277.8
Air Travel Non-Resident	\$298.9	\$253.2	\$552.1
Total	\$481.2	\$348.7	\$829.9

TABLE 3.12 – Value Chain Labour Income (millions) 2018			
Economic Impact	Direct	Spinoff	Total
Exports	\$91.4	\$52.4	\$143.8
Air Travel Non-Resident	\$222.1	\$151.0	\$373.0
Total	\$313.5	\$203.4	\$516.8

TABLE 3.13 – Value Chain 2018 Employment			
Economic Impact	Direct	Spinoff	Total
Exports	1,975	1,263	3,238
Air Travel Non-Resident	6,922	2,997	9,919
Total	8,897	4,260	13,157

Source: Canmac Economics Limited

The contribution to the value chain is provided in Charts 3.6 to 3.9. The non-resident air visitor makes the most significant contribution. The contribution to provincial gross domestic product for example is 68.7% of the value chain.

Chart 3.6 - Halifax Stanfield Economic Impact Value Chain - Economic Output 2018

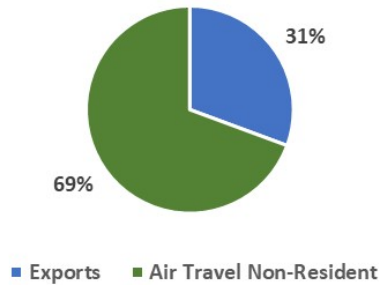


Chart 3.7 - Halifax Stanfield Economic Impact Value Chain - GDP(Basic Prices) 2018

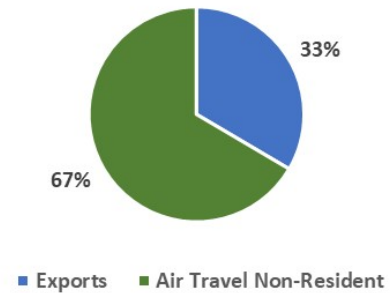


Chart 3.8 - Halifax Stanfield Economic Impact Value Chain - Labour Income 2018

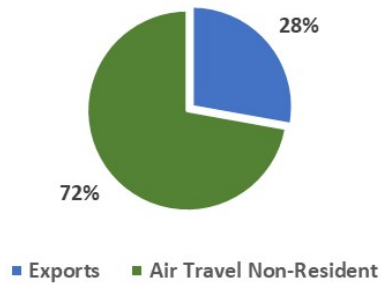
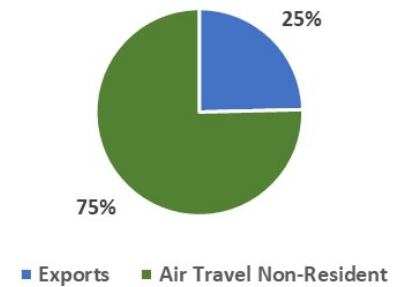


Chart 3.9 - Halifax Stanfield Economic Impact Value Chain - Employment



3.4 New Construction Impact

As one of Nova Scotia's dynamic growth centres, Halifax Stanfield economic region provides significant economic stimulus with its construction activity.

In 2018, capital expenditures for HIAA and tenants totaled \$50.2 million. Over the period 2019 – 2023, the airport authority is expected to spend a further \$261.3 million.

Table 3.15 shows the economic impact of the capital expenditures. In 2018, total capital expenditures results in the following.

- Direct provincial output (GDP) of \$18.1 million and total provincial output (GDP) of \$42.4 million
- Direct labour income of \$15.5 million and \$29.7 million in total
- Direct employment of 253 (FTE) and 574 in total

Over the period 2019 – 2023, capital projects will provide significant stimulus to the Nova Scotia economy as follows:

- Direct provincial output (GDP) of \$94.2 million and total provincial output (GDP) of \$220.7 million
- Direct labour income of \$80.9 million and \$154.3 million in total
- Direct employment of 1,315 (FTE) and 2,985 in total

TABLE 3.14 – Construction 2018 Economic Output (millions)			
Economic Impact	Direct	Spinoff	Total
Construction 2018	\$50.2	\$42.7	\$92.9
Construction 2019 - 2023	\$261.3	\$222.2	\$483.5

TABLE 3.15 – Construction 2018 Gross Domestic Product (millions)			
Economic Impact	Direct	Spinoff	Total
Construction 2018	\$18.1	\$23.3	\$42.4
Construction 2019 - 2023	\$94.2	\$126.4	\$220.7

TABLE 3.16 – Construction 2018 Labour Income (millions)			
Economic Impact	Direct	Spinoff	Total
Construction 2018	\$15.6	\$14.1	\$29.7
Construction 2019 - 2023	\$80.9	\$73.4	\$154.3

TABLE 3.17 – Construction 2018 Employment			
Economic Impact	Direct	Spinoff	Total
Construction 2018	253	321	574
Construction 2019 - 2023	1,315	1,670	2,985
Source: Canmac Economics Limited			

3.5 Other Impact

Halifax Stanfield airport is an important hub for the Atlantic region. In 2018 the airport provided cargo export services for New Brunswick and PEI that totaled \$65.7 million. The economic impact of this activity was as follows:

- Total economic output of \$100.1 million (direct \$65.7 million)
- Total Provincial output of \$49.2 million (direct \$29.8 million)
- Total labour income of \$31.6 million (direct \$21.3 million)
- Total employment (FTE) of 706 (direct 454)

3.6 Fiscal Impact

The economic impact generates tax revenues. In this section, we provide an estimate of major tax revenues. Halifax Stanfield provides tax revenues in 2018 as follows:

- Property tax to HRM from HIAA and its tenants of \$4.68 million
- Personal Income Tax of \$198.7 million
- HST of \$62.7 million

3.7 Summing Up

The total 2018 economic impact of Halifax Stanfield on the Nova Scotia economy is set out in Table 3.18. Overall, the economic impact size is impressive.

- Total economic GDP of \$1.87 billion
- Total labour income of \$1.13 billion
- Total employment of 24,470

TABLE 3.18 - 2018 Total Output (millions)			
Economic Impact	Direct	Spinoff	Total
Airport Cluster	\$1,211.2	\$769.2	\$1,980.4
Value Chain	\$1,023.6	\$655.2	\$1,678.8
Construction 2018	\$50.2	\$42.7	\$92.9
Total	\$ 2,285.0	\$1,467.1	\$3,752.1

TABLE 3.19 – 2018 Total Gross Domestic Product (millions)

Economic Impact	Direct	Spinoff	Total
Airport Cluster	\$563.5	\$435.6	\$999.1
Value Chain	\$481.2	\$348.7	\$829.9
Construction 2018	\$18.1	\$23.3	\$41.4
Total	\$1,062.8	\$807.6	\$1,870.4

TABLE 3.20 – 2018 Total Labour Income (millions)

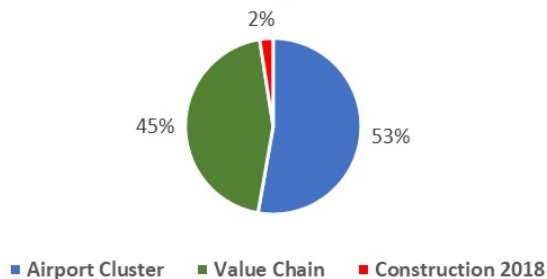
Economic Impact	Direct	Spinoff	Total
Airport Cluster	\$355.7	\$234.6	\$590.3
Value Chain	\$313.5	\$203.4	\$516.9
Construction 2018	\$15.6	\$14.1	\$29.7
Total	\$684.8	\$452.1	\$1,136.9

TABLE 3.21 – 2018 Total Employment

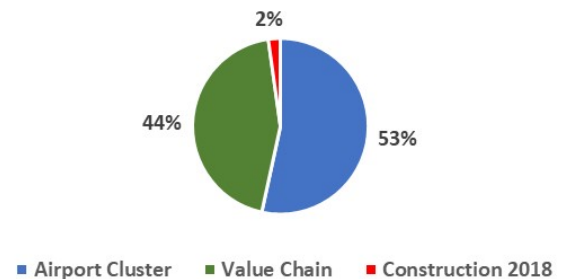
Economic Impact	Direct	Spinoff	Total
Airport Cluster	5,606	5,133	10,739
Value Chain	8,897	4,260	13,157
Construction 2018	253	321	574
Total	14,756	9,714	24,470
Source: Canmac Economics Limited			

As shown in the charts below, the airport cluster and value chain provide about equal contributions to Halifax Stanfield International Airport. Of course, the impact types are different. The airport cluster measures the backward and forward linkages whereas the value chain measures the economic impact of the total value chain associated with the airport.

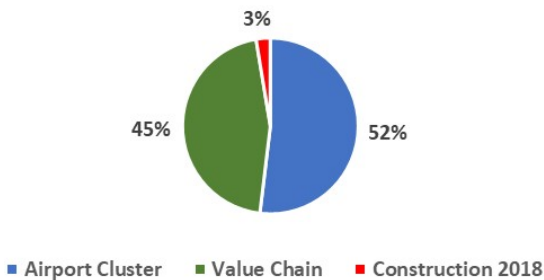
**Chart 3.10 - Halifax Stanfield Economic Impact
Total Output 2018**



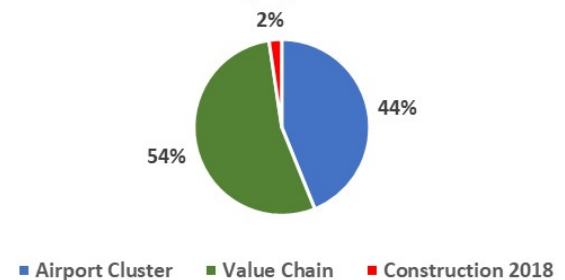
**Chart 3.11 - Halifax Stanfield Economic Impact
Total GDP 2018**



**Chart 3.12 - Halifax Stanfield Economic Impact
Total Labour Income 2010**



**Chart 3.13 - Halifax Stanfield Economic Impact
Total Employment 2018**



4 Summary

4.1 Summary

Halifax Stanfield is a significant economic contributor to the Nova Scotia economy. First and foremost, it provides sustainable and competitive air travel and cargo services to its customers. In the provision of these services it makes a significant economic contribution to the provincial economy.

In 2018 the airport region had a direct output of \$2.31 billion with direct employment of 14,517 persons and creation of \$0.67 billion in labour income and provincial output GDP of \$1.07 billion.

The total economic impact of the airport consisted of the following:

- total economic output of \$3.75 billion
- total provincial output of \$1.87 billion
- total labour income of \$1.13 billion
- total employment (full time equivalents) of 24,470

Open economies like Nova Scotia are dependent on trade as their key to long-term economic growth. Halifax Stanfield contributes to the sustainability of Nova Scotia's growth by providing access to the global economy. The world economy is increasingly interdependent and to ensure success in the global economy requires a modern competitive airport.

Halifax Stanfield provides its economic impact through several channels. First is the airport cluster impact. The airport's geographic location provides an economic magnet for forward and backward linkages plus an incentive for industry such as the aerospace product manufacture sector to locate near the airport. The cluster provides an economic impact as follows:

- total provincial output of \$999.1 million
- total labour income of \$590.3 million
- total employment of 10,739

The airport is a component of the value chain that in 2018 provided for international exports of Nova Scotia goods of \$343.2 million in 2018. This economic activity provided:

- total provincial gross domestic product of \$277.8 million
- total labour income of \$143.8 million
- total employment of 3,238

The airport is also a critical component that supports the province's tourism sector. In 2018, air non-resident travelers spent an estimated \$680.38 million. This economic activity resulted in:

- total provincial gross domestic product of \$552.07 million
- total labour income of \$373.03 million
- total employment of 9,919.

4.2 Comparison of 2018 Results

Table 4.1 provides a summary of the 2018 economic impact and comparison to 2017. The 2017 comparison is based on revised numbers developed by Canmac for the 2017 Halifax Stanfield economic impact. Since the original study was completed, Statistics Canada provided updated input-output data. The results reported in Table 4.1 are based on the updated model.

As shown in Table 4.1, the economic impact of Halifax Stanfield saw an increase of 5.2% in economic output. This resulted in an increase in provincial gross domestic product of 2.4%, labour income of 2.3% and employment of 2.4%.

TABLE 4.1 - SUMMARY OF ECONOMIC IMPACTS				
	DIRECT	SPINOFF	TOTAL	TOTAL % CHANGE 2017 - 2018
2018 Economic Impacts				
Economic Output (\$Millions)	2,285.0	1,467.1	3,752.1	5.2%
GDP Basic Price (\$Millions)	1,062.8	807.6	1,870.4	2.4%
Labour Income (\$Millions)	684.8	452.1	1,136.9	2.3%
Employment (FTE)	14,756	9,714	24,470	2.4%

Economic Impact Assessment

J.A. Douglas McCurdy Sydney Airport



Prepared By:
Canmac Economics Limited
January, 2015

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Executive Summary

This report presents an economic impact assessment of the J.A. Douglas McCurdy Sydney Airport on the Nova Scotia and Cape Breton economy. The economic impact assesses the contribution of the airport to the provincial and regional economy in terms of output, (Gross Domestic Product), household income and employment generation.

The economic impact of the J.A. Douglas McCurdy Sydney Airport for 2013 is estimated as follows:

- Total provincial output (Gross Domestic Product) increases by \$9.691 million dollars.

This increase in provincial economic output represents the sum of 71.4% from airport and partner operations and 28.6% as airport construction activity.

The increase in provincial economic output results in the generation of:

- \$6.696 million in total household income, and
- 159 full time equivalent jobs (or 206 jobs).

The total economic impact is concentrated in the Cape Breton region. Canmac estimates that over 90% of the total impact is generated in the local economy.

The J.A. Douglas McCurdy Sydney Airport's economic impact is significant relative to the Cape Breton regional economy that it supports. Table E1 shows its impact relative to a sample of other airports in the region. The Sydney airport has a smaller impact than other regions primarily because of the lack of airport related companies. Reflection on J.A. Douglas McCurdy Sydney Airport's relative economic impact compared to other Atlantic region airports show the strong potential the airport has to develop an economic cluster in the regional economy.

Table E1
Comparison with other Airports

	Halifax	St. John's	Gander	Sydney
Passengers	3,605,701	1,250,000	133,500	170,022
Gross Domestic Product	\$1.27 Billion	NA	\$210 Million	\$9.691 Million
Household Income	\$507.5 Million	\$269.8 Million	\$120 Million	\$6.696 Million
Employment	12,360	5,962	1,940	159

In addition to its operational and construction economic impacts, the J.A. Douglas McCurdy Sydney Airport is a critical link to the overall economic health and vitality of the Cape Breton region. Airports represent vital infrastructure for regional economies. One significant example is the tourism industry. Data on the size of the air tourism sector is not presently available for the Cape Breton region but a comparison with the air tourism market for the Halifax International Airport (HIA) provides a useful approximation. A 2012 study of the economic impact of the HIA stated that the air tourism market, i.e. passengers who stated their visit purpose was tourism related accounted for 15,030 full time equivalent jobs (FTE's). Applying the same ratio of tourism jobs to passengers for the Sydney Airport (not an unreasonable assumption) reveals that the J.A. Douglas McCurdy Sydney Airport generates 708 FTE's.

Conclusion

The J.A. Douglas McCurdy Sydney Airport represents a critical infrastructure for the Cape Breton economy.

- It makes a significant economic contribution through operations and construction activities.

- It is a vital link for the region's key economic base such as tourism.
- It has potential for future growth based on other regional airports as a benchmark.

Section 1 - Introduction

1.1 Study Purpose

This report presents an economic impact assessment of the J.A. Douglas McCurdy Sydney Airport on the Nova Scotia and Cape Breton economy. The economic impact assesses the contribution of the airport to the provincial and regional economy in terms of output, (Gross Domestic Product), household income and employment generation.

1.2 Airport Overview

The J.A. Douglas McCurdy Sydney Airport (Map 1) is located in Sydney Nova Scotia. The airport is owned and operated by a not-for-profit society and is classified as a small regional airport. The airport has a 12 member board. The current airline services are:

Air Canada:	Sydney - Halifax - Year Round
Air Canada:	Sydney - Toronto Direct Daily Flights: Year round
WestJet:	Sydney - Toronto Direct: Daily Flights: May 18 to Oct 26
WestJet Encore:	WestJet Encore to start Sydney - Halifax Service July 15/15
Canadian North:	Charter Service
Air Saint Pierre:	Charter Service Saint Pierre & Miquelon July 5-Sept 6
Maritime Air Charters:	Charter Service - Atlantic Provinces
Provincial Airlines:	Charter Service
Atlantic Charters:	Charter Service
Skylink Express:	Courier Service

Various service partners operate within the airport. The service partners are:

- Avis Car Rentals
- Budget Car Rentals
- National Car Rentals
- Air Canada
- WestJet
- Airconsol Aviation (Ground Service)

-
- PLH Aviation (Provides Jet Fuel to Aircraft/The airport provides aviation gas for smaller aircraft)
 - Securitas (CATSA) Security Services

Map 1



- RMT Industrial Service (In Fire hall)
- Chef Todd's Catering & Deli (Todd MacIntyre)
- City Wide Taxi Service (Ground Concession)

The J.A. Douglas McCurdy Sydney Airport infrastructure consists of two runways, 1) 1 7070' x 200' asphalt and 2) a 5997' c 150' asphalt runway. In addition, the airport operates the following building facilities:

- Fire Hall
- Combined Services Building (CSB)
- FBO Hanger 12,000 sq. ft.
- Air Terminal Building (ATB)
- Provincial Hangar 6,500 sq. ft.
- Quonset Hut
- Nickerson Hangers 8,500 sq. ft.
- Allied Steel Building 3,000 sq. ft.
- Water Treatment Plant
- Air Bras d'Or Hangar 8,000 sq. ft.
- Wash Bay

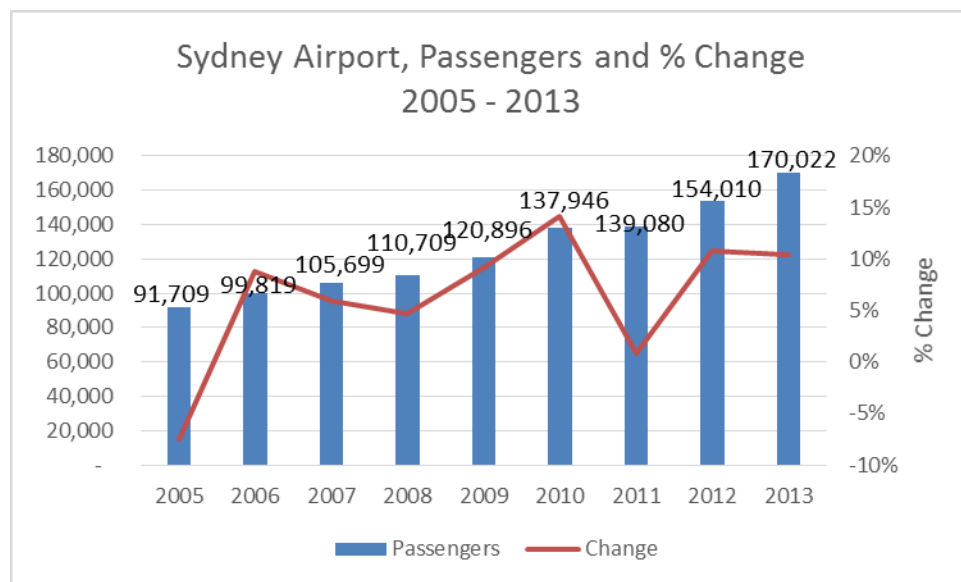


The airport's 2012/2013 Capital Program included expenditures of \$3.9 million as follows:

- Security Area Expansion, Entrances & Hospitality Area: \$2 million
- Provincial Hangar Renovation 2012 - Heating System & Upgrades \$165,000
- ½ Ton Truck & Snowmobile: \$48,000
- Diesel Engine & Transfer Switch: \$535,000
- Runway Condition Reporting Equipment: \$33,000
- Airfield Inspection Management TRACR AIM \$18,000
- Water Treatment Plant - Roof & Wall - \$18,000
- Renovation - 2nd Floor Air Terminal Building \$200,000
- Gas Pumps \$6,000
- Air Handling Unit - Fan Section & New Units \$216,000
- Computer & Camera Equipment, Furniture \$22,000

- Runway 01/19 Culverts & Pave Taxiway \$400,000
- Fencing \$100,000
- Contingency \$100,000

The J.A. Douglas McCurdy Sydney Airport has witnessed significant growth recently - growing from 91,709 passengers in 2005 to 170,022 passengers by 2013. The highest seasonal component for passengers occurs in August followed by July. The major origin/destination of passengers is Halifax (66.5%), followed by Toronto (30.6%) with charters accounting for the remainder at 2.9%.



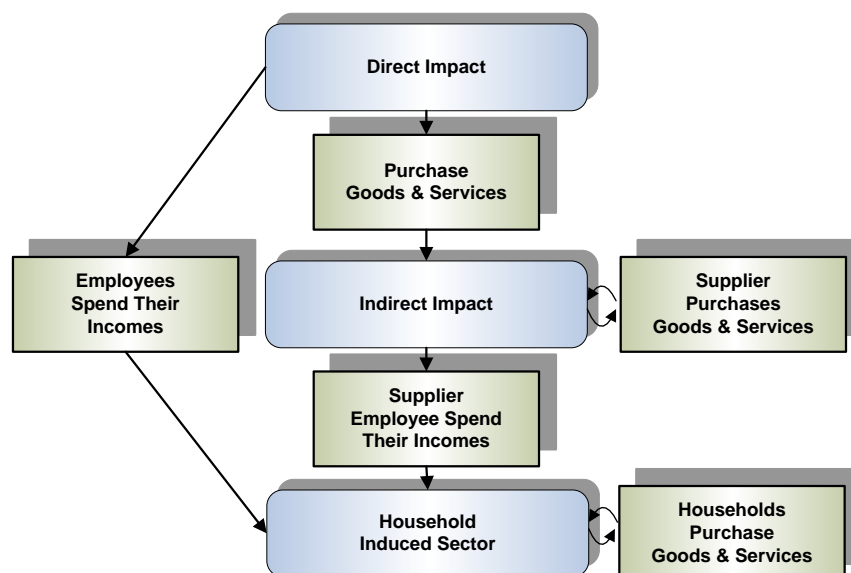
Section 2 – Economic Impact

2.1 Introduction

The total economic impact of the J.A. Douglas McCurdy Sydney Airport is shown schematically in Figure 1. It consists of measuring the direct, indirect, and induced impacts of the airport. The direct phase is defined as the direct output, employment and household income created by the project. This is the sales employment and wage bill for on-site personnel. The indirect phase for the project is defined as the household income and employment creation resulting from supplier purchases by the client. The final impact - the induced phase, refers to the additional income and employment created by the re-spending of the household income in the direct and indirect phases.

The economic impacts are estimated using the Nova Scotia Input-Output Model. The direct contribution is the input to the model. The model traces out the indirect and induced impact expenditure effects.

Figure 1 – Economic Impact Process



2.2 *Direct Effects*

The J.A. Douglas McCurdy Sydney Airport's direct economic impact is comprised of 1) the airport operations, 2) ancillary services provided at the airport such as car rental, etc. and 3) airline operations such as ticket agents. Canmac estimated that the total annual operations expenditures from the above was \$7.801 million in 2013, the year for which the latest data is available. In addition to these annual operations, the airport has a capital construction program that totaled \$3.861 million in 2012/2013.

The J.A. Douglas McCurdy Sydney Airport is a major component in the Cape Breton economy. The airport operations and associated partner firms have a direct employment impact of 60 full time and 49 part time employees. In total, the airport directly provides 84 full time equivalent jobs. The wage bill associated with this employment is estimated at \$3.229 million. The direct contribution to Gross Domestic Product of the airport and its partners is estimated at \$4.164 million.

Construction activity for the airport is also a major generator of economic activity. It is estimated that the \$3.861 million in construction expenditures has a direct impact of:

- \$1.351 million in Provincial Gross Domestic Product.
- \$1.235 million in direct household income.
- 25 direct full time equivalent employment.

2.3 *Total Impact*

As noted above, the direct impacts create significant spinoff benefits for the Nova Scotia economy. Table 2.1 provides the total impacts for the operations and construction economic activity based on simulations with the Statistics Canada input-output model. As shown in Table 2.1, the total impact from the operations economic activity is as follows:

- Total Gross Domestic Product increase of \$6.911 million.
- Total wages and salaries increase of \$4.688 million.
- Total employment increase (FTE's) of 117.

In a similar manner, the total economic impact from construction activity is estimated as follows:

- Gross Domestic Product of \$2.78 million.
- Total household income of \$2.008 million.
- Total employment (FTE's) of 42.

Table 2.1
Operations Impact
J.A. Douglas McCurdy Sydney Airport and Service Providers
2013

	Gross Domestic Product (000's)	Household Income (000's)	Employment (FTE's)
Direct	\$4,163,531	\$3,229,570	84
Spinoff	\$2,747,722	\$1,458,285	33
Total	\$6,911,253	\$4,687,855	117
<i>Source: Canmac Economics Limited computations from N.S. I-O Model 2010</i>			

Table 2.2
Construction Impact
J.A. Douglas McCurdy Sydney Airport
2013

	Gross Domestic Product (000's)	Household Income (000's)	Employment (FTE's)
Direct	\$1,351,350	\$1,235,520	25
Spinoff	\$1,428,570	\$772,200	17
Total	\$2,779,920	\$2,007,720	42
<i>Source: Canmac Economics Limited computations from N.S. I-O Model 2010</i>			

Section 3 – Conclusions

3.1 *Introduction*

The economic impact of the J.A. Douglas McCurdy Sydney Airport for 2013 is estimated as follows:

- Total provincial output (Gross Domestic Product) increases by \$9.691 million dollars.

This increase in provincial economic output represents the sum of 71.4% from airport and partner operations and 28.6% as airport construction activity.

The increase in provincial economic output results in the generation of:

- \$6.696 million in total household income, and
- 159 full time equivalent jobs.

The total economic impact is concentrated in the Cape Breton region. Canmac estimates that over 90% of the total impact is generated in the local economy.

3.2 *Comparison with other Atlantic Region Airports*

The J.A. Douglas McCurdy Sydney Airport's economic impact is significant relative to the Cape Breton regional economy that it supports. Table 3.1 shows its impact relative to a sample of other airports in the region. The Sydney airport has a smaller impact than other regions primarily because of the lack of airport related companies. Reflection on J.A. Douglas McCurdy Sydney Airport's relative economic impact compared to other Atlantic region airports show the strong potential the airport has to develop an economic cluster in the regional economy.

Table 3.1
Comparison with other Airports

	Halifax	St. John's	Gander	Sydney
Passengers	3,605,701	1,250,000	133,500	170,022
Gross Domestic Product	\$1.27 Billion	NA	\$210 Million	\$9.691 Million
Household Income	\$507.5 Million	\$269.8 Million	\$120 Million	\$6.696 Million
Employment	12,360	5,962	1,940	159

3.3 Network Economic Linkages

In addition to its operational and construction economic impacts, the J.A. Douglas McCurdy Sydney Airport is a critical link to the overall economic health and vitality of the Cape Breton region. Airports represent vital infrastructure for regional economies. One significant example is the tourism industry. Data on the size of the air tourism sector is not presently available for the Cape Breton region but a comparison with the air tourism market for the Halifax International Airport (HIA) provides a useful approximation. A 2012 study of the economic impact of the HIA stated that the air tourism market, i.e. passengers whose state their visit purpose was tourism related accounted for 15,030 full time equivalent jobs (FTE's). Applying the same ratio of tourism jobs to passengers for the Sydney Airport (not an unreasonable assumption) reveals that the J.A. Douglas McCurdy Sydney Airport generates 708 FTE's.

3.4 Conclusions

The J.A. Douglas McCurdy Sydney Airport represents a critical infrastructure for the Cape Breton economy.

- It makes a significant economic contribution through operations and construction activities.
- It is a vital link for the region's key economic base such as tourism.
- It has potential for future growth based on other regional airports as a benchmark.

Appendix A - Glossary of Terms

Glossary of Terms

Direct Impact

All 'first round' economic activities which contribute to GDP, employment, household income. These can vary from investment in a new or expanded facility to wages paid to employees directly involved in production of the operation for which an impact statement is required.

Gross Domestic Product (GDP)

The measure of economic activity in an economy, in this case the Nova Scotia economy. GDP measured on an expenditure basis is expressed as:

$$\text{GDP} = \text{C} + \text{G} + \text{I} + \text{X} - \text{M}$$

where:

- C = Personal consumption (expenditure) of goods and services.
- G = Government expenditures on goods and services.
- I = Investment in capital, machinery equipment and inventories.
- X = Exports of goods and services.
- M = Imports of goods and services.

GDP is also measured on an income basis and consists of :

- labour income
- corporate profits before taxes
- interest and investment income
- net farm income
- unincorporated business income
- inventory valuation adjustment
- indirect taxes less subsidies
- capital consumption allowance

Gross domestic product of an industry is the value added by labour and capital in transforming inputs purchased from other producers into outputs.

Indirect Impact

All 'subsequent rounds' of economic activities which contribute to GDP, employment, household income. These activities are not directly associated with the production

activity but are a result of direct production activities. These indirect contributions also include 'induced contributions' which measure the economic activity associated with the respending of wages paid in the direct, indirect, and to a lesser extent earlier rounds of induced activity.

Input-Output (I-O)

The input-output model measures the wide economic impact of a direct economic event by the known inter-industry dependency in the given economy. Different sectors of an economy depend on other sectors of the economy to supply its inputs or purchase its output to varying degrees. The imbalance in this supply/demand relationship is made up by imports (supply) and exports (demand).

The input-output model measures total economic activity defined as direct + indirect + induced activities. For an explanation on direct, indirect and induced activity see preceding GDP definition.

Input-Output Multipliers

Relate the indirect and induced impact by industry to the direct increase or reduction of the output of a given industry. The sum of all industries indirect and induced impacts plus the direct industry impact equals the total impact.

Multipliers are produced for output, income, GDP, and employment.

Appendix B – Limitations to I-O Models

MODEL LIMITATIONS

An input-output model, like any model, is an approximation to reality. It is built on assumptions that are never fully realized in the real world. While most analysts are well aware of the limitations of any I-O model it may be helpful to the general reader to review these limitations.

INPUT-OUTPUT LACKS AN EXPLICIT TIME DIMENSION

An input-output system provides a snapshot of an economy for a period of time (usually a one-year period). If the economy is in disequilibrium, all future uses of the tables and the related impact models will reflect the structural implications of the atypical year.

Multiplier effects do occur over time. However, the impact models associated with input-output systems imply that the multiplier effects are virtually instantaneous. There is some evidence to show that the multiplier effects take from two or three years to move through an economy.

SENSITIVITY TO RELATIVE PRICE CHANGES

Relative prices between commodities will change from the base year of model construction to the period in which the model is used. Therefore, the analysis of projects via input-output analysis in the future will reflect one set of relative prices, while the direct requirements coefficients in the tables reflect the relative prices of the base year. If the relative price changes are not accounted for, future data supplied to the impact model will produce “incorrect” impact results.

For example, say, in 1984 an industry required \$100 of lumber for every \$1,000 of output (i.e. 10 percent of inputs). If an analysis of the same industry were conducted in 2011, prices for the same volume of lumber may have increased to \$150 while inflation on all other inputs was only 10 percent. Therefore the total output value

(for the same amount of production) is now \$1,140, of which lumber is 13.2 percent of inputs. The relative price change in lumber has caused an increase in the size of its technical coefficient. Using unadjusted data in the 2011 model would produce incorrect impact results to the extent that relative prices change.

CONSTANT TECHNOLOGY

As mentioned earlier, the input-output system is a static model. However, times change and so do the technologies used. To mitigate this limitation, most input-output systems are updated on a periodic basis. The PEI Input-Output system has been updated over the years. Such an update picks up any technology changes in the economy. Between updates no changes in technology are assumed.

CONSTANT RETURNS TO SCALE

Input-output systems assume constant returns to scale; that is, all inputs change in the same proportion as any change in an industry's output. This assumption implies that even for one dollar increase in sales, the model will show impacts on wages, salaries and employment associated with the multiplier effects. However, common sense tells us that this is not true. Such a small increase would not necessarily cause, especially in the short run, generation of a commensurate increase in wages or employment. However, in the long run, it can be assumed that even a small increase in final demand will produce the multiplier effects estimated by an input-output system.

In the short run, industries can draw on inventories, use their labor more efficiently, etc. to increase output with limited impact effects. However, if the new level of final demand is maintained, then firms in the long run will move back to their historical steady-state level of the utilization of factors of production. In the long run, increases in, say, household income due to increases in final demand will reflect

the technical coefficients' relationship between income and output modeled in the input-output system.

NO SUPPLY CONSTRAINTS

Input-output systems assume that whatever is demanded by industries as inputs can be supplied. They assume no productive capability constraints. This problem is not significant when there is excess capacity in an economy. However, when economies are operating at or near capacity, this limitation is important. The multipliers for an economy near capacity will be underestimated. This is because increased final demand will require new capital investment whose own direct and multiplier effects are not captured within the standard input-output system.

FIXED CONSUMPTION PATTERNS

The consumption patterns that result in household re-spending multipliers are assumed to be fixed and linear. As Canadians become "better off" they redirect real growth in income to savings and luxury consumption. Because the input-output system is static, it does not model the effect of non-linear patterns in household consumption (as real incomes increase) within its multiplier estimates. This problem is partially overcome by regularly updating input-output systems.

CONCLUSION

Although the list of limitations may appear long, a similar or longer list is associated with almost any form of economic analysis. The limitations occur in different areas in other analytical tools. No one economic model is expected to provide the comprehensive "answer". Economic analysis techniques should be used in a complementary fashion to appreciate the full scope of a problem. In a very real sense, then, quantitative economic models should be used to examine the structural implications of changes in an economy and should not be treated as providing "the" answer.

Appendix C – Bibliography

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 - Halifax Stanfield International Airport 2012 Economic Impact Report. Chris Lowe Group Management, September, 2013
 - Gander International Airport Economic Impact Study. InterVISTAS Consulting Inc., September, 2015

Appendix H : Kelowna International Airport Master Plan 2045 Economic Impact Study Update

Kelowna International Airport Master Plan 2015 Economic Impact Study Update

FINAL REPORT
October 2016

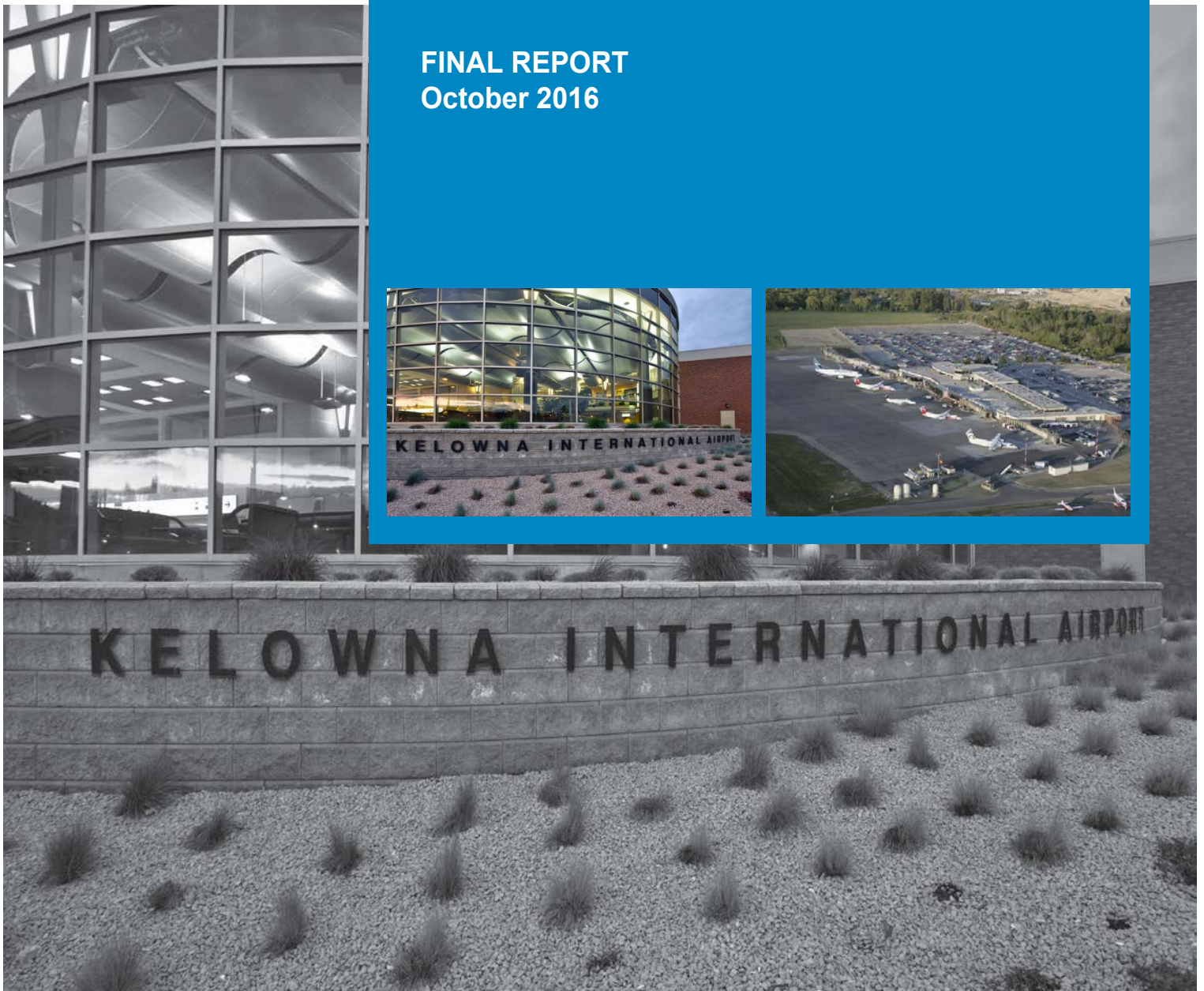




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EXECUTIVE SUMMARY

As part of the work leading up to the development of Master Plan 2045, SNC-Lavalin Inc.'s (SLI) Airport and Aviation Group has been engaged to deliver an updated Economic Impact (EI) Study for YLW.

The previous economic impact study conducted for Kelowna International Airport (YLW) was completed in February 2011 using data from calendar year 2010. Since that time, YLW has continued to experience strong growth with passenger traffic increasing by 15%. This study primarily uses data from calendar year 2014 although the study was completed in 2015.

Employment

There are 46 organizations operating at YLW in 2014 with 1,411 full time equivalent (FTE) direct jobs. Of these, 1,306 FTE jobs were located at the airport and another 105 FTE jobs were attributable to off-site organizations operating at the airport. The 105 jobs represents the portion of the time those employees spend either at the airport or providing services to users of the airport (e.g., flight crew not based at YLW, but operating flights to/from YLW). There were another 10 FTE voluntary workers at the airport (excluded from the 1,411 total FTE jobs given above). The 1,411 FTE jobs represent an increase of 9% from the 1,290 direct jobs at the airport in 2010. Total employment including indirect and induced employment increased 6% from 2,520 to 2,670 FTEs.

Operations at YLW generate 1,411 direct person years of employment and \$83 million in direct wages

Labour Income

It is estimated that activity at YLW directly contributes \$83 million in labour income (including benefits unless otherwise stated). This is an increase of 18% since 2010. Total labour income including indirect and induced effects is \$142 million. On average labour income is \$58,610 per direct FTE at YLW.

Average wage at YLW is \$59,000 per direct FTE

Economic Output

It is estimated that activity at YLW contributes \$336 million in direct output. This is an increase of 12% since 2010. Total output including indirect and induced effects is \$600 million.

GDP

Gross Domestic Product (GDP) is calculated using Statistics Canada economic multipliers for B.C. applied to direct output. Different multipliers were used for different activity categories. \$336 million in direct output is estimated to produce \$169 million in direct GDP, an increase of 41% from that estimated in 2010. Total GDP including indirect and induced effects is over \$345 million, an increase of 38% from 2010.



Recurrent Airport Operations

Even without airport development, the airport would continue to generate recurrent impacts based on ongoing operations. SNC-Lavalin forecast that in year 2020, a total of 1.93 million passengers will travel through the airport, an increase of 20%; and 2.25 million in 2025 (40% increase).

Assuming a similar relationship between growth in passenger traffic and economic benefits as was found over the past 5 years, by the year 2020 operations at YLW can be expected to generate approximately \$381 million (2014\$) in direct output. This in turn equates to almost 1,600 FTE workers being directly employed at the airport and \$94 million (2014\$) in direct wages.

Ongoing operations at YLW contribute a total of 2,670 FTE jobs and \$600 million to the economy of the province

Catalytic Impact

Tourism is one of the major catalytic impacts associated with the airport. The impacts of visitors to the region travelling by air are significant equating to roughly 70% of the employment impact of the airport and between 26% and 36% of the income, output and GDP impacts of the airport. The economic impacts to the region of visitors travelling by air, excluding the airport component, are summarized below.

Tourism Economic Impact of Visitors Travelling by Air, Excluding Airport Component, in 2014

Impact Component	Employment		Wages (\$ Million)	GDP (\$ Million)	Gross output (\$ Million)
	Jobs	Person-yrs			
Direct Impacts					
Accommodation	528	372	\$13	\$22	\$37
Net Other Tourism Industries	671	387	\$15	\$36	\$77
Visitor Spending	711	555	\$16	\$25	\$47
Total Direct Excl. Airport Component	1,910	1,314	\$44	\$83	\$161
Net Indirect	493	247	\$3	\$2	\$11
Net Induced	586	311	\$4	\$4	\$17
Total Impact	2,990	1,872	\$51	\$90	\$190

A survey of businesses and organizations in the region indicated that the airport is very important in bringing customers to the region. The second most important impact of YLW was on investment decisions to expand in the region, followed by connecting staff with other businesses/organizations, clients, and other offices of their business/organization. The airport is also important in attracting skilled workers to the region. YLW is therefore very important to economic growth in the Okanagan region.



Each additional daily B737 service generates up to 38 FTE jobs associated with all passenger-related activities at the airport

Impact of an Additional Daily B737 Flight

The 2010 Economic Impact Study included an analysis of the microeconomic impact of additional WestJet short and long haul daily B737-700 services to Calgary and Toronto, respectively. It was determined through this micro analysis that the additional jobs created from the addition of these new direct services would generate 16 new jobs (FTE) for the Calgary daily service and 21 new jobs (FTE) for the longer haul Toronto daily service. A high-level desktop calculation, using more general and broad employment benchmarks, reveals a range of 16 - 38 new jobs would be generated from the addition of a single daily B737 flight. The analysis finds that 16 FTE jobs directly relate to air carrier and supporting services; while the higher range of 38 FTE jobs support all passenger-related activities at the airport, excluding aircraft maintenance, charter and GA activities.

Summary

With 1,411 FTEs and \$336 million in direct output, YLW is a powerful economic generator for the City of Kelowna and Central Okanagan Region. The airport is a gateway to the Region and plays a major role in supporting industry, tourism and overall quality of life.

Summary of Economic Impacts at YLW – 2014

ACTIVITY CATEGORY	ASSOCIATED WITH AIRPORT ACTIVITY				CATALYTIC
	DIRECT	INDIRECT	INDUCED	TOTAL	TOURISM
Employment (Person/yr)	1,411	737	525	2,673	1,872
Wages (million)	\$83	\$37	\$22	\$142	\$51
Output (million)	\$336	\$169	\$94	\$599	\$190
GDP (million)	\$169	\$88	\$88	\$345	\$90



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1 INTRODUCTION

1.1 BACKGROUND AND CONTEXT

Understanding the economic impact of the Kelowna International Airport (YLW) is important for increasing business and community awareness of the activities taking place at the airport and their contribution to the economic well-being of the Central Okanagan Valley. It is also beneficial towards communicating the linkages between the airport and other aspects of the regional economy.

As part of the work leading up to the development of Master Plan 2045, SNC-Lavalin Inc.'s (SLI) Airport and Aviation Group has been engaged to deliver an updated Economic Impact (EI) Study for YLW. The analysis includes two components:

1. Economic impact of businesses located at the airport; and
2. Economic assessment of the influence of YLW on the surrounding regional economy.

The Economic Impact Study is a valuable tool for garnering support among local government, tenants, residents and other community stakeholders for preservation and enhancement of airport activities; providing input to future business planning exercises; and supporting business cases for capital funding initiatives at the airport.

The previous economic impact study was completed in 2011. Since that time, the passenger traffic at YLW has increased significantly.

The last economic impact study conducted for the Airport was completed in 2011 using data from year 2010¹. The study found that ongoing operations at YLW generated 1,290 direct person years of employment and nearly \$70 million in direct wages. It also found that the airport contributed a total of 2,730 jobs and \$610 million in total economic output to the province. Since that time, the passenger traffic at Kelowna International Airport increased significantly.

1.2 WHAT IS ECONOMIC IMPACT?

Economic impact is a measure of the level of economic activity such as employment, personal income, business output and value added associated with a sector of the economy, a specific project or government policy. Economic impact is typically determined using the input-output method which measures three separate effects:

- **Direct Impacts** result from activities carried out by firms and others with a direct involvement in the operation and management of the airport and associated aviation related services. The distinguishing feature of a direct impact is that it is an immediate consequence of airport activities. Most direct impacts are generated on-site.

¹ 2010 Kelowna International Airport Economic Impact Study, Final Report, by InterVistas Consulting, Feb. 2011.



- **Indirect Impacts** are those attributable to non-aviation industries, largely off-site, that supply or provide services to businesses and other groups operating at the airport; i.e., in support of direct airport activities. Examples include travel agents, and suppliers to airport-based organizations.
- **Induced Impacts** occur when employees directly or indirectly linked to the airport spend their wages.

Economic impacts can be measured and quantified in several different ways, including the following which are calculated for YLW in this report:

- **Gross output (\$)** – the total gross value of all business revenue – the broadest measure of economic activity and indicates the total sales and transactions triggered by operations;
- **Value-added (\$ GDP)** – the “value added” to the economy or the unduplicated total value of goods and services; includes only final goods to avoid double counting of products and services sold during an accounting period;
- **Employment (jobs / FTE)** – the number of jobs created expressed in full-time equivalent jobs or person-years;
- **Wages / salaries (\$)** – the total value of wages and salaries associated with employment impacts; and
- **Tax Revenue (\$)** – the total amount of tax revenues generated for different levels of government.

The economic impact of an airport is typically measured based on the activity at the airport and the associated indirect and induced benefits. This approach has been used for determining the economic impact of most major airports in Canada, and a recent study of the economic impact of aviation in Canada for the Canadian Airports Council².

Catalytic Impacts

While these measures provide a measure of the economic impact of operations at the airport, it does not include the economic impact on businesses in the region of air travel to/from the region using YLW, nor other socio-economic benefits to residents. These are commonly referred to as catalytic benefits and can be at least as important to the region as the direct, indirect and induced impacts. The impact of the airport on tourism is a good example of one of the catalytic impacts.

² The Economic Impact of the Air Transportation Industry in Canada, Canadian Airports Council (CAC), April 2013



1.3 STUDY APPROACH

The primary data collection tool used in determining the economic impact of business operating at the airport was an online survey/questionnaire which was sent to all tenants and organizations based at YLW.³ The list of the 46 organizations that participated in the survey is shown in Appendix A. A response rate of 93% was achieved for the survey, although some responses were incomplete. Responses could not be obtained from three companies, including one charter helicopter company and two scheduled airlines both with limited service at YLW. The economic impact of these companies was estimated based on the number of aircraft based at YLW for the charter helicopter company and number of movements at YLW for the scheduled carriers and the impacts and aircraft/movements of similar companies at YLW for which responses were obtained. The estimated FTE employees of these three companies represent only 1.4% of total FTE jobs and errors in these estimates of even 50% would represent only 0.7% of the total employment impact.

An online survey was used as the primary data collection tool to determine the economic impact of businesses operating at the airport.

To protect the confidentiality of the respondents, all data outputs were aggregated into categories of activity taking place at the airport (see Table 1).

Table 1. Activity Categories

ACTIVITY CATEGORY	EXAMPLES
Airport Operations	Airport operator and sub-contracted firms, air traffic control, security firms, other government departments / agencies operating at airport
Scheduled Carrier	Air carriers operating scheduled passenger services
Charter Operator	Air carriers operating charter and medevac services
Aircraft/Aviation Services	FBO and fuelling, maintenance and repair, aircraft modification, aircraft cleaners, aircraft sales / leasing, aircraft parts, ground-handling
Airport Commercial Services	Retail concessions, F&B operations, car rentals
General Aviation	Private, Corporate, Flight training
Ground Transportation	Taxi, limo, bus, other public transportation, vehicle parking
Other	Hotel, Tourism promotion and other organizations

To calculate the direct impacts of organizations providing only partial responses, the values were estimated using other data provided, data from other similar organizations, or values from the B.C. Input-Output Model, as appropriate.

Indirect and induced impacts are almost impossible to determine by examination of the individual businesses affected by airport activity. Instead, economic impact studies, including the last study for YLW, use economic multipliers for estimating the indirect and induced impacts. Similarly, multipliers from the

³ A covering and link to an online survey questionnaire was distributed via email. Follow ups were completed with non-respondents via email and telephone.



B.C. Input-Output Model were used in this study. The total impacts, which include the direct, indirect and induced impacts, are those for the province of B.C., not just the Kelowna or the Central Okanagan. Care was taken to use the multipliers appropriate for the various industry groups operating at the airport. These impacts are less precise than the direct impacts and greater importance should therefore be given to the direct impacts when assessing the overall impact.

Ongoing, long-term impacts were based on the current economic impacts applied to forecasts of passenger and aircraft traffic. Temporary impacts associated with capital improvements were also calculated based on the construction value estimates provided by the Airport.

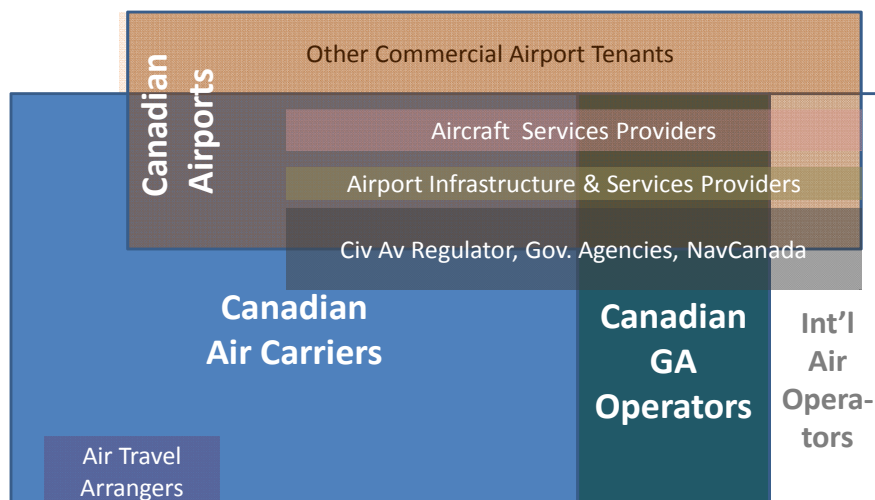
The catalytic impacts of air travel using YLW are more difficult to estimate and, except for tourism, only qualitative measures of these impacts could be determined. Information for determining the catalytic benefits was collected through a second survey of other businesses operating in the region to collect information on the importance of YLW to their business. Also, other key stakeholders not based at the airport, such as the City of Kelowna Economic Development, Okanagan Economic Development Commission and Kelowna Tourism were contacted to get their views on the importance of the airport to the regional economy. The economic impacts of tourism associated with air travel to YLW were estimated using information from Kelowna Tourism, past studies of economic impact of tourism in Kelowna area, and from the passenger market study for YLW.



2 AIRPORTS AND THEIR IMPACT ON THE ECONOMY

Airports are a critical component of the Canada's air transportation industry, providing the land-based infrastructure from which aircraft operate. Figure 1 presents a summary of Canada's air transportation industry and how airports fit in. Air operators, including both air carrier and General Aviation (GA), are the largest portion of the industry, but much of their economic impact does not overlap with airports. Thus, while airports generate significant economic impact to the region they serve, they enable the aviation industry to function which produces a much larger economic impact throughout Canada.

Figure 1. Canada's Air Transportation Industry and How Airports Fit In
(Source: SLI Airports+Aviation Group)



2.1 AIRPORTS AS ECONOMIC GENERATORS

Commercial airports provide essential, if not indispensable public services. YLW, as with most commercial airports, has tenants engaged in a wide array of aeronautical and general business enterprises located on, and generating revenue for, the airport. YLW's annual operating budget runs into the millions of dollars, with capital projects accounting for millions more. The Air Terminal Building complex, general aviation facilities, airport support facilities such as maintenance buildings and equipment, and aircraft operating areas such as runways, taxiways and aprons easily value in the hundreds of millions of dollars. YLW, as with all large commercial airports, is "big business", and impacts the social, economic and political life of the Central Okanagan region.

Airports provide significant economic and transportation benefits, and have become an integral part of their local, regional and national economies. They are a key catalyst for economic growth through employment and the utilization of goods and services and provision of vital links to the rest of Canada and internationally. YLW, as with most airports, has a profound influence on the quality of life and ability of businesses to attract skilled workers.

Airports integrate world markets and promote the international exchange of people, products, investment and ideas. They also

Airports are key catalysts for economic growth through employment and the utilization of goods and services, and provision of vital links to the rest of Canada and internationally.



provide a variety of other public benefits such as time and cost savings associated with air transportation. Many businesses operating in the region are heavily dependent on air transportation and the availability of efficient and affordable air services at YLW have allowed the tourism and other businesses to expand which has driven economic development both in the region and Canada as a whole.

Airports provide communities with a focal point, and with essential infrastructure to:

- attract new investment and skilled personnel;
- retain and expand existing companies;
- have businesses relocate to the area;
- promote success; and
- enhance competitiveness.

There are some distinct advantages for communities or regions that are within the reach of efficient air transportation. By facilitating the activity of industrial and service sectors – connecting them to global economic activity – airports play a key role in a community's ability to attract and retain businesses.

Economic development agencies interviewed indicated that YLW has provided all these dynamics and that these have acted as strong regional drivers and been a fundamental catalyst of business growth.

Clearly, air transportation has facilitated business' ability to move its products around the world. It has, however, played a far more important role in bringing business managers together, enabling them to build the links, communications and personal relationships necessary to achieve such a level of international business activity. This has been critical in the development of the Information Technology (IT) industry in Kelowna. Despite continuous advances in telecommunications technologies, the growth in global business over the last 50 years could not have been achieved without the personal contact established by the world's civil aviation system⁴.

Figure 2 (following page), originally described in a report by Oxford Economics Limited⁵ depicts how air transportation can affect the economy in a broader way than traditionally measured by input-output models. For example, if prices of aviation services increase, this could lead to higher fares or longer transport times, which could reduce competitiveness among firms that make heavy use of air transportation. There is also a long-run impact of aviation on productivity growth in other sectors of the economy; as well as an impact of changes in productivity growth on investment and the amount of capital equipment available for production in other sectors of the economy.

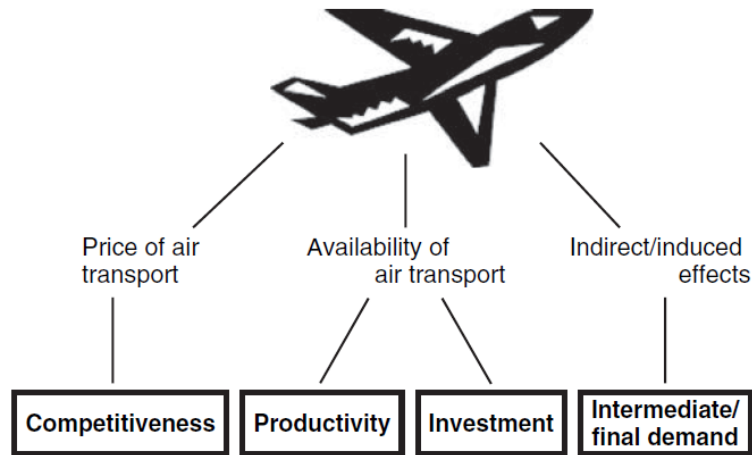
Somewhat separate, but of significant importance, is the fact that airports attract inbound tourism with the consequent development of the tourism industry generating growth, income and employment.

⁴ "The National Economic Impact of Civil Aviation, July 2002", DRI-WEFA, Inc. in collaboration with the Campbell-Hill Aviation Group, Inc.

⁵ Exhibit sourced from ACRP Synthesis 7 "Airport Economic Impact Methods and Models – A Synthesis of Airport Practice", ISBN 978-0-309-09801-1, 2008. Original



Figure 2. Direct, Catalytic and Indirect/Induced Impacts





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3 KELOWNA INTERNATIONAL AIRPORT

3.1 AIRPORT OVERVIEW

The Kelowna International Airport (YLW) is located 6 miles northwest of the City of Kelowna, the largest city in B.C. outside the B.C. Lower Mainland, with a population of 130,000⁶. The primary catchment area is the Central Okanagan, which has a population of 192,000.

Kelowna International Airport is the second most important airport in the province based on passenger traffic.

In March 2015, YLW was served by eight airlines providing scheduled or major charter service as shown in Table 2. These carriers link Kelowna to twelve destinations year-round (eleven domestic, one U.S.) and six seasonal destinations, including two in the U.S. and four in Mexico. A number of charter carriers also provide domestic passenger service from the Air Terminal Building (ATB) in 2014/2015, including Air North, Flair Airlines and Canadian North, and the private operator, Suncor. United Airlines and Northwestern Air also recently served YLW, but their services were suspended in early 2015.

YLW is the second busiest airport in British Columbia and is served by 9 airlines providing domestic, transborder and international service.

Table 2. Scheduled Air Carriers Operating at YLW in March 2015 and Destinations

AIRLINE	DESTINATION(S)
Air Canada / Air Canada Regional	Vancouver, Calgary, Toronto
WestJet / Encore	Vancouver, Calgary, Toronto, Edmonton, Victoria, Saskatoon, Fort McMurray, Cancun, Los Vegas, Phoenix, Puerto Vallarta, San Jose Cabo
Canadian North Airlines	Vancouver, Whitehorse
Central Mountain Air	Kamloops, Prince George
Pacific Coastal Airlines	Cranbrook, Trail
Alaska Airlines / Horizon	Seattle
Ait Transat	Cancun, Puerto Vallarta
Sunwing	Ixtapa-Zihuatanejo

KF Aviation (previously Kelowna Flightcraft) is YLW's largest tenant and has its base at YLW providing both aircraft maintenances and freighter services from the airport. KF Aviation provided freighter services throughout Canada on behalf of Purolator until March 15th 2015 when their contract expired. They currently operate once weekly scheduled courier flight from YLW and also provide on demand charter air cargo service. Carson Air operates daily courier services out of YLW on behalf of FedEx. Some cargo at YLW is also carried in the belly of passenger aircraft on scheduled passenger service.

⁶ 2015 BC Stats



YLW had 101 aircraft based at the airport in March 2015. Two-thirds of the based aircraft were owned by commercial operators and included 17 narrow-body jets, 4 wide-body jets, 30 turboprops and 9 helicopters. All 33 privately owned aircraft were piston.

At the start of 2015, there were 46 organizations operating at the airport – see Table 3 and Figure 3. Air carriers (scheduled and charter) is the largest aviation sector at the airport.

Table 3. Distribution of Organizations Operating at the Kelowna International Airport by Primary Category of Operation – 2014

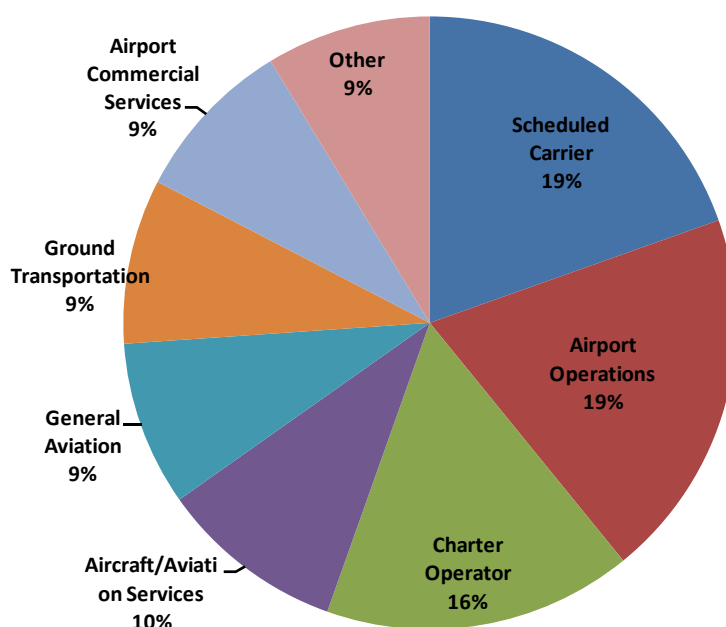
AVIATION SECTOR	NO. OF ORGANIZATIONS	% OF TOTAL
Airport Operations	9	20%
Scheduled Carrier^	9	20%
Charter Operator	8*	16%
Aircraft/Aviation Services	5*	10%
Airport Commercial Services	4	23%
General Aviation	4	9%
Ground Transportation	4	5%
Other	4	9%
TOTAL	46	100%

Notes: * One large company, KF Aviation, operates both charter and Aircraft/Aviation services and has been included in both categories (once in the total)

^ Air carriers operating scheduled charter services (Canjet and Air Transat) are included as Scheduled air carriers

Figure 3. Distribution of Organizations Operating at the Kelowna International Airport 2014

(Measured by number of organizations in each primary category of operation)





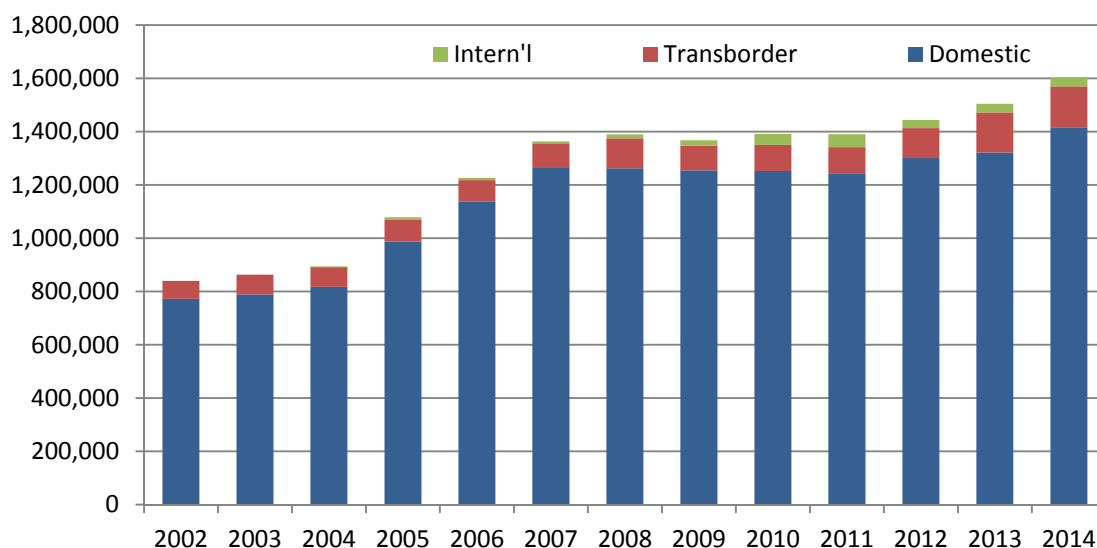
3.2 TRAFFIC AT THE AIRPORT

Passenger Traffic

YLV handled 1.6 million Enplaned/Deplaned (E/D) passengers in 2014, an increase of 7.1% over 2013. Domestic passengers totaled 1.4 million, 88.3% of the total. As shown in Figure 4, passenger traffic at YLV increased slowly in the late 1990 and early 2000s; but grew strongly during the four-year period of strong economic growth from 2005 to 2008. Traffic declined in 2009 with the global financial crisis and recession, then recovered slowly in 2010 and 2011, before growing strongly again in 2012 to 2014. YLV first received transborder service in 2004. Since then, transborder passengers have accounted for 6.5% to 10% of total traffic, the high being reached in 2013. Other international traffic has fluctuated between 0.3% and 3.5% of total traffic, the high being recorded in 2011.

YLV handled 1.6 million passengers in 2014, an increase of 7.1% over 2013.

Figure 4. Total Passengers at YLV by Year (2002 – 2014)





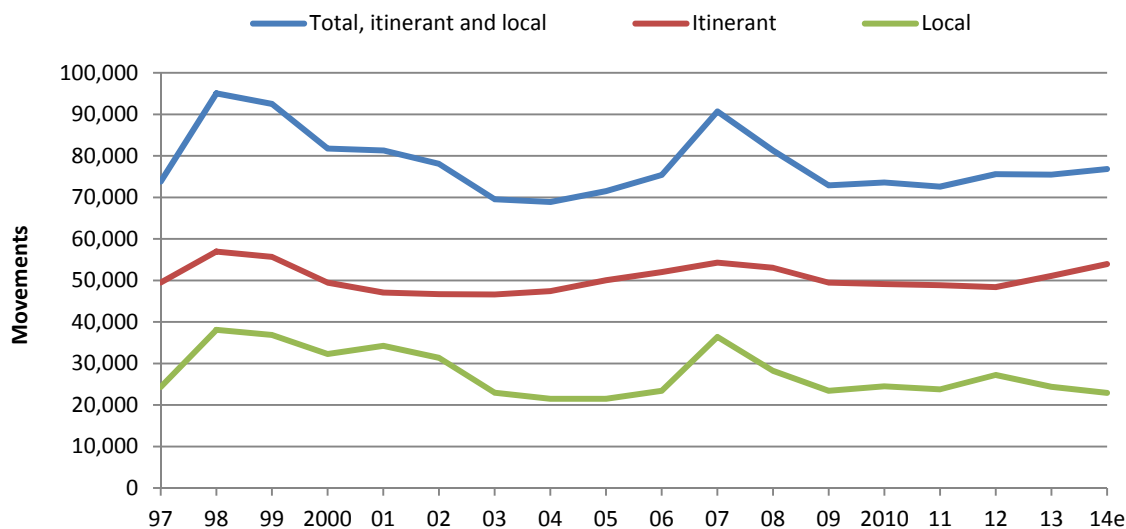
Air Traffic Movements

The number of annual aircraft movements at YLW has fluctuated over the past 18 years, as shown in Figure 5⁷, but has changed significantly. The variation generally follows periods of economic growth in the region. The variation in total movements is largely due to changes in local movements (essentially recreation and flight training aircraft movements) which account for 30-40% of all movements. Over most of the 18-year period, annual itinerant movements showed a similar trend as local movements, but with less variation. However, since 2012, itinerant movements have increased strongly (5.6%/yr) while local movements have declined significantly (-8.3%/yr).

The number of total annual aircraft movements has not changed significantly in the past 18 years.

not

Figure 5
Annual Itinerant and Local Aircraft Movements, 1997 to 2014



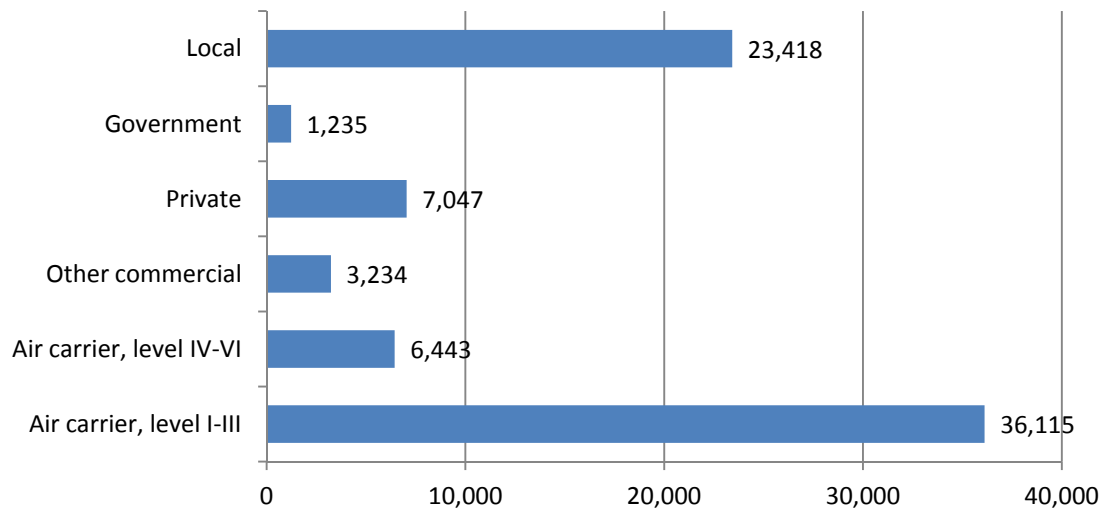
Source: Statistics Canada

Most aircraft movements are by air carriers with the larger Level I-II carriers accounting for 67% of itinerant movements and the other smaller air carriers accounting for another 12% (see Figure 6). Local movements account for 30% of total movements.

⁷ 2014 values estimated based on values for January to October for that year



Figure 6. Local and Itinerant Movements by Operator Segment in 2014



Source: Statistics Canada

Air Cargo

Statistics Canada data indicates total annual cargo handled at YLW peaked in 2012 at 2,971 tonnes, but declined by 22% in 2013 to 2,327 and grew by 1% in 2014 to 2,296 tonnes. Approximately 60% of the cargo is inbound, and unloaded at YLW.

Five air carriers based at YLW reported carrying air cargo in 2014. The most common types of cargo included:

- Wine;
- Fruit;
- Personal effects;
- Company material (COMAT) / aircraft parts;
- Kennelled animals; and
- General cargo which includes unpacked and packed goods, for example in cartons, crates, bags or bales, often palletized.

3.3 E/D PASSENGER TRAFFIC FORECAST

The forecast E/D passengers through to 2045 are given in Table 4 by sector, with average annual growth rates, and are shown graphically in Figure 7 for the Medium, Low and High Case scenarios. The forecasts show that traffic, after declining by 0.6% in 2015, will grow at a fairly strong rate of 3.5% in 2016 under the Medium Case Scenario. Stronger growth rates of 4.5%, 4.3% and 3.7% are forecast for 2017, 2018 and 2019, with growth slowing to 3.3% in 2020 to 2022. Growth slows gradually after that to 2.8% in 2025.

Passenger traffic forecasts show continued strong growth (medium case scenario).

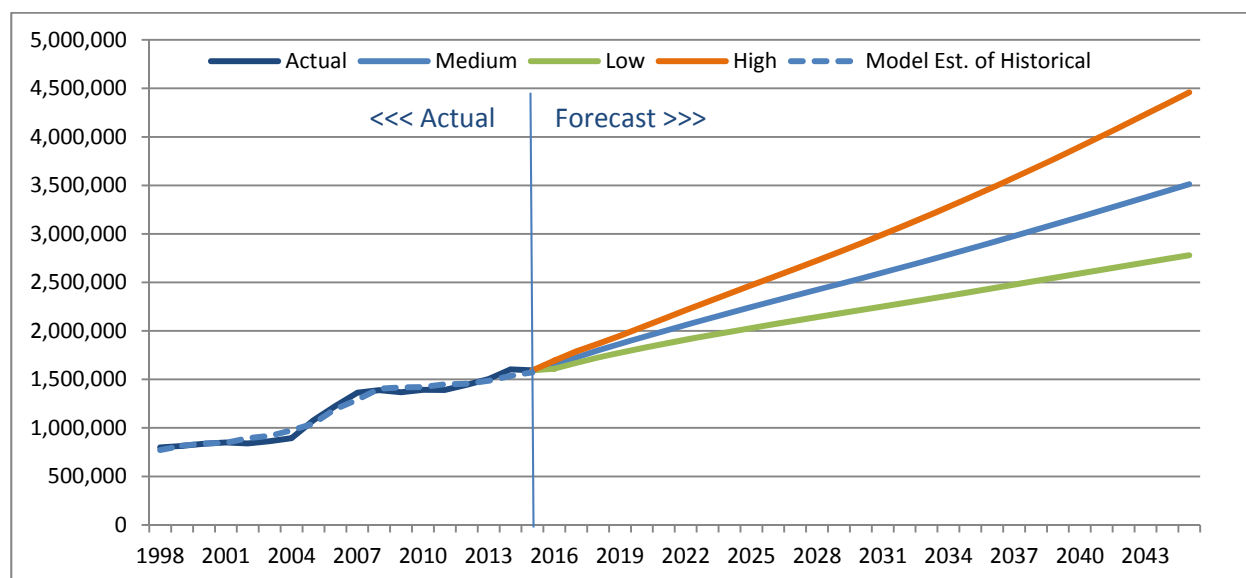


Table 4. Forecast E/D Passengers and Average Annual Growth Rates by Sector under the Medium Case Scenarios, 2015 to 2045

Year	E/D Passengers			
	Domestic	Transborder	Intern'l	Total
2014	1,416,512	153,342	33,045	1,602,899
2015	1,432,456	126,559	34,591	1,593,606
2016	1,493,600	121,200	35,200	1,650,000
2017	1,559,900	127,400	37,700	1,725,000
2018	1,626,100	133,700	40,200	1,800,000
2019	1,685,000	139,400	42,600	1,867,000
2020	1,739,200	144,800	45,000	1,929,000
2025	2,017,600	173,300	58,100	2,249,000
2030	2,268,100	200,900	72,000	2,541,000
2035	2,529,300	230,900	87,800	2,848,000
2040	2,806,300	263,800	105,900	3,176,000
2045	3,088,300	298,800	125,900	3,513,000

Average Annual Growth Rates				
2005-2015	3.8%	4.6%	12.9%	4.0%
2010-2015	2.7%	5.2%	-3.5%	2.7%
2015-2020	4.0%	2.7%	5.4%	3.9%
2020-2025	3.0%	3.7%	5.2%	3.1%
2025-2030	2.4%	3.0%	4.4%	2.5%
2030-2045	2.1%	2.7%	3.8%	2.2%

Figure 7. Actual and Forecast E/D Passengers under the Medium, Low and High Case Scenarios





4 ECONOMIC IMPACT ASSOCIATED WITH ACTIVITY AT AIRPORT

To protect the confidentiality of information provided by private operators, their information has been aggregated into categories of activity. All impacts quoted, unless otherwise noted, include those from respondent organizations and inferred impacts from respondent organizations providing only partial responses.

4.1 EMPLOYMENT

Direct

Direct employment at the airport was calculated in terms of full-time equivalents (FTEs). The conversion from jobs to FTE, where necessary, was based on an available 2080 working hours per year (40 hours a week, 52 weeks per year).

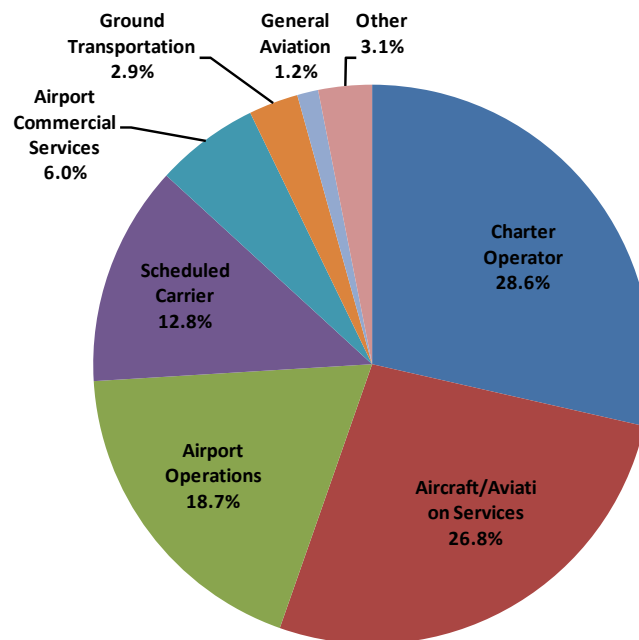
Tenants, concessionaires, service providers and organizations based at the airport were asked to report employment directly related to activities at the airport. 2014 employment figures were provided for 44 of the 46 current organizations. Values for the other two businesses were estimated based on information provided by the airport. The latter accounted for only 1.4% of total full time equivalent (FTE) jobs at the airport.

There were 46 organizations operating at YLW in 2014 with 1,411 FTE direct jobs. Of these, 1,306 FTE jobs were located at the airport and another 105 FTE jobs were attributable directly to operations at the airport. The 105 jobs represents the portion of the time those employees spend either at the airport or providing services to users of the airport (e.g., flight crew not based at YLW, but operating flights to/from YLW). There were another 10 FTE voluntary workers at the airport (excluded from the 1,411 total FTE jobs given above). The 1,411 FTE jobs represent an increase of 9% from the 1,290 direct jobs at the airport in 2010. Figure 8 show the distribution of direct employment at YLW in 2014. Charter Operators is the largest activity category as measured by direct employment, followed closely by Aircraft/aviation Services, then by Airport Operations.

There are 46 companies operating at YLW. These companies generated 1,411 FTE direct jobs in 2014 – an increase of 9%, or 121 new direct jobs since 2010.



Figure 8. Distribution of Direct Employment at YLW (2014)



Indirect

Indirect employment was calculated by using a multiplier applied to the direct effects in an open model, less the direct effects. Different multipliers were used for different activity categories.⁸ **Indirect employment at YLW in 2014 is estimated at 735 FTE jobs.**

Induced

Induced employment was calculated by using a 'total' multiplier applied to the direct effects less the direct and indirect effects. Different multipliers were used for different activity categories. **Induced employment at YLW in 2014 is estimated at 516 FTE jobs.**

Summary

Table 5 summarizes the 2014 employment impacts at YLW.

Operations at YLW directly employ over 1,400 people on a full-time equivalent basis. In addition, when accounting for indirect and induced effects, over **2,660** people are employed because of activities on airport property which represents an increase of 6% from 2010.

For every 1,000 enplaning passengers, there are 1.8 direct full time jobs (FTE).

For every 1,000 passengers, there are 1.8 direct full time jobs created.

⁸ Multipliers from the Statistics Canada for B.C. were used for the following activity categories: Air Transportation Industry, Airport Commercial Services, Other federal government services (except defence) for Airport Operations, Aircraft/Aviation Services, Traveller accommodation, Urban transit systems for Ground Transportation, and Transportation Engineering Construction.



Table 5. 2014 Employment Impacts at YLW

	Direct	Indirect	Induced	Total
Charter Operator	403	334	185	922
Aircraft/Aviation Services	378	98	98	575
Airport Operations	263	100	114	477
Scheduled Carrier	180	150	83	413
Airport Commercial Services	85	20	14	119
Ground Transportation	40	9	4	54
General Aviation	17	14	8	39
Other	44	9	9	61
Grand Total	1,411	735	516	2,661

4.2 LABOUR INCOME

Direct

Tenants, concessionaires, service providers and organizations based at the airport were asked to report employment earning and wages for their employees directly involved in activities at the airport. Twenty-two organizations reported average labour income figures. For other organizations, average labour incomes were determined based on other similar organizations or average values for those types of businesses in the B.C. input-output tables with adjustments for inflation and average wage rates in Kelowna relative to the provincial average.

The average FTE salary at YLW is \$58,610. YLW contributes \$83 million in labour income to the economy.

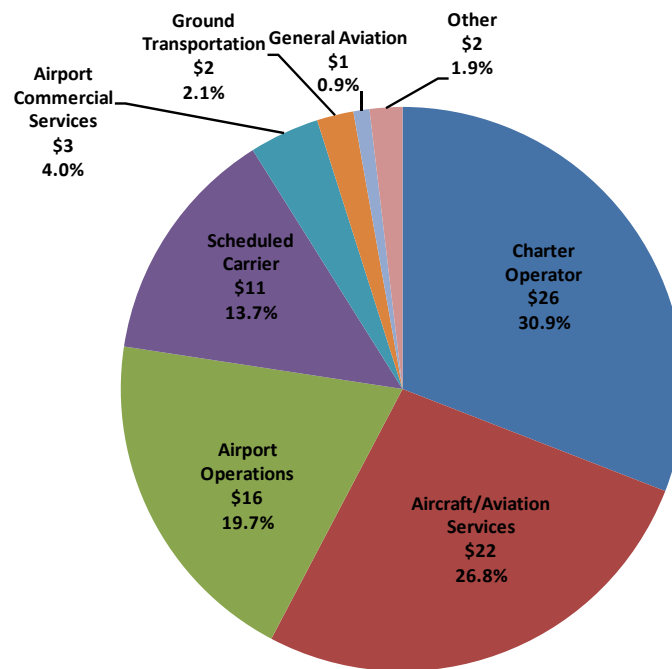
It is estimated that activity at YLW **directly contributes \$83 million in labour income**, an increase of 18% over 2010. This equates on average to \$58,610 per FTE. Figure 9 shows the distribution of direct labour

income at YLW in 2014.

Charter Carrier is the largest activity category as measured by direct labour income, followed by Aircraft/Aviation Services.



Figure 9. Distribution of Direct Labour Income at YLW (2014, millions)



Indirect

Indirect labour income was calculated by using the appropriate economic multiplier, as discussed in Section 1.3, applied to the direct effects given above. Different multipliers were used for different activity categories. **Indirect labour income at YLW in 2014 is estimated at \$37 million.**

Induced

Induced labour income was calculated by using a 'total' multiplier applied to the direct effects less the direct and indirect effects. Different multipliers were used for different activity categories. **Induced labour income at YLW in 2014 is estimated at \$22 million.**

Summary

Table 6 summaries the 2014 labour income impacts at YLW.

Persons employed at YLW **directly earn almost \$83 million** which combined with indirect and induced effects mean that close to **\$142 million** is earned because of activities on airport property.



Table 6. 2014 Labour Income Impacts at YLW (millions)

ACTIVITY CATEGORY	DIRECT	INDIRECT	INDUCED	TOTAL
Charter Operator	\$26	\$17	\$8	\$51
Aircraft/Aviation Services	\$22	\$6	\$5	\$34
Airport Operations	\$16	\$3	\$3	\$23
Scheduled Carrier	\$11	\$8	\$4	\$22
Airport Commercial Services	\$3	\$1	\$1	\$6
Ground Transportation	\$2	\$1	\$0	\$3
General Aviation	\$1	\$1	\$0	\$2
Other	\$2	\$0	\$0	\$2
TOTAL	\$83	\$37	\$22	\$142

4.3 ECONOMIC OUTPUT

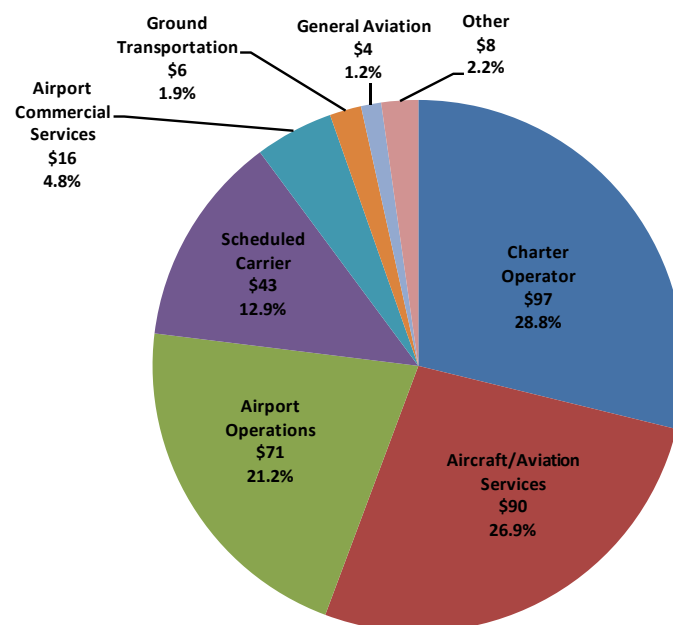
Direct

Tenants, concessionaires, service providers and organizations based at the airport were asked to report direct output (components of sales of goods and services, including that of the Airport Authority) directly related to activities at the airport. Only ten organizations reported direct output figures and for the others direct output was inferred based on the type of service provided, other information collected (e.g., concession revenue collected by airport), output rates per FTE employee for similar tenants, and/or ratios of direct output to employment income from the B.C. input-output model.

It is estimated that activity at YLW **directly contributes over \$336 million in direct output**.

Figure 10 shows the distribution of direct output at YLW in 2014. Charter Operators and Aircraft/Aviation Services are the largest aviation sectors as measured by direct gross output, followed by Airport Operations. Specifically there is approximately almost \$420 in direct gross output generated on a per enplaned passenger basis.

Figure 10. Distribution of Direct Output at YLW (2014, millions)





Indirect

Indirect output was calculated by using the appropriate economic multiplier applied to the direct effects given above. Different multipliers were used for different activity categories. **Indirect output at YLW in 2014 is estimated at \$169 million.**

Induced

Induced output was calculated by using a 'total' multiplier applied to the direct effects less the direct and indirect effects. Different multipliers were used for different activity categories. **Induced output at YLW in 2014 is estimated at \$94 million.⁹**

Every time a passenger boards an airplane at YLW, \$420 of direct gross output is generated. This translates to a total of \$336 million in direct output or \$600 million when indirect and induced effects are considered.

Summary

Table 7 summarizes the 2014 gross output impacts at YLW.

Organizations based at YLW **directly produce over \$336 million** in gross output which combined with indirect and induced effects mean that close to **\$600 million** is produced because of activities on airport property.

Table 7. 2014 Gross Output Impacts at YLW (millions)

ACTIVITY CATEGORY	DIRECT	INDIRECT	INDUCED	TOTAL
Charter Operator	\$97	\$55	\$20	\$172
Aircraft/Aviation Services	\$90	\$34	\$34	\$159
Airport Operations	\$71	\$41	\$21	\$133
Scheduled Carrier	\$43	\$25	\$9	\$77
Airport Commercial Services	\$16	\$6	\$5	\$28
Ground Transportation	\$6	\$3	\$2	\$11
General Aviation	\$4	\$2	\$1	\$7
Other	\$8	\$3	\$2	\$13
TOTAL	\$336	\$169	\$94	\$599

⁹ Induced impacts of employment, wages and output are significantly lower than those estimated in the previous study for 2010. Discussions with Statistics Canada have confirmed the multiplier and applicable methodology that is used in this report. While direct and indirect impacts have demonstrated growth over 2010, the sizeable methodological difference in the calculation of the induced impact compared to that assumed to be used in the previous study results in a negative variation from 2010 on the calculation of total output.



4.4 GDP

Direct

Gross Domestic Product (GDP) is calculated using Statistics Canada economic multipliers for B.C. applied to direct output previously estimated. Different multipliers were used for different activity categories. \$336 million in direct output is estimated to produce **\$152 million in direct GDP**.

Indirect GDP

Indirect GDP was calculated using Statistics Canada economic multipliers for B.C. applied to direct GDP and results in an estimate of **\$75 million in indirect GDP**.

Induced GDP

Induced GDP was calculated using Statistics Canada economic multipliers for B.C. applied to direct GDP and results in an estimate of **\$79 million in induced GDP**.

Summary

Table 8 summarizes the 2014 GDP impacts at YLW.

Organizations based at YLW **directly produce over \$152 million** in GDP. Combined with indirect and induced effects, it means that over **\$306 million** GDP is produced because of activities on airport property.

Table 8. 2014 GDP Impacts at YLW (millions)

ACTIVITY CATEGORY	DIRECT	INDIRECT	INDUCED	TOTAL
Airport Operations	\$49	\$12	\$21	\$82
Charter Operator	\$36	\$27	\$19	\$81
Aircraft/Aviation Services	\$35	\$17	\$23	\$75
Scheduled Carrier	\$16	\$12	\$8	\$36
Airport Commercial Services	\$7	\$4	\$4	\$15
Ground Transportation	\$3	\$1	\$1	\$5
General Aviation	\$2	\$1	\$1	\$3
Other	\$5	\$1	\$2	\$8
TOTAL	\$152	\$75	\$79	\$306

4.5 TAXES AND OTHER REMITTANCES TO GOVERNMENTS

There are many taxes and other remittances to paid Governments associated with activities at the airport. Some are paid by passengers, some are paid by companies operating at the airport and by their employees, and other taxes are paid by the Airport Authority itself in its procurement processes. These are summarized below:

- Statistics Canada provides Average Expenditure Statistics for households in each province¹⁰. In B.C., the average household spends 14.2% of their income on personal income taxes. By applying this percentage to the \$82.7 million in earnings directly associated with activity at the airport activity, approximately **\$11.7 million in direct personal income taxes** was remitted to the provincial and

¹⁰ Statistics Canada – 2013 Average household expenditures, by province and territory



federal governments in 2014, with \$8.3 million going to the Federal Government and \$3.5 million going to the B.C. Government.

- Statistics Canada also reports that the average British Columbian household spends 32% of their income on retail goods and services. By applying 5% GST to the amount spent on retail goods and services, (32% x \$82.7 million in earnings x 5% GST) we estimate that **\$1.3 million in direct GST** was paid to the federal government by persons employed by organizations at the airport.
- The Provincial Sales Tax is charged at a rate of 7% on retail sales. Using the Statistics Canada data for B.C. it is estimated that 17% of income is spend on retail goods which would result in a total of **\$845,000** to the provincial government by persons employed on airport property.
- The GST is paid by passengers on airfares. One-way fares from YLW average approximately \$300¹¹ (including AIF, ATSC, NavCanada, and optional airline fees) resulting in **GST payments of \$25.5 million**. Splitting this between the origin and destination airports of each passenger, this represents GST payments attributable to YLW of **\$12.5 million**.
- Passengers and employees pay GST on their food and beverage concession purchases and car rentals at the airport; this is estimated at **\$800,000**.
- The GST is also applicable on expenditures on vehicle parking and ground transportation (primarily taxi fares) to/from the airport and is estimated to result in **\$450,000** to the federal government.
- In 2014, tenants at the airport paid property taxes of **\$1.10 million** to the City.
- The combined federal / provincial corporate tax rate is approximately 17% for B.C. Using gross output of \$288 million¹², and net income estimates of 10% of gross output, we estimate that the organizations based at YLW pay approximately **\$4.9 million in corporate tax** of which almost approximately 74% goes to the Federal Government.
- All employers at the airport are required to pay payroll taxes including Canada Pension Plan (CPP), employment insurance (EI), and worker's compensation. These are estimated at **\$6.4 million**.
- Air passengers are also levied, through the Air Travellers Security Charge (ATSC) which is applied to the price of their airline ticket, to cover the cost of security screening services. Currently the ATSC is set at \$7.48 for a domestic round-trip, \$12.71 for a transborder departure and \$25.91 for an international departure. Assuming half of the domestic round-trip charge is attributable to YLW (i.e., \$3.74) and using the distribution of passenger traffic at YLW, it is estimated that in 2014, passengers paid approximately **\$6.7 million in ATSC** for departures from YLW.
- The Province of British Columbia levies an aviation fuel tax of 2 cents per litre of aviation fuel sold and a carbon tax of 7.38 c/L. It is estimated that the province collected approximately **\$28,000 in aviation fuel taxes** in 2014 from fuel sales at YLW, but collected a total of \$5.7 million due to fuel used on flight operations to/from YLW. In addition, the Federal government levies a \$0.04 c/L excise

In 2014, the City of Kelowna received \$1.1 million in taxes from airport tenants.

¹¹ Value of \$295 given in Air Service Update by InterVistas, Jan 23, 2014, for top 10 markets in 2013. Assumed average fare in 2014 over all domestic and transborder markets was 2% higher at \$300.

¹² Excludes output of Airport, Nav Canada and government departments & agencies (TC, CATSA, CBSA) as they do not pay corporate taxes.



tax on aviation jet fuel sold for domestic flights and collected an estimated **\$12,000 on fuel** sold at YLW, but collected \$2.42 million due to fuel used for flights to/from YLW. Less than 1% of the fuel used on flights to/from YLW is purchased at YLW.

- Residents of B.C. must pay **Medical Service Plan (MSP)** premiums to the provincial government. The rates vary by net income and family size and in 2014 are estimated to average \$67 for singles, and \$128 for families per month. Assuming that all single direct employees and half the direct employees with family pay, the total annual MSP premiums paid by workers at YLW will be approximately **\$934,000 to the provincial government.**
- Workers Compensation Board (WCB) contributions of approximately \$550,000 to the provincial government in 2014.

The estimates of the taxes and other remittances paid to governments broken down by type and level of government are summarized in Table 9. Activity at YLW resulted in \$45.3 million in taxes and other remittances being paid to federal, provincial and municipal governments in 2014.

Activity at YLW resulted in \$45.3 million in taxes and other remittances paid to all levels of government in 2014

Table 9. Taxes and Other Remittances Paid to Governments in 2014

FEDERAL	(million)
Income tax*	\$8.3
Corporate tax*	\$3.6
GST - Air tickets (YLW share)	\$11.2
- Concession & car rentals	\$0.8
- Vehicle parking & ground transport	\$0.5
- Expenditures of direct income	\$1.3
Fuel Sales tax on fuel sold at YLW**	\$0.01
Payroll taxes	\$6.4
ATSC	\$4.1
Total Federal Taxes and Remittances	\$36.2
Provincial	
Income tax*	\$3.5
Corporate tax*	\$1.3
PST - Retail concessions & car rentals	\$0.9
- Expenditures of direct income	\$0.8
Fuel Sales tax & Carbon Tax on fuel sold at YLW**	\$0.03
Health Insurance Plan premiums	\$0.9
Workers Compensation Board contributions	\$0.5
Total Provincial Taxes and Remittances	\$8.0
MUNICIPAL	
Municipal Taxes	\$1.1
Total Federal, Provincial & Municipal	\$45.3

Notes:

* Income tax assumed to be split 70% Federal & 30% Provincial, and Corporate tax assumed to be split 74% Federal & 26% Provincial.

** Tax on fuel sales much higher if all fuel on flights to/from YLW is considered.



The total value of taxes and other remittances paid to governments of \$45.3 million is significantly higher than the value of \$31 million given in the previous study for 2010, primarily due to:

- Higher GST revenue on air tickets – previous study appears to have underestimated the GST revenue¹³;
- GST and PST collected from expenditures of employees due to direct employment at the airport which were excluded from the previous study;
- ATSC revenue which was excluded from the previous study;
- Higher GST and PST revenues collected on car rentals (current analysis included the full GST & PST on all rentals from the airport); and
- Higher corporate taxes collected – difference due to the way in which taxable income was estimated.

4.6 IMPACT OF AN ADDITIONAL DAILY B737 FLIGHT

Each additional flight at YLW will require additional employee time for a range of personnel from flight crew, air traffic controllers, baggage handlers, airline check-in and departure lounge staff, aircraft cleaners and maintenance providers, security screeners, and airport operations, ground transportation and airport concessions staff. Many employees are employed full-time and are not working at full capacity all the time and, depending on the time of day of the additional flight, may be able to provide services for these flights without requiring additional employment. In other situations additional staff may need to be employed.

The 2010 Economic Impact Study included an analysis of the microeconomic impact of additional WestJet short and long haul daily B737-700 services to Calgary and Toronto, respectively. It was determined through this micro analysis that the additional jobs created from the addition of these new direct services would generate 16 new jobs (FTE) for the Calgary daily service and 21 new jobs (FTE) for the longer haul Toronto daily service. Although this more in-depth analysis is not part of the scope of the current study undertaking, a high-level desktop calculation, as outlined below, using more general and broad employment benchmarks reveals a range of 16 - 38 new jobs would be generated from the addition of a single daily B737 flight. This would appear to support the findings of the previous report. The analysis finds that 16 FTE jobs directly relate to air carrier and supporting services; while the higher range of 38 FTE jobs support all passenger-related activities at the airport, excluding aircraft maintenance, charter and GA activities.

16-38 new jobs are generated from the addition of a single daily B737 flight.

¹³ GST revenue was estimated at \$4 million attributable to YLW (1/2 of total for round-trips). GST revenues of \$400,000 on the Airport Improvement Fees and \$350,000 on the ATSC were estimated separately giving a total of \$4.75 million collected on airfares in 2010. At the GST rate of 5% this implies total cost of airfares of \$95 million for departures from YLW. In 2010 there were 1,350,441 E/D passengers, or 675,221 departing passengers. This implies an average one-way airfare of only \$142. However, in their Air Service Update of Jan 23, 2014, InterVistas gives a chart showing the average base fare for the top 10 markets as being \$265 in 2010 and \$295 in 2013.



The impact of a single additional daily B737-700 flight at typical load factors was examined in two ways:

- Determine impact considering the time spent by the various airline and contracted employees servicing the flight. The incremental airline related jobs per year at YLW was estimated to be 16 FTE jobs at YLW¹⁴ and this represents the minimum additional jobs.
- Determine impact considering the total impact of scheduled service flights¹⁵ at YLW and assume the proportion of these impacts related to a single daily B737 flight represents the impact of that flight. Excluding jobs related to aircraft maintenance, charter and GA operations, and a small proportion of airport operations staff (5% assumed), there are approximately 700 FTE jobs at YLW serving scheduled operations. A single daily B737-700 flight would carry approximately 75,000 annual E/D passengers, or 5.4% of the total passengers at YLW in 2014. The portion of total jobs at YLW associated with a single B737-700 flight is therefore approximately 38. As there is usually some slack in the system with all employees not operating at full capacity, an additional flight will likely not result in the full 38 jobs that its passenger share would suggest and 38 FTE jobs therefore represents the maximum additional jobs.

4.7 ONE-TIME IMPACTS OF AIRPORT EXPANSION PROJECTS

In addition to the employment and other economic impacts of on-going operations at YLW, there are also economic impacts associated with capital construction programs at the airport. In 2014, the Airport undertook \$10.356 million of capital improvements to airport facilities¹⁶ and tenants spent another \$120,000, bringing the total spent on capital improvements to \$10.47 million.

The economic impacts of the YLW's capital expenditures were estimated using the cost of the capital projects and Statistics Canada economic multipliers for B.C. of direct employment generated by each dollar of capital spending and corresponding wages, GDP and economic output. The capital expenditure in 2014 is estimated to have created:

- 53 FTE annual direct jobs;
- \$3.39 million direct labour income; and
- \$4.39 million direct GDP.

4.8 SUMMARY

A summary of outputs can be found in Table 10.

- There are 46 organizations operating at YLW in 2014 with 1,411 full time equivalent (FTE) direct jobs. This is an increase of 9% from 2010. Total employment including indirect and induced employment increased 6% from 2010 to 2,660 FTEs.

¹⁴ Value presented in Section 7.2 of 2010 Kelowna International Airport Economic Impact Study by InterVistas, Feb. 2011. Labour elements included in this value are described in Section 7.1.

¹⁵ Includes Sunwing and Air Transat flights

¹⁶ Kelowna International Airport 2014 Financial Statements, additions during year to Tangible Capital Assets for land improvements, building and infrastructure



- It is estimated that activity at YLW directly contributes \$83 million in labour income. This is an increase of 18% since 2010. Total labour income including indirect and induced effects is over \$142 million. On average labour income is \$58,610 per direct FTE at YLW.
- It is estimated that activity at YLW contributes \$336 million in direct output. Total output including indirect and induced effects is almost \$600 million.
- \$336 million in direct output is estimated to produce \$152 million in direct GDP. Total GDP including indirect and induced effects is over \$300 million.

Table 10. Summary of Economic Impacts at YLW – 2014

ACTIVITY CATEGORY	DIRECT	INDIRECT	INDUCED	TOTAL
Employment (Person/yr)	1,411	735	516	2,661
Wages (million)	\$83	\$37	\$22	\$142
Output (million)	\$336	\$169	\$94	\$599
GDP (million)	\$152	\$75	\$79	\$306

Direct economic impacts are 9% higher for jobs than found in the previous Economic Impact study, and between 12% and 26% higher for wages, output and GDP. Larger increases in the dollar values are partly due to inflation over the five years which has increased the price of goods by 6% between 2010 and 2014. The indirect impacts are generally consistent with the previous study allowing for changes in multiplier values provided by Statistics Canada, increasing by 6% to 25%.

Induced impacts of employment, wages and output are significantly lower than those estimated in the previous study for 2010. The previous study had the induced benefits being higher than, or close to, the indirect benefits. This is atypical in most circumstances and therefore may have been overestimated. Discussions with Statistics Canada have confirmed the multiplier and applicable methodology that is used in this report. Therefore, while direct and indirect impacts have demonstrated growth over 2010, the sizeable methodological difference in the calculation of the induced impact results in a negative variation from 2010 on the calculation of total output (\$600M vs. \$610M).



5 CATALYTIC AND SOCIO-ECONOMIC CONTRIBUTION

5.1 IMPACT OF TOURISM ENABLED BY THE AIRPORT

Air transportation is a critical enabler of the tourism industry bringing people from distant places to the region. In 2011, 1.5 million tourists visited the Kelowna area, up 27% from the number in 2006 (6% per year). In 2014, the number of tourists was expected to reach 1.7 million¹⁷. Leisure accounts for almost half of the booking of overnight accommodation in Kelowna. Air travel is particularly important for meetings/conferences, events, and golf and ski vacations. Summer vacation travellers tend to predominantly access the area by road.

The economic impact of visitors travelling by air in 2014 is \$190 million (gross output).

Most tourists come from Canada, the large majority of these from B.C. (60%) or Alberta (23%). Approximately 17% come from more distant provinces where all would likely fly, with Ontario being the largest of these accounting for 7% of domestic tourists. International tourists account for about 10% of tourists, the majority of these from the U.S. (mostly Washington State), with 1-2% of the total coming from Europe, and a similar number from other international regions.

Based on the origin of tourists and information from the Passenger Market Study for YLW in 2010, it is estimated that 55% of passengers at YLW are visitors to the region. In 2014, this equates to 440,000 visitors.

Provincial and regional tourism data do not provide separate estimates of the spending by tourist in the Okanagan who travel by air to region. An Economic Impact Study conducted in 2011 for Kelowna Tourism provides estimates of the total impact of tourism to the City of Kelowna and the Central Okanagan (plus the Big White ski resort). The impacts of tourists arriving by air in 2014 were estimated from these findings as follows:

- To determine the spending of tourists coming by air, it was necessary to assume that spending patterns, excluding car rental, are similar, on average, between those arriving by air and those accessing the area by other modes. While spending by tourists arriving by air is likely higher, no good data is available on which to estimate the difference. Impacts for air mode tourists are therefore likely conservative.
- The tourism impacts given in the 2011 study include the economic impact on the airport of the passengers arriving by air (i.e., the airfares and associated impacts at the airport). Since these impacts are already included in the Airport economic impacts, they were subtracted to avoid double counting.
- The economic impact due to the car rental services at the airport was assumed to be all attributable to visiting passengers.
- Average wages, and output and value added per passenger, were assumed to have increased at the rate of inflation in B.C. between 2010 and 2014.

¹⁷ Economic Impact Study of Tourism in Kelowna prepared for Kelowna Tourism by InterVistas Consulting, Dec. 2011; and interview with Kelowna Tourism



The estimated tourism economic impact of visitors travelling by air in 2014, excluding airport component, are presented in Table 11 (categories used in the table are those used in the 2011 study). These tourism impacts are very significant equalling approximately 71% of FTE employment, a third of the wages and gross output, and a quarter of GDP impacts of YLW. As mentioned earlier, this is likely a conservative estimate. The direct output equates to an average of \$366 per visitor. This compares with average spending by tourists in Canada of \$265 for domestic, \$510 for US, and \$1,390 for other international visitors in 2011¹⁸. Note that tourists include groups such as those visiting friends and relatives who would typically have much lower expenditures than those on a vacation or on business.

Table 11. Tourism Economic Impact of Visitors Travelling by Air, Excluding Airport Component, in 2014

Impact Component	Employment		Wages (\$ Million)	GDP (\$ Million)	Gross output (\$ Million)
	Jobs	Person-yrs			
Direct Impacts					
Accommodation	528	372	\$13	\$22	\$37
Net Other Tourism Industries*	671	387	\$15	\$36	\$77
Visitor Spending**	711	555	\$16	\$25	\$47
Total Direct Excl. Airport Component	1,910	1,314	\$44	\$83	\$161
Net Indirect	493	247	\$3	\$2	\$11
Net Induced***	586	311	\$4	\$4	\$17
Total Impact	2,990	1,872	\$51	\$90	\$190

Notes:

* “Other Tourism Industries” impact reflects employment in attractions and other supporting businesses and organizations of the tourism sector in the region, but excludes air transportation.

** “Visitor Spending” impact is based on the 2011 Visitor Survey Spending Profile conducted by Kettle Valley Research in July and August 2011, and includes expenditure on retail, food & beverage and local transportation within the greater Kelowna area.

*** Does not include indirect and induced impacts for visitor spending (value is only for Accommodations and Other Tourism Industries) in order to avoid double-counting of impacts.

Source: Economic Impact Study conducted in 2011 for Kelowna Tourism, interview with Kelowna Tourism, and SLI analysis

5.2 IMPACTS ON BUSINESSES IN THE REGION

Other than tourism, the economic impacts of the availability of convenient local air service on businesses in the region are difficult to quantify. Instead, a qualitative analysis of the importance of the airport to businesses and organizations in the Central Okanagan region was undertaken. In addition, the good examples of industry segments that have benefited are given.

A survey of businesses and organizations in the Central Okanagan was conducted to obtain feedback on the importance of YLW to their business/organization. The overall response rate to the survey was low, as is typical for these types of surveys; but many groups for which YLW is important responded and provided some useful insights to the importance of the airport. The 32 respondents covered a wide range of types of businesses and organizations as is shown in Table 12. The respondents had a total of 1,720 employees in the region, the most being in the transportation services, accommodation and food services, and finance

¹⁸ The Canadian Tourism Industry – A Special Report by the Tourism Industry Association of Canada, Fall 2012



and insurance industries. Most of those responding (80%) indicated that the airport was *very important* to their business/organization, and another 17% indicated it was *somewhat important*. It should be noted, however, that businesses that do not rely on the airport are more likely not to respond as they would see little value in spending time to respond.

Table 12. Summary of Responses to the Economic Influence Survey of Businesses and Organizations in the Central Okanagan

Business/Organization Group	No. of Responses	Local Employees	Overall Importance of YLW*
Accommodation and Food Services	4	414	4.0
Arts, Culture, Entertainment	1	21	3.0
Business Organization	3	13	3.7
Finance and Insurance	3	275	3.3
Manufacturing	1	40	3.0
Professional Services	5	163	4.0
Real Estate	2	13	4.0
Transportation Services	4	720	4.0
Travel/Tourism Agent/Promotion	5	55	4.0
Other**	4	6	3.3
Total	32	1,720	3.8

* Average rating, rating varied from 1 – No Importance, to 4 – Very Important

** Includes respondents from Community Association, Construction, Recreation and Retail Trade groups

Businesses that operate only within the Okanagan placed less importance on the airport, but business with national and international operations, almost all (90%), indicated the airport is *very important* to their business.

The airport impacts businesses and organizations in different ways. Figure 11 shows the average importance rating of various different impacts for business and organizations responding to the survey. Not unexpectedly, bringing customers from outside the region was given as the most important. Second, however, was the importance of the airport in their investment decisions in locating or expanding in the Okanagan region. This is often an overlooked, or underappreciated, benefit of the airport and is critical to the economic development of the region. The importance of the airport in attracting skilled employees to their business in the Central Okanagan also ranked as one of the more importance impacts of the airport.



Figure 11. Average Importance Rating of Various Ways Airport Impacts Businesses and Organizations in the Central Okanagan



Note: Based on responses to the economic influence survey of businesses and organization;
Rating varied from 1 – No Importance, to 4 – Very Important

YLW benefits different industries in different ways, as is outlined below.

- Bringing customers from outside the region – this was rated by respondents as *very important* for the travel, manufacturing, real estate and transportation services industries, and to a lesser extent the food and accommodation services.
- Connecting staff with other offices of business/ organization – this was rated by respondents *somewhat important* to the finance and insurance, transportation, and arts, culture & entertainment industries.
- Connecting staff with clients/customers – this was rated by respondents as *very or somewhat important* the food and accommodation, professional services, travel and transportation services industries.
- Connecting staff with suppliers – this was rated by respondents as *somewhat important* to the food and accommodation and travel industries.
- Connecting staff with other businesses and organizations suppliers – this was rated by respondents as *very important* for the food and accommodation industry and, *somewhat important* to the transportation services, professional services, and arts, culture and entertainment industry.
- Moving items quickly to/from other regions – this was rated by respondents as *somewhat important* for the real estate, transportation services, and arts, culture an entertainment industries.



- Attracting skilled employees to the respondents' business in the Central Okanagan – this was rated by respondents as *very important* for the real estate industry and, *somewhat important* to the transportation services, finance and insurance, accommodation & food services, and arts, culture & entertainment industries.
- Respondents' decision to locate their business in the Okanagan – this was rated by respondents as *very important* for the real estate, accommodation & food services, and transportation services industries.
- Investment decisions in locating or expanding business or organization in the Okanagan region – this was rated by respondents as *very important* for the transportation services, real estate, and arts, culture & entertainment industries, and *somewhat important* to the accommodation & food services, finance & insurance, manufacturing, and travel industries.

Some comments from businesses in the region include:

"Having availability of flights is key to this very important region."

"It Influences our business a great deal."

"The more direct flights between Kelowna and other major cities opens the opportunity for further Tourism development and expansion. If there is the demand of guests then there's more opportunity to develop more attractions and activities for the traveler while visiting the city."

"YLW and its continued expansion and ability to attract more airlines and more direct flights to sun and Europe and Asia destinations is very, very important to us."

"People mobility within organization of greatest importance."

A good example of an industry where good local air service is critical is the technology industry. The direct and indirect impact of the Okanagan technology sector in 2013 was estimated to be \$1.02 billion. This includes direct impacts of 6,500 employees and \$797 million in revenues generated by tech companies as well as an indirect impact of \$223 million created by businesses that supply inputs to the technology sector. The two most predominant sectors are technology software and services, and new media and Internet technology. Overall, in the high tech sector revenues increased by 3.5% to \$23.2 billion and the GDP had 3.4% growth, which is double the overall provincial GDP growth.¹⁹ One prominent business, Disney Canada, has over 300 employees in Kelowna and relies on air service for employees to meet with other staff, primarily in Los Angeles, and attend meetings and conferences. Another prominent company in the sector is Bardel Entertainment which employed 650 artists and professionals in B.C., including over 50 in Kelowna in 2013, and is projecting to grow to over 100 employees in 2016. Again, air service is important for collaborating with staff in their Vancouver office and meeting clients such as DreamWorks, Nickelodeon, Disney, Warner Bros. and Cartoon Network-Adult Swim, many of which are in the U.S. According to the Kelowna City Chamber of Commerce, Kelowna is quickly becoming a high-tech hub in animation, video game development, aerospace development and Information Technology services. Accelerate Communications Group Inc., which promotes the technology sector in the Okanagan, indicates that the airport is very important for connecting businesses in the region with other offices, clients, suppliers and other businesses in the sector. YLW is very important to the growth of this sector.

¹⁹ Study on Technology Sector in the Okanagan by Accelerate Okanagan, Jan. 2015



5.3 *ENABLES COMMUTER WORKERS TO OTHER AREAS*

The airport allows people to live in the region and air commute to work outside the region, particularly to large oil and gas development projects in Alberta and B.C, typically on a 10-day on, 10-day off work schedule. These workers and their families live in the Okanagan region and most of their disposable income is spent in the region and stimulates the local economy.

The number of commuter workers working on resource development projects and their incomes are difficult to determine, but some data is available which indicates the magnitude of the economic impact to the Okanagan region. In 2014, there were 851 movements at YLW of medium or regional jets or medium or large turboprop aircraft to airports serving resource projects at Fort Mackay/Albian, Conklin, Christina Lake, Fort St. John, Terrace and Dawson Creek. Assuming typical seat capacity and load factors on these flights, it is estimated they carried 10,800 workers from the Kelowna area to these work sites, noting that these workers make multiple trips over the year. In addition, WestJet commenced daily scheduled service using 78-seat Q400 aircraft to Fort McMurray in May 2014. This service will carry approximately 34,000 E/D passengers annually, or 17,000 enplaned passengers. Surveys taken at Fort McMurray Airport indicate that 40% of passengers are commuting to/from work on oil sands projects. This would imply another 7,000 worker commuting trips from YLW for a total of 18,000 commuter work trips annually. The number is likely higher as many workers likely connect through Calgary or Edmonton. Assuming a typical work schedule and hourly rate, it is estimated that these workers generated at least \$75 million in income in the year May 2014 to April 2015, much of which will be spent in the Central Okanagan²⁰.

5.4 *VALUE OF AIR TRANSPORT BEYOND WHAT USERS PAY FOR AIR SERVICES*

Air transportation has value beyond just the cumulative amount of output produced by the industry and the associated indirect and induced outputs. The amount people pay for air travel drives the output produced by the aviation industry. However, people, whether travelling for business, work, personal reasons or leisure, value their air trips at least as much as the airfare they pay, otherwise they would not travel. For many air trips they value the trip at much more than the price paid, particularly business/work trips. The amount they value their trips above what they pay is very difficult to determine, particularly at an airport level. However, an analysis of the consumer surplus generated by air travel provides a method of estimating, at least approximately, the total benefit to air travellers. A study of the consumer surplus that Canadians derived from air travel indicated that the **total value that consumers place on the industry is roughly double the cumulative of GDP produced by the industry.**

²⁰ Assuming 10 day work shift associated with each commuter work trip, average 10 hour shift and wage of \$50 per hour.



5.5 *SOCIO ECONOMIC IMPORTANCE OF AIRPORT*

The Kelowna International Airport provides key socio-economic contributions to residents, businesses and visitors.

The airport provides critical support for the public sector in the regional essential for the communities they service. The public services include:

- **Health care** – Emergency or high-risk transfers (critical care) are always made by air; patients often travel by air for specialist treatment not available in the region, and doctors and other medical staff use YLW to visit the regional hospital and to attend conferences and other meetings.
- **Education** – University and college students often use air transport at the start and end of each term to access the university/college campus, both those from the region travelling out-of-town and visiting students attending university/college in the Okanagan. Air transportation is important to staff to attend conferences and other meetings.
- **Policing / Law Enforcement / Courts** – RCMP officers and judges often need to travel for meetings, witnesses and prisoners may use air transport depending on the location of the trial.

In addition, the airport improves the quality of life of residents of the region by allowing them to travel to more distant locations to see family and friends, attend to personal matters (such as funerals, health issues, etc.), attend social, cultural and sporting events, and go on vacation.



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6 KELOWNA INTERNATIONAL AIRPORT'S FUTURE ECONOMIC IMPACT

The future economic impact is generated by both recurrent (ongoing) airport operations as well as by temporary activities related to construction and development at the airport.

6.1 RECURRENT AIRPORT OPERATIONS

Even without airport development, the airport would continue to generate recurrent impacts based on ongoing operations. In Section 2.4 it was forecast that in year 2020, a total of 1.93 million passengers will travel through the airport, an increase of 20%; and 2.25 million in 2025 (40% increase).

Over the past 5 years, direct employment has grown at 65% of the rate of growth of passenger traffic, while growth rates on average for direct wages, output and GDP have been roughly equal to the growth in passenger traffic. However, adjusting for inflation, the rate of growth for direct wages, output and GDP has followed the same trend as that of direct jobs. Future recurrent direct economic impacts of airport operations were estimated assuming the same trend continues and are summarized in Table 13. By the year 2020 operations at YLW can be expected to generate approximately \$381 million (2014\$) in direct output. This in turn equates to almost 1,600 FTE workers being directly employed at the airport and \$94 million (2014\$) in direct wages.

Table 13. Future Impacts Due to Recurrent Airport Operations at YLW

ACTIVITY CATEGORY	2015	2017	2020	2025
Employment	1,405	1,481	1,597	1,780
Wages (million)	\$82.4	\$86.8	\$93.6	\$104.3
Output (million)	\$334.9	\$352.8	\$380.6	\$424.2
GDP (million)	\$151.1	\$159.2	\$171.7	\$191.4

6.2 PROPOSED CAPITAL EXPENDITURES

The Airport is in the process of expanding the air terminal building and further expansion may be necessary over the next 10 years. The capital investment associated with the expansion of the terminal will involve expenditure on construction, equipment, and raw and finished materials, all of which support employment, GDP, economic output and taxes receipts. The economic impacts of the YLW's terminal expansion were estimated using the cost of the capital projects and Statistics Canada economic multipliers of direct employment generated by each dollar of capital spending and corresponding wages, GDP and economic output for B.C.

In addition to the terminal building, tenants at YLW are planning to spend another \$0.56 million on capital improvements over the next five years.

Using the Provincial Input-Output model for the construction industry, we can estimate that should the Airport and tenants complete the full development program as outlined in their capital plans, the following non-recurring economic impacts will occur.



Table 14. Recent and Future Temporary Impacts Due to Planned Development at YLW

MEASURE	2014	2015	2016	2017-2026	Average per Year 2017-2026
Direct Gross Output (M)	\$10.47	\$3.1	\$21.6	\$280.3	\$28.0
Direct GDP (M)	\$4.39	\$1.28	\$9.0	\$117.4	\$11.7
Direct Employment	53.1	15.5	109	1,421	142
Direct Labour Income (M)	\$3.39	\$0.99	\$7.0	\$90.8	\$9.1

Note: 2014 and 2015 impacts are based on additions during year to tangible capital assets for land improvements, building and infrastructure as reported in the Kelowna International Airport 2014 and 2015 Financial Statements.

As shown above, proposed development at the airport will directly create 1,421 additional FTE of annual employment during the 10-year period 2017 to 2026, an average of 142 per year.



7 CONCLUSIONS

The previous economic impact study conducted for the Kelowna International Airport (YLW) was completed in 2011 using data from calendar year 2010. Since that time, the Kelowna International Airport traffic has increased by 15% over the five years.

YLW provides significant economic and transportation benefits and is an integral part of the local and regional economy. Table 15 summarizes the economic benefits of YLW as measured in 2014. Indirect and induced impacts were determined using Statistics Canada economic multipliers for B.C.

Table 15. Summary of Economic Impacts at YLW – 2014

ACTIVITY CATEGORY	ASSOCIATED WITH AIRPORT ACTIVITY				CATALYTIC
	DIRECT	INDIRECT	INDUCED	TOTAL	TOURISM
Employment (Person/yr)	1,411	737	525	2,673	1,872
Wages (million)	\$83	\$37	\$22	\$142	\$51
Output (million)	\$336	\$169	\$94	\$599	\$190
GDP (million)	\$152	\$75	\$79	\$306	\$90

Tourism is one of the major catalytic impacts associated with the airport. As shown in the above table, the total impacts of visitors to the region travelling by air are significant with 1,872 FTEs, \$51 million in wages, \$190 million in output and \$90 million in GDP. This equates to roughly 70% of the total employment impact of the airport and between 26% and 36% of the total income, output and GDP impacts of the airport. Businesses and organizations in the region indicated that the airport is very important in bringing customers to the region. The second most important impact of YLW was on investment decisions to expand in the region, followed by connecting staff with other businesses/organizations, clients, and other offices of their business/organization. The airport is also important in attracting skilled workers to the region. YLW is therefore very important to economic growth in the Okanagan region.

An additional single daily B737-700 flight at YLW is estimated to result in between 16 and 38 FTE jobs. Other measures of economic impact relative to traffic and employment numbers are provided in Table 16.

Table 16. Additional Economic Impact Measures (2014)

MEASURE	2014
Passengers (E/D)	1,602,899
Direct Output per E/D Passenger	\$210
Direct Output per Landing (All Movements)	\$7,087
Direct Output per Direct FTE	\$238,258
Direct Wages per Direct FTE	\$58,608
Increase in total FTE for every 1,000 increase in E/D passengers	1.8
Number of Landings per direct FTE	34

In conclusion, with 1,411 FTEs and \$336 million in direct output, YLW is a powerful economic generator for the Kelowna area. In addition, capital expenditures at the airport increase direct employment and direct output by another 53 FTEs in 2014 (4% of total). The value of transportation services beyond what travellers pay for their air tickets cannot be determined, but consumer surplus economic theory indicates that inclusion of this benefit to air travellers would roughly double the economic impacts presented above.



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APPENDIX A – LIST OF AIRPORT TENANTS / CONCESSIONNAIRES



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CURRENT YLW TENANT / BASED ORGANIZATION

Kelowna int'l Airport Authority
 Okanagan Aero Engine (1999) Ltd.
 Strategic Aviation Services LTD
 Ironman Holdings LTD
 ARINC
 Devon Transport Ltd. (Budget)
 Skyway (Tims, White Spot, Duty Free, etc)
 Enterprise Rent-A-Car Canada Company
 Avis Rent A Car
 G4S Secure Solutions, Aviation
 BC Corps of Commissionaires
 Transport Canada
 RCMP
 Nav Canada
 CBSA
 CATSA
 Ambassadors
 North Cariboo Air
 NT Air
 Enerjet
 Flair Airlines Ltd
 Carson Air Ltd.
 Canjet
 Royal Star Enterprises Inc.
 Western Bus Lines
 All Rush Express
 Kelowna Cabs
 Big White Central Reservations
 Tourism Kelowna
 Coast Capri Hotel
 Suncor Energy
 Kelowna T Hangars
 Kelowna and District Flying Club
 Air North
 WestJet
 Pacific Coastal Airlines
 Alaska - Horizon Air
 Central Mountain Air
 Air Canada / Express-Jaz
 Bouygues Energies & Services
 KF Aerospace (prev. Kelowna Flightcraft) - Air Carrier
 Great Slave Helicopters
 Skyline Helicopters Ltd.
 Air Transat
 Canadian North
 Southern Interior Flight School

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THE ECONOMIC AND FISCAL IMPACTS OF THE ACTIVITIES AT MONTRÉAL-TRUDEAU AIRPORT SITE

PUBLISHED IN JUNE 2015



STUDY OBJECTIVES

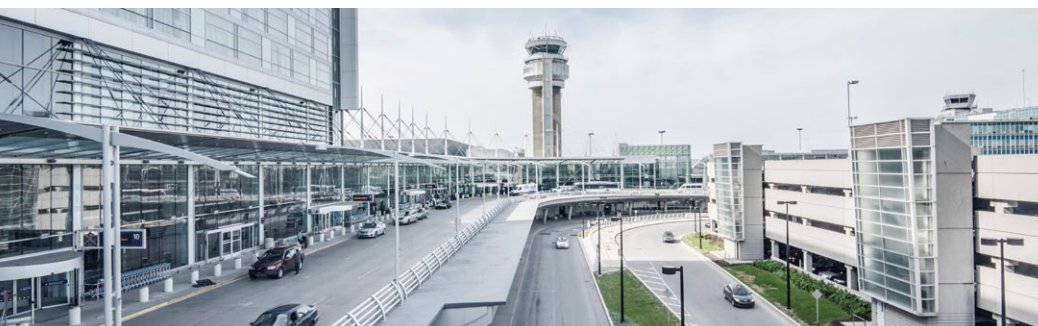
Measuring the impacts

- This impact study is based on an economic analysis approach and tries to identify the impacts generated by the economic activity carried out on the Montréal-Trudeau site in 2014.
- This study also includes an estimate of impacts associated with various investment programs and more specifically with spending in 2014.
- The estimated impacts include direct, indirect and induced effects.

Main concepts

- **DIRECT EFFECT:** Economic effect generated by the value of production of all organizations on the Montréal site.
- **INDIRECT EFFECT:** Economic effect generated by the production of primary suppliers of companies being studied, and their respective suppliers, and so on.
- **INDUCED EFFECT:** Economic effect generated by the consumer spending of direct and indirect workers.

THE ECONOMIC IMPACT RESULTS PRESENTED IN THIS DOCUMENT RELATE TO EMPLOYMENT, GROSS WORKFORCE REMUNERATION AND CONTRIBUTION TO GDP OF PRODUCTION TAKING PLACE ON THE MONTRÉAL-TRUDEAU SITE IN 2014.



APPROACH – THE INPUT-OUTPUT MODEL

CONCEPT

An initial expenditure in Québec made by a business or a public authority generates direct and indirect economic impacts across the province's supplier network. The Québec input-output model calculates the impact of the initial expenditure based on several indicators:

JOB: Full-time workload, measured in "person-years"

GROSS EARNINGS OF THE WORKFORCE

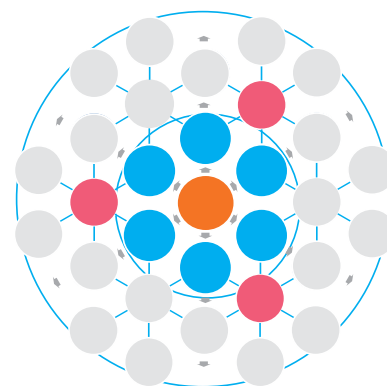
VALUE ADDED: Contribution to GDP

COMBINED TAX REVENUE*: Taxes and other contributions paid to government authorities on both the provincial and federal levels

The model applies to both operational and capital expenditures (investments).

* Includes tax revenue on individuals' salaries and wages, sales tax and fuel tax, as well as contributions by employers and employees to various government programs (RRQ, FSS, CSST, RQAP, employment insurance). Based on 2014 fiscal structure.

Propagation of demand captured by the input-output model



INITIAL PURCHASES
FIRST SUPPLIERS
IMPORTS
OTHER SUPPLIERS

LIMITATIONS

- Linear, static model (no economies of scale)
- Impacts are not regionalized
- Municipal tax revenue is not calculated
- Externalities are not taken into account

STRUCTURE OF EMPLOYMENT AT THE SITE

Distribution of the number of direct jobs related to day-to-day operations by sector on the Montréal-Trudeau site – 2014

SECTOR OF ACTIVITY	NUMBER OF JOBS	SHARE OF EMPLOYMENT
Airlines, including general aviation and maintenance	10,381	39%
Manufacturing of aeronautical products and parts	8,897	33%
Aeronautical and air transportation support services	3,052	11%
Airport administration and government services	1,387	5%
Ground transportation companies	1,265	5%
Commercial services	800	3%
Hotel/tourism	749	3%
Other	237	1%
Total	26,768	100%

SOURCE: E&B DATA based on first-hand (businesses) and second-hand data (databases).

MORE THAN ONE-THIRD (39%) OF DIRECT JOBS ON THE MONTRÉAL-TRUDEAU SITE ARE RELATED TO AIR CARRIERS, WHILE MANUFACTURING ACCOUNTS FOR ONE-THIRD (33%) OF ALL DIRECT JOBS.



HIGHLIGHTS SUMMARY TABLE

Impacts attributable to all activities of the businesses and organizations established at the Montréal-Trudeau site – 2014

CATEGORY		TYPES OF EFFECTS			
		DIRECT AND INDIRECT			TOTAL
		DIRECT	INDIRECT	TOTAL	
Workforce (person-years)		27,821	16,208	44,030	55,572
Gross earnings of the workforce (\$M)		1,655	846	2,501	2,955
Contribution to GDP (\$M)		3,186	1,564	4,749	5,600
Québec government revenue (\$M)	Income tax on salaries and wages	209	93	302	340
	Sales taxes	-	16	16	100
	Specific taxes	-	22	22	76
	Incidental taxation (RRQ, RQAP, CSST, FSS)	257	128	385	455
	Total	466	260	725	972
Federal government revenue (\$M)	Income tax on salaries and wages	171	74	245	280
	Sales taxes	-	6	6	52
	Specific taxes	-	12	12	26
	Incidental taxation (employment insurance)	51	25	77	94
	Total	223	118	340	452
Municipal revenue (\$M)	Property tax	37	n.a.	37	37

SOURCES: E&B DATA based on the input-output model of the Institut de la statistique du Québec and Aéroports de Montréal.

NOTE: The impacts shown in this table constitute the sum of the impacts associated with day-to-day operations and capital expenditures for the year 2014. Excluding corporate taxes.

DAY-TO-DAY OPERATIONS – ECONOMIC IMPACTS 2014

Impacts attributable to the day-to-day operations of the businesses and organizations established at the Montréal-Trudeau site – 2014

CATEGORY	TYPES OF EFFECTS				
	DIRECT AND INDIRECT			INDUCED	TOTAL
	DIRECT	INDIRECT	TOTAL		
Workforce (person-years)	26,768	15,471	42,239	11,132	53,371
Gross earnings of the workforce (\$M)	1,594	811	2,405	437	2,842
Contribution to GDP (\$M)	3,099	1,505	4,604	820	5,424

SOURCE: E&B DATA based on the input-output model of the Institut de la statistique du Québec.

IN 2014, THE DAY-TO-DAY OPERATIONS OF THE BUSINESSES AND ORGANIZATIONS ESTABLISHED AT THE MONTRÉAL-TRUDEAU AIRPORT SITE, MADE IT POSSIBLE TO MAINTAIN MORE THAN 53,000 QUÉBEC JOBS.



DAY-TO-DAY OPERATIONS – TAX IMPACTS 2014

Tax impacts attributable to the day-to-day operations of the businesses and organizations established at the Montréal-Trudeau site – 2014

CATEGORY		TYPES OF EFFECTS				
		DIRECT AND INDIRECT			INDUCED	TOTAL
		DIRECT	INDIRECT	TOTAL		
Québec government revenue (\$M)	Income tax on salaries and wages	202	90	292	37	329
	Sales taxes	-	15	15	81	96
	Specific taxes	-	22	22	52	74
	Incidental taxation (RRQ, RQAP, CSST, FSS)	244	123	367	68	435
	Total	446	250	696	239	935
Federal government revenue (\$M)	Income tax on salaries and wages	166	71	238	33	271
	Sales taxes	-	4	4	45	49
	Specific taxes	-	9	9	14	23
	Incidental taxation (employment insurance)	46	23	69	16	85
	Total	212	107	319	108	427
Municipal revenue (\$M)	Property tax	37	n.a.	37	n.a.	37

SOURCES: E&B DATA based on the input-output model of the Institut de la statistique du Québec and Aéroports de Montréal.

NOTE: Excluding corporate taxes.

THE DAY-TO-DAY OPERATIONS OF THE BUSINESSES AND ORGANIZATIONS ESTABLISHED AT THE MONTRÉAL-TRUDEAU SITE ALLOWED THE GOVERNMENT OF QUÉBEC TO GENERATE TAX REVENUE OF \$935 MILLION IN 2014. THIS AMOUNT COMES TO \$427 MILLION FOR THE FEDERAL GOVERNMENT.

WITH THE PROPERTY TAXES PAID BY THE BUSINESSES AND ORGANIZATIONS ESTABLISHED AT THE MONTRÉAL-TRUDEAU SITE, MUNICIPALITIES COLLECTED CLOSE TO \$40 MILLION IN 2014.

CAPITAL EXPENDITURE ECONOMIC IMPACTS 2014

Economic impacts attributable to capital expenditure of the businesses and organizations established at the Montréal-Trudeau site – 2014

CATEGORY	TYPES OF EFFECTS				
	DIRECT AND INDIRECT			INDUCED	TOTAL
	DIRECT	INDIRECT	TOTAL		
Workforce (person-years)	1,053	737	1,791	411	2,201
Gross earnings of the workforce (\$M)	61	35	96	16	112
Contribution to GDP (\$M)	87	59	145	30	176

SOURCE: E&B DATA based on the input-output model of the Institut de la statistique du Québec.

IN 2014, \$195 MILLION OF CAPITAL EXPENDITURE WAS SPENT AT THE MONTRÉAL-TRUDEAU SITE, LEADING TO THE CREATION OR MAINTENANCE OF OVER 2,200 JOBS.



CAPITAL EXPENDITURE TAX IMPACTS 2014

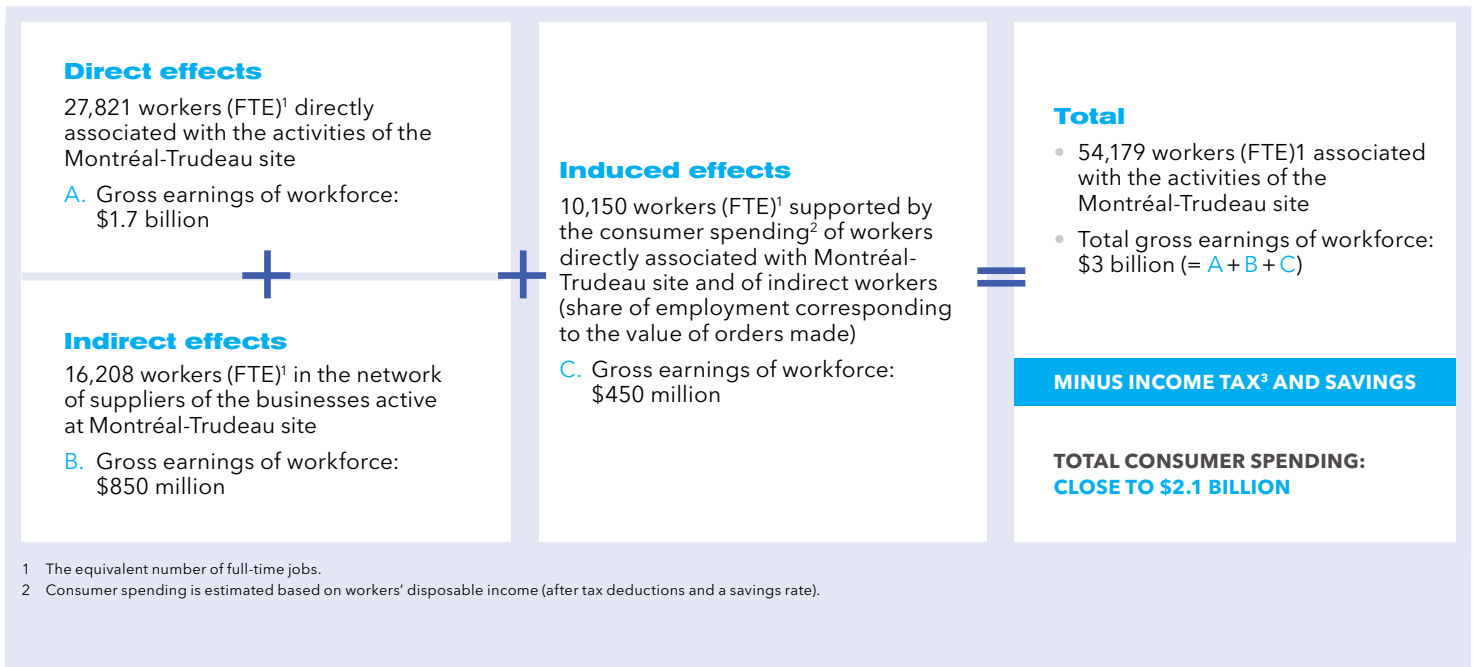
Tax impacts attributable to capital expenditure of the businesses and organizations established at the Montréal-Trudeau site – 2014

CATEGORY		TYPES OF EFFECTS				
		DIRECT AND INDIRECT			INDUCED	TOTAL
		DIRECT	INDIRECT	TOTAL		
Québec government revenue (\$M)	Income tax on salaries and wages	6.4	3.4	9.8	0.9	10.7
	Sales taxes	-	1.0	1.0	3.0	4.0
	Specific taxes	-	ngl.	ngl.	1.9	2.0
	Incidental taxation (RRQ, RQAP, CSST, FSS)	13.1	5.2	18.3	2.2	20.5
	Total	19.5	9.7	29.1	8.1	37.2
Federal government revenue (\$M)	Income tax on salaries and wages	5.1	2.8	7.9	0.9	8.8
	Sales taxes	-	0.1	0.1	1.7	1.8
	Specific taxes	-	0.2	0.2	0.5	0.8
	Incidental taxation (employment insurance)	1.8	1.2	3.0	0.5	3.6
	Total	6.9	4.3	11.3	3.6	14.9

SOURCE: E&B DATA based on the input-output model of the Institut de la statistique du Québec.
NOTE: Excluding corporate taxes.

IN 2014, CAPITAL EXPENDITURES (\$195 MILLION) ALLOWED THE GOVERNMENT OF QUÉBEC TO COLLECT OVER \$35 MILLION. MEANWHILE, THE FEDERAL GOVERNMENT COLLECTED CLOSE TO \$15 MILLION.

CONTRIBUTION TO CREATING PURCHASING POWER – ALL ACTIVITIES 2014

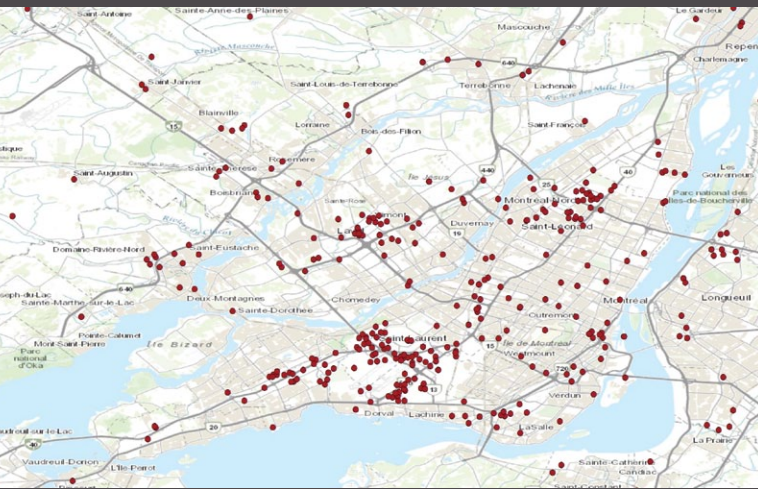


TAKING INTO ACCOUNT THE INCOME FROM DIRECT, INDIRECT AND INDUCED JOBS, THE ACTIVITIES ASSOCIATED WITH THE MONTRÉAL-TRUDEAU SITE GENERATE CONSUMER SPENDING ESTIMATED AT CLOSE TO \$2.1 BILLION ACROSS QUÉBEC.

CONCLUSIONS

- IMPACTS OF AGGLOMERATION.**
 Montréal-Trudeau airport is home to more than 200 companies active in a large number of complementary and connected industry segments (e.g., ground transportation, transportation support services, hotels, security). Also present on the site is a group of aerospace-industry companies that form an advanced-knowledge cluster (e.g., design, training); the fact that they are in close proximity is one reason they enjoy a competitive advantage.
- A PRODUCTIVE, HIGHLY LABOUR-INTENSIVE INFRASTRUCTURE.**
 With close to 27,000 direct jobs, Montréal-Trudeau is the leading employment hub in Montréal after the downtown area. In addition, for every job at the airport site, another position is supported elsewhere in Québec.
- AN ENGINE FOR GROWTH IN THE MONTRÉAL REGION.**
 GDP generated at Montréal-Trudeau airport accounts for more than 4% of GDP in the Montréal Administrative Region. This economic activity does not take into account that of the many Montréal companies located away from the airport, but whose competitiveness is fueled in part by proximity and access to an international airport.
- ONGOING INVESTMENTS.**
 An effective and efficient international airport depends on an ongoing process of infrastructure optimization and modernization. In 2014 alone, close to \$200 million has been invested in Montréal-Trudeau as part of the 2013-2033 Master Plan, including improvements to passenger flow, among others. The results are particularly observable in increased productivity—a reflection of better use of space and improved work organization.
- A WEALTH-CREATION ZONE.**
 Activity at Montréal-Trudeau airport generates purchasing power in excess of \$2 billion, nearly \$40 million in municipal taxes, and more than \$1.4 billion per year for the provincial and federal governments.

MAP OF SUPPLIERS

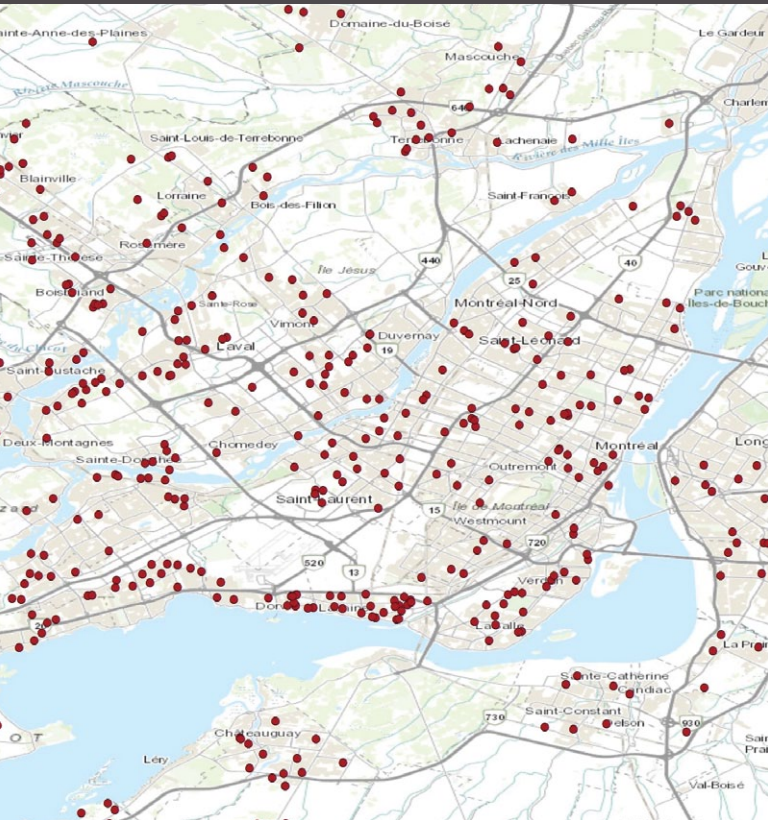


Distribution of a sample of suppliers of businesses and organizations established at the Montréal-Trudeau site by region – Sample 2014

ADMINISTRATIVE REGIONS	NUMBER OF SUPPLIERS	SHARE OF SPENDING
Montréal	251	79%
Montérégie	80	12%
Laval	51	2%
Laurentians	51	2%
Lanaudière	22	1%
Other	23	3%
Total	478	100%

SOURCE: E&B DATA based on the files of suppliers of businesses of Aéroports de Montréal. Sample: n=478.

EMPLOYEE MAP



HIGHLIGHTS

Organizations and businesses

- Nearly **200 ORGANIZATIONS AND PRIVATE COMPANIES** operating at the Montréal-Trudeau site
- Close to **27,000 DIRECT JOBS** at these companies and organizations in 2014 (not including positions related to capital expenditures at Montréal-Trudeau in 2014)

Employment

- Close to **55,000 TOTAL JOBS** (direct, indirect and induced) attributable to the operations of organizations and companies at Montréal-Trudeau in 2014:
 - More than **52,000 JOBS** in day-to-day operations and more than **2,000** related to investment projects in 2014
 - Total payroll of **\$3 BILLION** in 2014, i.e., purchasing power of \$1.7 billion

Contribution to Québec GDP

- **\$5.5 BILLION** in 2014
 - Day-to-day operations contributed approximately **\$5.3 BILLION** in 2014
 - Investment projects in 2014 resulted in a contribution to GDP of nearly **\$200 MILLION** in 2014

Contribution to governments' revenues

- Economic activity at Montréal-Trudeau generated more than **\$1.4 BILLION** (2014) in revenues for the federal and provincial governments (not including corporate taxes)
- Nearly **\$40 MILLION** in property taxes was paid to **MUNICIPAL ADMINISTRATIONS** in 2014



APPROACH – QUANTIFYING PURCHASING POWER

Input

- Number of jobs
- Value of payroll
- Value of capital expenditure

Direct effects

- Workers (FTE)¹ directly associated with Montréal-Trudeau site
- Gross earnings of "direct" workforce

Indirect effects

- Workers (FTE)¹ in the network of suppliers of the businesses directly associated with Montréal-Trudeau site
- Gross earnings of "indirect" workforce

Induced effects

- Workers (FTE) supported by the consumer spending² of workers directly associated with Montréal-Trudeau site and indirect workers (share of employment corresponding to the value of orders made)
- Gross earnings of "induced" workforce

Overall effects

- Total workers (FTE) associated with Montréal-Trudeau site
- Total gross earnings of workforce

¹ The equivalent number of full-time jobs.

² Consumer spending is estimated based on workers' disposable income (after tax deductions and a savings rate).

THE ECONOMIC IMPACT STUDY MAKES IT POSSIBLE TO QUANTIFY THE CONTRIBUTION OF PRODUCTION ACTIVITIES TO THE CREATION OF PURCHASING IN QUÉBEC.



CORPORATE PROFILE

Aéroports de Montréal is a not-for-profit corporation without share capital and is responsible for the management, operation, and development of Montréal-Pierre Elliott Trudeau International Airport (formerly Montréal-Dorval International Airport) and Montréal-Mirabel International Airport under the terms of a lease signed with Transport Canada in 1992 and expiring in 2072.



THE MISSION OF AÉROPORTS DE MONTRÉAL IS THREEFOLD

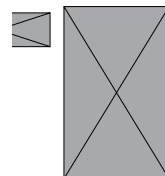
- PROVIDE QUALITY AIRPORT SERVICES THAT ARE SAFE, SECURE, EFFICIENT AND CONSISTENT WITH THE SPECIFIC NEEDS OF THE COMMUNITY
- FOSTER ECONOMIC DEVELOPMENT IN THE GREATER MONTRÉAL AREA, ESPECIALLY THROUGH THE DEVELOPMENT OF FACILITIES FOR WHICH IT IS RESPONSIBLE
- CO-EXIST IN HARMONY WITH THE SURROUNDING ENVIRONMENT, PARTICULARLY IN MATTERS OF ENVIRONMENTAL PROTECTION

AÉROPORTS DE
MONTRÉAL

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06/2015



Muskoka Airport Economic Impact Analysis

for the Muskoka Airport



30 June 2020

From Operations Economics Inc.
2000 – 1066 W. Hastings Street, Vancouver, V6E 3X2
operationseconomics.com

Executive Summary

Muskoka Airport

The year 2019 was strong for the Muskoka Airport. FlyGTA and Porter both began air services to and from Toronto Billy Bishop Airport and, Skyservice Business Aviation announced it will be expanding at Muskoka Airport.

For this project, the scope of study was defined as all economic activity that took place at the Muskoka Airport and related activity within Ontario in 2019. An airport is part of the national transportation system with people and cargo moving to and from the airport. Aviation-related commercial activities also generate economic activity within the region, the province, and the country. A survey of airport users and businesses was conducted to gather data on airport activity.

Airport Economic Impacts

Using the direct economic numbers gathered from airport businesses and users, the indirect and induced impacts for the airport were analyzed using multiplier analysis. The direct, indirect and induced impacts are added together to calculate the total impacts.

The total impacts for the Muskoka Airport in 2019 are approximately

- 179 FTEs
- \$11 million in income,
- \$22.6 million in total GDP, and
- \$46.7 million in total Output.

Table ES-1 provides each category of impact for 2019, Direct, indirect and induced for employment, income, GDP and Output.

Table ES-1: Total 2019 Economic Impacts

	Employment (FTEs)	Income (\$ Millions)	GDP (\$ millions)	Output (\$ millions)
Direct	77.2	5.2	10.0	23.2
Indirect	63.9	4.1	7.7	16.2
Induced	38.3	2.0	5.0	7.4
TOTAL	179.4	11.3	22.6	46.7

Note: columns may not add as a result of rounding

Capital Impacts

Construction projects also generate significant economic impact. The airport's capital costs in 2019 were \$817,000, and this generated employment. Using multiplier analysis, the economic impacts of the capital projects can be analyzed. The direct impacts of the projects included:

- 4 jobs
- \$260,000 in income
- \$320,000 in GDP, and
- \$866,000 in Output.

Total impacts are provided in the table below.

Table ES-2: Capital Spending Impacts, 2019

	Jobs	Income	GDP	Output
Direct	3.6	\$260,000	\$320,000	\$866,000
Indirect	2.6	\$178,000	\$294,000	\$575,000
Induced	1.5	\$77,000	\$195,000	\$284,000
TOTAL	7.6	\$516,000	\$808,000	\$1,726,000

Note: columns may not add as a result of rounding

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1. Introduction

The Muskoka Airport (YQA) started in 1933 as an emergency landing field for Trans-Canada Airways. The first aircraft landed there in 1935. In 1940 the RCAF began using the site for flight training and it was made available to the Royal Norwegian Air Force (RNAF) in 1943 as part of the war effort. Trans-Canada served the airport during the 1950s, but the service ended. It has subsequently developed as a general aviation (GA) airport until scheduled service began again in 2019.

The District Municipality of Muskoka owns and operates the Muskoka Airport. Located in Gravenhurst, Ontario, the airport is a Canada Customs Airport of Entry and a certified airport which operates 365 days per year. The airport has one paved runway (Rwy 18-36) which is 6,000 x 150 feet, as well as grass crosswind runway. The site has a large public apron adjacent to its Air Terminal Building (ATB).

Figure 1-1: Township of Muskoka Lake



Source: Explorers Edge

The Muskoka region is famous for cottage country and tourism. The Globe and Mail newspaper uses the term cottage country and Muskoka almost synonymously, for example.¹

¹ A recent example of this is “Tensions rise over travel to cottage country amid pandemic,” 8 May 2020, The Globe & Mail.

Scope of Study

For this project, the scope of study was defined as all economic activity that takes place at the Muskoka Airport and related activity within Ontario in 2019. Given the COVID crisis in 2020, these levels of economic activity will not be recovered at the airport this year. An airport is part of a transportation system with people and cargo moving to and from the airport. Aviation-related commercial activities also generate economic activity within the region, the province, and the country. The ability of people and cargo to move and the creation of related employment defines the airport's importance to the Canadian economy. However, an airport is often more than transportation activity alone. In the case of the Muskoka Airport, aerospace related employment is also significant to airport operations, and generates employment. Tourism activity supported by the airport is also considered in this analysis.

This analysis represents economic activity at Muskoka Airport in 2019. Given the 2020 COVID crisis, this level of economic activity will not occur in 2020.

The scope of study has been defined as all economic activity that takes place at Muskoka Airport and related activity.

Report Organization

The report is developed in the following sections:

2. The airport and its activities are discussed.
3. Economic impacts of airport operations are reviewed.
4. Capital Impacts are summarized.
5. Findings are outlined.

Appendix A describes the study methodology, and **Appendix B** contains the project survey.

2. The Airport

Economic numbers describe the activity that businesses and workers conduct. The analysis describes this activity in a quantitative manner. To understand the economic numbers, it is necessary to appreciate the nature of economic activity at a site such as the airport. This section describes the ongoing operations of Muskoka Airport, the businesses there, the types of employment activity, and the airport's links to the regional economy.

Owner

The District Municipality of Muskoka owns and operates the Muskoka Airport. The District Municipality is the upper-tier of a two-tier system, working closely with six Area Municipalities. These are the

- Town of Bracebridge
- Township of Georgian Bay
- Town of Gravenhurst
- Town of Huntsville
- Township of Lake of Bays
- Township of Muskoka Lakes

The airport is located within the Town of Gravenhurst municipal boundaries.

In early 2018 the District recruited a "skills-based" Board to oversee operation of the Airport and interact with the community and regional and airport businesses. The Board has seven members.

Operations

Aviation activity at Muskoka Airport is shown in the figures below. **Figure 2-1** displays all itinerant aircraft movements in 2019, and **Figure 2-2** shows local movements. Itinerant aircraft movements are between airports. Local are flights that typically begin and end at the same airport, such as training flights. The majority of operations at Muskoka are itinerant flights with piston aircraft. There were 11,421 total aircraft movements recorded in 2019.

The exact Statistics Canada definitions for Itinerant and Local Movements are provided below

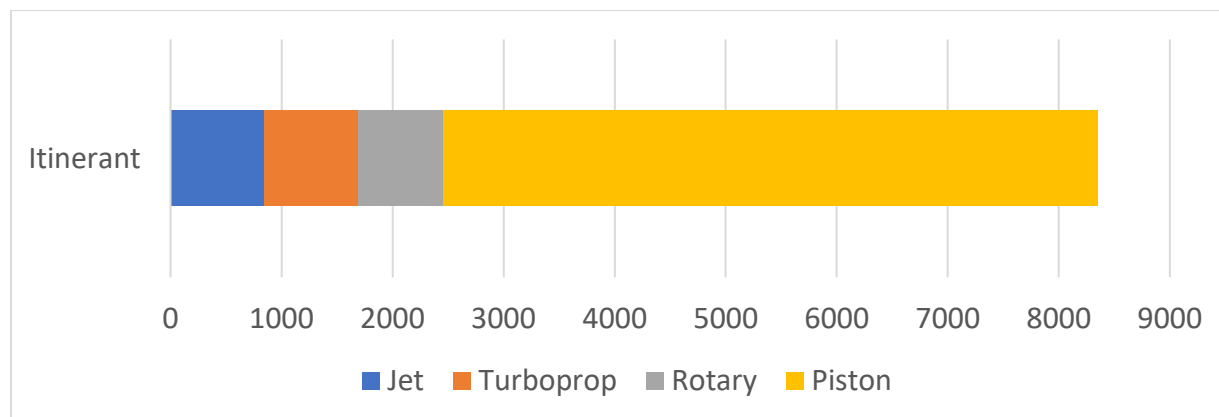
Itinerant movements

At airports with control towers and/or flight service stations: for the purpose of completing air traffic records, itinerant movements are considered as movements in which aircraft proceed to or arrive from another location; or where aircraft leave the circuit but return without landing at another airport. At airports without control towers: an aircraft movement in which the aircraft arrives from or departs to a point other than the reporting airport; or a movement by an aircraft that leaves the close proximity of an airport and returns without landing at another airport.

Local movements

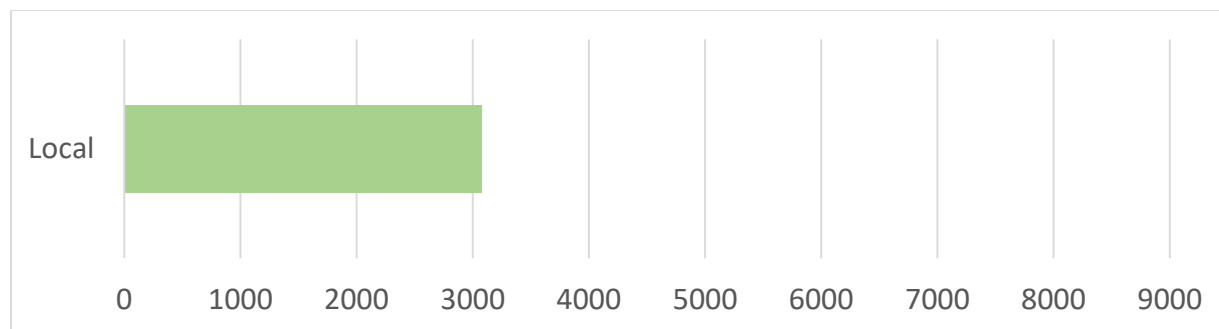
At airports with control towers and/or flight service stations: for the purpose of completing air traffic records, local movements are considered as movements in which the aircraft remains in the circuit. At airports without control towers: an aircraft movement in which the aircraft remains in the close proximity of the airport. Local movements are often carried out during training flights (touch-and-go), equipment tests, etc.²

Figure 2-1: Itinerant Aircraft Movements, 2019



Source: Muskoka Airport.

Figure 2-2: Local Aircraft Movements, 2019



Source: Muskoka Airport.

² https://www.statcan.gc.ca/eng/statistical-programs/document/2715_D1_T9_V1

Tourism: Ontario and Muskoka

Ontario tourism is a significant industry, and Muskoka has a high-profile role in this business. Impacts of province-wide tourism are shown in the **Table 2-1** below. This information is provided only at a provincial level and not at the regional level.

Table 2-1 : Ontario Tourism Direct Economic Impacts, 2016

GDP	\$13.7 billion
Employment (Jobs)	205,777
Labour Income	\$7.7 billion
Government Tax Revenue	\$5.6 billion

Source: Ontario Ministry of Heritage, Sport, Tourism and Cultural Industries³

The Muskoka, Parry Sound and Algonquin Park region (Ontario's Region 12) has significant tourism activity, as shown in **Table 2-2**. Ontario publishes regional tourism statistics from Statistics Canada's Travel Survey, the CBRE Hotels Trends in Hotel Industry National Market Report, and the Canadian Business Patterns Survey.⁴ Annual statistical highlights of the tourism region are described below.

Table 2-2: Annual Snapshot

Total Person Visits	4,730,800
Visits Q3 (Jul – Sep)	2,817,800 (59.5% of total)
Annual Nights	10,686,400
Average overnight visits	3.33 days

Source: Region 12 Tourism Statistics

Muskoka is also a unique tourism market because of the high number of seasonal homes and visitors in the region. Details of this are provided in **Table 2-3**, which shows that during the summer an estimated 54.5% of the regional population is seasonal.

Table 2-3 : Muskoka Regional Population, 2016

Estimated Seasonal Population	Permanent Population	Total	% Seasonal Population
81,907	60,599	142,506	57.5%

Source: District of Muskoka, 2017 Second Home Study

³ http://www.mtc.gov.on.ca/en/research/econ_impact/econ_impact.shtml

⁴ <http://www.mtc.gov.on.ca/en/research/rtp/rtp.shtml>

Airport Recent Development

2019 was a strong year for the Muskoka Airport. FlyGTA and Porter both began air services to Toronto Billy Bishop Airport and, Skyservice announced it will be expanding at Muskoka Airport.

FlyGTA offers a year-round service of a few flights per week. The carrier is based at Billy Bishop and offers scheduled services to Niagara District Airport, Waterloo Regional Airport, and Muskoka Airport, as well as charters and sight seeing services. The carrier offers executive jet flights, and scheduled services on eight-seat piston and turbo-prop aircraft.



Porter Airlines flies only DeHavilland Q400s, all in a 68-seat configuration. In 2019 Porter provided seasonal, twice-weekly service to Muskoka Airport from Billy Bishop Airport. This service is to continue in 2020 and 2021 with a subsidy via Explorers Edge, with the hope that it would continue after the subsidy ended.



Skyservice Business Aviation offers aircraft management, charters, FBOs, maintenance, and aircraft sales. It is a large North American operation and offers FBOs in Toronto, Montreal, Ottawa and Calgary. In October 2019 Skyservice announced the purchase of Muskoka Aircraft Centre and its plan to expand the business. This was followed by a ribbon cutting in November.



In this 2019 economic analysis, the impact of the new FlyGTA and Porter Airlines services are included, but the potential Skyservice Business Aviation activity is not because it had not been developed as of the end of the year.

3. Economic Impacts of Operations

Economic Impacts

Economic impact measures economic activity, such as spending or employment. Impacts can be measured for an economic sector, a project, or a change in spending in the economy. Economic impact is measured in different ways. Two of the most common measures of economic impact are Gross Domestic Product (GDP) and jobs, which are often reported as full-time equivalents (FTEs). These and other measures such as output and income are used to explain the impact of activity in the economy. Statistics Canada analyzes the entire Canadian economy and regularly updates an input-output model which describe economic activity in the country. Economic impact analysis such as this report are primarily based on Statistics Canada's input-output model. For this analysis provincial level multipliers are used.

The economic impact is divided into the following concepts to assist with analysis:

Direct. These impacts are directly attributable to the operations in an industry, firm, etc. For example, at Muskoka Airport, all activity based on the airport is considered direct. The direct activity therefore includes the airport itself, and all businesses on airport lands.

Indirect. Indirect activity supports or enables direct activity. A supplier for a direct activity at the airport is indirect activity. For Muskoka, this includes supplier industries to air carriers, for example. These are analyzed using economic multipliers.

Induced. Induced economic activity is created by people in direct and indirect sectors spending money in the regional economy. For example, an airport employee spending money for groceries generates induced impacts. These are analyzed using economic multipliers.

Total impacts are the sum of direct, indirect and induced effects.

Direct Impacts

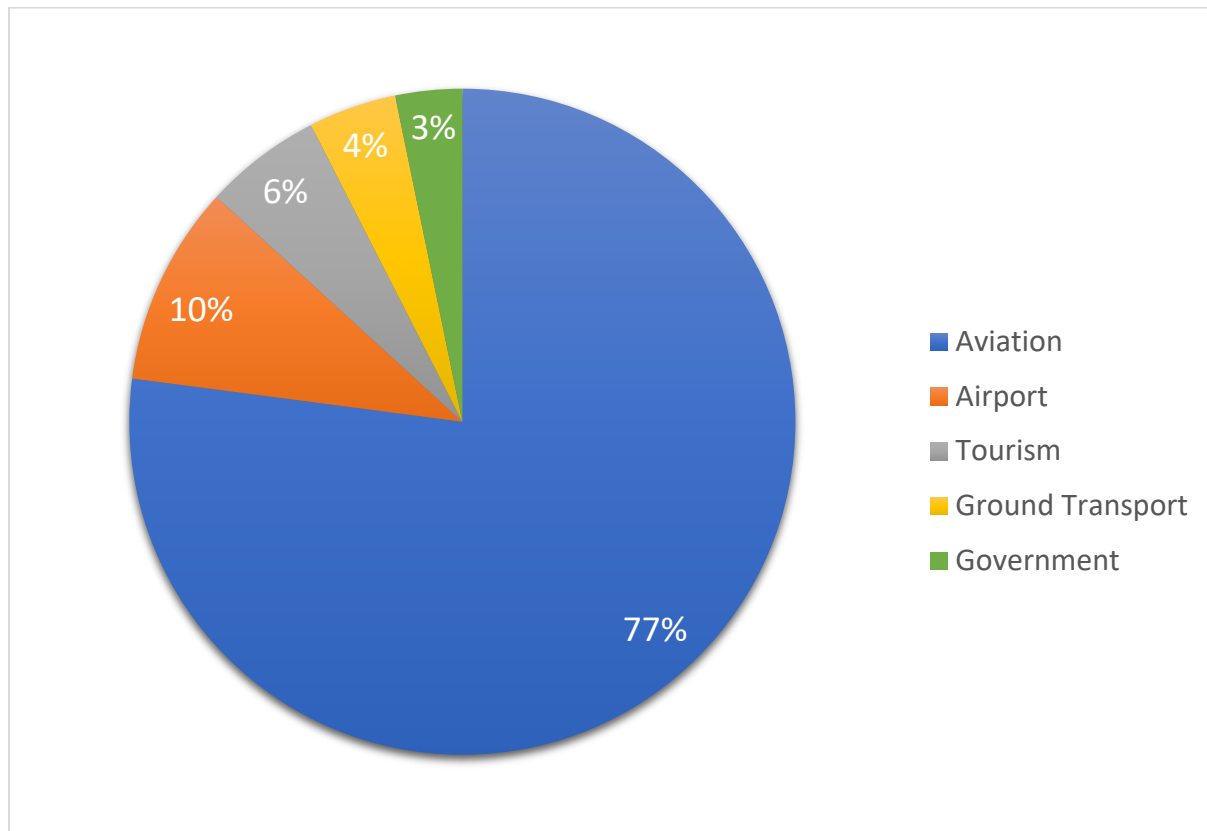
Direct employment related to airport operations includes 103 jobs, including airport operations related to the airport such as employment on flights arriving at and departing from Muskoka. Adjusting for seasonal and airport employment, this is the equivalent of approximately 77 full-time employees (FTEs). Employees at the airport earned approximately \$5.2 million in wages and benefits, yielding an average of \$67,000 per person per year in income. Employment figures are summarized in **Table 3-1**.

Table 3-1: Direct Employment and Wages

Employment (Jobs)	Employment (FTEs)	Income (\$ millions)
103	77	5.2

The relative scale of employment by industrial sector related to airport operations is shown in **Figure 3-1**. Air transportation accounts for the greatest number of jobs (77%), followed by airport operations (10%), tourism (6%), ground transportation (4%), and government (3%).

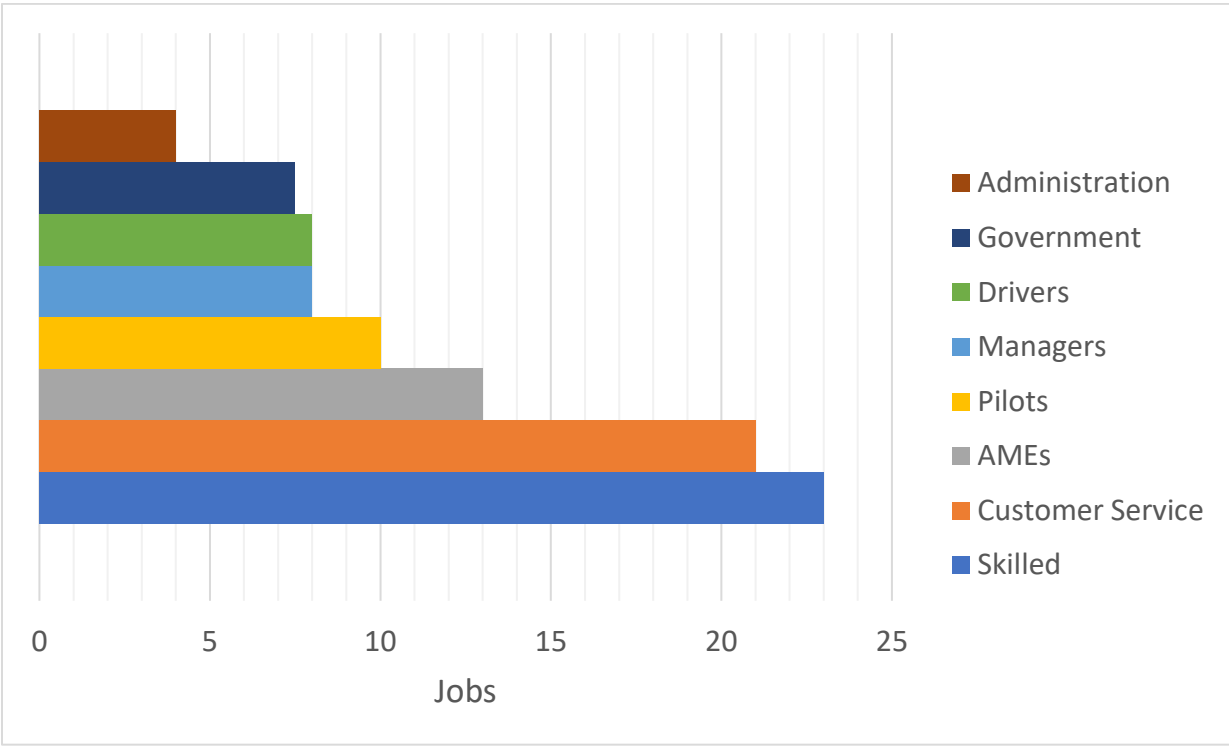
Figure 3-1: Share of Employment by Sector



Total by Job Type

Based on the survey, **Figure 3-2** displays the direct jobs at and related to the airport. AMEs are Aircraft Maintenance Engineers. Jobs related to airports are typically more skilled and higher paying than employment in the general economy.

Figure 3-2: Employment by Job Type



Total Economic Impacts

The economic measures for the airport's GDP and Output have also been measured using multiplier analysis and are shown in **Table 3-2**.

Direct impacts are approximately:

- \$10.0 million in GDP, and
- \$23.1 million in Output.

Table 3-2 : Direct GDP and Output

	Employment (FTEs)	Income (\$ Millions)	GDP (\$ millions)	Output (\$ millions)
Direct	77	5.2	10.0	23.1

Using the direct economic numbers gathered via the survey, the indirect and induced impacts for the airport were analyzed using multiplier analysis. The direct, indirect and induced impacts are added together to calculate the total impacts.

The total impacts for the Muskoka Airport in 2019 are approximately

- 179 FTEs
- \$11 million in income,
- \$22.6 million in total GDP, and
- \$46.7 million in total Output.

Table 3-3 provides each category of impact for 2019, Direct, indirect and induced for employment, income, GDP and Output.

Table 3-3: Total 2019 Economic Impacts

	Employment (FTEs)	Income (\$ Millions)	GDP (\$ millions)	Output (\$ millions)
Direct	77.2	5.2	10.0	23.2
Indirect	63.9	4.1	7.7	16.2
Induced	38.3	2.0	5.0	7.4
TOTAL	179.4	11.3	22.6	46.7

Note: columns may not add as a result of rounding

4. Capital Spending Impacts

Construction projects also generate significant economic impact. The airport's capital costs in 2019 were \$817,000 in spending by the airport, and this generated employment. Using multiplier analysis, the economic impacts of the capital projects can be analyzed. The direct impacts of the projects included:

- 4 jobs
- \$260,000 in income
- \$320,000 in GDP, and
- \$866,000 in Output.

Total impacts are provided in the table below.

Table 4-1: Capital Spending Impacts, 2019

	Jobs	Income	GDP	Output
Direct	3.6	\$260,000	\$320,000	\$866,000
Indirect	2.6	\$178,000	\$294,000	\$575,000
Induced	1.5	\$77,000	\$195,000	\$284,000
TOTAL	7.6	\$516,000	\$808,000	\$1,726,000

Note: columns may not add as a result of rounding

5. Findings

Findings from this analysis include the following:

- Muskoka Airport supports a wide range of economic activity, and the airport is actively seeking and attracting new businesses. Examples of recent new business include Porter Airlines and FlyGTA, and Skyservice Business Aviation's announcement that it will be expanding at Muskoka.
- The airport generates significant economic impacts, including direct impacts of
 - 77.2 direct FTEs
 - \$5.2 million in direct income
 - \$10.0 million in GDP, and
 - Over \$23 million in Output
- Total airport impacts include
 - 179.4 FTEs
 - \$11.3 million in income
 - \$22.6 million in GDP, and
 - Almost \$47 million in Output

Appendix A: Survey Methodology

The economic impact survey conducted for this project was targeted at businesses which operate at the Muskoka Airport or conduct economic activity related to the airport.

Purpose

An economic impact survey was designed to measure and understand the economic activity at the airport in 2019. As the airport is important to tourism in the region, tourism related companies were invited to participate via a link on Explorers Edge's website.

Survey Design

SurveyMonkey.com was used to distribute the survey to facilitate distribution and to increase the ease of response for respondents. The survey design focuses on employment.

Distribution

The survey list was developed in coordination with the Airport, and was sent by the Airport to companies at the site or using the site. Explorers Edge also invited tourism companies to respond to the survey. The airport distributed an email with an electronic link to the survey to these companies. Companies entered data for their own responses. When companies/organizations did not respond, attempts were made to contact them by telephone.



Response Rate

Thirty-five questionnaires were sent to airport tenants and businesses. Many of these were tenants with a hangar who may have no economic activity but were offered the chance to respond. Nineteen survey responses were received, nine from airport organizations / companies, and 10 from tourism related organizations. Of airport surveys, a 27% response rate was achieved which is good, particularly considering that many of those surveyed probably do not generate economic activity.

Additional Sources

Survey results have been supplemented by on-line searches and interviews to check and add facts, and to understand regional and industry context.

Appendix B: Survey Example

A reproduction of the on-line survey is shown on the following pages.



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NANAIMO AIRPORT ECONOMIC IMPACT ASSESSMENT AND FORECAST



Final Report



Nanaimo Airport Economic Impact Assessment and Forecast

FINAL REPORT

Prepared by:

VANN STRUTH CONSULTING GROUP INC.

For:

NANAIMO AIRPORT COMMISSION

January 2017

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EXECUTIVE SUMMARY

Nanaimo Airport has been one of the fastest-growing airports in British Columbia in recent years. It is reaching passenger growth forecasts years ahead of schedule and is in need of a further expansion to the air terminal building and runway apron.

This report provides an analysis of Nanaimo Airport's economic impacts in these areas: (1) the direct, indirect and induced impacts of the operation of the airport and its tenants, (2) the impacts of ongoing construction at the airport over the next 20 years, including core infrastructure like the terminal building and runway apron, as well as significant development of vacant airport lands, (3) the estimated tourism impacts from regional visitors who travel through the Nanaimo Airport, and (4) the catalytic impacts of the airport in supporting trade, investment, and labour productivity, particularly in key sectors like post-secondary education, technology, and real estate.

Catalytic Impacts

Studies of catalytic impacts at a national and international level have identified a variety of economic benefits from increased air connectivity, including higher GDP growth, more international trade linkages, increased foreign direct investment and enhanced labour productivity (which leads to higher personal incomes). The same level of analysis is not possible for individual airports and regions, but through a combination of recent growth trends and input from business and community leaders, there is strong evidence in favour of the airport's catalytic role in maintaining a strong regional economy. Given this role, it becomes a priority to ensure that the necessary facilities and infrastructure is in place to allow for continued airport growth to occur.

Current and Forecast Economic Impacts

Based on employment, financial and passenger information, the Nanaimo Airport's estimated economic impacts in 2016 include 625 jobs from airport operations, a further 600 jobs from airport-supported tourism, and \$229 million in total economic output. These impacts are province-wide, but the majority of the impact is felt in Nanaimo and the surrounding region.

The airport's future impacts are forecast based on passenger traffic projections from SNC-Lavalin. Both current and forecast impacts are summarized below.

	2016	2021	2026	2031	2036
Passenger Traffic	340,861	418,000	484,000	555,000	628,000
Airport and Tenant Impacts					
Employment Impact (Jobs)	625	1,245	1,895	2,525	3,140
Economic Output	\$136 million	\$243 million	\$353 million	\$463 million	\$569 million
Airport-supported Tourism					
Employment Impact (Jobs)	605	745	860	985	1,115
Economic Output	\$93 million	\$114 million	\$132 million	\$152 million	\$172 million
Total Impacts					
Employment Impact (Jobs)	1,230	1,990	2,755	3,510	4,260
Economic Output	\$229 million	\$358 million	\$486 million	\$614 million	\$741 million

1 INTRODUCTION

Nanaimo Airport has been one of the fastest-growing airports in British Columbia in recent years. Passenger traffic increased by 130% from 2009 (when a significant runway expansion project was completed) to 2016 and the Airport has added additional routes, air carriers and flight frequencies. Commercial activity has also increased with the addition of daily FedEx Express service and annual employment growth ranging from 2-5% per year for non-passenger-related airport tenants.

Recent growth has far exceeded projections prepared in 2007,¹ which forecast about 300,000 passengers by 2021. That threshold was surpassed six years early.

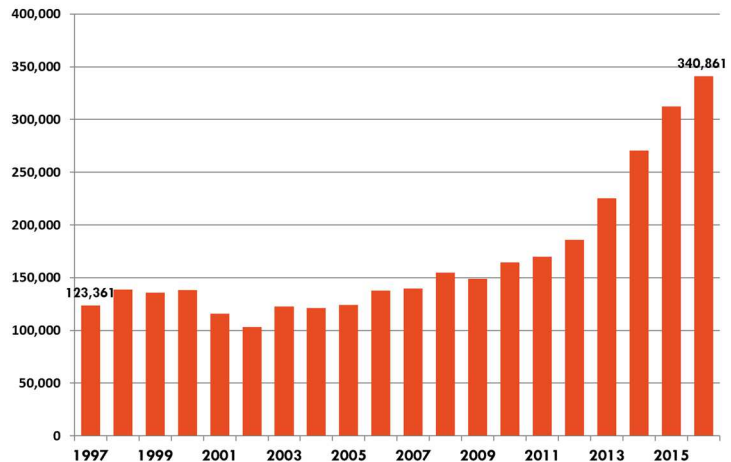
In percentage terms, Nanaimo Airport growth from 2009 to 2015 (the latest year with comparable data) ranked 2nd among larger BC airports. It will rank 1st once 2016 data is released as Fort St. John traffic declined in 2016.

Considering this impressive growth record, the airport needs further expansion to the air terminal building and runway apron. Recent passenger growth projections prepared by SNC Lavalin² suggest the airport will surpass 400,000 passengers by 2020 on its way to 750,000 passengers by 2044 (based on a medium growth scenario), but will require further capital improvements to achieve this growth. If growth in airport activity is constrained by existing facilities and infrastructure, the associated economic activity in Nanaimo and the surrounding region will be similarly constrained.

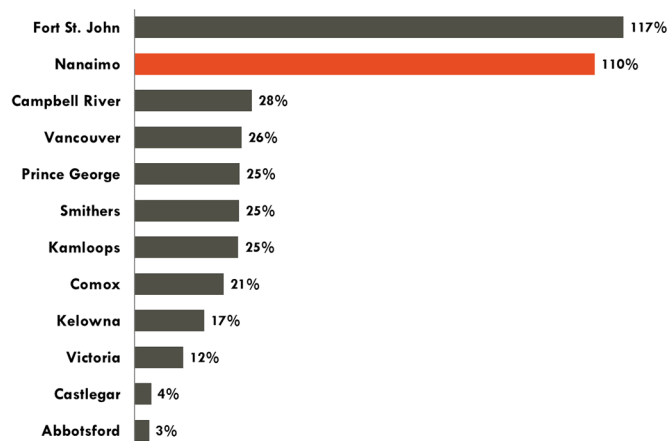
This report provides an updated estimate of the current economic impact of the Nanaimo Airport, including airport and tenant operations, ongoing construction of both airport facilities and adjacent commercial land, the tourism impact of airport users, as well as the “catalytic” role of the airport in

Nanaimo Airport Passenger Traffic, 1997-2016

(Source: Nanaimo Airport Commission)



Growth in Passenger Traffic, Selected BC Airports, 2009-2015
(Source: Destination BC)



¹ Jacobs Consultancy, “Nanaimo Airport Aviation Activity and Forecasts,” March 2007.

² SNC-Lavalin, “Passenger Terminal Demand-Capacity Assessment and Preliminary Expansion Options: Final Report,” October 2015.

supporting a wide range of economic sectors and key institutions in Nanaimo and the surrounding region.

The study also includes an updated forecast of future economic impacts that will be achieved provided currently planned capital improvements are completed and projected growth in passenger traffic (and related activity) is achieved.

Economic Impact Overview and Limitations

The economic impact calculations found in this report are estimated using Statistics Canada's input-output model.³ There are three types of impacts:

- The **direct effect** is the total revenue and employment of the airport itself and airport tenants. For construction, the direct effect is based on the initial spending on construction contractors and other service providers while for tourism, the direct effect is based on the initial spending infusion by tourists across a wide range of local and regional businesses (hotels, restaurants, retail shops, etc.).
- The **indirect effect** is generated by the suppliers to all of the industries who receive direct revenue, as well as the full chain reaction of suppliers to the suppliers throughout the production stream. As the direct industries increase production, they increase demand for inputs (supplies and services), which increases demand for inputs to those inputs, and so on.
- The **induced effect** is created by the increased household income received by those involved in the production of direct and indirect goods and services. The income is used to purchase the typical range of household items, creating another cascade of impacts among all the suppliers of household goods and services, including food, shelter, transportation, personal services, entertainment, etc.

The input-output model converts the direct spending by the airport and its tenants and tourists into employment and other economic impacts at the provincial level. **Economic Output** is the total dollar increase in expenditures in the economy, including the direct, indirect, and Induced impacts. Note that it also includes the purchase of intermediate inputs that are used to produce final goods and services. **GDP (Gross Domestic Product)** is the total "value-added" generated in the economy, meaning that the value of intermediate inputs is excluded. **Employment** may be expressed as "jobs" for ongoing impacts or as "person-years" for short-term impacts like construction. **Labour Income** is the total wages earned by workers at all levels of the provincial supply chain.

In addition to the standard direct/indirect/induced impacts, the report also discusses the **catalytic effect** of the airport. Air travel in the modern economy is part of the fundamental economic infrastructure of a region and influences personal and business location and investment decisions far beyond what is evident in the standard economic impact approach. These impacts are discussed in Section 5 of the report.

³ The most recent multipliers published by Statistics Canada are for 2010. All multipliers have been adjusted to take account of average BC wage growth and general price inflation since that time.

2 AIRPORT AND TENANT OPERATING IMPACTS

The ongoing operations of the Nanaimo Airport and the tenants on airport land are continually evolving in response to changing passenger levels and economic conditions in the Nanaimo area. Over the 20-year time horizon of this study, there is expected to be a continual stream of new construction and development, including both airport facilities like the terminal building and runway apron, as well as development of the significant volume of vacant and developable airport land for a variety of aviation-related and general commercial purposes.

2.1 Airport Operations

The Nanaimo Airport Commission (NAC) has an annual operating budget of about \$3.5 million and direct employment of 14 positions in 2016. An additional 12 people are employed through Executive Flight Centres, which provides aviation support services including emergency response, firefighting and security.

The airport budget directly supports other local employment through contracts for service, including landscaping, HVAC and electrical contractors, janitors, vehicle maintenance, wildlife control, marketing and promotions, finance and insurance, hydrogeologists, vegetation and other scientific specialists, planning and development consultants, and others. The employment impact of this spending typically amounts to some portion of a full-time-job, but is estimated to be an additional 12 full-time-equivalent jobs.

Going forward, most airport-related functions will grow in proportion to the projected increase in passenger traffic.

2.2 Airport Tenants

A much larger concentration of employment can be found among the airport tenants, most of whom are located at the airport either due to the critical nature of airside access (e.g., air cargo firms, aviation fuel providers) or because they provide services to airport passengers and other businesses (e.g., baggage handlers, taxi and car rental firms, restaurants).

Reported employment among airport tenants in 2016 includes the following:

- 53 jobs with the air carriers (Jazz Aviation, WestJet Encore, Island Express Air)
- 129 jobs in airside businesses (those with direct, secure access to the air field), including aircraft hangars, baggage handlers, security firms and maintenance and fuel providers
- 39 jobs in airport-reliant groundside businesses, including a restaurant and car rental firms
- 45 jobs in ground transportation businesses, including taxis, a shuttle service and couriers
- A further 36 jobs are in other groundside businesses that are not directly airport-reliant, including a golf course, farm and RV sales outlet

Projected growth in airport tenant employment is largely determined by the amount of available land that will be developed over the next 20 years, as well as the additional employment space contained in an expanded airport terminal. Further details on provided in Section 5 (Economic Impact Forecasts).

2.3 Ongoing Construction

Construction is normally treated as a temporary activity in economic impact analysis, but within the 20-year time horizon of this study, the construction of new and expanded airport facilities and of new developments on airport lands will be continual.

The Airport Commission has a 20-year capital plan covering the period from 2017 to 2036 that totals \$76 million in new and replacement infrastructure and major capital equipment for the airport.

In addition, the airport has about 28 ha of vacant land that is expected to be fully developed over the next 20 years. Using a series of assumptions about site coverage and density and building types, the total construction value over this period can be estimated. The key assumptions underlying these calculations are adjusted for the following four development types:

- Type 1: Taxiway (low density, large buildings with minimal office, such as aircraft maintenance and other aviation-reliant uses)
- Type 2: Higher-Value Airport-Reliant (located adjacent to Type 1, often two storeys, higher office component)
- Type 3: Airport-Compatible (hotel, retail, and office uses, such as medical/dental or finance/insurance to serve airport workers and passengers and the surrounding community)
- Type 4: Prestige Highway Development (lands fronting on the Island Highway, largely retail, food service and other highway commercial uses)

The specific development densities and construction costs for each category are based on a mix of direct observation of existing airport development, as well as legislated maximums in other rural areas of the Regional District of Nanaimo, past consultant studies for comparable BC communities, input from the airport's construction managers, and published construction cost figures from Butterfield Development Consultants for the Nanaimo market.

Table 1. Land Development Assumptions for Vacant Airport Lands (including site costs)

Land Type	Approximate Land Area	Floor Area Ratio	Building Area	Construction Costs (per sf)	Construction Costs (Total)
Type 1: Taxiway	7.0 ha (17.2 acres)	0.25	188,000 square feet	\$150	\$28 million
Type 2: Higher-Value Airport-Reliant	3.2 ha (7.9 acres)	0.5	172,000 sf	\$210	\$36 million
Type 3: Airport-Compatible	3.4 ha (8.3 acres)	0.55 (hotel) 0.4 (other)	160,000 sf	\$260 (hotel) \$170 (other)	\$32 million
Type 4: Prestige Highway Development	14.2 ha (35.2 acres)	0.25	383,000 sf	\$170	\$65 million
Total	27.8 ha (68.6 acres)		904,000 sf		\$162 million
Annual Average over 20 Years			45,000 sf		\$8.1 million

It is assumed for purposes of this analysis that construction is constant over the next 20 years. The annual expenditure of about \$3.8 million on airport facilities and \$8.1 million in land development will support an estimated 60 direct jobs.

2.4 Summary of Operating Impacts

In addition to the direct spending and employment figures cited above, Table 2 shows other economic impacts including indirect and induced employment, total economic output (equivalent to total spending in the economy), total labour income, and total gross domestic product (GDP), which is the value-added component of total spending. All impacts are for the BC economy.

Table 2. Estimated Economic Impacts of Nanaimo Airport and Tenant Operations, 2016

Impact	Airport and Tenant Operations	Annual Construction*	TOTAL OPERATING IMPACTS
Direct Employment	355	60	410
Indirect/Induced Employment	170	40	210
Total Employment	525	100	625
Total Economic Output	\$115 million	\$21 million	\$136 million
Total Labour Income	\$34 million	\$7 million	\$41 million
Total Value Added (GDP)	\$58 million	\$11 million	\$69 million

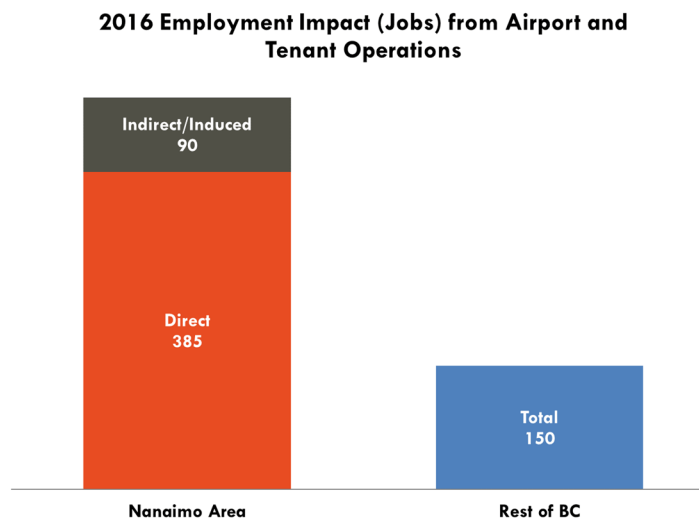
*Note that the assumed level of construction in 2016 is the same as the 20-year average from 2017 to 2036.

In addition to the BC-level impacts outlined above, it is possible to provide a general estimate of employment in the Nanaimo area.⁴ The calculation assumes that all ongoing service contracts at the airport are held by local firms (either Nanaimo or surrounding communities) and the majority (75%) of construction contracts are also done locally. Some specialized services and equipment are assumed to be sourced from Vancouver.

⁴ The local analysis relies on a now dated report from BC Stats, "Local Area Economic Dependencies: 2006," released in 2009. This report shows that local employment multipliers were relatively stable in BC communities from 1991 to 2006, but due to the age of the local multiplier regardless, the Nanaimo-area employment estimates should be interpreted with caution.

In total, of the 625 BC jobs associated with Airport and tenant operations in 2016, an estimated 475 jobs are in the Nanaimo area.

This includes 385 direct and 90 indirect and induced jobs in the local area.



3 TOURISM IMPACTS

The Nanaimo Airport directly supports the tourism industry by providing a gateway for visitors to the region. The tourism economic impacts that are tabulated below are based on the estimated tourist expenditures in Nanaimo and the surrounding region from visitors who arrive at the airport.

Based on passenger surveys conducted by volunteer ambassadors at the airport in 2014 and 2016, in the range of 40-50% of passengers live somewhere other than Vancouver Island. For purposes of this analysis, the following assumptions are used to generate estimated tourism expenditures for 2016:

- Total passenger traffic was 340,861 in 2016.
- The 2014 survey reported that 52% of passengers were off-Island residents while the 2016 survey reported an off-Island figure of 38%. Using a conservative assumption near the low end of that range, an estimated 40% of 2016 passengers live somewhere other than Vancouver Island. This yields an estimated number of tourist flights of 136,000, which are assumed to be evenly split between arrivals and departures. **The estimated number of tourist arrivals at Nanaimo Airport is 68,000.**
- Based on Statistics Canada's Travel Survey of Residents of Canada, the average trip duration for trips to British Columbia (including by BC residents) is 5.7 nights.⁵ While this may undersell the longer trips typical of international visitors, it is considered a reasonable and conservative estimate for this analysis. **Total visitor-nights from airport passengers are estimated at 389,000.**
- Based on the same Statistics Canada survey cited above, average per day spending for commercial air travelers in BC was \$151 in 2014 (which is inflated to \$156 per day for 2016). **Direct tourist expenditure from Nanaimo Airport passengers was an estimated \$61 million in 2016.**

These expenditures are distributed across a range of tourism-reliant businesses, based again on the Statistics Canada travel survey. Some of the primary recipients of tourist spending include accommodation providers, restaurants and pubs, transportation providers,⁶ food stores and a wide variety of other retail outlets and service providers.

Not all of the tourist spending is absorbed within the Nanaimo region as some visitors may stop over if they are flying through Vancouver, for example, and many are likely to purchase various items not sourced within the airport's primary market area. The economic impacts from airport-supported tourism are summarized in Table 3.

⁵ Data from Cansim table 426-0026 for 2014.

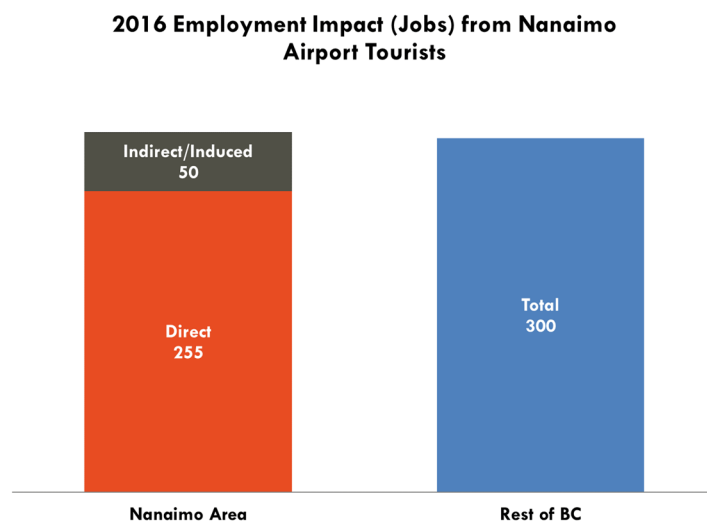
⁶ Note that tourist spending on rental cars and airfare has been removed from the impact calculations to avoid double-counting with the airport employment already included in Section 3.

Table 3. Estimated Economic Impacts from Tourists Arriving at Nanaimo Airport, 2016

Impact	Nanaimo Airport Tourists
Direct Employment	420 jobs
Indirect/Induced Employment	190 jobs
Total Employment	605 jobs
Total Economic Output	\$93 million
Total Labour Income	\$30 million
Total Value Added (GDP)	\$48 million

Many tourists flying through the Nanaimo Airport are likely venturing to other parts of Vancouver Island, such as Tofino/Ucluelet, the North Island, the Comox Valley, or any of the many Gulf Islands.

Assuming total tourist spending is split evenly between the local Nanaimo area and other BC locations, the employment impacts are also evenly split (an estimated 305 jobs in the Nanaimo area and 300 jobs in the rest of BC).



4 CATALYTIC IMPACTS

Catalytic impacts are part of an emerging focus in airport analysis that recognizes the fundamental role that air connectivity can play in economic development.⁷ Some of the more common catalytic impacts include enhancing tourism, improving export and trade opportunities for local businesses, making the area more attractive as an investment location, and generating overall improvements in productivity by improving the frequency, speed, reliability and affordability of transportation and shipping options.

4.1 Global Overview

The groundbreaking work in this field was conducted in Europe and uses advanced statistical methods and other intensive research techniques to estimate impacts on the overall economy due to the presence of air travel. The most prominent early study⁸ showed that air transport usage boosted European GDP by 4% by 2003 and would continue to support GDP growth on a higher track for at least the next several decades. A more recent study⁹ suggested that a 10% increase in air connectivity (based on a “connectivity index” incorporating flight frequencies and variety of destinations) led to an increase of 0.5% in GDP per capita for the average European nation.

Closer to home, the Canadian Airports Council (CAC) funded a 2013 national economic impact study that showed strong links between flight connectivity to a country and Canada’s level of international trade with that country.¹⁰ The CAC study also summarized prior research showing a link between a country’s flight connectivity and its stock of foreign direct investment (FDI),¹¹ as well as research completed for the International Air Transport Association (IATA) that showed a statistical link between air connectivity and labour productivity.¹²

At a national and international level, the evidence in favour of the catalytic effects of air connectivity is strong and nearly all studies that attempt to quantify these effects have been completed at the national or supra-national level. A review of around 20 economic impact studies for individual airports in Canada, the United States and Europe suggests that catalytic impacts are often recognized and discussed, but not quantified. This is likely due to the lack of required data for sub-national regions on international trade flows, local labour productivity measures, regional GDP and other key variables.

The approach in this report is to provide comment and circumstantial evidence on the growth of several key airport-related sectors in Nanaimo and the surrounding region at the same time that the Nanaimo Airport has experienced significant passenger growth. It is not possible to definitively establish causation, meaning that we cannot say for sure that airport growth has caused a given

⁷ Alternative approaches to the economic impact analysis of airports are summarized in Transportation Research Board of the National Academies, “Airport Economic Impact Methods and Models: A Synthesis of Airport Practice,” sponsored by the Federal Aviation Administration, 2008.

⁸ Oxford Economic Forecasting, “The Economic Catalytic Effects of Air Transport in Europe,” prepared for the European Organisation for the Safety of Air Navigation EUROCONTROL, July 2002.

⁹ InterVISTAS, “Economic Impact of European Airports: A Critical Catalyst to Economic Growth,” prepared for ACI Europe, January 2015.

¹⁰ SNC-Lavalin Inc. and Conference Board of Canada, “The Economic Impact of Air Transportation Industry in Canada,” prepared for the Canadian Airports Council, April 2013.

¹¹ Oxford Economics, “Economic Benefits from Air Transport in Canada,” 2011.

¹² International Air Transport Association, “Aviation Economic Benefits,” 2007.

percentage of growth in other sectors. But the observed correlation between sector growth and airport growth, combined with insight from local business leaders and public officials on the Airport's role, provides strong evidence of the link between the success of the Nanaimo Airport and overall economic development in the surrounding region.

4.2 Nanaimo Airport Growth Context

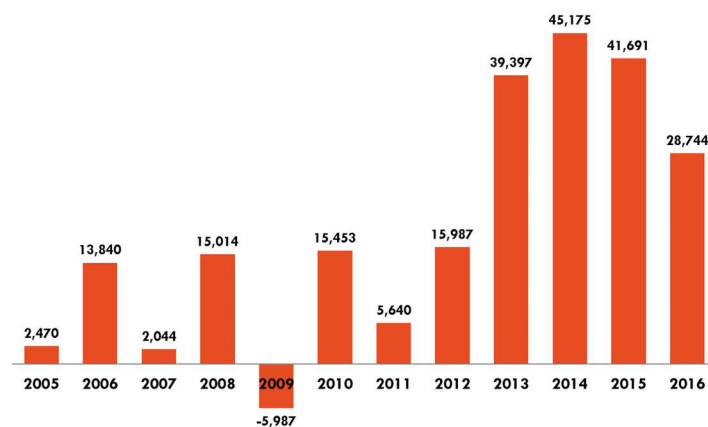
A significant runway extension was completed at Nanaimo Airport in 2009, coinciding with a down year in the provincial and global economies in the aftermath of the financial crisis of late 2008.

Passenger growth continued its upward trajectory after 2009 and seriously accelerated in the 2013-2016 period.

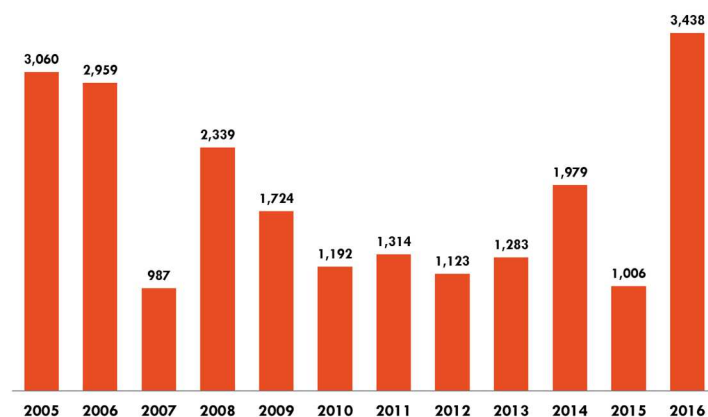
Population growth in the Regional District of Nanaimo (RDN) has been steady and ranks as one of the fastest-growing regions in BC over the last several decades. According to BC Stats estimates, the RD added more than 3,400 people in 2016, its largest population increase since 1995.

Note the same pattern is evident for the Nanaimo Airport's entire primary service area, which also includes the Cowichan Valley and Alberni-Clayoquot Regional Districts. Population growth in the combined region is currently slower than it was around 10 years ago, but had its best growth performance in 10 years in 2016.

Annual Change in Nanaimo Airport Passenger Traffic, 2005-2016 (Source: Nanaimo Airport Commission)



Annual Change in RD of Nanaimo Population Estimate, 2005-2016 (Source: BC Stats)



Construction investment intentions, as measured by building permit values, are another indicator that is following the same pattern in both the RDN and the broader region. Values in 2014 and 2015 returned to the same level as the pre-2009 period for the first time (recognizing that these figures are not adjusted for inflation and \$300 million in 2015 paid for less building than it did in 2005).

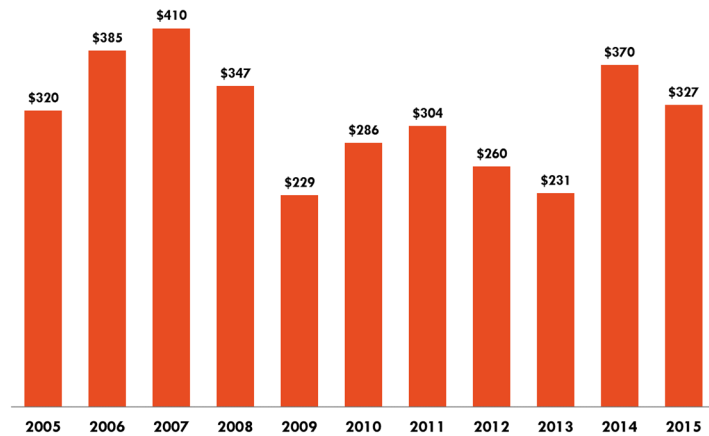
The positive trend continues for the available 2016 data. Through November, there has been a further 23% increase over 2015, reaching the highest 11-month total since 2007.

The rate of new business formation, as measured by incorporations, is relatively consistent from year to year, but shows a notable spike upward in the last three years in the RDN.

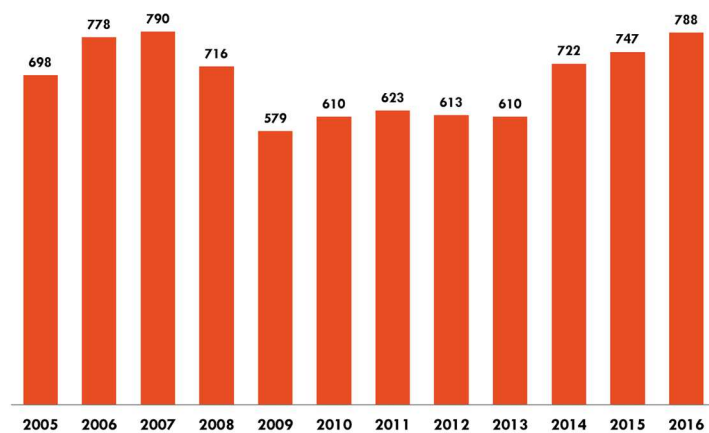
All of these indicators, whether measuring population growth or construction investment or new business formation, are showing a notable increase in activity in the last few years, coinciding with rapid growth in airport passenger traffic. The airport added

direct flights to Calgary in 2013 and had direct flights to Seattle and Edmonton for a period of time in 2014-2015. Certainly there is a symbiotic relationship between airport services and economic activity as the extra activity in Nanaimo and the surrounding region is a key driver of the additional passenger traffic. But a certain amount of the new activity was likely enabled, in part, by having more frequent flights to Vancouver and the addition of new destinations like Calgary.

Total Building Permit Values in RD of Nanaimo
(\$millions) (Source: BC Stats)



Business Incorporations in RD of Nanaimo
(Source: BC Stats)



Insight from the Greater Nanaimo Chamber of Commerce is that the local business community has watched the airport's growth with excitement. Its success helps to build pride of place in Nanaimo when everyone sees this aspect of the community doing so well.

Anecdotally, certain local businesses have particularly benefited. These include couriers and businesses that are particularly reliant on shipping across Canada, including Tilray.

The Alberta connection that has been established will be very important to the Greater Nanaimo economy going forward, along with having excellent connections to Vancouver and Victoria. A useful ambition is a direct flight to Kelowna that would tap into networks throughout BC.

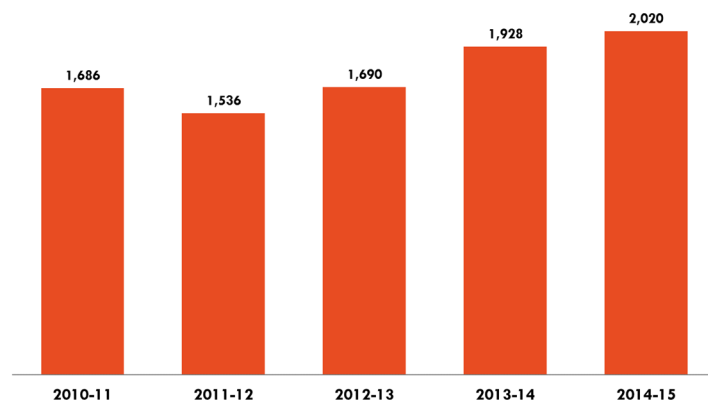
4.3 Post-Secondary Education

The post-secondary education sector, particularly Vancouver Island University (VIU), is a heavy user of Nanaimo Airport. One of the ways that VIU is most reliant on the airport is for the growth of the international student market.

VIU's international student count has increased significantly in the last few years, averaging 10% growth per year in the last three years. This provides another example of a local sector that has seen a significant growth spike at the same time as airport traffic.

In addition to international students, post-secondary institutions benefit from convenient air links to major centres of government (e.g., Victoria, Ottawa) and business (e.g., Vancouver, Calgary) for both administrative and academic personnel. Research partners, guest speakers and lecturers, funding agency representatives and sponsors are among the regular users who benefit from improved air linkages.

International Students at Vancouver Island University
(Source: VIU)



According to VIU, the vast majority of international students first arrive in Nanaimo through the airport, usually after connecting flights to Vancouver. Frequent and reliable air access to Vancouver is critical for the international student market, which attracts students from Asia (China, Japan, India, South Korea), the Middle East (Saudi Arabia), Africa (Nigeria) and Europe (Germany) among its top seven markets.

Going forward, the greatest benefit to international education at VIU is more flights to Vancouver, although the recent improvements that increase flight reliability in foggy conditions have also been an important benefit. Future direct flights to international markets (Seattle, Los Angeles) are a potential longer-term aspiration.

The economic impact of continued expansion of VIU's international student population is significant. A recent study on the economic impact of international education in BC showed for every 100 international post-secondary students, BC gains about 25 direct and indirect jobs and \$1.6 million in provincial GDP.¹³

4.4 Technology Sector

In some ways, the technology sector is like any other economic sector in Nanaimo that benefits from the convenience and logistical support provided by a thriving and expanding Nanaimo Airport. But there are several other ways in which the technology sector is more affected than most by the quality of air service.

Technology businesses are often connected to national and international networks to a greater degree than other local sectors. Smaller firms and individual technology workers are often employed or work as contractors for larger firms based in major centres like Vancouver, Seattle, Silicon Valley and elsewhere. They require convenient air access to visit clients and employers on at least a semi-regular basis.

By definition, technology companies are on the cutting edge of creating and adapting advanced technology and the market for such innovative new products and services is often global in scale. This requires convenient access to clients for sales or trouble-shooting anywhere in the world.

The global nature of the sector also makes it extremely competitive. Companies with an opportunity need to move fast and sometimes build teams very quickly, meaning that both talented workers and the capital required for growth are recruited from around the world. Air linkages are often an important consideration for workers considering moving to a new and/or smaller urban centre, as well as investors who want convenient access to stay in touch with their investments.

Unfortunately, there are no recent data sources that isolate the growth of the technology sector in Nanaimo or the broader region. A recent report on the economic impact of the technology sector in the RD of Nanaimo in 2012 showed a total employment impact (including direct, indirect and induced

¹³ Roslyn Kunin & Associates, Inc., "An Update on the Economic Impact of International Education in British Columbia," prepared for the BC Council for International Education, November 2013.

effects) of 2,730 jobs.¹⁴ It should be noted, however, that the study used a BC Stats definition of high technology that includes industries that are heavy users of technology (such as various professional services firms like engineers and architects) rather than just firms engaged in the more “pure” activities of creating technology and commercializing intellectual property.

According to Innovation Island, the airport is fundamental to the technology sector. Expanding the local pool of skilled labour is always an important challenge and having more flights enhances the region’s appeal to talented individuals. But perhaps most important is the ease with which local companies can bring investors to the area, making it easier for them to attract necessary funding.

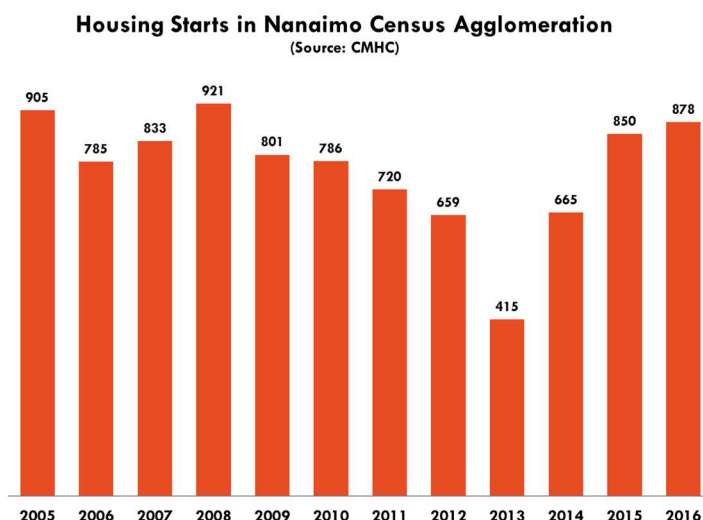
Looking forward, the next evolution for Nanaimo Airport that would most benefit the tech sector would be to add direct flights to San Francisco or Seattle. Having direct access to the much larger technology markets in those centres would take Nanaimo and central Vancouver Island to another level in tech sector connectivity.

4.5 Retirees and other Amenity Migrants

The Nanaimo Airport is increasingly viewed as an important lifestyle amenity for a wide range of demographic groups, including the retiree market and other amenity migrants (defined as people who move to a community based on the attraction of natural and/or cultural amenities, rather than purely economic or family motives).

It was shown under section 4.2 that population growth has accelerated in the Nanaimo area in the last several years. Any significant change in population growth from year to year, such as the increase observed recently, is based almost entirely on changes in *net migration*. The number of births and deaths in a community change slowly from year to year, so faster or slower population growth is based almost entirely on the attraction and/or retention of more or fewer residents.

Not surprisingly, the recent increase in population growth is accompanied by an increase in housing starts, which reached their highest level in



¹⁴ Nordicity, “An Economic Impact Analysis of the Nanaimo Technology Sector,” prepared for Nanaimo Economic Development Corporation, February 2014.

eight years in 2016.¹⁵ While there is no way to know from the data what percentage of new residents are retirees or other amenity migrants, anecdotal evidence suggests that people continue to be attracted to Nanaimo and the surrounding region for lifestyle reasons.

According to Re/Max of Nanaimo, the airport is now used as a key selling feature when promoting Nanaimo as a retirement destination. People are attracted by the ease of access to vacation destinations and many maintain business interests or family that they regularly return to visit in their former home (particularly important for retirees attracted from Calgary).

4.6 Tourism

The economic impact of tourists arriving through Nanaimo Airport was estimated in Section 3. But in addition to the quantifiable tourist activity, the airport has a catalytic impact on certain segments of the tourism industry.

In particular, the conference and corporate meetings market is highly reliant on quality air access. Any list of top location factors for conferences and events will invariably list the convenience of air access as a leading factor.

The catalytic potential of the airport also influences the types of tourism attractions and services that are developed. Examples include destination resorts that cater to high-end travelers, or services and attractions that view international visitors (such as group travel from Asia) as a key market. Having direct air access to Calgary, for example, opens up the possibility for short corporate meetings or retreats that would not be possible without a direct flight.

According to Tourism Vancouver Island, Alberta is an incredibly important market for regional tourism. Having and expanding direct air access through the Nanaimo Airport to Alberta is very valuable for the industry.

4.7 Investment Attraction

The literature on the catalytic effects of airports (summarized in section 4.1) suggests that investment attraction is one of the areas that benefits from increased air connectivity. This theme was reflected in the discussion of the technology sector (particularly the improved access for investors to visit Nanaimo) and in feedback from the Greater Nanaimo Chamber of Commerce, which identified multiple businesses that have expanded locally due to the improved air service after 2009.

¹⁵ Housing starts are reported by the Canada Mortgage and Housing Corporation (CMHC) for Census Agglomerations (CAs). The Nanaimo CA include Nanaimo, Lantzville, Areas A and C of the Regional District of Nanaimo, and First Nations Reserves within these areas.

Retirees and amenity migrants, even if they no longer participate in the economy as workers or business owners, are a critical part of the economic base in much of the region and their residential and recreational investments are also a significant benefit.

4.8 Catalytic Impacts Summary

The discussion throughout Section 4 shows that significant growth has recently been occurring in Nanaimo across a range of sectors, demonstrating a high degree of correlation with expanding passenger growth at the Nanaimo Airport.

It makes sense that the airport and sectors that rely on it will grow together. Improving air services make it easier for business, investment and population growth to occur, while expansion in those areas drives higher demand for even more air service. The fact that these sectors are demonstrating a reliance on Nanaimo Airport to help support and facilitate their growth provides strong evidence in favour of the airport's catalytic role in maintaining a strong regional economy.

Given the airport's catalytic role, it becomes a priority to ensure that the necessary facilities and infrastructure is in place to allow for continued airport growth to occur. If airport growth is constricted due to inadequate facilities, all of the sectors that rely on the airport may also have constricted growth potential.

5 ECONOMIC IMPACT FORECASTS

Economic impact forecasts for the Nanaimo Airport are based on passenger traffic projections prepared by SNC-Lavalin in 2015.¹⁶ There were three growth scenarios – a high, medium and low – over a 30-year time horizon. Compared to the 2014 total of 270,000 passengers, the forecasts ranged from growth of 3.5 times under the high scenario to 2.8 times under the medium scenario to 2.0 times under the low scenario as of 2044.

For purposes of this report, the medium scenario is adopted as the basis for the economic impact forecasts. Forecasts are provided for each five-year interval starting in 2021.¹⁷

The projected passenger volume is used as the primary driver of the forecast economic impacts. The assumptions underlying the forecasts are outlined in Table 4.

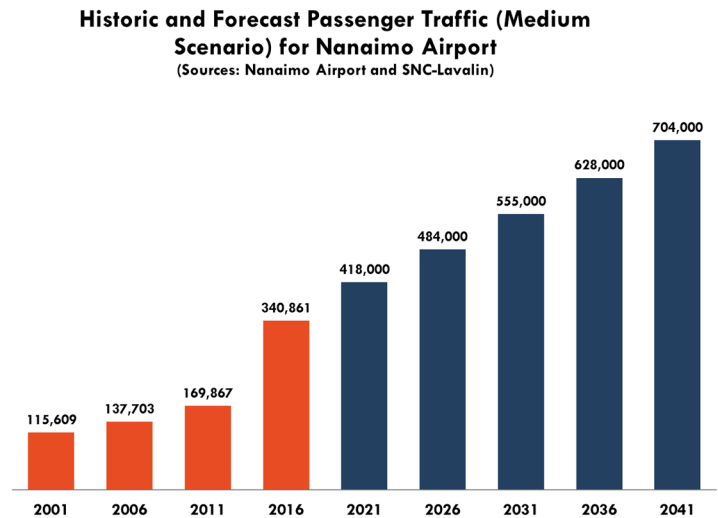


Table 4. Forecast Assumptions for Components of Nanaimo Airport Economic Impact

Component of Economic Impact	Projection Method
Nanaimo Airport Commission	Proportional to passenger growth
Airport Tenants	Proportional to growth in developed land and terminal space (for most tenants). Special growth rates were applied in specific cases, including: <ul style="list-style-type: none"> For air courier/cargo companies, growth to five times current levels by 2034 For NAV Canada, 30% growth by 2030. For a new hotel, completion by 2020 (with an estimated 74 jobs)
Ongoing Construction Impacts	Constant over 20-year period from 2017 to 2036 (as per assumptions outlined in Section 2.3)
Tourism Impacts	Proportional to passenger growth

Applying the forecast assumptions to the passenger projections yields the impacts outlined in Table 5.

¹⁶ SNC-Lavalin, "Passenger Terminal Demand-Capacity Assessment and Preliminary Expansion Options: Final Report," prepared for Nanaimo Airport Commission, October 2015.

¹⁷ The SNC-Lavalin forecasts are annual until 2024 and then subsequent five-year intervals (2029, 2034, etc.). The forecasts shown in the chart (2025, 2030, 2035, 2040) were interpolated from the SNC-Lavalin figures by applying the projected growth rates in each five-year interval.

Table 5. Forecast Economic Impacts at Nanaimo Airport, 2021-2036 (\$2016)

	2021	2026	2031	2036
Passenger Traffic	418,000	484,000	555,000	628,000
Airport and Tenant Impacts				
Employment Impact (Jobs)	1,245	1,895	2,525	3,140
Economic Output	\$243 million	\$353 million	\$463 million	\$569 million
Airport-supported Tourism				
Employment Impact (Jobs)	745	860	985	1,115
Economic Output	\$114 million	\$132 million	\$152 million	\$172 million
Total Impacts				
Employment Impact (Jobs)	1,990	2,755	3,510	4,260
Economic Output	\$358 million	\$486 million	\$614 million	\$741 million

2017 OTTAWA INTERNATIONAL AIRPORT ECONOMIC IMPACT ASSESSMENT



2017 ECONOMIC IMPACTS

IMPACT OF THE AIRPORT OPERATION ON GDP

IMPACT ON THE GDP OF THE OPERATION OF THE OMCA

IMPACT ON GDP (M\$)

TOTAL: **1,043.4**

IMPACT ON EMPLOYMENT AND WAGES

EMPLOYMENT GENERATED BY SECTORS

EMPLOYMENT

TOTAL: **10,776**

WAGES AND SALARIES GENERATED BY THE OPERATION OF THE OMCA

LABOUR INCOME (M\$)

TOTAL: **602.3**

AVERAGE ANNUAL SALARIES FOR THE EMPLOYMENT GENERATED BY THE OMCA OPERATION

AVERAGE FULL TIME EQUIVALENT ANNUAL SALARY

TOTAL AVERAGE: **\$55,893**

IMPACT ON GOVERNMENTAL REVENUES

TOTAL INCOME TAX GENERATED BY THE OMCA OPERATION

TOTAL INCOME TAX (M\$)

TOTAL: **109.9**

PROVINCIAL INCOME TAX GENERATED BY THE OMCA OPERATION

PROVINCIAL INCOME TAX (M\$)

TOTAL: **31.5**

FEDERAL INCOME TAX GENERATED BY THE OMCA OPERATION

FEDERAL INCOME TAX (M\$)

TOTAL: **78.4**

TAXES ON PRODUCTS GENERATED BY THE ACTIVITIES OF THE OMCA

TOTAL TAXES ON PRODUCTS (M\$)

TOTAL: **21.3**

PROVINCIAL TAXES ON PRODUCTS GENERATED BY THE ACTIVITIES OF THE OMCA

PROVINCIAL TAXES ON PRODUCTS (M\$)

TOTAL: **13.1**

FEDERAL TAXES ON PRODUCTS GENERATED BY THE ACTIVITIES OF THE OMCA

FEDERAL TAXES ON PRODUCTS (M\$)

TOTAL: **8.2**

OUTPUT GENERATED BY THE OPERATION OF THE OMCA

TOTAL OUTPUT BY SECTORS

OUTPUT (M\$)

TOTAL: **2,204.8**

TOTAL OUTPUT PER PASSENGER

OUTPUT (\$)

TOTAL: **464.8**

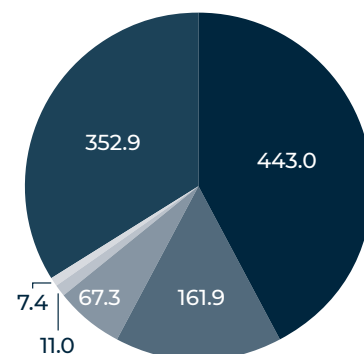
2017 ECONOMIC IMPACTS

IMPACT OF THE AIRPORT OPERATION ON GDP

Impact on the GDP of the operation of the OMCIA

Impacts on GDP (M\$)

Airport administration / Aviation services / Capital expenditures	443.0
Airlines / Cargo / Trucking	161.9
Passenger services (incl. Land transportation)	67.3
Restaurants	11.0
Shops	7.4
Other Industrial / Commercial	352.9
TOTAL	1,043.4

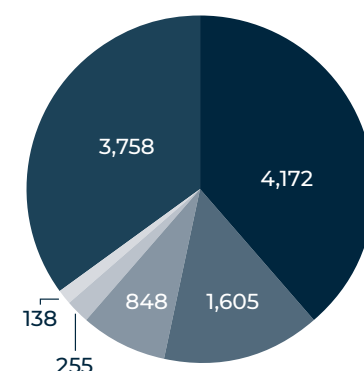


IMPACT ON EMPLOYMENT AND WAGES

Employment generated by sectors

Employment

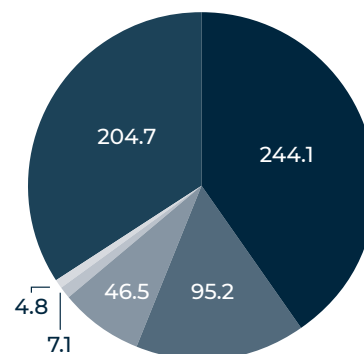
Airport administration / Aviation services / Capital expenditures	4,172
Airlines / Cargo / Trucking	1,605
Passenger services (incl. Land transportation)	848
Restaurants	255
Shops	138
Other Industrial / Commercial	3,758
TOTAL	10,776



Wages and salaries generated by the operation of the OMCIA

Labour Income (M\$)

Airport administration / Aviation services / Capital expenditures	244.1
Airlines / Cargo / Trucking	95.2
Passenger services (incl. Land transportation)	46.5
Restaurants	7.1
Shops	4.8
Other Industrial / Commercial	204.7
TOTAL	602.3



2017 ECONOMIC IMPACTS

Average annual salaries for the employment generated by the OMClA operation

Average Full Time Equivalent Annual Salary

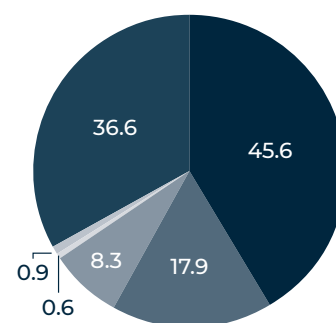
Airport administration / Aviation services / Capital expenditures	58,502
Airlines / Cargo / Trucking	59,302
Passenger services (incl. Land transportation)	54,822
Restaurants	28,021
Shops	34,420
Other Industrial / Commercial	54,460
TOTAL	55,893

IMPACT ON GOVERNMENTAL REVENUES

Total income tax generated by the OMClA operation

Total Income Taxes (M\$)

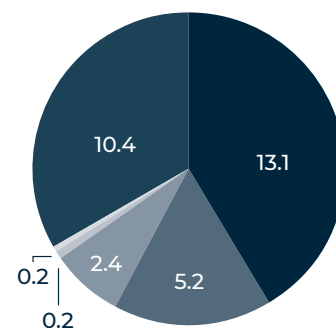
Airport administration / Aviation services / Capital expenditures	45.6
Airlines / Cargo / Trucking	17.9
Passenger services (incl. Land transportation)	8.3
Restaurants	0.9
Shops	0.6
Other Industrial / Commercial	36.6
TOTAL	109.9



Provincial income tax generated by the OMClA operation

Provincial Income Tax (M\$)

Airport administration / Aviation services / Capital expenditures	13.1
Airlines / Cargo / Trucking	5.2
Passenger services (incl. Land transportation)	2.4
Restaurants	0.2
Shops	0.2
Other Industrial / Commercial	10.4
TOTAL	31.5

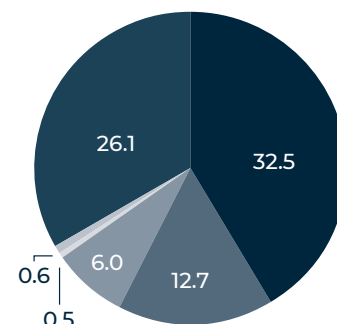


2017 ECONOMIC IMPACTS

Federal income tax generated by the OMCIA operation

Federal Income Tax (M\$)

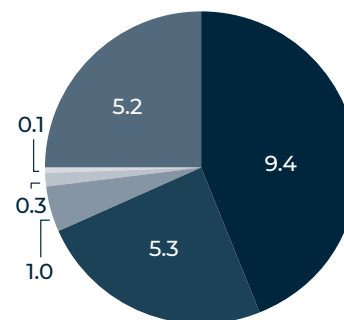
Airport administration / Aviation services / Capital expenditures	32.5
Airlines / Cargo / Trucking	12.7
Passenger services (incl. Land transportation)	6.0
Restaurants	0.6
Shops	0.5
Other Industrial / Commercial	26.1
TOTAL	78.4



Taxes on products generated by the activities of the OMCIA

Total Taxes on products (M\$)

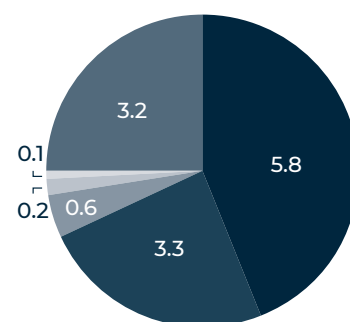
Airport administration / Aviation services / Capital expenditures	9.4
Airlines / Cargo / Trucking	5.2
Passenger services (incl. Land transportation)	1.0
Restaurants	0.3
Shops	0.1
Other Industrial / Commercial	5.3
TOTAL	21.3



Provincial taxes on products generated by the activities of the OMCIA

Provincial Taxes on products (M\$)

Airport administration / Aviation services / Capital expenditures	5.8
Airlines / Cargo / Trucking	3.2
Passenger services (incl. Land transportation)	0.6
Restaurants	0.2
Shops	0.1
Other Industrial / Commercial	3.3
TOTAL	13.1

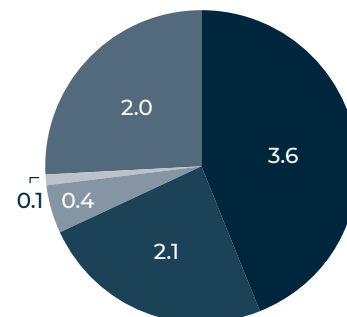


2017 ECONOMIC IMPACTS

Federal taxes on products generated by the activities of the OMCIA

Federal Taxes on products (M\$)

Airport administration / Aviation services / Capital expenditures	3.6
Airlines / Cargo / Trucking	2.0
Passenger services (incl. Land transportation)	0.4
Restaurants	0.1
Shops	0.0
Other Industrial / Commercial	2.1
TOTAL	8.2

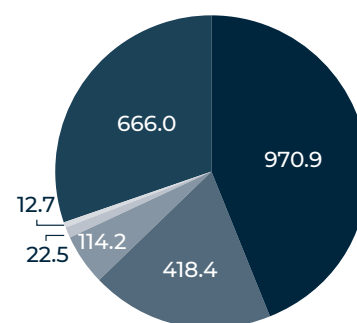


OUTPUT GENERATED BY THE OPERATION OF THE OMCIA

Total output by sectors

Output (M\$)

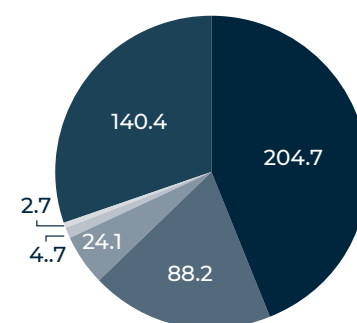
Airport administration / Aviation services / Capital expenditures	970.9
Airlines / Cargo / Trucking	418.4
Passenger services (incl. Land transportation)	114.2
Restaurants	22.5
Shops	12.7
Other Industrial / Commercial	666.0
TOTAL	2,204.8



Total output per passenger

Output (\$)

Airport administration / Aviation services / Capital expenditures	204.7
Airlines / Cargo / Trucking	88.2
Passenger services (incl. Land transportation)	24.1
Restaurants	4.7
Shops	2.7
Other Industrial / Commercial	140.4
TOTAL	464.8



LONG TERM FUTURE ECONOMIC IMPACTS (20 YEARS-2036)

IMPACT OF THE AIRPORT OPERATION ON GDP

IMPACT OF THE AIRPORT OPERATION ON GDP IN 2036

IMPACTS ON GDP (M\$)

TOTAL: **1,569.9**

IMPACT ON EMPLOYMENT AND WAGES

IMPACT OF THE AIRPORT OPERATION ON EMPLOYMENT IN 2036

EMPLOYMENT

TOTAL: **16,213**

IMPACT OF THE AIRPORT OPERATION ON LABOR INCOME IN 2036

LABOUR INCOME (M\$)

TOTAL: **906.2**

IMPACT ON GOVERNMENTAL REVENUES

TOTAL INCOME TAX GENERATED BY THE OMCA OPERATION IN 2036

TOTAL INCOME TAX

TOTAL: **165.34**

TOTAL PROVINCIAL INCOME TAX GENERATED BY THE OMCA OPERATION IN 2036

PROVINCIAL INCOME TAX (M\$)

TOTAL: **47.38**

TOTAL FEDERAL INCOME TAX GENERATED BY THE OMCA OPERATION IN 2036

FEDERAL INCOME TAX (M\$)

TOTAL: **117.97**

TAXES ON PRODUCTS GENERATED BY THE ACTIVITIES OF THE OMCA, 2036

TOTAL TAXES ON PRODUCTS (M\$)

TOTAL: **31.98**

PROVINCIAL TAXES ON PRODUCTS GENERATED BY THE ACTIVITIES OF THE OMCA, 2036

PROVINCIAL TAXES ON PRODUCTS (M\$)

TOTAL: **19.68**

FEDERAL TAXES ON PRODUCTS GENERATED BY THE ACTIVITIES OF THE OMCA, 2036

FEDERAL TAXES ON PRODUCTS (M\$)

TOTAL: **51.66**

OUTPUT GENERATED BY THE OPERATION OF THE OMCA

OUTPUT GENERATED BY THE ACTIVITIES OF THE OMCA, 2036

OUTPUT (M\$)

TOTAL: **3,317.3**

FINAL REPORT:
2011 Prince George Airport (YXS)
Economic Impact Study

InterVISTAS
CONSULTING GROUP

strategic
transportation
& tourism
solutions



Prepared for
Prince George Airport Authority Inc.

Prepared by
Inter VISTAS Consulting Inc.

23 November 2011

Executive Summary

InterVISTAS Consulting Inc. was commissioned by Prince George Airport Authority Inc. to conduct an economic impact study to account for the operations of Prince George Airport (YXS) in 2011.¹ The purpose of this study is to document the economic contribution of the airport, its airlines and their partner businesses to the community and the province.

On-going operations at YXS generate 430 direct person years of employment and \$17 million in direct wages

Direct Economic Impacts

Direct economic impact measures the employment and economic impact directly associated with the airport (e.g., airlines, ground handling, airport operations, air traffic control, etc.). Indirect and induced impacts are multiplier impacts in the wider economy stimulated by the airport's activities (e.g., other businesses that supply goods and services to the airport and spending by airport employees).

Emphasis is placed on the direct economic impacts as these are based on data from the employer survey and are clearly identifiable. The multiplier impacts are inferred from Statistics Canada data and are therefore less definite.

This study found that the direct impacts of YXS in 2011 include:

- 490 **direct** jobs in the Prince George region, representing 430 direct person years of employment.
- The **direct** economic impact of this employment on the provincial economy is:
 - \$32 million in gross domestic product (GDP);
 - \$57 million in economic output; and
 - \$17 million in wages.

¹ Taxation impacts are based on calendar year 2010. Employment, wage, GDP and economic output impacts are based on 2011 operations.

Including indirect and induced impacts, YXS generates a total of 770 person years of employment and \$24 million in wages

Total Impacts

Total impacts are calculated by adding together the direct, indirect and induced impacts. The total economic impacts of on-going operations at YXS on the provincial economy are summarised in Table ES-1.

Table ES-1: On-Going Total Economic Impacts of YXS in British Columbia

Type of Impact	Jobs	Person Years	Wages (\$ Millions)	GDP (\$ Millions)	Economic Output (\$ Millions)
Direct	490	430	17	32	57
Indirect	190	170	4	8	13
Induced	200	170	3	6	11
Total	880	770	24	46	81

The employment survey administered to employers at YXS and related businesses also revealed some interesting characteristics:

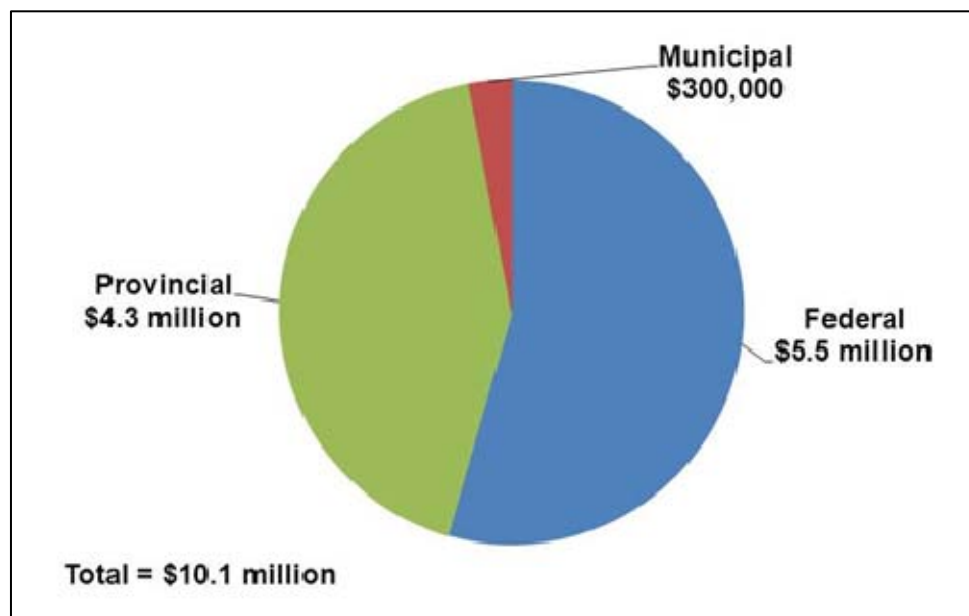
- 92% of jobs at YXS and related businesses are permanent (non-seasonal) and 79% of these are full-time jobs.
- Employees at YXS and other businesses linked to the airport earned over \$17 million in wages, yielding an average of approximately \$40,000 per person year of employment.
- Contract employees and firms providing services to YXS and related firms contributed 23 additional person years of employment, based on survey responses.

On-going operations at YXS generate \$10 million per annum in government tax revenues

Significant Tax Contributions

- On-going economic activity at the airport contributes over \$10 million annually in tax revenue to all levels of government (See **Figure ES-1**):
 - The federal government was the largest recipient of tax revenue, receiving more than \$5 million (55% of total tax revenue).
 - The provincial government received over \$4 million in tax revenue (42% of total tax revenue).
 - The municipal government collected approximately \$300,000 in tax revenue (3% of total tax revenue).
- Approximately 44% of taxes were paid by air travellers, 54% of taxes were paid by employers and their employees, and the remaining 2% by Prince George Airport Authority Inc.
- The Airport Authority made approximately \$210,000 in property tax payments in 2010. The airport authority did not make any federal lease payments to the Federal Government in 2010, and will not be making any payments until 2011. Airport tenants also paid property taxes amounting to over \$100,000 in 2010 to the municipal government.

Figure ES-1: Estimated Annual Tax Revenues to Government



Potential air passenger service to/from Frankfurt could generate an additional 3 direct person years of airport related employment and could stimulate over \$3 million in non-local visitor spending

Microeconomic Impact of Potential Air Passenger Service to/from Frankfurt

Every arrival of a passenger flight at YXS generates labour hours for individuals with jobs involved in handling passengers, their baggage, cargo and the aircraft. In addition, each flight will bring in non-local visitors, who will spend money on hotels, taxis, food and beverage, entertainment, etc. This report includes a micro study that estimates the economic impact generated by a potential international air passenger service to/from Frankfurt, including:

- **Direct Airport Related Impacts:** those associated with employment in the aviation sector directly related to operating and servicing the new air service (e.g., customer services, airline crew based in Prince George, ground handling, cleaning, maintenance and airport staff members, etc.)
- **Direct Visitor Spending Impacts:** economic impacts generated by incremental visitor spending in the area that would be brought about by the new air service (e.g., on food, lodging, entertainment, etc.).

The **combined direct** economic impact of the potential new air service to/from Frankfurt, which combine the impact of the airport related operations and the visitor spending impacts, are shown in Table ES-2.²

Table ES-2: Combined *Direct* Economic Impacts Attributed to the Potential New Air Service to/from Frankfurt

Type of Impact	Employment (Person Years)	Wages (\$ Millions)	GDP (\$ Millions)	Visitor Spending (<i>Economic Output</i>) (\$ Millions)
Airport Related Impacts	3	0.2	0.4	1.0
Visitor Spending Impacts	39	1.1	1.9	3.4
<i>Combined Impacts</i>	<i>42</i>	<i>1.3</i>	<i>2.3</i>	<i>4.4</i>

Notes & Assumptions: The potential air service to **Frankfurt** analysed is operated once weekly seasonal (21 weeks) using a 270-seat B767-300ER aircraft, with an 82% load factor.

² Only the direct impacts are estimated (and not indirect and induced impacts) to mitigate double counting.

Potential air cargo service to/from Asia could generate an additional 4 direct person years of airport related employment

Microeconomic Impact of Potential Air Cargo Service to/from Asia

Each arrival of a cargo flight at Prince George Airport (YXS) generates labour hours for individuals with jobs involved in handling cargo and the aircraft. Micro economic impact studies describe the employment impact of a specific flight moving air cargo through an airport. This analysis looks primarily at the operations of air cargo services to/from YXS. For purposes of this study, the following potential freighter operation was examined:

- A twice-weekly year-round air cargo service to Asia operated using a B747-400 freighter aircraft, with an estimated tonnage of 22.5 metric tonnes.

The *direct* economic impact of the potential air cargo service to/from Asia is shown in Table ES-3.³

Table ES-3: Annual *Direct* Airport Related Economic Impact of Potential Air Cargo Service to/from Asia

Type of Impact	Employment (Person Years)	Wages (\$ Millions)	GDP (\$ Millions)	Economic Output (\$ Millions)
Airport Related Impacts	4	0.3	0.6	1.3

Notes & Assumptions: The potential air cargo service to **Asia** analysed is operated twice weekly, using a B747-400 freighter aircraft, with an estimated tonnage of 22.5 metric tonnes.

³ Only the direct impacts are estimated (and not indirect and induced impacts) to mitigate double counting.

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1. Introduction

Prince George Airport Authority Inc. commissioned InterVISTAS Consulting Inc. to conduct an economic impact study of Prince George Airport (YXS) in 2011. Prince George Airport Authority Inc. is responsible for the operation and management of Prince George Airport.

1.1 Prince George Airport

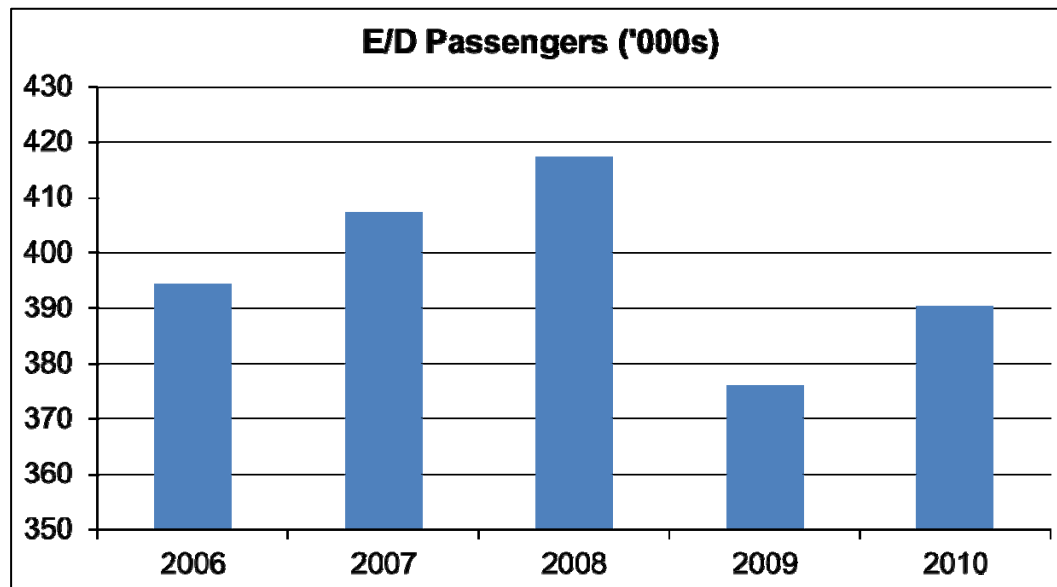
Management and operation of Prince George Airport was transferred from Transport Canada to the Prince George Airport Authority (PGAA) in 2003. Since the transition, the PGAA has embarked on a business plan focused on improving airport infrastructure and services with the goal of increasing air services to the area. In February 2009, the PGAA, along with the provincial and federal governments, Northern Development Initiative Trust, the City of Prince George and the Lheidli T'enneh, officially opened the doors to the airport's runway extension. The Prince George Airport runway, at 11,450 feet long and 150 feet wide, is currently the third longest runway in Canada and can accommodate any size aircraft for refuelling. It is located adjacent to the 3,000 acre Global Logistics Park development.

Prince George Airport serves as a gateway to Northern British Columbia (B.C.). There are 18 flights a day between Vancouver and Prince George with Air Canada Jazz and WestJet, connecting Northern B.C. to the world. These core services are also complemented by Central Mountain Air and Northern Thunderbird Air, who provide scheduled and charter services and connect the areas of the north (Terrace, Smithers, Fort St. John and Fort Nelson) and B.C.'s interior (Kamloops and Kelowna). Guardian Aerospace provides air charter service, flight training and aircraft maintenance.

As shown in **Figure 1-1**, Prince George Airport recorded an increase in air passenger traffic from 2006-2008. In 2009, the airport experienced a decline as air travel slowed due to the global economic downturn; however, in 2010, passenger traffic levels returned to close to 2006 levels. For 2010, annual enplaned/deplaned passenger volume at YXS was approximately 390,000 and annual aircraft movements were nearly 43,000.

In July 2011, total direct non-stop scheduled services to Prince George included approximately 5,000 seats per week. These scheduled services included direct non-stop flights to Prince George from five Canadian cities – Fort St. John, Kamloops, Kelowna, Terrace and Vancouver. Weekly capacity of total scheduled services to Prince George from Vancouver increased by approximately 3% from 2006 to 2011, while weekly seat capacity from all other cities remained constant. A summary of the summer air services in July 2006 and July 2011 is provided in **Table 1-1**.

Figure 1-1: Growth of Air Passenger Traffic at Prince George International Airport (YXS)



Source: Prince George International Airport

Table 1-1: Direct Non-stop Scheduled Flights Arriving in Prince George Airport (YXS) – July 2006 and July 2011

Country	City	Weekly Seat Capacity 2006	Weekly Seat Capacity 2011	% Change
Canada	Fort St. John	108	108	0.0%
	Kamloops	108	108	0.0%
	Kelowna	108	108	0.0%
	Terrace	108	108	0.0%
	Vancouver	4,415	4,568	+3.5%
Canada Total		4,847	5,000	+3.2%
<i>Grand Total</i>		<i>4,847</i>	<i>5,000</i>	<i>+3.2%</i>

Source: Official Airline Guide (OAG) based on summer services for week of 9 July 2006 and 11 July 2011.

1.2 Industry and economy

The regional economy of Prince George is evolving and is driven by an entrepreneurial industrial sector and a rich natural resource base. Its key geographic location and skilled workforce gives Prince George a strategic advantage over other communities in the region.

Advanced manufacturing is one of the largest sectors with main activities related to the forest industry. Wood products and paper manufacturing firms are major employers and producers in this sector. Nearly one-third of the manufacturers in Prince George are comprised of fabricated metal products, machinery and transportation equipment manufacturing firms. Chemical manufacturing and oil processing activities are also deeply rooted in the city. With Prince George's strategic location along key transportation corridors, exporting these manufactured products to key markets – in easy reach, in every direction – creates growth opportunities for small and medium-sized ventures.

Mining and mineral exploration is an essential part of the provincial economy and the industry has the potential for significant growth in Northern B.C. Five mines are now under development and 17 proposals for new mines and quarries have been submitted for government review and approval, which indicates there will be more development over the next five years.

Prince George's strategic location on key transportation corridors provides local businesses with easy access to major markets in North America, Asia and other areas of the world. Significant investment in local and regional transportation infrastructure has enhanced major opportunities for the **Transportation & Logistics** sector. Recent infrastructure improvements include upgrades to several highways in Northern B.C., the expansion of the main runway at Prince George International Airport, the establishment of CN intermodal facilities, and the construction and expansion of the Fairview Container terminal at the Port of Prince Rupert. A new Logistics Park is currently being planned for a 688 hectare (1,700 acre) plot of land adjacent to the Prince George Airport.

Prince George is the hub of Canada's **lumber and pulp and paper** industries. The largest companies in solid wood include Canfor, Carrier Lumber, Conifex, Sinclair Mills, Winton Global, and West Fraser. Canfor Pulp Limited Partnership is the largest pulp and paper mill and is also invested in co-generation for energy production.

Canada's pellet manufacturing industry is focused in the Prince George region and, with two-thirds of the country's fibre resources in Northern B.C., expansion of the forest industry is emerging into **bioenergy** production. The largest companies in this sector include Pacific Bioenergy, Premium Pellet and Pinnacle Pellet.

Prince George's downtown area is a targeted area for **redevelopment**. A vibrant downtown that is the centre of business, cultural and recreational activities and supports an increased density in the downtown area commercially, industrially and residentially, is the vision of the City's commitment and has created many diverse development opportunities in Prince George's downtown core area.

With its outstanding positioning to attract and retain **corporate service-based businesses** (particularly customer care centres), Prince George is becoming increasingly well-known as a preferred place to locate this sector. Business overhead costs and cost of living for employees in Prince George has a significant advantage over many major cities in Western Canada.⁴

Tourism is flourishing in Prince George and offers a mixed array of options for visitors worldwide - from first class hotels and shopping to some of the country's best fishing, hiking, camping and local and regional festivals.

Healthcare is an essential sector of Prince George's economy. Northern Health provides services to 300,000 people over an area of 600,000 square kilometres that make up Northern British Columbia. Northern Health is responsible for delivering health care, including acute care, mental health, public health, addictions, and home and community care services. The only cancer care facility in Northern B.C. is proposed to open in Prince George in the fall of 2012.

Prince George offers a variety of **educational** and life-long learning options. From children's public and private schools to trades and technical training institutes to outstanding medical training programs and facilities, Prince George is one of B.C.'s learning centres of excellence. With Prince George's large multi-cultural ethnic population, English language training is also widely available along with upgrading, career preparation and continuing education programs.

The industries that are directly relevant to YXS have a diverse and educated labour force of over 29,900. Of these, 16.4% are employed in manufacturing, 12.7% are employed in construction and 10.4% are employed in transportation and warehousing. **Table 1-2** lists the major private sector employers in the City of Prince George, while **Table 1-3** summarises total Prince George employment by industries relevant to YXS in 2010. Canfor Wood Products and Canfor Pulp are the largest private sector employers with over 1,200 employees each, followed by Save-On Foods with 475 employees. Other major employees in the region include CN Rail, Aim-Hi, ACS and Wal-Mart.

⁴ KPMG's Competitive Alternatives 2010 found Prince George's overall cost index for Corporate & IT Services, based on 26 location-sensitive cost factors, was 3.5, 2.2 and 4.0 points lower than Vancouver, Victoria and Edmonton, respectively.

Table 1-2: City of Prince George - Major Private Sector Employers

Employer	# of Employees	Sector
Canfor Wood Products	1,210	Manufacturing/Natural Resources
Canfor Pulp	1,200	Manufacturing/Natural Resources
Save-On Foods	475	Retail
CN Rail	400	Transportation
Aim-Hi	400	Social Services
ACS	350	Call Centre
Wal-Mart	300	Retail
Telus	258	Communications
McDonald's	250	Restaurant
Costco	245	Retail
Treasure Cove Hotel and Casino	240	Tourism/Accommodation
Dunkley Lumber	230	Manufacturing/Natural Resources
Home Depot	185	Retail
Lakeland Mills	175	Manufacturing/Natural Resources
BC Hydro	160	Utilities
Sears Canada	130	Retail
Coast Inn of the North	125	Tourism/Accommodation
Lomak Bulk Carriers	125	Transportation

Source: www.initiativespg.com. – July 2008

Table 1-3: Prince George Employment by Industries Relevant to YXS (2010)

Industry	# of People Employed
Total, all industries	29,900
Manufacturing	4,900
Construction	3,800
Transportation and Warehousing	3,100
Other Services	2,900
Accommodation and Food Services	2,600
Public Administration	2,300
Forestry, Fishing, Mining, Oil and Gas	2,100
Professional, Scientific and Technical Services	2,100
Business, Building and Other Support Services	1,900
Finance, Insurance, Real Estate and Leasing	1,800
Information, Culture and Recreation	1,500
Utilities	600
Agriculture	300

Source: Statistics Canada Labour Force Study

Note: Values less than 1,500 are suppressed and have been estimated.

YXS contributes directly to the provincial and national Gross Domestic Product (GDP) and to employment in the Prince George region through its business and commercial activities and operations. More importantly, it also acts as an economic catalyst, facilitating the growth of regional businesses and industrial sectors. The economic contribution of the airport to the community is termed the economic impact of YXS. This study examines the economic impact of the airport on the provincial economy. One of the most important components of the YXS economic impact is given particular attention here: *Employment Impact*. Other economic impact measures such as wages, GDP and economic output are also considered and presented.

1.3 What is economic impact?

Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project (such as the construction of a new facility), or a change in government policy or regulation. Economic impact can be measured in various ways. Two of the most popular ways to assess economic impact are in terms of the dollar value of industrial output produced, or in terms of person years (full-time equivalents (FTEs)) of employment generated. Other measures are value-added (GDP) and value of capital used and/or created. All of these are used to express the gross level of activity or expenditure from a sector of the economy, a specific project or a change in policy or regulation. As such, they are not “net” measures that weigh benefits against costs; nevertheless, these measures can be useful in developing an appreciation of projects, investments and economic sectors.

1.4 Study outline

This report provides an estimate of the economic impacts of employment related to YXS.

- **Chapter 2** explains the methodology for estimating the current economic impact of Prince George Airport.
- **Chapter 3** measures and describes the direct employment base from the results of a survey of employers related to the operations at Prince George Airport.
- **Chapter 4** uses multipliers to infer indirect and induced employment impacts related to YXS operations.
- **Chapter 5** uses multipliers to infer GDP and economic output impacts related to YXS operations.
- **Chapter 6** describes the catalytic impacts related to YXS operations.
- **Chapter 7** measures the tax contribution of YXS by estimating taxes paid by employers, employees and passengers using the airport.
- **Chapter 8** outlines the microeconomic impact related to a potential passenger service and details employment associated with the service.
- **Chapter 9** outlines the microeconomic impact related to a potential cargo service and details employment associated with the service.
- **Chapter 10** summarises the economic impact study results.

2. Methodology

2.1 Estimating current economic impact

The direct employment base related to on-going operations at YXS is first measured. Employment figures are generally more understandable by the public than more abstract measures, such as economic output or GDP. Employment figures also have the advantage of being a more accurate measure, both because the firms are more likely to provide data on employment, as opposed to information on revenues, wages and other monetary amounts, and because there is less chance of double counting economic activity.⁵

The economic impact study then assesses the indirect and induced (or “multiplier”) employment supported by YXS’s related operations, as well as economic activity in terms of economic output and GDP using Statistics Canada’s economic multipliers. The tax revenues generated annually by operations at Prince George Airport are also estimated.

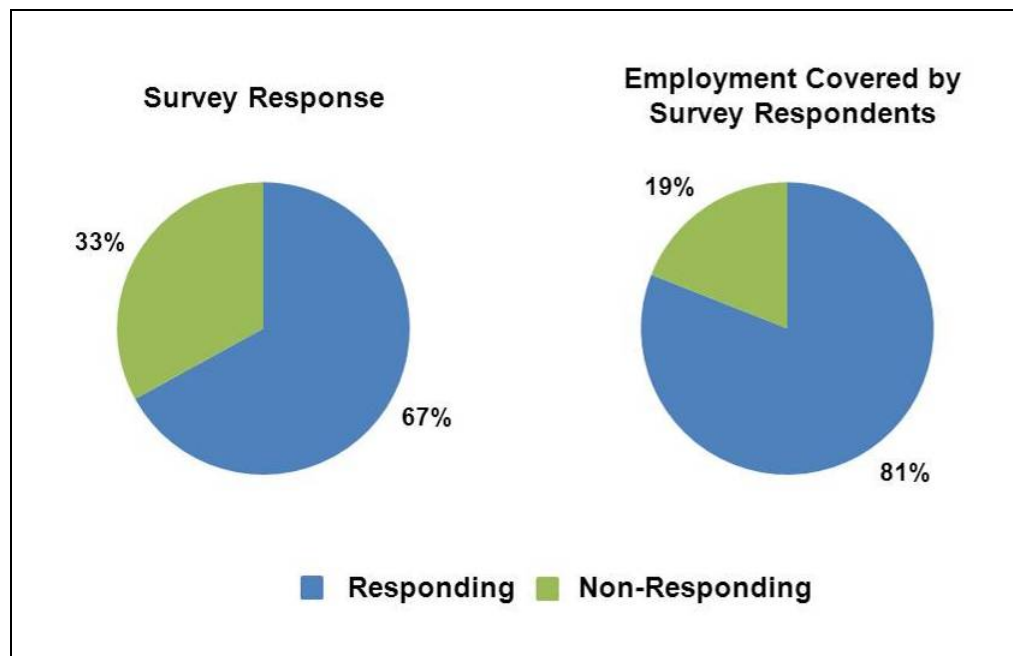
2.2 Surveying direct employment

Employment attributable to on-going YXS operations was measured by surveying 110 tenants and related businesses and organizations located at YXS and other businesses economically linked to the airport. Specifics of the survey methodology are contained in the **Appendices** and a sample copy of the survey is provided in **Appendix B**.⁶ Telephone follow-up was conducted to increase the response rate. In total, 67% of the businesses and organisations contacted responded to the survey, representing nearly 81% of total person years of employment covered by the survey. A summary is provided in **Figure 2-1**. Twenty four survey responses were received from YXS onsite tenants. **Appendix A** shows a breakdown of survey responses by firm type.

⁵ For example, revenues reported by an air carrier would double count revenues received by caterers. The caterer’s revenue is an expense for the airline.

⁶ Taxi employment related to Prince George Airport was estimated based on the average number of taxi trips to and from the airport, as indicated in survey interviews with a taxi company in Prince George. See **Appendix G** on details on the methodology used in estimating related taxi employment.

Figure 2-1: Response Rate (Employers and Person Years)



2.3 Inferring employment

Employment was “inferred” for firms that did not respond to the survey by using a proven and accepted methodology.⁷ This includes using other sources of employment information, such as past employment surveys or using survey results for firms of similar types. A conservative approach was taken when using other survey or employment information to infer for non-responding firms.

There may be firms which were not surveyed simply because it was not known that they existed. We do not include an estimate of employment for such non-surveyed firms because there is no basis for an assessment. In any event, we expect most of these to be very small in terms of missed employment (See **Appendix E** and **Appendix F**).

⁷ The methodology employed in this study to infer for non-respondents is also used by the federal government for estimating the national income and product accounts.

2.4 Direct versus indirect versus induced economic impact

One measure of economic impact, employment, can be broken down into the following categories:

Direct employment is employment that can be attributed to the operation and management of YXS including firms onsite at the airport and airport-dependent businesses offsite. Thus, the direct employment base includes employees of airlines, fixed base operators, aircraft maintenance, among others, onsite at the airport.

Indirect employment is employment in down-stream industries that results from the presence of YXS. For example, suppliers of food to fixed based operators at YXS would be considered indirect employment. Indirect employment is generated in industries that supply or provide services to the airport employers.

Induced employment is employment generated from expenditures by individuals employed indirectly or directly. For example, if an airline maintenance firm employee at YXS decides to expand or re-model his/her home, this would result in additional (induced) employment hours in the general economy. The home renovation project would support hours of induced employment in the construction industry, the construction materials industry, etc.

Total employment is the sum of direct, indirect and induced effects. The multiplier (indirect and induced) economic impacts represent the maximum potential stimulus to the economy resulting from activity of YXS related businesses.

2.5 Economic multipliers

Measurement of indirect and induced economic activity is difficult. While it might be possible to conduct a survey of such employers, the survey would need to cover thousands of firms for indirect employment. For induced employment, the entire economy would need to be scrutinised. In addition to the time and financial resources needed to conduct such surveys, the quality of responses would be suspect.

As an alternative to costly and inaccurate surveys, indirect and induced effects are typically measured by the use of *economic multipliers*. Multipliers are derived from economic/statistical/accounting models of the general economy.⁸ They come in a variety of forms and differ greatly in definition and application. Thus, great care must be exercised in choosing the appropriate set of multipliers to use. In addition, the use of multiplier analysis is limited by a number of factors, these being:

- the accuracy of the structure and parameters of the underlying model;
- the level of unemployment in the economy;

⁸ The multipliers used for the analysis are based on Statistics Canada economic multipliers for British Columbia from the 2007 Interprovincial Input-Output model, the most recent available. These multipliers were updated with Consumer Price Indices to account for inflation.

- the assumption of constant returns to scale in production;
- the assumption that the economy's structure is static over time; and
- the assumption that there are no displacement effects.

Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment.

2.6 Study time frame

The employment survey was conducted between May to August 2011 and the results reflect employment as of May 2011.

2.7 Jobs versus person years

Traditionally, one measures employment by the number of jobs. However, when part-time and/or seasonal workers are used, this can be a misleading measure resulting in an overstatement of economic impact. Whenever possible, employment impacts are measured both in terms of the number of jobs and the number of person years.⁹

2.8 Comparison of economic impact estimates for Prince George Airport

In 2005, InterVISTAS conducted an economic impact study for Prince George Airport that included an analysis of airport, transportation and tourism jobs in the region as it related to the YXS expansion at the time. Because of the scope of this previous study, the methodology included 100% onsite, offsite and ground transportation employment.

In this 2011 economic impact study for Prince George Airport, the scope includes a measure of the employment and economic contribution generated by the airport in 2011. Therefore, to conduct the current economic impact study, InterVISTAS included airport related employment only. For related businesses located offsite, only the estimated percentage portion of revenue related to the airport provided by these firms in the survey is used as the share estimate for airport related employment. For the ground transportation component (i.e. taxi firms), the employment estimate is based on the number of airport related trips as indicated by the taxi firms in the conducted survey.¹⁰

⁹ One person year is equivalent to 1,832 hours of work. See **Appendix C** for a detailed calculation of the number of hours per person year. Person years are the same as full time equivalents (FTEs).

¹⁰ See **Appendix K** for details on the differences in the economic impact study results for the previous 2005 economic impact study for Prince George's Airport Expansion compared to the current 2011 study which covers current airport operations.

3. Direct Economic Impacts

3.1 Introduction

This section describes the total employment, in both jobs and person years (or equivalently FTEs), and estimated payroll attributable to employers directly related to on-going operations at YXS.

This section also examines the employment due to on-going operations at YXS in more detail. Jobs are broken down by:

- Full-time versus part-time and seasonal employment; and
- Employment by trade.

YXS supports:

- 490 direct jobs
- 430 direct person years of employment
- \$17 million in wages

3.2 Jobs and person years

Direct employment related to on-going operations at YXS amounts to 490 jobs. After adjusting for part-time and seasonal employment, the 490 jobs amount to 430 person years of employment.¹¹

3.3 Wages

Employees at YXS and related firms earn approximately \$17 million in wages, yielding an average of \$40,000 per person year of employment. Employment figures are summarised in **Table 3-1** for wages, as well as jobs and person years.

Table 3-1: Direct Employment and Wages at YXS

Type of Impact	Jobs	Person Years	Wages (\$ Millions)
Direct Employment	490	430	17

¹¹ Of this total, 80 person years were inferred for firms that did not respond to the survey. See **Appendix E** for details.

3.4 Full-time versus part-time and seasonal employment at YXS and related businesses

A total of 490 direct jobs are attributable to YXS operations and other airport related businesses in 2011. Of these jobs, 340 jobs (or 70%) are from onsite firms located at the airport; the remaining 150 jobs (30%) are from offsite firms related to the airport. Approximately 92% of the 490 jobs are permanent jobs, and 79% of these permanent jobs are full-time positions. This demonstrates that YXS and its related businesses are a source of stable, year-round employment. The breakdown of YXS person years by full-time and part-time positions is presented in **Figure 3-1**.

Figure 3-1: Full-Time Versus Part-Time Permanent Employment

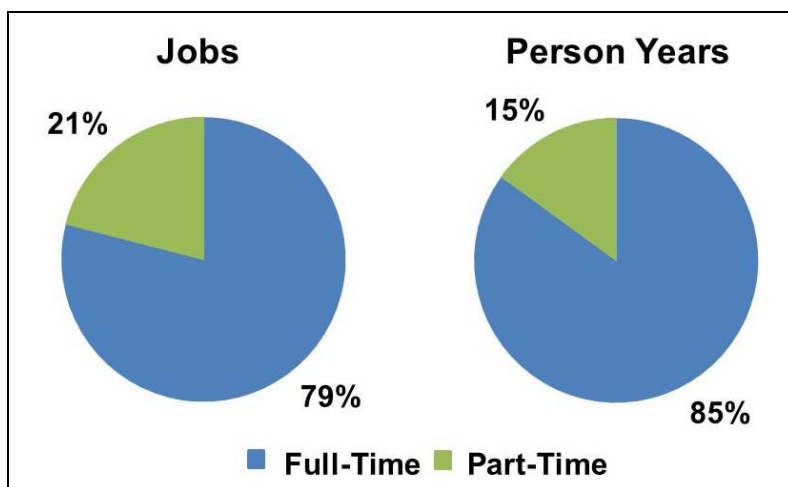
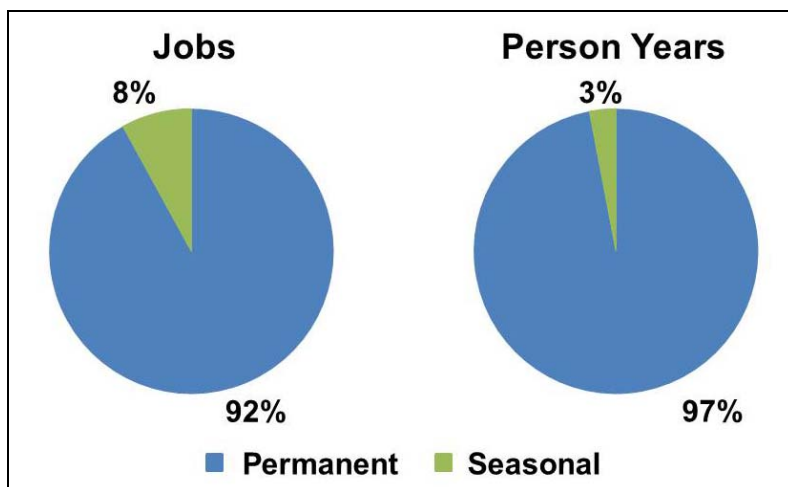


Figure 3-2 shows that during the surveying period, the seasonal component of YXS's and related firms' employment base was 8% of total surveyed onsite and offsite jobs.

Figure 3-2: Permanent Versus Seasonal Employment



3.4.1 Contract employment

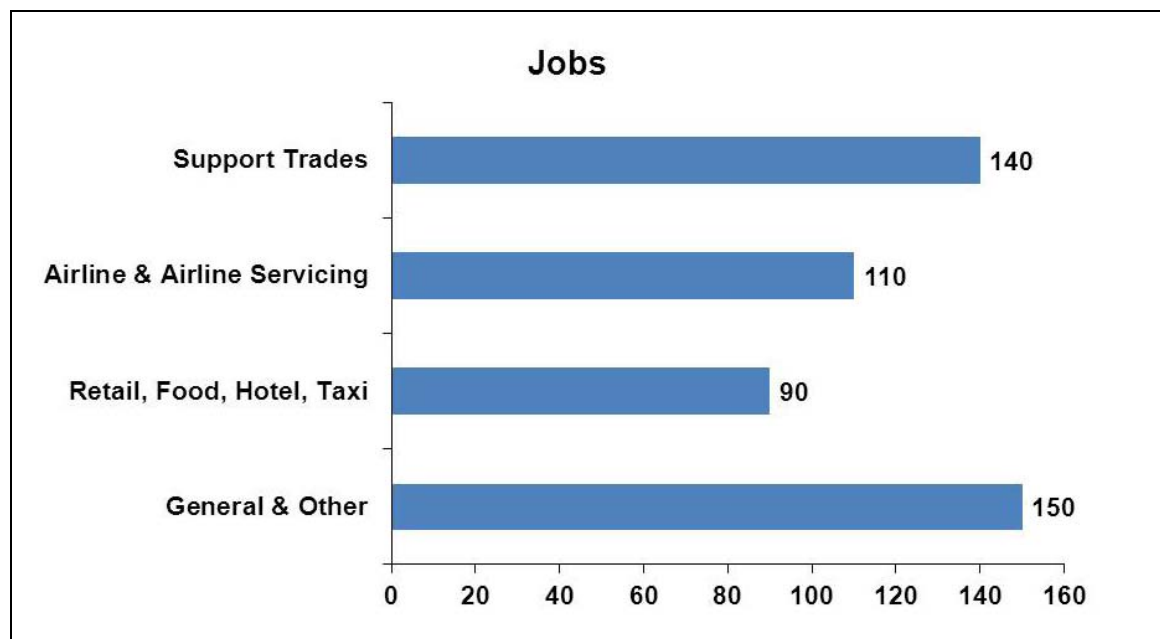
Some employers contract out services to individuals and other firms. It is estimated that 32 jobs, equivalent to 23 person years of employment, are from contract individuals and firms.

A total of 23 person years of employment depend on labour contracts with YXS employers.

3.5 Employment by job type

YXS is a source of employment opportunities for individuals with a broad range of skills. Most businesses require a combination of management, clerical and trades employees. Beyond that breakdown, jobs can also be classified into airline and airline-servicing trades, support trades, retail trades and general trades. Support trades account for 29% of YXS's direct employment base with nearly 140 jobs. Close to 110 (or 22%) of direct jobs attributable to YXS are classified as airlines and aircraft servicing positions by YXS employers and related businesses. Approximately 90 individuals, 18% of direct employment, are employed in the retail, food and beverage, accommodation and ground transportation jobs serving YXS. An estimate of 31% (close to 150 jobs) of the 490 total direct jobs can be classified as general trades and others. **Figure 3-3** shows the current job categories at YXS.

Figure 3-3: Current Job Categories at YXS



4. Multiplier Economic Impacts

4.1 Introduction

The previous chapters discussed how direct employment related to on-going operations at YXS was measured and presented the results in some detail. However, the employment impact of the airport does not end there; other sectors of the economy are dependent on these employers' businesses. *Indirect* employment is generated by suppliers to the airport. Additionally, there may be a general stimulus to the overall provincial economy when direct (and indirect) employees spend their wages. These employment effects are referred to as *induced* employment. Total employment effects are the sum of direct, indirect, and induced effects.

Total employment effects are the sum of direct, indirect, and induced effects.

4.2 Methodology: economic multipliers

Measurement of indirect and induced economic activity is difficult. While it might be possible to conduct a survey of such employers, the survey would need to cover thousands of firms for indirect employment. For induced employment, the entire provincial economy would need to be scrutinised. In addition to the time and financial resources needed to conduct such surveys, the quality of responses would be suspect.

As an alternative to costly and inaccurate surveys, indirect and induced effects are typically measured by the use of *economic multipliers*. Multipliers are derived from economic/statistical/accounting models of the general economy. They come in a variety of forms and differ greatly in definition and application. Thus, great care must be exercised in choosing the appropriate set of multipliers to use. While multiplier impacts are useful and important, the user should be mindful of their limitations. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment.

4.3 Indirect employment

Indirect employment is employment in non-airport industries that supply or provide services to this industry. Using British Columbia employment impact multipliers, 170 person years were estimated for total indirect person years related to YXS. The source of the multipliers was Statistics Canada's 2007 Interprovincial Input-Output Model.¹² This total

YXS indirect employment:

- 170 person years
- \$4 million in wages

¹² The multipliers used for the analysis are based on Statistics Canada economic multipliers for British Columbia from the 2007 Interprovincial Input-Output model, the most recent available. These multipliers were updated with Consumer Price Indices to account for inflation.

suggests that 170 person years of employment are indirectly generated in British Columbia industries that supply the businesses of YXS. Labour income associated with the total indirect employment is estimated at \$4 million per annum.

4.4 Induced employment

Induced employment is somewhat more complicated than indirect employment. It is employment created because of expenditures by individuals employed both directly and indirectly by the airport's businesses. It is the demand for goods and services generated by wage earnings from economic activity at the airport.

Induced employment attributable to YXS is estimated at 170 person years.¹³ Induced employment is associated with a wage bill of \$3 million per annum.

YXS induced employment:

- 170 person years
- \$3 million in wages

4.5 Total employment

Tables 4-1 summarises the direct, indirect, and induced and total employment attributable to on-going operations within YXS and the British Columbia economy.

Table 4-1: Direct and Total Employment in British Columbia: YXS

Type of Impact	Jobs	Person Years	Wages (\$ Millions)
Direct	490	430	17
Indirect	190	170	4
Induced	200	170	3
Total	880	770	24

¹³ Statistics Canada has recommended some ratios of induced to direct plus indirect impacts which are used here.

5. Other Economic Impacts

5.1 Introduction: What are economic output and GDP?

Previous chapters of the report focused on the employment impacts of operations at YXS. This chapter turns to the broader economic impacts of YXS that are measured in dollar terms.

The two most common measures of economic contribution (in addition to employment) are *gross domestic product (GDP)* and *economic output*. Economic output roughly corresponds to the *gross revenues* of goods or services produced by an economic sector, while GDP measures only *value-added* revenues. As such, GDP removes the revenues to suppliers of *intermediate* goods and services and only includes the revenues from value-added production. Alternatively, economic output adds all revenues at each stage of production together as a measure of total production in the economy. Economic output will always be greater than GDP (also termed value-added).

GDP: *value-added in industrial output, net of intermediate revenues.*

Economic output: *total revenues from industrial output including materials and supplies.*

To estimate economic output for a sector, one might add up the gross revenues of the various firms in that sector. However, to find GDP for a sector, care must be taken to avoid double-counting. The revenues of one firm providing service to another are not incremental GDP. For example, in the automobile sector, one cannot add the value (gross revenue) of a finished auto to the value of the tires. The tires are already included in the value of the automobile.

One approach to measuring economic output and value-added is to ask firms in a survey to provide information on their gross revenues, payments to suppliers, etc. However, there are several problems with the approach. First, it is much too expensive. Second, the double counting problem makes this approach impractical.

An alternative is to infer economic output and GDP for an economic sector from employment data using economic multipliers. Statistics Canada produces economic multipliers both for Canada and all of the provinces and territories, and these are both more cost effective and more accurate than obtaining the data from surveys. This method, using 2007 Statistics Canada economic multipliers for British Columbia, is the approach adopted here.

5.2 Other economic impacts

Table 5-1 provides economic output and GDP impacts related to on-going operations at YXS employment for the Province of British Columbia.

Table 5-1: Direct and Total GDP and Economic Output: YXS

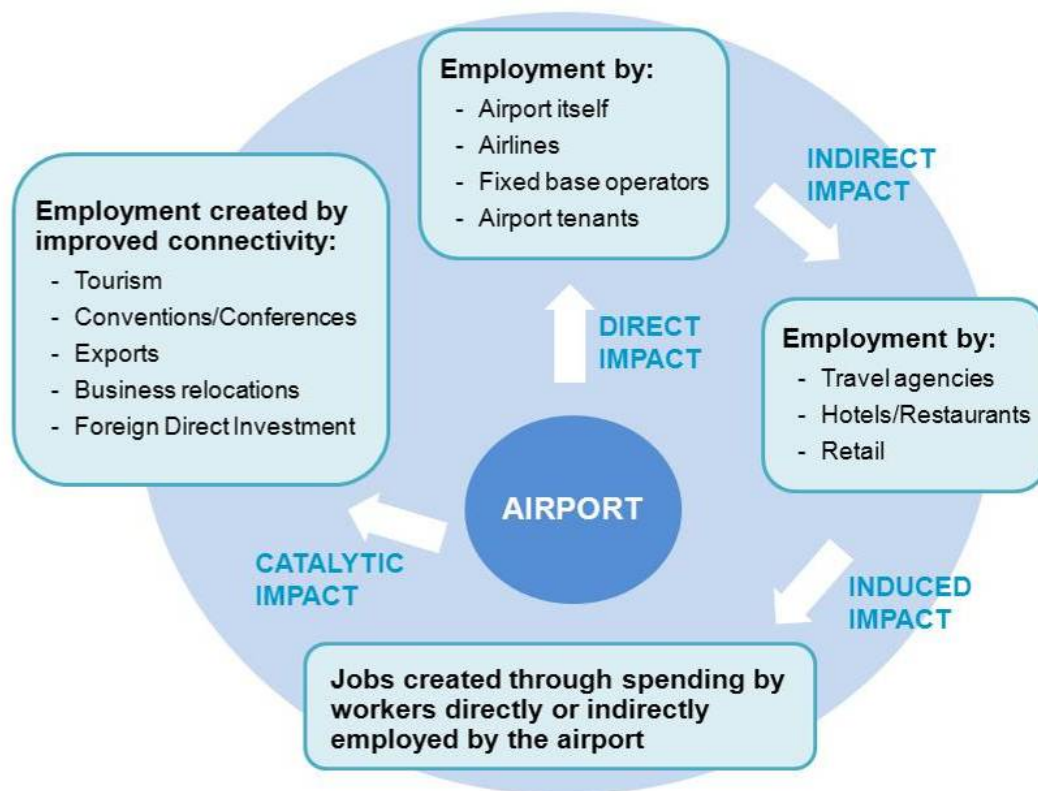
Type of Impact	GDP (\$ Millions)	Economic Output (\$ Millions)
Direct	32	57
Indirect	8	13
Induced	6	11
<i>Total</i>	<i>46</i>	<i>81</i>

The direct employment described in Chapter 3 generates \$32 million in direct gross domestic product and \$57 million in direct economic output in the provincial economy. Including multiplier effects, operations at YXS may be supporting up to \$46 million in total (direct, indirect and induced) GDP and \$81 million in economic output, economy-wide in British Columbia.

6. Catalytic Impacts

Beyond the direct, indirect, and induced economic impacts noted earlier, air service also contributes other positive effects to a region that can be more difficult to assess. These “catalytic effects” of air transport contribute in other ways to a local or regional economy. They are important beneficial economic events or activities that occur in an area that are attributable to the presence of the airport or of a particular type of air service. **Figure 6-1** illustrates the potential catalytic impacts of an airport, together with the direct, indirect and induced economic impacts. This section provides a discussion of these catalytic impacts.

Figure 6-1: Potential Direct, Indirect, Induced and Catalytic Impacts of an Airport



Air transportation facilitates employment and economic development in the national and regional economy through increased trade, attracting new businesses to the region and encouraging investment. Industries and activities that would otherwise not exist in a region can be attracted by improved air transport connectivity. In particular, catalytic effects can include some or all of the following:

- **Employment effects** - the attractiveness of an area for the creation of new or retention of existing job opportunities. For example, companies may choose to locate in a region because of the presence of the airport, particularly if the airport enjoys service to a certain destination (e.g., nonstop service to Europe or Asia)
- **Trade effects** – additional air services opens new export markets to many businesses as a result of new destinations, better flight connections and higher frequencies offered. For example, the airport's presence can contribute to the export success of companies located in the area by the provision of freight links to key markets or by its ability to provide fast and efficient freight service. This leads to a broader demand for existing products.
- **Investment effects** – a key factor many companies take into account when making decisions about location of office, manufacturing or warehouses is proximity of an international airport.
- **Productivity effects** – air transportation offers access to new markets which in turn enables businesses to achieve greater economies of scale. Air access also enables companies to attract and retain high quality employees.

As discussed previously in **Section 1.2**, Prince George and the province have an important entrepreneurial industrial sector and a rich natural resource base. The airport has played and will continue to play a significant role in providing the necessary transportation access and linkages to markets for these industries. This will contribute to the growth of overall economy for the city and the province as a whole.

Taken together, these issues contribute to an overall sense of a region's attractiveness and competitiveness.

7. Tax Impacts

7.1 Introduction

This part of the report documents the current contribution to government revenues resulting from current operations at YXS and associated economic activity. This includes revenues received by federal, provincial and local governments.

Revenue contributions are divided into three groups, based on who is making the payment:

- **Taxes paid by employers and employees.** These are taxes paid by the airport employers and employees. They include income and payroll taxes, social insurance contributions (such as the employment insurance premiums) and the federal and provincial fuel taxes.
- **Taxes paid by passengers.** Visitors pay various taxes and fees. For example, these include taxes on personal expenditures at YXS such as taxes on food and beverages, taxes on airline tickets and taxes on single night hotel stays by connecting passengers and overnight flight crews, as well as the passenger facility charge.
- **Taxes paid by the airport authority.** YXS pays taxes in the form of property taxes. YXS does not currently make a federal lease payment, and will not pay rent until 2011.

For each category, taxes paid to the federal, provincial and local levels of government are separately identified.¹⁴

The purpose of this section is to present the tax revenue contributions resulting from the activity attributable to YXS. As with all such studies, a conceptual decision has to be made as to how broad a definition of *economic activity* should be used in measuring the impacts. For this study a relatively narrow definition has been taken, for example, the following have **not** been included:

- Taxes associated with indirect or induced employment (i.e. multiplier effects).
- Consumption taxes (e.g., HST) paid by airport employees when they spend their income.
- Excise or import taxes on cargo.
- Taxes paid by airport users outside of the airport.

It would be exceedingly complex to broaden the scope of the tax base in this analysis to include taxes generated by indirect and induced employment. The level of detail collected on direct

¹⁴ For the most part, this study **estimates** (some tax envelopes were measured directly, e.g., tenant property taxes) taxes paid from information on the passengers, employers and employees at the airports. In a few situations, such as the corporate income tax paid by employers, an approximate method was used to estimate taxes paid. In every case conservative methods were used. No major tax has been excluded.

employment by the survey is critical to the analysis while such information is not available for the indirect and induced employment. This being the case, impacts and speculation about the general economy would be complex and averages would not necessarily be precise or accurate. Therefore, the tax analysis in this report is limited to revenues attributable to direct employment only.

7.2 Taxes by level of government

On-going economic activity at YXS generated tax revenue contributions to all levels of government, estimated to be in the order of \$10 million.

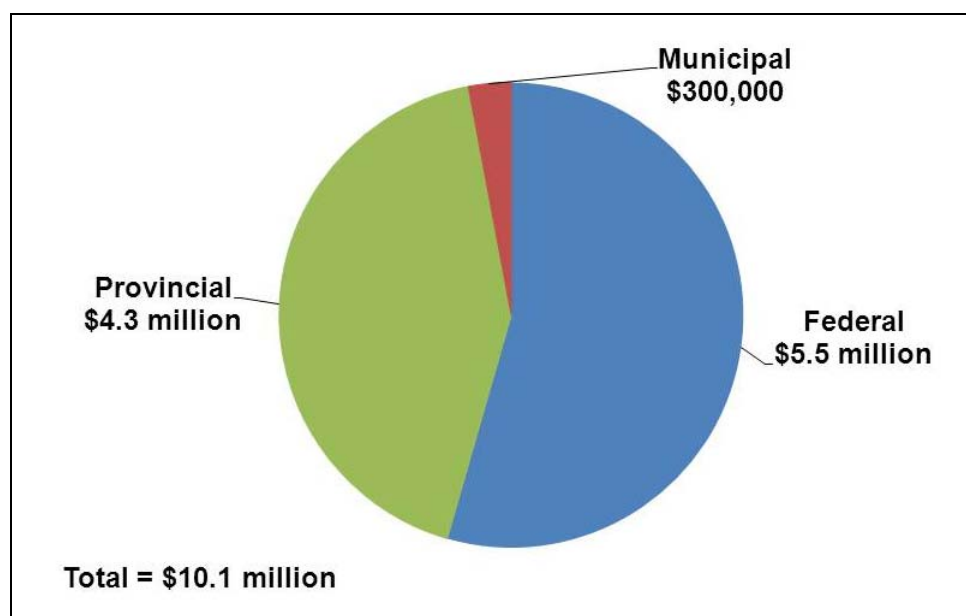
- Approximately 44% of taxes were paid by air travellers, 54% of taxes were paid by employers and their employees, and the remaining 2% by YXS.
- Prince George Airport Authority Inc. made approximately \$210,000 in property tax payments in 2010. The airport authority did not make any federal lease payments to the Federal Government in 2010, and will not be making any payments until 2011. Airport tenants also paid property taxes amounting to over \$100,000 in 2010 to the municipal government.

Tax revenues generated by YXS amount to \$10 million per year.

7.3 Summary of tax contribution

The federal government is the largest recipient of tax revenue, receiving over \$5 million (55% of the total), as seen in **Figure 7-1**.

Figure 7-1: Breakdown of Tax Revenues by Government Level



A complete summary of tax contributions by YXS passengers and businesses is provided in **Figure 7-2**.

Figure 7-2: Current Tax Contributions of YXS Airport Passengers and Businesses – 2010

SUMMARY OF TAX CONTRIBUTIONS BY PRINCE GEORGE AIRPORT - 2010							
	Federal		Provincial		Municipal		All Gov'ts
	Tax	Amount (\$'000s)	Tax	Amount (\$'000s)	Tax	Amount (\$'000s)	Amount (\$'000s)
Paid by Passengers	GST on Passenger Facility Fee	156	PST on Passenger Facility Fee	219			
	GST on Airport Concession	11	PST on Airport Concession	15			
	GST on Ground Transportation	93	PST on Ground Transportation	130			
	GST on Airfares	981	PST on Airfares	1,374			
	GST on Insurance Surcharges	7	PST on Insurance Surcharges	10			
	GST on Air Traveller Security Charge (ATSC)	34	PST on Air Traveller Security Charge (ATSC)	48			
	GST on Accommodation	496	PST on Accommodation	694			
			Supplementary Hotel Room Tax	198			
	Total	1,778	Total	2,687			4,465
Paid by Employers or Employees	Personal Income Tax	1,753	Personal Income Tax	635	Property Tax	109	
	Corporate Income Tax	624	Corporate Income Tax	205			
	EI - Employer	195	WCB	219			
	EI - Employee	139	MSP	291			
	CPP - Employer	422	PST on Aircraft Terminal Fee	73			
	CPP - Employee	422	PST on Landing Fee	117			
	GST on Aircraft Terminal Fee	52	Aviation Fuel Tax	4			
	GST on Landing Fee	84	PST on Accommodation	33			
	Aviation Fuel Tax	4	Supplementary Hotel Room Tax	9			
	GST on Aviation Fuel	3					
	GST on Accommodation	23					
	Total	3,720	Total	1,587	Total	109	5,416
Paid by Prince George Airport					Property Tax	209	
					Total	209	209
	Grand Total	5,498	Grand Total	4,274	Grand Total	318	10,090

Notes: For the purposes of the tax analysis, the HST has been separated out into its GST and PST components to document the federal and provincial portions of tax collected respectively.

8. Microeconomic Impact of Potential Air Passenger Service to/from Frankfurt

Each arrival of a passenger flight at Prince George Airport generates labour hours for individuals with jobs involved in handling passengers, their baggage, cargo and the aircraft. To gain an understanding of the effect that a potential new air service may have on the labour necessary to operate every aspect of a flight, economic impact studies examine the economic inputs and outputs of air service. We call these analyses micro studies to differentiate them from other broader economic impact studies of an airport that take into account all employment and economic activity at an airport, not just that associated with a given service to a particular destination.

These micro studies assess the impact of all activities related to aircraft landing, departure and activities completed during turnaround time and in-flight. Among others, these activities include unloading inbound passengers and their baggage, and then re-loading the aircraft with outbound passengers and their baggage. The estimated labour hours in these micro studies also include the employment involved in processing each aircraft and its passengers, such as catering, cleaning, maintenance, fuelling, ground service, etc. The impacts also include the labour hours of in-flight airline employees (flight and cabin crew).

The micro studies also assess the direct labour hours of other services offered at the airport, such as car rental agencies, food concessions, etc. Direct employment impacts at ground transport providers and at hotels are also considered. In addition to the airline employees in the public areas of the terminal, the airlines also have administrative employees in the office area of the terminal. The labour hours of employees behind the scenes, such as managers, accountants, crew trainers and load planners are also included in these micro studies. The figures in these micro studies represent the average labour impacts of the air services. It includes the sum of all of the labour hours from all jobs associated with each flight - both "hands-on" jobs as well as "overhead" jobs.

In addition, each flight will bring in non-local visitors, who will spend money on hotels, taxis, food and beverage, entertainment, etc. The non-local visitor spending facilitated by the air services are estimated in these micro studies.

In this section, the following potential international air passenger service at YXS is examined:

- A once-weekly seasonal (21 weeks) air passenger service to Frankfurt operated using a 270-seat B767-300ER aircraft, with an 82% load factor.¹⁵

¹⁵ Details of the potential international passenger air service are taken from the route analysis conducted by InterVISTAS.

8.1 Direct airport related economic impact

Table 8-1 illustrates the direct employment impact of the potential air passenger service to Frankfurt on a per flight basis for jobs occurring at the airport, and also indicates the annual impact based on the number of flights operated each year.¹⁶

Table 8-1: *Direct* Airport Related Employment Impact of Potential International Air Passenger Services to Frankfurt

Potential Air Service	Number of Annual Departures	Employment Per Departure (Person Years)	Annual Employment (Person Years)
Potential Air Service to Frankfurt	21	0.16	3.4

Notes & Assumptions: The potential air service to **Frankfurt** analysed is operated once weekly seasonal (21 weeks) using a 270-seat B767-300ER aircraft, with an 82% load factor.

A summary of the annual direct economic impact of the potential air passenger service to Frankfurt, including wages, GDP and economic output, is provided in **Table 8-2**.¹⁷ The potential once weekly seasonal (21 weeks) air service could generate three person years of airport related employment and approximately \$200,000 in wages each year. Furthermore, the potential air service could contribute more than \$400,000 in GDP and nearly \$1 million in economic output to the provincial economy per annum.

Table 8-2: Annual *Direct* Airport Related Economic Impact of Potential International Air Passenger Services to/from Frankfurt

Type of Impact	Employment (Person Years)	Wages (\$ Millions)	GDP (\$ Millions)	Economic Output (\$ Millions)
Airport Related Impacts	3	0.2	0.4	1.0

Notes & Assumptions: The potential air service to **Frankfurt** analysed is operated once weekly seasonal (21 weeks) using a 270-seat B767-300ER aircraft, with an 82% load factor.

¹⁶ Employment attributable to the potential new air service to/from Frankfurt was estimated using data available to InterVISTAS from existing industry data. Direct employment associated with the potential air service includes customer services, ground handling, cleaning, maintenance, airport staff members and airline crew.

¹⁷ Only the direct impacts are estimated (and not indirect and induced impacts) to mitigate double counting.

8.2 Direct visitor spending impacts

The potential air service will bring in non-local visitors to the Province of British Columbia, spending money on items such as hotels, taxis, food and beverage, entertainment, etc. This section presents the non-local visitor spending impacts of the potential air service to/from Frankfurt.

Non-Local Visitors & Visitor Spending Estimates

After making reasoned assumptions on the mix of outbound and inbound passengers on the air service, the annual number of non-local visitors to British Columbia from the potential air service is estimated.¹⁸ International visitor characteristics and spending patterns from Statistics Canada's *International Travel Survey* are used to estimate the total spending of non-local visitors from the potential air service from Frankfurt. **Table 8-3** shows the estimated number of non-local visitors of the potential air service per annum, the average nights per trip, average tourist spend per night, and the total expenditure. The potential new air service from Frankfurt is estimated to bring over 2,300 non-local visitors to the region, spending more than \$3 million.

Table 8-3: Estimated Number of Non-Local Visitors Potential International Air Passenger Services to/from Frankfurt per Annum

Potential Air Service	Non-Local Visitors (per Annum)	Average Nights per Trip	Average Spend per Night	Total Visitor Spending (per Annum) (\$ Millions)
Potential Air Service from Frankfurt	2,300	8.60	\$170	\$3.4

Notes & Assumptions:

- The potential air service to Frankfurt analysed is operated once weekly seasonal (21 weeks) using a 270-seat B767-300ER aircraft, with an 82% load factor.
- Non-local visitors per air service calculated based on estimated load factor and % of non-resident passengers per air service. See **Appendix H** for a detailed calculation.
- International visitors' average nights per trip and average spend per night is taken from Statistics Canada's *International Travel Survey* and based on commercial airplane visitors to British Columbia.

Direct Visitor Spending Impacts

In addition to the employment and other economic impacts of the operations and servicing of the air passenger services, there are also economic impacts associated with visitor spending. The economic impacts associated with the non-local visitor spending from the air services are estimated using Statistics Canada multipliers. These multipliers estimate the direct employment generated by each dollar of non-local visitor spending, as well as wages and GDP.¹⁹ Visitor

¹⁸ See **Appendix H** for a detailed calculation of the estimated load factor and proportion of non-resident passengers per air service.

¹⁹ Only the direct impacts of visitor spending are estimated (and not indirect and induced impacts) to mitigate double counting.

spending from the potential international air service from Frankfurt could potentially generate up to 39 direct person years of employment per annum. In addition, the total annual expenditure of non-local visitors on the potential air service could support up to nearly \$2 million in direct GDP in the province of British Columbia. The direct economic impacts attributed to annual visitor spending from the potential air service from Frankfurt are summarised in **Table 3-5**.

Table 8-4: Direct Annual Visitor Spending Impact Potential International Air Passenger Services to/from Frankfurt

Type of Impact	Visitor Spending (<i>Economic Output</i>) (\$ Millions)	Employment (Person Years)	Wages (\$ Millions)	GDP (\$ Millions)
Visitor Spending Impacts	3.4	39	1.1	1.9

Notes & Assumptions:

- The potential air service to Frankfurt analysed is operated once weekly seasonal (21 weeks) using a 270-seat B767-300ER aircraft, with an 82% load factor.
- International visitors' average nights per trip and average spend per night is taken from Statistics Canada's *International Travel Survey* and based on commercial airplane visitors to British Columbia.

8.3 Total aviation and tourism impacts

The new international air service to/from Frankfurt could potentially support up to 42 person years of employment, and could also potentially stimulate over \$4 million in spending.²⁰ The **combined direct** economic impact of the potential new air service, which combine the impact of airport related operations and visitor spending impacts, are shown in **Table 8-5**.

Table 8-5: Combined *Direct* Economic Impacts Attributed to the Potential New Air Service to/from Frankfurt

Type of Impact	Employment (Person Years)	Wages (\$ Millions)	GDP (\$ Millions)	Visitor Spending (<i>Economic Output</i>) (\$ Millions)
Airport Related Impacts	3	0.2	0.4	1.0
Visitor Spending Impacts	39	1.1	1.9	3.4
<i>Combined Impacts</i>	<i>42</i>	<i>1.3</i>	<i>2.3</i>	<i>4.4</i>

Notes & Assumptions: The potential air service to **Frankfurt** analysed is operated once weekly seasonal (21 weeks) using a 270-seat B767-300ER aircraft, with an 82% load factor.

²⁰ Only the direct impacts are estimated (and not indirect and induced impacts) to mitigate double counting.

9. Microeconomic Impact of Potential Air Cargo Service to/from Asia

Each arrival of a cargo flight at Prince George Airport (YXS) generates labour hours for individuals with jobs involved in handling cargo and the aircraft. Micro economic impact studies describe the employment impact of a specific flight moving air cargo through an airport. This analysis looks primarily at the operations of air cargo services to/from YXS.

To provide a closer look at air cargo operations, this micro economic impact assessment explores typical cargo operations at the airport and the jobs that are supported by these operations. This analysis examines the steps involved in day-to-day air cargo operations of a potential freighter service at Prince George Airport (YXS). The steps in the logistics chain of freight operators include receiving, sorting, preparing, loading and unloading cargo. The estimated labour hours in these micro studies also include the employment involved in the maintenance and fuelling of each aircraft, as well as the labour hours of in-flight airline employees. The labour hours of employees behind the scenes, such as managers, accountants, and clerical staff are also included in these micro studies. The figures in these micro studies represent the average labour impacts of the air cargo service. It includes the sum of all of the labour hours from all jobs associated with each flight - both "hands-on" jobs as well as "overhead" jobs.

For purposes of this study, the following potential freighter operation was examined:²¹

- A twice-weekly year-round air cargo service to Asia operated using a B747-400 freighter aircraft, with an estimated tonnage of 22.5 metric tonnes.

9.1 Direct airport related economic impact

The direct employment impact of the potential air cargo service to Asia on a per flight basis for jobs occurring at the airport, and the annual impact based on the number of flights operated each year are shown in **Table 9-1**.²² Subsequently, the overall labour requirements of the potential air cargo service by position are provided in **Table 9-2** on a per flight basis.

²¹ Details of the potential air cargo services were taken from joint discussions between YXS and InterVISTAS.

²² Employment attributable to the potential new air service to/from Asia was estimated using data available to InterVISTAS from existing industry data. Direct employment associated with the potential air service includes flight crew, cargo terminal staff, delivery staff, aircraft maintenance staff, and other overhead staff.

Table 9-1: Direct Airport Related Employment Impact of Potential Air Cargo Service at Prince George Airport (YXS)

Potential Air Service	Number of Annual Departures	Employment Per Departure (Person Years)	Annual Employment (Person Years)
Potential Air Cargo Service to Asia	104	0.04	4.4

Notes & Assumptions: The potential air cargo service to **Asia** analysed is operated twice weekly, using a B747-400 freighter aircraft, with an estimated tonnage of 22.5 metric tonnes.

Table 9-2: Average Local Person Hours per Departure of Potential Air Cargo Service at Prince George Airport (YXS)

Staff Position	Average Local Person Hours per Departure
Flight Crew	34.1
Cargo Terminal	11.4
Delivery Staff	14.1
Other Overhead	15.5
Aircraft Maintenance	2.7
Total Average Hours per Departure	77.76

Notes & Assumptions:

- The potential air cargo service to **Asia** analysed is operated twice weekly, using a B747-400 freighter aircraft, with an estimated tonnage of 22.5 metric tonnes.
- **Flight Crew** includes labour hours of in-flight airline employees. **Cargo Terminal** includes labour hours of jobs involved in receiving, sorting, preparing, loading and unloading shipment. **Delivery Staff** includes labour hours of local trucking drivers responsible in delivering cargo. **Other Overhead** includes labour hours of clerical staff and NAV Canada staff attributed to the air service. **Aircraft Maintenance** includes labour hours of jobs involved in maintaining and fuelling the aircraft.²³

²³ Labour hours attributable to the potential air cargo service to/from YXS were estimated from data available to Inter VISTAS from existing industry data.

A summary of the annual direct economic impact of the potential air cargo service to Asia, including wages, GDP and economic output, is provided in **Table 9-3**.²⁴ The potential twice weekly air cargo service could generate four person years of airport related employment and approximately \$300,000 in wages each year. Furthermore, the potential air service could contribute close to \$600,000 in GDP and over \$1 million in economic output to the provincial economy per annum.

Table 9-3: Annual *Direct* Airport Related Economic Impact of Potential Air Cargo Service to/from Asia

Type of Impact	Employment (Person Years)	Wages (\$ Millions)	GDP (\$ Millions)	Economic Output (\$ Millions)
Airport Related Impacts	4	0.3	0.6	1.3

Notes & Assumptions: The potential air cargo service to **Asia** analysed is operated twice weekly, using a B747-400 freighter aircraft, with an estimated tonnage of 22.5 metric tonnes.

²⁴ Only the direct impacts are estimated (and not indirect and induced impacts) to mitigate double counting.

10. Summary of Economic Impact Results

On-going operations at YXS generates 430 direct person years of employment and \$17 million in direct wages

On-going operations at YXS may support up to a total of 880 jobs equivalent to 770 person years of employment province-wide, when multiplier impacts are present. Of this employment, 490 jobs (equal to 430 person years) are directly related to the airport. Because jobs related to the airport extend far beyond the Prince George region, the total also includes both indirect (approximately 170 person years) and induced employment (170 person years).

YXS generates direct employment in the Prince George region and contributes significantly to the British Columbia economy. The significance of the airport in terms of the provincial economy is demonstrated by the *direct* economic impact of the airports' employment on GDP and output, measured at \$32 million and \$57 million, respectively. Including indirect and induced impacts, the *total* impacts are approximately \$46 million and \$81 million, respectively. **Table 10-1** summarises the economic impacts of on-going operations at YXS.

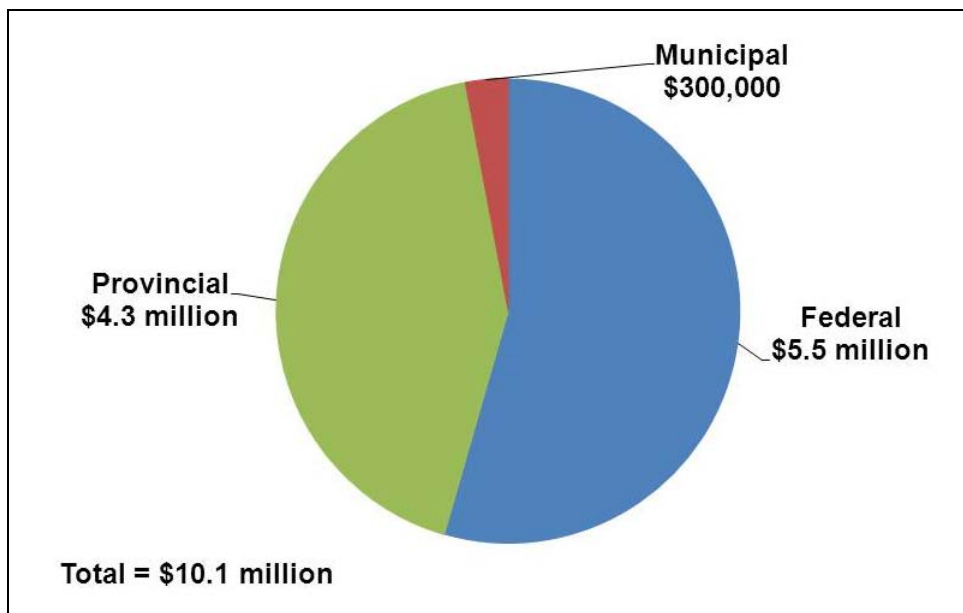
Table 10-1: On-Going Total Economic Impacts of YXS in British Columbia

Type of Impact	Jobs	Person Years	Wages (\$ Millions)	GDP (\$ Millions)	Economic Output (\$ Millions)
Direct	490	430	17	32	57
Indirect	190	170	4	8	13
Induced	200	170	3	6	11
<i>Total</i>	<i>880</i>	<i>770</i>	<i>24</i>	<i>46</i>	<i>81</i>

On-going operations at YXS generates \$10 million per annum in government tax revenues

YXS is also an important generator of taxation revenues to all levels of government. Total taxes paid on an annual basis, by employers, employees and airport users, are estimated at \$10 million per year. The majority of taxes collected accrue to the federal and provincial governments, at 55% and 42% respectively. Local governments also benefit from YXS, such as through the collection of property taxes amounting to approximately \$300,000 paid by the airport authority and its tenants (see **Figure 10-1**).

Figure 10-1: Estimated Annual Tax Revenues to Government



Potential air passenger service to/from Frankfurt could generate 3 direct person years of airport related employment and could stimulate over \$3 million in non-local visitor spending

Labour hours are generated for individuals with jobs involved in handling passengers, their baggage, cargo and the aircraft every time a passenger flight arrives at YXS. In addition, each flight will bring in non-local visitors, who will spend money on hotels, taxis, food and beverage, entertainment, etc. **Table 10-2** shows the *combined* (airport related employment and visitor spending) *direct* economic impacts attributed to the potential new air service to/from Frankfurt.

Table 10-2: Combined *Direct* Economic Impacts Attributed to the Potential New Air Service to/from Frankfurt

Type of Impact	Employment (Person Years)	Wages (\$ Millions)	GDP (\$ Millions)	Visitor Spending (<i>Economic Output</i>) (\$ Millions)
Airport Related Impacts	3	0.2	0.4	1.0
Visitor Spending Impacts	39	1.1	1.9	3.4
<i>Combined Impacts</i>	<i>42</i>	<i>1.3</i>	<i>2.3</i>	<i>4.4</i>

Notes & Assumptions: The potential air service to **Frankfurt** analysed is operated once weekly seasonal (21 weeks) using a 270-seat B767-300ER aircraft, with an 82% load factor.

Potential air cargo service to/from Asia could generate an additional 4 direct person years of airport related employment

Each arrival of a cargo flight at Prince George Airport (YXS) generates labour hours for individuals with jobs involved in handling cargo and the aircraft. Micro economic impact studies describe the employment impact of a specific flight moving air cargo through an airport. For purposes of this study, a twice-weekly year-round potential air cargo service to Asia operated using a B747-400 freighter aircraft, with an estimated tonnage of 22.5 metric tonnes, was examined. The *direct* economic impact of the potential air cargo service to/from Asia is shown in **Table 10-3**.²⁵

Table 10-3: Annual *Direct* Airport Related Economic Impact of Potential Air Cargo Service to/from Asia

Type of Impact	Employment (Person Years)	Wages (\$ Millions)	GDP (\$ Millions)	Economic Output (\$ Millions)
Airport Related Impacts	4	0.3	0.6	1.3

Notes & Assumptions: The potential air cargo service to **Asia** analysed is operated twice weekly, using a B747-400 freighter aircraft, with an estimated tonnage of 22.5 metric tonnes.

²⁵ Only the direct impacts are estimated (and not indirect and induced impacts) to mitigate double counting.

Appendix A: Employment Survey

Identification of the survey population

A total of 110 firms that received employment surveys for the YXS economic impact study included airport tenants, offsite firms, hotels and ground transportation firms directly related or dependent upon the airport. Prince George Airport Authority Inc. provided a list of airport tenants, while InterVISTAS identified the offsite employers, hotels and ground transportation firms closely tied to airport operations using several phone directories.

Table A-1: Total Number of Firms Surveyed

Type of Impact	Number of Firms Surveyed	Number of Responding Firms	Response Rate
Prince George Airport (YXS) Employers	30	27	90%
Offsite Employers (including ground transportation firms)	43	24	56%
Hotels	37	23	62%
<i>Total</i>	<i>110</i>	<i>74</i>	<i>67%</i>

Questionnaire design

The basic questionnaire was designed to be effective in obtaining information and, equally importantly, to be as clear and easy to understand as possible for respondent firms. The basic survey was provided to employers at each airport. Three other surveys were developed for offsite employers, hotel employment and ground transportation employment. The basic questionnaire provided to airport tenants contained questions in the following areas:

General Information

- Name of firm, address
- Contact person's name and title
- Phone and fax numbers

- Email and website address
- Type of business

Total Employment Numbers

- Total employees (*as of May 2011*)
- Total payroll excluding benefits
- Number of onsite employees
- Number of offsite employees

Part-time and Full-time Employment

- Full-time permanent employees
- Part-time permanent employees
- Full-time seasonal employees
- Part-time seasonal employees
- Average hours and weeks for part-time and seasonal employees

Employment by Trade

- A selection of job trades was provided to categorise employment

Outsourcing and Contracting Out

- Number of individuals on contract
- Number and names of firms on contract

Copies of the surveys are provided in **Appendix B**.

Conducting the survey

The survey was mailed out electronically by InterVISTAS Consulting with a cover letter from Prince George Airport Authority President and CEO, John Gibson. The letter explained the purpose of the study, the confidentiality of responses and encouraged members of the airport business community to participate.

Following the initial electronic mail-out of the surveys and throughout the following weeks, non-responding firms were contacted by telephone to follow up. Firms were encouraged to return the survey and new copies were offered if the originals were lost. The replacement surveys were emailed once again, or sent via regular mail with postage-paid envelopes. Some survey responses were collected via a telephone interview with firms.

Analysis of the results

The survey results were compiled into an MS Excel spreadsheet.

Appendix B: Sample Survey



PRINCE GEORGE AIRPORT AUTHORITY INC
4141 Airport Rd – Suite 10, Prince George, BC, V2N 4M6
Phone: 250.963.2400 Fax: 250.963.3462 www.pgairport.ca

May 2011

To All Members of the Prince George Airport Business Community:

Re: Prince George Airport Economic Impact Study

A critical factor in winning community and government support for continued operation and future initiatives that benefit all airport-related businesses is our ability to demonstrate the significant economic impact of Prince George Airport (YXS) upon our community and province.

Prince George Airport Authority has therefore commissioned an updated economic impact study. The results of the study will be used to raise public awareness of the airport, the airlines and other related businesses' contribution to local employment and economic activity. We receive many requests for economic impact information and it is important that the public continues to appreciate the benefits of the Prince George Airport to the economy of Prince George and to the province of British Columbia.

Prince George Airport Authority has commissioned InterVISTAS Consulting to conduct the economic impact study on our behalf. InterVISTAS Consulting has completed similar economic impact studies for airports across Canada and prepared the airport's previous economic impact study in 2006. In order to undertake this study, we are seeking your co-operation through participation in the attached employment survey. In order to keep this initiative on time and on budget, we request that you complete this survey as soon as possible, so that InterVISTAS Consulting can compile the results without delay or additional cost.

We appreciate that some of the information requested in the survey may be of a sensitive nature to your firm. You may be assured that Prince George Airport Authority or any other party will not view your completed survey. Please send your survey results directly to InterVISTAS via **one** of the following methods:

- **Email** your response back to InterVISTAS Consulting at matt.boire@intervistas.com; or
- **Fax** to 604-717-1818 to the attention of Matt Boire

InterVISTAS Consulting will maintain the confidentiality of your survey response and will not provide individual firm results to Prince George Airport Authority. Only the aggregate survey totals will be provided to Prince George Airport Authority for the purposes of the economic impact study. The published document will not reveal employment figures for any individual firms.

The economic impact study is conducted under the supervision of Doris Mak, Director, Special Projects at InterVISTAS Consulting. Should you have any questions regarding the study or the survey, please contact Doris Mak at 1-877-717-6246 (ext. 1838).

Thank you for your co-operation in this important study. We all look forward to the results as they will benefit all members of the Prince George Airport business community.

Sincerely,

John Gibson
President and CEO
Prince George Airport Authority



Prince George Airport Authority
On-Site Employment Survey
May 2011

The figures you provide in the following sections are strictly confidential and will be viewed only by InterVISTAS Consulting and reported only in an aggregate form. For the purposes of this study, it is important that the figures you provide are as accurate and current as possible. **When answering the questions below regarding your business, please include all related subsidiary businesses.**

Name of Firm: _____

Address of Firm: _____

City, Province: _____ Postal Code: _____

Contact Person: _____ Phone number: _____

Email: _____

Q1. Location of Firm

Please indicate the general location of your firm:

- ☐ Prince George Airport (YXS)
- ☐ Other, please specify: _____

Q2a. Business Related to Prince George Airport

Please estimate the amount of your business that is related to Prince George Airport.

YXS Related Business: (as of May 2011)	%
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Q2b. Cargo Related Business

We would like to be able to document the impact of the airport's air cargo services. Please help us by indicating the portion of your business that is involved in servicing air cargo.

Please estimate the proportion of your business (revenue) that can be attributed to air cargo related activities?

Air Cargo Related Business: (as of May 2011)	%
--	---



Prince George Airport Authority
On-Site Employment Survey
May 2011

Q3. Type of Business (check one)

If you are involved in more than one of the businesses below, please choose the one that best describes your business.

Air Carriers

- ☐ 1. Scheduled Canadian Carrier
- ☐ 2. Scheduled Non-Canadian Carrier
- ☐ 3. Charter Carrier
- ☐ 4. Helicopter
- ☐ 5. Air Taxi
- ☐ 6. Cargo Carrier
- ☐ 7. Courier
- ☐ 8. Other Type of Air Carrier: _____

Other Business Types

- | | |
|---|--|
| <input type="checkbox"/> 9. Facility Operator | <input type="checkbox"/> 19. Aviation Related Training |
| <input type="checkbox"/> 10. Freight Forwarder, Cargo Agent, etc. | <input type="checkbox"/> 20. Caterer |
| <input type="checkbox"/> 11. Warehousing | <input type="checkbox"/> 21. Security Firm |
| <input type="checkbox"/> 12. Customs Broker | <input type="checkbox"/> 22. Hotel |
| <input type="checkbox"/> 13. Aircraft Maintenance | <input type="checkbox"/> 23. Taxi, Bus |
| <input type="checkbox"/> 14. Aircraft Ground Handler | <input type="checkbox"/> 24. Car Rental |
| <input type="checkbox"/> 15. Fuelling Company | <input type="checkbox"/> 25. Airport Retail Outlet, Restaurant, etc. |
| <input type="checkbox"/> 16. Fixed Base Operator | <input type="checkbox"/> 26. Government Agency/Department |
| <input type="checkbox"/> 17. Aircraft Parts Supplier | <input type="checkbox"/> 27. Air Traffic Control |
| <input type="checkbox"/> 18. Aviation Related Manufacturing | <input type="checkbox"/> 28. Other: _____ |

Q4. Total Employment

Please state the total number of employees that you have at present. **This figure should include all full-time, part-time and seasonal work but should not include employment for work done on contract.**

Total Number of Employees: (as of May 2011)	
---	--



**Prince George Airport Authority
On-Site Employment Survey
May 2011**

Total Annual Payroll: (Excluding employee benefits, 2011 figures)	
---	--

OR, Provide an estimate of the average annual salary per employee \$ _____

- ☐ Less than \$20,000
☐ Between \$20,000 and \$40,000
☐ Between \$40,000 and \$60,000
☐ Between \$60,000 and \$80,000
☐ Between \$80,000 and \$100,000
☐ More than \$100,000

Q5. On-site versus Off-site Employees

For the purpose of this study, on-site workers are employees who work on airport land. Off-site employees are those who do not work on airport land, but are primarily performing airport or aviation related duties (e.g., airline sales representatives at a downtown office). Of the total number of employees listed in Q4, how many work on-site and how many work off-site?

Number or % of Employees On-Site:	
Number or % of Employees Off-Site:	

Q6. Part-Time and Full-Time Employees

A. Permanent Employees: A permanent employee is one who works year round. In reference to the number of total employees in Q4, how many are permanent employees and how many are full-time and how many are part-time?

Number of Full-Time <u>Permanent</u> Employees:	
Number of Part-Time <u>Permanent</u> Employees:	
Total <u>Permanent</u> Employees:	0

For part-time employees, on average, how many hours per week will they work this year?

# of Weekly Hours:	
--------------------	--

If it is difficult to obtain this information or if there is great variation, you may provide a range of weekly hours (i.e., less than 10 hours, 10-15 hours, etc).



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B. Seasonal Employees: A seasonal employee is one who is hired for work during peak or specific time periods only. In reference to the number of total employees in Q4, please indicate how many are seasonal full-time and part-time employees (2011)?

Number of Full-Time <u>Seasonal</u> Employees:	
Number of Part-Time <u>Seasonal</u> Employees:	
Total <u>Seasonal</u> Employees:	0.00

For seasonal workers, on average, how many **weeks** will they work this year (2011)?

Number of Weeks Per Year:	
---------------------------	--

For part-time seasonal workers, on average, how many **hours per week** will they work this year (2011)?

Number of Weekly Hours:	
-------------------------	--

If it is difficult to obtain this information or if there is great variation, you may provide a range of weekly hours (i.e., less than 10 hours, 10-15 hours, etc).

THE SUM OF THE PERMANENT AND SEASONAL EMPLOYEES LISTED IN Q6A AND Q6B SHOULD EQUAL THE NUMBER OF TOTAL EMPLOYEES IN Q4.

Q7. Employment by Trade

In order to reflect the diversity of employment at the airport, please provide us with a breakdown of your total payroll employees, by position.

Employment by Trade		Number or % of Employees
General	Managerial/Supervisory	
	Clerical	
	Craft Trades (Electricians, Steam Fitters, etc.)	
Airline & Airline Servicing Trades	Pilots	
	Flight Attendants	
	Aircraft & Vehicle Mechanics	
	Customer Service Agents	
	Aircraft Servicing	
Support Trades	Security Agents	
	Food Service Workers	
	Drivers / Delivery / Couriers	
	Dispatchers	
	Call Centre / Reservations	
	Air Traffic Control	



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Retail Trades	Sales / Cashiers	
	Food & Beverage Staff	
Other (Please specify)		

Q8. Outsourcing and Contracting Out

Since we do not want to exclude any employment from the airport, we would like you to briefly comment on whether your firm contracts out any important services.

A. Individuals on Contract: If you pay some individuals through a contract, as opposed to through payroll, please indicate the number of such employees.

Number of <u>Contract</u> Employees:	
--------------------------------------	--

Of these employees on contract, how many **weeks**, on average, will they work this year? And, on average, how many **hours per week** do they work?

Number of Weeks Per Year:	
Number of Weekly Hours:	

B. Firms on Contract: Do you contract any work out to other **firms**? For example, janitorial services, ground handling, etc.

☐ **No.** (continue to next question)

☐ **Yes.** If yes, please complete the following table indicating the functions you contract out to other firms and an estimate of the annual hours on contract. Also include the names of the firms you use so we can ensure that we do not double count any work performed by other firms that we are surveying as a part of this study.

Function	Name of Firm	Estimated Number of Hours to be Performed by Firm in 2011
<i>Example: Janitorial</i>	<i>Spic and Span Cleaners</i>	<i>100 a year (2 hours per week)</i>

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Q9. Property Taxes Paid in 2010

Please indicate the amount of property taxes paid by your firm in 2010.

Total Property Taxes Paid (2010)	
--	--

**Thank you for your assistance in completing this survey.
Please return the completed survey via email to:**

Matt Boire at matt.boire@intervistas.com

Or by fax: Attention: Matt Boire, Fax: 604-717-1818

If you have any questions, please call Matt Boire at 1-877-717-6246 (ext. 1853)

Appendix C: Calculation of Person Hours per Year

The following are details of calculations for the average number of hours per person year (PY).

Table C-1: Person Hours per Year

Calculation of person hours per year:	
	365 days per year
Less:	(104) weekend days
	(11) legal holidays
	(15) average vacation days
	(6) sick leave
	229 days per person year
	* 8 hours per work day
	1,832 hours per person year

Workdays vary anywhere from 6.5 to 8 hours; however, in order to be conservative, an 8 hour workday was assumed.²⁶ Similarly, numbers of vacation and sick leave days may also vary.

²⁶ Essentially, we are using a measure of paid hours per year. Using a measure of productive hours per year with 6.5 hour workdays (8 hours less 1 hour for lunch less two 15 minute work breaks) would give 1,489 hours per person year. Using this lower figure would result in inferring a greater number of person years from seasonal and part-time jobs. Using the 1,832 figure, we infer a lower number of person years.

Appendix D: Summary of Total Jobs and Person Years

Table D-1: Total Jobs and Person Years

Total Jobs and Person Years		
	Jobs	Person Years
Surveyed employment ¹	365	322
Inferred employment for non-respondents ²	89	80
Contract employment	32	23
<i>Total</i>	<i>486</i>	<i>425</i>
¹ Appendix A ² Appendix E ³ Appendix F		

Appendix E: Inferred Employment

This appendix describes how employment was inferred for non-responding airport employers.

InterVISTAS' approach was to utilise information from responding firms for each type of business and use it, along with publicly available information on individual non-responding firms, to make inferences. This approach is generally deemed to be the best approach, and indeed is often used for developing the national income and products account (i.e. partial survey with inference for non-surveyed or non-responding firms based on responses of surveys received). The approach was conservative in that, unlike the national income and products account inference, we assumed that the non-responding firms were smaller than respondents.²⁷

The employment data in this report was constructed from a combination of two sources:

1. **Employment reported by employers on surveys.**
2. **Employment inferred for employers who did not provide a survey response.** Inferred employment was based on employment information from firms in each business type that did respond to the survey. The mean employment of respondents in each business type was calculated, excluding outliers, and then adjusted downwards. For example, especially large firms were excluded from the "mean without outliers" to obtain conservative results. This "adjusted mean" employment for each business type was then applied to the non-respondent firms.

²⁷ As with the national income and products account approach, we recognise and discard outliers in the survey respondents when making inferences for non-respondents.

Appendix F: Contract Employment

Some firms contract out services which they do not have expertise in providing, or when there are cost advantages to doing so. For example, many airport firms contract out janitorial, elevator and maintenance services. The employment survey asked firms to identify whether they contracted out some of their work, and to estimate the number of annual hours involved.

Contract work was separated into two distinct categories in the employment survey: i) individual "employees" paid through a contract, rather than via payroll, and, ii) contracting out services to other firms.

The employment results for individuals on contract were derived by counting the number of individual positions for the number of *jobs* and dividing the total hours of employment by 1,832 to estimate person years. The employment results for firms on contract were derived by dividing the total hours of employment by 1,832 to estimate person years.

There were approximately 32 jobs equivalent to 23 person years of contract employment supplied by firms doing work for YXS firms and contract employees working for firms at YXS. These included janitorial, snow removal, maintenance and security services.

Appendix G: Calculation of Taxi Employment Related to Prince George Airport

This appendix provides details on how taxi employment related to Prince George Airport was estimated.

As indicated in survey interviews with a taxi company in Prince George, InterVISTAS assumes that a total of 50 trips are made per day to and from the airport.²⁸ Based on the distance from the airport to the downtown Prince George area, it is estimated that the length of each return trip is 60 minutes.

Using these inputs, the total length per trip per annum and the equivalent taxi person years are determined. With a total trip length of 18,250 hours per annum, the total person years per annum is approximately 10. A summary of the estimated taxi employment related to Prince George Airport is provided in Table G-1 below.

Table G-1: Estimated Taxi Employment Related to Prince George Airport

Average number of trips per day	50
Length of return trip (minutes)	60
Total length of trip per day (minutes)	3,000
Total length of trip per annum (minutes)	1,095,000
Total length of trip per annum (hours)	18,250
<i>Estimated Taxi Person Years</i>	<i>9.96</i>

²⁸ Other taxi company interviewed was unable to provide an estimate of the average trips to and from the airport per day at the time of the interview. Thus, similar operations were assumed.

Appendix H: Calculation of Non-Local Visitors On-Board Potential Air Service to/from Frankfurt

The following are details of calculations for the annual number of non-local visitors on-board the potential air passenger service to/from Frankfurt.

Table H-1: Estimated Annual Number of Non-Local Visitors of Potential Air Passenger Services to/from Frankfurt

Potential Air Service	Frankfurt
Aircraft Type	B767-300 ER
Capacity	270
Load Factor	82%
Weekly Frequency	1
Weeks per Year	21
Estimated % Non-Local Passengers	50%
<i>Estimated Enplaned Passengers per Year</i>	<i>4,649</i>
<i>Estimated Non-Local Visitors per Year</i>	<i>2,325</i>

Notes & Assumptions:

- Details of the potential international passenger air service are taken from the route analysis conducted by InterVISTAS.
- It was assumed that 50% of passengers on all air services were non-local visitors. Annual estimated non-local visitors are calculated by multiplying the aircraft capacity by the load factor, the weekly flight frequency, the number of weeks per year, and the estimated percentage of visitors on board each flight.

Appendix I: Tax Revenues Attributable to Airport Employers

Introduction

This appendix describes the employment and other assumptions on which tax revenues calculations are based. As well, the approaches used to estimate employer and employee contributions to local, provincial and federal governments are presented. All estimates are for the 2010 calendar year, unless otherwise stated.

Some of the taxes pose conceptual questions about how much, or if any, tax revenue from a particular source should be attributed to firms serving YXS. These questions are highlighted and simplifying assumptions are put forth.

Employment at YXS

The majority of tax calculations in this report depend on direct employment and total wages. The total direct employment, in person years, used for these calculations is 430 person years. The total payroll is estimated at \$17 million.

Personal income tax (federal and provincial)

Tax base and rates. Under the *Income Tax Act* federal income tax is paid on taxable income at a rate that increases with taxable income.

Provincial income tax was formerly calculated as a percentage of federal tax, but most provincial governments have begun collecting taxes on a sliding scale.

Estimation Method and Results

Because the tax rate is progressive, the tax paid by a group of employees depends on the distribution of income among those employees. Unfortunately, the distribution of income is not known and average incomes must be used.

Each employee is assumed to pay tax as a single tax filer. Estimated income tax payable is \$1.8 million in federal tax and about \$0.6 million in provincial tax.

The average tax rates used are derived from the more detailed calculations of taxes payable shown in **Table I-2**. In those calculations, assumptions have been made about income from non-employment sources, tax deductions from income (e.g. RPP and RRSP contributions), and tax credits applied against tax otherwise payable (e.g. CPP, EI and charitable contributions). Average credits are calculated from Revenue Canada, *General Income Tax Forms, 2010*.

Table I-2: British Columbia Single Tax Filer Income Tax Calculation – 2010

British Columbia Single Tax Filer Income Tax Calculation									
Income									
Employment	20,000		40,000		60,000		80,000		100,000
Other	2,000		4,000		6,000		8,000		10,000
TOTAL	22,000		44,000		66,000		88,000		110,000
Deductions									
RPP	47		543		1,375		1,878		1,751
RRSP	307		543		2,212		3,614		6,670
Carrying Charges	53		165		343		541		859
Union	44		218		411		492		339
TOTAL	452		1,469		4,341		6,524		9,618
Taxable Income	21,548		42,531		61,659		81,476		100,382
Credits									
Basic Federal	10,382		10,382		10,382		10,382		10,382
Basic Provincial	11,000		11,000		11,000		11,000		11,000
CPP	525		1,359		1,592		1,716		1,677
EI	183		469		513		551		483
Charity	126		317		667		766		1,153
Fed. Total	11,216		12,527		13,154		13,415		13,695
Prov. Total	11,834		13,145		13,772		14,033		14,313
Federal Credits	1,682		1,879		1,973		2,012		2,054
Provincial Credits	599		665		697		710		724
Tax Payable									
Federal - Bracket 1	3,232		6,232		6,232		6,232		6,232
Federal - Bracket 2	0		217		4,425		8,785		9,140
Federal - Bracket 3	0		0		0		0		4,496
Federal Total	3,232		6,449		10,657		15,017		19,868
Basic Federal		1,550		4,570		8,684		13,004	17,814
BC - Bracket 1	1,090		1,829		1,829		1,829		1,829
BC - Bracket 2	0		492		1,964		2,783		2,783
BC - Bracket 3	0		0		0		964		1,124
BC - Bracket 4	0		0		0		0		2,136
BC - Bracket 5	0		0		0		0		0
BC Total	1,090		2,321		3,793		5,577		7,873
Basic Provincial		492		1,655		3,097		4,866	7,149
TOTAL TAX PAYABLE		2,041		6,225		11,780		17,871	24,962
Average Rate of Tax		9.5%		14.6%		19.1%		21.9%	24.9%
Federal		7.2%		10.7%		14.1%		16.0%	17.7%
Provincial		2.3%		3.9%		5.0%		6.0%	7.1%

Corporate income tax (federal and provincial)

All corporations are liable to pay federal income tax under the *Income Tax Act*. The tax rate varies by type and size of company and by province. Provincial governments also levy a corporation income tax on any company having a permanent establishment in that province.

Estimation Method and Results

1. To calculate tax liability precisely is very difficult. It requires knowledge of the total tax base, and the proportion of the tax base attributable to the provinces. Therefore, an approximate method has been used.
2. In British Columbia, the federal corporate income tax collected per employee was \$1,640 provincial corporate income tax collected per employee was \$540 in 2010.

3. Assuming all companies pay tax at the average rate per employee calculated above, the 2010 corporation income tax liability of the airports of YXS employment sector is estimated to be \$624,000 toward federal revenues and \$205,000 toward provincial revenues. The estimated total corporate income tax revenue is about \$829,000 as shown in **Table I-3**.

Table I-3: Estimated Corporate Income Tax Paid by Firms within YXS

Government	Revenue
Federal	\$ 624,000
Provincial	\$ 205,000
<i>Total (million)</i>	<i>\$ 829,000</i>

Employment Insurance premiums

Tax base and rates. In 2010, employees in Canada paid employment insurance (EI) premiums equal to 1.73% of earnings up to a maximum of \$747 per year. (Maximum insurable earnings are \$43,200). Employers paid EI premiums equal to 1.4 times employee premiums.

Estimation Method and Results

The employee premium rate is applied to total payroll costs for employees earning less than \$43,200 per year. The maximum contribution was used for employees earning more than \$43,200 per year. Estimated employee payments were about \$139,000 in 2010.

The employer rate is applied to the employee payments. Estimated employer payments were about \$195,000 in 2010.

Canada Pension Plan contributions

Tax base and rates. In 2010, employee contributions for the Canada Pension Plan (CPP) were 4.95% of pensionable earnings. Pensionable earnings are actual earnings less \$3,500, to a maximum of \$47,200. The maximum annual employee contribution is \$2,163. The employer contribution is the same as the employee contribution.

Estimation Method and Results

The employee contribution rate is applied to average payroll for employees who are earning less than \$47,200 a year. The maximum contribution was used for employment earning more than the maximum pensionable earnings.

Estimated employer and employee contributions are about \$422,000 each, for a total of \$844,000.

Workers' Compensation Board contributions

Tax base and rates. Employers in each province are required to make contributions to the Workers' Compensation Board to help offset the cost of on-the-job injuries. Employers are classified into industry groups. The contribution rate for each group is based on the injury costs associated with all companies in that group.²⁹ The group contribution rate varies widely among industries and provinces. Some major companies are not included in the general "rateable" method of contribution but simply pay the actual cost of their claims plus an allowance for WCB administration costs. As it is not generally known which firms contribute in this manner, nor the value of their claims, an estimate based on reported payroll has been made for all firms.

Conceptual issues. It is possible that some companies are self-insured and their payments could be viewed as a business expense rather than a tax. However, we have chosen to include their contribution because they are required to be part of this government-mandated program.

Estimation Method and Results

The contribution rates for each employment classification at the airport have been applied to the total payroll for that group. YXS employees paid an estimated \$219,000 to Worker's Compensation in 2010.

Medical Services Plan premiums

Tax base and rates. Medical Services Plan (MSP) premiums for British Columbia in 2010 were:

Single	- \$57 per month
Family of two	- \$102 per month
Family of three or more	-\$114 per month

Conceptual issue. Premiums must be paid by any person registered with the Plan, whether they are employed or not.³⁰ Therefore, premiums are not directly related to employment. Nevertheless, many employers pay premiums on behalf of their employees. Therefore, premiums are included as a tax contribution.

Estimation Method and Results

Many employees may be covered by premiums paid by or on behalf of a spouse. Therefore, an employee may not need the coverage offered by an employer. For any group of employees it is difficult to know how many have coverage through a spouse. Therefore, we have assumed that all employees are covered as a result of employment, but that the premium required is only the rate for single persons.

²⁹ Subject to Experience Rating Adjustment for individual companies.

³⁰ Low income persons may qualify for premium assistance.

Total employment of 420 person years at \$684 per employed person annually (\$57 x 12 months) equals a total contribution of \$291,000.

Aviation fuel tax

The federal and provincial governments levy taxes on jet fuel. The aviation fuel tax rates are shown in **Table I-4**.

Table I-4: British Columbia Fuel Tax Rates, 2010

Federal	British Columbia
\$/Litre	
\$0.04	\$0.05

Estimation Method and Results

The amount of aviation fuel sold at YXS in 2010 was 89,551 litres.³¹ The total aviation fuel tax revenues at YXS amount to approximately \$8,000. Of this total, over \$4,000 went to the Federal government and the government of British Columbia collected nearly \$4,000.

A 5% HST (which includes only 5% Goods and Services Tax (GST) and not the 7% Provincial Sales Tax (PST) component) was also collected from aviation fuel sold at the airport. The total HST revenues from fuel sales at YXS amount to approximately \$3,000.

Property Taxes collected to government

Governments levy property taxes to help them finance local services.

Property taxes paid by YXS amounted to \$210,000 in 2010.

YXS tenants also paid municipal taxes amounting to \$109,000 in 2010.

Federal Ground Lease Payable in 2010

The Prince George Airport Authority Inc. did not make any federal lease payments to the Federal Government in 2010, and will not be making any payments until 2011.

³¹ As per the fuel reports of Imperial Oil and Shell Oil provided by Prince George Airport Authority.

Appendix J: Tax Revenues Attributable to Airport Users

YXS Passengers in 2010

In 2010, approximately 390,000 passengers enplaned and/or deplaned at YXS. **Table J-1** shows the passenger movements used in this study including breakdown into sectors and percentage of connecting passengers at YXS.

Table J-1: Passenger Movements 2010

Sector	Enplaned Plus Deplaned 2010	Percent Connecting
Domestic	381,940	0%
Transborder	0	0%
International	8,400	0%
<i>Total</i>	390,340	
Daily Average	1,069	

Note: International refers to the seasonal winter/spring charters to sun destinations, such as Puerto Vallarta. Assume close to zero passengers use YXS as a connecting hub to another destination.

NAV CANADA Charges

Prior to November 1, 1998, the Canadian government collected the Air Transportation Tax (ATT) to fund aviation programs, including air navigation services. The ATT was levied on all tickets purchased in Canada as well as those purchased internationally for trips that included an enplanement in Canada. ATT rates were adjusted frequently, reaching a high in May 1995 of 7% + \$6 (to a maximum of \$55) for domestic and transborder flights, and a flat rate of \$55 for international flights.

When control of air navigation services was privatised and passed to NAV CANADA on November 1, 1996, the ATT was gradually replaced by NAV CANADA charges. These fees, collected under authority of the Civil Air Services Commercialisation Act, are not taxes on ticket sales; they are service charges billed to aircraft operators. In order to recover these costs, airlines usually pass these charges on to passengers, though NAV CANADA does not dictate how this is done. Most carriers apply a flat rate NAV CANADA surcharge to tickets they sell.

NAV CANADA fees consist of two parts: en route charges and terminal charges. En route charges are based on the maximum permissible takeoff weight of the aircraft (metric tonnes) and the

distance being flown in Canadian-controlled airspace. Terminal charges are dependent only on aircraft weight.

Conceptual Issues. Because the ATT is no longer collected and the fees that NAV CANADA now charges are service fees, rather than taxes, no taxes for air navigation services will be included in total taxes paid.

HST (GST and PST) on Air Fares, Insurance Surcharges and the Passenger Facility Fee (PFF)

Tax Base and Rate

The 13% HST (includes 5% Goods and Services Tax (GST) and 8% Provincial Sales Tax (PST)) applies to all tickets purchased in Canada and includes all domestic, transborder and international flights.

Several North American carriers have also included an insurance surcharge on top of the air fare paid by passengers for all tickets purchased to account for the rising costs of aviation insurance. Air Canada levies a \$3.00 insurance surcharge each way for domestic trips within Canada. HST (GST and PST) is levied on the surcharge.

The airport authority charges all passengers originating their journey at YXS a Passenger Facility Fee (PFF) that is collected for the sole purpose of funding capital improvements at the airport. HST (GST and PST) is levied on the fee.

Conceptual Issues. Taxes levied on the air fare should be shared among airports in Canada associated with the journey. The estimation method builds in a sharing assumption (50% YXS and 50% other Canadian airports).

Estimation Method and Results

HST (GST and PST) is levied on all domestic air fares; however, due to the sharing assumption stated above, only 50% of the estimated taxes per departing passenger are attributable to YXS. Total tax on airfares is estimated to be nearly \$2.4 million.

The total insurance surcharge collected by carriers from domestic passengers at YXS is approximately \$287,000. Total tax on this total is estimated to be over \$17,000.

The airport authority collected nearly \$3 million through the PFF in 2010. Tax revenue on this amount is approximately \$375,000, with \$156,000 and \$219,000 collected by the Federal government and the government of British Columbia, respectively.

HST (GST and PST) on Air Traveller Security Charge

The Canadian Government enacted the Air Traveller Security Charge (ATSC) on April 1, 2002 to help fund security improvements at airports across Canada, as a result of the terrorist attacks on September 11, 2001. As of April 1, 2010, these rates were increased. There is a flat rate fee of \$7.12 for each chargeable enplanement for domestic travel, \$12.10 for transborder travel, and \$25.91 for international travel.

Tax Base and Rate

The HST (GST and PST) applies to the domestic and transborder ATSC.

Estimation Method

The volume of origin/destination traffic at YXS was determined. It was assumed that 50% was origin traffic at YXS. Each origin passenger pays the ATSC. A total of \$82,000 in taxes (\$34,000 GST and \$48,000 PST) was collected on the ATSC in 2010.

Tax on Aircraft Terminal Fees

The HST rate is applied to aircraft terminal fees.

Estimation Method and Results

Based on the information provided by the airport authority, net revenue from aircraft terminal fees was over \$1 million in 2010. Total tax collected is estimated at \$125,000, including \$52,000 GST and \$73,000 PST.

Tax on Aircraft Landing Fees

The HST rate is applied to aircraft landing fees.

Estimation Method and Results

Based on the information provided by the airport authority, net revenue from aircraft landing fees was nearly \$1.7 million in 2010. Total tax collected is estimated at \$201,000, including \$84,000 GST and \$117,000 PST.

Tax on Concession Purchases

Tax Base and Rate

The HST rate applies to most retail concession purchases by travellers at the airport.

Estimation Method and Results

HST based on sales of \$211,000 (including airport restaurant/gift shop sales) is \$25,000.

Tax on Ground Transportation, Parking, and Car Rentals

The GST rate applies to taxi, limousine and bus transportation, as well as to parking fees and car rentals.

Estimation Method and Results

Based on the information provided by the airport authority and related businesses, parking and ground transportation revenues was close to \$2 million 2010. Tax on these expenditures is estimated at over \$223,000.

Tax on Accommodation Costs

Tax Base and Rates. The Harmonized Sales Tax (HST) rate of 12% (includes 5% Goods and Services Tax (GST) and 7% Provincial Sales Tax (PST)) applies to accommodation costs by non-local visitors to Prince George staying in hotels.

In addition, according to the Hotel Association of Canada, a hotel tax of 2% is also levied on accommodation expenditure in British Columbia.

The Tourism Sector Monitor published by B.C. Stats indicates that the average daily room rate in British Columbia in 2010 was \$136.80.

Estimation Method and Results

In order to estimate the total accommodation costs of non-local visitors in Prince George, B.C. the average daily room rate was applied to the estimated total crew layover nights and connecting passenger nights determined from the hotel survey conducted. The total accommodations expenditure amounted to more than \$10 million, with revenue from total crew layover nights accounting for \$468,000 and revenue from total connecting passenger nights accounting for over \$9 million.

HST based on the expenditure for airline crew accommodation of \$468,000 is approximately \$56,000, while the hotel tax is estimated to be \$9,000. HST based on accommodation costs of \$9 million by connecting passengers is approximately \$1.2 million, while the hotel tax is estimated to be \$198,000.

Appendix K: Comparison of Economic Impact Study Results, 2005 versus 2011

This section describes the differences in the economic impact study results for the previous 2005 economic impact study for Prince George's Airport Expansion compared to the current 2011 study which covers current airport operations.

Differing Scopes of Study: 2005 versus 2011

The 2005 study was undertaken to describe the economic impact of the airport, transportation and tourism employment in the Prince George region to provide support for the expansion of the airport.

The 2005 study provided economic impact analysis on the following elements related to Prince George:

- On-going employment at Prince George Airport and related firms offsite;
- On-going employment associated with tourism in Prince George and the surrounding area; and
- Ground transportation employment in Prince George

The 2011 study was commissioned by PGAA to assess the on-going impacts of the airport. The analysis includes onsite tenants and offsite firms that rely on the airport for its operations. Airport related ground transportation and accommodations economic impacts are also considered. The 2011 study; however, does not provide an assessment of tourism impacts nor does it include a broad ground transportation assessment as was presented in the 2005 study.

Overestimation and Incorrect Categorization of Economic Impacts in the 2005 Study

Through the preparation of the 2011 study, we have realized that there were some overestimations and incorrect categorizations of economic impact in the 2005 study report as follows:

- For the airport related economic impacts presented, the taxi employment related to Prince George Airport was overestimated. We included all of Prince George's taxi employment in the airport economic impact (approximately 165 jobs). However, some of the taxi employment should have been allocated to the airport, some to the tourism industry and the remainder to ground transportation. But, the figure was overestimated. Additionally, the taxi related employment should have been presented in the ground transportation or tourism economic impact table rather than in the airport economic impact results.

- For the off-site employment related to the airport we have realized that this component of the impact analysis was also over-attributed to the airport. For example, for the integrators (e.g., FedEx, Purolator, and DHL) and other offsite firms, we included all of their employment in our analysis when only a portion of their employment should have been counted. Not all jobs (e.g., trucking/ground employment) at these integrators are associated with Prince George Airport operations.

Rationalization of Economic Impact Results: 2005 versus 2011

The following table shows a summary of the direct economic impact (*in terms of person years of employment*) for Prince George Airport in 2005 compared to 2011, as follows:

- *Column 1:* the economic impact results as presented in the 2005 report for the airport related component;
- *Column 2:* the restated economic impact results for the airport related component in 2005;
- *Column 3:* the 2011 economic impact results
- *Column 4:* the % change in person years of employment from 2005 restated results to 2011 results.

When the results are restated, it can be seen that the airport's total direct employment has increased by almost 6% during this period despite the global recession. Airport related ground transportation is lower, but has been offset by an increase in onsite & offsite employment.

Table K-1: Comparison of Economic Impact Results (2005 vs. 2011)

Type of Firm	2005 <i>Reported</i> Direct Person Years	2005 <i>Restated</i> Direct Person Years	2011 Direct Person Years	Restated 2005 to 2011 (% Change)
Onsite & Offsite	475	291	338	+ 16.2%
Ground Transportation	174	51	27	- 47.1%
Accommodations	-	60	60	0.0%
Total	649	402	425	+ 5.7%

Appendix L: Glossary of Terms

Air Traveller Security Charge (ATSC): A fee collected by the Federal Government from air travellers to help fund security improvements at Canadian airports. The fee varies by region of travel and is charged to the passenger per enplanement.

Contract Work: Any work which is done for a company by an individual who is not on the payroll or work done for a company by another company. Generally speaking, firms will contract out work in areas in which they do not have expertise or when there are cost advantages to doing so.

Direct Employment: Direct employment is employment that can be directly attributable to the operations in an industry, firm, etc. It is literally a head count of those people who work in a sector of the economy. In the case of the airport, all of those people who work in an aviation related capacity would be considered direct employment.

Economic Activity: (also Output, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, the process of transforming the factors of production into goods and services desired for consumption.

Economic Output: (also Economic Activity, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, it is defined as the process of transforming the factors of production into goods and services desired for consumption.

Employment Impact: Employment impact analysis determines the economic impact of employment in terms of jobs created and salaries and wages paid out. In the case of the airport, the direct, indirect, induced and total number of jobs or person years created at the airport is examined to produce a snapshot of airport operations.

Full Time Equivalent (FTE): (also Person Year) One full time equivalent (FTE) year of employment is equivalent to the number of hours that an individual would work on a full time basis for one year. In this study we have calculated one full time equivalent year to be equivalent to 1,832 hours. Full time equivalent years are useful because part time and seasonal workers do not account for one full time job.³²

GDP: (also value-added) A measure of the money value of final goods and services produced as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.

³² *The Dictionary of Modern Economics*, David W. Pearce, General Editor, The MIT Press, Cambridge Mass., 1984

Ground Transportation: Ground Transportation at the airport includes any vehicles which transport passengers from the airport to the cities or from the cities to the airport. This would include taxicab service, limousine service and hotel van service. Valet services as well as skycaps are included in this category.

Indirect Employment: Indirect employment is employment which results because of direct employment. For the airport, it would include that portion of employment in supplier industries which are dependent on sales to the air transport sector. In some cases, contract work would be considered indirect employment.

Induced Employment: Induced employment is employment created because of expenditures by direct and indirect employees.

Multiplier Analysis: Analysis using economic multipliers in which indirect and induced economic impacts is quantified. Essentially, a multiplier number is applied to the "directly traceable economic impact" to produce indirect and total effects (see Multiplier.)

Multiplier: Economic multipliers are used to infer indirect and induced effects from a particular sector of the economy. They come in a variety of forms and differ in definition and application. A multiplier is a number which would be multiplied by direct effects in order to calculate indirect or induced effects. In the case of the airport, as in many other cases, multipliers can lead to illusory results, and thus must be used with great care.

Passenger Facility Fee (PFF): A fee collected by the airport authority from passengers to help with funding capital improvements at the airport. In some regions of Canada, this is also referred to as the Airport Improvement Fee (AIF) or Passenger Facility Charge (PFC).

Seasonality: Seasonality results when the supply and demand for a good is directly related to the season in which is consumed. For example, ski resorts experience changes in net income as a result of seasonality. Airports and airport services also experience seasonality as a result of vacation times for families (typically during the summer) and/or temperatures abroad (typically at Christmas time). As a result of seasonality in demand for flights, some air carriers increase frequency of flights to certain areas during the busy season.

Tenant: A firm which pays a lease to a leasing company or to the airport authority directly.

Value-Added: (also GDP) A measure of the money value of final goods and services produced as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.



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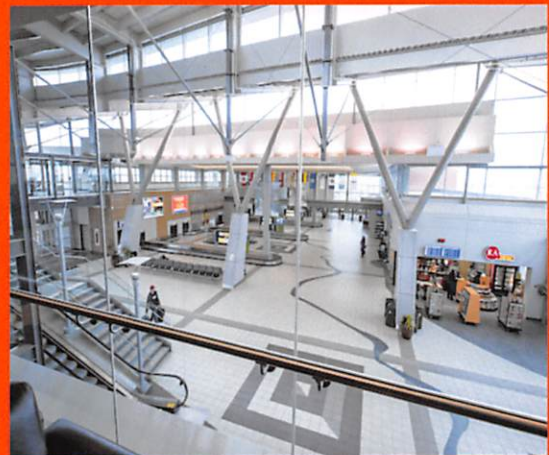
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The 2015 Economic Impact of the Regina International Airport

Regina
Airport
Authority Inc

(June 2016)



www.yqr.ca

THE ECONOMIC IMPACT OF THE REGINA INTERNATIONAL AIRPORT: 2015

prepared for

THE REGINA AIRPORT AUTHORITY

RP ERICKSON & ASSOCIATES
AVIATION CONSULTANTS
CALGARY

(JUNE 2016)

EXECUTIVE SUMMARY

The Regina International Airport is an economic engine for the community, generating hundreds of millions of dollars in local economic activity while providing one of the largest employment generators in the region. The Regina Airport Authority is a not-for-profit, non-government corporation whose vision is to operate this community asset to enhance economic growth and air access to Regina and southern Saskatchewan.

This report documents the 2015 economic impact activity generated by 67 on-airport firms and their subsidiaries. The impact is reported in terms of full-time equivalents (FTEs), labour income and economic output. Direct, indirect and induced forms of activity have been considered. The response rate to the survey questionnaire was exceptional: a 96 percent completion rate for the data sought.

In 2015, the Regina International Airport supported a significant level of economic activity :

Direct Impact

<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
3,497 †	\$138 million	\$216 million	\$354 million

Total Impact

<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
6,527	\$302 million	\$537 million	\$839 million

† 1078 jobs are located on the airport.

The Regina International Airport generated 839 million dollars of economic activity : roughly 6 percent of Regina's total 2015 GDP.

The Airport is one of the Top 10 Centres of Employment in the Regina area.

The on-airport economic benefits are distributed :

	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
Air Carriers	19%	15%	42%	33%
ATB Concessionaires	7%	6%	9%	8%
General & Corporate Av	7%	6%	9%	7%
Air Cargo	5%	4%	1%	2%
Airport & Gov't Services	37%	39%	17%	25%
On-Airport, Non-Aviation	25%	30%	22%	25%

Each 1000 E&D passengers creates 5.2 full time jobs.

Each 1000 E&D passengers creates \$241,000 of annual labour income.

Each 1000 E&D passengers creates \$668,000 of economic output activity.

Each time a B737 lands and takes off, it generates 1.4 FTEs;
\$63,000 of annual labour income; and \$174,000 of economic output activity.

Each time a Bombardier Q400 lands and takes off, it supports 0.8 FTEs;
\$36,000 of annual labour income; and \$100,000 of economic output activity.

A new daily Bombardier C-Series service between Regina and Ottawa would create 157 FTEs of employment; \$7,254,000 of labour income; and \$20,107,000 of economic output annually largely of benefit to Regina and southern Saskatchewan.

THE ECONOMIC IMPACT OF THE REGINA INTERNATIONAL AIRPORT : 2015

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- I Survey Questionnaire
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- III Generalities Methodology

Definition of Terms

ATB – airport terminal building.

FTEs – Full time equivalent workers, based upon a 40 hr work week.

E&D passengers – enplaned and deplaned passengers.

GDP – Gross domestic product; the value of all goods and services required to produce a given service or product.

Economic Output – an aggregate of the labour income plus other expenditures totals which can be considered as the contribution to GDP.

Jobs – the number of workers gainfully employed, either full-time (FTE) or part-time.

Labour Income – the annual salaries plus benefits of a given workforce, which are generally circulated within the community where that workforce resides.

On-Airport, Non-Aviation – refers to those businesses physically located on airport property but do not have or produce an aviation-related product or service.

One-Time, New Construction – consists of on-airport, new capital construction (ie. new bricks and mortar facilities and/or the refurbishment of existing infrastructure).

Other Expenditures – other annual, non-labour expenditures, by firms for goods and services, excluding labour costs. These monies generally circulate within the community where those purchases are made.

Non-Resident Visitors – passengers arriving at the airport from jurisdictions outside the greater Regina area (ie. other parts of Saskatchewan, other provinces, transborder or international passengers).

Trans-Border – US originating or departing passengers.

ULD – Unit Load Device, a container used in the large-scale movement of air cargo, typically in support of dedicated freighter aircraft.

Chapter I

Introduction

1.1 About this report

This report was undertaken by RP Erickson & Associates of Calgary for the Regina Airport Authority (RAA). The purpose of the study is to document the economic impact of the Regina International Airport during the 2015 calendar year. This is the fourth economic impact study which the consultants have undertaken for the RAA following our first report 2005, 2008 and again in 2012.

Impact assessments are valuable in that they serve to heighten business, community and political awareness as to the economic importance of an airport within a local economy. This study can also be viewed as a base-line against which future developments may be measured.

Any questions related to this study should be direct to Mr. Dick Graham, President & CEO, Regina Airport Authority (306) 761-7557.

1.2 Background

The Regina International Airport (YQR) is an economic engine pumping hundreds of millions of dollars of economic activity into the provincial economy, predominantly within the greater Regina area. In 2015, the Regina airport handled 1,256,000 enplaned and deplaned passengers. Over the past decade YQR has enjoyed a remarkable average annual growth rate of 4.2 %.

The current downturn in western Canada's oil patch has affected airports across the Prairies. YQR has been perhaps more fortunate than others, with passenger traffic relatively unchanged from previous years. Additionally, the airport welcomed its first large air cargo freighter operator with CargoJet now undertaking weeknight B757F service at the airport.

Senior RAA management has strengthened its commitment to future growth with a robust 2015 capital investment plan, including:

- upgrades to ATB retail and restaurant areas that has increased service offerings;
- an expanded pre-board screen area which has helped to reduce wait lines;
- upgrades to the baggage handling and screening systems will ensure YQR stays at the forefront of growing demand;
- the Multi-Tenant Facility – Airside which will provide a state-of-the-art facility for YQR's future ground handling and airside capabilities, enhancing the ability of all airlines in maintaining their on-time performance;
- the Multi-Tenant Facility – Groundside which will provide state-of-the-art facilities for YQR's growing air cargo and catering sectors; and,
- upgrades to Taxiway 'C' which will increase the RAA's land inventory to facilitate future on-airport development and growth.

Indeed – YQR's current investment priorities will ensure that the airport is 'ready for take-off' now and into the future.

1.3 Methodology

The economic impact of the Regina International Airport has been measured in terms of employment [full-time equivalents or FTEs], labour income, other expenditures and economic output. These leading indicators are expressed in dollar values and person-years of employment. Direct, indirect and induced forms of activity have been considered for employment and economic output. Data was obtained for the 2015 calendar year.

The data compiled in the 2015 study was obtained via a questionnaire circulated amongst 67 firms that operate on the airport. It is noted that a number of companies, particularly the airport terminal building (ATB) concessionaires, often include subsidiary businesses operating separate venues, as do several other on-site firms. In all cases, data was sought for an entire operation even though a business entity may have more than one on-airport outlet.

The survey population was separated into 8 sub-categories; the impacts associated with :

- the air carriers & their support services;
- the airport terminal building concessionaires;
- the general and corporate aviation communities;
- the air cargo sector;
- airport support & government agencies;
- on-airport, non-aviation firms;
- the impact associated with the spending activities of non-resident air passengers visiting the Regina area; and,
- the 'one-time' economic impacts of new construction projects on the Regina International Airport.

Each of the above categories is described in more detail in Chapter II (Sections 2.1 through 2.8). Section 2.9 displays the aggregate economic impact of the Regina International Airport for 2015.

In conducting the interview/questionnaire process, key principals at each targeted firm were visited by the consultants, where : the underlying rationale for undertaking the study was explained; the objectives of the study could be examined; the value of their participation fully explored; and, the confidentiality of their data could be assured.

This approach resulted in an exceptional 96 percent response rate. Of the 67 firms surveyed, 64 completed the questionnaire with all firms providing employment data. Incomplete returns were estimated comparing completed results of similar-sized firms involved in like commercial pursuits.

The impact of off-airport passenger spending was undertaken by utilizing the Conference Board of Canada's TEAM econometric model, as explained in Section 2.7.

One last important consideration is worth imparting : this report represents a 'snap-shot' of economic activity in time. The data herein represents the economic activity for the Regina International Airport for calendar year 2015.

1.4 The economic impact modelling process

Economic impact analysis is based on the premise that operations within various industries in an economy are closely related or linked to each other; that is, an increase in the activity levels in one industry will produce a positive 'domino' or rippling effect on other industries. Economists discuss the impact that one sector has on another in terms of indirect and induced effects. The total economic impact is the sum of the direct, indirect and induced effects.

The most common economic measures used in economic impact surveys are: employment in terms of jobs and labour come alongside economic output – essentially, the contribution made to gross domestic product. For this study, the consultants have chosen to display labour income as a separate category of economic output.

In this report:

Direct economic effects are the benefits attached to labour and expenditure activities within Saskatchewan;

Indirect economic effects are the result of the increase in goods and services produced largely within the Saskatchewan economy in support of direct activities;

Induced economic effects arise from the spending power of direct and indirect employees and largely benefiting local businesses;

Employment is measured in terms of full-time equivalents (FTEs). FTEs are expressed in person-years and labour income by dollar value. Employment multipliers have been used to generate the associated indirect and induced impacts;

Labour Income is the total payroll expense including wages, salaries and employee benefits. Labour income multipliers have been used to generate the associated indirect and induced impacts;

Other Expenditures is defined as the amount of dollar value to the local economy created through expenditure activity. A multiplier has been used to generate the indirect and induced impacts; and,

Economic Output is an aggregate of labour income and other expenditure totals, and can be considered as a contribution to gross domestic product (GDP). No multiplier effort has been applied to this category.

The aviation industry is a good example of a highly integrated sectoral activity which has significant linkages throughout a domestic economy. The multipliers associated with aviation are higher than most primary sectors and, as such, the potential impact to an economy linked to an increase or expansion in aviation activity is significant.

1.5 A word about the multipliers used in this report

Multipliers are used to *infer* indirect and induced economic activity from a measure of direct economic activity. Multipliers are not directly observed; they are inferred from an economic model. By far the direct measure is the most accurate. Readers are advised that multiplier analysis remains an imprecise econometric technique and that caution be used in interpreting the indirect and induced impacts contained in this report. However, multipliers are virtually the only cost-effective tool available to identify the overall impact of a sectoral activity within an economy.

The consultants note that the Saskatchewan Bureau of Statistics does not create provincial economic multipliers. The consultants have chosen the latest available set of Saskatchewan-specific multipliers produced by Statistics Canada, National Input-Output Multipliers. Multipliers have been selected for three categories 'Air Transportation' (used for aviation activities); 'Retail Trade' (used for ATB Concessionaires); and 'Professional Services' (used for Non-Aviation, On-airport Firms).

The closed Statistics Canada model utilized accounts for economic activity occurring within the province. As such, it is fair to note that some 'leakage' of benefits is likely occurring outside the Regina area as well as Saskatchewan as a whole which may not be accounted for in this report. This reinforces our earlier premise of undertaking a conservative approach in assessing the overall impact of the Regina International Airport. Thus, the findings displayed in this report can be viewed as the minimum economic impact created by YQR in 2015.

Readers are advised that multiplier analysis remains an imprecise econometric technique and that caution be used in interpreting the indirect and induced impacts.

Chapter II

The 2015 Economic Impact of the Regina International Airport

2.1 Economic Impact of the Air Carrier & Support Services Sector at the Regina International Airport : 2015

As could be expected, the air carrier sector is a dominant contributor to the economic activity generated by the Regina International airport. The major firms operating within this category include scheduled and charter airlines, ground and passenger handling firms, food catering, aircraft grooming, line maintenance and re-fuelling companies. Noted is a seasonal variation with regard to the substantial sunspot charter activity which occurs at YQR throughout the winter months.

Table 1 depicts the economic impact activity undertaken by the Air Carrier & Support Services sector in 2015.

Table 1.

Air Carrier & Support Services Sector :
2015 Economic Impact
 (in 000s, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
153	\$8.051	\$37.695	\$45.746
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
427	\$18.356	\$98.007	\$116.363

For calendar year 2015, a total of 153 full-time equivalent employees can be attributed to the Air Carrier & Support sector operating at YQR – within this category 165 direct jobs are located on the airport. Their aggregate labour income was identified at \$8.051 million. Other Expenditures for this sector were \$37.695 million. The direct Economic Output was \$45.746 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the considerable impact of Regina's air carrier sector can be realized. Within the Regina area 427 full-time jobs are dependent upon it, generating an annual labour income of \$18.356 million. Other Expenditures in this sector were \$98.007 million. In 2015, the total Economic Output benefit created by air carriers and their support activities at the Regina International airport was \$116.363 million.

2.2 Economic Impact of the Airport Terminal Building Concessionaire Sector : 2015

Within the Regina Airport Terminal Building (ATB), 16 firms were identified as providing services to passengers and non-resident visitors arriving by air, alongside the meeters & greeters of arriving passengers and employees of the airport. The number of firms canvassed in this grouping does not correlate with the actual number of outlets offering on-site services since a number of firms operate subsidiary or satellite venues. The totals of this sector are dominated by the car rental firms; important too, are the ground transportation and food & beverage providers.

Table 2 depicts the economic impact activity undertaken by the ATB concessionaire sector in 2015.

Table 2.

Airport Terminal Building Concessionaire Sector : 2015 Economic Impact (in 000s, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
132	\$5.044	\$14.007	\$19.051
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
166	\$6.910	\$20.310	\$27.220

For calendar year 2015, a total of 132 full-time equivalent employees can be attributed to the concessionaires operating within the Regina ATB – within this category 209 direct jobs are located on the airport. Their aggregate labour income was identified at \$5.044 million, lower on average than most other airport workers and reflecting the lower earnings bracket of many workers in this sector. Other Expenditure activities were \$14.007 million. The direct Economic Output was \$19.051 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the overall economic impact of the ATB concessionaires can be realized. Within the Regina area 166 full-time jobs are dependent upon this sector, generating an annual labour income of \$6.910 million. Other Expenditure activities were \$20.310 million. In 2015, the total Economic Output activity created by ATB activities was \$27.220 million.

2.3 Economic Impact of the General & Corporate Aviation Sectors at the Regina International Airport : 2015

The Regina International Airport supports a diverse, on-site general aviation (GA) community alongside a growing corporate aviation presence.

Regina's GA firms undertake a variety of aviation-related activities, including : flight training; aircraft sales and leasing; maintenance/overhaul/repair; alongside a range of specialized support services. The airport is home to several government flight departments and two Fix Base Operators (FBOs) which handle itinerant corporate air traffic and re-fuelling activities. Noteworthy to this sector has been the continuing growth in medium and large corporate aircraft activity by both resident and itinerant aircraft.

Table 3 depicts the economic impact activity undertaken by the GA and Corporate sector in 2015.

Table 3.

General & Corporate Aviation Sector : 2015 Economic Impact
(in 000s, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
55	\$2.917	\$7.566	\$10.483
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
154	\$6.651	\$19.672	\$26.323

For calendar year 2015, a total of 55 full-time equivalent employees can be attributed to the general and corporate aviation sector operating at YQR – within this category 71 direct jobs are located on the airport. Their aggregate labour income was identified at \$2.917 million. Other Expenditure activities were \$7.566 million. The direct Economic Output was \$10.483 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the significant impact of Regina's GA and corporate sectors can be realized. Within the Regina area 154 full-time jobs are dependent upon it, generating an annual labour income of \$6.651 million. Other Expenditures activity was \$19.672 million. In 2015, the total Economic Output activity created by general and corporate aviation at the Regina International airport was \$26.323 million.

2.4 Economic Impact of the Air Cargo Sector at the Regina International Airport : 2015

Regina's current air freight industry is dominated by the express courier & mail segment largely due to the lack of air cargo capacity available on the majority of narrow-bodied passenger aircraft in service at YQR. The RAA has made a major investment in a joint use Multi-Tenant Facility – Groundside which has created a significant on-site air cargo resource. Concurrently, the introduction of a CargoJet B757 weeknight freighter service to the airport's overnight courier segment has added a much needed ULD capability to the airport. The combination of these two prominent resources adds immensely to YQR's ability to attract meaningful air cargo flows to the airport.

Table 4 depicts the economic impact activity undertaken by the Air Cargo sector in 2015.

Table 4.

Air Cargo Sector : 2015 Economic Impact (in 000s, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
44	\$2.021	\$1.185	\$3.206
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
123	\$4.608	\$3.081	\$7.689

For calendar year 2015, a total of 44 full-time equivalent employees work in the air cargo sector – within this category 52 direct jobs are located on the airport. Their aggregate labour income was identified at \$2.021 million. Other Expenditure activities were \$1.185 million. The direct Economic Output was \$3.206 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the overall impact of YQR's air freight sector can be realized. Within the Regina area 123 full-time jobs are dependent upon the movement of air cargo, courier and mail products, generating an annual labour income of \$4.608 million. Other Expenditures activity was \$3.081 million. In 2015, the total Economic Output benefit created by YQR's air freight sector was \$7.689 million.

2.5 Economic Impact of the Airport Support & Government Services Sector at the Regina International Airport : 2015

The second largest on-site contributor to the economic impact of YQR is the Airport Support & Government Services group. This sector includes the Regina Airport Authority and its third-party contractors, as well as, those government agencies operating on the airport. Included in this later group are the Canada Border Services Agency, the Canadian Air Transport Security Authority, the RCMP, the Commissionaires and the Saskatchewan government's flight department. Three other non-government agencies - Nav Canada, the country's air navigation service provider, operating the Regina Air Traffic Control Tower, STARS Air Ambulance – the not-for-profit airborne service provider and the Commissionaires are included in this category.

Table 5 depicts the economic impact activity undertaken by the Airport Support and Government Services sector in 2015.

Table 5.

Airport Support & Government Services Sector :
2015 Economic Impact
 (in 000s, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
305	\$21.497	\$14.702	\$36.199
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
851	\$49.013	\$38.225	\$87.238

For calendar year 2015, a total of 305 full-time equivalent employees can be attributed to this sector – within this category 326 direct jobs are located on the airport. Their aggregate labour income was identified at \$21.497 million. Other Expenditure activities were \$14.702 million. The direct Economic Output was \$36.199 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the significant impact of the airport & government support sector can be realized. Within the Regina area 851 full-time jobs are dependent upon it, generating an annual labour income of \$49.013 million. Other Expenditure activity was \$38.225 million. In 2015, the total Economic Output activity created by the airport support and government services sector was \$87.238 million.

2.6 Economic Impact of the On-Airport, Non-Aviation Sector at the Regina International Airport : 2015

The attractiveness of the industrial lands located on the Regina airport is reflected in the growing importance of the On-Airport, Non-Aviation sector. Currently 9 firms are included in this sub-group. With its Taxiway 'C' development initiative well underway, airport management will be well-positioned to actively promote its continuing land development strategy. Regina has enjoyed considerable growth over the past several years - as business and commerce continues to flow along the Lewvan Drive bi-pass, airport lands will become increasingly attractive.

Table 6 depicts the economic impact activity identified in the On-Airport, Non-Aviation sector in 2015.

Table 6.

On-Airport, Non-Aviation Sector : 2015 Economic Impact (in 000s, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
266	\$17.282	\$20.893	\$38.175
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
551	\$37.156	\$50.561	\$87.717

In 2015, a total of 266 full-time equivalent employees are attributed to the On-Airport, Non-Aviation sector – within this category 289 direct jobs are located on the airport.

Their aggregate labour income was identified at \$17.282 million. Other Expenditure activities were \$20.893 million. The direct Economic Output was \$38.175 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the significant impact of the On-Airport, Non-Aviation sector can be realized. Within the Regina area 551 full-time jobs are dependent upon it, generating an annual labour income of \$37.156 million. Other GDP activity was \$50.561 million. In 2015, the total Economic Output activity created by the sector at the Regina International airport was \$87.717 million.

2.7 Economic Impact generated by Airport Visitor Spending : 2015

Spending by visitors travelling by air to the Regina area is an important contribution to the overall economic impact of the airport. Visitors by air are divided into domestic, transborder or international passengers depending upon point of origin. A smaller subset of visitor spending are the expenditures made by cockpit and cabin crews of air carriers who overnight at hotels in the Regina area for operational or crew rest reasons; additionally, passengers who have been delayed and require overnight accommodation have also been considered in the 'overnight expenses' category.

In attempting to capture the impact attributable to this sector, the consultants have chosen the Conference Board of Canada's Tourism Economic Assessment Model [TEAM]. The TEAM model is a sophisticated, computer-based econometric tool designed to assess the impact of non-resident spending upon a local or provincial economy. The TEAM output is presented and integrated into the overall study results.

From Table 7 an input total of \$270.377 million of non-resident visitor/overnight aircrew spending was entered into the TEAM model utilizing Canadian Tourism Committee data supported by Tourism Regina-derived average length of stay and per diem rates for each visitor category. The model produced the results displayed in Table 8.

Table 7.

**Spending by Non-Resident Visitors
Arriving by Air : 2015**

<u>Non-resident Visitors</u>	<u>2015 Visitor Totals</u> [†]	<u>Total Spending</u> ^{††}
Domestic	395,800	\$181,672,000
Transborder	64,700	\$42,600,000
International	43,500	\$42,325,000
Flightcrew/Pax overnight expenses ^{†††}		<u>\$3,780,000</u>
	Total	\$270,377,000

[†] Regina Airport Authority.

^{††} Canadian Tourism Commission/Tourism Regina.

^{†††} RP Erickson & Associates.

Note: This spending is attributable to passengers arriving at the Regina International airport in 2015; an unknown number of these visitors continue beyond the immediate Regina market, to southern centres, Saskatoon, northern parts of the province and/or beyond. It is safe to assume that a significant proportion of this spending finds its way into the southern Saskatchewan economy but that exact figure is unknown.

Table 8 depicts the economic impact attributable to non-resident, airport visitor spending in the Regina area in 2015.

Table 8.

**Spending by Non-Resident Visitors arriving by Air :
2015 Economic Impact**
(in 000s, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
2,542	\$80.784	\$120.376	\$201.160
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
4,002	\$159.992	\$278.760	\$438.752

For calendar year 2015 within the province, a total of 2,542 full-time equivalent employees can be attributed to non-resident, airport visitor spending. The aggregate labour income was identified at \$80.784 million. Other Expenditure activities were \$120.376 million. The direct Economic Output was \$201.160 million.

When the TEAM-generated multipliers are applied to the above direct economic activity, the significant impact of non-resident, airport visitor spending upon the province can be realized. This spending generated 4,002 full-time jobs, generating an annual labour income of \$159.992 million. Other Expenditure activity was \$278.760 million. In 2015, the total Economic Output activity created by this sector on the provincial economy was \$438.752 million.

2.8 The 'One-Time' Economic Impact of New Construction at the Regina International Airport : 2015

The 'one-time' impact of the economic contribution accompanying capital spending on the airport is consequential. Capital spending arises from the RAA's capital construction program alongside a range of tenant facility new construction and/or expansion projects. This capital investment has provided work for the local construction industry and Saskatchewan's construction materials sector.

In 2015, an appreciable \$44.341 million of capital construction was undertaken at YQR. Leading the investment was a \$39.95 million RAA capital program including work to : ATB retail improvements; hold baggage screening up-grades; taxiway 'C' relocation work; and, the addition of roughly 400 economy parking stalls. Noteworthy was the construction of two RAA Multi-Tenant Facilities – a Groundside enhancement designed to considerably advance YQR's air cargo and food catering capabilities and the other an industry-leading Airside Facility which will mitigate the equipment challenges facing winter groundside air operations. Each of the multi-use facilities has been constructed with considerable growth potential. The RAA's on-going airport improvements alongside the considerable expansion program accounted for 90 percent of the 2015 capital expenditures on the airfield

Table 9 depicts the 'one-time' economic impact activity associated with capital spending on the Regina airport in 2015.

Table 9.

**One-Time, New Construction at the Regina International Airport :
2015 Economic Impact**
(in 000s, except FTEs)

<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
253	\$19.421	\$28.068	\$47.489

For calendar year 2015, a total of 253 annual full-time equivalent construction and support service jobs can be attributed to YQR's capital construction spending. The aggregate labour income was identified at \$19.421 million. Other Expenditure activities were \$28.068 million. The direct Economic Output was \$47.489 million.

2.9 The Aggregate Economic Impact of the Regina International Airport : 2015

At the Regina International Airport, some 67 commercial firms or government agencies were interviewed and their 2015 economic activities assessed. Additionally, the impact of non-resident visitor spending in the Regina area and the economic benefits associated with 'one-time' capital construction expenditures for 2015 have been combined with the data in Sections 2.1 through 2.8 to produce Table 10.

Table 10 depicts the aggregate economic impact of the Regina International Airport for 2015.

Table 10.

**Aggregate Economic Impact of the
Regina International Airport : 2015**
(in 000s, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
3,497	\$137.596	\$216.424	\$354.020
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
6,527	\$302.107	\$536.684	\$838.791

For calendar year 2015, a total of 3,497 annual full-time equivalent employees can be attributed to the Regina International Airport; it is noted that within this total – 1078 jobs are located on the airport. The aggregate labour income of this workforce was identified at \$137.596 million. Other Expenditure activity was \$216.424 million. The direct Economic Output created by the Regina International airport was \$354.020 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the consequential impact of the airport can be realized. The airport creates some 6,527 full-time jobs, generating an annual labour income of \$302.107 million. Other Expenditures activity was \$536.684 million. In 2015, the total Economic Output benefit created by the Regina airport was \$838.791 million.

2.10 Discussion

In addition to providing over 6500 full-time jobs, the Regina International Airport's contribution to the GDP of the Regina area was nearly \$840 million. This sum amounted to roughly 6 percent of Regina's 2015 GDP of \$14.75 billion¹. In reviewing the major employers in the Regina area, it is noted that the airport is amongst the Top 10 Centres of Employment.

The distribution of the Economic Impact by sub-category is presented in Table 11. This distribution has been calculated on the basis of on-airport activities and does not include the totals created by non-resident visitor spending and the one-time impact associated with new construction.

Table 11.

Distribution of Economic Impacts

The economic benefits of the on-airport firms are distributed :

	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
Air Carriers	19%	15%	42%	33%
ATB Concessionaires	7%	6%	9%	8%
General & Corporate Av	7%	6%	9%	7%
Air Cargo	5%	4%	1%	2%
Airport & Gov't Services	37%	39%	17%	25%
On-Airport, Non-Aviation	25%	30%	22%	25%

¹ Regina Regional Economic Development Authority.

Data Generalities – 2015

When the economic impact totals are compared against Regina's 2015 enplaned and deplaned [E&D] passenger movement data (1,256,000), the results provide some interesting generalities.

Within the Regina area ² :

Each 1000 E&D passengers creates 5.2 full time jobs.

Each 1000 E&D passengers creates \$241,000 of annual labour income.

Each 1000 E&D passengers creates \$668,000 of economic output activity.

* * * * *

Each time a B737 lands and takes off, it generates 1.4 FTEs;
\$63,000 of annual labour income; and \$174,000 of economic output activity.

Each time a Bombardier Q400 lands and takes off, it supports 0.8 FTEs;
\$36,000 of annual labour income; and \$100,000 of economic output activity.

* * * * *

A new daily Bombardier C-Series service between Regina and Ottawa would create 157 FTEs of employment; \$7,254,000 of labour income; and \$20,107,000 of economic output each year - largely of benefit to the Regina area.

* * * * *

² See Appendix III for a methodology for the above data.

In addition to the quantifiable economic benefits displayed in this report, the Regina International Airport provides a wide range of ancillary, qualitative benefits to residents of the Regina area and the province as a whole. These range from societal advantages attached to the travel, tourism and transportation functions of the airport, through expansive career and hobby development possibilities to opportunities for volunteerism.

The Regina airport also provides critical access for air-related environmental and emergency response services; none more importantly than in providing all Saskatchewan residents with access to Regina's extensive health care resources by both fixed wing aircraft alongside the STARS helicopter capability.

Volunteerism - 2015

Airports provide local residents with a number of volunteer opportunities, where local residents can pursue their recreational interests in like company at no cost to any level government. By example, the Regina Flying Club has 300+ members who, by the Club's estimate, average some 15 to 20 hrs per year of volunteer activities. The Club's activities are diverse but include support for local air cadet groups, aviation historical research, and the restoration of historical aircraft. Volunteers also enable the Regina chapter of CASARA to undertake critical search & rescue missions in southern Saskatchewan.

A number of airport firms and agencies host school visits throughout the year. These services are undertaken on a 'no-charge, volunteer basis' and have the significant ancillary benefit of passing Regina and the province's rich aviation heritage on to future generations - not to mention the student visitors who may be attracted to a career in aviation.

2.11 Conclusions

In 2015, the Regina International Airport supported a considerable level of economic activity, primarily in the Regina area but also throughout the province and, to a lesser extent, the national economy.

In direct terms, the airport :

- contributed 3500 full-time jobs;
- generated \$140 million in labour income; and,
- created well in excess of \$200 million in economic output.

When indirect and induced forms of economic activity are included, the airport generates :

- over 6500 full-time jobs;
- over \$300 million in annual labour income; and,
- \$840 million dollars of GDP activity.

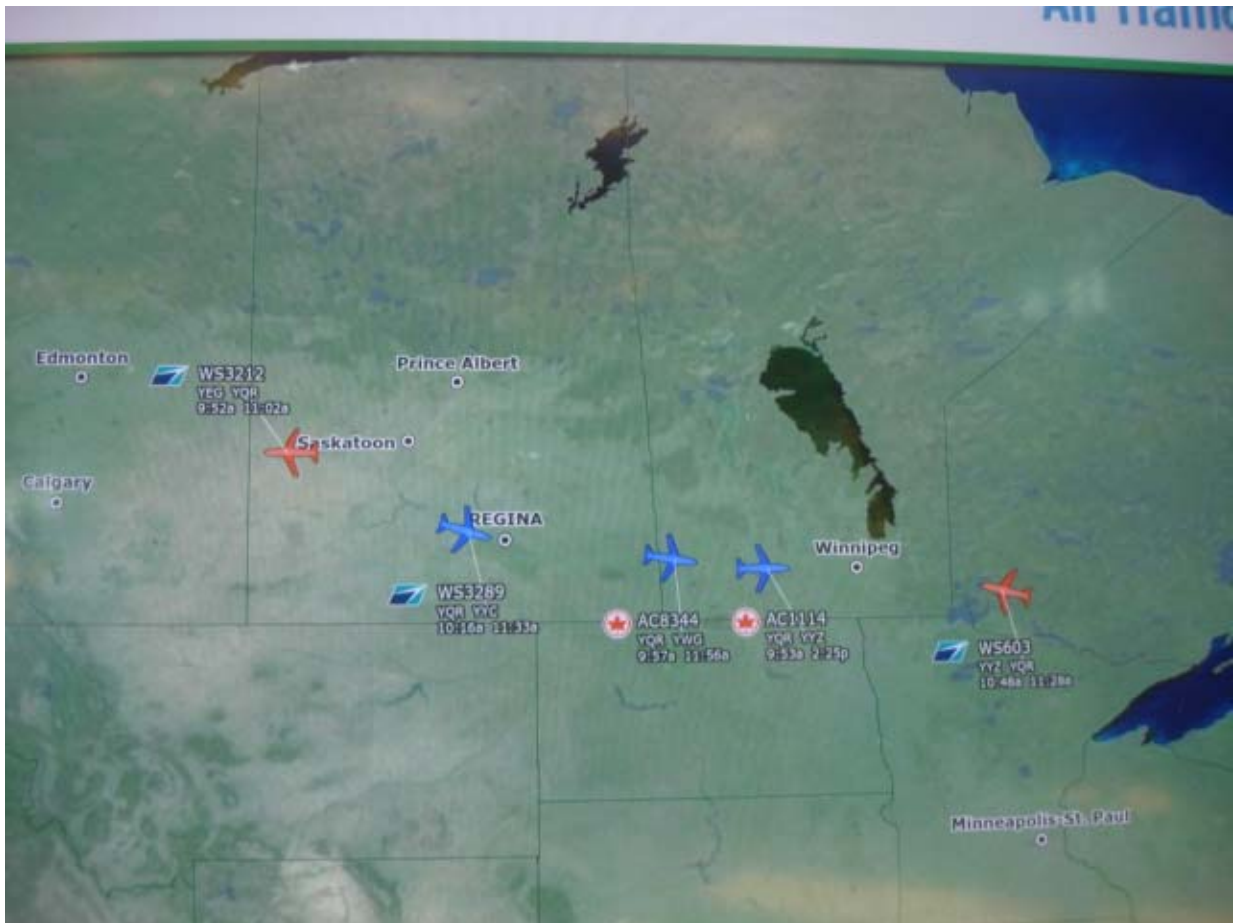
***Clearly – the Regina International Airport is
an important economic and social contributor
to the City of Regina and southern Saskatchewan.***

Picture Report









Regina Airport
Authority Inc.

APPENDIX I

SURVEY QUESTIONNAIRE

SURVEY OF THE ECONOMIC SIGNIFICANCE OF THE REGINA INTERNATIONAL AIRPORT

Please complete this survey using data for calendar year 2015 or for your most recent fiscal year. All data will be treated in strict confidence and will not be released in a disaggregated form to any individual or agency. Only aggregate industry data will be included in the final report.

Please answer the questions as completely as you can. If you are not entirely certain of an answer, please give your best estimate - your estimate will surpass by far our best guess in accuracy.

Feel free to direct any questions pertaining to this questionnaire or our study to either :

RP Erickson & Associates
Aviation Consultants
Calgary, Alberta
Tel. (403) 241-9633

Derrick B. Thue CMA, CA
VP Administration & CFO
Regina Airport Authority
Tel. (306) 761-7551

Please EMAIL the completed survey to :

rpeassoc@gmail.com

Section A: General Information

{Use the TAB key to move through the fields for data entry. SHIFT+TAB will take you back.}

Name of Firm	
Contact Person	
Telephone Number	
Email address	

Classification

Please choose the classification that best describes your firm's activities

Scheduled Air Carrier	<input type="checkbox"/>
Airport Terminal Concessionaire	<input type="checkbox"/>
General or Corporate Aviation	<input type="checkbox"/>
Government Agency	<input type="checkbox"/>
Cargo or Express	<input type="checkbox"/>
On Airport, non-aviation services	<input type="checkbox"/>
Other, please describe	

Section B: Employment & Expenditures - 2015

We are seeking the impact from that portion of your firm's business activity which pertains to the presence of the Regina International Airport. Please round all financial data to the nearest \$'000.

Employment & Labour Expense - 2015

Number of jobs your firm provides	
Number of full-time employees working for your firm. Please estimate in 40 hr per week, full-time equivalents [eg., 1 part-time worker @ 20 hrs/week = .5 full-time employee].	
Total annual payroll expense for all employees including wages or salaries, plus all employee benefits	

Expenditures for Goods & Services - 2015

Total operating expenditures for goods and services, but not including wages or salaries and employee benefits.	
---	--

Capital Expenditures (New Construction) - 2015

Total capital expenditures for building construction or renovation	
--	--

Section C: General Comments

Do you have any comments regarding the value of the Regina International Airport to our community ? By example - we think our airport provides a great place for career development, to pursue hobby interests in aviation, as a base for protecting our natural resource environment and serves as a critical access point to our health care facilities.

What are your thoughts ?

Thank you for your assistance with our survey – it is appreciated !

APPENDIX II

DATA BREAKDOWN

Direct Impact

	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Exp'tures</u>	<u>Economic Output</u>
Air Carriers & Support Services	153	\$8.051	\$37.695	\$45.746
ATB Concessionaires	132	\$5.044	\$14.007	\$19.051
General & Corporate Aviation	55	\$2.917	\$7.566	\$10.483
Air Cargo	44	\$2.021	\$1.185	\$3.206
Airport Support & Gov't Services	305	\$21.497	\$14.702	\$36.199
On-Airport, Non-Aviation	266	\$17.282	\$20.893	\$38.175
Non-resident Visitor Spending	<u>2,542</u>	<u>\$80.784</u>	<u>\$120.376</u>	<u>\$201.160</u>
Totals	3,497	\$137.596	\$216.424	\$354.020

(in millions, except FTEs)

Total Impact

	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Exp'tures</u>	<u>Economic Output</u>
Air Carriers & Support Services	427	\$18.356	\$98.007	\$116.363
ATB Concessionaires	166	\$6.910	\$20.310	\$27.220
General & Corporate Aviation	154	\$6.651	\$19.672	\$26.323
Air Cargo	123	\$4.608	\$3.081	\$7.689
Airport Support & Gov't Services	851	\$49.013	\$38.225	\$87.238
On-Airport, Non-Aviation	551	\$37.156	\$50.561	\$87.717
Non-resident Spending	4,002	\$159.992	\$278.760	\$438.752
'One-time New Construction	<u>253</u>	<u>\$19.421</u>	<u>\$28.068</u>	<u>\$47.489</u>
Totals	6,527	\$302.107	\$536.684	\$838.791

(in millions, except FTEs)

The above direct data was collated from the survey questionnaire : as detailed in Section 1.3, with the exception of the Non-resident Spending category which was derived from the TEAM econometric model as explained in Section 2.8; and, 'One-Time' New Construction Spending on the Regina International Airport, as discussed in Section 2.9.

APPENDIX III

GENERALITIES METHODOLOGY

Each 1000 E&D passengers creates 5.2 full time jobs.
 (6527 FTEs ÷ 1,256,000 annual E&D passengers x 1000)

Each 1000 E&D passengers creates \$241,000 of annual labour income.

(\$302.107 million annual labour income ÷ 1,256,000 annual
 E&D passengers x 1000)

Each 1000 E&D passengers creates \$668,000 of economic output activity.

(\$838.791 million economic output ÷ 1,256,000 annual E&D passengers x 1000)

***Each time a B737 lands and takes off, it generates 1.4 FTEs;
 \$63,000 of annual labour income; and \$174,000 of economic output activity.***
*(B737 at 130 seats average (considers the 600 model @ 120 seats and the 700 model
 @ 140 seats) x 2 or a multiple of .26 applied against
 the 1000 E&D passenger data set)*

**Each time a Bombardier Q400 lands and takes off, it supports 0.8 FTEs;
 \$36,000 of annual labour income; and \$100,000 of economic output activity.**
*(Q400 at 74 seats x2 or a multiple of .15 applied against
 the 1000 E&D passenger data set)*

**A new daily Bombardier C-Series service between Regina and Ottawa would
 create 157 FTEs of employment; \$7,254,000 of labour income; and \$20,107,000 of
 economic output annually of benefit to Regina and southern Saskatchewan.**
*Bombardier C-100 at 110 passengers x 365 days at 75 percent load factor = 30,100
 annual passengers; a multiple of 30.1 x the 1000 E&D passenger variables.*

Wilfrid Laurier University

School of Business and Economics



Region of Waterloo International Airport
Economic Impact Study 2015

Prepared for:

The Region of Waterloo International Airport

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April 22, 2016

Disclaimer

The research and advisory activities of this project are designed to enable students to learn theory and practice within the field of business administration. As an institution of learning, neither Wilfrid Laurier University nor its faculty or students assume responsibility for use of the results of this study. It is exclusively a tool of learning in a specific curriculum. Every reasonable effort has been made to provide complete and accurate information. However, Wilfrid Laurier University or its faculty or students cannot be held responsible for omissions or inaccuracies in published reference works, databases or in information provided by persons or organizations contacted as part of this research, or for the use of such information provided under this authorization.

Executive Summary

Located just outside of the tri-cities of Kitchener-Waterloo-Cambridge, the Region of Waterloo Airport is a full-service facility that is a certified Airport of Entry and is owned, maintained, and operated by the city of Waterloo.

This study provides an updated annual overview of social and economic impact generated by the Region of Waterloo Airport and its tenants as of 2015, using proven methodologies and secondary analysis of data provided by the ROWIA and external resources. Since the most recent impact study of 2013, there have been several significant internal developments, including investments in infrastructure such as a new control tower, addition of flight routes, and unique services such as private charters. With the restart of the Master Plan, economic impact is expected to increase more rapidly in the coming years, as the ROWIA undergoes more development and restructuring.

Social impact has been outlined in relation to significant airport-hosted events and activities that are ongoing and support local community development. Social impact remains strong with the Airport Fun day that has attracted several thousand visitors at a time, WestJet Cares for Kids providing a charity network, and career exploration opportunities for local youth via school tours.

Economic impact will be assessed in three sections using a standardized input-output model, calculating overall economic impact (direct, indirect, and induced) in addition to GDP measures and tax contribution. As of 2015, the airport and its tenants generated an estimated \$90.1 million in economic impact, supporting \$64.8 million in GDP, and \$668,000 total in tax contributions. Catalytic impact includes contributions to local tourism, trade, investment, and business productivity within the economy. As the sole airport in a city undergoing steady population growth, this study indicates that ROWIA contributes consistently to the Region Waterloo and surrounding areas as a focal point for community involvement and as a driver in the local economy.

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1.0 Introduction: The Region of Waterloo International Airport

As an airport that provides aviation services and business facilities to several large regions in Southwestern Ontario, the Region of Waterloo Airport drives vital economic growth and social welfare locally. Recent years have seen significant changes that are expected to affect the economic impact of ROWIA and its tenants. These changes include the addition of Chartright private jets, construction of a new state-of-the-art NAV Control tower and twice-daily service to Chicago with American Airlines. As of 2015, the airport Master Plan was also restarted with expectations of future expansion and development. It is assumed that these new additions have had and will continue to have a generally positive effect on the performance of ROWIA and its supported businesses. As the Region of Waterloo continues to grow and attract business, leveraging support from the Region itself is expected to ensure mutual benefit to the airport and local community. Increasing demand for flights is also expected to soon exceed the capacity of existing large airports such as Toronto Pearson¹, making it increasingly crucial to optimize operating capacity to leverage its ability to service customers in Ontario.

2.0 Purpose of Report

The purpose of report is to create an updated economic impact report for the Region of Waterloo International Airport, which will act as a reference document to supporting the ROWIA's mandate for continuing to develop and service the Region of Waterloo. The most recent ROWIA economic impact study was conducted on the 2013 economic data. This study will update developmental changes as of 2015 into the new report, together with other economic and social activities, as these changes have contributed significant economic impact to the

¹ (Keenan 2015)

Waterloo Region. These contributions will be measured using proven economic models, taking into consideration impact that is direct, indirect and induced in order to estimate the overall economic impact of the ROWIA. Analyses from this publication will help support ROWIA's positioning within the market, support potential tourism and business awareness, and help guide the ongoing Master Plan.

3.0 Scope of Report

This report will be based on internal materials and statistical data provided by the ROWIA unless otherwise noted, in which case it may be publicly available information retrieved from Internet, and references accessible from Wilfrid Laurier University databases. The report will focus on factual findings and analyses.

4.0 What is Economic Impact?

Economic impact is described in this report as the measure of value added as a result of the ROWIA and its tenants. Economic impact can be examined using three measures: Economic Output, Gross Domestic Product (GDP), and Tax Contribution.²

Economic Output is the measure of the direct and induced value of all goods and services offered by ROWIA and the on-campus tenants. Their capital expenditures, revenues, and operating expenses are included in this impact study.

Gross Domestic Product is the measure of the value of final goods and services offered by the ROWIA as a result of economic activity and does not include intermediate goods and services used to produce final goods and services.

² (Plumstead 2012)

Tax Contribution Impact is the measure of the value contributed back to the government through the taxation system.

5.0 How do we Measure Economic Impact?

Economic Impact can be measured by analyzing the direct impact, indirect impact, induced impact, and catalytic impact.³ The definition and example of each type of impact is given below:

- Direct Impact: Economic activity of the airline industry. Example: cleaning staff.
- Indirect Impact: Activity as a result of the direct impact. Example: offering fuel service to airliners.
- Induced Impact: Value created by spending earnings from direct and indirect impact.
Example: ROWIA employee buys house in Region of Waterloo.
- Catalytic Impact: Net economic effect from direct, indirect, and induced impact.
Example: Less people are driving on the roads.

6.0 Region of Waterloo

6.1 Location and Population

The ROWIA is a full-service facility classified as a Airport of Entry (AOE) that is owned, maintained and operated by the Regional Municipality of Waterloo. Located in Canada's "technology triangle", it services the cities of Cambridge, Kitchener and Waterloo. Through its many years of operation, it has provided valuable services to local community, both economically and socially. As of year-end 2014, the Region of Waterloo had an estimated

³ (Plumstead 2012)

population of 568,500. Yearly population growth rate has averaged 1.63 percent in the region over the past 15 years.⁴

6.2 Macroeconomic Study

The Region of Waterloo is the tenth largest census metropolitan area in Canada in terms of population. In 2015, its GDP reached \$26.35 billion. Its GDP per person, \$50,973, is 15% higher workforce from than the provincial average.⁵ Benefiting from skilled talent from University of Waterloo and Wilfrid Laurier University, it is home to over 1,000 technology companies. Its exports exceeded \$11 billion in 2012. The region has particular strength in Information & Communication Technology, Quantum & Nanotechnology, Advanced Manufacturing, Business and Financial Services and Food Processing sectors.⁶

7.0 Region of Waterloo International Airport

7.1 Flight Services Offered

The Region of Waterloo International Airport connects passengers from many popular destinations in North America, including Calgary, Chicago, Orlando, and Cayo Santa Maria, with services that benefit customer segments from families to business travellers. WestJet Airlines offers a daily service between Waterloo Region and Calgary and through connecting flights, passengers can access Vancouver, Victoria, Abbotsford, Kelowna, Edmonton, Regina and Saskatoon. WestJet Airlines also offers a weekly service that provides a direct flight between

⁴ (Region of Waterloo 2014)

⁵ (Airport 2014)

⁶ (The Canadian Trade Commissioner Service 2016)

Waterloo Region and Orlando. American Airlines offers non-stop daily services between Waterloo Region and Chicago O'Hare International Airport with connections to over 250 cities in over 40 countries worldwide. The newest flight service, offered by Sunwing Airlines, provides direct flights between Waterloo Region and Cayo Santa Maria (Santa Clara), Cuba.

7.2 Passenger Movement

Passenger movements through the facility can provide a measure of utilization of the ROWIA's services. This metric is an important reference for estimating economic impact based on airport facilities and services. ROWIA has seen steady increases in passenger movements since 2011, an overall indicator of stable growth of its customer base in the region and delivery of services on the part of ROWIA and its tenants. As of 2015, passenger movements were up 6% from the previous year to a record total of 155,645 (Appendix 2).

7.3 Facility and Services

The facilities and services at the Region of Waterloo International Airport are situated on 1000 acres of land that offers two distinct runways, one 7000 feet and another 4100 feet long.⁷ More than 300 employees work around the clock to provide service to the 25 onsite business and over 250 private and charter aircrafts. These services range from providing aircraft maintenance, fixed based operator, fuel service, flight training, restaurants, and an AOE with Canada Border Services Agency (CBSA) onsite. A detailed list of all the business supported by ROWIA can be found in Appendix 1.

8.0 Business Development Activities

⁷ (Region of Waterloo International Airport 2014)

8.1 Master Plan Update

ROWIA's Master Plan was restarted as of 2015, after a brief hiatus in 2014 following initial information sessions and planning. An airport's Master Plan provides a set of future recommendations over the course of 20 years with short, medium, and long-term guidelines. As of 2015, recommendations were to increase revenue, manage operational and capital expenses and establish a net levy target for airport management.⁸ Development in the near future will continue to promote growth of the airport's services, while the current economic position of the airport in Waterloo region supports the implementation of the new Master Plan. This Master Plan will take into account environmental and socioeconomic impact of the airport on the community, as well as implement capital improvements to be made going forward, while recognizing all opportunities and challenges. This plan is produced in collaboration with airport staff and tri-city officials with input from residents and customers in the region. Regional Municipality of Waterloo instructed a dedicated team to complete the Airport Master Plan and associated Business Plan by the end of 2016.

8.2 2015 Achievements

ROWIA had a phenomenal year leading up to 2015, with achievements ranging from increased flight services to increased community involvement and, to increased onsite services. The following highlights a few of ROWIA's achievements that have contributed to development:

December 2014 – Restructured Aeronautical Noise Advisory Committee (ANAC)

⁸ (Region of Waterloo 2014)

ROWIA has worked with the airlines to adjust departures and arrivals to reduce the impact of aircraft noise on the surrounding community. Signage around the ROWIA has also been increased to inform the public on how to communicate noise concerns.

December 2014 – Sunwing Vacations added a new direct flight

ROWIA has secured a seasonal flight service with Sunwing Vacations. Weekly direct flights between Waterloo Region and Cayo Santa Maria (Santa Clara), Cuba ran from December 24, 2015 and continued through March of 2016.

February 2015 – WestJet Airlines Increased its Seat by 18%

Due to significant increase in passenger demand for Calgary service, WestJet added more flights and switched its current aircraft to WestJet's Next-Generation Boeing 737-800 aircraft, adding an additional 16,780 additional seats.

April 2015 – Chartright Air Group joined the Airport Aviation Business Park Development

In April 2015, Chartright Air Group purchased a new hangar and announced its new service for corporate jet charters. Chartright is expecting to employ over 40 people to manage the fleet's 37 corporate aircraft, which fly to destinations around the world.

July 2015 – WestJet adds Seasonal Orlando Services

Orlando services is one of the most frequently requested destinations by residents of the Waterloo Region. In July 2015, ROWIA solidified a deal with WestJet to offer a seasonal service between Waterloo Region and Orlando, Florida.

Other Achievements

- Website content updated to better inform community
- Installation of new signs in subdivisions located in proximity

- Economic Impact Awareness campaign and increased public consultation

8.3 Other Planned Initiatives

The Region of Waterloo International Airport has many planned initiatives that will contribute to continual development. Some notable initiatives are highlighted in the following section.

1) More services

- ROWIA continues to serve as a convenient option for area businesses needing access to global markets. ROWIA Business Advisory Committee members and local companies such as Toyota, Blackberry, ATS, and Sun Life Financial continue to use the ROWIA as the preferred option for supporting its business operations.

2) NAV Control Tower

Building of a new control tower at the Region of Waterloo International Airport with expected completion in 2017. Modernization of their air traffic control service will improve sightlines and increase controller capacity.⁹

3) Other Business Initiatives

- Development of the Hangar Campus and East Side Employment Lands –Opportunity to commercialize thirty-five acres of land, which would complement the future development of the East Side Employment Lands;

⁹ (Region of Waterloo International Airport 2015)

- Business Plan – Develop an associated Business Plan to link the Master Plan with an efficient and effective financial plan, and address the recommendations from the Service Review;
- Support for Business –identify opportunities to align the future of the ROWIA with future needs of emerging sectors in Waterloo Region; and
- Changes in the Aviation Industry – The ever-changing nature of the aviation industry will affect the future growth of the ROWIA. Currently, Toronto Pearson International Airport is reviewing its existing capacity and future growth demands.¹⁰ As part of that review, neighbouring airports including the ROWIA are being considered as potential options for spill-over service.

9.0 Social Impact

Besides economic impact, the ROWIA also creates considerable social impact to local community. Airports can provide residents of the local community they service with access to distant emergency health care services. Tourism can also be encouraged to the region because of the direct connection, and having a local airport can act as a source of pride for the Region of Waterloo.¹¹ Last but not least, it can also act as a unique focal point for recreation, hobbies, career development, and volunteer opportunities, attracting visitors and goodwill in from around the region.

Community involvement will continue to provide intangible economic and social impact to the region by providing career exploration for local youth and sustaining charitable activities that

¹⁰ (Keenan 2015)

¹¹ (Air Transport Action Group 2005)

feed back into the region's overall social wellness. Some recent notable ROWIA-hosted events and activities are outlined in the section below.

9.1 Community Involvement Activities

During ROWIA's annual Aviation Fun Day, community members, organizers and volunteers get together in the spirit of the love of aviation. In 2015's event, 3,300 members of the community attended the event, contributing \$1,780 in cash donations and over 2,012 pounds of food for the Food Bank of Waterloo Region and the Cambridge Self Help Food Bank. This year's upcoming Aviation Fun Day will be hosted on Saturday August 20.¹²

ROWIA also offers guided airport school tours for students from kindergarten to grade 3. Through a tour of 1.5 hours, students experience a once-in-a-lifetime opportunity to explore the security screening area, hold room, and air terminal building, to learn about parts of an airplane and to meet with the Airport's fire truck team and Airport's Operations Team. For the sixth grade audience, the Waterloo Wellington Flight Centre also offers a similar tour that focuses on promoting aviation as a future profession within the community.

Finally, ROWIA supports the WestJet Cares for Kids program that collects used books and magazine for local charities, which are then resold for a donation at departure gates. To date, the program has raised over \$7,000 for local charities.¹³

10.0 Economic Impact

10.1 Modeling Economic Impact

¹² (Region of Waterloo International Airport 2016)

¹³ (Region of Waterloo International Airport 2016)

The economic impact encompasses direct, indirect, induced, and catalytic impact. The direct impact of ROWIA can be determined through ROWIA's internal resources, however indirect and induced impact requires an alternative solution. A common approach that is accepted by the industry is the input-output model. This model organizes the business sector of an economy in terms of who makes what outputs and who uses what inputs. The input-output model is useful for estimating how an increase in demand for a product of one industry could impact other industries, and the economy as a whole. Using the Interprovincial Input-Output Model 2010 report released by Statistics Canada, the indirect and induced impact can be estimated.

10.2 Economic Output

Operating activities and capital expenses were gathered from ROWIA financial reports with tenant contribution estimated from historical tenant expenditures. Total capital expenditures for 2015 was estimated based on an average of current plus previous 4 years' capital expenditures. This method was employed to prevent the effect of data skewing due to annual fluctuations and outliers, thus providing a more consistent estimate of year over year economic impact trend.

Considering the added regular airline services as of 2015, an improved method was employed to estimate tenant contribution. According to ROWIA's reports, airlines have also been making continual upgrades over the course of 2015 to their respective facilities, so this method allows for more accurate estimates of tenant expenditure. This method accounts for capital expenditure based on passenger movements, converted from capital expenditure per available seat mile (ASM), an industry standard measurement of capacity usage.¹⁴ For the

¹⁴ (American Airlines Group Inc. n.d.)

purposes of this report, average Cap Ex per ASM from West Jet and American Airline carriers¹⁵¹⁶ was applied against ROWIA's total passenger movements in 2015. (Appendix 3)

In summary, the Region of Waterloo International Airport and the on campus tenants has contributed \$90.1 million in 2015, equating to a slight 4% increase since 2013. The contribution experienced only a slight increase largely due to the Master Plan being put on hold, thus significantly decreased ROWIA's capital expenditure. However at \$5.65 of economic impact produced per dollar spent on capital, this ratio suggests that the ROWIA is also creating more impact per dollar over 2013 figures. With the restart of the Master Plan and ROWIA's newly developed services and business, the economic output will be significantly improved in the upcoming years.

10.3 Gross Domestic Product Impact

Additional measures, such as GDP, Tax contribution, and Catalytic impact can be combined with the total economic impact to provide a more thorough analysis of the total contribution that ROWIA makes to the Waterloo Region and economy as a whole.

Economic output and gross domestic product (GDP) are the two most common measures of economic contribution. Economic output measures the gross revenues of goods or services produced by an economic sector, while GDP measures only value-added revenues and removes the revenues to suppliers of intermediate goods and services.

Usually there are two approaches that could be used to do the measurements. The first approach is to ask each individual firm in a survey to provide information on their gross revenues, payments to suppliers, and so on. However, there are several problems with this

¹⁵ (American Airlines Group Inc. 2016)

¹⁶ (West Jet 2016)

approach: firstly, it is very expensive, and double counting makes this approach impractical. The alternative approach is to use economic multiplier data for the Waterloo Region and the province, as is provided by Statistics Canada. This method is more cost-effective and more accurate than obtaining data from surveys.

The detailed calculation for the GDP impact of ROWIA to the economy is shown in Appendix 5, calculated by multiplying the total economic impact with the GDP multiplier of 0.72 that provided in the Statistics Canada¹⁷. In total, the ROWIA is supporting approximately \$64.9 million GDP.

10.4 Tax Contribution Impact

Tax contribution measures the impact of ROWIA's operations on the federal and provincial government's revenue. Revenue contributions can be divided into two groups, taxes paid by employers and employees and taxes paid by passengers and visitors, based on who is the payee. Employers and employees pay payroll tax, social insurance contributions and corporate income tax, while passengers pay tax on the airport improvement fee, airline tickets and accommodations. From the tax contribution table in Appendix 6, it could be concluded that the direct employment and total wages are the major contributors, which account for 90% of the total tax contribution. For this report, only the direct employment by the airport is used.

The ROWIA's total tax contributions to Waterloo Region are approximately \$668,000, with Federal contributions of \$442,500 and Provincial contributions of \$226,600.

10.5 Catalytic Impact

¹⁷ (Statistics Canada, 2014)

ROWIA generates significant economic catalytic impact to Waterloo Region. Catalytic economic impact is the net economic effect resulting from the contribution to tourism, trade, and productivity and so on with air transportation usage¹⁸.

Tourism impact: With the existence of airport, more tourists can travel to Waterloo by air. The money they spend on tourism contributes to the economy of GDP.

Trade impact: A large proportion of international trade is transported by air. With the presence of airports, exporters or importers can easily access more distant markets to do business.

Impact on investment: Transportation conditions are usually the first thing to consider for corporations when they make business decisions. This includes company investment decisions and technology transfer decisions. Thus the quality of air services and convenience of transportation are very crucial for attracting business.

Impact on productivity and business operations: Good air delivery services may help companies to reduce the need to hold inventories and reduce the risk that production is too high when concerned about rapid delivery time of goods.

Impact on market structure: Good air transportation links may strengthen healthy competition between companies in the region, and help avoid monopoly.

11.0 Conclusions

As of 2015, the airport and its tenants generated an estimated \$90.1 million in economic impact, supporting \$64.8 million in GDP, and \$668,000 total in tax contributions. The increased economic impact was greatly supported by the numerous internal developments that have

¹⁸ (Boat Harbour Investments Ltd 2016)

transpired as of 2013, which included investments in infrastructure, addition of new flight services, and unique services such as private charters. Coupled with a catalytic effect, the ROWIA was also estimated to have contributed to local tourism, trade, investment, and business productivity within the economy. These economic assessments provide a snapshot of the ROWIA's economic contributions for the year ended 2015, and provide an updated reference for year-over-year impact. With the restart of the Master Plan, economic impact is expected to increase more rapidly in the coming years, as the ROWIA undergoes more development and restructuring. Social impact remains strong with various community activities that have attracted several thousand visitors at a time, providing charitable work and career exploration opportunities for local youth. As the sole airport in a city undergoing steady population growth, this study indicates that ROWIA contributes consistently to the Region Waterloo and surrounding areas as a focal point for community involvement and as a driver in the local economy.

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Appendix 1 – List of ROWIA’s Tenants

Air Cadets

Royal Canadian Air Cadet Youth Development
Centre: 822 Tutor Squadron

Air Cargo / Just-In-Time Freight

Adler Aviation
Chartright Air Group
Flite Line Services
Flightpath Charter Airways
Great Lakes Helicopter
Nolinor Aviation

Air Traffic Services

NAV Canada

Aircraft Charter

Adler Aviation
Chartright Air Group
Flightpath Charter Airways
Flite Line Services
Great Lakes Helicopter
Nolinor Aviation

Aircraft Maintenance

Chartright Air Group
Flightpath Charter Airways
Flite Line Maintenance Group Inc. AMO 40-11
Kitchener Aero Avionics
Tri-City Aero
Rotor Services
Reliable Horse Power

Airline

American Airlines
Sunwing Vacations
WestJet Airlines

Fixed Based Operator / Fuel Service

Flite Line Services
Waterloo ESSO Services

Flight Training

Adler Aviation
Great Lakes Helicopter
Waterloo Wellington Flight Centre

Government Agencies

Canada Air Transport Security Authority
(CATSA)
Canada Border Services Agency (CBSA)
Transportation Safety Board of Canada
(TSB)
Transport Canada

Ground Handling Providers

Airway Aviation
Executive Aviation Fuels Ltd.
Fliteline Services

Hangars & Aircraft Parking

Ankedow Real Estate Corp.
Chartright Air Group
Epsilon Aviation
Flite Line Services
Panjer Coyle Inc.
14327747 Ontario Ltd.
940787 Ontario Inc.
Westport Canada Ltd.
Outdoor Parking Space
953498 Ontario Inc.

Restaurants

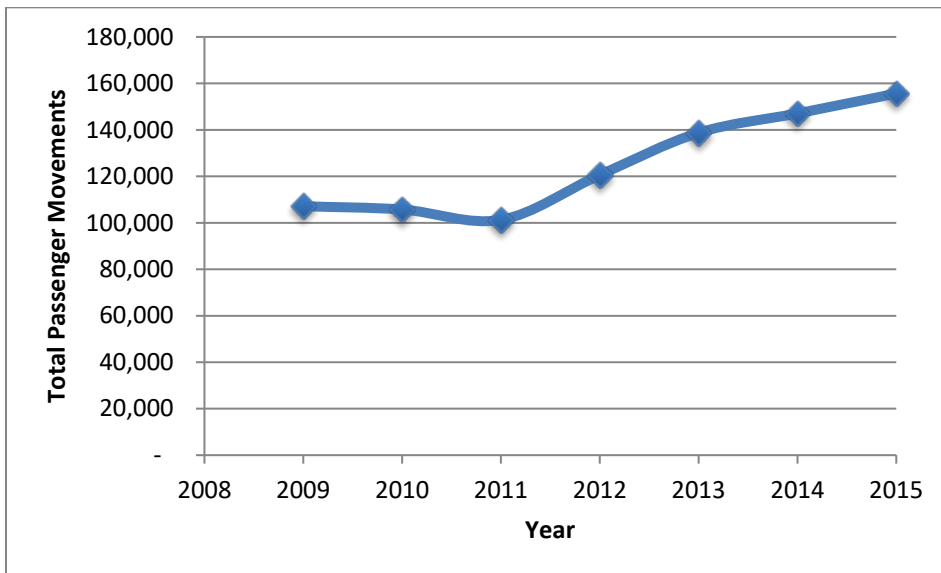
Aviator Cafe by Edelweiss Main Lobby
and Departure Lounge
Runways Cafe at the Waterloo Wellington
Flight Centre

Specialty Aviation

Discovery Air

Appendix 2 – Passenger Movements

Year	Movements*	% Change
2015	155,645	6%
2014	147,095	6%
2013	138,733	15%
2012	120,580	19%
2011	101,279	-4%
2010	105,729	-1%
2009	107,143	



* All passenger data provided by ROWIA (YKF Passenger Statistics 2015 Spreadsheet)

Appendix 3

	Updated Report	2013 Report			
	2015	2013	2012	2011	2010
Operating Activities					
[*1] Staffing Costs	2,314,750	2,142,875	\$2,114,400	\$2,051,107	\$2,092,125
[*1] Operating Expenses	6,121,985	5,484,690	\$6,042,021	\$5,218,198	\$4,508,545
[*2] Tenants	600,000	367,007	\$369,904	\$412,000	
Total Operating Activities	\$9,036,735	\$7,994,572	\$8,526,325	\$7,681,305	\$6,600,670
Capital Investment					
[*3] Total Capital Expenditure	\$15,939,344	\$17,793,083	\$16,457,000	\$22,205,000	\$25,379,000
Visitor Spending					
[*1] Total Passenger Traffic	155,645	116,580	120,580	101,279	105,729
Multiply (10%)	15,565	11,658	12,058	10,128	10,573
Per Capita Spending (\$500)	\$7,782,250	\$5,829,000	\$6,029,000	\$5,063,950	\$5,286,450
[*4] Total Spending by Passengers	\$7,782,250	\$5,829,000	\$6,029,000	\$5,063,950	\$5,286,450
Total Direct Impact	\$32,758,329	\$31,616,655	\$31,012,325	\$34,950,255	\$37,266,120
Indirect and Induced Economic Impact					
Total Direct Impact	\$32,758,329	\$31,616,655	\$31,012,325	\$34,950,255	\$37,266,120
[*5] Input-Output Multiplier (Ontario)	1.75	1.75	1.75	1.75	1.75
Total Indirect and Induced Impact	\$57,327,076	\$55,329,146	\$54,271,569	\$61,162,946	\$65,215,710
Total Economic Impact	\$90,085,405	\$86,323,415	\$77,730,000	\$73,980,000	\$58,050,000
[*6] Economic Impact per CapEx	5.65	4.85	4.72	3.33	2.29

Assumptions and References

- [*1] Data provided by ROWIA
- [*2] Tenant data is estimated using 2015's Tenant survey and historical spending
- [*3] Calculated by averaging Capital Expenditure of 2011 to 2015 and adding WestJet's and AA's Capital Expenditure
- [*4] Calculated using ROWIA's Economic Impact 2013 report's methodology. It is estimated that 10% of all passengers would spend \$500 per visit
- [*5] Multiplier used is the same as the ROWIA's Economic Impact 2013 report
- [*6] Calculated by dividing Total Capital Expenditure and Total Economic Impact

Appendix 4 – Capital Expenditure of Carriers

Total Carrier Capital Expenditure		\$5,596,944
<u>WestJet</u>		
[*1]	Passenger Movement at ROWIA	75,200
[*2]	Estimated Flight Distance	1800
	ASM at ROWIA	135,360,000
[*3]	Corporate Total ASM	26,900,000,000
	WestJet's Total Operation at ROWIA	0.50%
[*4]	WestJet's Total Capital Expenditure	\$920,000,000
	WestJet's Capital Expenditure towards ROWIA	\$4,629,413
<u>American Airlines</u>		
[*5]	Passenger Movement at ROWIA	75,200
[*6]	Estimated Flight Distance	500
	ASM at ROWIA	37,600,000
[*7]	Corporate Total ASM	239,000,000,000
	AA's Total Operation at ROWIA	0.02%
[*8]	AA's Total Capital Expenditure	\$6,150,000,000
	AA's Capital Expenditure towards ROWIA	\$967,531
<u>Sunwing</u>		
[*9]	Public data not available.	

Assumptions and References

- [*1] WestJet is assumed to account for 47% of all passenger movement, given their daily flight service to Calgary
- [*2] Flight distance is estimated from ROWIA to YYC
- [*3] ASM data taken from WestJet's Annual Report
- [*4] Capital Expenditure data taken from WestJet's Annual Report
- [*5] AA is assumed to account for 47% of all passenger movement, given their daily flight service to Chicago
- [*6] Flight distance is estimated from ROWIA to ORD
- [*7] ASM data taken from AA's Annual Report
- [*8] Capital Expenditure data taken from AA's Annual Report
- [*9] Sunwing's data was not publically available and their capital expenditure contribution cannot be calculated. Since Sunwing is estimated to contribute to 6% of all passenger movement, this would not significantly effect the overall results.

Appendix 5 – GDP Contribution

Scenarios	Bear	Base	Bull
Direct Impact	\$ 29,482,496.10	\$ 32,758,329.00	\$ 36,034,161.90
GDP Multiplier	\$ 21,227,397.19	\$ 23,585,996.88	\$ 25,944,596.57
Indirect and Induced Impact	\$ 51,594,368.40	\$ 57,327,076.00	\$ 63,059,783.60
GDP Multiplier	\$ 37,147,945.25	\$ 41,275,494.72	\$ 45,403,044.19
Total GPD Impact	\$ 58,375,342.44	\$ 64,861,491.60	\$ 71,347,640.76

Appendix 6 – Tax Contribution

Tax Contribution	Amount	Average Income Tax Rates		Estimated Income Tax Contribution	
		Federal	Provincial	Federal	Provincial
Permanent Full Time Salaries	\$ 868,286.00	26%	13.16%	\$ 225,754.36	\$ 114,266.44
Temprary Full Time Wages	\$ 101,523.00	15%	11.16%	\$ 15,228.45	\$ 11,329.97
Full Time Wages	\$ 601,496.00	26%	13.16%	\$ 156,388.96	\$ 79,156.87
Part Time Wages	\$ 8,362.00	15%	9.15%	\$ 1,254.30	\$ 765.12
Overtime Wages	\$ 28,256.00	15%	9.15%	\$ 4,238.40	\$ 2,585.42
Vacation and Sick Pay	\$ 152,549.00	26%	12.16%	\$ 39,662.74	\$ 18,549.96
Total	\$ 1,760,472.00			\$ 442,527.21	\$ 226,653.78



2015

Economic Impact Report



October 2016

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Executive Summary

Operation Impacts

In 2015, airport operations and tenants at the Saint John Airport had 190 full-time equivalent (“FTE”) employees in 20 government and business operations, as well as jobs associated with taxis. The economic impact of the Saint John Airport on the City of Saint John economy is significant in terms of airport operations, airport tenants and non-residents entering the City of Saint John at the airport. In 2015, these groups contributed \$63.6 million to the City’s gross output, \$33.9 million to gross domestic product and \$24.5 million to wages and salaries with 446 FTE direct and spinoff jobs.

Gross output is also called economic output and this measure is the total annual gross revenue from all airport-related and tenant activity, and non-residents entering Saint John at the airport. A portion of gross output impacts on gross domestic product (“GDP”) and wages and salaries. GDP represents the monetary value of all goods and services produced from airport activity listed above while wages and salaries is labour income created due to this activity. Wages and salaries result in jobs that are defined as FTE employment. One FTE represents one person-year of employment.

Highlights Of Operation Impacts

Non-residents entering the City of Saint John at the airport tend to stay longer and spend more money. In 2015, the direct and spin-off (indirect and induced) impacts of these non-resident visitors (pleasure and commercial) were significant. They contributed \$14.6 million to gross output, \$8.2 million to gross domestic product and \$4.7 million in labour income. While many jobs in the tourism and hospitality sectors are seasonal, the impact of air travelers is 142 FTE jobs.

Another important operational sector is Business Aviation. Irving Oil, JD Irving and Shoreland Transport (Cooke Aquaculture) have hangars that focus on business aviation while Atlantic Flight Centre functions as a fixed base operator (“FBO”). This sector contributed \$14.5 million in economic output, \$8.3 million in GDP and \$8.0 million in wage and salary for 110 FTE jobs. The average wage in this sector is \$72,730 or 64% above the New Brunswick 2015 average.

Construction Impacts

Operation impacts are ongoing while construction impacts are not as each capital project has a start and finish. Since the 1999 transfer of the airport land from Transport Canada, the Saint John Airport Authority and tenants have invested over \$23 million in new capital development projects and the maintenance of capital. Over the next decade, capital projects will top \$33.7 million. Completed capital projects since 1999, and ongoing and planned future projects to 2025 have or will contribute to the City of Saint John \$83.7 million in economic output, \$42.5 million to GDP, \$30.6 million to labour income and 624 FTE jobs.

In a typical year over the next decade, the impact of renovation and new construction projects will be \$5.1 million in economic output, \$2.6 million in GDP, \$1.9 million in household income and 37 FTE jobs.

Combined, airport operations in 2015 and airport construction projects in a typical year over the next decade will contributed \$68.7 million to the City's gross output, \$36.5 million to gross domestic product and \$26.4 million to wages and salaries with 483 FTE direct and spinoff jobs.

The Saint John Airport also has a positive fiscal impact on the City of Saint John, Province of New Brunswick and the Government of Canada. The Saint John Airport Authority, tenants, employees and purchasers of food/retail goods and car rentals at the ATB, and aviation fuel sales generated over \$6.6 million in government taxes during 2015.



SUMMARY OF ECONOMIC AND FISCAL IMPACTS SAINT JOHN AIRPORT				
Economic Impacts	Direct	Indirect	Induced	Total
Total Gross Output (\$Millions):				
Airport Operations: 2015	\$41.6	\$14.2	\$7.8	\$63.6
Construction: Typical Year	\$3.4	\$1.0	\$0.7	\$5.1
Total	\$45.0	\$15.2	\$8.5	\$68.7
GDP Basic Price (\$Millions):				
Airport Operations: 2015	\$23.3	\$6.0	\$4.6	\$33.9
Construction: Typical Year	\$1.7	\$0.5	\$0.4	\$2.6
Total	\$25.0	\$6.5	\$5.0	\$36.5
Labour Income (\$Millions):				
Airport Operations: 2015	\$16.5	\$5.5	\$2.5	\$24.5
Construction: Typical Year	\$1.4	\$0.3	\$0.2	\$1.9
Total	\$17.9	\$5.8	\$2.7	\$26.4
Full-Time Equivalent Jobs:				
Airport Operations: 2015	314	86	46	446
Construction: Typical Year	27	6	4	37
Total	341	92	50	483
2015 Fiscal Impacts (\$Millions):				\$6.71
Sources: Chris Lowe Group estimates based upon September 2016 Tenant Survey; Saint John Airport Authority; Statistics Canada Catalogue No. 15F0046XDB: Provincial Input-Output Multipliers, 2010.				

Over the next decade, the Saint John Airport's catchment area should see significant new energy, natural resource and infrastructure investments that will increase the demand for air services. Enterprise Saint John maintains a database on these projects that includes confidential information. These projects are:

- JD Irving - Pulp and Paper Mill Upgrade
- Atlantic Potash - Millstream Mining Operation
- TC Pipelines - Energy East Pipeline
- TransCanada and Irving Oil - Oil Export Terminal
- City of Saint John - New Sewage Treatment Plant and Water Mains Upgrades
- Saint John Development Corporation and Partners - Fundy Quay Mixed Use Development
- Tucker Park Corporation - Medical Arts Centre
- Bell Aliant - Saint John Data Centre
- Port Saint John - West Side Terminal Modernization

From 2016 to 2025, these projects are forecast to increase air travel expenditures by more than \$17.5 million with the result being over 39,000 new enplaned/deplaned passengers.

1 Introduction

1.1 Context



The Saint John Airport (IATA: “YSJ”, “ICAO”) is the commercial airport for the City of Saint John and surrounding region of Southeastern New Brunswick. It is an important transportation link for business, residents and visitors and is essential to the region’s future economic growth and prosperity.

The airport’s catchment area extends over 5,000 square kilometres from the Fundy Isles and St. Stephen on the New Brunswick - Maine border in the southeast to Sussex in the east. The catchment area has an estimated 2011 Census of Canada population of 250,000 or one-third of the province’s total population. Within the catchment area, the City of Saint John is the major urban centre (2011 population of 70,063) with City and surrounding communities (Census Metropolitan Area) having a 2011 population of 127,761.

To understand the scope of the airport’s economic and fiscal (government revenue) impacts on the City of Saint John, the Saint John Airport Authority Inc. (“SJAAI”) retained Chris Lowe Group to determine the 2015 impacts. The study relied upon a survey of major airport tenants, operating and financial results from SJA and other sources for the calculations.

The report contains five sections. Section 1, Introduction, contains an overview of the airport. Section 2, Study Approach, outlines how the 2015 economic and fiscal impacts are measured. Section 3, Economic Impacts, presents the findings of the airport’s 2015 economic impacts on the City of Saint John and the benefits of how major regional capital projects (like Energy East) will impact upon the airport’s operations. Section 4, Fiscal Impacts, defines the income, consumption, retail and aviation fuel tax impacts for 2015. Section 5, Summary, presents the 2015 highlights.

1.2 Airport Overview

In March 1999, the Department of Transport (“Transport Canada”) transferred operational and financial responsibility for the Saint John Airport to the SJAAI under a 60-year lease arrangement. The Federal Government (“Canada”) through Transport Canada remains the property owner. The Ground Lease covers 1,800 acres (728 hectares) and contains all operational infrastructure and facilities for the airport. These include a 40,000 square foot (3,715 square metres) Air Terminal Building (“ATB”), Runway 05-23 at 7,000 feet (2,134 metres) and Runway 14-32 at 5,100 feet (1,555 metres).

The airport is located at elevation AMSL 109 metres (358 feet) with co-ordinates 45° 32’ 65” N, 65° 88’ 89” W. The airport’s civic address is 4180 Loch Lomond Road within the City of Saint John and east of the urban centre. Within the Saint John Census Metropolitan Area (“CMA”), it provides easy access to the suburban areas of Rothesay and Quispamsis.

The Saint John Airport is one of 26 National Airport System (“NAS”) facilities in Canada. There are two other NAS airports in New Brunswick: Fredericton “YFC” and Greater Moncton “YQM”)

SJAAI is a not-for-profit community based company with a Board of Directors nominated by various levels of government. Board members in 2015 were nominated by Transport Canada, New Brunswick Department of Transportation and Infrastructure, City of Saint John, The Saint John Region Chamber, Enterprise Saint John, Enterprise Fundy, Saint John and District Labour Council, Fundy Regional Services Commission and SJAAI.

SJAAI’s mission is to operate a safe, efficient and financially viable airport in the public’s interest in compliance with the Ground Lease signed in 1999. The Transport Canada 2015 Lease Monitoring Report determined SJAAI is in general compliance with the Ground Lease and ancillary agreements. The Board’s vision is to make the Saint John Airport a premier gateway to Canadian, transborder (Canada - United States) and international destinations by offering the highest standards of safety and customer service to the New Brunswick travelling community. The vision is carried out by key strategies to enhance scheduled passenger service, provide appropriate infrastructure and ensure community engagement while meeting or exceeding regulatory requirements that include safety, security and environmental management.



In 2015, the airport had year-round scheduled Air Canada service to Halifax (four daily flights), Montreal (three flights daily), and Toronto (four daily flights), and seasonal service (mid-February to mid-May) by Sunwing Vacations (Sunwing Airlines) to Cuba, Mexico and the Dominican Republic. Sunwing added direct flights to Orlando, Florida for the 2016 season.

Air Canada service is provided by their partners Jazz Aviation (Toronto and Montreal) and EVAS Air (Halifax). Below-the-wing aircraft services for Air Canada are provided by Air Canada Ground Handling. Jazz Aviation does the above-the-wing services for Sunwing while the below-the-wing aircraft services are contracted to Strategic Aviation (SA) Services.

There is an active General Aviation ("GA") community with hangers providing direct taxiway access to Runway 14-32. These operations include Atlantic Flight Centre ("AFC"), Irving Air Services (JD Irving), Clover Valley Properties (Irving Oil Transport) and Shoreland Transport (Cooke Aquaculture). Air Canada Ground Handling Services and Northrup Group also have Bravo taxiway access from their handlers. Other tenants with their own buildings include Measurement Canada, ASIG Aircraft Service International Group (fuel farm) and NavCanada (air traffic control).



Exhibit 1.1
REGIONAL SETTING

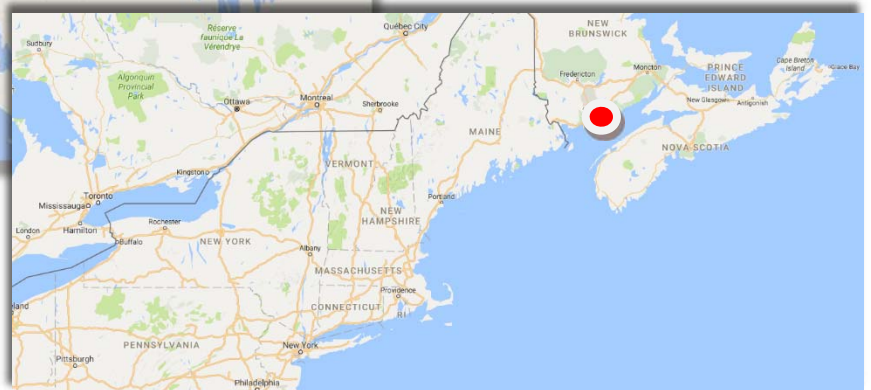
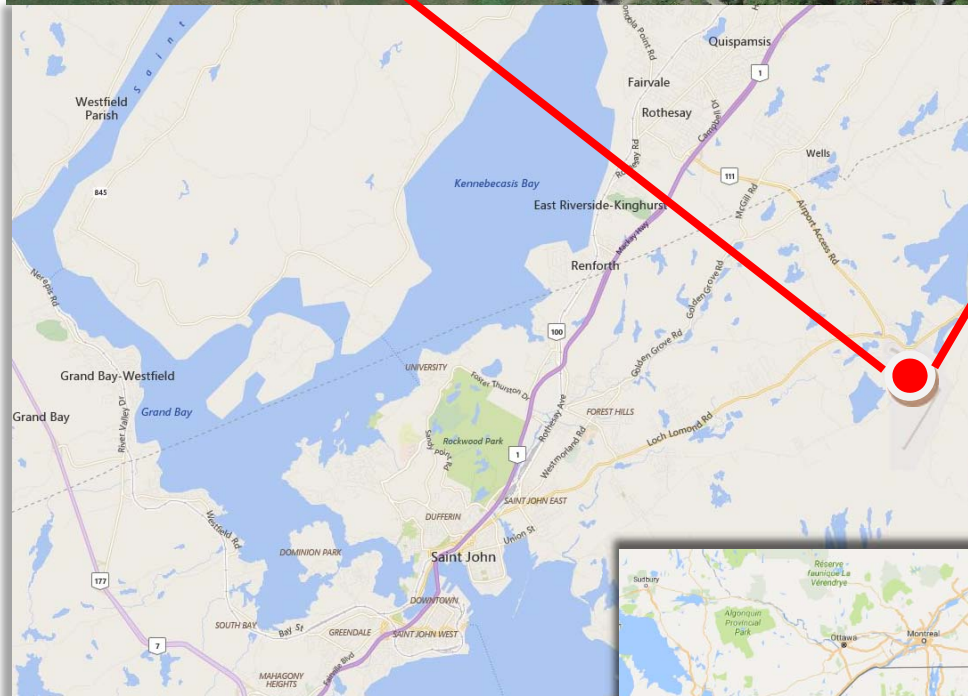


Exhibit 1.2
SAINT JOHN AIRPORT -
REGULAR SCHEDULED PASSENGER SERVICE 2015

Depart: Flight	Time	Destination	Frequency
Air Canada 8945	5:15AM	Toronto YYZ	Daily
Air Canada 7596	5:40AM	Halifax YHZ	Daily Except Sunday
Air Canada 8791	6:00AM	Montreal YUL	Daily
Air Canada 8789	11:10AM	Montreal YUL	Daily
Air Canada 7598	11:30AM	Halifax YHZ	Daily
Air Canada 8947	12:10PM	Toronto YYZ	Daily
Air Canada 8951	2:30PM	Toronto YYZ	Saturday
Air Canada 7600	3:00PM	Halifax YHZ	Daily
Air Canada 8793	6:15PM	Montreal YUL	Daily
Air Canada 7602	7:50PM	Halifax YHZ	Daily
Air Canada 8949	8:30PM	Toronto YYZ	Daily
Arrive: Flight	Time	Destination	Frequency
Air Canada 8972	12:08AM	Toronto YYZ	Daily
Air Canada 8788	10:46AM	Montreal YUL	Daily
Air Canada 7597	11:15AM	Halifax YHZ	Daily
Air Canada 8946	11:40PM	Toronto YYZ	Daily
Air Canada 8950	1:53PM	Toronto YYZ	Daily
Air Canada 7599	2:45PM	Halifax YHZ	Daily
Air Canada 8786	5:49PM	Montreal YUL	Daily
Air Canada 7601	7:35PM	Halifax YHZ	Daily
Air Canada 8948	7:58PM	Toronto YYZ	Daily
Air Canada 8792	11:21PM	Montreal YUL	Daily
Air Canada 7603	11:59PM	Halifax YHZ	Daily Except Saturday
Source: Scheduled Service July 15 - 31, 2015, Saint John Airport Authority Inc.			

Exhibit 1.3
SAINT JOHN AIRPORT -
CANADIAN CIVIL AIRCRAFT (REGISTERED)

Common Name	Carrier Name	Owner	Date Registered
Bombardier	BD-100-1A10	Irving Oil Transport, Inc.	2016-08-16
Bombardier	BD-100-1A10	Irving Oil Transport, Inc.	2009-07-07
Bombardier	BD-100-1A10	Irving Oil Transport, Inc.	2009-07-07
Dehavilland	DHC-2	Galloway Aviation Ltd.	2016-08-25
Ayres	S-2R	Forest Patrol Ltd.	1973-07-18
Bell	407	Forest Patrol Ltd.	2000-01-11
Bell	407	Forest Patrol Ltd.	2013-10-16
Ayres	S2R-T34	Forest Patrol Ltd.	1980-04-30
Ayres	S2R-T34	Forest Patrol Ltd.	1980-04-30
Ayres	S2R-T34	Forest Patrol Ltd.	1980-04-30
Ayres	S2R-T34	Forest Patrol Ltd.	2015-01-20
Cessna	TU206G	Forest Patrol Ltd.	1993-04-27
Beech	G58	Irving, James	2015-02-16
Beech	B200GT	Irving Air Service Inc.	2008-12-30
Cessna	680	Irving Air Service Inc.	2008-07-28
Dassault	FALCON 2000EX	Brunswick Air Limited Partnership	2010-03-05
Cessna	172S	658761 N.B. Inc.	2011-08-19
Beech	B200	Shoreland Transport Inc.	2012-05-31
Piper	PA-31-350	Shoreland Transport Inc.	2004-12-22
Quad City	CHALLENGER II	Shoreland Transport Inc.	2014-05-22
Bensen	BENSEN B8MG	Trask, Carl	1968-05-28
Socata	TBM 700 (SERIES B)	Lorne Brett Motors Ltd.	2009-01-22
Piper	PA-28-151	Beaulieu, François	1995-05-01
JRDS	JRDS 77-24	Rogers, Jim	2006-11-23
Cessna	172R	The Saint John Flying Club Ltd.	2011-10-26
Van's	RV-6A	Jacques, Paul	2003-08-25
Balloon Works	FIREFLY 7	Great Eastern Balloon Adventures Inc.	1989-07-18
Eipper Aircraft	DOUBLE QUICK	Landry, Albert	1984-01-03
Lazair	LAZAIR	Farren, W	1985-07-16
Smith Miniplane	MINI PLANE	Dornan, John	2003-10-27
Source: Transport Canada, Official Canadian Civil Aviation Register, September 2016.			

1.3 Airport and Park Tenants

In 2015, the airport had 190 full-time equivalent (“FTE”) employees. The number of employees by business category or sector are listed in Exhibit 1.4.

Airport Operations – 81 FTEs



The Saint John Airport Authority runs the airport. The airports operations are supported by Canadian Air Transport Security Authority CATSA/Securitas, the Canadian Corps of Commissionaires, Nav Canada and the Canadian Border Services Agency CBSA.

Carriers – 40 FTEs



The carriers at Saint John Airport are Air Canada and Sunwing Airlines. Air Canada has a commercial agreement with Jazz Aviation and EVAS Air called a Capacity Purchase Agreement (CPA). Under the CPA, Jazz and EVAS operate flights on behalf of Air Canada as a contract carrier, under the Air Canada Express brand. EVAS flies to Halifax and Jazz Aviation to Montreal and Toronto. Jazz Aviation provides check-in services for Air Canada and Sunwing. Air Canada Ground Handling Services does the ground services for Air Canada while Strategic Aviation Services provides these services on a seasonal basis for Sunwing charter flights. Fueling services are provided by ASIG Airport Services International Group and Atlantic Flight Centre.

General Aviation – 36 FTEs

General aviation operators at the airport are Irving Air Services, Irving Oil Transport and Shoreland Transport (Cooke Aquaculture). They had a combined 36 FTEs.



Air Terminal Building Services – 22 FTEs

Services in the ATB include car rental outlets and a restaurant/gift shop. Three rental car operations (Avis Budget, Hertz, National) operate at the ATB and the restaurant/gift shop is branded as Connections Bistro. There are also cleaning services.

Other Services & Tenants – 11 FTEs

Outbound ground transportation services are provided by Diamond Taxi. Measurement Canada has an industrial building on the airport without taxiway access. This organization is part of Innovation, Science and Economic Development Canada with a mandate to ensure the accuracy of measuring devices for financial transactions involving goods and services.





**Exhibit 1.4
SAINT JOHN AIRPORT -
MAJOR EMPLOYERS 2015**

Sector	Firms / Organizations
Airport Operations	Saint John Airport Authority
	CATSA / Securitas
	Canada Border Services Agency (CBSA)
	NAV Canada
	Canadian Corps of Commissionaires
Carriers	Jazz Aviation
	Air Canada Ground Handling Services
	Strategic Aviation Services
	ASIG Aircraft Service International Group
	Atlantic Flight Centre
General Aviation	Irving Air Service
	Irving Oil Transport
	Shoreland Transport (Cooke Aquaculture)
Air Terminal Building Services	Hertz
	Avis Budget
	National Car Rental
	Connections Bistro (Food and Retail)
	Air Terminal Building Cleaners
Other Services & Tenants	Diamond Taxi
	Measurement Canada
Source: Chris Lowe Group and Saint John Airport Authority Inc.	

1.4 Airport Operations

Exhibit 1.5 lists passenger and aircraft movement activity between 2013 and 2015. Over this period, total enplaned and deplaned passengers increased by 6.9% from 235,815 to 252,000 while total aircraft movements are in the 13,600 range.

Exhibit 1.5 SAINT JOHN AIRPORT - AIR TRAFFIC STATISTICS 2013 to 2015		
Year	Enplaned / Deplaned Passengers	Total Aircraft Movements
2013	235,815	13,642
2014	248,280	13,448
2015	252,000	13,654
Source: Saint John Airport Authority Inc.		



Exhibit 1.6 presents the 2013 to 2015 concession sales and car rentals at the ATB. Total sales and car rentals in 2015 were \$517,100 or an increase of 3.4% from 2013.

Exhibit 1.6 SAINT JOHN AIRPORT - CONCESSION SALES & CAR RENTALS 2013 to 2015			
Year	Enplaned / Deplaned Passengers	Total Concession Sales & Car Rentals	Sales Per Passenger
2013	235,815	\$500,110	\$2.12
2014	248,280	\$528,649	\$2.13
2015	252,000	\$517,110	\$2.05
Source: Saint John Airport Authority Inc.			



2 Study Approach

2.1 Introduction

This section outlines the approach used to calculate the impacts of the Saint John Airport on the City of Saint John.

2.2 Economic Impact

To establish a framework for measuring the economic impacts of the Saint John Airport on the City of Saint John, the following were defined:

- The types of economic activity being considered
- The units of measurement of economic impact used
- The methods used to measure or estimate economic impacts

The types of economic activity are grouped into three categories: direct, indirect and induced. They represent the total impacts when combined.

Direct Economic Activity

The Saint John Airport's economic activity is calculated by direct, indirect, induced and total impacts. Indirect and induced activity show the effect that the direct expenditures have as they "ripple" through the City of Saint John's economy. The measure is referred to as the multiplier effect or spinoff impacts.

This activity refers to airport-related and tenant activity of those firms or government service providers located at the Saint John Airport. These businesses fit into three categories: those with primary linkage to the airport (aviation-related); those with a secondary linkage (generally not aviation-related); and other tenants. Primary linkage businesses or organizations include those listed below.

Air Carriers: This refers to companies offering scheduled year-round and seasonal air service from the airport. These service providers are Jazz Aviation, EVAS Air and Sunwing Airlines. Air Canada Ground Handling Services are also included in this group.

Business Aviation: This is an important sector for the Saint John Airport. It refers to the use of business aircraft for the movement of executives, and time sensitive specialist employees and cargo. Irving Oil, JD Irving and Cooke Aquaculture have hangars that focus on business aviation.





Air Support Services: This refers to companies whose business is primarily or wholly aviation-related, or who provide direct support to air carriers or general aviation businesses. Air support services include fuelling services and contracted airport terminal services and fixed base operators. Atlantic Flight Centre and ASIG Aircraft Service International Group are included in this group.



Airport Operations and Administration: This category includes SJAAI, NAV Canada, CATSA (Securitas), Canadian Corps of Commissionaires and the Canada Border Services Agency.

Secondary linkage businesses include:

Commercial Services: This refers to the Connections Bistro food and retail outlet in the ATB.



Ground Transportation: These include car rental and taxi service.

Tourist/Travel/Hotel Industry: This group of secondary linkage businesses includes hotels/motels, food and beverage operators and other retail or service operations in the City of Saint John providing service to passengers travelling by air for business or pleasure.

Indirect Economic Activity

Direct economic activity is accompanied by indirect and induced economic activity. Indirect economic activity refers to activity generated in a sector that supplies material and other inputs to businesses associated with direct economic activity (airport and tenants). Indirect activity occurs as a result of direct activity.



The terms "direct" and "indirect" depend on the chosen reference point. In this context, Statistics Canada's Provincial (New Brunswick) Input-Output Multipliers, 2010 (Catalogue No. 15F0046XDB) was used. In some sectors, direct indicators were not available for some of the operations or tenants at the airport. Data were obtained from the survey of tenants (September 2016), public filings for tenants associated with publicly traded companies (Air Canada, Chorus Aviation Inc.), public entities (NAV Canada), business associations or values for other provinces to fill the data gaps. In some cases, confidential data or information was provided. Data in exhibits have been aggregated to ensure confidentiality. For example, aviation fuel sales are grouped because this service is provided by two firms (Atlantic Flight Centre and ASIG Aircraft Service International Group).

Induced Economic Activity

Induced economic activity refers to economic activity by individuals employed in the direct or indirect activity sectors who spend a portion of their household income on consumer goods or services in the City of Saint John.



Measures of indirect and induced activity show the effect that the direct expenditures at the airport and tenants have as they “ripple” through the City of Saint John’s economy. The measure is referred to as the multiplier effect or spinoff impacts.

Total Economic Activity

The total economic activity of the airport and tenants is the sum of direct, indirect and induced effects. The multipliers (indirect and induced) are the total maximum potential stimulus of direct activity on the City of Saint John’s economy.

2.3 Study Area

The total economic activity and impacts are defined for the City of Saint John. For example, food catering for Sunwing Airlines flights is done from Moncton and is not included. Fiscal impacts are based upon the

tax regime between Canada, the Province of New Brunswick and the City of Saint John. Income tax, HST and aviation fuel taxes are jurisdictions of senior levels of government.



Under the *Assessment Act* and the *Real Property Tax Act*, the Province of New Brunswick shares property tax with the City of Saint John.

2.4 Economic Impacts Measured and Methods of Measurement

Four measures of the airport's economic impact on the City of Saint John are defined as follows:

Economic Output or Gross Revenue: This measure is calculated in terms of total annual gross revenue from all airport-related and tenant activity, and those same total gross revenues, less any revenue transferred from one airport-related or tenant activity (primary or secondary) to another airport-related or tenant activity.

Gross Domestic Product (GDP) Basic Price: This measure is the broadest quantitative measure of New Brunswick's total economic activity that occurs in the City of Saint John. It represents the monetary value of all goods and services produced at the airport and tenants in 2015. The concept of GDP at basic prices includes net indirect taxes (indirect taxes less subsidies) attached to factors of production.

Employment: This measure is defined as the total amount of full-time equivalent (FTE) employment created by airport and tenants in the City of Saint John as well as non-resident (commercial and tourist travelers) who enter the City of Saint John at the airport.

Wages and Salaries: This measure is defined as the total amount of wages and salaries within the City of Saint John created due to airport and tenant activity, and non-residents entering Saint John at the airport.

Direct, indirect and induced economic impacts associated with the above four measures of economic activity were calculated as follows:

Direct Economic Impact: Economic output, GDP, employment and wages and salaries were obtained by means of surveys of the airport tenants and the other sources listed above.

Indirect and Induced Economic Impact: These impacts were estimated by means of economic multipliers from Statistics Canada's Provincial (New Brunswick) Input-Output Model and other referenced sources.

In addition to the four measures, other economic impacts were determined. ATB retail and concession sales, construction activity (from transfer in 1999 and 10-year forecasts) and non-residents accessing the City of Saint John at the airport were also identified. These impacts are assessed separately and represent major contributions to the local economy.

The economic impacts also investigated the introduction of major new capital projects like Energy East.

2.5 Fiscal Impact

Fiscal impacts are defined under personal income taxes, retail sales taxes, aviation fuel and excise taxes, and municipal taxes. No impact multipliers (spinoffs) are applied to municipal taxes.

The fiscal impacts relate to Canada, the Province of New Brunswick or the City of Saint John. Fiscal impacts measures include the following:

Personal Income Taxes: This measure refers to the personal income taxes paid to Canada and the Province of New Brunswick by individuals employed due to airport and tenant activity, and non-residents entering the City of Saint John at the airport. This impact was calculated from Statistic Canada's 2014 Survey of Household Spending (Table 203-0021) with estimates for 2015.

Retail Sales Taxes: This measure refers to retail sales taxes generated by purchases of retail goods and services in the City of Saint John by individuals who earn wages and salaries due to their employment stemming from airport and tenant activity, and non-residents entering the City of Saint John at the airport. In 2015, the HST rate was 13% (5% federal part and 8% provincial part). The percentage of household income that is spent on taxable retail-type goods and services was derived from Statistic Canada's 2014 Survey of Household Spending with estimates for 2015. The HST rate for purchases in the ATB (food, retail, car rentals) was calculated from actual sales.

Aviation Fuel and Excise Taxes: The provincial aviation fuel tax (\$0.025 per litre) and federal aviation fuel excise tax (\$0.05 per litre) were calculated based upon litres sold.

Property Taxes: Property Taxes (net) paid to the City of Saint John were determined for both SJAAI and tenants.

Fiscal impacts are measured in a similar manner as economic impacts in terms of direct, indirect and induced activity. Spinoffs were not calculated for property taxes.

3 Economic Impacts

3.1 Introduction

This section presents the economic impacts of the airport operations, tenants and non-residents accessing Saint John at the airport. The impacts are defined by direct, indirect, induced and total for four measures (economic output, GDP basic price, labour income and full-time equivalent jobs). Separate discussions and calculations are included for SJAAI and tenant construction activity (from transfer and 10-year forecasts), the business aviation sector, expenditures of non-residents accessing the City of Saint John at the airport and new major capital projects like Energy East.

3.2 Economic Output

The first measure of economic impact is total economic output. This measure is also referred to as gross revenue. Economic impacts related to the airport and tenants, in terms of economic output in Saint John, are summarized in Exhibit 3.1. The economic impact is separated into direct, indirect and induced. The economic output from the airport and tenants, and non-residents (tourist and commercial) entering the City of Saint John at the airport is \$63.6 million. This is composed of \$41.6 million in direct output, \$14.2 million in indirect output and \$7.8 million in induced output.

Exhibit 3.1 SAINT JOHN AIRPORT - GROSS OUTPUT (MILLIONS) IN 2015				
	Direct	Indirect	Induced	Total
City of Saint John	\$41.6	\$14.2	\$7.8	\$63.6

3.3 GDP Basic Price

Gross Domestic Product (GDP) at basic price is the monetary value of all goods and services produced at the airport by air-related operations and tenants, and non-residents (tourist and commercial) entering Saint John at the airport. It includes indirect taxes attached to factors of production. In 2015, the total value of GDP basic price was \$33.9 million. This total is comprised of \$23.3 million in direct impacts, \$6.0 million in indirect impacts and \$4.6 million in induced impacts.

Exhibit 3.2 SAINT JOHN AIRPORT - GDP BASIC PRICE (MILLIONS) IN 2015				
	Direct	Indirect	Induced	Total
City of Saint John	\$23.3	\$6.0	\$4.6	\$33.9

3.4 Employment

Employment is another measure of economic impact. It is defined as full-time equivalent (FTE) jobs or person-years of employment. Government of Canada security operations at the airport are defined differently by active employees and not FTE. The numbers in Exhibit 3.3 are 2015 averages and not peaks, and they include spinoff (indirect and induced) FTE employment estimates for the City of Saint John.

In 2015, 446 full-time equivalent direct and spinoff jobs were created in Saint John because of the airport. Direct employment from airport operations, tenants and non-residents (tourist and commercial) entering Saint John at the airport is 314. Of this total, 190 or 60% are based at the airport. Indirect employment accounts for 86 FTE jobs and induced employment represents another 46 FTE jobs.

Exhibit 3.3 SAINT JOHN AIRPORT - EMPLOYMENT (FULL-TIME EQUIVALENT) IN 2015				
	Direct	Indirect	Induced	Total
City of Saint John	314	86	46	446

3.5 Wages and Salaries

Wages and salaries are another measure of economic impact. Exhibit 3.4 lists the wage and salary impact of the airport operations, tenants and non-residents (tourist and commercial) entering Saint John at the airport. The total wages and salaries created by airport activity on the City of Saint John in 2015 was \$24.5 million. The direct wage and salary portion is \$16.5 million, the indirect impact is \$5.5 million and the induced impact is \$2.5 million. The average direct wage for FTE employees is \$52,550 and this value includes hospitality sector wages that are significantly lower than wages at the airport. The hospitality sector has a lower level of spin-off jobs than other sectors associated with the airport and the result is the average indirect wage is \$63,955. The overall average wage is \$54,930.

Exhibit 3.4 SAINT JOHN AIRPORT - WAGES AND SALARIES (MILLIONS) IN 2015				
	Direct	Indirect	Induced	Total
City of Saint John	\$16.5	\$5.5	\$2.5	\$24.5
Average Per FTE Employee	\$52,550	\$63,955	\$54,350	\$54,930

3.6 Renovation and New Construction Impact

Capital Improvements and New Projects Since 1999

Since the 1999 transfer of the Saint John Airport from Transport Canada, the Saint John Airport Authority and tenants have invested over \$23 million in new capital development projects (net) and the maintenance of capital. Projects by SJAAI (net of SJAAI assets that were disposed) were:



Leasehold Improvements - Building:	\$6,141,014
Leasehold Improvements – Runway:	\$7,570,146
Vehicles:	\$1,287,137
Machinery & Equipment:	\$850,001
Computer Equipment:	\$101,521
Furniture & Fixtures:	\$65,111
Total:	<u>\$16,014,929</u>

The past projects of SJAAI and tenants created over 250 FTE jobs (person-years of employment) with the majority of benefits flowing to businesses and residents in the City of Saint John.

Future Capital Projects

The 10-Year Capital Budget approved by the SJA's Board of Directors for the 2016 - 2025 period contains almost \$30 million of new expenditures. The focus is runway and apron rehabilitation and lighting, ATB upgrades, new supporting infrastructure and new ground handling equipment. The breakdown of planned future expenditures (with contingencies included in construction projects) is:

Construction:	\$24,879,801
Vehicles:	\$4,470,000
Equipment:	<u>\$641,000</u>
Total:	<u>\$29,990,801</u>

The 2016 tenant survey included a question on expected future capital expenditures at the airport. The survey is not a full disclosure of approved tenant budgets nor a complete indication of the total dollars that will be spent to 2025. Tenants identified \$3,715,000 of future capital projects. Combined with SJA's 10-year capital plan, expenditures to 2025 are over \$33.7 million.

Completed capital projects since 1999, ongoing and planned future projects to 2025 represent over \$56 million of direct expenditures. As the benefits of these projects flow through the local economy, the result is over \$83 million in economic output, \$42 million in GDP, \$30 million in household income and 624 FTE jobs. Similar to past capital projects, most benefits of future capital projects should occur to businesses and residents in the City of Saint John.

Construction projects are one-time events that vary in duration and have a high level of labour to complete. In a typical year over the next decade, the impact of renovation and new construction projects will be \$5.1 million in economic output, \$2.6 million in GDP, \$1.9 million in household income and 37 FTE jobs.

Exhibit 3.5 SAINT JOHN AIRPORT - 1999 TO 2015 AND FUTURE CAPITAL PROJECTS TO 2025 (MILLIONS)				
Total Impacts 1999 - 2025	Direct	Indirect	Induced	Total
Output	\$56.8	\$15.9	\$11.0	\$83.7
GDP Basic Price	\$28.1	\$7.8	\$6.6	\$42.5
Labour Income	\$22.8	\$5.0	\$2.8	\$30.6
FTE Jobs	457	97	70	624
Typical Annual Impacts Over Next Decade	Direct	Indirect	Induced	Total
Output	\$3.4	\$1.0	\$0.7	\$5.1
GDP Basic Price	\$1.7	\$0.5	\$0.4	\$2.6
Labour Income	\$1.4	\$0.3	\$0.2	\$1.9
FTE Jobs	27	6	4	37
Sources: Chris Lowe Group estimates based upon September 2016 Tenant Survey; Saint John Airport Authority; Statistics Canada Catalogue No. 15F0046XDB: Provincial Input-Output Multipliers, 2010.				

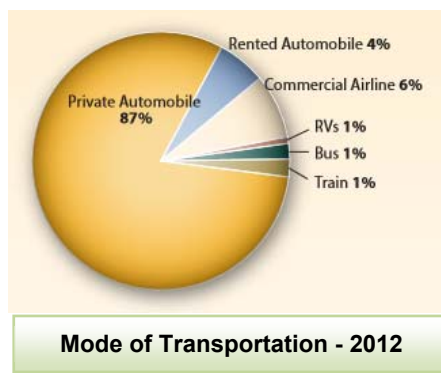
3.7 Tourist/Visitors Impacts



Tourism is an important sector of the New Brunswick economy. In 2012, the New Brunswick Department of Tourism, Heritage and Culture calculated the sector was worth more than \$1.1 billion with non-resident spending being over \$540 million.

Visitors have different reasons for coming to New Brunswick. The Statistics Canada 2012 survey of residents of Canada and international visitors revealed that the majority of visitors are visiting friends and relatives or on vacation.

The mode of transport for visitors is dominated by the private auto. Ninety-one percent of Canadian residents visiting in New Brunswick for one or more nights travelled by car based upon 2012 figures. Statistics Canada's International Travel Survey reports only mode of entry into Canada rather than primary mode of transportation while on trips. American transportation patterns are comparable to Canadian resident visitors to New Brunswick. The air segment represents 6% of trips.



The New Brunswick Department of Tourism, Heritage and Culture does not collect data on non-resident (tourist) expenditures by mode of transport. These data are regularly collected for Prince Edward Island and Nova Scotia and provide a proxy of estimated expenditures for the City of Saint John. These data sets supplemented by local figures and interviews provide detailed estimates of the economic impacts of non-resident (business and leisure) travellers who travel to the City of Saint John using the Saint John Airport.

Visitors entering and leaving Saint John by air have a different expenditure profile than other visitors. On average, they stay longer in New Brunswick and spend more than non-residents using other modes of transportation. An indicator of length of stay is duration of car rentals at Saint John Airport. Confidential information from car rental concessions at the airport reveal the average length of stay is three days for business travellers and 5.5 days for tourists. The business travel segment is predominately in the City of Saint John. Interviews with the

major taxi operator at the airport (Diamond Taxi) confirm the destination of business travellers. Leisure tourists have a different profile. They will typically mix a stay in the City of Saint John with other destinations along the Bay of Fundy.

The direct and spin-off (indirect and induced) impacts of non-resident (business and leisure) visitors to the City of Saint John entering and leaving at the Saint John Airport contributed \$14.6 million to economic output, \$8.2 million to GDP at basic price and \$4.7 million in labour income. While many jobs in the tourism and hospitality sectors are seasonal, the impact of air visitors is 142 full-time equivalent (FTE) jobs. The direct portion is \$9.8 million to economic output, \$5.6 million to GDP at basic price, \$3.4 million in labour income and 111 FTE jobs.

**Exhibit 3.6
SAINT JOHN AIRPORT -
NON-RESIDENT (BUSINESS & PLEASURE)
VISITORS EXPENDITURES (MILLIONS) IN 2015**

	Direct	Indirect	Induced	Total
Output	\$9.8	\$3.0	\$1.8	\$14.6
GDP Basic Price	\$5.6	\$1.5	\$1.1	\$8.2
Labour Income	\$3.4	\$0.8	\$0.5	\$4.7
FTE Jobs	111	19	12	142

Sources: Chris Lowe Group estimates based upon September 2016 Tenant Survey; New Brunswick Tourism Indicators Summary Report, Province of New Brunswick, September 2014; Overnight Pleasure Visitors' Travel Expenditures, Length of Stay, and Party Size by Mode of Transportation: Results from the PEI 2014 Exit Surveys, PEI Department of Economic Development and Tourism and Centre for Tourism Research at TIAPEI, December 2015; 2010 Visitor Exit Survey, Nova Scotia Department of Economic and Rural Development and Tourism, 2011; Statistics Canada Catalogue No. 15F0046XDB: Provincial Input-Output Multipliers, 2010.

3.8 Business Aviation



Business Aviation is a major sector for the Saint John Airport. Irving Oil, JD Irving and Cooke Aquaculture have hangers that focus on business aviation while Atlantic Flight Centre functions as a Fixed Base Operator (“FBO”).

In 2015, there were nine business aviation aircraft registered at Saint John Airport. In 2014, the Canadian Business Aviation Association (CBAA) prepared a study on the economic impacts of this sector on Canada. Based upon data in this study for New Brunswick and Canada, and interviews with airport tenants in September 2016, the economic impact of business aviation at the Saint John Airport can be estimated.

Exhibit 3.7 lists the impacts of business aviation activity on the City of Saint John. The total impact is \$14.5 million in economic output, \$8.3 million in GDP, \$8.0 million in wage and salary for 110 FTE jobs. The average wage in this segment is \$72,730 or 64% above the New Brunswick 2015 average of \$44,470 (Source: Statistics Canada CANSIM Table 281-0044, March 2016).

**Exhibit 3.7
SAINT JOHN AIRPORT -
BUSINESS AVIATION EXPENDITURES (MILLIONS) IN 2015**

	Direct	Indirect	Induced	Total
Output	\$8.6	\$4.1	\$1.8	\$14.5
GDP Basic Price	\$4.3	\$2.6	\$1.4	\$8.3
Labour Income	\$4.3	\$2.7	\$1.0	\$8.0
FTE Jobs	56	39	15	110

Sources: Chris Lowe Group estimates based upon September 2016 Tenant Survey; 2014 Economic Impacts of Business Aviation in Canada, Canadian Business Aviation Association, December 2014.

3.9 Saint John Region - Major New Capital Projects



Over the next decade, the Saint John Airport's catchment area should see significant new energy, natural resource and infrastructure investments that will increase the demand for air services. Some of these projects have advanced from construction to new facility opening while others are in the regulatory approval phase.

Enterprise Saint John maintains a database on these projects that includes confidential information. These projects are:

- JD Irving - Pulp and Paper Mill Upgrade
- Atlantic Potash - Millstream Mining Operation
- TC Pipelines - Energy East Pipeline
- TransCanada and Irving Oil - Oil Export Terminal
- City of Saint John - New Sewage Treatment Plant and Water Mains Upgrades
- Saint John Development Corporation and Partners - Fundy Quay Mixed Use Development
- Tucker Park Corporation - Medical Arts Centre
- Bell Aliant - Saint John Data Centre
- Port Saint John - West Side Terminal Modernization

The economic impacts of these major capital project can be separated by two generic phases: development/construction and operation. In October 2016, Enterprise Saint John updated their data on the status of these projects. The result is an understanding of the new FTE jobs that will be created in the airport's catchment area. Based upon established air transportation expenditure patterns in New Brunswick, every job associated with the construction and operation of these projects can be expected to create additional annual air travel expenditures in the range of \$400 (estimates based upon Table 203-0021, 2104 Survey of Household Spending in New Brunswick, Statistics Canada, April 2016). The result over the next decade is an additional market of over \$17.5 million in air travel expenditures and more than 39,000 new enplaned/deplaned passenger movements.

The expected future air travel demand from these projects by year to 2025 is listed in Exhibit 3.8.

Exhibit 3.8
SAINT JOHN AIRPORT CATCHMENT AREA -
MAJOR NEW PROJECTS IMPACTS ON PASSENGER DEMAND

Year	Estimated New FTE Jobs	Estimated New Air Transportation Expenditures	Estimated New Enplaned/Deplaned Passenger Demand
2016	956	\$382,531	850
2017	2,049	\$819,611	1,821
2018	2,695	\$1,077,811	2,395
2019	7,406	\$2,962,280	6,583
2020	10,315	\$4,126,080	9,169
2021	10,073	\$4,029,280	8,954
2022	4,027	\$1,610,800	3,580
2023	2,144	\$857,600	1,906
2024	2,144	\$857,600	1,906
2025	2,144	\$857,600	1,906
Total	43,953	\$17,581,194	39,069

Sources: Chris Lowe Group estimates based upon Enterprise Saint John data; Table 203-0021, 2104 Survey of Household Spending in New Brunswick, Statistics Canada, April 2016.

4 Fiscal Impacts

4.1 Introduction

The Saint John Airport has a positive impact on the Province of New Brunswick and the Government of Canada. This section highlights the fiscal benefits from employee (direct and spinoff) income tax, employee (direct and spinoff) purchases of goods and services, aviation fuel purchased at the airport, food and retail purchases in the ATB and car rentals at the ATB. As this section will show, the Saint John Airport Authority, tenants, employees and purchasers of food/retail goods and car rentals at the ATB, and aviation fuel sales generated over \$6.6 million in taxes during 2015.

4.2 Employee Income and Consumption Taxes

The percentage of wages and salaries paid to the Province of New Brunswick and Canada were calculated using the 2014 Survey of Household Spending (Table 203-0021) from Statistic Canada with estimates for 2015. According to this source, around 46% of household income in New Brunswick is spent on food service, food, communications, department store type merchandise (DSTM), private auto operations and other taxable purchases and leisure activities. The harmonized sales tax (HST) rate in 2015 on these types of purchases was 13% (8% provincial plus 5% federal rate).

The 2014 Survey of Household Spending also determined that around 16% of total household expenditures for New Brunswick residents go towards income taxes (Federal and Provincial).

Exhibit 4.1 summarizes the 2015 personal income and consumption tax impacts of the airport and tenants on Canada and the Province of New Brunswick. The total personal income and consumption taxes resulting from airport and tenants employment amounts to \$5.39 million. This consists of \$3.63 million in direct personal income and consumption taxes and \$1.76 million in indirect and induced taxes.

Exhibit 4.1 SAINT JOHN AIRPORT - PERSONAL INCOME & CONSUMPTION TAXES (MILLIONS) IN 2015			
	Direct	Indirect & Induced	Total
Income Tax	\$2.64	\$1.28	\$3.92
HST	\$0.99	\$0.48	\$1.47
Total	3.63	\$1.76	\$5.39

4.3 Air Terminal Building (Retail, Food and Car Rental) and Other Taxes

Another fiscal impact measure of Saint John Airport is sales taxes generated by the purchase of food and retail goods, car rental at the ATB, aircraft and landing fees and other taxable functions. These taxes cover:

- Aircraft Landing and Terminal Fees
- Vehicle Parking
- Concessions in the ATB
- Land and Office Rentals
- Airport Services
- Gain On Disposal Of Capital Assets

Revenue to the SJAAL in 2015 from these sources was approaching \$6.3 million in 2015 or an increase of 5.5% from 2014. The HST on these transactions increased from \$676,714 in 2012 to \$836,093 in 2015.

4.4 Aviation Fuel Taxes

Aviation fuel purchased at the Saint John Airport is taxed on litres purchased. The Province of New Brunswick's rate is \$0.025 per litre and the Federal Aviation Fuel Excise Tax is \$0.04 per litre. In the range of two million litres were pumped at the airport in 2015 by ASIG Aircraft Service International Group and Atlantic Flight Centre. The result is annual fuel taxes in the range of \$130,000.

4.5 Property Taxes

The Saint John Airport Authority and tenants pays property taxes. In 2015, the combined taxes paid by SJAAI and tenants to the City of Saint John was \$352,899.

Exhibit 4.2 SAINT JOHN AIRPORT - HST TAXABLE GOODS & SERVICES IN 2015		
Year	Airport Authority HST Taxable Revenue	HST
2015	\$6,251,556	\$812,702
Source: Saint John Airport Authority.		

5 Summary

In 2015, the airport and tenants had 190 FTE employees in 20 government and business operations, as well as FTE jobs associated with taxis. The economic impact of the Saint John Airport on the City of Saint John economy is significant in terms of airport operations, airport tenants and non-residents entering the City of Saint John at the airport. In 2015, it contributed \$63.6 million to the City's gross output, \$33.9 million to gross domestic product and \$24.5 million to wages and salaries with 446 FTE jobs.

Non-residents entering the City of Saint John at the airport tend to stay longer and spend more money. The impacts of this sector are included in the totals listed above. In 2015, the direct and spin-off (indirect and induced) impacts of these non-resident visitors (pleasure and commercial) were significant. They contributed \$14.6 million to gross output, \$8.2 million to gross domestic product and \$4.7 million in labour income. While many jobs in the tourism and hospitality sectors are seasonal, the impact of air travelers is 142 FTE jobs.

Another sector that is included in the impacts listed above is Business Aviation. It is a major sector for the Saint John Airport. Irving Oil, JD Irving and Cooke Aquaculture have hangars that focus on business aviation while Atlantic Flight Centre functions as a FBO. This sector contributed \$14.5 million in economic output, \$8.3 million in GDP and \$8.0 million in wage and salary for 110 FTE jobs. The average wage in this segment is \$72,730 or 64% above the New Brunswick 2015 average.

Since the 1999 transfer of the airport land from Transport Canada, the Saint John Airport Authority and tenants have invested over \$23 million in new capital development projects and the maintenance of capital. Over the next decade, capital projects will top \$33.7 million. Completed capital projects since 1999, and ongoing and planned future projects to 2025 have or will contribute to the City of Saint John \$83.7 million in economic output, \$42.5 million to GDP, \$30.6 million to labour income and 624 FTE jobs. In a typical year over the next decade, the impact of renovation and new construction projects will be \$5.1 million in economic output, \$2.6 million in GDP, \$1.9 million in household income and 37 FTE jobs.

Combined, airport operations in 2015 and airport construction projects in a typical year over the next decade will contribute \$68.7 million to the City's gross output, \$36.5 million to gross domestic product and \$26.4 million to wages and salaries with 483 FTE direct and spinoff jobs.

The Saint John Airport also has a positive fiscal impact on the City of Saint John, Province of New Brunswick and the Government of Canada. The Saint John Airport Authority, tenants, employees and purchasers of food/retail goods and car rentals at the ATB, and aviation fuel sales generated more than \$6.6 million in government taxes during 2015.

Over the next decade, the Saint John Airport's catchment area should see significant new energy, natural resource and infrastructure investments that will increase the demand for air services. Enterprise Saint John maintains a database on these projects that includes confidential information. These projects are:

- JD Irving - Pulp and Paper Mill Upgrade
- Atlantic Potash - Millstream Mining Operation
- TC Pipelines - Energy East Pipeline
- TransCanada and Irving Oil - Oil Export Terminal
- City of Saint John - New Sewage Treatment Plant and Water Mains Upgrades
- Saint John Development Corporation and Partners - Fundy Quay Mixed Use Development
- Tucker Park Corporation - Medical Arts Centre
- Bell Aliant - Saint John Data Centre
- Port Saint John - West Side Terminal Modernization

From 2016 to 2025, these projects are forecast to increase air travel expenditures by more than \$17.5 million with the result being over 39,000 new enplaned/deplaned passengers.

Exhibit 5,1 SAINT JOHN AIRPORT - SUMMARY OF ECONOMIC AND FISCAL IMPACTS				
Economic Impacts	Direct	Indirect	Induced	Total
Total Gross Output (\$Millions):				
Airport Operations: 2015	\$41.6	\$14.2	\$7.8	\$63.6
Construction: Typical Year	\$3.4	\$1.0	\$0.7	\$5.1
Total	\$45.0	\$15.2	\$8.5	\$68.7
GDP Basic Price (\$Millions):				
Airport Operations: 2015	\$23.3	\$6.0	\$4.6	\$33.9
Construction: Typical Year	\$1.7	\$0.5	\$0.4	\$2.6
Total	\$25.0	\$6.5	\$5.0	\$36.5
Labour Income (\$Millions):				
Airport Operations: 2015	\$16.5	\$5.5	\$2.5	\$24.5
Construction: Typical Year	\$1.4	\$0.3	\$0.2	\$1.9
Total	\$17.9	\$5.8	\$2.7	\$26.4
Full-Time Equivalent Jobs:				
Airport Operations: 2015	314	86	46	446
Construction: Typical Year	27	6	4	37
Total	341	92	50	483
2015 Fiscal Impacts (\$Millions):				\$6.71
Sources: Chris Lowe Group estimates based upon September 2016 Tenant Survey; Saint John Airport Authority; Statistics Canada Catalogue No. 15F0046XDB: Provincial Input-Output Multipliers, 2010.				



Étude des impacts économiques Aéroport Montréal Saint-Hubert (YHU)



Développement Aéroport St-Hubert de Longueuil (DASH-L)

Document préparé par Explorer Solutions

17 juillet 2019

DASH-L

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1. Description du projet et des objectifs

Développement Aéroport de St-Hubert Longueuil (DASH-L) est responsable de la gestion et du développement de l'Aéroport Montréal Saint-Hubert (YHU). Dans le contexte du présent mandat, YHU désire évaluer les impacts et les retombées économiques que génèrent l'aéroport et les entreprises qui y sont implantées, sur la Ville de Longueuil, l'agglomération de Longueuil et la Rive-Sud métropolitaine. Ce rapport fournit, en plus de retombées économiques directes, indirectes et induites, un argumentaire sur la dynamique économique, industrielle et sociale que confère l'aéroport à la Ville et la région. Plus précisément, l'évaluation des impacts vise les locataires de l'aéroport, mais également les visiteurs actuels et futurs provenant de l'extérieur de la région.

Cette démarche s'inscrit également dans le cadre du plan directeur de développement de l'aéroport 2018 - 2037. La définition et la présentation des impacts économiques constituent une composante importante du plan directeur du point de vue de la quantification de l'importance de l'aéroport pour la région.

2. Présentation de l'aéroport

2.1 Principales infrastructures aéroportuaires

Avec ses infrastructures actuelles, YHU peut accueillir une vaste gamme d'aéronefs, en passant par de petits avions monomoteurs jusqu'aux avions à fuselage étroit (turboréacteurs monocouloir) tel que le Boeing 737 (AGN IIIB). Les trois (3) pistes de l'aéroport permettent de répondre aux besoins de ses principaux utilisateurs, soit l'aviation générale et les transporteurs commerciaux.

Il y a quelques années, l'aéroport entrevoyait des limitations dans le développement de ses services aériens dû à la capacité portante de la piste principale qui était jusqu'à tout récemment de niveau 8 selon la méthode PCN (Pavement Classification Number) et qui permettait un poids maximal des aéronefs de 30 000 kg. Suite aux travaux de réfection et d'amélioration effectués en



2017 et 2018, la capacité portante a été augmentée au niveau 10 (selon le PCN), ce qui permet à l'aéroport d'accueillir des aéronefs d'environ 200 passagers ou d'un poids maximal de 80 000 kg. Cela inclut notamment l'A320 et le B737. Cependant, certaines versions allongées du modèle A320 peuvent atteindre un poids maximal de 83 000 kg. Une version modifiée du modèle A320, l'A321, peut même atteindre un poids de 93 000 kg.

Les trois (3) pistes de YHU ont les caractéristiques suivantes :

- Pistes 06G/24D : 2 377.75 x 45.72 mètres (asphalte)
- Pistes 06D/24G : 1 195.43 x 30.48 mètres (asphalte)
- Pistes 10/28 : 850.70 x 45.72 mètres (asphalte)

La piste principale (06G/24D) possède une longueur adéquate pour accueillir des avions à fuselage étroit similaire au Boeing 737. Avec de nombreuses organisations situées au pourtour de ses pistes, plusieurs zones de tabliers se sont développées au cours des années afin d'offrir des accès conviviaux aux pistes. La majorité de ces tabliers sont privés et utilisés par les compagnies qui les ont construits. Également, l'aéroport possède un réseau de voies de circulation situées le long de chaque piste. Deux (2) voies de circulation relient la piste principale aux pistes 06D/24G et 10/28.

YHU dispose de divers systèmes d'aide à la navigation, notamment un système NDB, ILS et DME. L'aéroport est également équipé d'un système AWOS (appartenant à NAV Canada) afin de partager efficacement des données météorologiques en temps réel aux utilisateurs. Puisque l'aéroport est ouvert en tout temps, un système complet d'éclairage est en place. L'une des particularités de YHU est sa tour de contrôle qui permet d'assurer une meilleure fluidité des opérations aériennes considérant le nombre important de mouvements à l'aéroport. Celle-ci est opérée par NAV Canada.

Le site aéroportuaire est actuellement desservi par un réseau d'aqueduc et d'égouts (sanitaire et pluvial) permettant le développement de nouveaux bâtiments. Cependant, des zones potentielles de développement situées sur le périmètre extérieur de la zone aéroportuaire (notamment à l'est) nécessiteront l'ajout d'infrastructures additionnelles afin de supporter tout nouveau développement. En 2018, YHU ne possède toujours pas de terminal passager. La mise en place de cette infrastructure stratégique pour le développement de l'aéroport est prévue au cours des prochaines années.

2.2 Mouvements d'aéronefs

YHU a enregistré 132 834 mouvements en 2018. Le nombre de mouvements enregistré en 2017 représente une baisse importante de 18,1% par rapport à 2016 (total de 144 816 mouvements) et une baisse de 31% par rapport à 2015 (total de 171 717 mouvements). Cependant, entre 2017 et 2018, on remarque à nouveau une croissance (12,03%). L'évolution des mouvements à YHU peut également être subdivisée en mouvements locaux et itinérants :

Tableau 1 - Mouvements d'aéronefs pour YHU

Année	Mouvements itinérants	Variation (%)	Mouvements locaux	Variation (%)	Total
2015	78 367	-	93 350	-	171 717
2016	72 722	-7,20%	72 094	-22,77%	144 816
2017	64 702	-11,02%	53 870	-25,28%	118 572
2018	72 486	+12,03%	60 348	+12,02%	132 834

Note : La décroissance du nombre de mouvements de 2017 est en partie attribuable à la réfection de la piste principale 06G/24D au cours de cette année.

Ayant vu le jour en 1999, la compagnie Pascan Aviation est le seul opérateur offrant des vols réguliers à partir de YHU. L'entreprise effectue ses opérations à partir de sa base principale située à l'est de la piste 06D/24G. L'entreprise propose neuf (9) destinations à travers le Québec¹ et une autre au Labrador (Wabush). Pascan Aviation opère principalement des vols de point à point (sans escale) puisque les opérations s'effectuent sans service de sûreté des passagers et des bagages. Sa flotte est composée de 12 Jetstream 32 (18 sièges) en plus de quelques PC-12 et KingAir-100. De leur côté, les compagnies Chrono Aviation et Max Aviation offrent des services de nolisement principalement pour la clientèle affaires et le cargo aérien. Chronos possède des B737.

3. Analyse des impacts économiques

3.1 Introduction

Les aéroports sont des vecteurs importants de développement économique pour leur région respective. Ceux-ci génèrent des retombées économiques qui proviennent à la fois des utilisateurs de l'aéroport (par le biais des services rendus par l'aéroport tel que le service aérien) ainsi que des entreprises localisées sur les terrains de l'aéroport.

Pour DASH-L, l'aéroport soutient un pôle économique grandissant. En effet, celui-ci a joué un rôle majeur dans le développement des créneaux de l'aviation et de l'aérospatiale présent dans l'écosystème de l'aéroport, mais également dans l'attraction de compagnies de divers autres secteurs voyant une valeur ajoutée à s'établir à proximité de l'aéroport. Pour certaines entreprises, la présence de l'aéroport est indispensable afin d'effectuer leurs opérations quotidiennes, tandis que d'autres apprécient la présence de l'aéroport afin de faciliter le déplacement des dirigeants, des employés et des partenaires d'affaires (tels que les clients et les fournisseurs).

¹ Destinations de Pascan Aviation: Québec, Val-d'Or, Mont-Joli, Sept-Îles, Saguenay (Bagotville), Baie-Comeau, Bonaventure, Rouyn-Noranda et Îles-de-la-Madeleine.

Au cours de son évolution, l'aéroport a accueilli des entreprises de divers secteurs qui ont su croître et créer des emplois de qualité dans la région. Ces entreprises génèrent de la richesse à plusieurs niveaux :

- Une contribution au PIB de la région;
- Des retombées parafiscales, en recettes fiscales (provinciales et fédérales) et en taxes municipales;
- Des dépenses d'exploitation qui se traduisent par des achats auprès de fournisseurs régionaux; et
- La masse salariale des employés est utilisée pour faire l'achat de biens et services variés dans la région.

En plus des bénéfices observés auprès des entreprises, YHU génère des retombées économiques par le biais de ses utilisateurs et de ses visiteurs externes. L'aéroport reçoit annuellement plusieurs visiteurs provenant de deux (2) catégories distinctes, soit des vols privés (pilotes d'aviation générale et les passagers des vols d'affaires) et les passagers des vols commerciaux (réguliers et nolisés) (Pascan Aviation, Chronos Aviation et Nolinor). Lors de leurs visites, les passagers de vols privés déboursent généralement pour l'achat de carburant, de nourriture, d'hébergement dans la communauté et potentiellement pour d'autres services connexes offerts à l'aéroport (ex : entretien d'avion). Pour leur part, les passagers de vols commerciaux ne sont pas propriétaires des aéronefs, et par conséquent, ne dépenseront pas nécessairement pour divers biens et services à l'aéroport, mais plutôt dans la Ville de Longueuil, les villes avoisinantes, la région de la Montérégie et plus.

Il est important de se rappeler que le développement de l'aéroport ne bénéficie pas uniquement à DASH-L et ses locataires, mais également à toute la communauté d'affaires de la Montérégie et à ses citoyens.

Le chapitre 3 de ce rapport s'attarde à identifier et à quantifier les impacts économiques directs et indirects générés par les différentes activités de l'aéroport et de ses locataires. Pour une compréhension commune de la terminologie utilisée dans cette section, nous avons brièvement décrit chacune des catégories d'impact économique analysées :

Retombées économiques directes

Les retombées économiques directes mesurent l'ampleur de l'impact économique généré à l'aéroport découlant de l'opération des vols (les diverses catégories d'utilisateurs), et à l'extérieur de l'aéroport (dépenses touristiques et attraction d'entreprises). Il s'agit de l'effet engendré des dépenses d'exploitation et d'opération sur la main-d'œuvre, leur rémunération, autres revenus contribuant au PIB (excédent brut, stocks (autre production), avantages sociaux/bénéfices et taxes foncières) et les revenus du gouvernement.

Retombées économiques indirectes

Les impacts indirects font référence aux réactions en chaîne que génèrent les activités de développement de l'aéroport dans l'économie régionale – particulièrement les emplois et les activités générées par les sous-traitants et les fournisseurs régionaux. En d'autres termes, les entreprises de la région de la Montérégie, de l'Estrie et du Centre du Québec, dont les activités génératrices de revenus sont positivement impactées par la vitalité de l'aéroport et de son trafic, sont comptabilisées dans cette catégorie.

3.2 Présentation de la méthodologie

Afin d'obtenir les données requises pour compléter l'analyse des retombées économiques avec la plus haute précision possible, divers acteurs de l'environnement aéroportuaire ont été sondés. La première cible de l'étude fut les locataires de l'aéroport, la seconde les utilisateurs non-locataires et la troisième les passagers des vols commerciaux actuels et futurs de l'aéroport.

Les organisations locataires à l'aéroport

Au total, Explorer Solutions a contacté 24 organisations (incluant DASH-L) dont 75% sont des locataires de DASH-L. Les autres organisations sont propriétaire de leur terrain, mais font tout de même partie de l'écosystème aéroportuaire.

Tableau 2 - Organisations locataires de YHU contactées pour l'étude

Nom de l'organisation	Nom de l'organisation
Cégep Édouard-Montpetit (École nationale d'aérotechnique)	Collège Air Richelieu (Aéroclub de Montréal)
Pascan Aviation	Aéro Teknic
Max Aviation	Handfield Aviation
Chrono Aviation	RCMP - GRC
Lux	Nolinor - H-18
NAV Canada	AVJET – Aviation CMP Inc.
École de pilotage de Saint-Hubert	Cargair
AirMédic	Les Immeubles DFM
Aviation GMR	H-19

Tableau 3 - Organisation non-locataires de YHU contactées pour l'étude

Nom de l'organisation	Nom de l'organisation
Pratt & Whitney Canada	CBSA-ASFC
Forces armées canadiennes	CPAQ.Aéro
NAV Canada	Héli-Inter Inc.

Initialement, l'équipe de projet a présenté à DASH-L une lettre d'invitation destinée aux locataires décrivant les objectifs de l'étude. Le contenu de ce document a été révisé et approuvé, tout comme pour le questionnaire destiné aux entreprises de l'aéroport. La lettre d'invitation a été transmise aux locataires et opérateurs de l'aéroport par la directrice générale de DASH-L vers la fin du mois d'avril 2019 afin de solliciter leur participation à l'étude. Les données ont été obtenues dans les quatre (4) semaines suivant l'envoi de la lettre d'invitation. Le sondage en ligne était accessible via un lien hypertexte.

L'équipe de projet a consolidé l'ensemble des informations colligées dans les sondages afin de les organiser de façon logique dans un fichier Microsoft Excel. Ces données ont été transmises à l'Institut de la Statistique du Québec (ISQ) qui en a fait l'analyse suivant la méthodologie du modèle intersectoriel. Ce modèle se base sur le code SCIAN des organisations ainsi que sur les dépenses d'exploitations et le nombre d'employés. Avec ces données, il est possible de calculer un intrant qui se traduit ensuite en diverses composantes du produit intérieur brut (PIB) au prix de base. Un rapport avec les résultats des retombées économiques a été transmis à Explorer Solutions au début du mois de juin 2019 afin de procéder à l'interprétation et la présentation des données.

Les informations transmises par l'ISQ fournissent les impacts économiques du PIB au prix de base, ce qui inclut les éléments suivants :

- Main d'œuvre (Salariés et autres travailleurs);
- Salaires et traitements avant impôt;
- Revenu mixte brut;
- Autres revenus bruts avant impôt;
- Les recettes fiscales provinciales;
- Les recettes fiscales fédérales;
- La parafiscalité;
- Les importations;
- Autres productions;
- Taxes indirectes; et
- Les subventions.

Les non-locataires et passagers

L'étude ciblait également les visiteurs provenant de l'extérieur de la région ainsi que les passagers des vols commerciaux. Les passagers provenant des vols d'aviation générale et d'affaires n'ont pas été considérés dans l'étude puisqu'aucune donnée précise n'est disponible à leur sujet. Même si elles ne sont pas chiffrées, les retombées de ces utilisateurs sont tout de même à considérer dans l'ensemble des impacts générés par l'aéroport. Pour les passagers (visiteurs externes), les retombées économiques sont calculées différemment des locataires même si au final elles sont toutes deux basées sur les dépenses.

C'est également l'ISQ qui a procédé à l'analyse des retombées provenant des visiteurs externes. Afin d'obtenir ce type de retombées, l'ISQ exigeait le total des dépenses touristiques

annuelles par catégorie de dépenses (par exemple, les dépenses totales en hébergement, en nourriture / boisson et en activités). Toutes ces catégories de dépenses n'ont pas les mêmes impacts économiques, d'où la pertinence d'avoir cette distinction. Ces données ont été fournies au début du mois de juin, au même moment que pour les organisations de l'aéroport. Les données fournies par l'ISQ pour ce type de clientèle ont le même format que pour les organisations de l'aéroport. Les hypothèses de calcul pour les dépenses générées par les visiteurs externes sont présentées à la section 3.4. Aucun sondage n'a été nécessaire pour ce segment du mandat. Des données sur les dépenses moyennes des visiteurs ont été considérées (fournies par Tourisme Montérégie).

Finalement, il est important de noter que ces retombées ont été projetées sur les 20 prochaines années en fonction des prévisions des volumes de passagers envisagés par la firme DKMA dans le cadre du mandat du plan directeur de développement de DASH-L. Les sections suivantes présentent les résultats obtenus pour les deux (2) cibles de l'étude.

3.3 Retombées provenant des locataires

Les résultats obtenus lors de l'étude d'impact économique sont segmentés en retombées directes et indirectes. À partir des données reçues des organisations sondées (états financiers de 2018) et de leur code SCIAN, il a été possible d'estimer les impacts économiques. Sur les 24 entreprises contactées, 16 ont accepté de répondre au questionnaire (66,66%). Neuf (9) de ces 16 organisations ont fourni des données financières, tandis que les autres ont uniquement fourni le nombre d'employés à temps plein et à temps partiel. À partir du code SCIAN, l'ISQ est en mesure d'estimer le volume des dépenses, recettes fiscales et autres éléments du PIB en se basant sur des ratios / multiplicateurs de l'industrie. Le Tableau 4 (page suivante) dresse le portrait détaillé des retombées économiques des locataires de l'aéroport par catégorie et par type de retombées.

Présentation des données du Tableau 4 – Impacts économique des locataires

Pour l'année 2018, les retombées économiques annuelles des entreprises implantées à l'aéroport se chiffrent à 664 M\$. En plus de cet impact économique monétaire, l'ensemble de leurs activités économiques a permis de soutenir et/ou contribuer au maintien et/ou la création d'environ 3 550 emplois (équivalent temps plein – ETP), dont 2 206 emplois ETP découlent directement des locataires de l'aéroport.

La ventilation des résultats permet d'apprécier l'ampleur et l'incidence des activités des locataires de l'aéroport tout au long de la chaîne de valeur. En effet, les activités économiques de ces entreprises génèrent des salaires et traitements avant impôt de 202 M\$, permettant de maintenir des emplois au sein d'autres secteurs économiques tout en assurant aux divers paliers de gouvernement des recettes fiscales de 45.4 M\$. De plus, les revenus bruts avant impôt (également appelés excédent brut d'exploitation – EBE) génèrent une plus-value totale de 191.8 M\$. Ces excédents sont en partie réinvestis dans les organisations afin de supporter leurs projets d'investissement. Finalement, la parafiscalité génère des retombées de l'ordre de 34.8 M\$.

Tableau 4 - Impacts économiques des locataires de YHU (en '000 CAD)

Catégorie		Effets directs	Effets indirects		Effets totaux
			Premiers fournisseurs	Autres fournisseurs	
Main-d'œuvre	<i>Salariés</i>	2 188	786	407	3 381
	<i>Autres travailleurs</i>	18	95	52	165
	Total	2 206	881	459	3 546
Valeur ajoutée aux prix de base	<i>Salaires et traitements avant impôt</i>	144 802 \$	37 795 \$	20 277 \$	202 873 \$
	<i>Revenu mixte brut</i>	443 \$	6 155 \$	3 039 \$	9 636 \$
	<i>Autres revenus bruts avant impôt</i>	124 971 \$	38 873 \$	18 380 \$	182 223 \$
	Total	270 216 \$	82 822 \$	41 695 \$	394 733 \$
Recettes fiscales provinciales	<i>Impôt sur les salaires et traitements</i>	15 518 \$	3 240 \$	1 790 \$	20 548 \$
	<i>Taxes de vente</i>	- \$	4 636 \$	531 \$	5 167 \$
	<i>Taxes spécifiques</i>	- \$	1 552 \$	878 \$	2 430 \$
	Total	15 518 \$	9 427 \$	3 199 \$	28 145 \$
Recettes fiscales fédérales	<i>Impôt sur les salaires et traitements</i>	10 806 \$	2 017 \$	1 125 \$	13 947 \$
	<i>Taxes de vente</i>	- \$	1 589 \$	346 \$	1 935 \$
	<i>Taxes et droits d'accise</i>	- \$	1 053 \$	310 \$	1 363 \$
	Total	10 806 \$	4 659 \$	1 781 \$	17 245 \$
Parafiscalité	<i>Québécoise (RRQ, FSS, CSST, RQAP)</i>	20 659 \$	6 038 \$	3 301 \$	29 998 \$
	<i>Fédérale (assurance-emploi)</i>	3 223 \$	1 023 \$	541 \$	4 787 \$
	Total	23 882 \$	7 061 \$	3 842 \$	34 785 \$
Importations		- \$	130 417 \$	45 418 \$	175 835 \$
Autres productions		- \$	640 \$	957 \$	1 597 \$
Taxes indirectes		- \$	8 830 \$	2 065 \$	10 895 \$
Subventions		(1 863) \$	(516) \$	(306) \$	(2 685) \$
Total (000' \$):		320 765 \$	244 220 \$	99 111 \$	664 096 \$
		48,3%	36,8%	14,9%	100,0%

Sur le total des retombées économiques générées par les entreprises, il n'est pas possible d'estimer avec précision la proportion allouée à chacune des régions administratives du Québec. Puisque la localisation des fournisseurs de chaque entreprise n'a pas été partagée, et que le lieu de résidence des employés est inconnu, l'ISQ n'est pas en mesure de définir la provenance exacte des retombées. De manière générale, il est réaliste de croire que la majeure partie des retombées sont réalisées dans la région de la Montérégie et du Grand Montréal. Puisque la Montérégie est l'une des régions les plus performantes et polyvalentes au niveau économique, on peut sous-entendre que les entreprises sur place sont en mesure de s'approvisionner en biens et services à partir de partenaires locaux. Cela est également vrai pour les employés considérant l'important bassin de main-d'œuvre qualifiée du Grand Montréal.

3.3.1 Commentaires sur le développement aérien futur

En plus des impacts économiques actuels de YHU, il est pertinent de se questionner sur les impacts futurs de celui-ci considérant l'arrivée potentielle de transporteurs aériens nationaux tels que Porter ou Air Canada. Selon la direction de DASH-L, le positionnement de quatre (4) appareils d'un transporteur à YHU générerait entre 500 et 700 emplois. De plus, l'arrivée d'un transporteur national attirerait diverses organisations de support aux opérations. Finalement, le plan d'utilisation des terrains du plan directeur prévoit l'attraction de plus d'une quinzaine d'entreprises à l'aéroport au cours des 20 prochaines années.

Compte tenu de ces considérations, et le fait que l'arrivée d'un transporteur risque de se produire à court terme, Explorer Solutions a préparé un tableau présentant trois (3) scénarios de développement futurs de l'aéroport afin d'estimer les retombées potentielles de ces nouveaux arrivants. Les scénarios considèrent uniquement le transporteur et quelques petites entreprises de support aux opérations afin de supporter l'augmentation des vols commerciaux. Compte tenu du scénario réaliste, on peut estimer que des retombées additionnelles d'environ 150 M\$ seront envisageables lors de l'arrivée d'un transporteur national, augmentant ainsi le total des retombées économiques annuelles générées par les locataires à 814 M\$ (664 M\$ + 150 M\$).

Tableau 5 - Estimation des impacts économiques additionnels provenant de l'arrivée d'un transporteur aérien national

Scénarios	Nombre d'emplois prévus	Estimation des retombées totales (directes et indirectes)
Pessimiste	600	112 375 340 \$
Réaliste	800	149 833 786 \$
Optimiste	900	168 563 009 \$

Note importante : Il est important de comprendre que ces données sont des estimations et n'ont pas été fournies par l'ISQ. Il s'agit uniquement d'une proportion des retombées totales des locataires actuelles sur le nombre total d'emplois. En divisant le total des retombées (664 096 000\$ par le nombre total d'emplois, soit 3 546, on obtient un ratio de 187 292\$ d'impacts économiques (directs et indirects) par emplois en moyenne.

3.4 Retombées économiques générées par les passagers

Tel que mentionné plus tôt, les retombées générées par les passagers commerciaux n'ont pas uniquement été définies pour 2018, mais plutôt sur un horizon temporel de 20 ans afin de considérer les prévisions de passagers futurs suite à l'arrivée éventuelle de nouveaux transporteurs à YHU (par exemple Porter, Air Canada, SWOOP ou Jetline). De plus, parmi les volumes annuels de passagers il est important de considérer uniquement les passagers entrants (provenant de l'extérieur) et d'exclure les passagers sortants qui vont vers des destinations à l'extérieur de la région.

Afin de définir les retombées économiques liées aux dépenses touristiques des visiteurs externes, les hypothèses suivantes ont été définies :

Tableau 6 - Données requises pour l'analyse des retombées des visiteurs externes

Type de données	Description
Catégories de marchés aériens	Dans les projections des volumes de passagers de DKMA, trois (3) marchés sont identifiés : Les vols régionaux, les vols domestiques et les vols transfrontaliers nolisés. Tel que mentionné précédemment, les passagers de vols privés (aviation générale et aviation d'affaires) n'ont pas été considérés dans l'étude.
Catégorie de passagers et proportion	Les deux (2) catégories de passagers à l'étude sont les passagers d'affaires et les passagers de plaisance. Puisque les habitudes de dépenses ne sont pas identiques entre les passagers d'affaires et les passagers de plaisance, il est impératif de définir une proportion de ces types de client pour chaque marché aérien. Par exemple, la proportion de passagers d'affaires et de plaisance est différente entre des vols régionaux (axé affaires) et les vols transfrontaliers (axé plaisance). Cette segmentation des catégories de passagers est présentée au Tableau 7.
Provenance des passagers	L'analyse des retombées doit considérer uniquement les dépenses des passagers provenant de l'extérieur de la région. Par conséquent, une segmentation des passagers « inbound » (entrant) et des passagers « outbound » (sortant) a été effectuée pour chacun des trois (3) marchés aériens. Ces hypothèses sont également présentées au Tableau 7.
Nombre de passagers	Le nombre total de passagers annuel pour chaque catégorie de marché aérien est présenté en détail dans le haut du Tableau 9 et du Tableau 10.
Durée moyenne des séjours	Selon les données obtenues de Tourisme Montérégie, la durée des séjours a été définie de la manière suivante : <ul style="list-style-type: none"> - Passagers d'affaires : 2 jours - Passagers de plaisance: 1,7 jour
Dépenses quotidiennes moyennes par personne	Selon les données obtenues de Tourisme Montérégie, les dépenses moyennes par visiteurs ont été définies de la manière suivante : <ul style="list-style-type: none"> - Passagers d'affaires: 295\$ par jour - Passagers de plaisance: 145\$ par jour
Total des dépenses annuelles	Le Tableau 9 et le Tableau 10 présentent le détail des dépenses touristiques des passagers d'affaires et de plaisance entrant. Les données sont présentées par année et évoluent selon l'augmentation du volume annuel de passagers prévus d'ici 2037. Au total, sur la période de 20 ans, les dépenses sont estimées à 1 788 M\$ pour les passagers entrants. Les données sont présentées individuellement pour les passagers

	d'affaires et de plaisance, et les lignes « TOTAL » combinent les deux catégories de passagers.
Segmentation des dépenses	Au-delà des dépenses quotidiennes moyennes, il est capital pour l'Institut de la Statistique de connaître la composition des dépenses, notamment la proportion des dépenses en hébergement, transport, nourriture, loisirs, etc. Cette segmentation des dépenses est présentée au Tableau 8.

Tableau 7 - Proportion des catégories de passagers et des passagers entrants vs. sortants

Catégorie	Provincial	Domestique	Transfrontalier
Pourcentage de passagers entrant	50%	40%	10%
Pourcentage de passagers sortant	50%	60%	90%
Total:	100%	100%	100%
Pourcentage de passagers d'affaires	90%	80%	5%
Pourcentage de passagers plaisance	10%	20%	95%
Total:	100%	100%	100%

Tableau 8 - Segmentation des dépenses par catégorie de passager

Catégories de dépenses	Passagers d'affaires	Passagers de plaisance
Hébergement	40%	37%
Nourriture et boisson	27%	22%
Activités, loisirs et divertissements	9%	22%
Transport	15%	9%
Magasinage	5%	8%
Autres dépenses	4%	2%
Total:	100%	100%

Tableau 9 - Détail des dépenses par années par catégorie de passagers (2018 à 2027)

Marchés aériens		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
1) Fil de l'eau		17685	19459	19493	18635	18799	19726	20625	21493	22325	23118
2) Provincial		0	0	35420	36257	37077	38028	39039	40199	41344	42471
3) Domestique		0	0	189925	292592	318469	324765	331612	338924	346635	354655
4) Transfrontalier		0	0	0	145368	149729	153765	158186	162943	167997	173298
TOTAL PASSENGERS:		17685	19459	244838	492852	524075	536284	549463	563558	578300	593543
Dépenses de la clientèle d'affaires		4 695 368 \$	5 166 307 \$	50 437 326 \$	70 244 038 \$	75 403 913 \$	77 102 805 \$	78 915 849 \$	80 848 560 \$	82 844 173 \$	84 884 147 \$
Dépenses de la clientèle de plaisance		217 583 \$	239 406 \$	4 414 322 \$	9 833 231 \$	10 456 684 \$	10 698 065 \$	10 959 709 \$	11 239 764 \$	11 534 037 \$	11 839 472 \$
Total des dépenses		4 912 950 \$	5 405 713 \$	54 851 647 \$	80 077 269 \$	85 860 597 \$	87 800 871 \$	89 875 558 \$	92 088 324 \$	94 378 210 \$	96 723 619 \$
TOTAL	Hébergement	1 958 653 \$	2 155 103 \$	21 808 229 \$	31 735 911 \$	34 030 538 \$	34 799 406 \$	35 621 432 \$	36 498 137 \$	37 405 263 \$	38 334 264 \$
	Nourriture et boisson	1 315 617 \$	1 447 572 \$	14 589 229 \$	21 129 201 \$	22 659 527 \$	23 171 332 \$	23 718 415 \$	24 301 859 \$	24 905 415 \$	25 523 404 \$
	Activités, loisirs et divertissements	470 451 \$	517 637 \$	5 510 510 \$	8 485 274 \$	9 086 823 \$	9 292 827 \$	9 513 562 \$	9 749 119 \$	9 993 464 \$	10 244 257 \$
	Transport	723 888 \$	796 493 \$	7 962 888 \$	11 421 597 \$	12 251 689 \$	12 528 247 \$	12 823 751 \$	13 138 863 \$	13 464 689 \$	13 798 175 \$
	Magasinage	252 175 \$	277 468 \$	2 875 012 \$	4 298 860 \$	4 606 730 \$	4 710 985 \$	4 822 569 \$	4 941 609 \$	5 064 932 \$	5 191 365 \$
	Autres dépenses	192 166 \$	211 440 \$	2 105 779 \$	3 006 426 \$	3 225 290 \$	3 298 074 \$	3 375 828 \$	3 458 738 \$	3 544 448 \$	3 632 155 \$
AFFAIRES	Hébergement	1 878 147 \$	2 066 523 \$	20 174 930 \$	28 097 615 \$	30 161 565 \$	30 841 122 \$	31 566 340 \$	32 339 424 \$	33 137 669 \$	33 953 659 \$
	Nourriture et boisson	1 267 749 \$	1 394 903 \$	13 618 078 \$	18 965 890 \$	20 359 056 \$	20 817 757 \$	21 307 279 \$	21 829 111 \$	22 367 927 \$	22 918 720 \$
	Activités, loisirs et divertissements	422 583 \$	464 968 \$	4 539 359 \$	6 321 963 \$	6 786 352 \$	6 939 252 \$	7 102 426 \$	7 276 370 \$	7 455 976 \$	7 639 573 \$
	Transport	704 305 \$	774 946 \$	7 565 599 \$	10 536 606 \$	11 310 587 \$	11 565 421 \$	11 837 377 \$	12 127 284 \$	12 426 626 \$	12 732 622 \$
	Magasinage	234 768 \$	258 315 \$	2 521 866 \$	3 512 202 \$	3 770 196 \$	3 855 140 \$	3 945 792 \$	4 042 428 \$	4 142 209 \$	4 244 207 \$
	Autres dépenses	187 815 \$	206 652 \$	2 017 493 \$	2 809 762 \$	3 016 157 \$	3 084 112 \$	3 156 634 \$	3 233 942 \$	3 313 767 \$	3 395 366 \$
PLAISANCE	Hébergement	80 506 \$	88 580 \$	1 633 299 \$	3 638 295 \$	3 868 973 \$	3 958 284 \$	4 055 092 \$	4 158 713 \$	4 267 594 \$	4 380 605 \$
	Nourriture et boisson	47 868 \$	52 669 \$	971 151 \$	2 163 311 \$	2 300 471 \$	2 353 574 \$	2 411 136 \$	2 472 748 \$	2 537 488 \$	2 604 684 \$
	Activités, loisirs et divertissements	47 868 \$	52 669 \$	971 151 \$	2 163 311 \$	2 300 471 \$	2 353 574 \$	2 411 136 \$	2 472 748 \$	2 537 488 \$	2 604 684 \$
	Transport	19 582 \$	21 547 \$	397 289 \$	884 991 \$	941 102 \$	962 826 \$	986 374 \$	1 011 579 \$	1 038 063 \$	1 065 553 \$
	Magasinage	17 407 \$	19 153 \$	353 146 \$	786 658 \$	836 535 \$	855 845 \$	876 777 \$	899 181 \$	922 723 \$	947 158 \$
	Autres dépenses	4 352 \$	4 788 \$	88 286 \$	196 665 \$	209 134 \$	213 961 \$	219 194 \$	224 795 \$	230 681 \$	236 789 \$

Tableau 10 - Détail des dépenses par années par catégorie de passagers (2027 à 2037)

Marchés aériens		2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
1) Fil de l'eau		23871	24581	25247	25869	26448	26983	27477	27931	28349	28734
2) Provincial		43578	44660	45716	46742	47734	48691	49609	50486	51319	52106
3) Domestique		362874	371269	379750	388248	396740	405179	413520	421761	429902	437918
4) Transfrontalier		178775	184414	190159	195961	201806	207660	213490	219292	225063	230786
TOTAL PASSENGERS:		609097	624925	640872	656820	672728	688514	704096	719471	734634	749543
Dépenses de la clientèle d'affaires		86 945 651 \$	89 023 216 \$	91 098 481 \$	93 157 489 \$	95 195 102 \$	97 201 964 \$	99 168 833 \$	101 095 369 \$	102 981 407 \$	104 822 532 \$
Dépenses de la clientèle de plaisance		12 152 153 \$	12 471 305 \$	12 793 714 \$	13 116 916 \$	13 440 040 \$	13 761 382 \$	14 079 215 \$	14 393 448 \$	14 704 004 \$	15 009 973 \$
Total des dépenses		99 097 804 \$	101 494 522 \$	103 892 195 \$	106 274 405 \$	108 635 142 \$	110 963 346 \$	113 248 047 \$	115 488 818 \$	117 685 411 \$	119 832 506 \$
TOTAL	Hébergement	39 274 557 \$	40 223 669 \$	41 173 067 \$	42 116 254 \$	43 050 856 \$	43 972 497 \$	44 876 843 \$	45 763 724 \$	46 633 044 \$	47 482 703 \$
	Nourriture et boisson	26 148 799 \$	26 779 956 \$	27 411 207 \$	28 038 244 \$	28 659 486 \$	29 272 034 \$	29 873 012 \$	30 462 308 \$	31 039 861 \$	31 604 278 \$
	Activités, loisirs et divertissements	10 498 582 \$	10 755 777 \$	11 013 480 \$	11 269 896 \$	11 524 368 \$	11 775 681 \$	12 022 622 \$	12 265 142 \$	12 503 208 \$	12 736 222 \$
	Transport	14 135 541 \$	14 475 900 \$	14 816 206 \$	15 154 146 \$	15 488 869 \$	15 818 819 \$	16 142 454 \$	16 459 716 \$	16 770 571 \$	17 074 277 \$
	Magasinage	5 319 455 \$	5 448 865 \$	5 578 421 \$	5 707 228 \$	5 834 958 \$	5 961 009 \$	6 084 779 \$	6 206 244 \$	6 325 391 \$	6 441 924 \$
	Autres dépenses	3 720 869 \$	3 810 355 \$	3 899 814 \$	3 988 638 \$	4 076 605 \$	4 163 306 \$	4 248 338 \$	4 331 684 \$	4 413 336 \$	4 493 101 \$
AFFAIRES	Hébergement	34 778 260 \$	35 609 286 \$	36 439 393 \$	37 262 996 \$	38 078 041 \$	38 880 785 \$	39 667 533 \$	40 438 148 \$	41 192 563 \$	41 929 013 \$
	Nourriture et boisson	23 475 326 \$	24 036 268 \$	24 596 590 \$	25 152 522 \$	25 702 678 \$	26 244 530 \$	26 775 585 \$	27 295 750 \$	27 804 980 \$	28 302 084 \$
	Activités, loisirs et divertissements	7 825 109 \$	8 012 089 \$	8 198 863 \$	8 384 174 \$	8 567 559 \$	8 748 177 \$	8 925 195 \$	9 098 583 \$	9 268 327 \$	9 434 028 \$
	Transport	13 041 848 \$	13 353 482 \$	13 664 772 \$	13 973 623 \$	14 279 265 \$	14 580 295 \$	14 875 325 \$	15 164 305 \$	15 447 211 \$	15 723 380 \$
	Magasinage	4 347 283 \$	4 451 161 \$	4 554 924 \$	4 657 874 \$	4 759 755 \$	4 860 098 \$	4 958 442 \$	5 054 768 \$	5 149 070 \$	5 241 127 \$
	Autres dépenses	3 477 826 \$	3 560 929 \$	3 643 939 \$	3 726 300 \$	3 807 804 \$	3 888 079 \$	3 966 753 \$	4 043 815 \$	4 119 256 \$	4 192 901 \$
PLAISANCE	Hébergement	4 496 297 \$	4 614 383 \$	4 733 674 \$	4 853 259 \$	4 972 815 \$	5 091 711 \$	5 209 309 \$	5 325 576 \$	5 440 481 \$	5 553 690 \$
	Nourriture et boisson	2 673 474 \$	2 743 687 \$	2 814 617 \$	2 885 722 \$	2 956 809 \$	3 027 504 \$	3 097 427 \$	3 166 559 \$	3 234 881 \$	3 302 194 \$
	Activités, loisirs et divertissements	2 673 474 \$	2 743 687 \$	2 814 617 \$	2 885 722 \$	2 956 809 \$	3 027 504 \$	3 097 427 \$	3 166 559 \$	3 234 881 \$	3 302 194 \$
	Transport	1 093 694 \$	1 122 417 \$	1 151 434 \$	1 180 522 \$	1 209 604 \$	1 238 524 \$	1 267 129 \$	1 295 410 \$	1 323 360 \$	1 350 898 \$
	Magasinage	972 172 \$	997 704 \$	1 023 497 \$	1 049 353 \$	1 075 203 \$	1 100 911 \$	1 126 337 \$	1 151 476 \$	1 176 320 \$	1 200 798 \$
	Autres dépenses	243 043 \$	249 426 \$	255 874 \$	262 338 \$	268 801 \$	275 228 \$	281 584 \$	287 869 \$	294 080 \$	300 199 \$

Présentation des données du Tableau 11 – Impacts économiques des visiteurs

Le **Erreur ! Référence non valide pour un signet.** (page suivante) dresse le portrait détaillé des retombées économiques des passagers entrants de l'aéroport par catégorie et par type de retombées. Selon les hypothèses de calcul utilisées, et compte tenu des dépenses touristiques totales de 1 788 M\$ sur 20 ans, les retombées économiques globales – effets directs et indirects – générées par les passagers entrants de YHU se chiffreront à 2 193 M\$ suivant l'hypothèse que les projections de passagers se réaliseront aux années envisagées (moyenne de 109 M\$ par année). En plus de cet impact économique monétaire, l'ensemble de leurs activités économiques permettront de soutenir et/ou contribuer au maintien et/ou la création d'environ 18 250 emplois (équivalent temps plein – ETP) sur 20 ans.



La ventilation des résultats permet d'apprécier l'ampleur et l'incidence des activités des passagers de YHU tout au long de la chaîne de valeur. En effet, les activités économiques de ces passagers généreront des salaires et traitements avant impôt de 593 M\$ (sur 20 ans), permettant ainsi de maintenir des emplois au sein d'autres secteurs économiques tout en assurant aux divers paliers de gouvernement des recettes fiscales de 329 M\$ sur la même période.

De manière similaire aux impacts économiques générés par les entreprises de l'aéroport, il est très difficile de préciser l'emplacement géographique exact des impacts des passagers entrants. Pour la clientèle d'affaires, on peut facilement sous-entendre qu'une proportion importante des passagers a comme destination finale la Montérégie ou bien la Métropole, conservant ainsi les retombées dans une zone géographique restreinte. Du côté des passagers de plaisance, on peut penser qu'une portion se dirigera également vers les régions de l'Estrie et du Centre du Québec.

Note importante : Bien que l'ajout et l'augmentation progressive des services aériens à l'Aéroport Montréal-Saint-Hubert (YHU) générera des retombées pour la région, il faut être conscient du phénomène de déplacement des passagers de Montréal-Trudeau (YUL) vers Montréal Saint-Hubert. En effet, une portion importante des passagers qui utiliseront YHU sont déjà des utilisateurs de YUL, et donc proviennent d'une demande existante. YHU ajoute une alternative à YUL, et se sera plutôt une question de préférence qui fera en sorte qu'un passager choisira YHU au lieu de YUL. Par conséquent, dans le cas présent, on ne crée pas une nouvelle demande, on déplace seulement des gens qui utiliseraient YUL vers YHU. En d'autres termes, d'un point de vue des impacts économiques, on ne crée pas vraiment de nouvelles retombées avec les passagers de YHU, on déplace plutôt ces retombées de Montréal vers la Rive-Sud de Montréal, à tout le moins en partie.

Cependant, si l'offre de YHU se différencie grandement de YUL, par exemple avec l'arrivée d'un transporteur à bas coût, certaines personnes qui ne voyageraient pas normalement par la voie des airs seront peut-être amenées à voler à partir de YHU grâce à cette nouvelle offre et la proximité du service comparativement à Montréal Trudeau. Dans ces circonstances, on pourra dire que l'on crée de toutes nouvelles dépenses, et par conséquent de nouveaux impacts économiques.

Tableau 11 - Retombées économiques générées par les visiteurs externes (en '000 CAD)

Catégorie		Effets directs (2020)		Effets indirects 2020	Effets totaux 2020	Effets totaux (2020 à 2038)
		Demande finale	Premiers fournisseurs			
Main-d'œuvre	Salariés	...	453	126	578	18,249
	Autres travailleurs	...	46	16	62	1,947
Valeur ajoutée aux prix de base	Salaires et traitements avant impôt	- \$	13,368 \$	5,439 \$	18,806 \$	593,360 \$
	Revenu mixte brut	- \$	1,336 \$	920 \$	2,257 \$	71,196 \$
	Autres revenus bruts avant impôt	- \$	9,221 \$	4,819 \$	14,040 \$	442,974 \$
	Total	- \$	23,925 \$	11,178 \$	35,103 \$	1,107,531 \$
Recettes fiscales provinciales	Impôt sur les salaires et traitements	- \$	586 \$	426 \$	1,012 \$	31,916 \$
	Taxes de vente	...	3,892 \$	149 \$	4,041 \$	127,503 \$
	Taxes spécifiques	...	1,979 \$	514 \$	2,493 \$	78,647 \$
	Total	- \$	6,457 \$	1,088 \$	7,545 \$	238,065 \$
Recettes fiscales fédérales	Impôt sur les salaires et traitements	- \$	266 \$	254 \$	519 \$	16,389 \$
	Taxes de vente	...	1,941 \$	80 \$	2,021 \$	63,765 \$
	Taxes et droits d'accise	...	197 \$	156 \$	353 \$	11,147 \$
	Total	- \$	2,404 \$	490 \$	2,894 \$	91,301 \$
Parafiscalité	Québécoise (RRQ, FSS, CSST, RQAP)	- \$	2,166 \$	879 \$	3,045 \$	96,059 \$
	Fédérale (assurance-emploi)	- \$	396 \$	149 \$	545 \$	17,194 \$
	Total	- \$	2,562 \$	1,028 \$	3,590 \$	113,253 \$
Importations		...	1,342 \$	10,456 \$	11,797 \$	372,215 \$
Autres productions		...	18 \$	98 \$	116 \$	3,671 \$
Taxes indirectes		...	8,009 \$	899 \$	8,908 \$	281,062 \$
Subventions		- \$	(993) \$	(80) \$	(1,073) \$	(33,868) \$
Total (000' \$):		- \$	44,221 \$	25,298 \$	69,520 \$	2,193,426 \$

3.5 Investissements et perspectives d'avenir

Le sondage aux entreprises de l'écosystème aéroportuaire demandait également des informations sur les projets d'investissements passés et futurs. Ces projets sont importants à présenter puisqu'ils ont généré des retombées au cours des dernières années et généreront des retombées dans le futur. Le Tableau 12 présente les résultats obtenus pour les six (6) organisations qui ont été enclines à fournir ces informations (seulement 25% des 24 entreprises contactées). Au total, on prévoit 104 M\$ de projets d'investissements au cours des 5 prochaines années. La presque totalité de ce montant est attirée à DASH-L et à la construction future de son terminal aéroportuaire et des infrastructures associées. À long terme (10 ans et plus), DASH-L pourrait avoir des projets d'investissements totaux dépassant les 200 M\$ si le volume de passagers est au rendez-vous et justifie l'expansion du futur terminal et des infrastructures associées.

Tableau 12 - Sommaire des investissements passés et futurs pour les organisations de YHU

Catégories		Montant (\$)
Projets d'investissements passés	Projet de construction	44 000 000 \$
	Achat d'équipement	80 000 \$
	Développement de matériel académique	1 000 000 \$
	TOTAL	45 080 000 \$
Projets d'investissements futurs	Projet de construction	103 911 100 \$
	Achat d'équipements	200 000 \$
	TOTAL	104 111 100 \$

3.6 Sommaire des impacts économiques

Afin d'obtenir un portrait global des impacts économiques générés par YHU, il est pertinent de combiner ceux des entreprises de l'aéroport et des passagers entrants. Puisque les impacts économiques des locataires sont uniquement pour 2018 (à un moment spécifique dans le temps) et que les retombées des passagers sont évolutives dans le temps (selon le volume annuel de passagers), l'équipe de projet à considérer les hypothèses suivantes :

- Le total des retombées provenant des entreprises de YHU (664 M\$) en 2018 a été bonifié de 2% par année afin de représenter la croissance future de celles-ci jusqu'en 2037.
- Les retombées économiques globales de 2 193 M\$ pour les passagers entrants ont été étalées sur les 20 années des projections en proportion du volume des passagers chaque année.
- Les entreprises qui pourraient venir s'implanter à l'aéroport au cours des prochaines années (tel qu'un transporteur aérien) n'ont pas été considérées dans les calculs, ce qui implique que les retombées réelles (totales) sur 20 ans risquent d'être plus élevées en réalité.

Les données présentées ci-dessous sont en milliers de dollars. Au total, sur 20 ans, les entreprises de YHU et les passagers entrants génèrent respectivement des retombées de 15 356 M\$ et 2 193 M\$. En les combinant, on obtient un grand total des retombées de 17 550 M\$ sur 20 ans, soit une moyenne de retombées économiques annuelles de 877,5 M\$. Encore une fois, ces retombées sont anticipées uniquement si les prévisions de nombre de passagers se concrétisent, que l'économie est favorable et que les entreprises locales poursuivent une croissance stable.

Tableau 13 - Détail des impacts économiques globaux de YHU (entreprises et passagers entrants combinés) - Données en '000 \$

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Total des passagers (annuel)	17 685 \$	19 459 \$	244 838 \$	492 852 \$	524 075 \$	536 284 \$	549 463 \$	563 558 \$	578 300 \$	593 543 \$
Total des retombées des entreprises de YHU	664 096 \$	674 057 \$	684 168 \$	694 430 \$	704 847 \$	715 419 \$	726 151 \$	737 043 \$	748 099 \$	759 320 \$
Total des retombées des passagers entrants	6 024 \$	6 629 \$	67 267 \$	98 202 \$	105 294 \$	107 674 \$	110 218 \$	112 932 \$	115 740 \$	118 616 \$
Total des retombées économiques	670 120 \$	680 686 \$	751 435 \$	792 633 \$	810 142 \$	823 094 \$	836 369 \$	849 975 \$	863 839 \$	877 937 \$
	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Total des passagers (annuel)	609 097 \$	624 925 \$	640 872 \$	656 820 \$	672 728 \$	688 514 \$	704 096 \$	719 471 \$	734 634 \$	749 543 \$
Total des retombées des entreprises de YHU	770 710 \$	782 271 \$	794 005 \$	805 915 \$	818 004 \$	830 274 \$	842 728 \$	855 369 \$	868 199 \$	881 222 \$
Total des retombées des passagers entrants	121 528 \$	124 467 \$	127 407 \$	130 329 \$	133 224 \$	136 079 \$	138 881 \$	141 629 \$	144 323 \$	146 956 \$
Total des retombées économiques	892 238 \$	906 738 \$	921 412 \$	936 244 \$	951 228 \$	966 353 \$	981 609 \$	996 998 \$	1 012 522 \$	1 028 178 \$

4. Conclusion

L'aéroport Montréal Saint-Hubert et son écosystème d'entreprises représentent un atout économique majeur pour la ville de Longueuil et toute la Montérégie. En plus des impacts économiques actuels, qui se chiffrent actuellement dans les centaines de millions de dollars annuellement, l'aéroport possède un futur prometteur. En effet, le nouveau plan directeur de développement de l'aéroport dirigera son développement vers l'attraction de transporteurs aériens qui pourront offrir des vols sur les marchés domestiques et transfrontaliers au cours des prochaines années. Ce développement des services aériens entraînera également l'attraction de nombreuses organisations en support (et en complément) aux services actuels et futurs. Le plan de développement des terrains inclus dans le plan directeur témoigne également du potentiel immense de l'aéroport à développer ses terrains au cours des prochaines années. En somme, on peut conclure que YHU est un vecteur de développement économique important et que les retombées économiques actuelles représentent seulement une portion du potentiel global à long terme de l'aéroport.

Sommaire des impacts économiques

Période	Impacts des entreprises	Impacts des visiteurs	Total des impacts économiques
2018 uniquement	664 M\$	17.7 M\$	681.7 M\$
2018 à 2037	15 356 M\$	2 193 M\$	17 550 M\$

THE ECONOMIC IMPACT OF THE SASKATOON INTERNATIONAL AIRPORT: 2016

prepared for

THE SASKATOON AIRPORT AUTHORITY

RP ERICKSON & ASSOCIATES
AVIATION CONSULTANTS
CALGARY

(MAY 2017)

EXECUTIVE SUMMARY

The Saskatoon International Airport is an economic engine for the community, generating over one billion dollars in economic activity while providing one of the largest employment generators in the region. The Saskatoon Airport Authority is a not-for-profit, non-government corporation whose vision is to operate this community asset to enhance economic growth and air access to Saskatoon and northern Saskatchewan residents.

This report documents the 2016 economic impact activity generated by 67 on-airport firms and their subsidiaries. The impact is reported in terms of full-time equivalents (FTEs), labour income and economic output. Direct, indirect and induced forms of activity have been considered. The response rate to the interview process and survey questionnaire was exceptional: a 96 percent completion rate for the data sought.

In 2016, the Saskatoon International Airport supported a significant level of economic activity :

Direct Impact

<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
4,283 †	\$169.304	\$346.541	\$515.845

Total Impact

<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
8,026	\$359.202	\$689.053	\$1,048.255

(in millions, except FTEs)

† 1460 jobs are located on the airport.

The on-airport economic benefits are distributed :

	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
Air Carriers	22%	23%	27%	26%
ATB Concessionaires	13%	6%	7%	7%
General & Corporate Av	30%	26%	45%	40%
Air Cargo	9%	9%	3%	4%
Airport & Gov't Services	25%	33%	13%	19%
On-Airport, Non-Aviation	4%	3%	5%	4%

Each 1000 E&D passengers creates 5.5 full time jobs.

Each 1000 E&D passengers creates \$247,000 of annual labour income.

Each 1000 E&D passengers creates \$721,000 of economic output activity.

Each time a B737 lands and takes off, it generates 0.8 FTEs;
\$35,000 of annual labour income; and \$102,000 of economic output activity.

Each time a Bombardier Q400 lands and takes off, it supports 0.4 FTEs;
\$19,000 of annual labour income; and \$56,000 of economic output activity.

A new daily Bombardier C-Series service between Saskatoon and Ottawa would create 175 FTEs of employment; \$7,880,000 of labour income; and \$23,000,000 of economic output annually largely of benefit to Saskatoon and northern Saskatchewan.

THE ECONOMIC IMPACT OF THE SASKATOON INTERNATIONAL AIRPORT : 2016

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Definition of Terms

ATB – airport terminal building.

FTEs – Full time equivalent workers, based upon a 40 hr work week.

E&D passengers – enplaned and deplaned passengers.

GDP – Gross domestic product; the value of all goods and services required to produce a given service or product.

Economic Output – an aggregate of the labour income plus other expenditures totals which can be considered as the contribution to GDP.

Jobs – the number of workers gainfully employed, either full-time (FTE) or part-time.

Labour Income – the annual salaries plus benefits of a given workforce, which are generally circulated within the community where that workforce resides.

On-Airport, Non-Aviation – refers to those businesses physically located on airport property but do not have or produce an aviation-related product or service.

One-Time, New Construction – consists of on-airport, new capital construction (ie. new bricks and mortar facilities and/or the refurbishment of existing infrastructure).

Other Expenditures – other annual, non-labour expenditures, by firms for goods and services, excluding labour costs. These monies generally circulate within the community where those purchases are made.

Non-Resident Visitors – passengers arriving at the airport from jurisdictions outside the greater Saskatoon area (ie. other parts of Saskatchewan, other provinces, transborder or international passengers).

Trans-Border – US originating or departing passengers.

ULD – Unit Load Device, a container used in the large-scale movement of air cargo, typically in support of dedicated freighter aircraft.

About this report

This report was undertaken by RP Erickson & Associates of Calgary in conjunction with AirBiz of Vancouver for a Master Plan which was completed for the Saskatoon Airport Authority. The purpose of the study is to document the economic impact of the Saskatoon International Airport during the 2016 calendar year.

Impact assessments are valuable in that they serve to heighten business, community and political awareness as to the economic importance of an airport within a local economy. This study can also be viewed as a base-line against which future developments may be measured.

Methodology

The economic impact of the Saskatoon International Airport has been measured in terms of employment [full-time equivalents or FTEs], labour income, other expenditures and economic output. These leading indicators are expressed in dollar values and person-years of employment. Direct, indirect and induced forms of activity have been considered for employment and economic output. Data was obtained for the 2016 calendar year.

The data compiled in the 2016 study was obtained via a questionnaire circulated amongst 67 firms that operate on the airport. It is noted that a number of companies, particularly the airport terminal building (ATB) concessionaires, often include subsidiary businesses operating separate venues, as do a number of other on-site firms. In all cases, data was sought for an entire operation even though a business entity may have more than one on-airport company or outlet presence.

The survey population was separated into 8 sub-categories; the impacts associated with :

- the air carriers & their support services;
- the airport terminal building concessionaires;
- the general and corporate aviation communities;
- the air cargo sector;
- airport support & government agencies;
- on-airport, non-aviation firms;
- the impact associated with the spending activities of non-resident air passengers visiting the Saskatoon area; and,
- the 'one-time' economic impacts of new construction projects on the Saskatoon International Airport.

Each of the above categories is described in more detail in Chapter II (Sections 2.1 through 2.8). Section 2.9 displays the aggregate economic impact of the Saskatoon International Airport for 2016.

In conducting the interview/questionnaire process, key principals at each targeted firm were visited by the consultants, where: the underlying rationale for undertaking the study was explained; the objectives of the study could be examined; the value of their participation fully explored; and, the confidentiality of their data could be assured.

This approach resulted in an exceptional 96 percent response rate. Of the 67 firms surveyed, 64 completed the questionnaire with all firms providing employment data. Incomplete returns were estimated comparing completed results of similar-sized firms involved in like commercial pursuits.

The impact of off-airport passenger spending was undertaken by utilizing the Conference Board of Canada's TEAM econometric model, as explained in Section 2.7.

One last important consideration is worth imparting : this report represents a ‘snap-shot’ of economic activity in time. The data herein represents the economic activity for the Saskatoon International Airport for calendar year 2016.

The economic impact modelling process

Economic impact analysis is based on the premise that operations within various industries in an economy are closely related or linked to each other; that is, an increase in the activity levels in one industry will produce a positive ‘domino’ or rippling effect on other industries. Economists discuss the impact that one sector has on another in terms of indirect and induced effects. The total economic impact is the sum of the direct, indirect and induced effects.

The most common economic measures used in economic impact surveys are: employment in terms of jobs and labour come alongside economic output – essentially, the contribution made to gross domestic product. For this study, the consultants have chosen to display labour income as a separate category of economic output.

In this report:

Direct economic effects are the benefits attached to labour and expenditure activities within Saskatchewan;

Indirect economic effects are the result of the increase in goods and services produced largely within the Saskatchewan economy in support of direct activities;

Induced economic effects arise from the spending power of direct and indirect employees and largely benefiting local businesses;

Employment is measured in terms of full-time equivalents (FTEs). FTEs are expressed in person-years and labour income by dollar value. Employment multipliers have been used to generate the associated indirect and induced impacts;

Labour Income is the total payroll expense including wages, salaries and employee benefits. Labour income multipliers have been used to generate the associated indirect and induced impacts;

Other Expenditures is defined as the amount of dollar value to the local economy created through expenditure activity. A multiplier has been used to generate the indirect and induced impacts; and,

Economic Output is an aggregate of labour income and other expenditure totals, and can be considered as a contribution to gross domestic product (GDP). No multiplier effort has been applied to this category.

The aviation industry is a good example of a highly integrated sectoral activity which has significant linkages throughout a domestic economy. The multipliers associated with aviation are higher than most primary sectors and, as such, the potential impact to an economy linked to an increase or expansion in aviation activity is significant.

A word about the multipliers used in this report

Multipliers are used to *infer* indirect and induced economic activity from a measure of direct economic activity. Multipliers are not directly observed; they are inferred from an economic model. By far the direct measure is the most accurate. Readers are advised that multiplier analysis remains an imprecise econometric technique and that caution be used in interpreting the indirect and induced impacts contained in this report. However, multipliers are virtually the only cost-effective tool available to identify the overall impact of a sectoral activity within an economy.

The consultants note that the Saskatchewan Bureau of Statistics does not create provincial economic multipliers. The consultants have chosen the latest available set of Saskatchewan-specific multipliers produced by Statistics Canada, National Input-Output Multipliers. Multipliers have been selected for three categories 'Air Transportation' (used for aviation activities); 'Retail Trade' (used for ATB Concessionaires); and 'Professional Services' (used for Non-Aviation, On-airport Firms).

The closed Statistics Canada model utilized accounts for economic activity occurring within the province. As such, it is fair to note that some 'leakage' of benefits is likely occurring outside the Saskatoon area as well as Saskatchewan as a whole which may not be accounted for in this report. This reinforces our earlier premise of undertaking a conservative approach in assessing the overall impact of the Saskatoon International Airport.

Thus, the findings displayed in this report can be viewed as the minimum economic impact created by the presence of YXE in 2016.

Economic Impact of the Air Carrier & Support Services Sector at the Saskatoon International Airport : 2016

As could be expected, the air carrier sector is a dominant contributor to the economic activity generated by the Saskatoon International airport. The major firms operating within this category include scheduled and charter airlines, ground and passenger handling firms, food catering, aircraft grooming, line maintenance and re-fuelling companies. Noted is a seasonal variation with regard to the substantial sunspot charter activity which occurs at YXE throughout the winter months.

Table 1 depicts the economic impact activity undertaken by the Air Carrier & Support Services sector in 2016.

Table 1.

Air Carrier & Support Services Sector : 2016 Economic Impact (in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
257	\$16.806	\$54.458	\$71.264
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
717	\$38.318	\$141.591	\$179.909

For calendar year 2016, a total of 257 full-time equivalent employees can be attributed to the Air Carrier & Support sector operating at YXE – within this category 298 direct jobs are located on the airport. Their aggregate labour income was identified at \$16.806 million. Other Expenditures for this sector were \$54.458 million. The direct Economic Output was \$71.264 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the considerable impact of Saskatoon's air carrier sector can be realized. Within the Saskatoon area 717 full-time jobs are dependent upon it, generating an annual labour income of \$38.318 million. Other Expenditures in this sector were \$141.591 million. In 2016, the total Economic Output benefit created by air carriers and their support activities at the Saskatoon International airport was \$179.909 million.

Economic Impact of the Airport Terminal Building Concessionaire Sector : 2016

Within the Saskatoon Airport Terminal Building (ATB), 11 firms were identified as providing services to passengers and non-resident visitors arriving by air, alongside the meeters & greeters of arriving passengers and employees of the airport. The number of firms canvassed in this grouping does not correlate with the actual number of outlets offering on-site services since a number of firms operate subsidiary or satellite venues in the terminal. The totals of this sector are dominated by the car rental firms; important too, are the ground transportation and food & beverage providers.

Table 2 depicts the economic impact activity undertaken by the ATB concessionaire sector in 2016.

Table 2.

Airport Terminal Building Concessionaire Sector :
2016 Economic Impact
(in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
161	\$4.644	\$13.511	\$18.155
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
203	\$6.362	\$19.321	\$25.683

For calendar year 2016, a total of 161 full-time equivalent employees can be attributed to the concessionaires operating within the Saskatoon ATB – within this category 276 direct jobs are located on the airport. Their aggregate labour income was identified at \$4.644 million, lower on average than most other airport workers and reflecting the lower earnings bracket of many workers in this sector. Other Expenditure activities were \$13.511 million. The direct Economic Output was \$18.155 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the overall economic impact of the ATB concessionaires can be realized. Within the Saskatoon area 203 full-time jobs are dependent upon this sector, generating an annual labour income of \$6.362 million. Other Expenditure activities were \$19.321 million. In 2016, the total Economic Output activity created by ATB activities was \$25.683 million.

Economic Impact of the General & Corporate Aviation Sectors at the Saskatoon International Airport : 2016

The Saskatoon International Airport supports a diverse, on-site general aviation (GA) community alongside a growing corporate aviation presence. By a wide measure, YXE is Saskatchewan's leading general aviation airport in large measure due to its extensive supporting role in servicing northern Saskatchewan communities and their residents.

Saskatoon's GA firms undertake a variety of aviation-related activities, including : flight training; aircraft sales and leasing; maintenance/overhaul/repair; alongside a range of specialized support services, where a significant northern workforce transportation presence is apparent. The airport is home to several government flight departments and Fix Base Operators (FBOs) which handle itinerant corporate air traffic and re-fuelling activities.

Table 3 depicts the economic impact activity undertaken by the GA and Corporate sector in 2016.

Table 3.

General & Corporate Aviation Sector : 2016 Economic Impact (in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
354	\$18.455	\$91.128	\$109.583
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
988	\$42.077	\$236.933	\$279.010

For calendar year 2016, a total of 354 full-time equivalent employees can be attributed to the general and corporate aviation sector operating at YXE – within this category 387 direct jobs are located on the airport. Their aggregate labour income was identified at \$18.455 million. Other Expenditure activities were \$91.128 million. The direct Economic Output was \$109.583 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the significant impact of Saskatoon's GA and corporate sectors can be realized. Within the Saskatoon area 988 full-time jobs are dependent upon it, generating an annual labour income of \$42.077 million. Other Expenditures activity was \$236.933 million. In 2016, the total Economic Output activity created by general and corporate aviation at the Saskatoon International airport was \$279.010 million.

Economic Impact of the Air Cargo Sector at the Saskatoon International Airport : 2016

Saskatoon's current air freight industry is dominated by the express courier & mail segment largely due to the limited air cargo capacity available on the narrow-bodied jet or regional passenger aircraft in service at YXE. In fact, YXE's air cargo requirements are largely being met at Calgary and Edmonton due to a lack of unit load devices (ULD) capacity. As such, most of Saskatchewan's regular air freight shipments are transported by road feeder services.

One bright light has been the recent introduction of a weeknight B727 main deck freighter service linking YXE with the country's overnight hard freight network. However, this welcomed ULD capacity is currently subscribed to mainly courier express products; so much so, that the current service provider reports a strong likelihood that a larger B757-200F will come on-line in the fall.

Table 4 depicts the economic impact activity undertaken by the Air Cargo sector in 2016.

Table 4.

Air Cargo Sector : 2016 Economic Impact
(in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
105	\$6.655	\$5.536	\$12.191
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
293	\$15.173	\$14.394	\$29.567

For calendar year 2016, a total of 105 full-time equivalent employees work in the air cargo sector – within this category 115 direct jobs are located on the airport. Their aggregate labour income was identified at \$6.655 million. Other Expenditure activities were \$5.536 million. The direct Economic Output was \$12.191 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the overall impact of YXE's air freight sector can be realized. Within the Saskatoon area 293 full-time jobs are dependent upon the movement of air cargo, courier and mail products, generating an annual labour income of \$15.173 million. Other Expenditures activity was \$14.394 million. In 2016, the total Economic Output benefit created by YXE's air freight sector was \$29.567 million.

Economic Impact of the Airport Support & Government Services Sector at the Saskatoon International Airport : 2016

This sector includes the Saskatoon Airport Authority and its third-party contractors, as well as, a range of government agencies operating on the airport. Included in this later group are the Canada Border Services Agency, the Canadian Air Transport Security Authority, Transport Canada, the Commissionaires and two air ambulance agencies: the Saskatchewan Air Ambulance, providing northern Saskatchewan residents with fixed wing service in accessing Saskatoon's health care facilities; and STARS Air Ambulance – the not-for-profit helicopter service provider. NavCanada, the country's air navigation service provider, is included in this category although it is not a government agency. NavCanada operates the Saskatoon Air Traffic Control Tower, the Saskatoon Flight Service Station and provides an on-airport Tech Services branch.

Table 5 depicts the economic impact activity undertaken by the Airport Support and Government Services sector in 2016.

Table 5.

Airport Support & Government Services Sector : 2016 Economic Impact (in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
292	\$23.520	\$27.091	\$50.611
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
815	\$53.626	\$70.437	\$124.063

For calendar year 2016, a total of 292 full-time equivalent employees can be attributed to this sector – within this category 328 direct jobs are located on the airport. Their aggregate labour income was identified at \$22.520 million. Other Expenditure activities were \$27.091 million. The direct Economic Output was \$50.611 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the significant impact of the airport & government support sector can be realized. Within the Saskatoon area 815 full-time jobs are dependent upon it, generating an annual labour income of \$53.626 million. Other Expenditure activity was \$70.437 million. In 2016, the total Economic Output activity created by the airport support and government services sector was \$124.063 million.

Economic Impact of the On-Airport, Non-Aviation Sector at the Saskatoon International Airport : 2016

The attractiveness of the industrial lands located on the Saskatoon airport is reflected in its On-Airport, Non-Aviation sector. Currently, 7 firms are included in this sub-group.

Table 6 depicts the economic impact activity identified in the On-Airport, Non-Aviation sector in 2016.

Table 6.

On-Airport, Non-Aviation Sector : 2016 Economic Impact
(in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
53	\$1.960	\$9.906	\$11.866
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
110	\$4.724	\$22.784	\$27.508

In 2016, a total of 53 full-time equivalent employees are attributed to the On-Airport, Non-Aviation sector – within this category 56 direct jobs are located on the airport. Their aggregate labour income was identified at \$1.960 million. Other Expenditure activities were \$9.906 million. The direct Economic Output was \$11.866 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the significant impact of the On-Airport, Non-Aviation sector can be realized. Within the Saskatoon area 110 full-time jobs are dependent upon it, generating an annual labour income of \$4.724 million. Other GDP activity was \$22.784 million. In 2016, the total Economic Output activity created by the sector at the Saskatoon International airport was \$27.508 million.

2.7 Economic Impact generated by Airport Visitor Spending : 2016

Spending by visitors travelling by air to the Saskatoon area is an important contribution to the overall economic impact of the airport. Visitors by air are divided into domestic, transborder or international passengers depending upon point of origin. A smaller subset of visitor spending are the expenditures made by cockpit and cabin crews of air carriers who overnight at hotels in the Saskatoon area for operational or crew rest reasons. Another source of local hospitality spending can be attributed to non-resident aviation students undertaking flight or job training syllabuses available at YXE on-site aviation education institutes.

In attempting to capture the impact attributable to this sector, the consultants have chosen the Conference Board of Canada's Tourism Economic Assessment Model [TEAM]. The TEAM model is a sophisticated, computer-based econometric tool designed to assess the impact of non-resident spending upon a local or provincial economy. A Saskatchewan-specific TEAM model was utilized and its impacts output is presented below and integrated into the overall study results.

From Table 7 an input total of \$325.521 million of non-resident visitor/overnight aircrew spending was entered into the TEAM model utilizing Canadian Tourism Committee and Tourism Saskatoon data sources. The model produced the results shown in Table 8.

Table 7.

**Spending by Non-Resident Visitors
Arriving by Air : 2016**

<u>Non-resident Visitors</u>	<u>2016 Visitor Totals</u> [†]	<u>Total Spending</u> ^{††}
Domestic	457,700	\$221,080,000
Transborder	74,800	\$49,250,000
International	50,300	\$48,941,000
Flightcrew/Non-resident student expenditures ^{†††}		<u>\$6,250,000</u>
	Total	\$325,521,000

[†] Saskatoon Airport Authority.

^{††} Canadian Tourism Commission/Tourism Saskatoon.

^{†††} RP Erickson & Associates.

Note: This spending is attributable to passengers arriving at the Saskatoon International airport in 2016; an unknown number of these visitors continue beyond the immediate Saskatoon market, possibly to Regina or other regional centres, northern parts of the province and/or beyond. It is safe to assume that a significant proportion of this spending finds its way into the Saskatchewan economy but that exact figure is unknown.

Table 8 depicts the economic impact attributable to non-resident, airport visitor spending in the Saskatoon area in 2016.

Table 8.

**Spending by Non-Resident Visitors arriving by Air :
2016 Economic Impact**
(in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
3061	\$97.264	\$144.933	\$242.197
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
4818	\$192.630	\$174.499	\$367.129

For calendar year 2016 within the province, a total of 3061 full-time equivalent employees can be attributed to non-resident, airport visitor spending. The aggregate labour income was identified at \$97.264 million. Other Expenditure activities were \$144.933 million. The direct Economic Output was \$242.197 million.

When the TEAM-generated multipliers are applied to the above direct economic activity, the significant impact of non-resident, airport visitor spending upon the province can be realized. This spending generated 4818 full-time jobs, generating an annual labour income of \$192.630 million. Other Expenditure activity was \$174.499 million. In 2016, the total Economic Output activity created by this sector on the provincial economy was \$367.129 million.

2.8 The 'One-Time' Economic Impact of New Construction at the Saskatoon International Airport : 2016

The 'one-time' impact of the economic contribution accompanying capital spending on the airport is consequential. Capital spending arises from the Saskatoon Airport Authority's capital construction program alongside a range of tenant facility new construction and/or expansion projects. This capital investment has provided work for the local construction industry and Saskatchewan's construction materials sector.

In 2016, an appreciable \$14.385 million of capital construction was undertaken at YXE. Leading the investment was an \$11 million SAA capital program. The SAA's on-going maintenance and expansion programs accounted for 76 percent of the 2016 capital expenditures on the airfield

Table 9 depicts the 'one-time' economic impact activity associated with capital spending on the Saskatoon airport in 2016.

Table 9.

One-Time, New Construction at the Saskatoon International Airport : 2016 Economic Impact (in millions, except FTEs)

<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
82	\$6.292	\$9.094	\$15.386

For calendar year 2016, a total of 82 annual full-time equivalent construction and support service jobs can be attributed to capital construction spending at YXE. The aggregate labour income was identified at \$6.292 million. Other Expenditure activities were \$9.094 million. The direct Economic Output was \$15.386 million.

The Aggregate Economic Impact of the Saskatoon International Airport : 2016

At the Saskatoon International Airport, 67 commercial firms or government agencies were interviewed and their 2016 economic activities assessed. Additionally, the impact of non-resident visitor spending in the Saskatoon area and the economic benefits associated with 'one-time' capital construction expenditures for 2016 have been combined with the data in Sections 2.1 through 2.8 to produce Table 10.

Table 10 depicts the aggregate economic impact of the Saskatoon International Airport for 2016.

Table 10.

Aggregate Economic Impact of the Saskatoon International Airport : 2016 (in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
4,283	\$169.304	\$346.541	\$515.845
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
8,026	\$359.202	\$689.053	\$1,048.255

For calendar year 2016, a total of 4,283 annual full-time equivalent employees can be attributed to the Saskatoon International Airport; it is noted that within this total – 1460 jobs are located on the airport. The aggregate labour income of this workforce was identified at \$169.304 million. Other Expenditure activity was \$346.541 million. The

direct Economic Output created by the Saskatoon International airport was \$515.845 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the consequential impact of the airport can be realized. The airport creates some 8,026 full-time jobs, generating an annual labour income of \$359.202 million. Other Expenditures activity was \$689.053 million. In 2016, the total Economic Output benefit created by the Saskatoon airport was \$1,048.255 million.

2.10 Discussion

In addition to providing over 8000 full-time jobs, the Saskatoon International Airport's contribution to the GDP of the Saskatoon area was over \$1 billion.

The distribution of the Economic Impact by sub-category is presented in Table 11. This distribution has been calculated on the basis of on-airport activities and does not include the totals created by non-resident visitor spending and the one-time impact associated with new construction.

Table 11.

Distribution of Economic Impacts

The economic benefits of the on-airport firms are distributed :

	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
Air Carriers	22%	23%	27%	26%
ATB Concessionaires	13%	6%	7%	7%
General & Corporate Av	30%	26%	45%	40%
Air Cargo	9%	9%	3%	4%
Airport & Gov't Services	25%	33%	13%	19%
On-Airport, Non-Aviation	4%	3%	5%	4%

Data Generalities – 2016

When the economic impact totals are compared against Saskatoon's 2016 enplaned and deplaned [E&D] passenger movement data (1,453,000), the results provide some interesting generalities.

Within the Saskatoon area :

Each 1000 E&D passengers creates 5.5 full time jobs.

Each 1000 E&D passengers creates \$247,000 of annual labour income.

Each 1000 E&D passengers creates \$721,000 of economic output activity.

* * * * *

Each time a B737 lands and takes off at YXE, it generates 0.8 FTEs;
\$35,000 of annual labour income; and \$102,000 of economic output activity.

* * * * *

Each time a Bombardier Q400 lands and takes off at YXE, it supports 0.4 FTEs;
\$19,000 of annual labour income; and \$56,000 of economic output activity.

* * * * *

A new daily Bombardier C-Series service between Saskatoon and Ottawa would create
175 FTEs of employment; \$7,9 million of labour income; and \$23 million of economic
output annually largely of benefit to Saskatoon and northern Saskatchewan.

* * * * *

In addition to the quantifiable economic benefits displayed in this report, the Saskatoon International Airport provides a wide range of ancillary, qualitative benefits to residents of the Saskatoon area and the province as a whole. These range from societal advantages attached to the travel, tourism and transportation functions of the airport, through expansive career and hobby development possibilities to opportunities for volunteerism.

The Saskatoon airport also provides critical access for air-related environmental and emergency response services; none more importantly than in providing all Saskatchewan residents with access to Saskatoon's extensive health care resources by both fixed wing aircraft alongside the STARS helicopter capability.

Volunteerism - 2016

Airports provide local residents with a number of volunteer opportunities, where local residents can pursue their recreational interests in like company at no cost to any level government. By example, the Saskatoon Aviation Museum Society estimate some 4600 hours of volunteerism by their membership in 2016. The Club's activities are

diverse but include support for local air cadet groups, aviation historical research and the restoration of historical aircraft.

A number of airport firms and agencies host school visits throughout the year. These services are undertaken on a 'no-charge, volunteer basis' and have the significant ancillary benefit of passing Saskatoon and the province's rich aviation heritage on to future generations - not to mention those student visitors who may be attracted to a career in aviation.

2.11 Conclusions

In 2016, the Saskatoon International Airport supported a considerable level of economic activity, primarily in the Saskatoon area but also throughout the province and, to a lesser extent, the national economy.

In direct terms, the airport :

- contributed 4300 full-time jobs;
- generated \$170 million in labour income; and,
- created in excess of \$500 million in economic output.

When indirect and induced forms of economic activity are included, the airport generates :

- over 8000 full-time jobs;
- over \$350 million in annual labour income; and,
- over 1 billion dollars of GDP activity.

***Clearly – the Saskatoon International Airport is
an important economic and social contributor
to the City of Saskatoon and northern Saskatchewan.***

LAND USE & MASTER PLAN, SAULT STE. MARIE AIRPORT

ECONOMIC IMPACT STUDY - COMPONENT REPORT

2014 - 2023



Prepared For:



Sault Ste. Marie Airport
DEVELOPMENT CORPORATION

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Economic Impact Study Sault Ste. Marie Airport, Ontario

FINAL REPORT

Version 1.2

10 December 2013

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1 Introduction

An airport is a key component of a region's infrastructure and plays an important role in facilitating the flow of domestic and international commerce. In collaboration with airlines, it fulfils that role by enabling the movement of people and goods: i.e., passenger transport services facilitate face-to-face business transactions, tourist activity, and the reuniting of family and friends; cargo services facilitate the flow of inputs to industrial production processes and the distribution of final products. All of these movements have a positive and significant impact on a region's economic growth.

The term economic impact, as it applies in this context, is defined as the regional economic activity, in terms of variables such as employment and payroll that can be attributed to the operation of Sault Ste. Marie Airport (herein referred to as the Airport). This measure has three components: direct, indirect and induced. These are described as follows:

- Direct impact of Sault Ste. Marie Airport pertains to the impact of all economic activities located on the Airport's lands.
- Indirect impact pertains to the economic impact generated as a result of the purchases of goods and services by the airport and businesses located on its premises – e.g., restaurants and retail stores. In general, indirect impacts of an airport primarily result from off-site economic activities.
- An induced economic impact refers to the economic activity that is generated as a result of expenditures on goods and services in the local economy that are made by individuals who draw an income through being directly employed at an airport or indirectly employed in supporting industries.

These three impacts are measured by using the Input-Output Interprovincial Economic Impact Model of Statistics Canada (I-O model). The I-O model depicts inter-industry relationships within an economy, providing a measure of the interdependence between a given industry and the rest of the economy: e.g., quantifying the value of inputs derived from supplier industries that are required by a given industry to produce one dollar of final output. These inter-industry relationships are derived from the Input-Output tables produced by Statistics Canada. In addition, the I-O model contains employment multipliers which express the relationship between employment and output: i.e., output (value-added) per employee.

At the outset, it is important to define what is meant by the Airport's output, or 'value-added'. In broad terms, an establishment's total value added is equivalent to its revenue less its purchases of materials and services, which form inputs to its production of goods and/or services. Also, total value added is the sum of labour income (including wages, salaries, and benefits) and gross operating surplus (defined as operating profits, depreciation, and all other extra-ordinary gains). Applying this concept in the context of the Airport, it means that its "value added" is roughly the difference between its total revenues (the Airport and its tenants combined) and its purchases of inputs (goods and services) from supplier industries. By another term, the Airport's total value-added is its GDP.



2 Methodology

In the case of the Sault Ste. Marie Airport, the Study Team utilized Statistics Canada's input-output model of the Ontario economy to measure the Airport's economic footprint: i.e., direct, indirect and induced impacts.

The following describes, in general, the steps and procedures undertaken by the Study Team in utilizing the I-O model to produce the desired results.

Base Year Impacts:

1. Definition of "Airport Area": The starting point for this component of the mandate was to collaborate with the Airport client to agree upon the physical boundaries of the "airport area", the enterprises captured therein, and the definition of "direct" impact. In this regard, it was agreed that "direct" impact would be attributed to all commercial activity undertaken within the Airport boundaries: i.e., all revenue, wages & salaries, and employment accounted for by the Airport and its tenants.
2. Survey of Airport Tenants: The second step was to conduct a survey, with the intention of collecting revenue, wages & salaries, and employment data, from the Airport Development Corporation itself and from all enterprises that are located within the boundaries of the "Airport area." As indicated to the Airport client at the outset of the study, undertaking an economic impact assessment (base year and projections) is contingent upon capturing these types of data via surveys. Unfortunately, the survey was unsuccessful in capturing the full range of data required; in fact, most of the Airport tenants were unwilling to provide revenue figures for their operations at the Airport and, while all ended up providing employment figures, in some cases the proprietors did not provide a breakout between their total employment and that which is located on the Airport's premises. This meant that the Study Team did not receive the complete set of data that was required for running the Statistics Canada Input-Output model according to standard procedures. As a result, a number of estimates and assumptions had to be made in order to run the model, albeit in a workable but unconventional manner (see explanations in the steps which follow).
3. Categorization of Survey Data: Following the collection of data, the next task was to categorize all enterprises located within the Airport area according to specific industry definitions employed by Statistics Canada. This was undertaken to maintain consistency with the industries captured in the I-O model.
4. Estimation of Full-Time Equivalent (FTE) Employees at the Airport: Employment data collected from the Airport and its tenants included full-time, part-time and seasonal employment. Given estimates provided for hours worked by non-full-time employees, we were able to convert those figures into FTEs, which were then combined with the figures for full-time employment to obtain total FTEs by industry classification (refer to the previous step).



5. Impact Modelling: Normally, revenue data categorized by industry classification would be introduced as an exogenous shock to the I-O model in order to estimate direct, indirect and induced economic impacts. In the absence of such data, however, the Study Team took the following optional approach using the employment data. Based on FTE employment multipliers contained in Statistics Canada's Input-Output Multiplier Table, we were able to estimate the amount of output (revenues) associated with the levels of FTE employment at the Airport (i.e., output by industry at the Airport). In turn, those output figures were used as exogenous shock values for the I-O model, which would be the standard approach, to obtain the direct, indirect and induced impacts (i.e., GDP, employment) in total and by sector captured at the Airport. It must be stressed that this is a crude approach to simulating economic impacts. In fact, normally the employment data collected from the survey would be used as a "sanity check". That is, the normal approach would be to shock the model with revenue data and thereby estimate impacts, including employment impacts. In turn, the estimated employment impacts would be compared to the actual direct employment at the Airport, as determined via a survey.

Due to the data limitations indicated above, and the resulting alternative methodology that had to be employed, the following results of the I-O simulation must be interpreted with caution and should be considered as a rough guide to understanding the Airport's direct, indirect and induced economic impacts.



3 Results of the Economic Impact Simulation

CONFIDENTIAL INFORMATION - The Airport's tenants were given assurances by the Study Team that any data, they might provide, would be used in an aggregate form only. In that regard, it should be noted that, in some instances there are only one or two establishments per industry grouping represented at the Airport. Consequently, it is not possible to totally obscure the identity of some of the reporting entities.

Based on the methodology described above and the data provided by the Airport's tenants, it is estimated that operations at Sault Ste. Marie Airport generate a total (direct, indirect and induced) GDP impact of \$39.3 Million and that the level of output corresponds to 430 FTE jobs. The specific inputs underlying these estimates are presented below, followed by a detailed breakout of the results.

The table in Exhibit 3-1 displays the industry groupings present at the Airport and their associated estimates of FTE employees, as derived from the raw employment data provided by the Airport's tenants.

Exhibit 3-1 – Employment Estimates Based on Survey of Airport Tenants

Input-Output Industry Classification	Estimated FTEs*
Support activities for forestry	47.0
Non-store retailers	0.1
Air transportation	27.5
Support activities for transportation	73.5
Automotive equipment rental and leasing	4.0
Investigation and security services	5.5
Services to buildings and dwellings	2.0
Educational services	28.5
Amusement and recreation industries	1.5
Food services and drinking places	2.0
Other federal government services (except defence)	20.0
Total	211.6

* Includes part-time and seasonal employment converted to FTEs. Note: Self-employed individuals that may do work at the Airport from time to time are not included.

Source: Aviotec International survey and estimates by Statistics Canada and DKMA Inc.

As mentioned above, these FTEs were used to generate associated total revenues which, in turn, were used to shock the I-O model in order to simulate direct, indirect and induced GDP



and employment impacts of the Airport and its tenants. These impacts are presented in the table in Exhibit 3-2.

Exhibit 3-2 – Economic Impact of Sault Ste. Marie Airport on Ontario Economy (\$'000)

GDP

Direct impact	20,665
Total impact (direct, indirect and induced)	39,349
Multiplier*	1.90

Labour income

Direct impact	13,274
Total impact (direct, indirect and induced)	23,954
Multiplier*	1.80

Jobs - full-time equivalent (FTE)

Direct impact**	233
Total impact, closed model	430
Multiplier*	1.85

* In the Statistics Canada Input-Output model, this is the 'type 2 multiplier', which is defined as 'total impact' divided by 'direct impact'.

** This figure differs from the FTEs calculated from data provided by the Airport's tenants, as it includes an estimate of self-employed individuals that may undertake work from time to time at the Airport.

Source: Statistics Canada's I-O simulation model.

To interpret these data: 'Direct' impact refers to the portion of 'Total' impact (i.e., direct, indirect and induced) that is confined to operations on the Airport's premises; and the multipliers refer to the incremental values of output, employment and wages that are generated by one dollar of output (value-added) at the Airport. For example, the Airport has a GDP multiplier of 1.90 (refer to Exhibit 2-2), which means that the impact of a one dollar increase in GDP at the Airport is accompanied by, or triggers, 90 cents of GDP from supplier industries.

In essence, we have a rough guide telling us that the Airport's total economic impact is almost twice (1.90) the value of the economic impact of all commercial entities located on its premises.

Exhibit 3-3 presents the key industries that are impacted by commercial operations at the Airport. On the basis of the industries identified in the Socioeconomic section above and those identified through the Study Team's survey of Airport's tenants, it seems that most, if not all, of these industries have some degree of presence in the Algoma region and this



leads us to believe that at least some of the Airport's indirect and induced impacts accrue to local industries. Of course, this does not mean that all of the Airport's purchases from these sectors are made locally. We do know, however, that, at a minimum, 50% of the Airport's total impact is confined to Sault Ste. Marie, since the I-O model demonstrates that the Airport's 'direct' economic impact accounts for roughly 50% of its total economic impact (as shown in Exhibit 3-2). Isolating the precise proportion of the balance of the impact (indirect and induced) that is captured in the region around Sault Ste. Marie is beyond the scope of Statistics Canada's I-O model, which does not disaggregate impacts below the provincial level.

Exhibit 3-3 – Economic Impact of Sault Ste. Marie Airport on Ontario Industries ¹

Industries (Summary level)	% Distribution of Impact	
Crop and animal production	61	0.2%
Forestry and logging	5	0.0%
Support activities for agriculture and forestry	2,272	5.8%
Mining, quarrying, and oil and gas extraction	49	0.1%
Utilities	592	1.5%
Repair construction	418	1.1%
Other activities of the construction industry	35	0.1%
Manufacturing	1,281	3.3%
Wholesale trade	878	2.2%
Retail trade	1,279	3.3%
Transportation and warehousing	14,859	37.8%
Information and cultural industries	1,076	2.7%
Finance, insurance, real estate, rental and leasing and holding companies	5,436	13.8%
Owner occupied dwellings	1,796	4.6%
Professional, scientific and technical services	1,419	3.6%
Administrative and support, waste management and remediation services	1,404	3.6%
Educational services	1,202	3.1%
Health care and social assistance	296	0.8%
Arts, entertainment and recreation	222	0.6%
Accommodation and food services	684	1.7%
Other services (except public administration)	655	1.7%
Non-profit institutions serving households	101	0.3%
Government education services	158	0.4%
Government health services	70	0.2%
Other federal government services	2,794	7.1%
Other provincial and territorial government services	33	0.1%
Other municipal government services	275	0.7%
Total	39,349	100.0%

Note: 1. GDP at basic prices, total impact (direct, indirect and induced) in thousands of Canadian dollars.

Source: Statistics Canada's I-O simulation model.



As indicated in the above table, the Airport's key GDP impacts are focused on transportation and related sectors (37.8%), which is not a surprise, and on the sector grouping 'finance, insurance, real estate, rental and leasing and holding companies' (13.8%). The balance of the Airport's impact is fairly evenly spread across 25 other sectors of the provincial economy.

Similarly, as presented in Exhibit 3-4 below, the Airport's total FTE employment impacts for Ontario are most pronounced for the transport and warehousing sector (31.6%). However, concerning FTE employment impacts, other sectors of note that are impacted by the Airport include support activities for agriculture and forestry (10.7%), retail trade (5.7%), finance, insurance, real estate, rental and leasing & holding companies (7.1%), administrative and support, waste management and remedial services (7.1%), and educational services (8.3%).

Exhibit 3-4 – Impact of Airport on FTE Employment in Ontario Industries ¹

Industries (Summary level)	% Distribution of Impact	
Crop and animal production	2	0.4%
Support activities for agriculture and forestry	46	10.7%
Utilities	3	0.6%
Repair construction	6	1.5%
Manufacturing	12	2.7%
Wholesale trade	9	2.1%
Retail trade	25	5.7%
Transportation and warehousing	136	31.6%
Information and cultural industries	6	1.4%
Finance, insurance, real estate, rental and leasing and holding companies	31	7.1%
Professional, scientific and technical services	17	4.0%
Administrative and support, waste management and remediation services	31	7.1%
Educational services	36	8.3%
Health care and social assistance	4	1.0%
Arts, entertainment and recreation	4	1.0%
Accommodation and food services	19	4.3%
Other services (except public administration)	15	3.5%
Non-profit institutions serving households	2	0.4%
Government education services	1	0.3%
Government health services	1	0.2%
Other federal government services	21	4.9%
Other municipal government services	3	0.7%
Total	430	100.0%

Note: 1. Full-time Equivalent (FTE) jobs (direct, indirect and induced), in number of jobs.

Source: Statistics Canada I-O simulation model.



It should be noted that, apart from steel production, Sault Ste. Marie and Algoma District have relatively little manufacturing activity and that the Airport and its tenants have little or no direct or indirect linkage with the steel industry. This consideration is raised given that steel production and related industries are the key drivers of the economy of Sault Ste. Marie and Algoma District.



4 Conclusions

While the estimates provided herein are rough approximations, they offer a relatively good guide as to the specific industries that are impacted by the Airport and the relative magnitude of the impact of the Airport's operations on those industries and on the Provincial economy in general.

Overall, based on study inputs received from the Airport's tenants, the total GDP impact (direct, indirect and induced) that accrues from operations at Sault Ste. Marie Airport is \$39.3 Million and the level of output corresponds to 430 FTE jobs.

Project Management
Feasibility Studies
Master & Facility Planning
Operational Analysis
Concept & Detail Designs



IT Assessment & Planning
Network Infrastructure
WIFI/Wireless Infrastructure
Common-Use Systems
Revenue/Mgmt. Systems



Terminal Security Consulting
Security Systems Design
Special Terminal Systems
Baggage Handling Systems
Cargo & Hold Bag Screening



Terminal Gate Planning
Airside Design &Modelling
Aircraft Servicing Design
Aviation Fuelling Design
Apron & GSE Marking



Procurement & Tendering
Project Implementation
Systems Integration Services
Testing & Commissioning
Operational Readiness



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ST JOHN'S INTERNATIONAL AIRPORT

Economic Impact Study 2017

Prepared for St John's International Airport Authority

Prepared by InterVISTAS Consulting Inc.

March 14, 2017

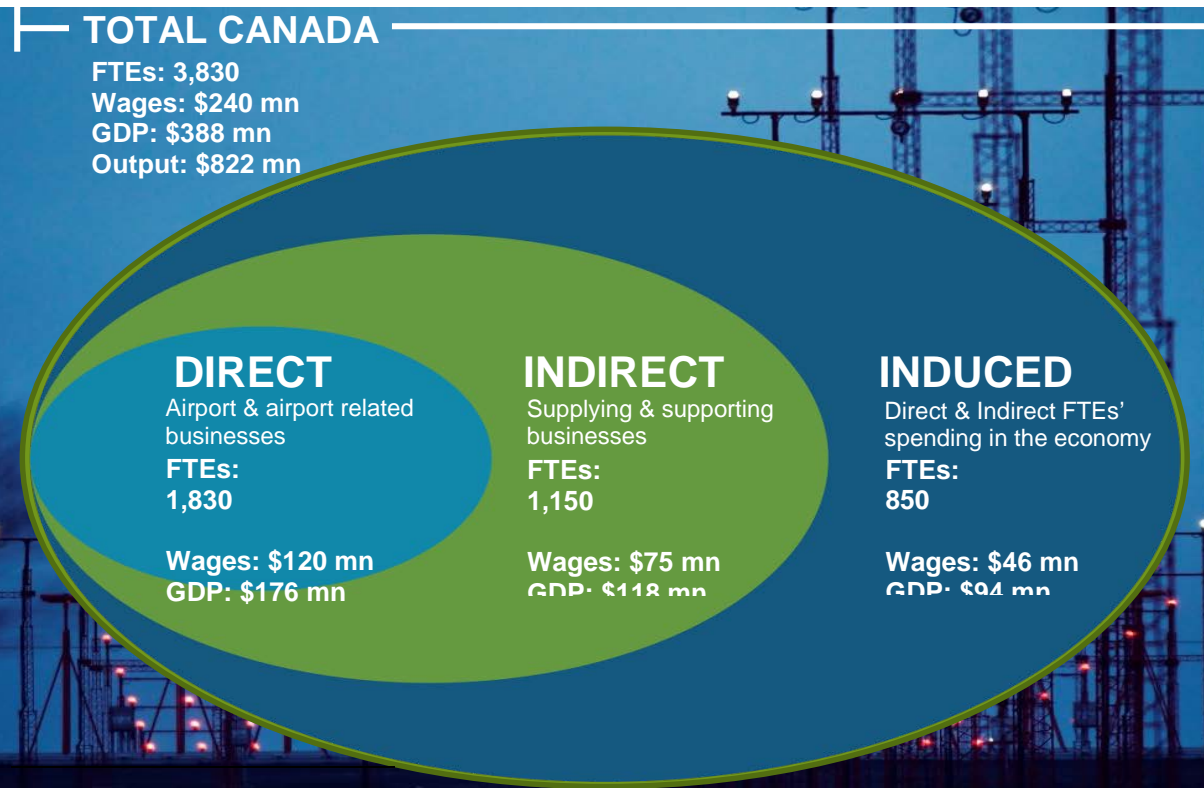


Executive Summary

St. John's International Airport plays an integral role in both supplying and facilitating economic prosperity in the province of Newfoundland and Labrador. This study examines the current economic impacts generated from the airport's operations and development activities, based on a review of the business in 2016. Aviation is a major economic generator and airports play a significant role within the industry. Air transportation also facilitates the business of other sectors of the economy. The industry facilitates employment and economic development in the national economy through a number of mechanisms, including trade in goods and services, investment, tourism and productivity.

Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project, or a change in government policy or regulation. In this case, economic impact refers to the economic contribution associated with the ongoing activities of St. John's International Airport. The three key components of economic impact are classified as *direct*, *indirect* and *induced impacts*. Together, they provide a snapshot of how the business of the airport impacts the broader economy at a local, provincial and/or national level.

St. John's International Airport Authority is a significant employer for the city and an important facilitator of economic development. A portion of its economic importance is reflected in the estimated 3,830 total full-time equivalents (FTEs)¹ of employment that is supported or facilitated by the airport and the \$388 million and \$822 million contributed to Canada's Gross Domestic Product (GDP) and economic output, respectively.



¹ FTE = full-time equivalent of employment. For purposes of this study, one full-time equivalent of employment corresponds to 1,832 hours of work annually.

Ongoing Economic Impact

The current economic impact of St. John's International Airport includes the impact related to the airport's ongoing operations, summarized in **Figure ES-1**.

Economic impact can be measured in a number of ways including:

- Employment (FTEs);
- Wages;
- Gross Domestic Product (GDP); and
- Economic output.

Direct economic impact measures the impact factors directly associated with the airport. This includes employment of all tenants located at St. John's International Airport. The *direct* impacts of St. John's International Airport in 2016 are estimated to be 1,830 *direct* FTEs or person years of employment, earning approximately \$120 million in *direct* wages. Direct employment generates \$176 million in *direct* GDP and \$393 million in *direct* economic output annually.

Total impacts to the national economy are calculated by adding together the *direct*, *indirect* and *induced* impacts. Including indirect and induced multiplier impacts, current economic impacts of St. John's International Airport include a *total* of 3,830 FTEs in Canada. *Total Canada* income of all employees amounts to \$240 million in wages. Furthermore, St. John's International Airport operations contribute an estimated \$388 million and \$822 million in *total* GDP and *total* economic output, respectively, to the national economy.

2016 direct employment figures are higher than the figures from the study for 2009 operations.² Direct FTEs from ongoing operations rose over 21%, from about 1,510 to 1,830, between 2009 and 2016.

Figure ES-2 summarizes employment growth between 2009 and 2016.

Ongoing Economic Impacts of St. John's International Airport Operations

Annual Direct Impacts:





- 1,830 FTEs or person years of employment
- \$120 million in wages
- \$176 million in gross domestic product (GDP)
- \$393 million in economic output

Annual Total Canada Impacts:

- 3,830 FTEs or person years of employment
- \$240 million in wages
- \$388 million in GDP
- \$822 million in economic output

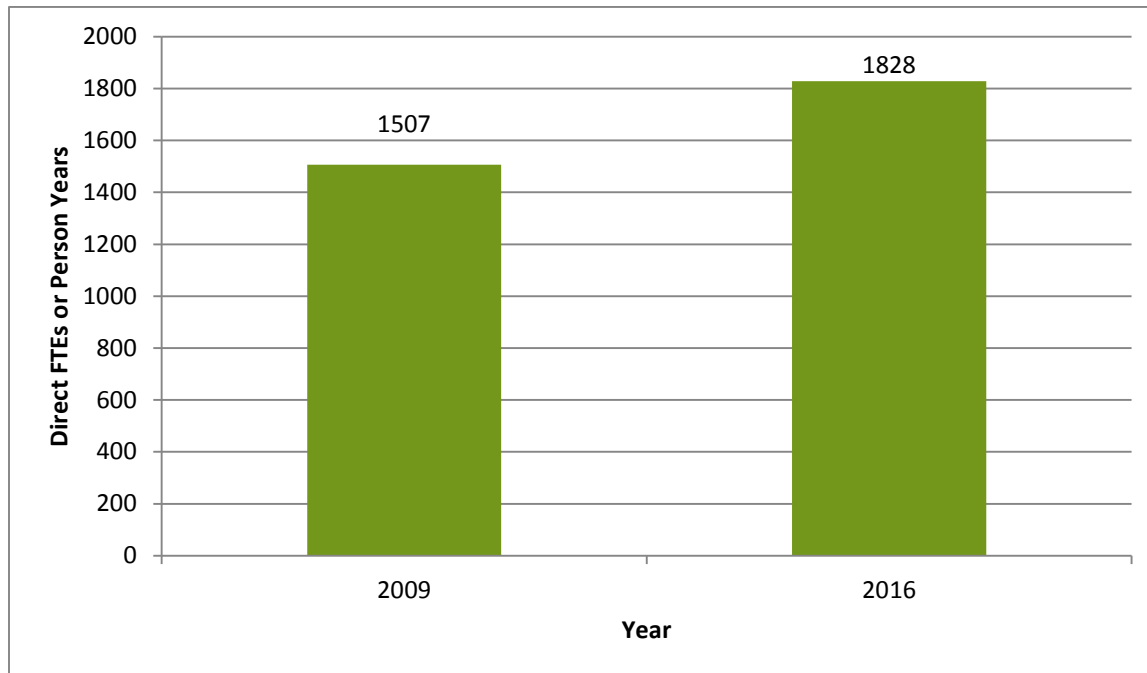
² The 2009 study was completed in 2011 by Strategic Concepts Inc. and Wade Locke.

Figure ES-1:
Annual Total Ongoing Economic Impact of St. John's International Airport Operations, 2016

					
Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	Jobs	FTEs			
		(or Person Years)			
Provincial Impacts					
Direct	1,950	1,830	\$120	\$176	\$393
Indirect	620	580	\$39	\$59	\$139
Induced	430	410	\$21	\$48	\$76
<i>Total NL</i>	<i>3,000</i>	<i>2,820</i>	<i>\$180</i>	<i>\$283</i>	<i>\$608</i>
Rest of Canada Impacts					
Indirect	610	570	\$36	\$59	\$126
Induced	460	440	\$24	\$46	\$88
<i>Total Rest of Canada</i>	<i>1,070</i>	<i>1,010</i>	<i>\$60</i>	<i>\$105</i>	<i>\$214</i>
Total Canada	4,070	3,830	\$240	\$388	\$822

Note: Employment figures (Jobs and FTEs) are rounded to the nearest ten. Dollar figures (wages, GDP and output) are rounded to the nearest million.

Figure ES-2:
Direct Employment Levels from Ongoing Operations at St. John's International Airport,
2009 vs. 2016



Source: The 2009 study was completed in 2011 by Strategic Concepts Inc. and Wade Locke. The 2016 figure is from InterVISTAS Consulting analysis.

Annual Tax Contributions

Ongoing operations at St. John's International Airport contribute to government revenue, including revenues received by federal, provincial and local governments. Total taxes paid on an annual basis, by airport employers and employees as well as passengers, are estimated at nearly \$82 million per year.

The majority of taxes accrue to the federal government at 57% overall, while the provincial government receives 41% of the tax revenue generated by St. John's International Airport. The municipal government also benefits from the airport through the collection of property taxes amounting to nearly \$2 million paid by St. John's International Airport and its tenants.

Figure ES-3 provides a summary of the taxes collected.

Figure ES-3: Estimated Annual Tax Revenues from St. John's International Airport, Ongoing Operations (2016)

Annual Tax Impacts of St. John's International Airport

Total:

- \$82 million

Federal Government:

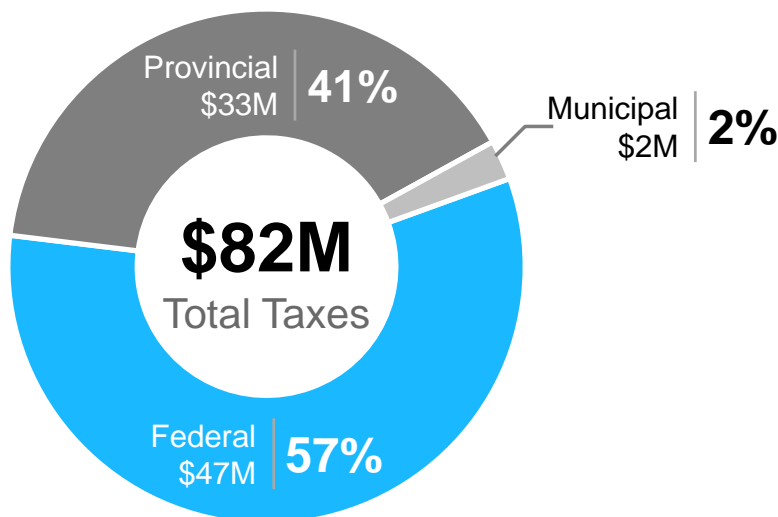
- \$47 million (57%)

Provincial Government:

- \$33 million (41%)

Municipal Government:

- \$2 million (2%)



Economic Impact of Non-Local Tourism Spending by Air Travellers

The estimate of the direct economic impact of non-local visitor spending in the city of St. John's is based on the amount of spending in the regional St. John's economy by same-day and overnight visitors that travelled to the area by air only. In order to avoid double-counting of impacts with the air transportation impacts, only the direct impacts are presented.

Non-local visitor spending in the St. John's area is based on statistics available that is collected by the Department of Business, Tourism, Culture and Rural Development of the Government of Newfoundland and Labrador. An extensive survey that began in 2003 has continued on a 5 year cycle, with the 2011 survey being the most recent one available at the time of this study.

In 2016, it was estimated that non-local visitors that travelled by air to St. John's spent approximately \$185 million in the local area. The economic impact of non-local visitor spending, that travelled by air, to the St. John's area region is based on the expenditures made by visitors on accommodation, food and beverage, retail, and ground transportation. The \$185 million in visitor spending generates roughly 1,740 FTEs of employment locally. See **Figure ES-4**.

Figure ES-4:
Direct Economic Impact of Non-Local Air Visitor Spending in the St. John's Area

				
Impact	Employment (FTEs or Person Years)	Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
Direct	1,740	\$65	\$93	\$185

Note: Employment figures (FTEs) are rounded to the nearest ten. Dollar figures (wages, GDP and output) are rounded to the nearest million. Only direct impacts of air visitor spending impacts are provided, to mitigate double-counting of potential impacts with air transportation.

Economic Impact of Capital Expenditures at St. John's International Airport

There are also economic impacts associated with the airport's capital expenditure program. The economic impact of capital development is considered separate from ongoing operations because capital spending can vary significantly over time and on a project-by-project basis.

Based on our survey of SJIAA, a total of \$35 million in capital expenditures was incurred in 2016, with a total of \$179 million in capital expenditures projected between 2017 and 2025. The 2016 capital budget was spent on a number of key projects such as terminal expansions, new roadways and parking facilities. Future capital spending between 2017 and 2025 will be directed towards continued terminal expansions, airside maintenance, fleet replacement and baggage-related equipment upgrades.

Using economic multipliers, the economic impact of these capital expenditures can be estimated. Based on the analysis, St. John's International Airport capital expenditures in 2016 generated approximately 130 *direct* FTEs or person years of employment and \$9 million in *direct* wages, as shown in **Figure ES-5**. The projected economic impact of the airport's capital expenditures from 2017 to 2025 is summarized in **Figure ES-6**.

Projected Capital Expenditure Economic Impacts (2016-2025)





10-Year Capital Expenditure:





- Projected \$214 million

10-Year Direct Impacts:

- 810 FTEs or Person Years
- \$53 million in wages





Figure ES-5: Total Economic Impact of Capital Expenditure at St. John's International Airport, 2016

				
Impact	Employment (FTEs or Person Years)	Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
Provincial Impacts				
Direct	130	\$9	\$11	\$35
Indirect	60	\$4	\$6	\$10
Induced	30	\$2	\$3	\$5
<i>Total NL</i>	<i>220</i>	<i>\$15</i>	<i>\$20</i>	<i>\$50</i>

				
Impact	Employment (FTEs or Person Years)	Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
Rest of Canada Impacts				
Indirect	80	\$5	\$8	\$17
Induced	40	\$2	\$5	\$9
<i>Total Rest of Canada</i>	<i>120</i>	<i>\$7</i>	<i>\$13</i>	<i>\$26</i>
Total Canada	340	\$22	\$33	\$76

Note: Employment figures (FTEs) are rounded to the nearest ten. Dollar figures (wages, GDP and output) are rounded to the nearest million.

Figure ES-6: Total Economic Impact of Capital Expenditure at St. John's International Airport, 2017-2025 Projection

				
Impact	Employment (FTEs or Person Years)	Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
Provincial Impacts				
Direct	680	\$44	\$55	\$179
Indirect	280	\$19	\$29	\$51
Induced	150	\$8	\$18	\$28
<i>Total NL</i>	<i>1,110</i>	<i>\$71</i>	<i>\$102</i>	<i>\$258</i>
Rest of Canada Impacts				
Indirect	430	\$27	\$43	\$88
Induced	220	\$12	\$23	\$44
<i>Total Rest of Canada</i>	<i>650</i>	<i>\$39</i>	<i>\$66</i>	<i>\$132</i>
Total Canada	1,760	\$110	\$168	\$390

Note: Employment figures (FTEs) are rounded to the nearest ten. Dollar figures (wages, GDP and output) are rounded to the nearest million.

Wider Economic Benefits

Beyond the direct, indirect, and induced economic impacts noted earlier, the air service provided by St. John's International Airport creates wider economic benefits to the region which can be more difficult to assess. These “catalytic effects” of air transport contribute in other ways to a local or regional economy. They are important, beneficial economic events or activities that occur in an area as a result of the presence of the airport or a particular type of air service. Catalytic effects from St. John's International Airport include facilitating local trade and investment and generally enhancing the productivity of other business sectors in the economy.



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1 Introduction

St. John's International Airport (YYT) commissioned InterVISTAS Consulting Inc. to conduct an economic impact study of its current operations on Newfoundland and Labrador. This study represents an update to a study that was conducted in 2011.³

Airports make substantial contributions to regional economies. They facilitate the movement of people, goods, and services throughout the nation and the world, allowing the economy to operate more efficiently. Airports provide vital links to economic opportunities locally and abroad. Aviation is also critical for local and regional tourism. Air transportation is a major means of bringing in tourists and their related spending on food, hotel, entertainment, and other items. Airports are also centers of significant economic activity themselves, as the locus of activity directly associated with passenger and cargo air travel. Given the geographical features of St. John's, located on the east coast of an island with limited efficient transportation options, each of these factors is particularly evident in the case of St. John's International Airport.

Economic impact studies are an important tool in communicating the significance and role of an airport to the community. St. John's International Airport enjoys continued growth and development, with passenger traffic growing by nearly 30% within the past seven years (CAGR of 3.6%). This study examines the current economic impacts of St. John's operations, while also noting the wider economic benefits provided by the airport that cannot be easily quantified. Beyond the direct, indirect and induced economic impacts presented in this study, St. John's International Airport also contributes other positive effects to the region including facilitating local trade and investment and enhancing the productivity of other business sectors.



St. John's International Airport facilitates employment, accessibility, trade and investment throughout the region, thereby enhancing the economic and social well-being of the local community

³ The 2011 study was conducted by Strategic Concepts and Wade Locke, which was based on 2009 operations.

1.1 St. John's International Airport⁴

Located less than six kilometres outside of the provincial capital (and its namesake city), St. John's International Airport serves as Canada's easternmost airport-of-entry. The property was originally established in 1941 as a World War II airbase for Canadian, British and U.S. military forces until its transformation into a civilian operation in 1946. The airport was transferred from Transport Canada in 1998 to St. John's International Airport Authority (SJIAA), a non-profit corporation that continues to manage St. John's operations and development.

Today, the airport ranks among one of the top 15 largest Canadian airports by passenger traffic levels.⁵ In addition, St. John's serves as the main commercial air service provider in Newfoundland and Labrador, accounting for approximately 70% of all non-resident passenger air traffic to and from the province.⁶ To better accommodate St. John's leading role in local and regional air transportation, SJIAA is currently implementing a 10-year development plan (2016-2025) that includes a \$214 million capital investment in terminal expansions, new airfield technology and other improvements.

1.2 Passenger Traffic

Figure 1-1 illustrates passenger traffic at St. John's International Airport from 2005 to 2016. Passenger traffic remained stable between 2005 and 2009, at around 1.2 million enplaned/deplaned passengers. From 2009 to 2014, St. John's International Airport saw steady annual increases in passenger traffic, culminating in growth from 1.2 million to nearly 1.6 million; however, passenger traffic fell by approximately 72,000 passengers in 2015 and may have been the result of a variety of factors including low oil prices impacting the mobile workforce, as well as fewer convention travellers (the City's convention centre was closed for expansion construction).⁷ Traffic numbers have since started recovering in 2016, surpassing 2015 totals and reaching nearly 1.6 million. Overall, passenger traffic has more than doubled since SJIAA began management of the airport in 1998, and the airport is expanding its Terminal Building to accommodate two million passengers anticipated by 2023.

Figure 1-2 shows the total number of aircraft movements from 2006 to 2016. The peak in passenger traffic during 2014 is reflected similarly by total aircraft movements in the same year. Aircraft movements have since recovered from a low of 35,000 in 2009, showing an overall growth of over 20% between 2009 and 2016 and now surpassing the totals that existed prior to the global financial crisis.

⁴ St. John's International Airport, "About Us." (<http://stjohnsairport.com/about/>)

⁵ Statistics Canada, CANSIM Table 401-0044 – Air passenger traffic and flights. Ranking refers to 2015 traffic levels. (<http://www5.statcan.gc.ca/cansim/a47>)

⁶ Government of Newfoundland and Labrador, Economic Research and Analysis Division, "St. John's International Airport." (<http://economics.gov.nl.ca/E2014/Airport.pdf>); St. John's International Airport, "About Us." (<http://stjohnsairport.com/about/>)

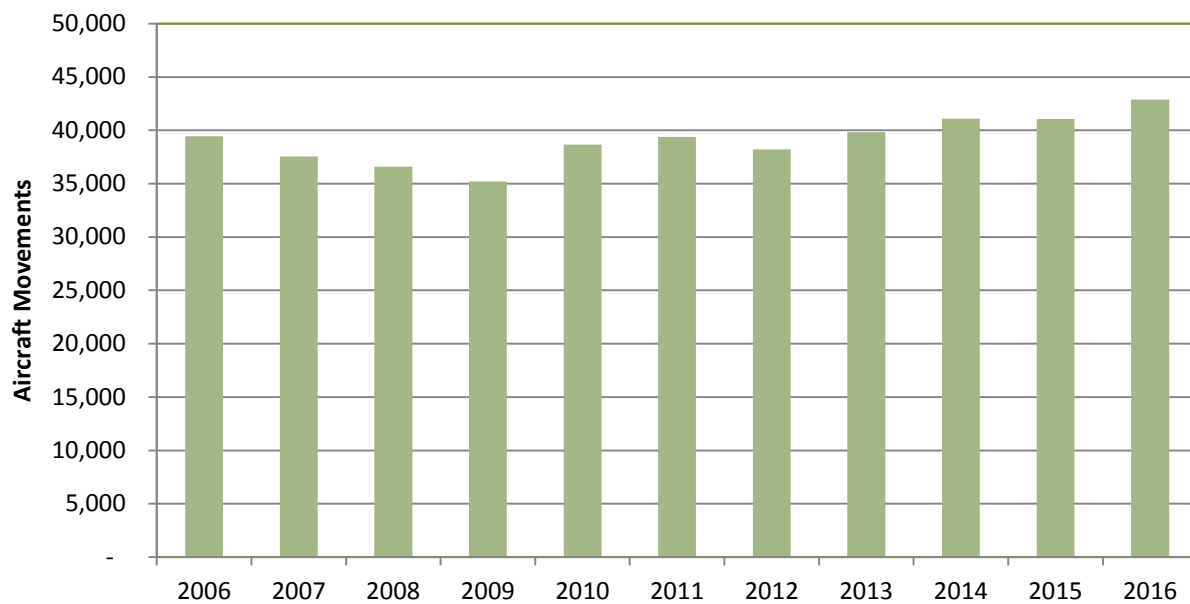
⁷ SJIAA 2015 Annual Report, "Message from our Chair and CEO". (<http://stjohnsairport.com/about/corporate-information/annual-reports/>)

Figure 1-1:
Total Enplaned/Deplaned Passenger Traffic at St. John's International Airport, 2005 – 2016



Source: St. John's International Airport Authority

Figure 1-2: Total Aircraft Movements at St. John's International Airport, 2006 – 2016



Source: St. John's International Airport Authority

1.3 Local and Provincial Industry and Economy

St. John's International Airport is located less than ten kilometres away from the core of St. John's, the capital city of Newfoundland and Labrador. As a "downtown airport" responsible for servicing the province's most populous city as well as most of the province's air travelers, St. John's International Airport serves as a gateway that facilitates economic growth and development for the St. John's region, and Newfoundland and Labrador as a whole.

St. John's, the second largest city in Atlantic Canada by population, is an economic hub for the region. The city is the support center for Canada's offshore petroleum industry and is a leader in ocean technology.⁸ This vibrant city has seen significant growth in the tourism and convention business sector, supported by a strong tourism marketing campaign and an expansion in the number of hotels and convention facilities in recent years.



St. John's

- **City of St. John's**
- Population (2011 Census): 106,000
- Average household total income: \$78,000
- **St. John's CMA**
- Population (2011 Census): 197,000
- Average household total income: \$82,000

Source: Statistics Canada; City of St. John's – 2015 State of the Economy

The St. John's CMA comprises a significant portion of the entire population in Newfoundland and Labrador, the second smallest province in Canada with just over 500,000 residents as of July 2016 (CAGR of 0.2% over the last four years).⁹ In 2015, Newfoundland and Labrador's real GDP was approximately \$27.3 billion.¹⁰ St. John's International Airport plays an integral role in serving the community's residents and visitors.

⁸ City of St. John's. (<http://www.stjohns.ca/doing-business/economy-and-statistics/strategic-sectors>)

⁹ Statistics Canada, "Population by year, by province and territory", 2016. (<http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/demo02a-eng.htm>)

¹⁰ Statistics Canada. "Real gross domestic product, expenditure-based, by province and territory", 2015 (<http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/econ50-eng.htm>) (http://www.gov.mb.ca/jec/invest/busfacts/economy/gdp_1.html), 2014.

1.4 What is Economic Impact?

Economic impact is a measure of the spending and employment associated with a particular source such as a sector of the economy, a specific project (e.g. the construction of new infrastructure), or a change in government policy or regulation. In this case, economic impact refers to the economic contribution associated with the ongoing operations and activities of St. John's International Airport.

Economic impact can be measured in several ways including employment, income, Gross Domestic Product (GDP) and economic output, as summarized in **Figure 1-3**. All of these measures help quantify the gross level of economic activity being generated by the source. As a result, they can be useful in developing an appreciation for projects, investments and economic sectors.¹¹

Figure 1-3: Measures of Economic Impact

Employment (Full-time Equivalents)	<ul style="list-style-type: none"> • The number of full-time equivalents (FTEs) or person years generated by a particular source. Because certain jobs may only be part-time or seasonal, the number of jobs is generally greater than the number of FTEs.
Wages	<ul style="list-style-type: none"> • The income (i.e. wages, salaries, bonuses, benefits and other remuneration) earned by the associated workforce.
Gross Domestic Product (GDP)	<ul style="list-style-type: none"> • GDP is a measure of the value added by labour and capital used to produce final goods and services. This measure is net of the value (i.e. cost) of intermediate goods and services used in the production of the final goods and services. GDP can thus be thought of as economic output less intermediate inputs.
Economic Output	<ul style="list-style-type: none"> • The gross dollar value of industrial output produced. Sometimes referred to as "economic activity," it reflects the spending (i.e., capital improvement plus revenue) by firms, organizations and individuals.

¹¹ Economic impact is different from a cost-benefit analysis that weighs benefits against costs.

The two most common measures of economic contribution (in addition to employment) are gross domestic product (GDP) and economic output. GDP is a measure of the value added by labour and capital services used to produce final goods and services, as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services. Economic output is the dollar value of industrial output produced and roughly corresponds to the gross revenue of goods or services produced by an economic sector. As such, GDP removes the revenues to suppliers of intermediate goods and services and only includes the revenues from value-added production. Alternatively, economic output adds all revenues at each stage of production together as a measure of total production in the economy. Economic output will always be greater than GDP (also termed value-added). In service industries and the public sector, economic output is often simplified to equate to total wages paid.

To estimate economic output for a sector, one might add up the gross revenues of the various firms in that sector. However, to find GDP for a sector, care must be taken to avoid double-counting. The revenues of one firm providing service to another are not incremental GDP. For example, in the automobile sector, one cannot add the value (gross revenue) of a finished auto to the value of the tires. The tires are already included in the value of the automobile.

1.5 Categories of Economic Impact

The three major components of economic impact are *direct*, *indirect*, and *induced impacts*, as described in the sections below. These distinctions are used as a base for the estimation of the total economic impact of St. John's airport. Each of these three components requires different tools of analysis. Employment impact analysis determines the economic impact in terms of jobs created and salaries and wages paid out. In the case of the airport, the direct, indirect, induced, and total numbers of person years created at the airport are examined to produce a snapshot in time of airport operations.

Direct Impact

Direct impacts account for the economic activity of the target sector itself. For instance, all employment that is directly related to the operation and management of St. John's International Airport, including businesses located onsite at the airport as well as airport-dependent businesses located offsite, would be considered direct employment. Thus, the direct employment base includes airline employees, fixed base operators, aircraft maintenance, ground handling, customer service, and airport authority staff etc.



Indirect Impact

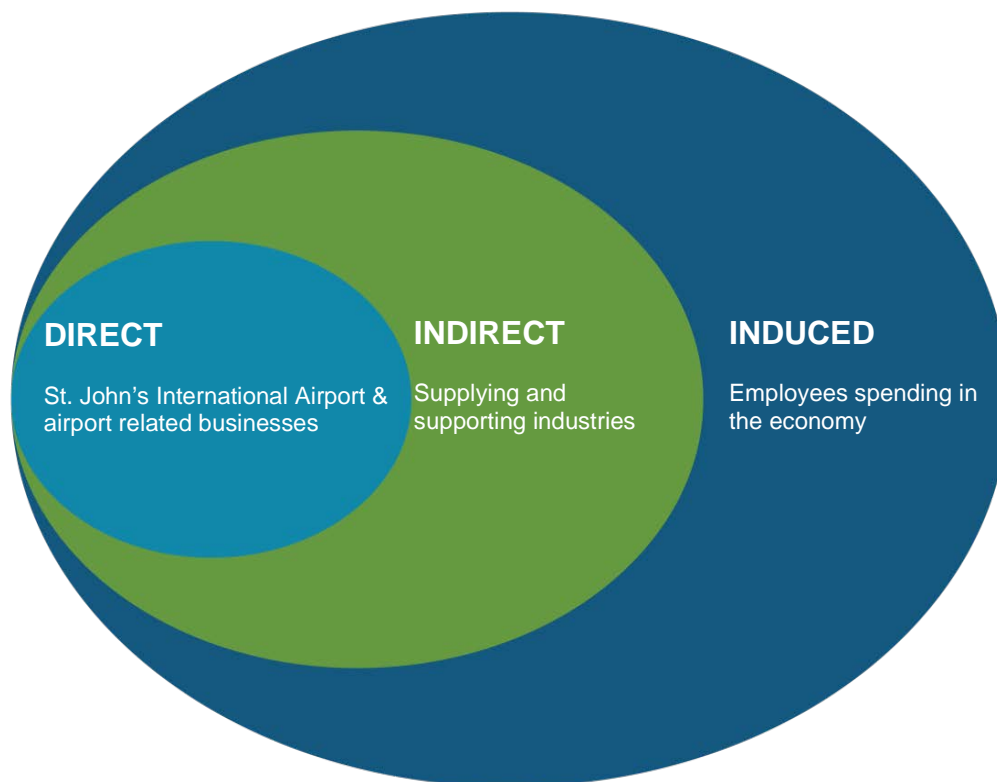
Indirect impacts are those that result because of the direct impacts. This involves employment in downstream industries that arise from the presence of St. John's International Airport. For instance, indirect employment includes the portion of employment in supplier industries which are dependent on sales to the air transport sector, e.g. food wholesalers that supply food for catering on flights.

Induced Impact

Induced employment is generated from expenditures by individuals employed directly or indirectly by the airport. For instance, if an airline employee at St. John's decides to renovate her home, this would result in induced employment hours in the general economy as the renovation would support hours of employment in the construction industry, the construction materials industry, etc. Induced impact is often called the "household-spending effect".

Total impacts are the sum of direct, indirect, and induced effects. These three categories of impacts are summarised in **Figure 1-4**.

Figure 1-4: Categories of Economic Impact Generated and Facilitated by St. John's International Airport



2 Methodology

2.1 Introduction

InterVISTAS conducted this economic impact study during the fall and winter of 2016. The study estimates the economic impact of St. John's International Airport's operations in 2016.

The study is based on data collected from an employment survey of all employers associated with the operation of St. John's International Airport (e.g. airlines, ground transport firms, accommodations, etc.) which is used as an input to assess the direct impacts of the airport's operations. The survey produced estimates of the number of people employed in directly-related occupations, as well as the total amount of earnings paid to these employees. The firms surveyed as part of this study are located both on the airport (on-site) and off the airport site (off-site). The employment survey was used to classify the total employment and average wages paid by business type.

InterVISTAS estimates the indirect and induced effects using economic multipliers developed by Statistics Canada that are derived from models of how the Canadian national and provincial economies operate. InterVISTAS utilizes a proprietary economic model in order to conduct multiplier analysis and estimate indirect and induced impacts.

Data collected from the employment survey is also used to calculate the associated tax impacts (government revenue) generated by the airport's operations.

To derive estimates of the impact of non-local visitor spending of visitors travelling by air, InterVISTAS used available data and statistics collected by the Province of Newfoundland and Labrador's Tourism Division on levels of visitation, expenditures by air travellers to St. John's and their allocation of expenditures to different categories, such as accommodations, food/beverage, retail and ground transportation. Statistics Canada economic multipliers were applied to estimate the impact of non-local visitor spending in the St. John's area by those travelling by air.

Survey Response Rate

- 95% of tenants responded to the survey
- 99.9% of total direct full-time equivalents covered by the survey

Study Time Frame

- 2016 operations

Economic Multiplier Source

- Statistics Canada (Industry Accounts Division): Input-Output Multipliers for Newfoundland and Labrador and Canada, 2010

Non-Local Visitor Spending Impacts Sources

- Government of Newfoundland and Labrador (Department of Business, Tourism, Culture and Rural Development): 2011 Provincial Visitor Exit Survey and 2015 Provincial Tourism Performance Report

2.2 Estimating Current Economic Impact of Airport Operations

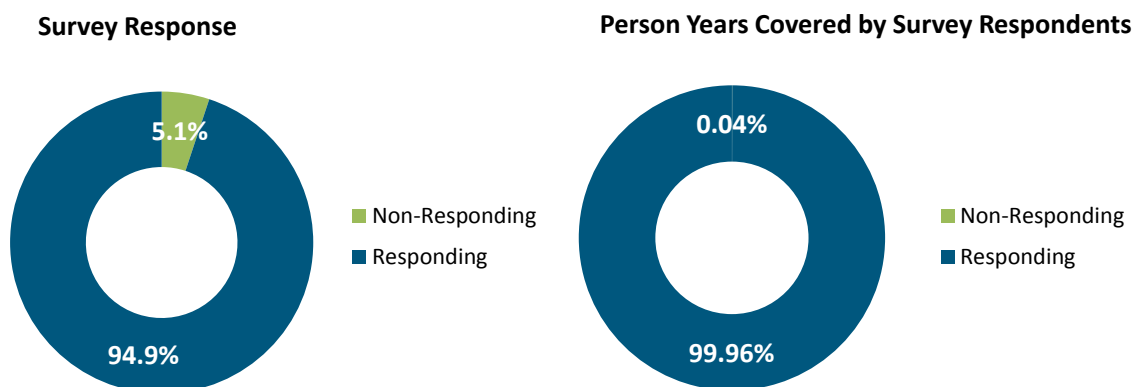
The direct employment base related to ongoing operations at St. John's International Airport is measured first. Employment figures are generally more understandable by the public than more abstract measures, such as economic output or GDP. Employment figures also have the advantage of being a more accurate measure, both because the firms are more likely to provide data on employment, as opposed to information on revenues, wages and other monetary amounts, and because there is less chance of double counting economic activity.

The economic impact study then assesses the indirect and induced (or "multiplier") employment supported by St. John's International Airport's operations, as well as economic activity in terms of economic output and GDP using Statistics Canada multipliers. The tax revenue generated annually by operations at St. John's International Airport is also estimated.

2.3 Surveying Direct Employment

Employment attributable to ongoing St. John's International Airport operations was measured by surveying all tenants and also other related businesses and organizations economically linked to the airport that may be located off airport. Specifics of the survey methodology, including questions and a description of the sampling techniques, are contained in **Appendix A**. E-mail and telephone follow-ups were conducted to ensure a strong response rate. In total, 95% of the businesses and organizations contacted responded to the survey, representing over 99.9% of total FTEs or person years of employment covered by the survey. A summary is provided in **Figure 2-1**.

Figure 2-1:
Response Rate for St. John's International Airport Economic Impact Employment Survey



2.4 Inferring Employment

For non-responding firms, employment was conservatively estimated using a proven and accepted methodology.¹² This includes referencing the survey results for firms of similar business types, or using past employment surveys, if available.

There may be firms that were not surveyed because their existence was not known. Employment for these non-surveyed firms was not estimated because there was no basis for assessment. We expect that the volume of missed employment would be minimal.

2.5 Estimating Indirect and Induced Impacts using Economic Multipliers

Measurement of indirect and induced economic activity is difficult. While it might be possible to conduct a survey of downstream employers, the survey would need to cover thousands of firms in order to completely measure indirect employment. For induced employment, the entire economy would need to be scrutinised. In addition to the time and financial resources needed to conduct such surveys, the quality of responses would be suspect.

As an alternative to costly and inaccurate surveys, indirect and induced effects are typically measured by the use of *economic multipliers*.¹³ Multipliers are derived from economic/statistical/accounting models of the general economy. They come in a variety of forms and differ greatly in definition and application. Thus, great care must be exercised in choosing the appropriate set of multipliers to use. In addition, the use of multiplier analysis is limited by a number of factors, these being:

- the accuracy of the structure and parameters of the underlying model;
- the level of unemployment in the economy;
- the assumption of constant returns to scale in production;
- the assumption that the economy's structure is static over time; and
- the assumption that there are no displacement effects.

Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment, with emphasis nonetheless placed on the direct economic impacts as these are based on data from the employer survey and are clearly identifiable.

¹² The methodology employed in this study to infer for non-respondents is similar to that used by the federal government for estimating the national income and product accounts.

¹³ The multipliers used for the analysis are based on Statistics Canada economic multipliers for Newfoundland and Labrador as well as Canada-wide from the 2010 Interprovincial Input-Output model, the most recent data available. These multipliers were updated with Consumer Price Indices to account for inflation.

2.6 Study Time Frame

The employment survey was conducted between October 2016 and January 2017. The results reflect employment and operations from 2016.

2.7 Jobs versus Full-Time Equivalents or Person Years

Traditionally, one measures employment by the number of jobs. However, when part-time and/or seasonal workers are used, this can be a misleading measure resulting in an overstatement of economic impact. Whenever possible, employment impacts are measured both in terms of the number of jobs and the number of full-time (FTE) equivalents, also called person years.¹⁴ In our model, hours worked by part-time and/or seasonal employees are converted into FTEs.

2.8 Estimating Capital Expenditure Impacts

The airport's capital expenditure program also generates significant impacts to the regional economy. The capital expenditures include spending on construction, which supports employment, earnings, GDP, and economic output. Using the Statistics Canada multipliers, the economic impacts of the airport's capital expenditures in 2016 and future years (2017-2025, inclusive) are estimated. The one-time economic effects of an airport's capital development are considered separate from an airport's ongoing operations because the capital spending can vary significantly over time and on a project-by-project basis.

2.9 Estimating Tax Revenue Impacts

The tax revenue contributions to the federal, provincial, and municipal levels of government that are associated with airport operations are also estimated. This includes taxes paid by employers and employees (such as payroll taxes), passengers (such as sales taxes on expenditures), and St. John's International Airport (property tax and the federal airport ground lease).

2.10 Estimating Non-Local Visitor Spending by Air Travellers

Non-local visitors that arrive in the city of St. John's by air spend money on hotels, taxis, meals, retail, ground transportation and entertainment in the region. This study includes an estimate of the visitor spending in the study region by those who arrive by air.

For this study, the economic impact of expenditures of non-local visitors to St. John's is treated as a separate impact from ongoing airport operations and one-time capital expenditures. Visitor impacts on local employment are estimated using Statistics Canada multipliers that are based on spending rather

¹⁴ One full-time equivalent job is equivalent to 1,832 hours of work. See **Appendix C** for a detailed calculation of the number of hours per full-time equivalent job. Person years are the same as full time equivalents (FTEs).

than direct surveys of employment at hotels, restaurants, retailers, recreation providers, and others. The additional indirect or induced effects associated with visitor spending are not calculated to avoid the double-counting that could be related to the air transportation industry.

To estimate the impacts of non-local visitor spending, we applied data on visitor spending patterns and travel characteristics obtained from the Province of Newfoundland and Labrador's Department of Business, Tourism, Culture and Rural Development. The Statistic Canada economic multipliers are used to estimate the direct employment generated by each dollar of non-local visitor spending, as well as earnings and GDP.

3 Direct Impacts of Airport Operations

3.1 Introduction

SUMMARY

- **Annual operations at St. John's International Airport support 1,940 direct jobs, 1,830 direct FTEs, and \$120 million in direct wages**
- **Direct employment related to St. John's International Airport operations includes 96% permanent jobs and 4% seasonal jobs**
- **The larger job categories comprising employment at St. John's International Airport are airline employees (e.g. pilots, flight attendants and CSAs), managerial and clerical staff, and airline support services**

This section describes the total employment, in terms of both jobs and FTEs or person years of employment, and estimated payroll attributable to employers directly related to ongoing operations at St. John's International Airport.

This section also examines the employment due to ongoing operations at St. John's International Airport in more detail. FTEs or person years of employment are broken down by:

- Full-time versus part-time and seasonal employment;
- Employment by industry; and
- Employment by job category.

3.2 Direct Employment and Wages



Every arrival of a flight at St. John's International Airport generates employment hours for individuals with jobs involved in handling passengers, their baggage, cargo and the aircraft. This employment includes customer service, airline crew, ground handling, cleaning, maintenance functions etc. It also includes some overhead labour (e.g., clerical and administrative staff), and the associated employment of ground transportation firms and accommodation providers that service passengers of the airport.¹⁵ The direct impacts are the employment generated largely within the aviation sector associated with the operating and servicing of air services.

¹⁵ Accommodations employment is only considered for staff associated with servicing airline crew stays and St. John's International Airport connecting passenger overnight stays.

Direct employment related to ongoing operations at St. John's International Airport amounts to 1,940 direct jobs. After adjusting for part-time and seasonal employment, the 1,940 jobs equate to 1,830 FTEs or person years of direct employment.

Direct employment at St. John's International Airport and related firms receive an estimated \$120 million in wages, providing an average of \$65,600 per FTE. This compares to the average provincial wage of \$45,800 per FTE, per annum and the average national wage of \$47,600 per FTE, per annum.¹⁶ Direct employment figures are summarized in **Figure 3-1** for wages, as well as jobs and FTEs.

Figure 3-1: Direct Employment and Income at St. John's International Airport, 2016

Type of Impact	Employment (Jobs)	Employment (FTEs or Person Years)	Income (\$ Millions)
Direct Employment	1,940	1,830	\$120

Note: Employment figures (jobs and FTEs) are rounded to the nearest ten. Dollar figures (wages) are rounded to the nearest million.

3.3 Direct Full-time, Part-time, Seasonal and Contract Employment

A total of 1,940 direct jobs or 1,830 FTEs are attributable to St. John's International Airport operations and other airport related businesses. Based on information provided by the survey of employers, 96% of the jobs are permanent jobs while seasonal employment represented only 4% of jobs. Approximately 74% of all direct jobs are full-time positions. This demonstrates that St. John's International Airport and its related businesses are a source of stable, year-round employment.

¹⁶ Based on Statistics Canada's December 2016 data on average hourly wages, and assuming 1 FTE = 1,832 hours. (<http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/labr69b-eng.htm>); (<http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/labr69a-eng.htm>)

Figure 3-2: Permanent versus Seasonal Employment at St. John's International Airport, 2016

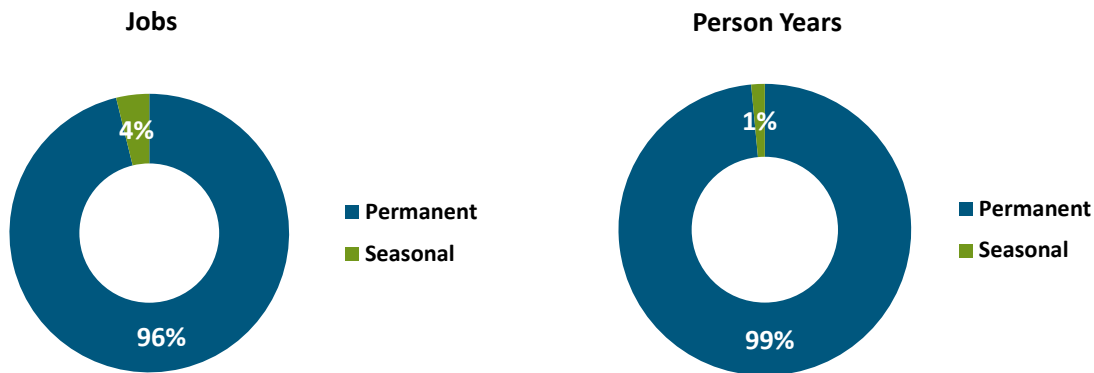
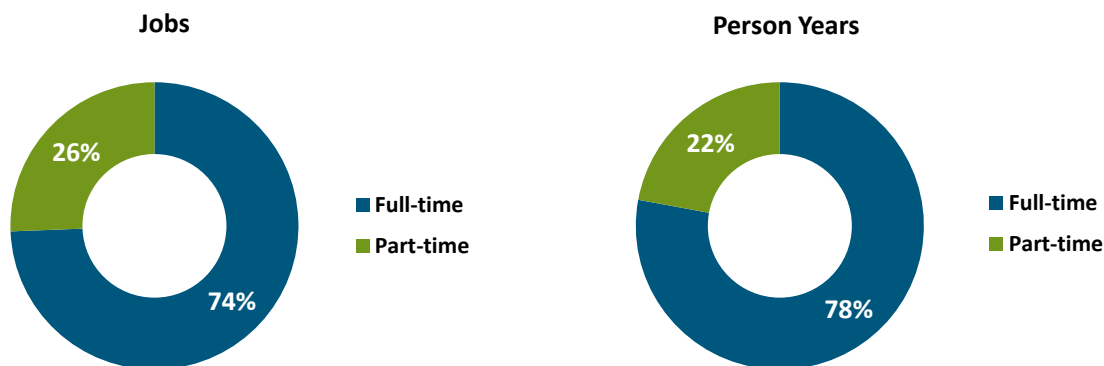


Figure 3-3: Full-Time Versus Part-Time Employment at St. John's International Airport, 2016



3.3.1 Future Economic Impacts at St. John's International Airport

InterVISTAS surveyed airport tenants in October 2016, at which point two construction projects were in progress and planned for a summer 2017 completion. The first of the two projects is a Best Western hotel, strategically situated on airport grounds to accommodate both business and leisure travellers arriving at the airport. The second project includes infrastructure for a future gas station. While the future employment at these businesses was not taken into account for the ongoing economic impacts at the airport, their eventual completion highlights the continued growth of employment generated by St. John's International Airport. When combined, these two businesses are expected to support approximately **60 person years** of employment, in addition to the **1,830 person years** generated by current ongoing operations at the airport.

3.4 Direct Employment by Job Category

St. John's International Airport is a source of a wide variety of job categories, with different positions spread on-site across the airport. A significant proportion of this employment is attributed to firms and employees supporting St. John's International Airport air service, air cargo, and terminal operations. The various occupations associated with St. John's International Airport can be grouped into the following job categories:

- **Airline Services** includes employment of pilots and flight attendants working at St. John's International Airport. Also considered are the labour hours of airline employees within the terminal, including check-in agents, gate agents, escorts (e.g., for wheelchairs), supervisors, and the airline's overhead staff. Airline services comprise the majority of direct employment at St. John's International Airport with 411 FTEs or person years (22% of direct employment).
- **Managerial and Clerical** employment accounts for management staff as well as clerical positions which could include administrative and office support workers. Managerial and clerical employment includes 406 direct person years at St. John's International Airport, equivalent to 22% of direct employment.
- **Airline Support Services** includes employment of aircraft maintenance and related airline servicing trades, including mechanics based at St. John's International Airport. Airline support accounts for 340 person years (19%) of direct employment.
- **Support Trades** includes security, food services, and dispatch. This category comprises 300 person years (16%) of direct employment at St. John's International Airport.
- **Freight Forwarding, Couriers, and Drivers** comprise 133 person years at St. John's International Airport (7% of direct employment).
- **Other** accounts for other non-airline workers within the terminal and onsite including air traffic control, engineers and technicians, janitorial and IT specialists. Other employment comprises 95 person years (5%) of direct employment.
- **Retail and Sales** includes in-terminal food and beverage staff, salespeople, hotel front-desk and cashiers. This category accounts for 76 person years (4%) of direct employment.
- **Craft Trades** include other support functions such as electricians, steam fitters, etc. and account for 67 person years (4%) of direct employment.

A breakdown of direct employment at St. John's International Airport by occupation is illustrated in **Figure 3-4**.

Figure 3-4: Direct Employment by Occupation at St. John's International Airport, 2016

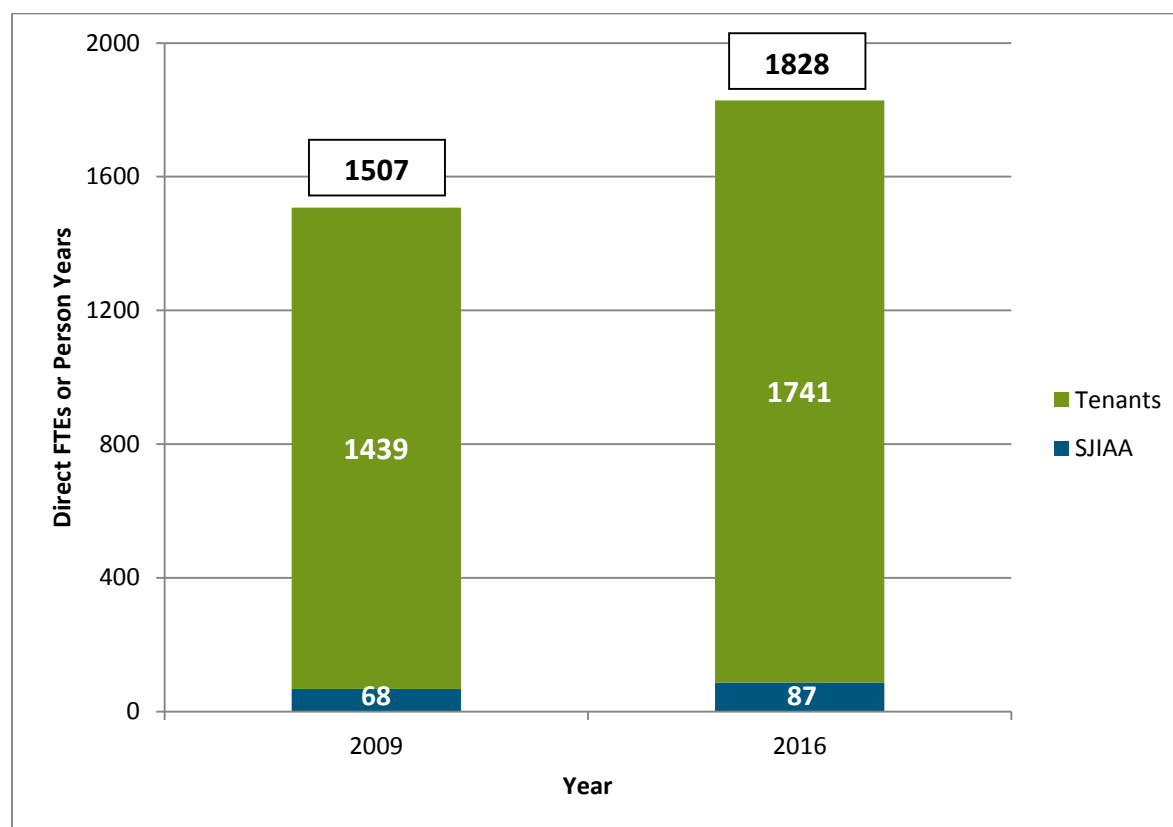


3.5 Comparison of 2009 vs. 2016 Direct Employment Results

St. John's International Airport commissioned a similar study on the economic impact of its 2009 operations.¹⁷ **Figure 3-5** shows the baseline of *direct* employment at St. John's International Airport in 2009 compared to 2016. Direct person years or FTEs of employment at St. John's International Airport (i.e. SJIAA plus airport tenants) grew by over 21%, from approximately 1,510 in 2009 to 1,830 in 2016. SJIAA itself generated 87 direct person years of employment in 2016 (not including the impacts of its capital expenditures), an increase of 28% since 2009. The direct employment from St. John's International Airport's tenants grew by about 21%, from 1,439 person years in 2009 to 1,741 person years in 2016.

¹⁷ The 2009 study was completed in 2011 by Strategic Concepts Inc. and Wade Locke.

Figure 3-5: Direct Employment Levels from Ongoing Operations, 2009 vs. 2016



3.6 Direct Gross Domestic Product and Economic Output

One approach to measuring economic output and value-added GDP is to ask firms in a survey to provide information on their gross revenues, payments to suppliers, etc. However, there are several problems with this approach. First, it is much too expensive. Second, the double counting problem makes this approach impractical.



An alternative is to infer economic output and GDP for an economic sector from employment data using economic multipliers. Statistics Canada produces economic multipliers on a national and provincial level. Using these economic multipliers is both cost effective and more accurate than obtaining the data from surveys. This method is the approach adopted here.¹⁸

¹⁸ The multipliers used for the analysis are based on Statistics Canada economic multipliers for Newfoundland and Labrador from the 2010 Interprovincial Input-Output model, the most recent data available. These multipliers were updated with Consumer Price Indices to account for inflation.

3.6.1 Gross Domestic Product and Economic Output

The direct employment from ongoing St. John's International Airport operations generates \$176 million in direct GDP and \$393 million in direct economic output. **Figure 3-6** summarizes the GDP and economic output contributions of ongoing airport operations at St. John's International Airport to the provincial economy.

Figure 3-6: GDP and Economic Output Impacts at St. John's International Airport, 2016

Impact	GDP (Millions)	Economic Output (Millions)
Direct	\$176	\$393

Note: Figures are rounded to the nearest million.

4 Indirect and Induced Impacts of Airport Operations

SUMMARY

- **Indirect employment impacts of St. John's International Airport include 1,150 indirect FTEs and \$75 million in indirect wages nationwide**
- **Induced employment impacts of St. John's International Airport include 850 induced FTEs and \$45 million in induced wages nationwide**
- **Total employment impacts of St. John's International Airport include 3,830 FTEs and \$240 million in wages nationwide**

4.1 Introduction

The previous sections discussed how direct employment related to ongoing operations at St. John's International Airport was measured. However, the employment impact of the airport does not end there, as other sectors of the economy are dependent on these employers' businesses. Indirect employment is generated by suppliers to the businesses directly related to the airport. In addition, there may be additional impacts to the province-wide economy when direct (and indirect) employees spend their wages. These employment effects are referred to as induced employment. Total employment impacts therefore equal the sum of direct, indirect and induced effects.

The indirect and induced effects have been calculated using Statistics Canada's economic multipliers and ratios for the Province of Newfoundland and Labrador as well as the nation as a whole.¹⁹

4.1.1 Limitations of Economic Multipliers

Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment, noting that these impacts have not been directly measured by the surveys conducted as part of the study.

The economic multipliers are derived from the 2010 Interprovincial Input-Output model, the most recent version available. Notably, the multipliers were updated by Statistics Canada since the 2009 economic

¹⁹ The multipliers used for the analysis are based on Statistics Canada economic multipliers and ratios for Newfoundland and Labrador and the country from the 2010 Interprovincial Input-Output model, the most recent data available. These multipliers were updated with Consumer Price Indices to account for inflation.

impact study. As a result, the indirect and induced impacts calculated for 2009 and 2016 studies are not directly comparable.

The multipliers used to calculate the indirect and induced impacts in 2016 may better represent the current structure of the Canadian economy which has become less integrated domestically and more integrated internationally, meaning that indirect and induced job impacts *within Canada* may be lower. The ratios of the indirect/induced multipliers to the direct multipliers have decreased in the current data provided by Statistics Canada. It is expected that multiplier impacts will decrease over time. For instance, as the economy becomes more global, more spending will occur outside of Canada, leading to lower employment impacts. In addition, the updated (lower) multipliers represent increased productivity in the aviation industry. This is consistent with more global data on employment in the post global economic downturn era, as employers are seeing improvements in worker productivity.

Altogether, the differences in indirect and induced economic impacts between 2009 and 2016 are influenced by exogenous factors and therefore not representative of the growth in St. John's International Airport's economic impacts.

4.2 Indirect Impacts

Indirect impacts are generated by industries that supply or provide services to the firms located at St. John's International Airport. Based on an analysis of the results of the employer survey and the application of the economic multipliers, it is estimated that 1,150 *indirect* FTEs are related to ongoing operations at St. John's International Airport in 2016. This indicates that 1,150 FTEs are indirectly generated in industries that supply the businesses at the airport. Of this total, 580 indirect FTEs are within the province, while the remaining 570 indirect FTEs relate to impacts throughout the rest of Canada. Labour income associated with the total indirect employment is estimated at \$75 million per annum. Indirect GDP contribution is estimated at \$118 million per year, and economic output at \$265 million annually.

4.3 Induced Impacts





Induced impacts are generated because of expenditures by individuals employed both directly and indirectly by the airport's businesses. It represents the demand for goods and services generated by wage earnings from economic activity directly related to the airport. *Induced* employment attributable to St. John's International Airport is estimated at 850 FTEs total, with 410 FTEs within the province and 440 FTEs throughout the rest of Canada. Induced employment is estimated to generate \$45 million per annum in income. Induced GDP and economic impact contributions amount to \$94 million and \$164 million, respectively, each year nationwide.

4.4 Total Canada Impacts

Ongoing St. John's International Airport operations, including induced and indirect effects, generate 4,070 total jobs (equivalent to 3,830 FTEs) and \$240 million in income nationwide. Including multiplier effects, operations at the airport support \$388 million in total GDP and \$822 million in total economic output.

Figure 4-1 summarizes the direct, indirect, induced and total employment and income in the provincial economy attributable to ongoing operations at St. John's International Airport, as well as annual GDP and economic output contributions.

Figure 4-1: Annual Direct and Total Employment Impacts of St. John's International Airport, 2016

Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	Jobs	FTEs (or Person Years)			
Provincial Impacts					
Direct	1,950	1,830	\$120	\$176	\$393
Indirect	620	580	\$39	\$59	\$139
Induced	430	410	\$21	\$48	\$76
Total NL	3,000	2,820	\$180	\$283	\$608
Rest of Canada Impacts					
Indirect	610	570	\$36	\$59	\$126
Induced	460	440	\$24	\$46	\$88
Total Rest of Canada	1,070	1,010	\$60	\$105	\$214
Total Canada	4,070	3,830	\$240	\$388	\$822

Note: Employment figures (Jobs and FTEs) are rounded to the nearest ten. Dollar figures (wages, GDP and output) are rounded to the nearest million.



5 Non-Local Air Visitor Spending Impacts

SUMMARY

- **Total spending by air travellers to St. John's and the surrounding area is estimated at approximately \$185 million in 2016**
- **Direct economic impact of non-local tourism spending includes 1,740 FTEs or person years of direct employment, \$65 million in direct wages, and \$93 million in direct GDP**

5.1 Introduction

The estimate of the direct economic impact of non-local visitor spending in St. John's is based on the amount of spending in the local economy by visitors travelling by air. The indirect and induced economic impacts of tourism on the local economy are not calculated, in order to eliminate the risk of double counting the indirect and induced impacts already calculated for ongoing airport operations. The economic impacts, in terms of employment, wages, GDP, and industry output, are quantified in the following sections.

This study measures the direct economic impact of non-local visitor spending in the city of St. John's and the surrounding municipal area, specifically for air visitors that actually stayed in St. John's and/or the surrounding area.²⁰

Non-local visitor spending in the St. John's area is based on statistics available from the Province of Newfoundland and Labrador's Department of Business, Tourism, Culture and Rural Development. In particular, the 2011 Exit Survey Profile of Non-residents Visiting the Avalon Region and St. John's (the 2011 Exit Survey) was the main information source used in the analysis.²¹ The survey, conducted every five years, involves interviewing non-resident visitors leaving the province through major exit points including St. John's International Airport. Interviewees were asked questions related to origin, trip purpose, party size, length of stay and party composition, with the option to provide additional information related to destinations visited, activities pursued and expenditures. The survey collected responses from a total of 13,825 visitors traveling by air.

In addition to the 2011 Exit Survey, we referred to the 2015 Provincial Tourism Performance Report and other visitor spending information provided directly by Newfoundland and Labrador's Department of Business, Tourism, Culture and Rural Development.

²⁰ In contrast, the 2009 study referred to air visitor spending throughout the entire province of Newfoundland and Labrador.

²¹ The 2011 Exit Survey was the most recent available at the time of our analysis.

5.2 Air Visitor Spending in St. John's

In 2016, there were an estimated total of 276,900 air visitors to St. John's and the surrounding area.²² Total consumer spending in 2016 generated by air tourism travellers in the St. John's area was approximately \$185 million, as shown in **Figure 5-1**.

Figure 5-1: Estimated Visitor Expenditures in the St. John's Area by Category

Sources: Government of Newfoundland and Labrador – based on 2015 Provincial Tourism Performance Report; 2011 Exit Survey

Category of Spend	Expenditures (\$)	% Share of Spend
Accommodation	\$69,279,044	38%
Transportation	\$40,828,450	22%
Restaurants	\$37,503,056	20%
Souvenirs	\$12,377,856	7%
Groceries	\$10,530,415	6%
Entertainment	\$9,421,950	5%
Other	\$4,803,347	3%
Total	\$184,744,116	

5.3 Economic Impact of Non-Local Air Visitor Spending

Visitor expenditures generate direct economic activity in the St. John's area. Using ratios of jobs to spending in the various spending categories, it is estimated that total visitor spending supported 1,740 direct person years of employment in the region, which collectively paid \$65 million in wages, as displayed in **Figure 5-2**. The economic impact of non-local visitor spending to the St. John's area region

²² Based on 385,100 non-resident visitors via air to the province and 71.9% of air visitors visiting the St. John's CMA. Source: 2015 Annual Provincial Performance Report and 2011 Air Exit Survey.

is based on the expenditures made by visitors on accommodation, food and beverage, retail and ground transportation.

Figure 5-2: Direct Economic Impact of Non-Local Visitor Spending in St. John's Region, 2016

				
Impact	Employment (FTEs or Person Years)	Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
Direct	1,740	\$65	\$93	\$185

Note: Employment figures (FTEs) are rounded to the nearest ten. Dollar figures (wages, GDP and output) are rounded to the nearest million. Only direct impacts of air visitor spending impacts are provided, to mitigate double-counting of potential impacts with air transportation.

6 Capital Expenditure Impacts

SUMMARY

- **St. John's International Airport's annual capital budget has grown twofold since 2009. In 2016, St. John's International Airport's capital expenditures totalled \$35 million**
- **St. John's International Airport's 2017-2025 projected capital expenditures are estimated at \$179 million**
- **Direct impacts of St. John's International Airport's 2016 capital expenditures include 130 direct FTEs or person years of employment, \$9 million in direct wages and \$11 million in direct GDP**
- **Direct impacts of St. John's International Airport's projected 2017-2025 capital expenditures are estimated at 680 direct FTEs or person years of employment, \$44 million in direct wages and \$55 million in direct GDP**

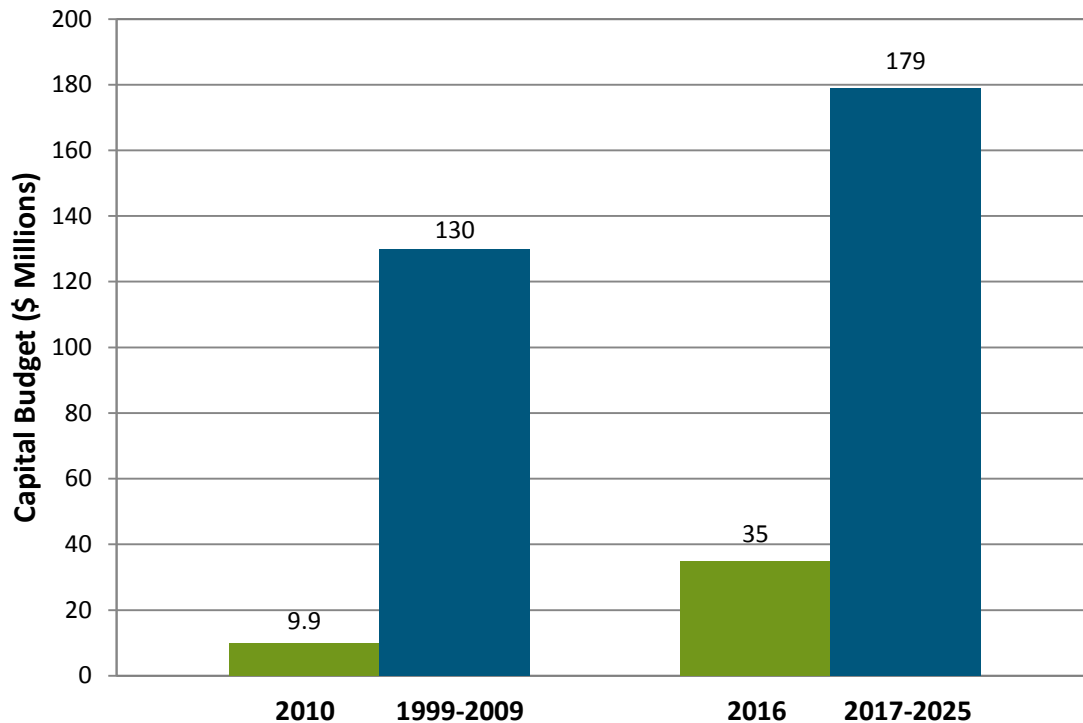
6.1 Economic Impact of Capital Expenditures at St. John's International Airport

In addition to the employment and other economic impacts of ongoing operations at St. John's International Airport, there are also economic impacts associated with the airport's planned capital expenditures. The expenditures include spending on capital improvement projects at St. John's International Airport, which supports employment, GDP and economic output. This section assesses the economic impacts associated with St. John's International Airport's 2016 actual capital expenditures as well as planned capital expenditures for 2017-2025.

SJIAA has significantly ramped up its commitment to improving and growing St. John's International Airport's operations, as shown in **Figure 6-1**. According to SJIAA, approximately \$35 million in capital expenditures were incurred by St. John's International Airport in 2016, about 2.5 times higher than the \$10 million budgeted for 2010. In addition, approximately \$179 million in capital expenditures are planned between 2017 and 2025, representing a sizeable growth in SJIAA's capital improvements since the \$130 million incurred in the first decade of the program (1999-2009).²³ The 2016 capital budget was spent on a number of key projects such as terminal expansions, new roadways and parking facilities. Future capital spending between 2017 and 2025 will be directed towards continued terminal expansions, airside maintenance, fleet replacement and baggage-related equipment upgrades.

²³ For historical capital expenditures, refer to the 2009 study, pg. 29.





Figure 6-1: St. John's International Airport Capital Budget, Single-Year and 10-Year Outlooks



Source: SJIAA.





We estimated the economic impacts of the airport's capital expenditures using Statistics Canada economic multipliers for the Province of Newfoundland and Labrador as well as the rest of Canada. Based on this analysis, we calculated that St. John's International Airport's 2016 capital spending supported 130 *direct* FTEs or person years of employment and \$9 million in *direct* income. In addition, St. John's International Airport's planned capital spending for 2017-2025 may support an additional 680 *direct* FTEs and \$44 million in *direct* income. Summaries of the economic impacts of the 2016 and planned 2017-2025 capital expenditures at St. John's International Airport are provided in **Figure 6-2** and **Figure 6-3**, respectively.

Figure 6-2:
Total Economic Impact of St. John's International Airport's Capital Expenditures, 2016

				
Impact	Employment (FTEs or Person Years)	Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
Provincial Impacts				
Direct	130	\$9	\$11	\$35
Indirect	60	\$4	\$6	\$10
Induced	30	\$2	\$3	\$5
<i>Total NL</i>	<i>220</i>	<i>\$15</i>	<i>\$20</i>	<i>\$50</i>
Rest of Canada Impacts				
Indirect	80	\$5	\$8	\$17
Induced	40	\$2	\$5	\$9
<i>Total Rest of Canada</i>	<i>120</i>	<i>\$7</i>	<i>\$13</i>	<i>\$26</i>
Total Canada	340	\$22	\$33	\$76

Note: Employment figures (FTEs) are rounded to the nearest ten. Dollar figures (wages, GDP and output) are rounded to the nearest million.

Figure 6-3:
Total Economic Impact of St. John's International Airport's Capital Expenditures, 2017-2025 Projections

				
Impact	Employment (FTEs or Person Years)	Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
Provincial Impacts				
Direct	680	\$44	\$55	\$179
Indirect	280	\$19	\$29	\$51
Induced	150	\$8	\$18	\$28
<i>Total NL</i>	<i>1,110</i>	<i>\$71</i>	<i>\$102</i>	<i>\$258</i>
Rest of Canada Impacts				
Indirect	430	\$27	\$43	\$88
Induced	220	\$12	\$23	\$44
<i>Total Rest of Canada</i>	<i>650</i>	<i>\$39</i>	<i>\$66</i>	<i>\$132</i>
Total Canada	1,760	\$110	\$168	\$390

Note: Employment figures (FTEs) are rounded to the nearest ten. Dollar figures (wages, GDP and output) are rounded to the nearest million.

7 Military & Accommodation Impacts at St. John's International Airport

In addition to the economic impacts of onsite tenants, visitor spending and capital expenditure, accommodation impacts due to military visits and air visitors arriving in the St. John's area are considered in the analysis.

7.1 Military Night Stays

The military enjoys a strong history with St. John's International Airport, dating back to 1940 when the Canadian Government originally agreed to construct an air base. St. John's International Airport continues to devote significant resources toward servicing military visits, which often fill St. John's International Airport's aircraft parking space and FBO service capacity even during low-traffic times of the year. Due to the strategic location of the airport, military aircraft perform over 1,000 landings per year to rest crew and perform maintenance (if necessary) and fueling on their aircraft. Consequently, military personnel provide an economic boost to the city by filling up hotel rooms, particularly during the off-season for tourism.

Military stops support additional employment at nearby accommodations in the St. John's area. InterVISTAS surveyed a range of hotels in the region to determine the annual number of room nights accounted for by military stays. In 2016, an estimated **7,400 military room night stays** supported an estimated **10 person years** of employment at accommodations. Expenditures by military visitors also support additional employment in the area, which is included in the estimated visitor spending impacts, by air travellers. See **Figure 7-1**.

Figure 7-1: Employment Impacts of Military Visitor Accommodations, 2016

Accommodation Guest	Supported Employment (Person Years)
Military Visitors	10

7.2 Air Passenger Visitors

St. John's International Airport facilitates the arrival of air passenger visitors that spend time and money in the city by staying at nearby accommodations and enjoying local attractions and entertainment. A survey was distributed to hotels within a 12km radius asking about air passenger related employment. This related employment includes annual visitor nights accounted for by St. John's International Airport single-night connecting passengers, as well as annual visitor nights related to airline crew contracts. When combined, an estimated **95 person years** of employment at accommodations are associated with air passenger visitors and airline crews from St. John's International Airport. **Figure 7-2** presents the results.

Figure 7-2: Employment Impacts of Air Visitor Accommodations, 2016

Accommodation Guest	Supported Employment (Person Years)
Civilian Air Connecting Passengers and Airline Crew Stays	95

8 Tax Impacts of Ongoing Operations at St. John's International Airport

SUMMARY

- Annual tax contributions of St. John's International Airport amount to nearly \$82 million
- This includes \$47 million to the federal government (57%), \$33 million to the provincial government (41%) and \$2 million to the municipal governments (2%)
- St. John's International Airport's annual tax contribution by tax payer includes \$21 million by passengers and \$61 million by SJIAA and other airport employers and employees

8.1 Introduction

This section documents the current contribution to government revenues resulting from current operations at St. John's International Airport and associated economic activity. This includes revenues received by federal, provincial and municipal governments.²⁴

Revenue contributions are divided into two groups, based on who is making the payment:

- **Taxes paid by SJIAA, airport employers and employees.** These are taxes paid by SJIAA as well as other airport employers and employees. They include income and payroll taxes, social insurance contributions (such as employment insurance premiums) and the federal and provincial fuel taxes.
- **Taxes paid by passengers.** Visitors pay various taxes and fees. For example, these include taxes on personal expenditures at St. John's International Airport such as taxes on food and beverages, taxes on airline tickets and taxes on single night hotel stays by connecting passengers and overnight flight crews, as well as the Airport Improvement Fee (AIF).

For each category, taxes paid to the federal, provincial and local levels of government are separately identified.²⁵

²⁴ Taxation impacts are based on 2016 tax rates.

²⁵ For the most part, this study **estimates** (some tax envelopes were measured directly, e.g., tenant property taxes) taxes paid from information on the passengers, employers and employees at the airport. In a few situations, such as the corporate income tax paid by employers, an approximate method was used to estimate taxes paid. In every case conservative methods were used. No major tax has been excluded.

The purpose of this section is to present the tax revenue contributions resulting from the activity attributable to St. John's International Airport. As with all such studies, a conceptual decision has to be made as to how broad a definition of *economic activity* should be used in measuring the impacts. For this study, a relatively narrow definition has been taken, for example, the following have **not** been included:

- Taxes associated with indirect or induced employment (i.e. multiplier effects).
- Consumption taxes (e.g., HST) paid by airport employees when they spend their income.
- Excise or import taxes on cargo.
- Taxes paid by airport users outside of the airport.

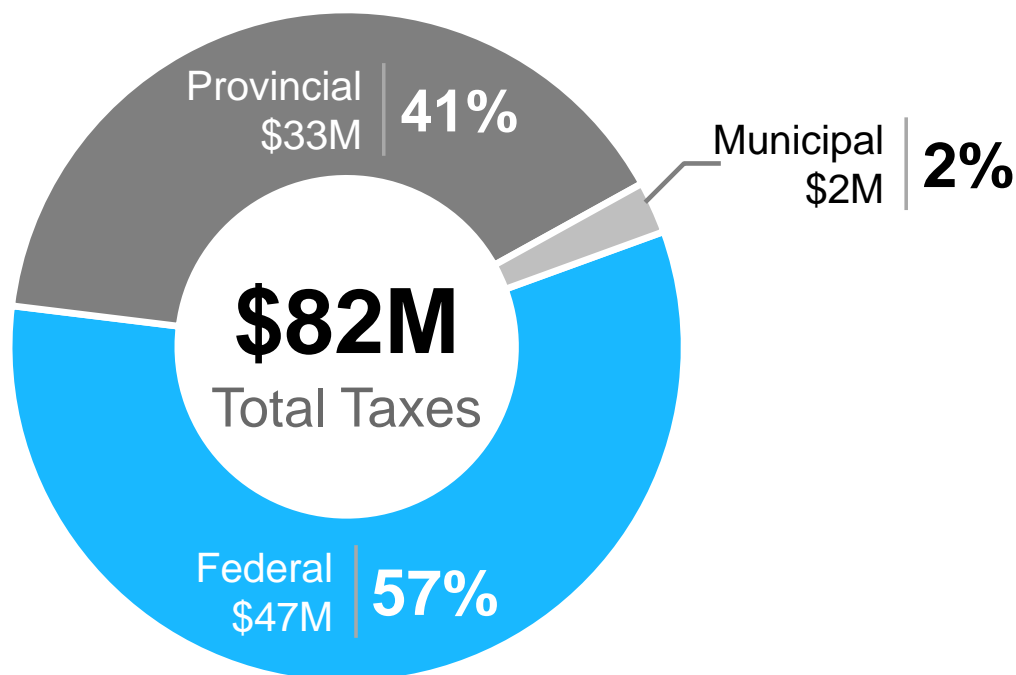
It would be exceedingly complex to broaden the scope of the tax base in this analysis to include taxes generated by indirect and induced employment. The level of detail collected on direct employment by the survey is critical to the analysis while such information is not available for the indirect and induced employment. This being the case, impacts and speculation about the general economy would be complex and averages would not necessarily be precise or accurate. Therefore, the tax analysis in this report is limited to revenues attributable to direct employment only.

8.2 Tax Contributions by Level of Government

Ongoing economic activity at St. John's International Airport generates tax revenue for all levels of government. In 2016, total tax contributions from St. John's International Airport-related *direct* employment to all levels of government were approximately \$82 million. **Figure 8-1** provides a rounded breakdown of tax impacts by level of government.

- The federal government was the largest recipient of tax revenue, receiving nearly \$47 million (57% of total tax revenue impacts). The vast majority of that total is attributable to taxes paid by employers and employees such as income tax, corporate income tax, CPP contributions, and the like.
- The provincial government received approximately \$33 million (41% of total tax revenue impacts). This total is from income taxes, contributions to health insurance, and the Provincial portion of the HST paid by passengers.
- The municipal governments collected nearly \$2 million in tax revenue (2% of total tax revenue impacts) in the form of property taxes from tenants or SJIAA.

Figure 8-1:
Annual Estimated Tax Revenues of St. John's International Airport by Level of Government



8.3 Summary of Tax Contributions by Taxpayer

Ongoing economic activity at St. John's International Airport generates tax revenue from different tax payers, as summarized in **Figure 8-2** below.

Figure 8-2:
Annual Estimated Tax Contributions by Taxpayer at St. John's International Airport (\$ millions)

Taxpayer	Federal	Provincial	Municipal	Total
Passengers	8	13	-	21
SJIAA ²⁶ and Other Airport Employers/Employees	39	20	2	61
Total	47	33	2	82

²⁶ Includes \$2 million in Federal Ground Lease Payments and \$1 million in municipal property taxes paid by SJIAA.

9 Wider Economic Benefits

This economic impact study shows that St. John's International Airport serves as a center of employment for the region, as well as the origin for significant secondary spending and economic effects. However, these impacts may not fully capture the true value of St. John's International Airport's presence in the community.

Beyond the direct, indirect and induced economic impacts noted earlier, airports also contribute other positive effects to a region that can be more difficult to assess. These "catalytic effects" of air transport help capture the way in which aviation enhances the productivity of other business sectors of the economy. In particular, the catalytic effects from St. John's International Airport include the following:

- **Employment effects** - the attractiveness of an area for the creation of new or retention of existing job opportunities
- **Trade effects** – additional air service opens new export markets to many businesses as a result of new destinations, better flight connections, and higher frequencies offered.
- **Investment effects** – a key factor many companies take into account when making decisions about location of office, manufacturing or warehouses is proximity of an international airport.
- **Productivity effects** – air transportation offers access to new markets which in term enables businesses to achieve greater economies of scale. Air access also enables companies to attract and retain high quality employees.

Taken together, these issues contribute to an overall sense of a region's attractiveness and competitiveness. Without the presence of St. John's International Airport, the feasibility of conducting business, of maintaining and growing a resident population, and of attracting new resources to the area – particularly given the geography of the Avalon Peninsula – would be severely diminished.

10 Summary of Results

10.1 Economic Impacts

Ongoing operations at St. John's International Airport support a *total* of 3,830 FTEs or person years of employment in Canada, when multiplier impacts are included. Of this employment, 1,830 FTEs or person years of employment are *directly* related to the airport. Because jobs related to the airport extend far beyond St. John's International Airport, the total also includes both indirect (approximately 1,150 FTEs) and induced employment (850 FTEs).





Direct person years or FTEs of employment from ongoing operations at St. John's International Airport (i.e. SJIAA plus airport tenants) grew by over 21%, from about 1,510 in 2009 to 1,830 in 2016.

St. John's International Airport contributes to the provincial and national economy as well. The significance of the airport is demonstrated by the *direct* economic impact of the airport on GDP and economic output in the Province of Newfoundland and Labrador, measured at \$176 million and \$393 million, respectively. Including indirect and induced impacts, the *total* impacts are approximately \$388 million and \$822 million, respectively, nationwide.

In addition to ongoing economic impacts of St. John's International Airport operations, additional economic impacts occur through the airport's capital expenditures, local spending by visitors travelling through the airport, and accommodation impacts due to air visitors to the St. John's area. **Figure 10-1** summarizes these 2016 economic impacts in total.²⁷

²⁷ Economic impacts due to accommodations for military visitors to the St. John's area are not included.

Figure 10-1:
Total Economic Impacts of St. John's International Airport Operations in 2016

					
Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	Jobs	FTEs			
Ongoing Economic Impacts of St. John’s International Airport Tenants (2016)					
Newfoundland and Labrador Impacts					
Direct	1,940	1,830	\$120	\$176	\$393
Indirect	620	580	\$39	\$59	\$139
Induced	440	410	\$21	\$48	\$76
Rest of Canada Impacts					
Indirect	610	570	\$36	\$59	\$126
Induced	460	440	\$24	\$46	\$88
Total	4,070	3,830	\$240	\$388	\$822
Air Visitor Spending Impacts (2016)*					
Newfoundland and Labrador Impacts					
Direct	1,850	1,740	\$65	\$93	\$185
Total	1,850	1,740	\$65	\$93	\$185
Capital Expenditure Impacts (2016)					
Newfoundland and Labrador Impacts					
Direct	140	130	\$9	\$11	\$35
Indirect	60	60	\$4	\$6	\$10
Induced	30	30	\$2	\$3	\$5
Rest of Canada Impacts					
Indirect	90	80	\$5	\$8	\$17
Induced	50	40	\$2	\$5	\$9
Total	370	340	\$22	\$33	\$76



Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	Jobs	FTEs			
Employment Impacts of Air Visitor Accommodations (2016)					
Newfoundland and Labrador Impacts					
Direct	100	95	\$4	\$7	\$11
Indirect	15	15	\$1	\$2	\$3
Induced	15	15	\$1	\$2	\$3
Rest of Canada Impacts					
Indirect	15	15	\$1	\$2	\$3
Induced	15	15	\$1	\$1	\$3
Total	160	155	\$8	\$14	\$23
GRAND TOTAL	6,450	6,065	\$335	\$528	\$1,106

Note: Employment figures (Jobs and FTEs) are rounded to the nearest ten. Dollar figures (wages, GDP and output) are rounded to the nearest million.

* Only direct impacts of air visitor spending impacts are provided, to mitigate double-counting of potential impacts with air transportation.

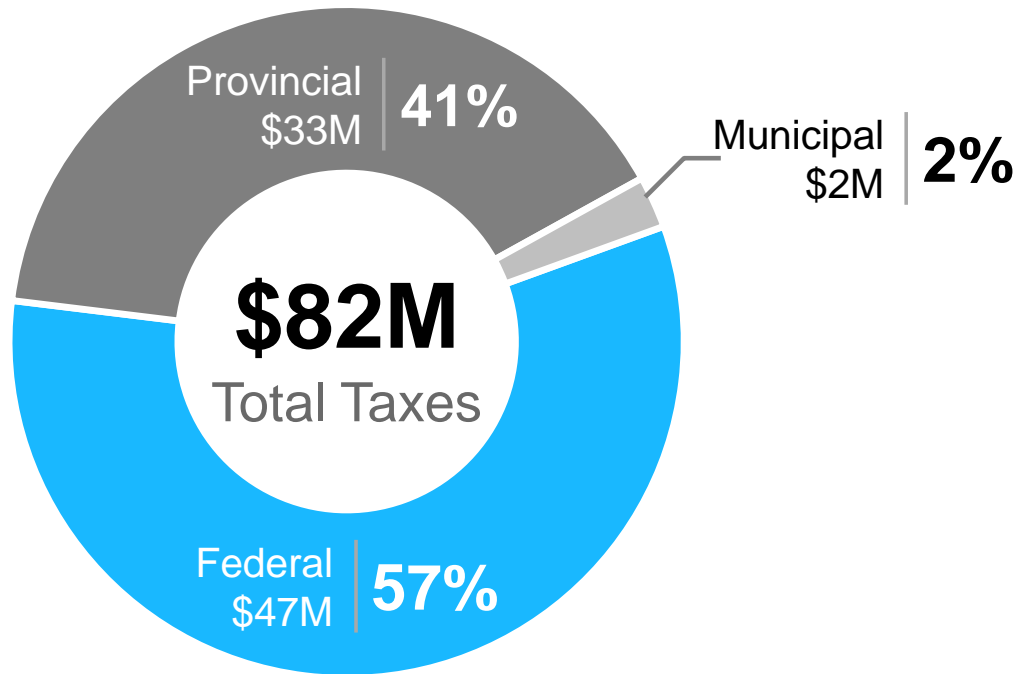
10.2 Tax Revenue Impacts

St. John's International Airport is also an important generator of taxation revenues to all levels of government. Total taxes paid on an annual basis, by airport employers and employees as well as passengers, are estimated at nearly \$82 million per year.^{28, 29} The majority of taxes accrue to the federal government at 57% overall, while the provincial government receives 41% of the tax revenue generated by St. John's. The municipal government also benefits from the airport through the collection of property taxes amounting to approximately \$2 million paid by St. John's and its tenants, as shown in **Figure 10-2**.

²⁸ Taxation impacts are based on 2016 tax rates.

²⁹ Includes \$2 million in Federal Ground Lease Payments and \$1 million in municipal property taxes paid by SJIAA.

Figure 10-2:
Annual Estimated Tax Revenues of St. John's International Airport by Level of Government



Appendix A: Employment Survey

Questionnaire Design

The basic questionnaire was designed to obtain information, and to be as clear and easy to understand as possible for respondent firms. The basic questionnaire provided to airport tenants contained questions in the following areas:

General Information

- Name of firm, address
- Contact person's name and title
- Phone and fax numbers
- Email and website address
- Principal business activity

Total Employment Numbers

- Total employees (2016)
- Number of on-site employees
- Number of off-site employees

Part-time and Full-time Employment

- Full-time permanent employees
- Part-time permanent employees
- Full-time seasonal employees
- Part-time seasonal employees
- Average hours and weeks for part-time and seasonal employees

Payroll and Wage

- Total payroll excluding benefits; or
- Average wage per employee

Employment by Occupation

- A selection of job trades was provided to categorize employment

Outsourcing and Contracting Out

- Number of individuals on contract
- Average hours and weeks for individuals on contract
- Number and names of firms on contract
- Average annual hours for firms on contract

Property Taxes & Other Taxes

- Total property taxes paid (2015)
- Other federal and provincial taxes paid (2015)

Business Related to St. John's International Airport

- Proportion of firm's business revenues related to St. John's International Airport (2016)

Capital Investment

- Capital investment in 2016
- Capital investment planned between 2017-2026

Conducting the Survey

The survey was mailed out electronically by InterVISTAS Consulting, with a cover letter from St. John's International Airport. The letter explained the purpose of the study, the confidentiality of responses and encouraged members of the airport business community to participate.

Following the initial electronic mail-out of the surveys and throughout the following weeks, non-responding firms were contacted by telephone to follow-up on the completion of the survey. St. John's International Airport staff handled the survey follow-up for the onsite tenants, while InterVISTAS staff managed the offsite firm follow-up. Firms were encouraged to return the survey and new copies were offered if the originals were lost. The replacement surveys were emailed once again. Some survey responses were collected via a telephone interview with firms.

Appendix B: Sample Survey

St. John's International Airport (YYT)
Economic Impact of YYT – 2016 Employment Survey



The figures you provide in the following sections are **strictly confidential** and will be viewed only by InterVISTAS Consulting. Only aggregate survey totals will be published in the final report.

For the purposes of this study, it is important that the figures you provide are as accurate as possible. However, where it is not possible to provide precise information, we would appreciate estimates rather than no response at all.

Name of Company: _____

Address of Company: _____

Contact Person: _____ Phone number: _____

Email: _____

Q1. Principal Business Activity

Please indicate your principal business activity. If you are involved in more than one of the businesses below, please choose the one that best describes your business (i.e., contributes the largest proportion of revenues).

Business Type

- ☐ 1. Air Carrier, Helicopter Operator, General Aviation Operator
- ☐ 2. Air Traffic Control
- ☐ 3. Aircraft Maintenance, Repair & Overhaul
- ☐ 4. Aviation Related Manufacturing
- ☐ 5. Aviation Related Training
- ☐ 6. Fixed Base Operator
- ☐ 7. Fuelling Company
- ☐ 8. Government Agency/Department
- ☐ 9. Military Services
- ☐ 10. Recreation Facility
- ☐ 11. Security Services
- ☐ 12. Education Institution
- ☐ 13. Health Service
- ☐ 14. Other:

September 2016

1

St. John's International Airport (YYT)
Economic Impact of YYT – 2016 Employment Survey



Q2. Location of Business

Please indicate where your company is located.

- ☐ 1. On-site (on YYT airport land)
☐ 2. Off-site (away from YYT airport land)

Q3. Employment at Your Company

Please state the number of staff (**permanent and seasonal staff on the company payroll**) employed as of September, 2016 by your company both on-site at YYT and off-site (but within Newfoundland and **directly related to operations at YYT**, e.g. administrative employees in Clarenville). For those employees that are not based at YYT, please include only those whose job functions are directly attributable to services provided by YYT. Please break down the employment into permanent, seasonal, full-time and part-time. *This should not include employment for work done on contract.*

Location	Permanent Employees		Seasonal Employees	
	Full-Time	Part-Time	Full-Time	Part-Time
On-Site (Employees based at YYT)				
Off-Site (Employees not based at YYT, but whose function is directly related to the operations at YYT)				

Note: For employees that split their time between on-site and off-site locations, please allocate them to the location where they spend the most time.

Please indicate how many hours per week **part-time employees** are expected to work in 2016, as well as how many weeks and weekly hours that **seasonal employees** are expected to work in 2016, on average.

Employee Type	Number of Weeks per Year	Number of Weekly Hours
Permanent Part-Time	52	
Seasonal Full-Time & Part-Time		

St. John's International Airport (YYT)
Economic Impact of YYT – 2016 Employment Survey



Q4. Payroll and Wages

Please state the total payroll that is expected to be paid by your company in 2016 for the employees included in Question 2 above. If your organization began operations in 2016, please provide the expected total payroll amounts to be paid at the end of December 2016.

This figure should include all full-time, part-time and seasonal employees. If you are unable to estimate payroll for 2016, please provide figures for your last financial year, and indicate which year that was.

Total Annual Payroll (Estimate for full-year 2016):	\$
Financial Year (if not calendar year 2016):	

Note: Total payroll includes gross (pre-tax) wages or salaries, including overtime pay, commissions, benefits, allowances and bonuses.

Alternatively, if you are unable to answer this question, please provide an estimate of the average annual wage/salary **per employee** (including overtime pay, commissions, benefits, allowances and bonuses), or select one of the options below.

Average Annual Salary/Wage per Employee: \$ _____ per annum.

Or: Estimate of the average annual salary range per employee:

- | | |
|--|--|
| <input type="checkbox"/> Less than \$20,000 | <input type="checkbox"/> \$60,000 - \$79,999 |
| <input type="checkbox"/> \$20,000 - \$39,999 | <input type="checkbox"/> \$80,000 - \$99,999 |
| <input type="checkbox"/> \$40,000 - \$59,999 | <input type="checkbox"/> \$100,000 or more |

Q5. Employment by Occupation

Please estimate below the number of employees included in Question 2 that are in the following occupation categories.¹ *The figures entered below should sum to the same total as Question 2 or sum to 100%.*

Employment by Occupation		Number or % of Employees
General	Managerial/Supervisory	
	Clerical	
	Craft Trades (Electricians, Steam Fitters, etc.)	
Airline & Airline Servicing Trades	Pilots	
	Flight Attendants	
	Aircraft & Vehicle Mechanics	
	Customer Service Agents	

¹ As classified by the "National Occupational Classification, 2011" published by the Human Resources and Skills Development Canada.

St. John's International Airport (YYT)
Economic Impact of YYT – 2016 Employment Survey



	Aircraft Servicing	
Support Trades	Security Agents	
	Food Service Workers	
	Drivers / Delivery / Couriers	
	Dispatchers	
	Call Center / Reservations	
	Air Traffic Control	
Retail Trades	Sales / Cashiers	
	Food & Beverage Staff	
Other (Please specify)		

Q6. Outsourcing and Contracting Out

Since we do not want to exclude any employment, we would like you to briefly comment on whether your firm contracts out any important services.

Individuals on Contract: If you pay some individuals through a contract, as opposed to through payroll, please indicate the number of such employees, how many weeks worked expected to be worked in full calendar year 2016, as well as how many hours per week worked in 2016, on average.

	Number of Contract Employees	Number of Weeks per Year	Number of Weekly Hours
Contract Employees			

St. John's International Airport (YYT)
Economic Impact of YYT – 2016 Employment Survey



Firms on Contract: If you outsource or contract out any work to other companies (e.g., cleaning services, IT, ground handling, etc.), please complete the following table, indicating the functions you outsource to third party companies, and provide an estimate of the annual contracted hours of work completed to the end of 2016. Also, please specify the company's name(s) and indicate whether they are located at YYT. This will allow us to avoid any double counting of work performed by other companies which may also be surveyed as a part of this study. *Feel free to attach another sheet of paper if the space provided below is insufficient.*

Function	Name of Firm	Located at YYT? (Check if Yes)	Number of Hours Performed by the Company in 2016
<i>Example: Cleaning services</i>	<i>Spic and Span Cleaners</i>	<input type="checkbox"/>	<i>100 hours per year (2 hours per week)</i>
		<input type="checkbox"/>	
		<input type="checkbox"/>	
		<input type="checkbox"/>	
		<input type="checkbox"/>	

Q7. Property Taxes Paid

Please indicate the amount of municipal property taxes paid by your firm in 2015.

Total Municipal Property Taxes Paid (2015):	\$
---	----

Q8. Business Related to YYT

Please estimate the proportion of your company's business revenues that is related to activities at St. John's International Airport.

Business Revenue Related to YYT (2016):	%
---	---

St. John's International Airport (YYT)
Economic Impact of YYT – 2016 Employment Survey



Q9. Capital Investment

Please estimate approximately the value of capital investments made in 2016 that are intended to support your operations at St. John's International Airport (e.g. purchase and installment of new equipment, development of a new facility).

Capital Investment (2016):	\$
Capital Investment (2017-2026)	\$

Thank you for your assistance in completing this survey.

Please enter your responses to this questionnaire online at:

If you have any questions, please call
Noel Szelewski at **1-877-717-6246**, ext.1808.

Appendix C: Calculation of Full-time Equivalent or Person Years of Employment

The following are details of calculations for the average number of hours per full-time equivalent (FTE) or person year of employment.

Table C-1: Full-time Equivalent Hours per Year

Calculation of FTE hours per year:		
	365	days per year
Less:	(104)	weekend days
	(11)	legal holidays
	(15)	average vacation days
	(6)	sick leave
	229	days per person year
	* 8	hours per work day
	1,832	hours per person year

Workdays vary anywhere from 6.5 to 8 hours; however, in order to be conservative, an 8 hour workday was assumed.³⁰ Similarly, numbers of vacation and sick leave days may also vary.

³⁰ Essentially, we are using a measure of paid hours per year. Using a measure of productive hours per year with 6.5 hour workdays (8 hours less 1 hour for lunch less two 15 minute work breaks) would give 1,489 hours per person year. Using this lower figure would result in inferring a greater number of FTEs from seasonal and part-time jobs. Using the 1,832 figure, we infer a lower number of FTEs.

Appendix D: Inferred Employment

Because not all employers responded to our requests for information in the survey, we statistically inferred some employment data to replace that which otherwise would be missing. This allows us to estimate the total amount and type of employment, which provides the basis for other estimates of economic impact.

In general, InterVISTAS' approach bases these inferred estimates on information provided by responding firms for each business type and validated against information from other publicly available sources of data. This approach is conservative in that we assumed that the non-responding firms are smaller than responding firms.

The employment data in this report was compiled from a combination of two sources:

1. Employment reported by employers on surveys submitted to InterVISTAS.
2. Employment inferred for employers who did not provide a survey response. Inferred employment was based on employment information from those firms in each business type that did respond to the survey. The mean employment of respondents in each business type was calculated, excluding outliers, and then conservatively adjusted downwards. For instance, those firms with especially large employment levels were excluded from the "mean without outliers" to obtain conservative results. This "adjusted mean" employment for each business type was then applied to those firms who did not respond to the survey.

Appendix E: Contract Employment

Some firms contract out services that they do not have expertise in providing or when there are cost advantages to doing so. For example, many airport firms contract out janitorial, elevator and maintenance services. The employment survey asked firms to identify whether they contracted out some of their work, and to estimate the number of annual hours involved.

Contract work was separated into two distinct categories in the employment survey: 1) individual “employees” paid through a contract, rather than via payroll, and 2) contracting out services to other firms.

The employment results for individuals on contract were derived by counting the number of individual positions for the number of *jobs* and dividing the total hours of employment by 1,832 to estimate a FTE or one person year of employment. The employment results for firms on contract were derived by dividing the total hours of employment by 1,832 to estimate FTEs or person years.

Appendix F: Methodology using Economic Multipliers

Measurement of indirect and induced economic activity is difficult. While it might be possible to conduct a survey of such employers, the survey would need to cover thousands of firms for indirect employment. For induced employment, the entire provincial economy would need to be scrutinised. In addition to the time and financial resources needed to conduct such surveys, the quality of responses would be suspect.

As an alternative to costly and inaccurate surveys, indirect and induced effects are typically measured by the use of economic multipliers. Multipliers are derived from economic/ statistical/accounting models of the general economy.³¹ They come in a variety of forms and differ greatly in definition and application. Thus, great care must be exercised in choosing the appropriate set of multipliers to use. In addition, the use of multiplier analysis is limited by a number of factors, these being:

- the accuracy of the structure and parameters of the underlying model;
- the level of unemployment in the economy;
- the assumption of constant returns to scale in production;
- the assumption that the economy's structure is static over time; and
- the assumption that there are no displacement effects.

Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment.

³¹ The multipliers used in this analysis are from the Statistics Canada 2010 Input-Output tables for Newfoundland and Labrador.

Appendix G: Tax Revenues Attributable to Airport Employers

Introduction

This appendix describes the employment and other assumptions on which tax revenues calculations are based. As well, the approaches used to estimate employer and employee contributions to local, provincial and federal governments are presented.

Some of the taxes pose conceptual questions about how much, or if any, tax revenue from a particular source should be attributed to firms serving St. John's International Airport. These questions are highlighted and simplifying assumptions are put forth.

Employment at St. John's International Airport

The majority of tax calculations in this report depend on direct employment and total wages. The total direct employment, in person years, used for these calculations is 1,828 person years. The total payroll is estimated at \$120 million.

Personal Income Tax (Federal and Provincial)

Tax Base and Rates

Under the *Income Tax Act* federal income tax is paid on taxable income at a rate that increases with taxable income.

Provincial income tax was formerly calculated as a percentage of federal tax, but most provincial governments have begun collecting taxes on a sliding scale.

Estimation Method and Results

Because the tax rate is progressive, the tax paid by a group of employees depends on the distribution of income among those employees. Unfortunately, the distribution of income is not known and average incomes must be used.

Each employee is assumed to pay tax as a single tax filer. Estimated personal income tax payable is \$16 million in federal tax and \$11 million in provincial tax.

The average tax rates used are derived from the more detailed calculations of taxes payable shown in **Figure G-1**. In those calculations, assumptions have been made about income from non-employment sources, tax deductions from income (e.g. RPP and RRSP contributions), and tax credits applied against tax otherwise payable (e.g. CPP, EI and charitable contributions). Average credits are calculated from Revenue Canada, *General Income Tax Forms*, 2016.

Figure G-1: Newfoundland and Labrador Single Tax Filer Income Tax Calculation – 2016

Newfoundland and Labrador Single Tax Filer Income Tax Calculation																				
Income																				
Employment	5,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000	55,000	60,000	70,000	80,000	90,000	100,000	150,000	250,000	350,000	
TOTAL	5,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000	55,000	60,000	70,000	80,000	90,000	100,000	150,000	250,000	350,000	
Deductions																				
RPP	300	81	60	37	52	99	177	415	682	862	1,098	1,365	1,753	2,427	3,144	2,839	2,363	2,131	2,076	
RRSP	1,061	145	77	76	103	165	227	351	456	628	859	1,086	1,454	1,906	2,454	3,388	5,904	11,862	20,100	
Carrying Charges	223	30	24	15	18	18	22	33	37	53	66	80	84	93	111	782	1,075	883	387	
Union	490	134	59	48	49	70	89	143	193	241	285	344	428	595	723	782	1,075	883	387	
TOTAL	2,074	389	220	176	223	352	526	941	1,367	1,784	2,308	2,875	3,718	5,021	6,433	7,991	10,417	15,759	22,949	
Taxable Income	2,926	9,611	14,780	19,824	24,777	29,648	34,474	39,059	43,633	48,216	52,692	57,125	66,282	74,979	83,567	92,209	139,583	234,241	327,051	
Credits																				
Basic Federal	11,474.00	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	
Basic Provincial	8,802.00	8,802	8,802	8,802	8,802	8,802	8,802	8,802	8,802	8,802	8,802	8,802	8,802	8,802	8,802	8,802	8,802	8,802	8,802	
CPP	15,374	15,197	7,861	8,348	3,752	2,731	2,558	2,332	2,251	2,074	1,932	1,773	1,555	1,274	920	911	1,128	1,671	1,671	
EI	4,656	1,290	508	345	277	313	370	468	451	531	565	610	673	740	810	882	953	1,033	1,113	
Charity	239	244	329	262	186	199	206	243	216	253	268	272	298	262	297	262	297	262	297	
Fed. Total	31,693	28,205	20,172	20,428	15,689	14,717	14,607	14,517	14,391	14,332	14,240	14,860	13,911	13,719	13,203	15,401	12,925	13,725	14,187	
Prov. Total	29,021	25,533	17,500	17,756	13,017	12,045	11,935	11,845	11,719	11,660	11,568	12,188	11,239	11,047	10,531	12,729	10,253	11,053	11,515	
Federal Tax Credit Rate	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	
Provincial Tax Credit Rate	8.2%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	
Federal Credits	4,754	4,231	3,026	3,064	2,353	2,207	2,191	2,178	2,159	2,150	2,136	2,229	2,087	2,058	1,980	2,310	1,939	2,059	2,128	
Provincial Credits	2,380	2,094	1,435	1,456	1,067	988	979	971	961	956	949	999	922	906	864	1,044	841	906	944	
Tax Payable																				
Federal - Bracket 1	439	1,442	2,217	2,974	3,717	4,447	5,171	5,859	6,545	6,792	6,792	6,792	6,792	6,792	6,792	6,792	6,792	6,792	6,792	
Federal - Bracket 2	0	0	0	0	0	0	0	0	0	601	1,519	2,428	4,305	6,088	7,848	18,565	18,565	18,565	18,565	
Federal - Bracket 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	428	12,745	36,501	36,501	
Federal - Bracket 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27,217	54,132	
Federal Total	439	1,442	2,217	2,974	3,717	4,447	5,171	5,859	6,545	7,394	8,311	9,220	11,097	12,880	14,641	25,786	38,103	61,859	61,859	
Basic Federal	0	0	0	0	0	1,363	2,240	2,980	3,681	4,386	5,244	6,176	6,991	9,011	10,822	12,660	23,476	36,164	59,800	
NFL - Bracket 1	240	788	1,212	1,626	2,032	2,431	2,827	2,882	2,882	2,882	2,882	2,882	2,882	2,882	2,882	2,882	2,882	2,882	2,882	
NFL - Bracket 2	0	0	0	0	0	0	0	528	1,145	1,764	2,369	2,967	4,203	4,745	4,745	4,745	4,745	4,745	4,745	
NFL - Bracket 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,189	10,081	23,854	37,358	
NFL Total	240	788	1,212	1,626	2,032	2,431	2,827	3,410	4,028	4,646	5,251	5,849	7,085	8,309	9,558	10,816	17,708	31,481	44,985	
Basic Provincial	0	0	0	0	170	964	1,444	1,848	2,439	3,067	3,690	4,302	4,850	6,164	7,403	8,695	9,772	16,868	30,575	
TOTAL TAX PAYABLE	0	0	0	0	170	2,328	3,683	4,828	6,120	7,453	8,934	10,478	11,841	15,174	18,225	21,355	33,247	53,032	103,771	
Average Rate of Tax	0.0%	0.0%	0.0%	0.0%	0.9%	9.4%	12.4%	14.0%	15.7%	17.1%	18.5%	19.9%	20.7%	22.9%	24.3%	25.6%	36.1%	38.0%	38.4%	31.7%
Federal	0.0%	0.0%	0.0%	0.0%	5.5%	7.6%	8.6%	9.4%	10.1%	10.9%	11.7%	12.2%	13.6%	14.4%	15.1%	25.5%	25.9%	25.5%	18.3%	
Provincial	0.0%	0.0%	0.0%	0.0%	3.9%	4.9%	5.4%	6.2%	7.0%	7.7%	8.2%	8.5%	9.3%	9.9%	10.4%	10.6%	12.1%	13.1%	13.5%	

Corporate Income Tax (Federal and Provincial)

All corporations are liable to pay federal income tax under the *Income Tax Act*. The tax rate varies by type and size of company and by province. Provincial governments also levy a corporation income tax on any company having a permanent establishment in that province.

Estimation Method and Results

1. To calculate tax liability precisely is very difficult. It requires knowledge of the total tax base, and the proportion of the tax base attributable to the provinces. Therefore, an approximate method has been used.
2. In Newfoundland and Labrador, the federal corporate income tax collected per employee was \$2,195 and the provincial corporate income tax collected per employee was \$925 in 2015.
3. Assuming all companies pay tax at the average rate per employee calculated above, the 2016 corporation income tax liability of the St. John's International Airport employment sector is estimated to be \$3.7 million toward federal revenues and \$1.5 million toward provincial revenues. The estimated total corporate income tax revenue is about \$5.2 million as shown in **Figure G-2**.

Figure G-2: Estimated Corporate Income Tax Paid by Firms within St. John's International Airport

Government	Revenue (\$Million)
Federal	3.7
Provincial	1.5
Total	5.2

Note: Amounts may not add to total due to rounding.

Employment Insurance Premiums

Tax Base and Rates

In 2015, employees in Canada paid employment insurance (EI) premiums equal to 1.88% of earnings up to a maximum of \$931 per year. (Maximum insurable earnings are \$49,500). Employers paid EI premiums equal to 1.4 times employee premiums.

Estimation Method and Results

The employee premium rate is applied to total payroll costs for employees earning less than \$49,500 per year. The maximum contribution was used for employees earning more than \$49,500 per year. Estimated employee payments were about \$1.5 million in 2016.

The employer rate is applied to the employee payments. Estimated employer payments were about \$2.1 million in 2016.

Canada Pension Plan Contributions

Tax Base and Rates

In 2015, employee contributions for the Canada Pension Plan (CPP) were 4.95% of pensionable earnings. Pensionable earnings are actual earnings less \$3,500, to a maximum of \$53,600. The maximum annual employee contribution is \$2,479.95. The employer contribution is the same as the employee contribution.

Estimation Method and Results

The employee contribution rate is applied to average payroll for employees who are earning less than \$53,600 a year. The maximum contribution was used for employment earning more than the maximum pensionable earnings.

Estimated employer and employee contributions are about \$4.5 million each, for a total of \$8.9 million.

WorkplaceNL Contributions

Tax Base and Rates

Employers in Newfoundland and Labrador are required to make contributions to the province's government-regulated workers' compensation institution, WorkplaceNL, to help offset the cost of on-the-job injuries. Employers are classified into industry groups. The contribution rate for each group is based on the injury costs associated with all companies in that group.³² The group contribution rate varies widely among industries and provinces. Some major companies are not included in the general "rateable" method of contribution but simply pay the actual cost of their claims plus an allowance for WorkplaceNL administration costs. As it is not generally known which firms contribute in this manner, nor the value of their claims, an estimate based on reported payroll has been made for all firms.

Conceptual Issues

It is possible that some companies are self-insured and their payments could be viewed as a business expense rather than a tax. However, we have chosen to include their contribution because they are required to be part of this government-mandated program.

Estimation Method and Results

The contribution rates for each employment classification at the airport have been applied to the total payroll for that group. St. John's International Airport employees paid an estimated \$1.9 million to WorkplaceNL in 2016.

³² Subject to Experience Rating Adjustment for individual companies.

Health Insurance Premiums

Tax Base and Rates

There are no Medical Services Plan (MSP) premiums for single filers in Newfoundland and Labrador.

Aviation Fuel Tax

The federal and provincial governments levy taxes on jet fuel. The aviation fuel tax rates are shown in **Table G-3**.

Table G-3: Fuel Tax Rates, 2016

Federal	Newfoundland and Labrador
\$/Litre	
\$0.04	\$0.025

Estimation Method and Results

The amount of aviation fuel sold at St. John's International Airport in 2016 was approximately 75 million litres. The total aviation fuel tax revenues at St. John's International Airport amount to approximately \$4.8 million. Of this total, about \$3.0 million went to the Federal government and the government of Newfoundland and Labrador collected \$1.9 million.

The Harmonised Sales Tax (HST), comprised of the 5% Federal portion of the HST payable to the federal government plus the 8% Provincial portion of the HST, was also collected from aviation fuel sold at the airport. The total HST revenues from fuel sales at St. John's International Airport amount to nearly \$4.7 million.

HST on Aircraft Parking

Per discussions with SJIAA, St. John's International Airport collected approximately \$0.1 million in aircraft parking fees. St. John's International Airport paid approximately \$15,000 in total taxes (HST) to the federal and provincial governments on this revenue.

HST on Crew Accommodation Costs

Tax Base and Rates

Estimation Method and Results

In order to estimate the total accommodation costs of airline crew to St. John's the average daily room rate was applied to the estimated airline nights determined from the hotel survey conducted. The total accommodations expenditure amounted to \$0.5 million.

HST based on accommodation costs of \$0.5 million by airline crew is approximately \$75,000 while the supplementary hotel tax is approximately \$20,000.

Property Taxes Paid to Government

Governments levy property taxes to help them finance local services. Property taxes paid by SJIAA amounted to \$1.1 million in 2016. Tenants at the airport paid \$0.5 million. In total, \$1.6 million in property taxes were paid to the municipal government by the airport authority and its tenants.

Federal Ground Lease Payment

St. John's International Airport paid approximately \$2.0 million for the Federal Ground Lease payment to the Federal Government in 2015.

Appendix H: Tax Revenues Attributable to Airport Users

St. John's International Airport Passengers, 2016

Based on 2016 traffic, approximately 0.8 million passengers will enplane at St. John's International Airport, including connecting passengers (approximately 0.1 million). **Table H-1** shows the passenger movements used in this study including breakdown into sectors and percentage of connecting passengers at St. John's International Airport.

Table H-1: Passenger Movements, 2016

Sector	Enplaned 2016
Domestic	700,000
Transborder	25,000
Other International	44,000
Connecting	10%
<i>Total</i>	<i>790,000</i>

Notes: Based on passenger traffic information provided by SJIAA

NAV CANADA Charges

Prior to November 1, 1998, the Canadian government collected the Air Transportation Tax (ATT) to fund aviation programs, including air navigation services. The ATT was levied on all tickets purchased in Canada as well as those purchased internationally for trips that included an enplanement in Canada. ATT rates were adjusted frequently, reaching a high in May 1995 of 7% + \$6 (to a maximum of \$55) for domestic and transborder flights, and a flat rate of \$55 for international flights.

When control of air navigation services was privatised and passed to NAV CANADA on November 1, 1996, the ATT was gradually replaced by NAV CANADA charges. These fees, collected under authority of the Civil Air Services Commercialisation Act, are not taxes on ticket sales; they are service charges billed to aircraft operators. In order to recover these costs, airlines usually pass these charges on to passengers, though NAV CANADA does not dictate how this is done. Most carriers apply a flat rate NAV CANADA surcharge to tickets they sell.

NAV CANADA fees consist of two parts: en route charges and terminal charges. En route charges are based on the maximum permissible takeoff weight of the aircraft (metric tonnes) and the distance being flown in Canadian-controlled airspace. Terminal charges are dependent only on aircraft weight.

Conceptual Issues

Because the ATT is no longer collected and the fees that NAV CANADA now charges are service fees, rather than taxes, no taxes for air navigation services will be included in total taxes paid.

HST on Air Fares and the Airport Improvement Fee (AIF)

Tax Base and Rates

The Harmonised Sales Tax (5% Federal portion of HST plus 8% Provincial portion of HST) applies to the base fare of all domestic tickets purchased in Canada. The Federal portion of HST applies to the base fare of all trans-border tickets purchased.

The airport authority charges all passengers originating their journey at St. John's International Airport an Airport Improvement Fee (AIF) that is collected for the sole purpose of funding capital improvements at the airport. The HST or Federal portion of HST is levied on the fee.

Conceptual Issues

Taxes levied on the air fare should be shared among airports in Canada associated with the journey. The estimation method builds in a sharing assumption (50% St. John's International Airport and 50% other Canadian airports).

Estimation Method and Results

The Federal portion of the HST is levied on all domestic air fares; however, due to the sharing assumption stated above, only 50% of the estimated taxes per departing domestic passenger are attributable to St. John's International Airport. Total tax on airfares is estimated to be over \$13 million.

The airport authority collected over \$20 million through the AIF in 2015.³³ Tax revenue on this amount is approximately \$3.0 million (\$1.0 million to the federal government and \$2.0 million to the provincial government).

HST on Air Traveller Security Charge

The Canadian Government enacted the Air Traveller Security Charge (ATSC) on April 1, 2002 to help fund security improvements at airports across Canada, as a result of the terrorist attacks on September 11, 2001. As of April 1, 2010, these rates were increased. There is a flat rate fee of \$7.48 for each chargeable enplanement for domestic travel, \$12.71 for transborder travel, and \$25.91 for international travel.

Tax Base and Rates

The HST applies to the domestic ATSC, while only Federal portion of the HST applies to the transborder ATSC.

³³ Source: 2015 St. John's International Airport Annual Report: [http://St. John's International Airportannualreport.com/#financial-report/1](http://St.John'sInternationalAirportannualreport.com/#financial-report/1)

Estimation Method

The volume of enplaned traffic at St. John's International Airport was determined, based on data provided by SJIAA. Each enplaned passenger pays the ATSC. A total of \$0.7 million in taxes was collected on the ATSC.

HST on Airport Operating and Landing Fees

The HST rate is applied to airport operating and landing fees.

Estimation Method and Results

Based on the airport's 2015 annual report,³⁴ net revenue from airport operating fees and landing fees was \$5 million and \$6 million, respectively, in 2015.³⁵ Total tax collected is estimated at \$0.7 million and \$0.9 million for operating and landing fees, respectively.

HST on Airport Concessions and Parking

The HST rate applies to airport concessions and parking fees at the airport.

Estimation Method and Results

Based on the information provided by the airport authority as well as the airport's 2015 annual report, concession and parking revenue was approximately \$15.0 million and \$3.6 million, respectively. Tax on these expenditures is estimated at \$2.2 million for concession and \$0.5 million for parking.³⁶

HST on Accommodation Costs

Tax Base and Rates

Estimation Method and Results

In order to estimate the total accommodation costs of visitors to St. John's the average daily room rate was applied to the estimated connecting passenger nights determined from the hotel survey conducted. The total accommodations expenditure amounted to \$6.4 million.

HST based on accommodation costs of \$6.4 million by connecting passengers is approximately \$1.0 million.

³⁴ Source: 2015 St. John's International Airport Annual Report: <http://St. John's International Airportannualreport.com/#financial-report/1>

³⁵ Excluding aircraft parking fees.

³⁶ Inferences made based on airport concession sales in the annual report as well as taxi and related transportation rates reported on St. John's International Airport's website. Source: 2015 St. John's International Airport Annual Report: <http://St. John's International Airportannualreport.com/#financial-report/1>

Appendix I: Glossary of Terms

Air Traveller Security Charge (ATSC): A fee collected by the Federal Government from air travellers to help fund security improvements at Canadian airports. The fee varies by region of travel and is charged to the passenger per enplanement.

Contract Work: Any work which is done for a company by an individual who is not on the payroll or work done for a company by another company. Generally speaking, firms will contract out work in areas in which they do not have expertise or when there are cost advantages to doing so.

Direct Employment: Direct employment is employment that can be directly attributable to the operations in an industry, firm, etc. It is literally a head count of those people who work in a sector of the economy. In the case of the airport, all of those people who work on airport property and in an aviation related capacity would be considered direct employment.

Economic Activity: (also Output, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, the process of transforming the factors of production into goods and services desired for consumption.

Economic Output: (also Economic Activity, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, it is defined as the process of transforming the factors of production into goods and services desired for consumption.

Employment Impact: Employment impact analysis determines the economic impact of employment in terms of jobs created and salaries and wages paid out. In the case of the airport, the direct, indirect, induced and total number of jobs or person years created at the airport is examined to produce a snapshot of airport operations.

Full Time Equivalent (FTE): (also Person Year) One full time equivalent (FTE) year of employment is equivalent to the number of hours that an individual would work on a full time basis for one year. In this study we have calculated one full time equivalent year to be equivalent to 1,832 hours. Full time equivalent years are useful because part time and seasonal workers do not account for one full time job.³⁷

GDP: (also value-added) A measure of the value added by labour and capital services used to produce final goods and services, as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.

Ground Transportation: Ground Transportation at the airport includes any vehicles which transport passengers from the airport to the cities or from the cities to the airport. This would include taxicab service, limousine service and hotel van service. Valet services as well as skycaps are included in this category.

³⁷ *The Dictionary of Modern Economics*, David W. Pearce, General Editor, The MIT Press, Cambridge Mass., 1984

Indirect Employment: Indirect employment is employment which results because of direct employment. For the airport, it would include that portion of employment in supplier industries which are dependent on sales to the air transport sector. In some cases, contract work would be considered indirect employment.

Induced Employment: Induced employment is employment created because of expenditures by direct and indirect employees.

Multiplier Analysis: Analysis using economic multipliers in which indirect and induced economic impacts is quantified. Essentially, a multiplier number is applied to the "directly traceable economic impact" to produce indirect and total effects (see Multiplier.)

Multiplier: Economic multipliers are used to infer indirect and induced effects from a particular sector of the economy. They come in a variety of forms and differ in definition and application. A multiplier is a number which would be multiplied by direct effects in order to calculate indirect or induced effects. In the case of the airport, as in many other cases, multipliers can lead to illusory results, and thus must be used with great care.

Airport Improvement Fee (AIF): A fee collected by the airport authority from passengers to help with funding capital improvements at the airport. In some regions of Canada, this is also referred to as the Passenger Facility Charge (PFC).

Seasonality: Seasonality results when the supply and demand for a good is directly related to the season in which is consumed. For example, ski resorts experience changes in net income as a result of seasonality. Airports and airport services also experience seasonality as a result of vacation times for families (typically during the summer) and/or temperatures abroad (typically at Christmas time). As a result of seasonality in demand for flights, some air carriers increase frequency of flights to certain areas during the busy season.

Tenant: A firm which pays a lease to a leasing company or to the airport authority directly.

Value-Added: (also GDP) A measure of the money value of final goods and services produced as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.



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The 2016
Economic
Impact of the
Thunder Bay Airport



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THE ECONOMIC IMPACT OF THE THUNDER BAY AIRPORT: 2016

prepared for

**THE THUNDER BAY INTERNATIONAL
AIRPORTS AUTHORITY INC.**

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EXECUTIVE SUMMARY

The Thunder Bay Airport is an economic engine generating hundreds of millions of dollars in local economic activity while providing one of the largest employment generators for the region. The Thunder Bay International Airports Authority is a not-for-profit, non-government corporation whose vision is to operate this community asset to enhance economic growth and air access to Thunder Bay and northwestern Ontario.

This report documents the 2016 economic impact activity generated by 64 on-airport firms and their subsidiaries. The impact is reported in terms of full-time equivalent employment (FTEs), labour income and economic output. Direct, indirect and induced forms of activity have been considered. The response rate to the survey questionnaire was exceptional: a 97 percent completion rate for the data sought.

In 2016, the Thunder Bay Airport supported a significant level of economic activity:

Direct Impact

<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
2,310 †	\$112 million	\$142 million	\$254 million

Total Impact

<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
5,067	\$257 million	\$389 million	\$646 million

† 1554 jobs are located on the airport.

The Thunder Bay Airport generated over 645 million dollars of economic output : roughly 15 percent of Thunder Bay's total 2016 GDP.

The Airport is one of the Top 10 Centres of Employment in the Thunder Bay area.

The on-airport economic benefits are distributed :

	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
Air Carriers	42%	46%	45%	45%
Airport & ATB C'ssionaires	11%	13%	10%	11%
General & Corporate Av	16%	16%	32%	25%
Air Cargo	5%	3%	2%	3%
Government Services	16%	15%	6%	9%
On-Airport, Non-Aviation	10%	6%	6%	6%

Each 1000 E&D passengers creates 6.3 full time jobs.

Each 1000 E&D passengers creates \$319,000 of annual labour income.

Each 1000 E&D passengers creates \$802,000 of economic output activity.

Each time a sunspot charter B737 lands and takes off, it generates 1.2 FTEs;
\$61,000 of annual labour income; and \$152,000 of economic output activity.

Each time a Bombardier Q400 lands and takes off, it supports 0.5 FTEs;
\$25,000 of annual labour income; and \$63,000 of economic output activity.

In 2016, the Thunder Bay Airport generated \$407 million in federal and provincial taxes.

This total is divided:

Federal Government	\$228 million
Province of Ontario	\$179 million

THE ECONOMIC IMPACT OF THE THUNDER BAY AIRPORT : 2016

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Definition of Terms

ATB – airport terminal building.

FTEs – Full time equivalent workers, based upon a 40 hr work week.

E&D passengers – enplaned and deplaned passengers.

GDP – Gross domestic product; the value of all goods and services required to produce a given service or product.

Economic Output – an aggregate of the labour income plus other expenditures totals which can be considered as the contribution to GDP.

Jobs – the number of workers gainfully employed, either full-time (FTE) or part-time.

Labour Income – the annual salaries plus benefits of a given workforce, which are generally circulated within the community where that workforce resides.

On-Airport, Non-Aviation – refers to those businesses physically located on airport property but do not have or produce an aviation-related product or service.

One-Time, New Construction – consists of on-airport, new capital construction (ie. new bricks and mortar facilities and/or the refurbishment of existing infrastructure).

Other Expenditures – other annual, non-labour expenditures, by firms for goods and services, excluding labour costs. These monies generally circulate within the community where those purchases are made.

Non-Resident Visitors – passengers arriving at the airport from jurisdictions outside the greater Thunder Bay area (ie. other parts of Ontario, other provinces, trans-border or international passengers).

Transborder – US originating or departing passengers.

ULD – Unit Load Device, a container used in the large-scale movement of air cargo, typically in support of dedicated freighter aircraft.

Chapter I

Introduction

1.1 About this report

This report was undertaken by RP Erickson & Associates of Calgary for the Thunder Bay Airport International Airports Authority (TBIAA). The purpose of the study is to document the economic impact of the Thunder Bay Airport during the 2016 calendar year. This is the third economic impact study which the consultants have undertaken for the TBIAA following our first report in 2008 and again in 2011. Econometric Research Ltd of Hamilton was contracted to assess the federal and provincial tax impact of the airport. These findings are included in the Executive Summary, with the complete report contained in Appendix III.

Impact assessments are valuable in that they serve to heighten business, community and political awareness as to the economic importance of an airport within a local economy. This study can also be viewed as a base-line against which future developments may be measured.

Any questions related to this study should be directed to Mr. Ed Schmidtke, President & Chief Executive Officer, Thunder Bay International Airports Authority (807) 473-2602.

1.2 Background

The Thunder Bay Airport (YQT) is operated and managed by the TBIAA under a long-term lease agreement with the federal government. The TBIAA is a non-share, private Corporation - no public funding is received by the Corporation for either its operations or capital projects. The airport is located on the southwestern reaches of the City of Thunder Bay. The airport is one of the 26 National Airport System (NAS) airports in Canada.

In 2016 scheduled air passenger activity at YQT totalled 805,000 passengers. The airfield features a significant general aviation component, with a number of on-site corporate, charter, maintenance, training and speciality aviation services companies. Flight training, largely due to the major presence of Confederation College, accounts for roughly 50 percent of the annual aircraft movements on the airport.

The airport property generally exhibits a flat topography. The reference elevation is 653' above mean sea level. The airport operates on a 24-hour, 7-day per week basis. The main asphalt runway (07-25) is 7320 x 200'; the crosswind runway (12-30) is 5300 x 150'. The airfield has runway and approach lighting; navigation and landing aids include a precision approach ILS runway 07 and GPS approaches to Runways 25, 12 and 07. The Nav Canada Tower provides local air traffic control and is operated on a 16 hr per day basis - a facility which remains a significant airport asset.

The Thunder Bay Airport is an economic engine for its community pumping hundreds of millions of dollars of economic activity into the local economy, as well as providing fiscal benefits to the provincial and national economies. The Thunder Bay region exhibits a range of air traffic 'attractors', such as: an entrepreneurial-minded business community which has fostered a diversified local economy; a well-educated workforce; in addition to Thunder Bay's attractive location as a convention and tourism destination. These attractors have created a stable and growing base of demand for air travel.

1.3 Methodology

The economic impact of the Thunder Bay Airport has been measured in terms of employment (full-time equivalents or FTEs), labour income, other expenditures and economic output. These leading indicators are expressed in dollar values and person-years of employment. Direct, indirect and induced forms of activity have been considered for employment and economic output. Data was obtained for 2016 based upon a twelve month period December 2015 to November 2016.

The data compiled in the 2016 study was obtained via a questionnaire circulated amongst 64 firms that operate on the airport. It is noted that several companies, particularly the airport terminal building (ATB) concessionaires, often operate subsidiary businesses under separate venues, as do several other on-site firms. In all cases, data was sought for an entire operation even though a business entity may have more than one on-airport outlet, business entity or location.

The survey population was separated into 8 sub-categories; the impacts associated with:

- the air carriers and their support services;
- the airport support group and the terminal building concessionaires;
- the general and corporate aviation communities;
- the air cargo sector;
- on-site government agencies;
- on-airport, non-aviation firms;
- the impact associated with the spending activities of non-resident air passengers arriving in the Thunder Bay area via the airport; and,
- the 'one-time' economic impacts of new construction projects located on the airport.

Each of the above categories is described in more detail in Chapter II (Sections 2.1 through 2.8). Section 2.9 displays the aggregate economic impact of the Thunder Bay Airport for 2016.

In conducting the interview/questionnaire process, key principals at each targeted firm were visited by the consultants, where: the underlying rationale for undertaking the study was explained; the objectives of the study could be examined; the value of their participation fully explored; and, where the confidentiality of their data could be assured.

This approach resulted in an exceptional 97 percent response rate. Of the 64 firms surveyed, 62 completed the questionnaire with all firms providing employment data. Incomplete returns were estimated comparing the completed results of similar-sized firms involved in like commercial pursuits.

The impact of non-resident passenger spending was undertaken by utilizing the Conference Board of Canada's TEAM econometric model, as explained in Section 2.7.

1.4 The economic impact modelling process

Economic impact analysis is based on the premise that operations within various industries in an economy are closely related or linked to each other; that is, an increase in the activity levels in one industry will produce a positive 'domino' or rippling effect on other industries. Economists discuss the impact that one sector has on another in terms of indirect and induced effects. The total economic impact is the sum of the direct, indirect and induced effects.

The most common economic measures used in economic impact surveys are: employment in terms of jobs and labour income alongside economic output – essentially, the contribution made to gross domestic product. For this study, the consultants have chosen to display labour income as a separate category of economic output.

In this report:

Direct economic effects are the benefits attached to labour and expenditure activities within Ontario;

Indirect economic effects are the result of the increase in goods and services produced largely within the Ontario economy in support of direct activities;

Induced economic effects arise from the spending power of direct and indirect employees and largely benefit local businesses;

Employment is measured in terms of full-time equivalents (FTEs). FTEs are expressed in person-years and labour income by dollar value. Employment multipliers have been used to generate the associated indirect and induced impacts;

Labour Income is the total payroll expense including wages, salaries and employee benefits. Labour income multipliers have been used to generate the associated indirect and induced impacts;

Other Expenditures is defined as the amount of dollar value to the local economy created through expenditure activity. A multiplier has been used to generate the indirect and induced impacts; and,

Economic Output is an aggregate of labour income and other expenditure totals, and can be considered as a contribution to gross domestic product (GDP). No multiplier effort has been applied to this category.

The aviation industry is a good example of a highly integrated sectoral activity which has significant linkages throughout a domestic economy. The multipliers associated with aviation are higher than most primary sectors and, as such, the potential impact to an economy linked to an increase or expansion in aviation activity is significant.

1.5 A word about the multipliers used in this report

Multipliers are used to *infer* indirect and induced economic activity from a measure of direct economic activity. Multipliers are not directly observed; they are inferred from an economic model. By far the direct measure is the most accurate. Readers are advised that multiplier analysis remains an imprecise econometric technique and that caution be used in interpreting the indirect and induced impacts contained in this report. However, multipliers are virtually the only cost-effective tool available to identify the overall impact of a sectoral activity within an economy.

The consultants note that the Ontario Bureau of Statistics does not create provincial economic multipliers. The consultants have chosen the latest available set of Ontario-specific multipliers produced by Statistics Canada, National Input-Output Multipliers. Multipliers have been selected to reflect specific sectoral activity; namely, Air Transportation, Retail Trade and Professional & Technical Services.

The closed Statistics Canada model utilized accounts for economic activity occurring within the province. As such, we note that some 'leakage' of benefits is likely occurring outside the Thunder Bay area as well as Ontario as a whole which may not be accounted for in this report. This reinforces our premise of undertaking a conservative approach in assessing the overall impact of the Thunder Bay Airport. Thus, the findings displayed in this report can be viewed as the minimum economic impact generated by YQT over 2016.

Chapter II

The 2016 Economic Impact of the Thunder Bay Airport

2.1 Economic Impact of the Air Carrier & Support Services Sector : 2016

As could be expected, the air carrier sector is a dominant contributor to the economic activity generated by the Thunder Bay airport. The major firms operating within this category include scheduled and charter airlines, ground and passenger handling firms, food catering, aircraft grooming, line maintenance and re-fuelling companies. Noted is a seasonal variation with regard to sunspot charter activity which occurs at YQT throughout the winter months.

Table 1 depicts the economic impact activity undertaken by the Air Carrier & Support Services sector in 2016.

Table 1.

Air Carrier & Support Services Sector :
2016 Economic Impact
 (in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
505	\$31.150	\$42.980	\$74.130
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
1180	\$74.791	\$103.797	\$178.588

For 2016, a total of 505 full-time equivalent employees can be attributed to the Air Carrier & Support sector operating at YQT – within this category 585 jobs are located on the airport. Their aggregate labour income was identified at \$31.150 million. Other Expenditures for this sector were \$42.980 million. The direct Economic Output was \$74.130 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the considerable impact of Thunder Bay's air carrier sector can be realized. Within the Thunder Bay area 1180 full-time jobs are dependent upon it, generating an annual labour income of \$74.791 million. Other Expenditures in this sector were \$103.797 million. In 2016, the total Economic Output benefit created by air carriers and their support activities at the Thunder Bay airport was \$178.588 million.

2.2 Economic Impact of the Airport Support & ATB Concessionaire Sectors : 2016

This Airport Support sector includes the not-for-profit Thunder Bay International Airports Authority and its third-party contractors, as well as, the Canadian Air Transport Security Authority and The Canadian Corps of Commissionaires. Also included is Nav Canada, the country's air navigation service provider operating the Air Traffic Control Tower and on-site Flight Service Station.

Within the Thunder Bay Airport Terminal Building (ATB), 9 firms were identified as providing services to passengers arriving or departing by air, alongside passenger 'meeters & greeters' and airport employees using ATB amenities. The number of companies canvassed does not correlate with the actual number of outlets offering ATB services since some firms operate subsidiary or satellite venues. The totals of this sub-sector are dominated by the car rental firms; important too, are the ground transportation and food & beverage providers.

Table 2 depicts the economic impact activity undertaken by the ATB concessionaire sector in 2016.

Table 2.

Airport Support & ATB Concessionaire Sector :
2016 Economic Impact
 (in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
197	\$12.251	\$11.670	\$23.921
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
472	\$28.606	\$28.183	\$56.789

For calendar year 2016, a total of 197 full-time equivalent employees can be attributed to the concessionaires operating within the Thunder Bay ATB – within this category 266 jobs are located on the airport. Their aggregate labour income was identified at \$12.251 million, lower on average than most other airport workers and reflecting the lower earnings bracket of many workers in this sector. Other Expenditure activities were \$11.670 million. The direct Economic Output was \$23.921 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the overall economic impact of the ATB concessionaires can be realized. Within the Thunder Bay area 472 full-time jobs are dependent upon this sector, generating an annual labour income of \$28.606 million. Other Expenditure activities were \$28.183 million. In 2016, the total Economic Output activity created by ATB activities was \$56.789 million.

2.3 Economic Impact of the General & Corporate Aviation Sectors : 2016

Thunder Bay's General Aviation (GA) firms undertake a variety of aviation-related activities, including: flight training; aircraft sales and leasing; a range of specialized support services; alongside a maintenance/overhaul/repair capability that has grown in scale and expertise to a noteworthy national presence. The airport is home to several government flight departments and a number of Fix Base Operators (FBOs) which handle itinerant corporate air traffic and/or re-fuelling activities. The Royal Canadian Air Force (RCAF) has a regular presence at YQT often choosing the airport to undertake pilot training/familiarization in a complex commercial aviation environment – the RCAF presence is a welcomed benefit for on-site aviation fuel sales.

Table 3 depicts the economic impact activity undertaken by the GA and Corporate sector in 2016.

Table 3.

General & Corporate Aviation Sector : 2016 Economic Impact (in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
191	\$10.923	\$30.414	\$41.337
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
446	\$26.226	\$73.450	\$99.676

For 2016, a total of 191 full-time equivalent employees can be attributed to the general and corporate aviation sector operating at YQT – within this category 214 jobs are located on the airport. Their aggregate labour income was identified at \$10.923 million. Other Expenditure activities were \$30.414 million. The direct Economic Output was \$41.337 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the significant impact of Thunder Bay's GA and corporate sectors can be realized. Within the Thunder Bay area 446 full-time jobs are dependent upon it, generating an annual labour income of \$26.226 million. Other Expenditures activity was \$73.450 million. In 2016, the total Economic Output activity created by general and corporate aviation at the Thunder Bay airport was \$99.676 million.

2.4 Economic Impact of the Air Cargo Sector : 2016

Thunder Bay's current air freight industry is currently dominated by the express courier and mail segment. The airport is home to several national freight firms whose interests are largely in support of Thunder Bay's express courier sector.

Table 4 depicts the economic impact activity undertaken by the Air Cargo sector in 2016.

Table 4.

Air Cargo Sector : 2016 Economic Impact
(in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
54	\$2.025	\$2.125	\$4.150
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
126	\$4.862	\$5.132	\$9.994

For 2016, a total of 54 full-time equivalent employees work in the air cargo sector – within this category 66 jobs are located on the airport. Their aggregate labour income was identified at \$2.025 million. Other Expenditure activities were \$2.125 million. The direct Economic Output was \$4.150 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the overall impact of YQT's air freight sector can be realized. Within the Thunder Bay area 126 full-time jobs are dependent upon the movement of air cargo, courier and mail products, generating an annual labour income of \$4.862 million. Other Expenditures activity was \$5.132 million. In 2016, the total Economic Output benefit created by YQT's air freight sector was \$9.994 million.

2.5 Economic Impact of Government Services Sector : 2016

This sector includes all of the federal or provincial government agencies operating on the airport. The significant activities of the Ontario Ministry of Natural Resources & Forestry are included in this sector – a key function of the agency is to oversee fire-fighting activity over a large swath of northwestern Ontario from their Thunder Bay base of operations. The department is in the process of a major expansion of its facilities.

Table 5 depicts the economic impact activity undertaken by the Government Services sector in 2016.

Table 5.

Government Services Sector : 2016 Economic Impact (in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
190	\$10.513	\$5.392	\$15.905
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
455	\$24.548	\$13.022	\$37.570

For 2016, a total of 190 full-time equivalent employees can be attributed to this sector – within this category 218 jobs are located on the airport. Their aggregate labour income was identified at \$10.513 million. Other Expenditure activities were \$5.392 million. The direct Economic Output was \$15.905 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the significant impact of the airport & government support sector can be realized. Within the Thunder Bay area 455 full-time jobs are dependent upon it, generating an annual labour income of \$24.548 million. Other Expenditure activity was \$13.022 million. In 2016, the total Economic Output activity created by the airport support & government services sector was \$37.570 million.

2.6 Economic Impact of the On-Airport, Non-Aviation Sector : 2016

The attractiveness of the 180 acres of serviced industrial lands on the Thunder Bay airport is reflected in the growing importance of the On-Airport, Non-Aviation sector. Currently 7 firms are included in this sub-group. Thunder Bay has enjoyed considerable growth over the past several years - as business and commerce continues to flow along the Highway 61 'airport corridor', airport lands will become increasingly attractive.

Table 6 depicts the economic impact activity identified in the On-Airport, Non-Aviation sector in 2016.

Table 6.

On-Airport, Non-Aviation Sector : 2016 Economic Impact
(in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
115	\$4.424	\$5.919	\$10.343
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
276	\$10.330	\$14.294	\$24.624

In 2016, a total of 115 full-time equivalent employees are attributed to the On-Airport, Non-Aviation sector – within this category 148 jobs are located on the airport. Their aggregate labour income was identified at \$4.424 million. Other Expenditure activities were \$5.919 million. The direct Economic Output was \$10.343 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the significant impact of the On-Airport, Non-Aviation sector can be realized. Within the Thunder Bay area 276 full-time jobs are dependent upon it, generating an annual labour income of \$10.330 million. Other GDP activity was \$14.294 million. In 2016, the total Economic Output activity created by the sector at the Thunder Bay airport was \$24.624 million.

2.7 Economic Impact generated by Airport Visitor Spending : 2016

Spending by visitors travelling by air to the Thunder Bay area is an important contribution of the overall economic impact of the airport. Visitors by air are defined as domestic, transborder or international in nature depending upon their point of origin. A smaller sub-set of visitor spending are the expenditures made by cockpit and cabin crews of air carriers who overnight or 'lay-over' at hotels within the Thunder Bay area for operational or crew rest reasons; additionally, passengers who have been delayed and require overnight accommodation have also been considered in the 'overnight expenses' category. An additional source of non-resident spending is attached to the foreign students attracted to the Thunder Bay area by the local community college which has a significant on-site aviation campus.

In attempting to capture the impact attributable to this sector, the consultants have chosen the Conference Board of Canada's Tourism Economic Assessment Model [TEAM]. The TEAM model is a sophisticated, computer-based econometric tool designed to assess the impact of non-resident spending upon a local or provincial economy. The TEAM output is presented and integrated into the overall study results. From Table 7 an input total of \$109.540 million of non-resident visitor/overnight aircrew spending was entered into the TEAM model utilizing Canadian Tourism Committee data supported by Tourism Thunder Bay-derived average length of stay and per diem rates for each visitor category. The model produced the results displayed in Table 8.

Table 7.

**Spending by Non-Resident Visitors
Arriving by Air : 2016**

	<u>Total Spending</u> ^{††}
Non-resident visitors arriving by air [†]	\$104,365,000
Aviation student & fire fighter spending ^{††}	\$2,625,000
Flightcrew overnight expenses ^{†††}	<u>\$2,550,000</u>
Total	\$109,540,000

[†] Thunder Bay International Airports Authority.

^{††} City of Thunder Bay Tourism Division.

^{†††} RP Erickson & Associates.

Table 8 depicts the economic impact attributable to non-resident, airport visitor spending in the Thunder Bay area in 2016.

Table 8.

**Spending by Non-Resident Visitors arriving by Air :
2016 Economic Impact**
(in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
945	\$30.810	\$31.445	\$62.255
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
1813	\$66.562	\$127.794	\$194.356

For 2016 within the province, a total of 945 full-time equivalent employees can be attributed to non-resident, airport visitor spending. The aggregate labour income was identified at \$30.810 million. Other Expenditure activities were \$31.445 million. The direct Economic Output was \$62.255 million.

When the TEAM-generated multipliers are applied to the above direct economic activity, the significant impact of non-resident, airport visitor spending upon the province can be realized. This spending generated 1813 full-time jobs, generating an annual labour income of \$66.562 million. Other Expenditure activity was \$127.794 million. In 2016, the total Economic Output activity created by this sector on the provincial economy was \$194.356 million.

2.8 The 'One-Time' Economic Impact of New Construction : 2016

The 'one-time' impact of the economic contribution accompanying capital spending on the airport is consequential. Capital spending arises from the TBIAA's capital construction program alongside a range of tenant facility new construction and/or expansion projects. This capital investment has provided work for the local construction industry and Ontario's construction materials sector.

In 2016, an appreciable \$25.228 million of capital construction was undertaken at YQT. A major piece of this investment was a roughly \$8 million TBIAA re-surfacing project for the crosswind R12-30 runway. Noteworthy too has been the construction of aviation facilities by the Ontario Ministry of Natural Resources & Forestry alongside a new on-site hangar development by Hydro One.

Table 9 depicts the 'one-time' economic impact activity associated with capital spending on the Thunder Bay airport in 2016.

Table 9.

One-Time, New Construction at the Thunder Bay Airport :
2016 Economic Impact
 (in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
113	\$9.357	\$12.482	\$21.839
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
161	\$12.050	\$20.814	\$32.864

For 2016, a total of 113 annual full-time equivalent construction and support service jobs can be attributed to YQT's capital construction spending. The aggregate labour income was identified at \$9.357 million. Other Expenditure activities were \$12.482 million. The direct Economic Output was \$21.839 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the significant impact of the on-site construction sector can be realized. Within the Thunder Bay area, 161 full-time jobs were dependent upon it generating an annual labour income of \$12.050 million. Other Expenditure activity was \$20.814 million. In 2016, the total Economic Output activity created by the new airport construction was \$32.864 million.

2.9 The Aggregate Economic Impact of the Thunder Bay Airport : 2016

At the Thunder Bay Airport, some 64 commercial firms or government agencies were interviewed and their 2016 economic activities assessed. Additionally, the impact of non-resident visitor spending in the Thunder Bay area and the economic benefits associated with 'one-time' capital construction expenditures for 2016 have been combined with the data in Sections 2.1 through 2.8 to produce Table 10.

Table 10 depicts the aggregate economic impact of the Thunder Bay Airport for 2016.

Table 10.

Aggregate Economic Impact of the Thunder Bay Airport : 2016 (in millions, except FTEs)

<i>Direct Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
2,310	\$111.453	\$142.427	\$253.880
<i>Total Impact</i>			
<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
5,067	\$256.874	\$388.662	\$645.536

For 2016, a total of 2310 annual full-time equivalent employees can be attributed to the Thunder Bay airport; it is noted that within this total – 1554 jobs are located on the airport. The aggregate labour income of this workforce was identified at \$111.453

million. Other Expenditure activity was \$142.427 million. The direct Economic Output created by the Thunder Bay airport was \$253.880 million.

When the indirect and induced multipliers are applied to the above direct economic activity, the consequential impact of the airport can be realized. The airport creates 5,067 full-time jobs, generating an annual labour income of \$256.874 million. Other Expenditures activity was \$388.662 million. In 2016, the total Economic Output benefit created by the Thunder Bay airport was \$645.536 million.

2.10 Discussion

In addition to providing over 5000 jobs, the Thunder Bay Airport's contribution to the GDP of the municipal area was nearly \$650 million. This sum amounted to roughly 15 percent of Thunder Bay's 2016 forecast GDP of \$4.096 billion¹. In reviewing the major employers in the Thunder Bay area, it is noted that the airport is amongst the Top 10 Centres of Employment.

The distribution of the Economic Impact by sub-category is presented in Table 11. This distribution has been calculated on the basis of on-airport activities and does not include the totals created by non-resident visitor spending and the one-time impact associated with new construction.

¹ Conference Board of Canada (Estimate), January 2016.

Table 11.

Distribution of Economic Impacts

The economic benefits of the on-airport firms are distributed :

	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Expenditures</u>	<u>Economic Output</u>
Air Carriers	42%	46%	45%	45%
Airport & ATB C'ssionaires	11%	13%	10%	11%
General & Corporate Av	16%	16%	32%	25%
Air Cargo	5%	3%	2%	3%
Government Services	16%	15%	6%	9%
On-Airport, Non-Aviation	10%	6%	6%	6%

Data Generalities – 2016

When the direct economic impact totals are compared against Thunder Bay's 2016 enplaned and deplaned [E&D] passenger movement data (805,000), the results provide some interesting generalities.

Within the Thunder Bay area ² :

Each 1000 E&D passengers creates 6.3 full time jobs.

Each 1000 E&D passengers creates \$319,000 of annual labour income.

Each 1000 E&D passengers creates \$802,000 of economic output activity.

* * * * *

² See Appendix III for a methodology for the above data.

Each time a sunspot charter B737 lands and takes off, it generates 1.2 FTEs;
\$61,000 of annual labour income; and \$152,000 of economic output activity.

* * * * *

Each time a Bombardier Q400 lands and takes off, it supports 0.5 FTEs;
\$25,000 of annual labour income; and \$63,000 of economic output activity.

* * * * *

Table 12 reviews the major employers in the Thunder Bay area; it is noted that the airport is the second largest centre of employment in the region.

Table 12.

TOP 10 EMPLOYERS IN THUNDER BAY

Thunder Bay Regional Health Sciences Centre	2,825
Thunder Bay Airport †	2,310
Lakehead District School Board	2,200
St Joseph's Care Group	2,150
Lakehead University	2,100
City of Thunder Bay	1,855
Government of Ontario	1,849
TB Catholic District School Board	1,500
Bombardier Transportation	1,100
Confederation College	785

† Direct jobs including part-time and full-time employment

(Source : Thunder Bay Community Economic Development
Commission and RP Erickson & Associates)

In addition to the quantifiable economic benefits displayed in this report, the Thunder Bay Airport provides a wide range of ancillary, qualitative benefits to residents of the Thunder Bay area and the province as a whole. These range from societal advantages attached to the travel, tourism and transportation functions of the airport, through expansive career and hobby development possibilities to opportunities for volunteerism.

The Thunder Bay airport also provides critical access for air-related environmental and emergency response services; none more importantly than in providing all northwestern Ontario residents with access to Thunder Bay's extensive health care resources through the on-site Ornge fixed wing aircraft and helicopter capabilities.

2.11 Conclusions

In 2016, the Thunder Bay Airport supported a considerable level of economic activity, primarily in the Thunder Bay area but also throughout the province and, to a lesser extent, the national economy.

In direct terms, the airport:

- contributed over 2300 full-time jobs;
- generated well over \$100 million in labour income; and,
- created nearly \$150 million in economic output.

When indirect and induced forms of economic activity are included, the airport generates:

- over 5000 full-time jobs;
- over \$250 million in annual labour income; and,
- nearly \$650 million dollars of GDP activity.

***Clearly – the Thunder Bay Airport is
an important economic and social contributor
to the City of Thunder Bay and northwestern Ontario.***

APPENDIX I

DATA BREAKDOWN

Direct Impact

	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Exp'tures</u>	<u>Economic Output</u>
Air Carriers & Support Services	505	\$31.150	\$42.980	\$74.130
Airport Support & ATB C'ssionaires	197	\$12.251	\$11.670	\$23.921
General & Corporate Aviation	191	\$10.923	\$30.414	\$41.337
Air Cargo	54	\$2.025	\$2.125	\$4.150
Government Services	190	\$10.513	\$5.392	\$15.905
On-Airport, Non-Aviation	115	\$4.424	\$5.919	\$10.343
Non-resident Visitor Spending	945	\$30.810	\$31.445	\$62.255
New Construction	<u>113</u>	<u>\$9.357</u>	<u>\$12.482</u>	<u>\$21.839</u>
Totals	2,310	\$111.453	\$142.427	\$253.880

(in millions, except FTEs)

Total Impact

	<u>FTEs</u>	<u>Labour Income</u>	<u>Other Exp'tures</u>	<u>Economic Output</u>
Air Carriers & Support Services	1180	\$74.791	\$103.797	\$178.588
Airport Support & ATB C'ssionaires	299	\$20.949	\$22.990	\$43.939
General & Corporate Aviation	446	\$26.226	\$73.450	\$99.676
Air Cargo	126	\$4.862	\$5.132	\$9.994
Airport Support & Gov't Services	455	\$24.548	\$13.022	\$37.570
On-Airport, Non-Aviation	276	\$10.330	\$14.294	\$24.624
Non-resident Visitor Spending	1813	\$66.562	\$127.794	\$194.356
New Construction	<u>472</u>	<u>\$28.606</u>	<u>\$28.183</u>	<u>\$56.789</u>
Totals	5,067	\$256.874	\$388.662	\$645.536

(in millions, except FTEs)

The above direct data was collated from the survey questionnaire : as detailed in Section 1.3, with the exception of the Non-resident Spending category which was derived from the TEAM econometric model as explained in Section 2.8; and, 'One-Time' New Construction Spending on the Thunder Bay Airport, as discussed in Section 2.9.

APPENDIX II

GENERALITIES METHODOLOGY

Each 1000 E&D passengers creates 6.3 full time jobs.
(5067 FTEs ÷ 805,000 annual E&D passengers x 1000)

Each 1000 E&D passengers creates \$319,000 of annual labour income.
(\$256.874 million annual labour income ÷ 805,000 annual
E&D passengers x 1000)

Each 1000 E&D passengers creates \$802,000 of economic output activity.
(\$645.536 million economic output ÷ 805,000 annual E&D passengers x 1000)

***Each time a sunspot charter B737 lands and takes off, it generates 1.2 FTEs;
\$61,000 of annual labour income; and \$152,000 of economic output activity.***
*(Sunwing B737-800 model @ 189 seats or a multiple of .19 applied against
the 1000 E&D passenger data set)*

***Each time a Bombardier Q400 lands and takes off, it supports 0.5 FTEs;
\$25,000 of annual labour income; and \$63,000 of economic output activity.***
*(WestJet Encore Q400 at 78 seats or a multiple of .078 applied against
the 1000 E&D passenger data set)*

APPENDIX III

THE TAX IMPACTS OF THE THUNDER BAY AIRPORT

The Tax Impacts of the Thunder Bay Airport

Introduction

Econometric Research Limited was retained on sub-contract to RP Erickson & Associates to estimate the tax impacts of aviation activities upon the federal and provincial treasuries generated by the activities of the Thunder Bay Airport for 2016.

The impact model utilized to estimate the tax impacts is a special application of a generic model (SEIM: Ontario) developed by Econometric Research Limited. It is a unique model that captures the economic impact of program or activity expenditures at the provincial level (Ontario) and the national level. The model is based on a proprietary technology which integrates input-output analysis and location theory.

The model utilizes a large set of economic and technical databases that are published by Statistics Canada. A short list includes the inter-provincial input-output tables, employment by sector, taxes by type of tax and the level of government collecting it, prices of products, energy used in physical and energy units, etc.

The conceptual basis and rationale of the tax assessment model used in this report is to estimate the taxes generated by the Thunder Bay Airport is based on the simple fact that any economy is made up of many interacting sectors and that any expansion in any one sector typically involves the expansion of other sectors in many other regions in Ontario and elsewhere in the Canadian national economy. For example, the wages spent by workers at the airport in Thunder Bay on, by example a dinner out, would require agricultural or alcohol products from other regions in Ontario or perhaps elsewhere in Canada. Farmers would require inputs such as fertilizers, tractors and fuel; typically these products would come from outside Thunder Bay and even Ontario. These spin-off effects involve several rounds of expansions in numerous industrial sectors that are connected to the original expenditures.

In this report, the estimated tax assessments generated by the Thunder Bay Airport have been made at both the provincial and federal level. The tax assessments shown under the following heading are based upon the aggregate of the direct, indirect and induced impacts created by the Thunder Bay Airport in 2016; a sum reported as the Total Economic Output - \$646 million, and displayed in the Executive Summary of this report. As an aside, Statistics Canada does not produce Input Output tables for any sub-provincial area; as such, we have created the SEIM: Ontario model to assemble tax assessments irrespective of where in the province the activity is produced.

The Results

As our analysis clearly depicts the provincial and federal governments derive substantial revenues related to the aviation activities generated by the Thunder Bay Airport. The federal government derives the majority – receiving annual tax revenues of roughly \$227.7 million; whereas, the provincial government derives a total of \$179.4 million.

For 2016, the SEIM: Ontario model assesses a total of \$407.1 million which was generated by the economic activities of the airport in 2016 as shown in Table 1. The largest federal contributions are gained from Personal Income Taxes (\$156.4 million) and the Harmonized Sales Tax (\$37.6 million). Equally, the Province of Ontario realized \$94.3 million from Personal Income Taxes and \$60.2 million from the HST. The impact results are presented in Table 1 below:

This tax base is sustained by the Thunder Bay Airport's existence and its overall economic impact on the Ontario and Canadian economies - similar totals could be expected annually based on the airport repeating this level of activity.

Table 1.

Tax Impacts of the Thunder Bay Airport (Thousands of 2016 Dollars)

	Federal	Provincial	Total
Personal Income Tax	\$156,395	\$94,340	\$250,735
Harmonized Sales Tax	\$37,615	\$60,185	\$97,800
Federal Excise Taxes	\$1,062	\$0	\$1,062
Corporate Profit Taxes	\$32,610	\$24,025	\$56,635
Tobacco & Liquor Tax	\$0	\$883	\$883
Total	\$227,682	\$179,433	\$407,115

Source: Econometric Research Limited

TORONTO PEARSON'S ECONOMIC IMPACT

A report for the Greater Toronto Airports
Authority

20 October 2016



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1 INTRODUCTION

1.1 Background and objective

Part of the mandate of the Greater Toronto Airports Authority (GTAA) is to operate and develop Toronto Pearson International Airport to enhance the economic development of the community.

To assess the economic impact of the airport, over the years, the GTAA and its predecessor (Transport Canada) have conducted many economic impact studies of Toronto Pearson International Airport. The last economic impact assessment was undertaken in 2006 but since then Toronto



32%

Increase in passengers
since 2006.

Pearson Airport has grown substantially, from 31 million passengers to more than 41 million in 2015, representing a 32% increase. The airport has cemented its status as a global hub airport with international passenger volumes increasing at an even faster rate from 17.5 million in 2006 to 25.0 million in 2015, representing a 46% increase. At the same time connecting passenger volumes have increased from 7.1 million in 2006 to 12.8 million in 2015, an increase of 82%.¹ The airport has also increased the number of direct international destinations by 14% from 126 in 2006 to 144 in 2015.

These figures illustrate that the airport now plays a different role in the economy as connectivity has increased substantially since the last economic impact assessment.

In 2014, Toronto Pearson published its Global Hub Economic Development Strategy that for the first time provided an assessment of the catalytic impact, or the number of jobs facilitated by virtue of trade and investment made easier by Toronto Pearson's connectivity.

In 2016 the GTAA determined, based on the strong growth that Toronto Pearson continues to exhibit, that a comprehensive update of its economic update was warranted. The objective of this report is to provide an updated estimate of Toronto Pearson's economic impact - both in terms of jobs generated and facilitated - with a particular focus on how these jobs are distributed geographically across Southern Ontario.

Future work is planned to assess Toronto Pearson's impact on specific sectors of the economy, for example, how international connectivity at Pearson enhances the productivity of the professional services sector.

Frontier Economics, a leading economics consultancy that undertook the 2014 Global Hub Economic Development Study has undertaken this study together

¹ New connections have been measured as those which had zero departures in 2012 and at least 52 departures in 2016, which equates to one a week, on average.

with Quod, a UK based specialist planning, socio-economic and development economics consultancy and MNP is a leading national accounting, tax and business consulting firm in Canada.

1.2 Structure of this report

The main body of the report provides a brief overview of our approach and our results. The report is structured as follows:

- Section 2 provides an overview of how we measure Toronto Pearson's economic impact;
- Section 3 provides our overall results;
- Section 4 discusses where the jobs generated and facilitated by Toronto Pearson are located;
- Section 5 provides our conclusion.

Annex A provides a more detailed description of the economic impact in the municipalities of the Greater Toronto Area including Peel, Halton, the City of Toronto, York and Durham.

Annex B to F provide a detailed description of the methodology we have used:

- Direct job estimates – Annex B;
- Indirect job estimates – Annex C;
- Tourism – Annex D;
- Catalytic impacts – Annex E; and
- Spatial breakdown – Annex F.

2 HOW DO WE MEASURE TORONTO PEARSON'S ECONOMIC IMPACT?

The airport's overall economic impact consists of three parts:

- Primary impacts, the **direct, indirect and induced** (often referred to as “DII impacts”) which include jobs generated from on-going operations at the airport;
- Secondary impacts, that is, jobs facilitated by **inbound visitor spending**; and
- Tertiary or **catalytic impacts**, that is, jobs facilitated via increased **trade and foreign direct investment** that is supported by the international connectivity provided by Toronto Pearson.

In this section, we provide a brief overview of our approach to estimating these impacts. A detailed explanation of our methodology and assumptions can be found in Annexes B to E.

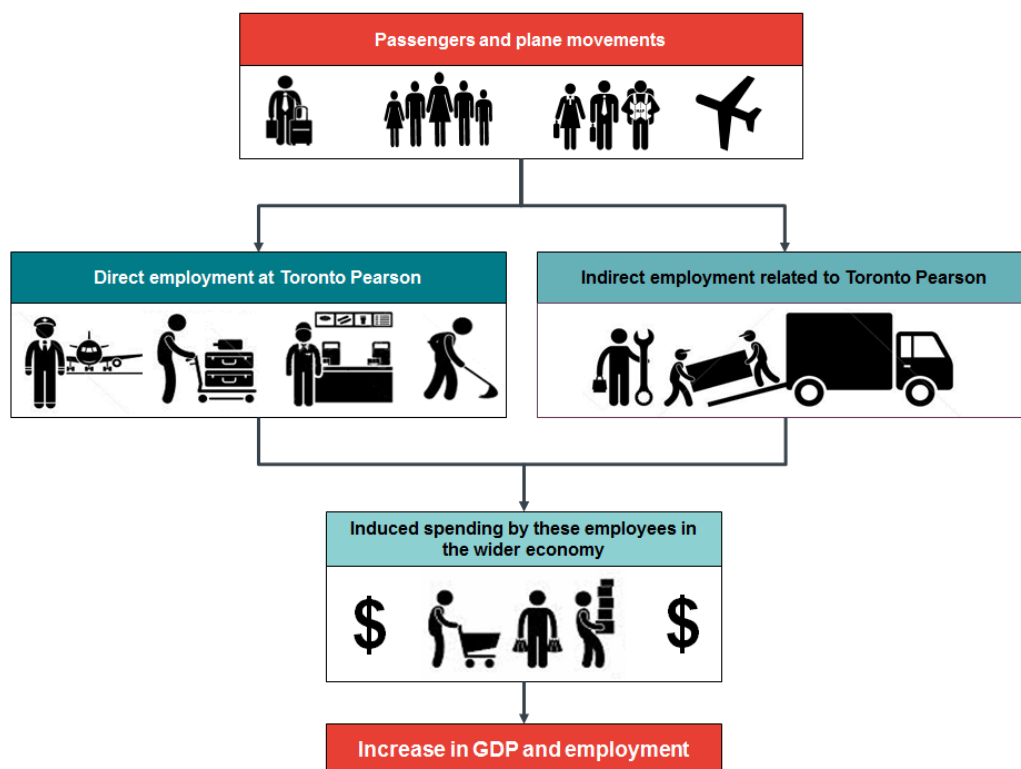
2.1 Primary impact: Direct, indirect and induced employment

The airport's primary impact comprises three components, collectively referred to as DII jobs:

- **Direct jobs** – These include jobs located at or close to the airport that are directly reliant on the ongoing activity of the airport. These are estimated as jobs either directly related to the operation of the airport located within a two-mile (3.2 km) radius of the airport or those jobs that are in airport-related sectors within 5 miles (8 km). An example of a direct employee is the person driving the catering truck and loading the food trays onto a plane. Another example is a person employed in one of the retail shops that are located at Toronto Pearson. We have estimated the direct impact using data from Statistics Canada and a survey of employers.
- **Indirect jobs** – These include jobs supported by the airport's supply chain (the goods and services it buys for day-to-day operation). For example, this would include the person repairing the catering truck in a garage in Mississauga. We estimated the indirect impact using multipliers produced by Statistics Canada.
- **Induced jobs** – These include jobs facilitated by the spending of people whose jobs are directly or indirectly related to the airport. So, if the catering employee and the mechanic described above spent money at a coffee shop, the Barista would count as an induced employee. This is because their job is supported by the wages earned by the direct and indirect employees. We estimated induced jobs estimated using multipliers produced by Statistics Canada.

All of our DII estimates are based on a standard approach which addresses the question: “what-if the airport did not exist?” As a result, all of the DII impact is estimated as gross total employment. This means we estimate the employment that is generated by the airport by comparing it to a situation where the airport does not exist and the activities are not replaced. This static approach is a standard way of estimating DII employment. Figure 1 summarises our methodology.

Figure 1. Overview of direct, indirect and induced impacts



Source: Frontier Economics

2.2 Secondary impact: Employment facilitated by inbound visitor spending

The connectivity provided by the airport enables people from other parts of Canada and the rest of the world to visit Ontario and the GTA. Visitors may be arriving at Toronto Pearson to visit friends and family, vacation in the GTA or Ontario, or for business.

All visitors will spend money on goods and services during their time in Toronto or Ontario. This expenditure, which can be classified as inbound visitor spending, will lead to an increase in GDP and facilitate employment in the GTA, mainly in retail, food and drink service, cultural, recreation and accommodation services.

We estimate total visitor spending using data on tourism spending per passenger-visit from a number of sources, including Statistics Canada, the Ministry of Tourism, Culture and Sport, the Canadian Tourism Commission and the Ontario Ministry of Tourism, Culture and Sport. The approach for estimating employment facilitated by inbound visitor spending is the same as for DII estimates. We estimate the total gross inbound visitor spending. In estimating this impact, we have therefore assumed that the spending by inbound visitors would not have incurred had the airport not existed. Our approach is described in Figure 2 below.

Figure 2. Overview of impact through inbound visitor spending



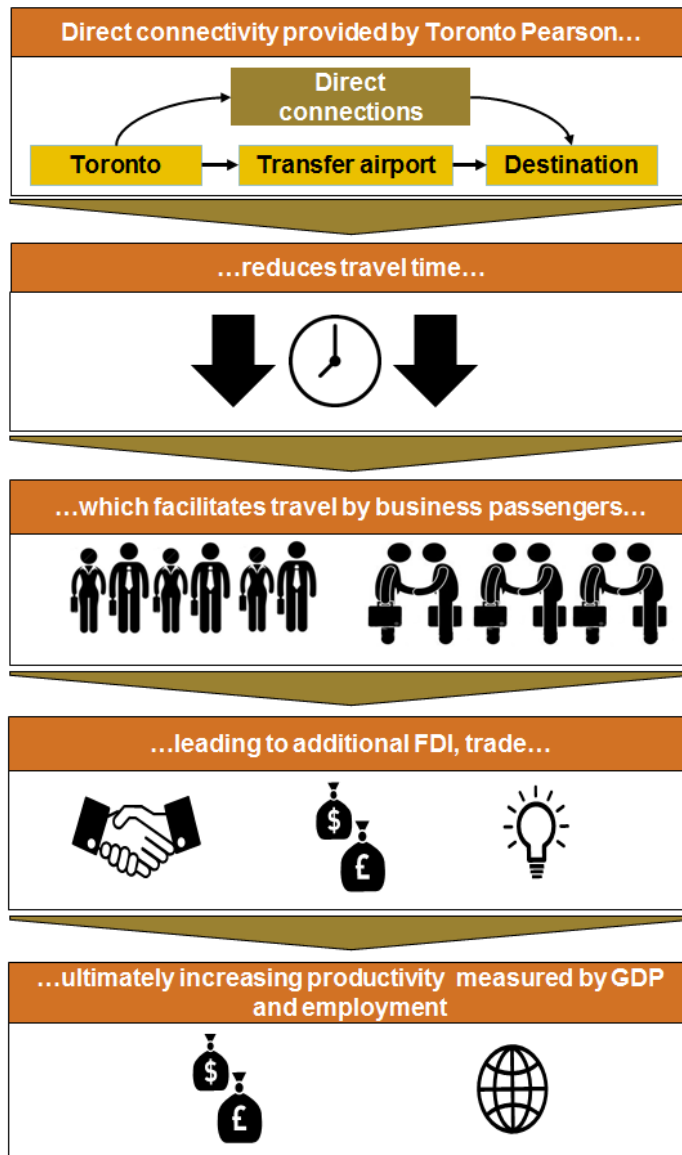
Source: Quod and Frontier Economics

2.3 Tertiary impact: Catalytic employment through connectivity

The catalytic impact includes jobs that are facilitated by the airport's international connectivity. This impact is estimated based on the following causality chain:

- Toronto Pearson provides substantial international connectivity to a wide range of destinations;
- Direct flights to a wide range of countries reduce the cost of travel to the business passenger as they represent a significant time saving;
- As a result, direct connections increase the likelihood for business passengers to travel;
- The resulting increase face-to-face meetings with international business partners increase the likelihood of closing business deals
- This has a positive impact on trade and foreign direct investment;
- Increased trade and FDI leads to improvements in productivity as the economy is more open – this has a positive impact on GDP and jobs.

These links are described in Figure 3 below.

Figure 3. Overview of methodology for catalytic impact

Source: Frontier Economics

Importantly, the approach for estimating catalytic impacts is different from the DII impacts and inbound visitor spending impacts. In this case, our estimates are based on a “what-if” scenario that assumes Toronto Pearson does not provide direct flights, so all passengers have to take indirect flights via another hub airport to get to their final destinations. This “what-if” scenario measures the economic value of being directly connected to destinations. This provides a more meaningful and realistic approach to valuing the Toronto Pearson’s connectivity as a hub airport than a scenario where we assume the airport does not exist. It also represents a conservative approach.

WHAT THE “WHAT-IF” SCENARIOS SAY ABOUT ADDITIONALITY

Our approach to estimating the DII, tourism and catalytic impact are based on two different “what-if” scenarios. The “what-if” scenarios have implications for the “additionality” of the economic value facilitated by Toronto Pearson. For DII and tourism economic impact, the estimates are gross figures. This means they describe the employment that is currently generated by the airport compared to a situation where the airport does not exist and it is not replaced by other economic activity. This is a common way of estimating DII and tourism impacts. In addition, the tourism impacts only consider inbound spending and do not take into account spending by Canadians abroad. Therefore, DII and tourism jobs facilitated by Toronto Pearson are not necessarily additional as there may be alternative sources of employment in the absence of the airport.

In contrast, the jobs resulting from the FDI and trade facilitated by the airport are additional; these are jobs that would not exist if the airport did not provide direct connections. This is because in the “what-if” scenario, we have assumed that the airport continues to exist but it no longer provides direct connections. The FDI and trade facilitated are therefore attributable to the additional connectivity provided by the airport, connectivity that would not be available if the direct connections did not exist.

3 WHAT IS TORONTO PEARSON'S ECONOMIC IMPACT?

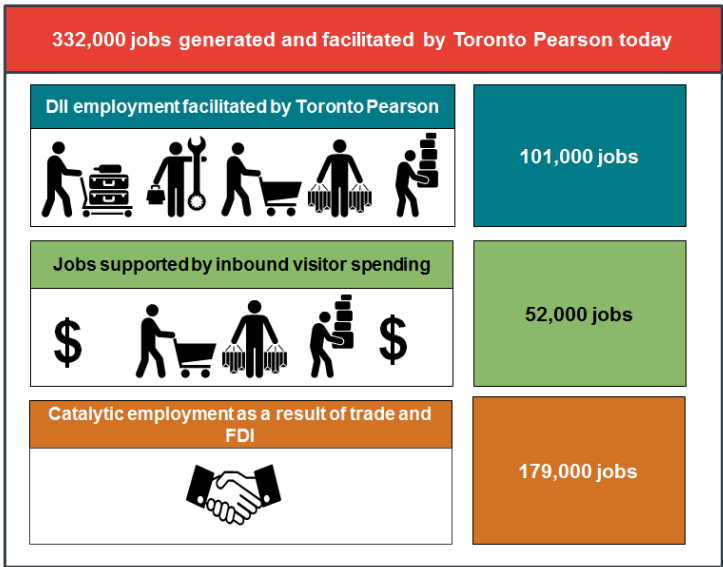
3.1 Economic impact today

In total we estimate that Toronto Pearson Airport currently generates and facilitates **332,000 jobs**. These can be broken down as follows:²

- **101,000** direct, indirect and induced jobs generated by the airport's operations.
- **52,000** jobs as a result of the effects of inbound visitor expenditure. 41,000 of these are direct jobs and 11,000 are indirect jobs; and
- **179,000** jobs facilitated as a result of the additional trade and foreign direct investment facilitated by direct international connectivity provided by the airport.

Figure 4 summarises these results.

Figure 4. Toronto Pearson's economic impact today



Source: MNP, Quod and Frontier Economics

The **101,000** DII jobs can be further disaggregated as follows:

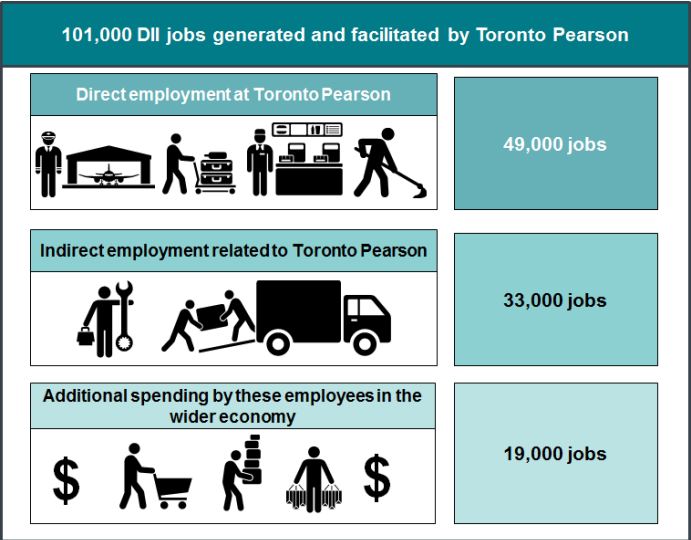
- **49,000** are direct jobs associated with on-going operations.
- **33,000** are indirect jobs as a result of the operations at the airport.

² Our results are based on the latest available data. The DII and inbound spending impact is based on 2015/6 data while the catalytic impact is based on 2014 passenger data.

- **19,000** are induced jobs as a result of the spending generated by direct and indirect employees.

This has been illustrated in Figure 5 below.

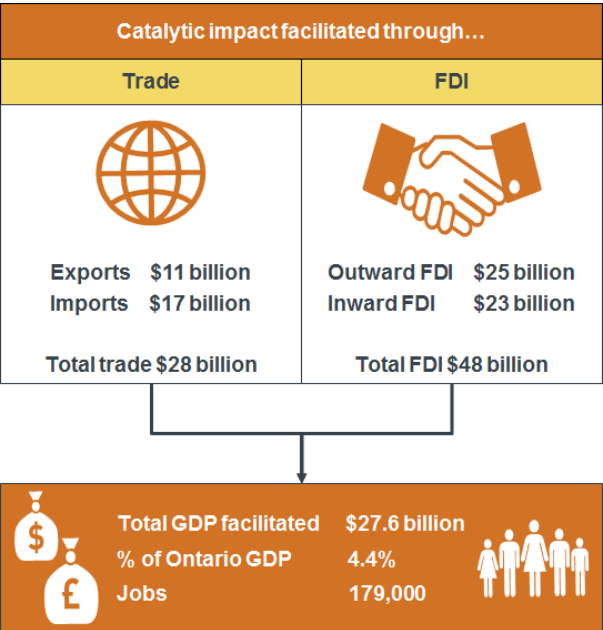
Figure 5. Toronto Pearson's DII impact today



Source: MNP, Quod and Frontier Economics

The catalytic impact can be broken down into that facilitated by the trade and FDI, as can be seen in Figure 4 below.

Figure 6. Catalytic impact facilitated by Toronto Pearson today

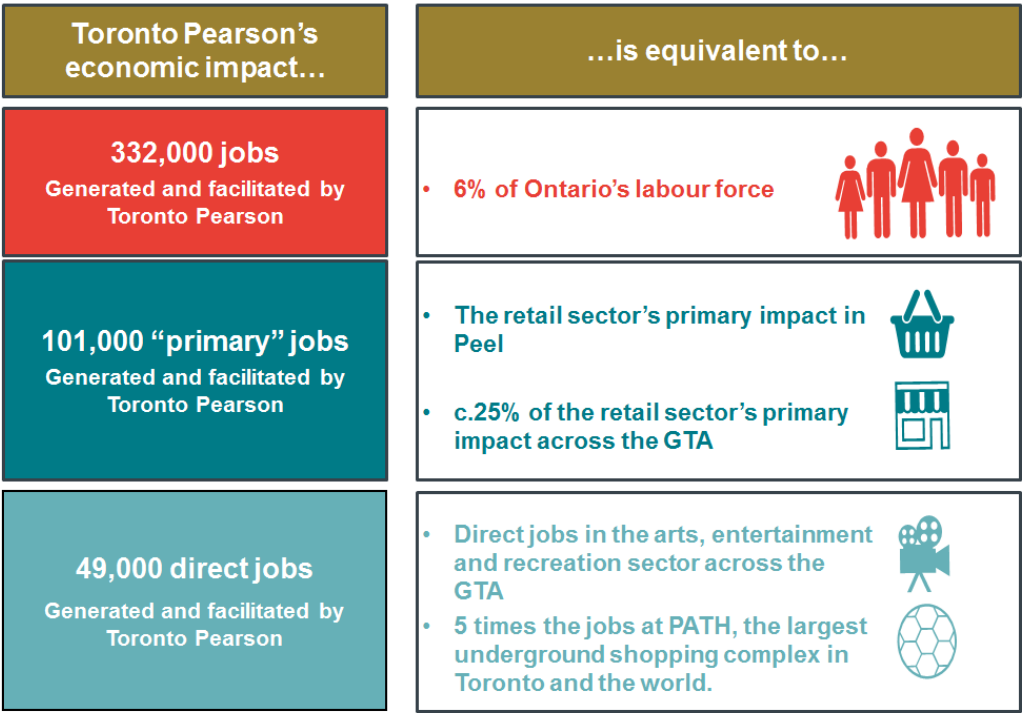


Source: Frontier Economics, numbers may not add up due to rounding

How do these numbers compare with other industries in the GTA?

Figure 7 provides a comparison of the jobs generated and facilitated by Toronto Pearson with that of other industries to help readers visualise the scale of the impact.³

Figure 7. Comparison of jobs generated and facilitated by Toronto Pearson



Source: MNP, Quod and Frontier Economics

By way of further comparison, the **GDP** generated by the DII employment facilitated by Toronto Pearson is:

- Around 2% of Ontario's total GDP⁴;
- Around the same as the nominal GDP of Madagascar or Malta in 2015.

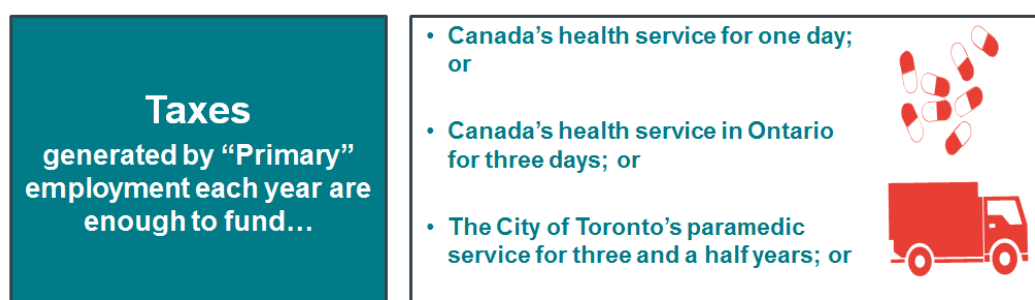
As a final means to contextualise the scale of "primary" or DII employment facilitated by Toronto Pearson, we have estimated the **taxes** generated by these employees each year at around \$696m.⁵ This is presented in Figure 8.

³ These comparisons are therefore not intended as a scientific comparison of sectors, rather as a tool for visualisation.

⁴ Based on StatCan GDP Multipliers

⁵ Based on Federal and Provincial tax derived from average annual earnings per employee in a job facilitated by Toronto Pearson

Figure 8. Estimating the taxes generated by DII employment facilitated by Toronto Pearson each year



Source: Quod and Frontier Economics

How does the current economic impact compare with previous estimates?

Figure 9 compares our estimates with those calculated in previous studies for Toronto Pearson in 2012⁶.

Figure 9. Comparing Toronto Pearson's economic impact today with yesterday's

Type of Job	2012	2016
Direct	33,000	49,000
Indirect	30,000	33,000
Induced	16,000	19,000
Total DII	79,000	101,000
Those supported by inbound visitor spending	30,000 (+11,000 indirect)	41,000 (+11,000)
DII + Inbound visitor spending jobs	109,000 (+11,000)	142,000 (+11,000)
Catalytic	153,000	179,000
Combined	273,000	332,000

Source: MNP, Quod, Frontier Economics and HDR Economics

This comparison shows that the airport's direct, indirect and induced employment has increased by 22,000 since 2012 (approx. 28% growth). It also shows that Catalytic employment has grown by 26,000 jobs across Ontario (around 17%);

Overall combined growth since 2012 is around 59,000 jobs, or 22% growth. This implies that Toronto Pearson has facilitated twice the rate of job growth as Toronto (9%), and five times the rate of Ontario (4%) since 2012. Furthermore, Toronto Pearson has facilitated about as many 'new' jobs as the professional, scientific and technical sector in the whole of Toronto since 2012.

⁶ The previous study used a slightly different methodology and set of definitions, which we have disaggregated and re-built to enable direct comparison by type of job. Previously, direct employment has been based on a modelled approach using the number of passengers passing through the airport each year, whereas this assessment identifies actual data on existing jobs in the area by sector.

Figure 10 shows how the total GDP impact has evolved since the previous report on Toronto Pearson's economic impact. In the previous report, the impact represented 5.6% of Ontario's GDP. This has increased to \$42 billion which represents approximately 6% of the Ontarian GDP.



GDP facilitated and generated by Toronto Pearson airport today.

Figure 10 also shows how the components of the overall GDP impact have evolved over time. The catalytic impact, which captures the economic impact facilitated by the airport's connectivity, has increased from 3.6% of the Ontarian GDP to 4.4% of the GDP in 2016. The impact through inbound visitor spending has also increased. In contrast, the DII impact has fallen over the same period. This reduction means that the airport is providing its services

more efficiently as it has increased connectivity without a proportionate increase in direct and indirect jobs.

Figure 10. Comparison of total GDP impact

	2014	2016
DII impact	1.8%	1.6%
Impact through inbound visitor spending	0.2%	0.3%
Catalytic impact	3.6%	4.4%
Total	5.6%	6.3%

Source: Frontier and Quod

Note: Note that the 2014 catalytic impact is based on passenger 2012 data, the 2016 catalytic impact is based on passenger 2014 data. Note also that numbers may not add up due to rounding.

What do these estimates mean on a per-flight basis?

The economic impact generated and facilitated by Toronto Pearson airport can

also be expressed per international flight. We have calculated the economic impact per international flight, by estimating the GDP impact facilitated by the DII and catalytic effects on a per flight basis.

We estimate that each international flight landing at Toronto Pearson in 2014⁷ facilitated on average:

- \$31,000 of GDP or approximately 0.28 direct, indirect and induced jobs.



400 jobs

facilitated and generated by a daily international service.

⁷ This is because the catalytic impact is based on 2014 passenger data.

- \$5,000 of GDP or approximately 0.13 jobs through inbound visitor spending.
- \$113,000 of GDP or approximately 0.7 jobs through catalytic impacts.⁸

The catalytic impact per flight is based on a weighted average of the GDP impact per international movement by continent. The GDP impact of DII employment can be estimated by first applying the average GDP per worker in Canada to the direct jobs. This gives us the GDP impact facilitated by direct employment, which is used as a starting point. Appropriate sectoral multipliers from Statistics Canada are then applied to this “direct” GDP figure to estimate the total indirect and induced GDP, from which average GDP per movement can be derived.⁹



GDP facilitated and generated per international flight.

To estimate the DII impact per international flight, we use a conservative approach by comparing the total GDP impact to the total number of movements. Because international flights tend to be use wide-bodied aircraft, an international flight can carry more passengers than a short-haul domestic flight (which often involves narrow-bodied aircraft). Therefore, the DII impact of an international flight would likely be higher than that estimated above. However, it is difficult to robustly disaggregate the impact between international and domestic travel.¹⁰



GDP facilitated and generated by a daily international service.

For similar reasons, the approach to estimate the inbound tourism expenditure per plane is also conservative as it compares the total GDP impact from inbound spending to total movements. This is because international visitors tend to spend more than visitors from other Canadian provinces, implying that the impact per international flight would be higher than that estimated above.

Another way to express the economic impact

⁸ This refers to the average GDP impact of an international flight i.e. excluding Canada. If the US were also to be excluded, the average international flight would facilitate £200,000 of GDP while each flight to the US would facilitate £80,000 of GDP through catalytic impacts.

⁹ We have also reviewed the relationship between direct employment and passenger numbers (PAX) and direct employment and air transport movements (ATMs) to identify the correlation, and calculate the number of Direct, Indirect and Induced jobs per average international movement. These approaches reach broadly the same conclusions.

¹⁰ Direct employment is the starting point for calculating the GDP impact. This can be apportioned to domestic and international travel by using the passenger split between domestic and international travel as a proxy. This implicitly assumes a linear relationship between passengers and employment which may not be correct because of factors such as economies of scale. Alternatively, the split of GDP between the different regions estimated in the catalytic impact could be used as a proxy for the split of DII GDP. This may also be inaccurate because the driver for the catalytic impact is connectivity at Toronto Pearson, while the driver for the DII impact is the airport acting as a consumer of goods and services. Therefore, the most robust and conservative approach is to visualise the total DII impact relative to total movements and this is likely a lower bound for the impact relative to an international movement.

generated and facilitated by Toronto Pearson airport is to consider it on a 'per daily connection' basis.¹¹ We estimate that each daily service operating from Toronto Pearson facilitates:

- \$11 million of GDP or approximately 101 direct, indirect and induced jobs.
- \$ 2 million of GDP or approximately 50 jobs through inbound visitor spending.
- \$ 41 million of GDP or approximately 250 jobs through catalytic impacts.

3.2 Economic impact tomorrow

We have used projections on traffic growth to estimate Toronto Pearson's economic impact in 2030. In total, we project that Toronto Pearson Airport will handle 63 million passengers and generate and facilitate **542,000 jobs**. These can be broken down as follows:¹²

- **136,000** direct, indirect and induced jobs generated by the airport's operations.
- **131,000** jobs as a result of the effects of inbound visitor expenditure. **103,000** of these are direct jobs and **28,000** are indirect jobs; and
- **275,000** jobs facilitated as a result of the additional trade and foreign direct investment facilitated by direct international connectivity provided by the airport.



542,000 jobs

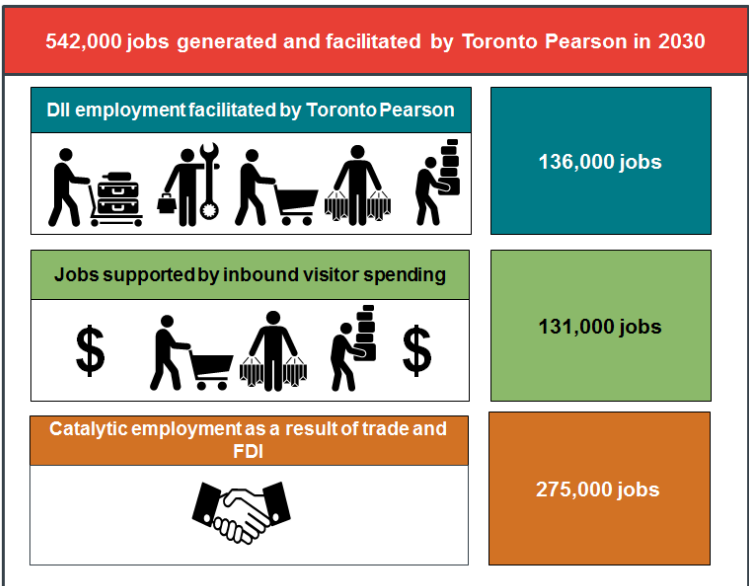
facilitated and generated
by Toronto Pearson in
2030.

Figure 11 summarises our results.

¹¹ To do so, we would multiply the "per international flight" figures by 365 to approximate a daily service.

¹² Our results are based on the latest available data i.e. 2014 data.

Figure 11. Toronto Pearson's economic impact tomorrow



Source: MNP, Quod and Frontier Economics

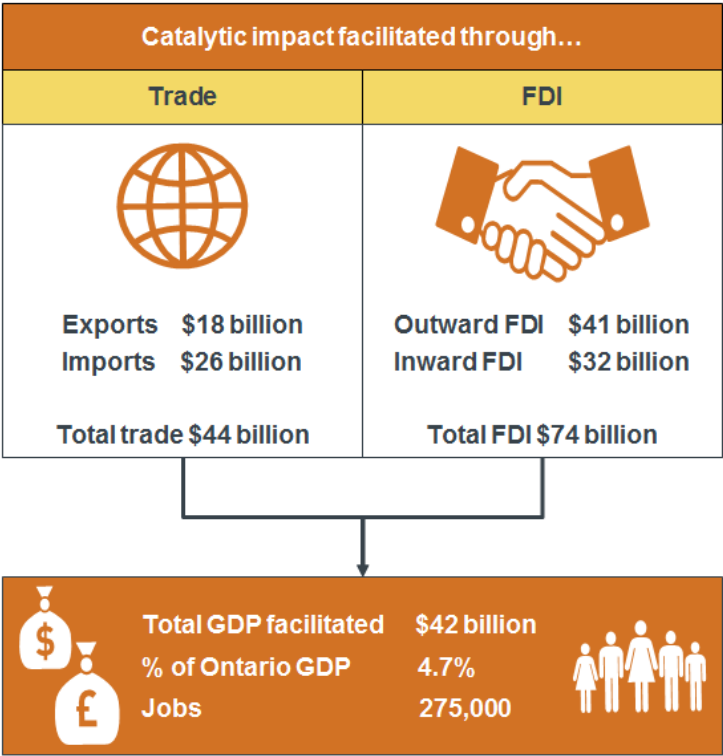


\$63 billion

GDP facilitated and generated by Toronto Pearson in 2030.

We further estimate that the overall GDP facilitated and generated by Toronto Pearson in 2030 (i.e. including DII, inbound visitor spending and catalytic impacts) will be approximately \$63 billion, which equates to 6.8% of Ontario's GDP in 2030. The GDP impact of the catalytic effects, in particular, could constitute 4.7% of Ontario's GDP in 2030. Figure 12 presents the airport's estimated catalytic impact in 2030.

Figure 12. Catalytic impact facilitated in 2030



Source: Frontier Economics, numbers may not add up due to rounding

4 WHERE ARE THE JOBS FACILITATED BY TORONTO PEARSON?

The jobs generated and facilitated by Toronto Pearson are not confined just to the airport boundary, but extend beyond the airport and even beyond the GTA. To provide an overview of the location of the 332,000 jobs facilitated by the airport, we estimate that:

- just under two-thirds of these jobs are located in the GTA - at least 195,000 in total;
- a third of the jobs it facilitates are located in Ontario but outside the GTA; and
- around 182,000 people who live in the GTA have jobs that are facilitated by the airport.

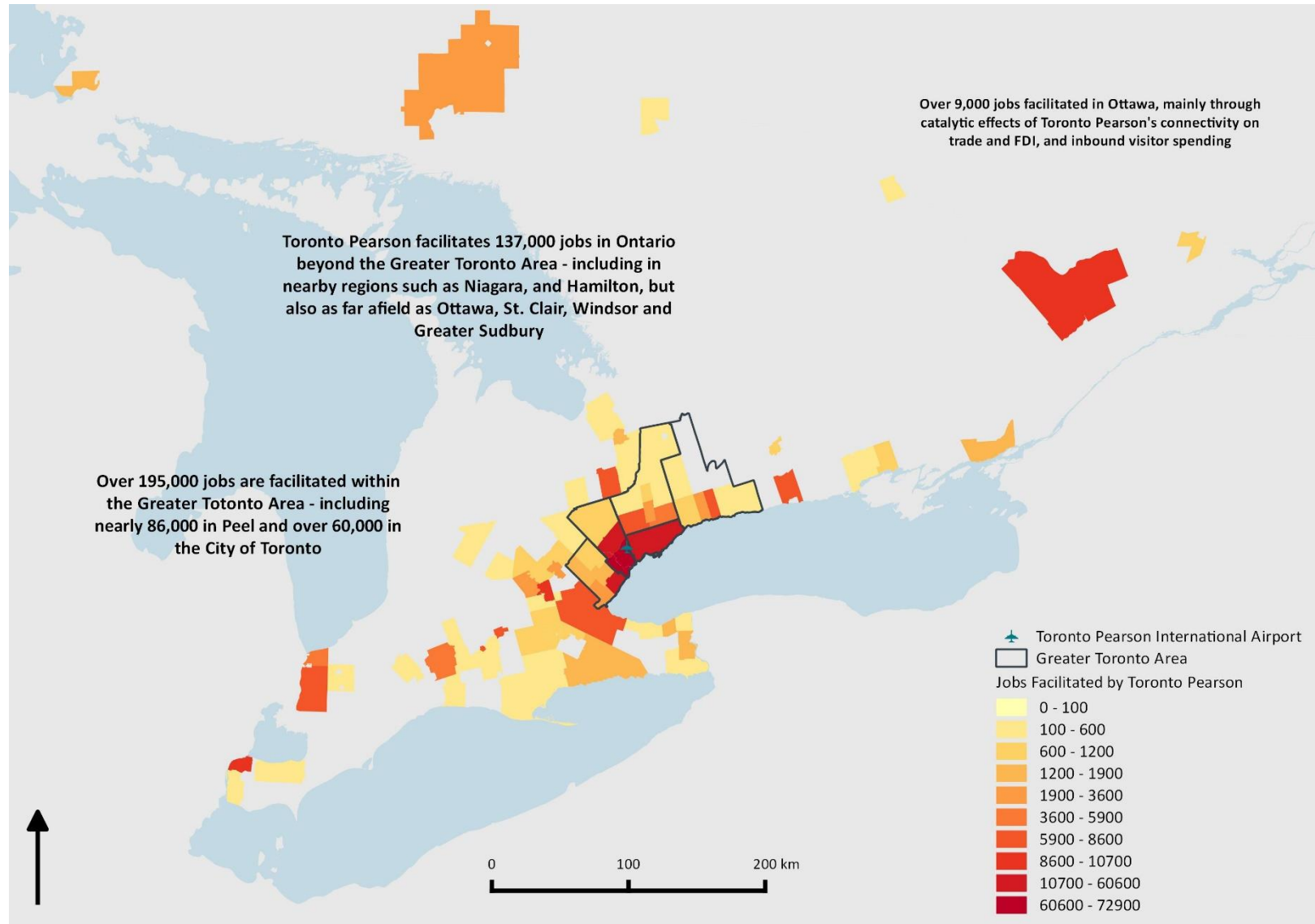
When considering the location of job, there are two perspectives we have considered:

- The locations of the job at the place of employment– this gives a sense of the location of the economic activity itself; and
- The residences of those carrying out the jobs – this provides an overview of the geographic spread of the communities benefiting from these job opportunities.

Figure 13 and Figure 14 show how the jobs facilitated by the airport, and residents in work facilitated by the airport, are distributed around the GTA and more widely in Ontario.

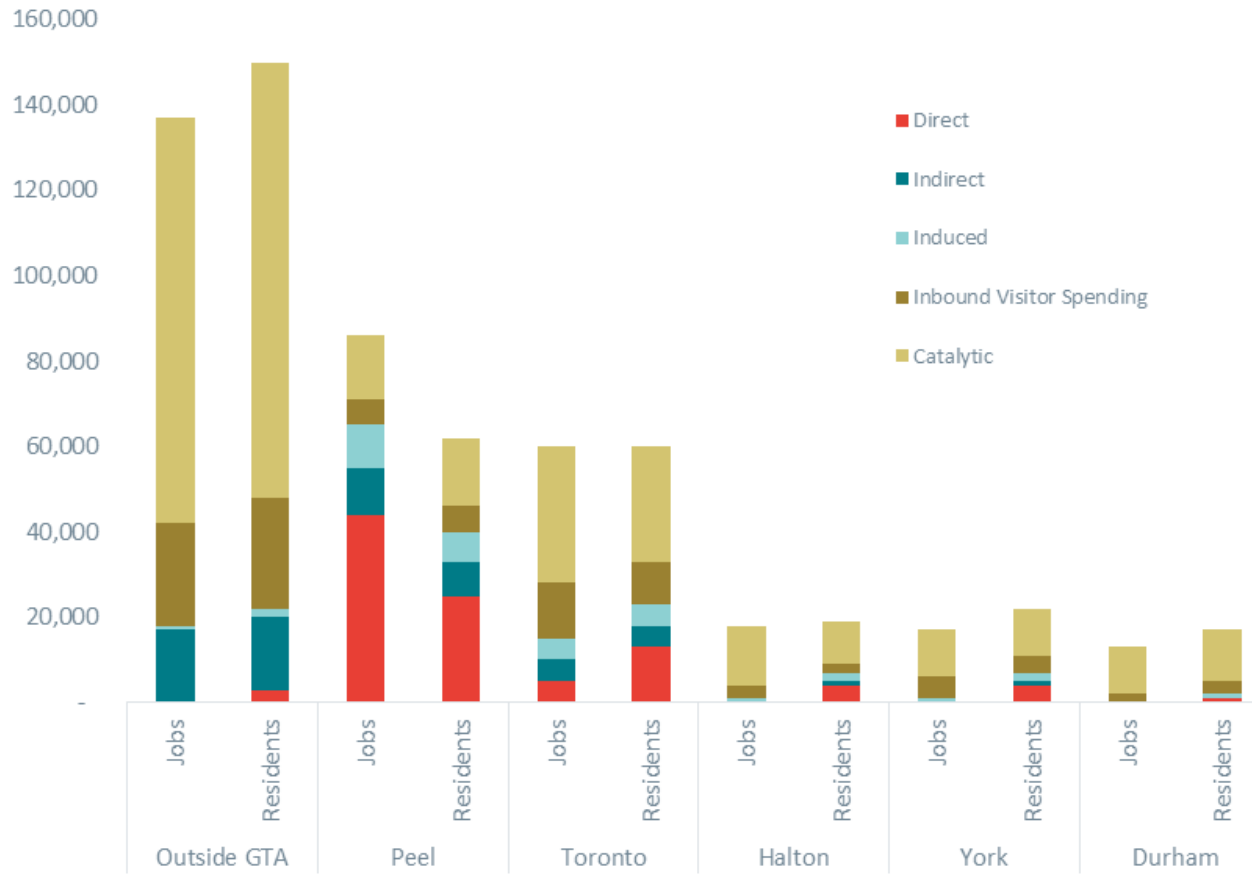
In the rest of this section, we present a geographic disaggregation for each type of employment estimate to illustrate the airport's economic reach.

Figure 13. Where is Toronto Pearson's overall economic impact?



Source: MNP, Quod, Frontier Economics and Statistics Canada

Figure 14. How is Toronto Pearson's overall economic impact distributed?



Source: MNP, Quod, Frontier Economics and Statistics Canada

4.1 Where is the airport's primary economic impact?

4.1.1 Direct employment

We have estimated direct jobs as those located within a two-mile radius of the airport or within a five-mile radius if they are in airport-related sectors. These jobs are therefore located in close proximity to the airport. To provide a more detailed map of the communities that benefit from these jobs, we have mapped where Toronto Pearson's 49,000 direct employees reside (see Figure 18). The map shows that Toronto Pearson's direct economic impact is spread throughout the GTA and beyond with 51% of direct employees living in the Region of Peel and 25% in the City of Toronto.

Figure 18 also shows that Peel is the contributor of the airport's direct employees, with 25,000 of its residents directly employed by the airport. This implies that approximately **1 in 30 Peel** residents in work is in a job directly related to the airport.

4.1.2 Indirect employment

Figure 19 shows the location of indirect jobs facilitated by the annual spending of the GTAA itself - estimated at around 5,000 jobs. These indirect jobs include those jobs that are not physically located at the airport but are created by the airport's supply chain. The map shows that the majority of those jobs are located in the GTA, but a significant amount of contract value is procured from further afield, for example around 600 jobs are located in London, as a result of construction, repair and maintenance, hardware and professional services procured from a contractor associated with terminal building enhancement.

The other activities at the airport - for example the operations of airlines, retailers, security, transit, accommodation and facilities/maintenance - also create indirect employment in the supply chain.

Based on a study of the sectors that the air transport industry buys goods and services from, and of the business concentration around the airport, we estimate that around 13,000 indirect jobs (not including GTAA-related jobs) are located within 5 miles of Toronto Pearson.

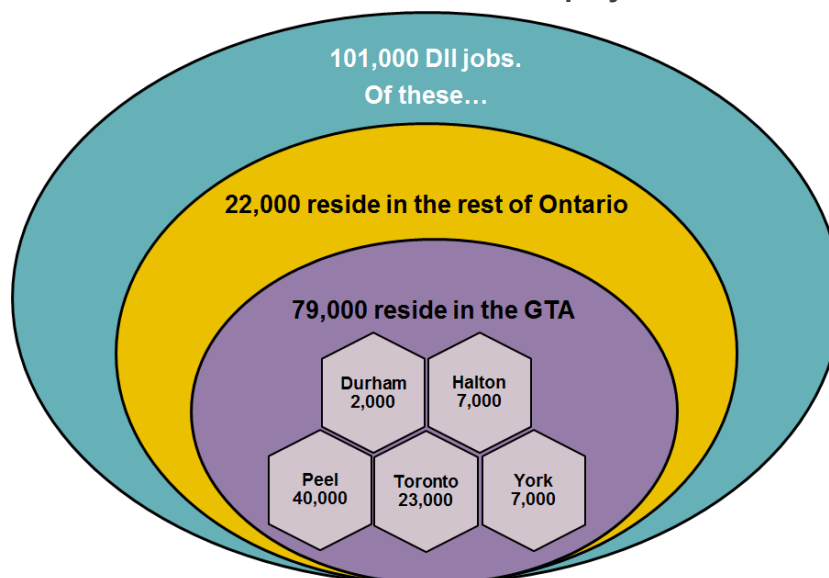
Overall, we estimate that up to around 50% of the total 33,000 indirect jobs facilitated by the airport are likely to be within 10 miles of the airport.

4.1.3 Induced employment

The spending by direct and indirect employees supports around 19,000 induced jobs, of which around 18,000 are in the GTA. Figure 20 provides a spatial disaggregation of these jobs. As can be seen, whilst the majority of induced jobs are concentrated in Peel and Toronto, jobs are spread as far as Northumberland and Niagara.

Figure 15 below summarises our estimates of where the 101,000 DII employees reside within Ontario.

Figure 15. Where do Toronto Pearson's DII employees reside?



Source: MNP, Quod and Frontier Economics

Note: Numbers may not add up due to rounding

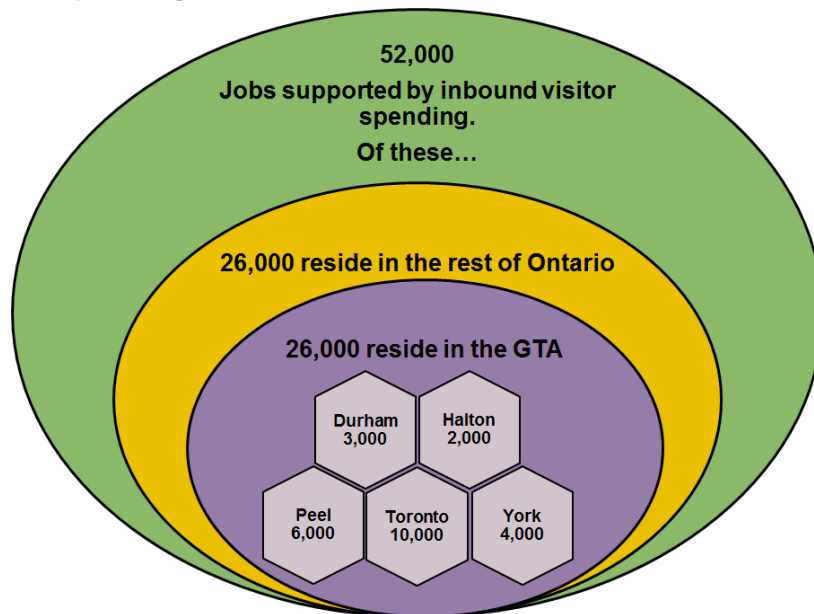
4.2 Where is the airport's secondary impact?

The employment generated as a result of the **spending of inbound visitors** travelling via Toronto Pearson is captured in the secondary impact. For example, this generates employment in retail, food and drink service, accommodation and recreation sectors in Toronto and across Ontario depending on where inbound visitors travel.

Based on spending patterns and output per job supported in these sectors, we estimate that around half of the 52,000 (direct and indirect) jobs resulting from this spending are likely to be within the GTA. This can be seen in Figure 21.

Figure 16 summarises our estimates of where those with jobs supported by inbound visitor spending reside. The exhibit shows that almost 50% of the employees in jobs facilitated by this spending reside outside the GTA, demonstrating the impact of Toronto Pearson on the wider Ontarian economy.

Figure 16. Where do the employees in jobs supported by inbound visitor spending reside?



Source: Quod and Frontier Economics

Note: Numbers may not add up due to rounding

4.3 Where are the airport's tertiary effects?

Catalytic impacts are driven by business travel and the airport's role in facilitating international trade and investment. In total, around 179,000 jobs are facilitated in Ontario as a result of this catalytic impact,

Using data on the distribution of exporting sectors and sectors with high reliance on FDI, we have estimated that the catalytic impacts are distributed across Ontario as shown in Figure 22.

The map shows that of the 179,000 catalytic jobs, around 84,000 are likely to be within the GTA mainly within the Region of Peel and the City of Toronto. We also estimate that at least 10,000 jobs are in each of York, Durham and Halton. Around 4,600 of the catalytic jobs are in Ottawa - showing Toronto Pearson's gravity beyond the GTA as Canada's main gateway to the rest of the world.

This distribution reflects the locations of businesses using the airport for business travel in the GTA and surrounding areas, along with the concentration of employment in FDI-intensive sectors (such as finance) and goods manufacturing sectors that trade internationally.

Around 1 in 5 of these jobs is in the City of Toronto, and around half are in the GTA - reflecting the importance of access to the airport, along with the higher job density and FDI-heavy sectors located downtown.

The remainder of the jobs are spread across the southern Ontario area and in Ottawa - partly reflecting the location of jobs in the trade-intensive manufacturing sectors, whose deals are facilitated through the airport.

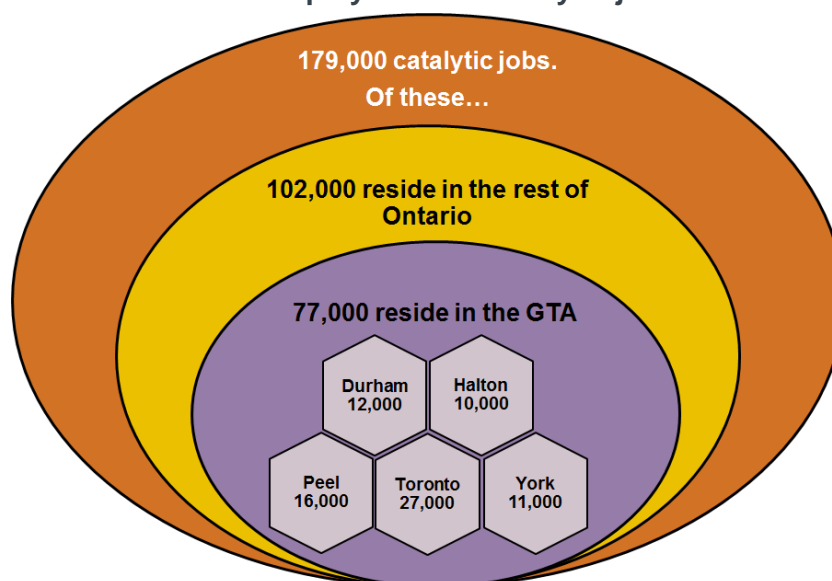
Around 4,600 of the catalytic jobs are in Ottawa - showing Toronto Pearson's gravity beyond the GTA as Canada's main gateway to the rest of the world.

The distribution of catalytic jobs is likely to be influenced by the origin of business travellers using Toronto Pearson. Exhibit 18 therefore also shows the location (origins) of Toronto Pearson's business travellers, which confirms that the airport's reach extends beyond the GTA to surrounding cities and town, as far as Ottawa, and reflects the distribution of jobs both within the GTA and in the rest of Ontario.

This distribution reflects the locations of businesses using the airport for business travel in the GTA and surrounding areas, along with the concentration of employment in FDI-intensive sectors (such as finance) and goods manufacturing sectors that trade internationally.

Figure 17 shows our estimate of the residences of those with jobs facilitated by the catalytic impact of the airport. It is clear that the airport's catalytic impact extends well beyond the GTA; the majority of those employed in jobs facilitated by the catalytic impact reside outside the GTA.

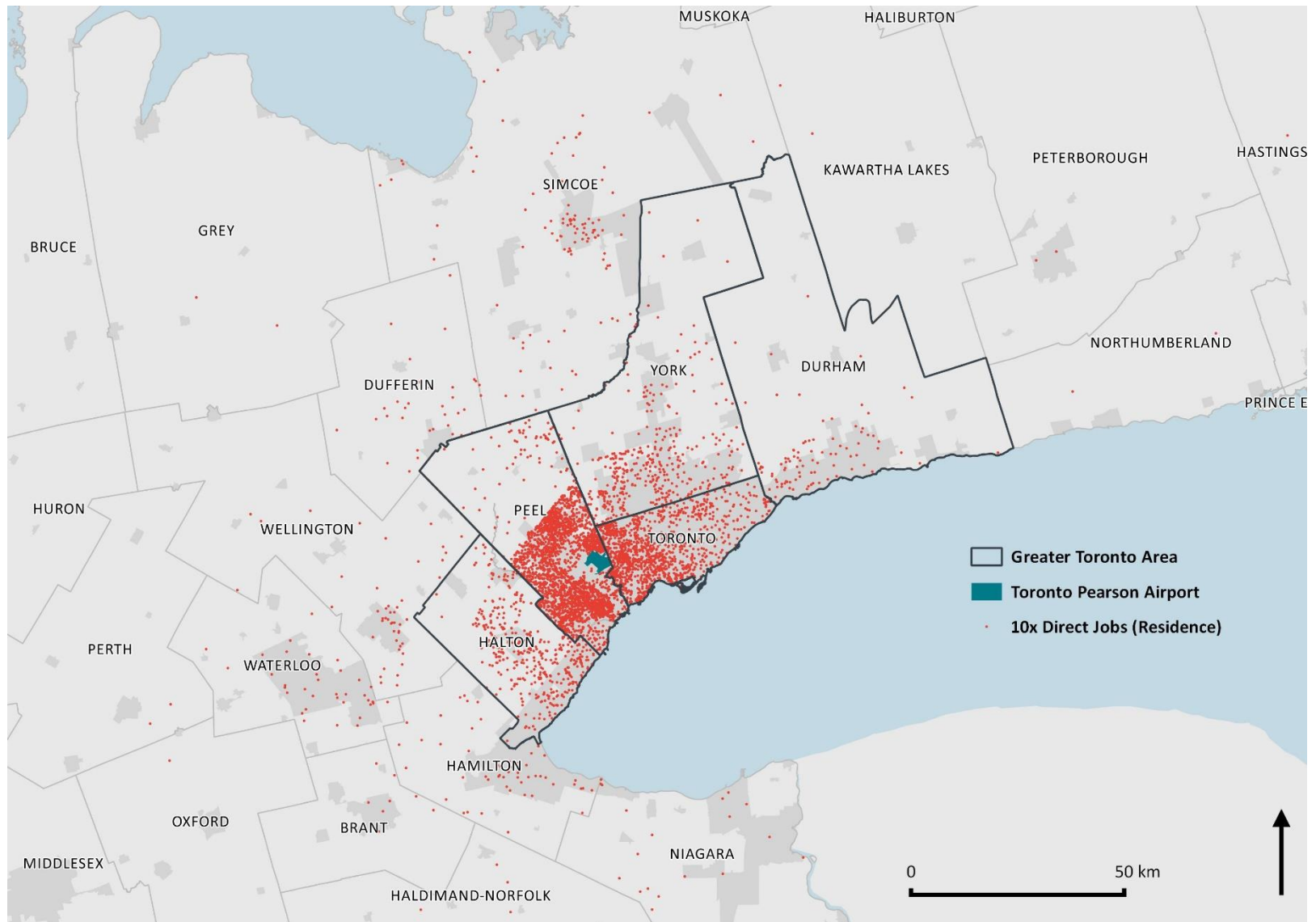
Figure 17. Where do the employees with catalytic jobs live?



Source: MNP, Quod and Frontier Economics

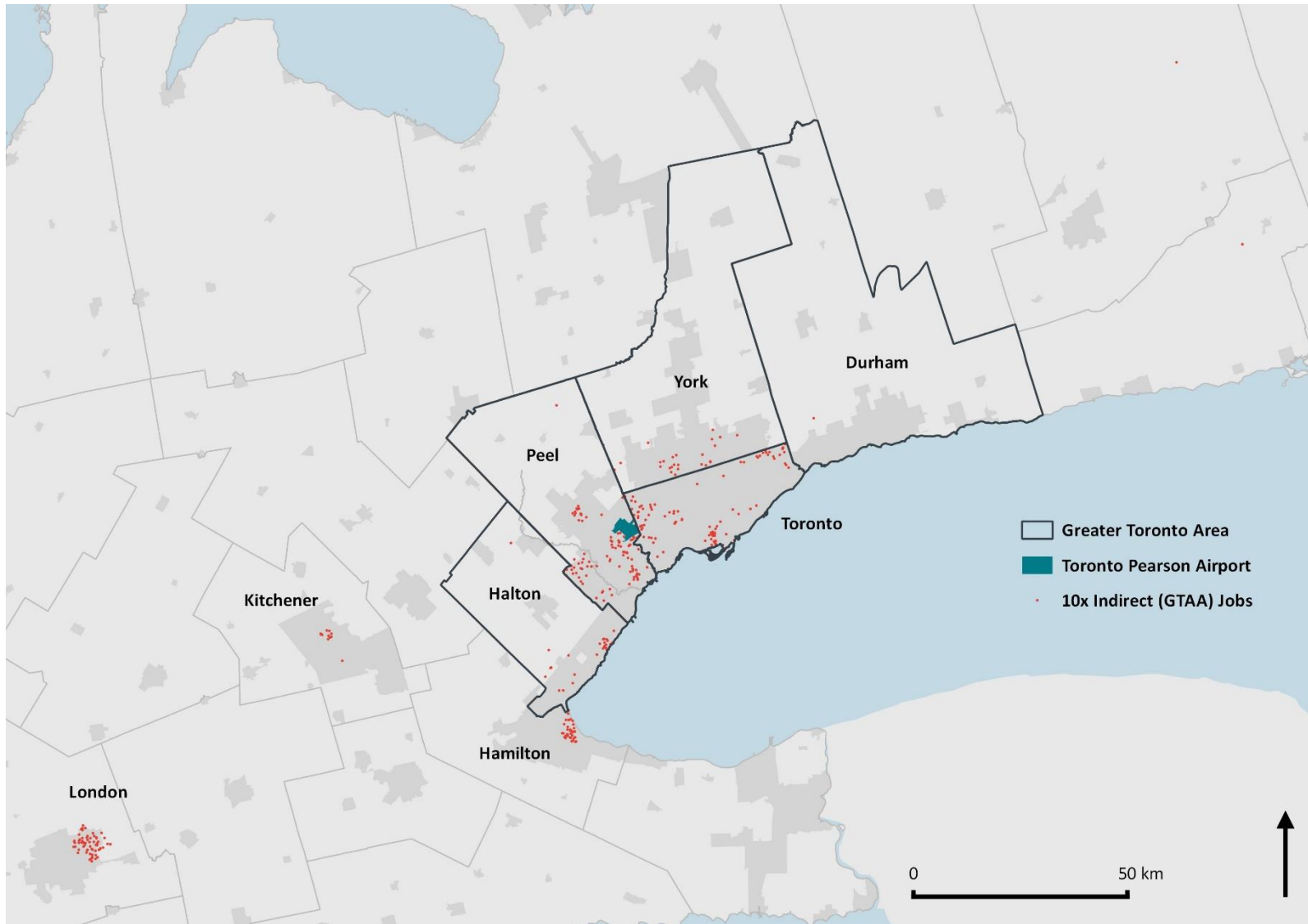
Note: Numbers may not add up due to rounding

Figure 18. Where are the residents with direct jobs?



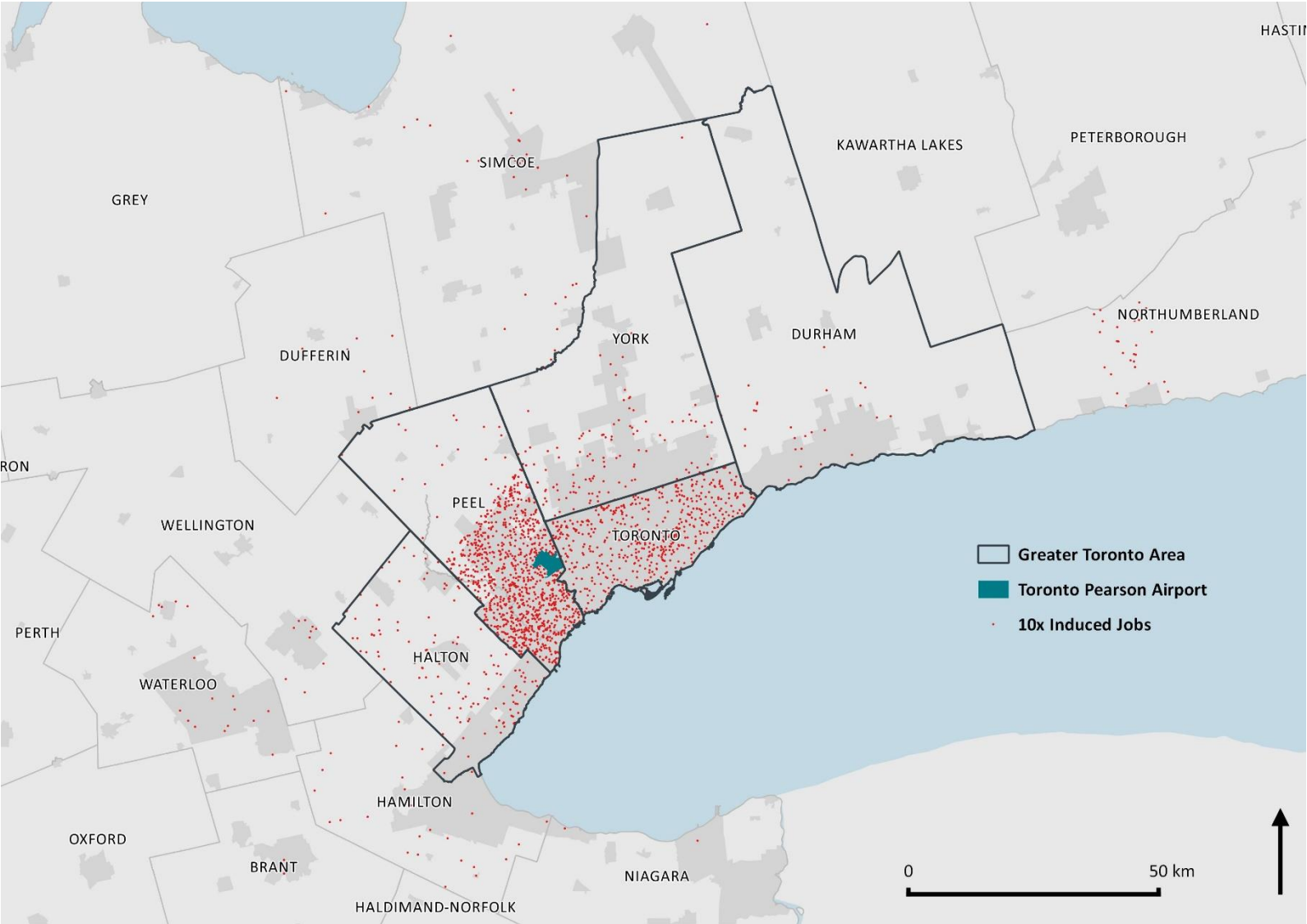
Source: MNP, Quod and Statistics Canada

Figure 19. Where are the indirect jobs created by GTAA's annual spending at Toronto Pearson?



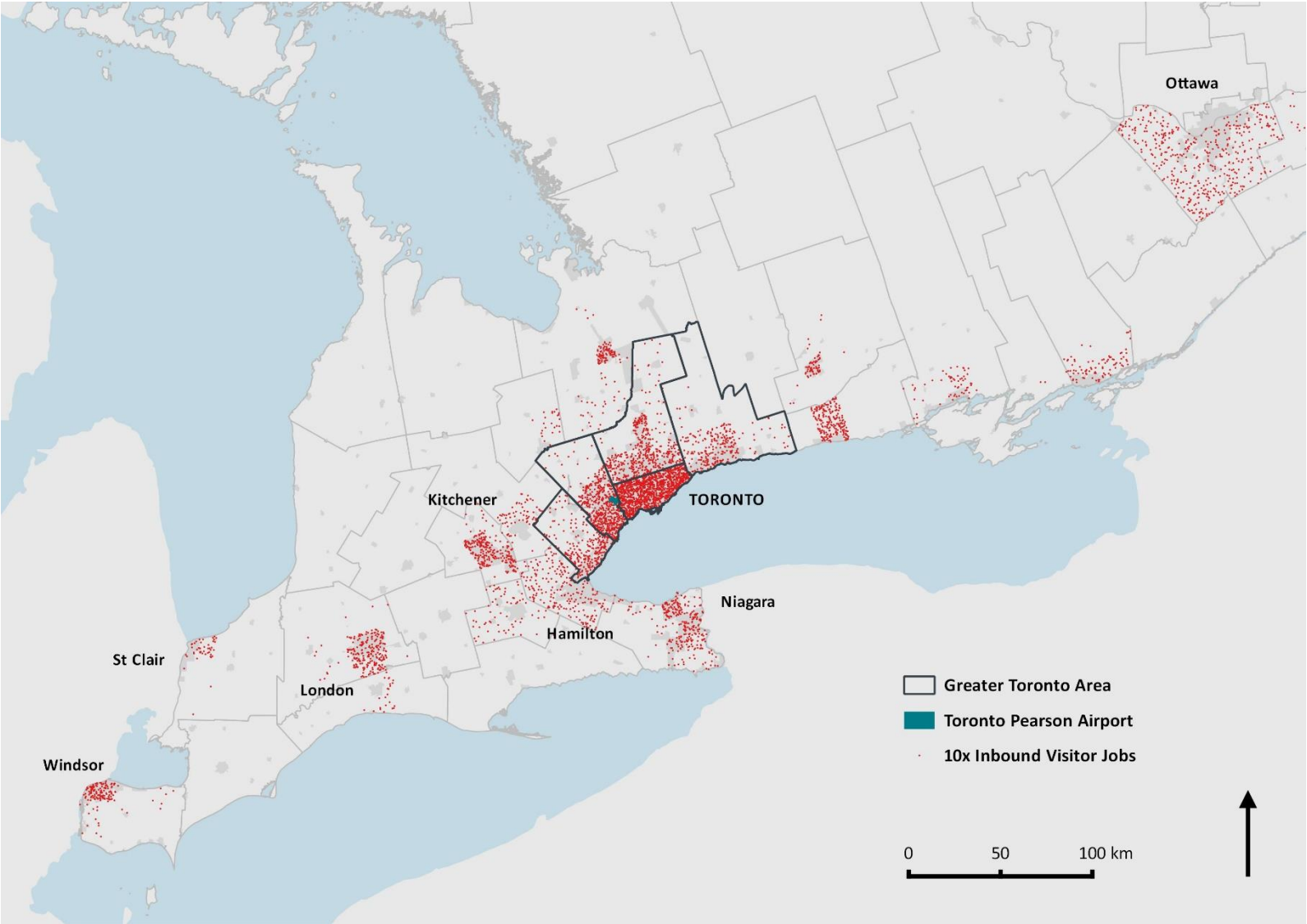
Source: MNP, Quod and Statistics Canada

Figure 20. Where are the induced jobs facilitated by Toronto Pearson?



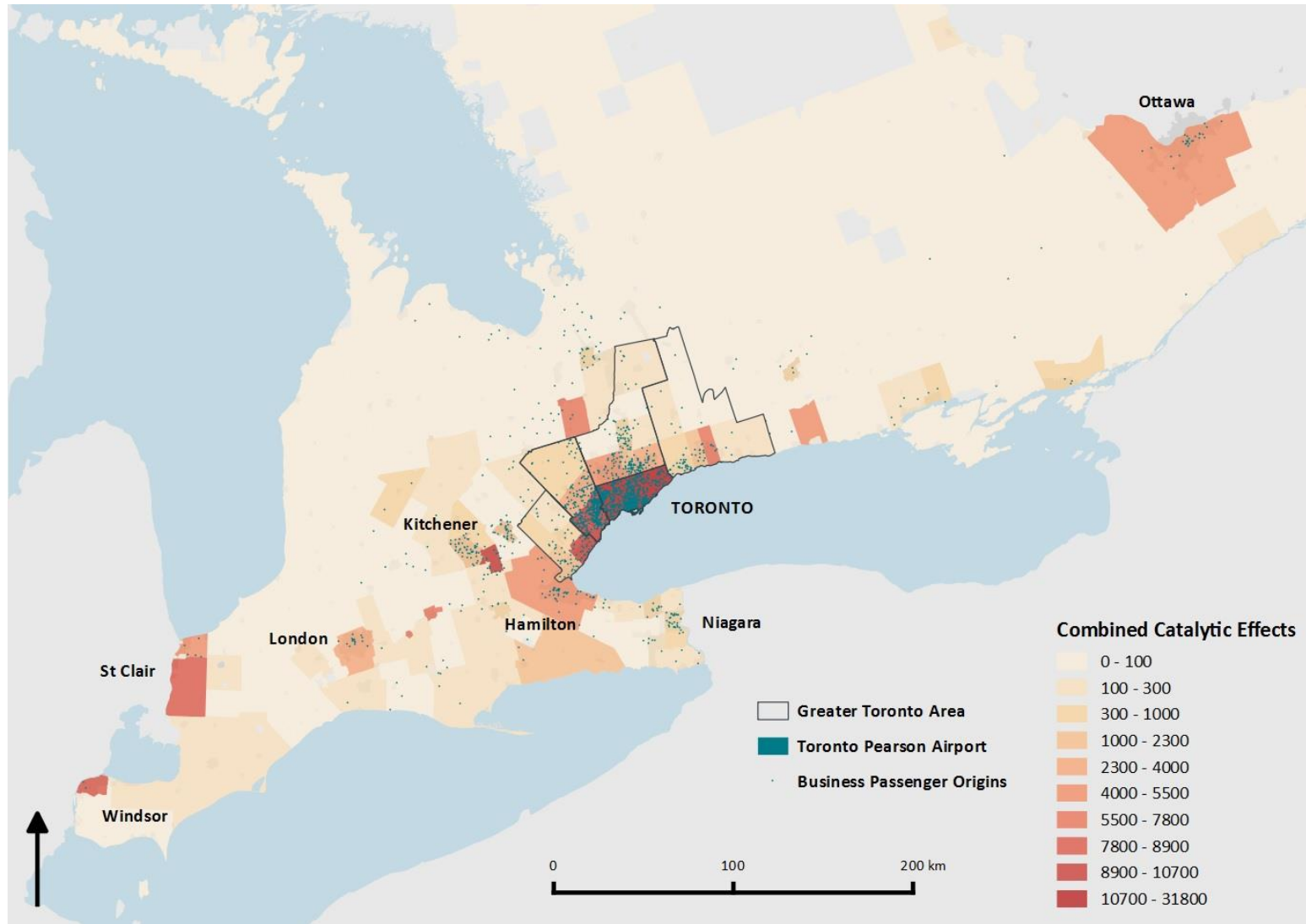
Source: MNP, Quod and Statistics Canada

Figure 21. Where are the jobs facilitated through spending by inbound visitors?



Source: MNP, Quod and Statistics Canada

Figure 22. How are catalytic impacts distributed across Ontario?



Source: MNP, Quod, Frontier Economics and Statistics Canada

5 CONCLUSION

Part of the mandate of the Greater Toronto Airports Authority (GTAA) is to operate and develop Toronto Pearson International Airport to enhance the economic development of our community. Over the past decade, Toronto Pearson has experienced significant traffic growth from 35 million passengers in 2006 to 41 million passengers today. In the context of the substantial increase in international connectivity, the objective of this report is to provide an updated estimate of Toronto Pearson's economic impact both in terms of jobs generated and facilitated with a particular focus on how these jobs are distributed geographically across Southern Ontario.

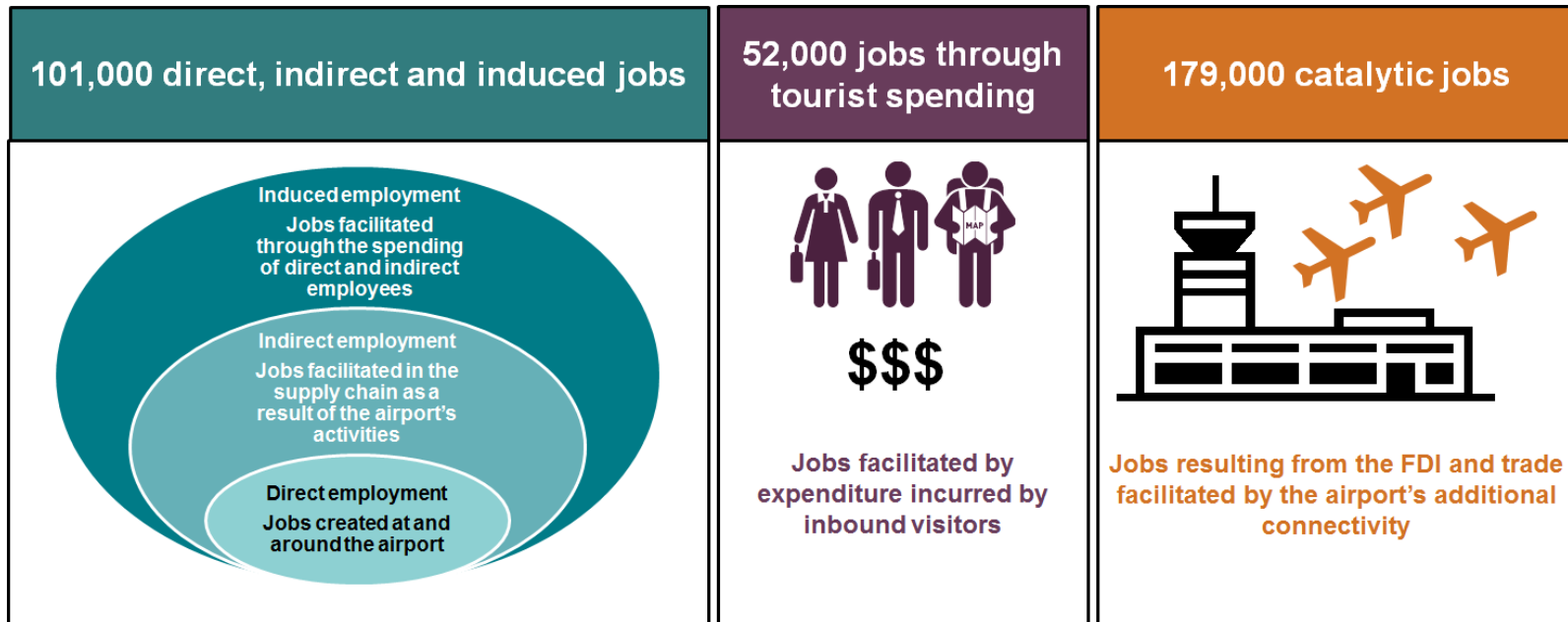
We have estimated that Toronto Pearson generates and facilitates **332,000 jobs**. These can be broken down as follows:

- **101,000** direct, indirect and induced jobs generated by the airport's operations.
- **52,000** jobs as a result of the effects of inbound visitor expenditure. 41,000 of these are direct jobs and 11,000 are indirect jobs); and
- **179,000** jobs facilitated as a result of the additional trade and foreign direct investment facilitated by direct international connectivity provided by the airport.

Figure 23 summarises these overall results.

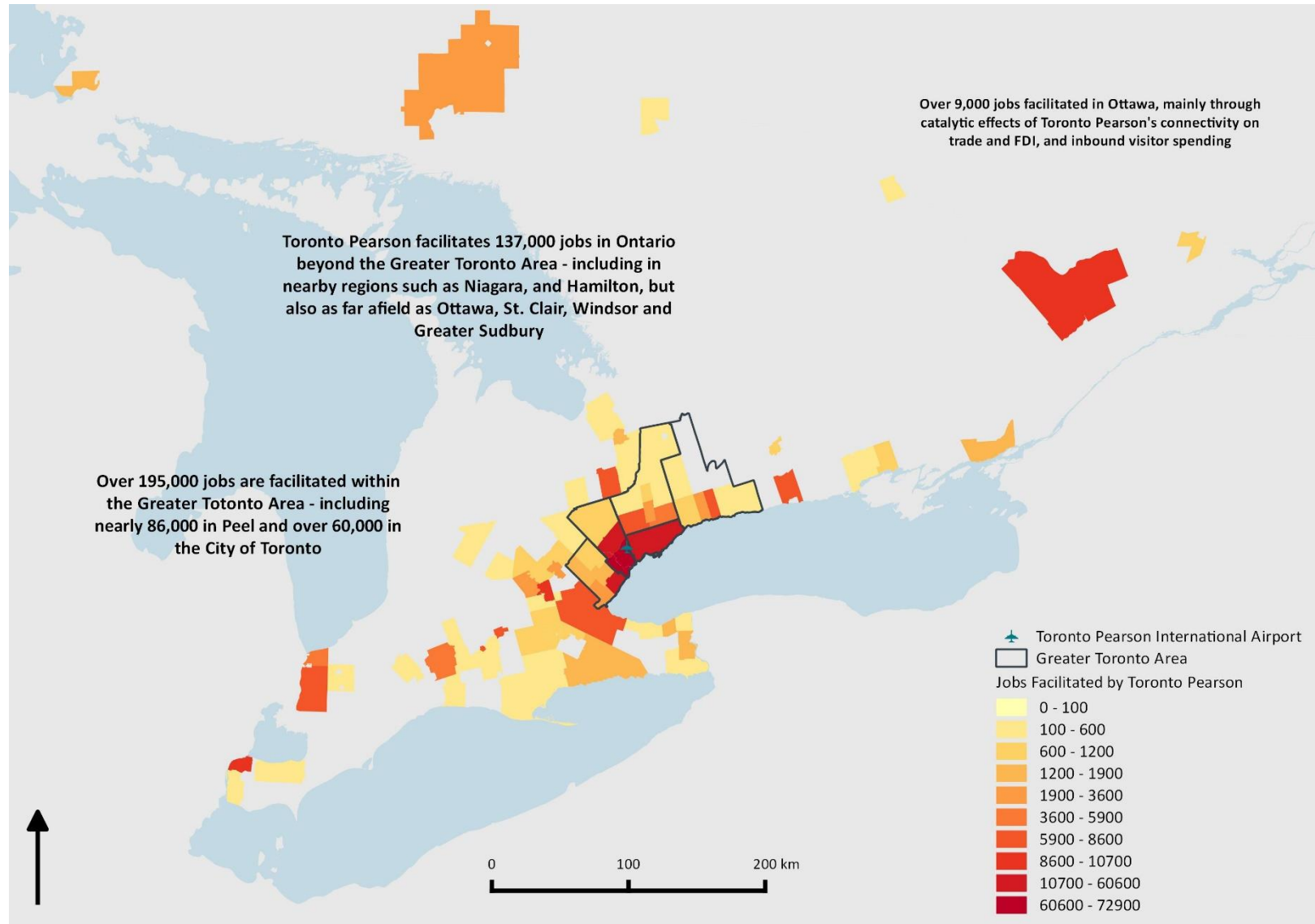
Figure 24 presents a spatial disaggregation of these jobs to illustrate the airport's economic reach. It shows that the economic impact is concentrated on the GTA (in particular the city Region of Peel and City of Toronto), but other parts of Ontario also benefit from Toronto Pearson's activities through the location of direct employees and their spending, the supply chains that support the airport's operation, and the effect on international trade of, and investment in, Ontarian companies.

Figure 23. Summary of overall results



Source: Frontier Economics, Quod and MNP.

Figure 24. Where is Toronto Pearson's overall economic impact?



Source: MNP, Quod, Frontier Economics and Statistics Canada

ANNEX A WHAT IS THE ECONOMIC IMPACT OF THE AIRPORT ON THE GTA?

In this annex, we provide a detailed break-down of Toronto Pearson's economic impact on each municipality within the GTA.

Overall, around **332,000** jobs are facilitated by the airport.

- Just under two thirds of these jobs are located in the GTA - at least 195,000 in total
- Around 182,000 people who live in the GTA have jobs that are facilitated by the airport

The airport's economic effect is wider than this with over a third of the jobs it facilitates going to Ontarians outside of the GTA.

As most of the impact is concentrated on the GTA, Figure 25 provides a breakdown of the DII and catalytic impact on each of the municipalities within the GTA in terms of the location of **jobs**, and Figure 26 shows the estimated home location of these workers:

33%

The proportion of jobs facilitated by Toronto Pearson which go to Ontarians outside the GTA.

Figure 25. Economic impact of Toronto Pearson in GTA (Location of jobs)

	DII	Jobs supported by Inbound visitor spending	Catalytic	Total
Halton	1,000	3,000	14,000	18,000
Peel	65,000	6,000	15,000	86,000
Toronto	15,000	13,000	32,000	60,000
York	1,000	5,000	11,000	17,000
Durham	<1,000	2,000	11,000	13,000
Greater Toronto Area	83,000	28,000	84,000	195,000
Rest of Ontario	18,000	24,000	95,000	137,000
Total	101,000	52,000	179,000	332,000

Source: Quod

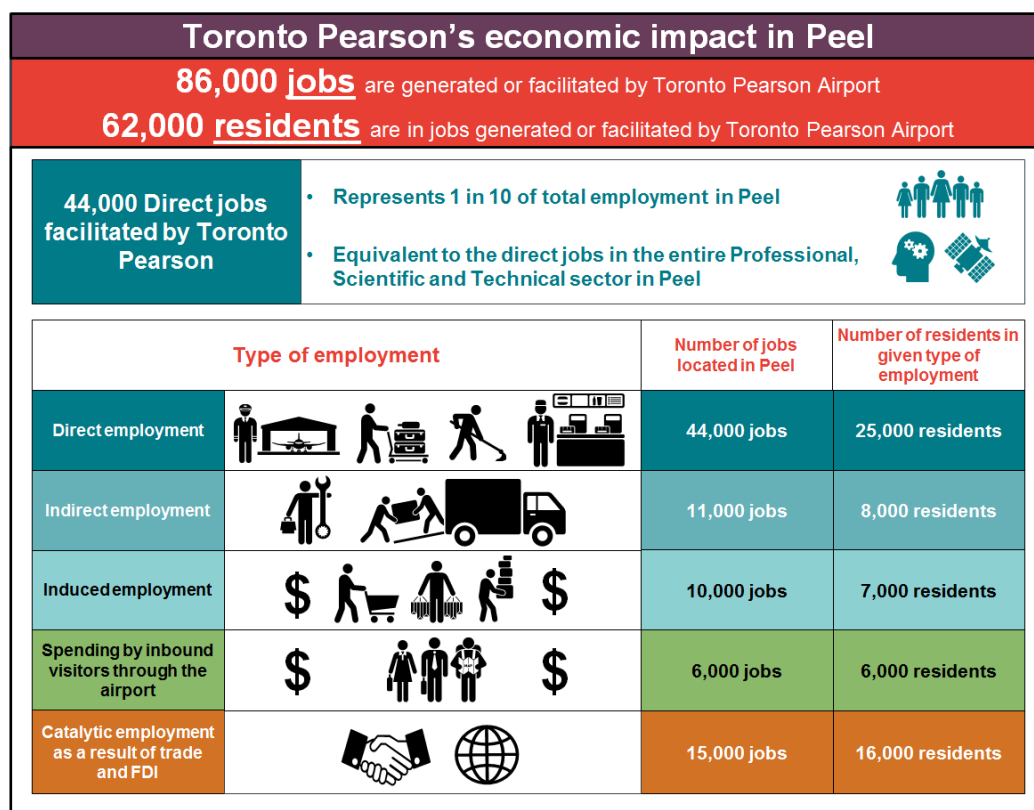
Figure 26. Economic impact of Toronto Pearson in GTA (Location of residents)

	DII	Jobs supported by Inbound visitor spending	Catalytic	Total
Halton	7,000	2,000	10,000	19,000
Peel	40,000	6,000	16,000	62,000
Toronto	23,000	10,000	27,000	60,000
York	7,000	4,000	11,000	22,000
Durham	2,000	3,000	12,000	17,000
Greater Toronto Area	79,000	26,000	77,000	182,000
Rest of Ontario	22,000	26,000	102,000	150,000
Total	101,000	52,000	179,000	332,000

Source: Quod

A.1 The Impact on Peel

Figure 27. The Region of Peel's Economic Characteristics



Source: Quod, Statistics Canada NHS 2011, Region of Peel, Frontier Economics

- There are 49,395 jobs at and around the airport that are **directly** reliant on the airport's operation - given the airport's location, around 44,000 of these jobs are in Peel – including all jobs at the airport and the majority of those in the surrounding area.
 - The airport's **direct employment effect alone** is equivalent to **nearly 1 in 10 of all jobs in Peel**, and **13% of all jobs in the City of Mississauga**.
 - The airport provides **as many direct jobs in Peel as the health sector**; or
 - More than **twice the number of jobs in the public administration sector**; or
 - Around the **same amount of jobs as Peel's professional, scientific and technical sector**.

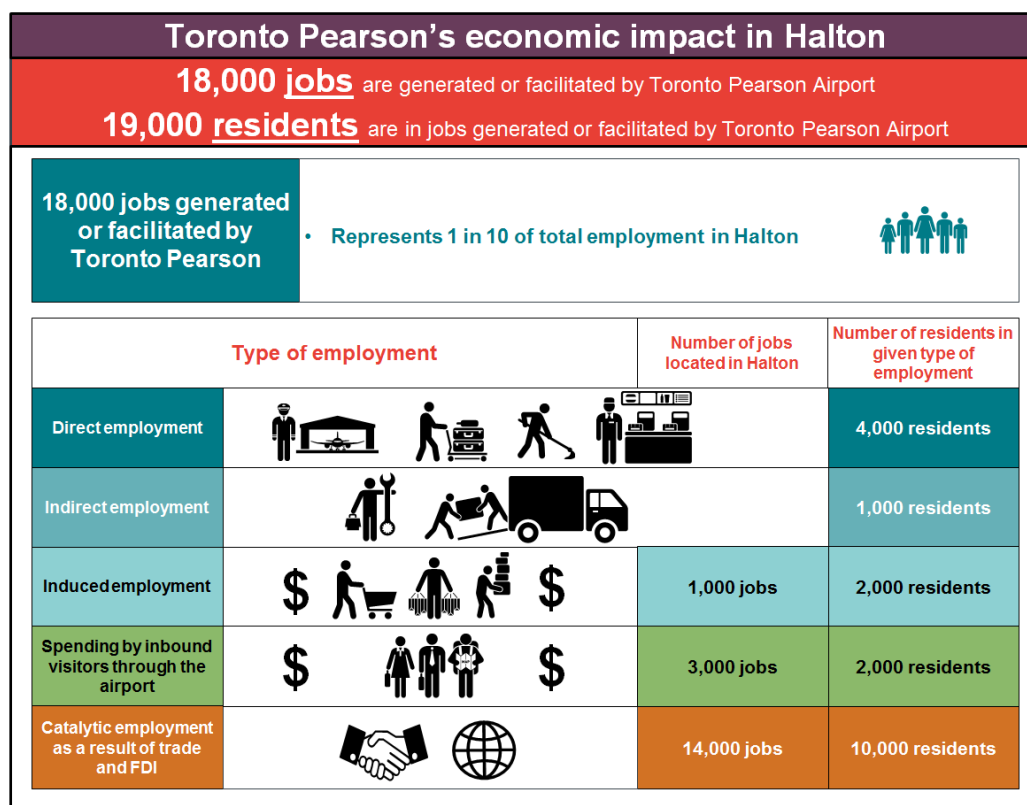
- These direct jobs support an additional **11,000 indirect jobs** in Peel within the airport's supply chain – supplying the airport with goods and services that it needs to operate – these jobs range from service sectors, to manufacturing, freight, consultancy, construction and many other sectors – delivering a range of skills for Peel's labour force.
- The 25,000 people who work at the airport and live in Peel, combined with the 8,000 who live in Peel and whose job is indirectly related to the airport, generate a significant amount of spending. This in turn creates jobs in the local area – in retail, service and other sectors that people need at and around their home. This **'induced' employment effect is likely to support over 10,000 more jobs in Peel.**
- We also know that the airport brings **inbound visitors** to Peel, who will spend money in the local economy on accommodation, transport, food, drink and other goods during their stay. A broad estimate of the value of this spending to Peel suggests that it might support **up to 6,000 jobs** in the region in these sectors.
- Finally, the airport has a significant effect in improving connectivity to Peel businesses – facilitating them to trade internationally and attract inward investment. Based on the distribution of trading sectors, FDI-heavy sectors, and the actual origin of business passengers through the airport, we estimate that the airport's connectivity supports **around 15,000 jobs in Peel.**
- If we include **indirect, induced, inbound visitor spending-related and catalytic employment**, the airport facilitates a **combined 86,000 jobs in Peel.**
- **62,000 Peel residents have jobs that are facilitated by the airport** (Over a third of these - 25,000) are in work directly related to or at the airport) - combined, this is equivalent to **over 1 in 10 Peel residents with a full time job.**
- The 25,000 Peel residents who work in jobs directly related to the operation of the airport account for over half of the airport's direct workforce.

More than 1 in 10

Number of jobs in Peel at Toronto Pearson.

A.2 The Impact on Halton

Figure 28. Halton's Economic Characteristics



Source: Quod, Statistics Canada, Frontier Economics

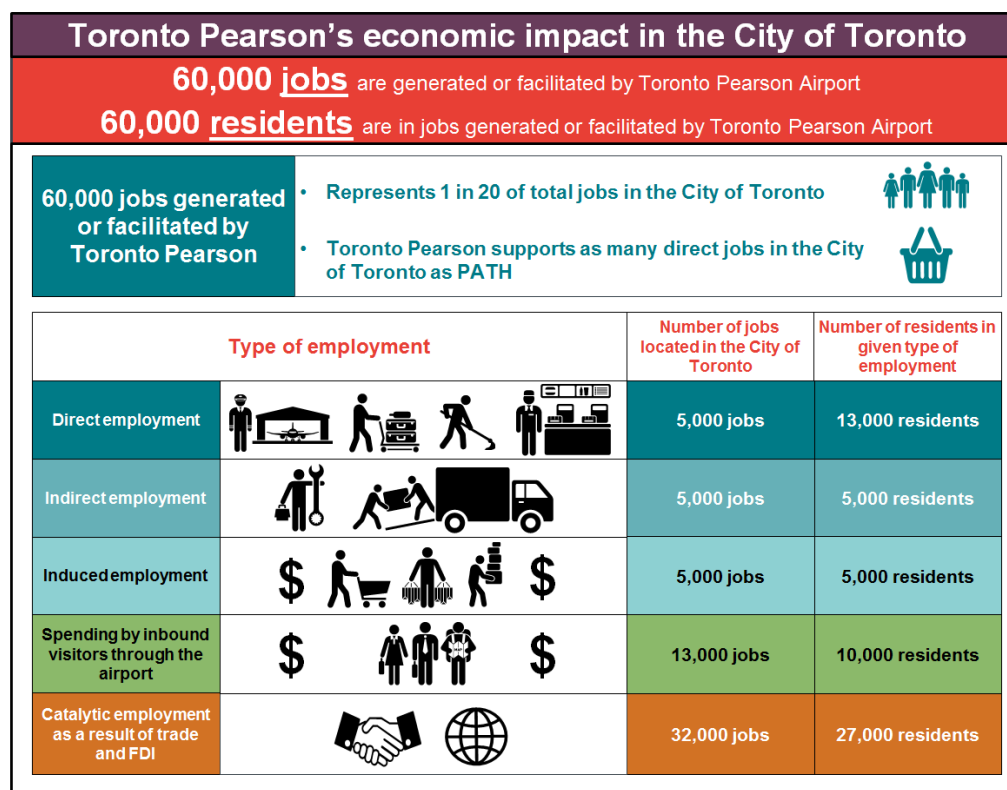
- Around 4,000 of Toronto Pearson's **direct jobs** are taken by residents of Halton.
- Toronto Pearson - and the GTAA - relies on Halton for part of its local supply chain workforce. Around 1,000 Halton residents work in **indirect** jobs related to the airport's supply chain through activities such as commercial and professional services, construction, finance and service sectors that supply the airport and its operations with the goods and services it needs to operate.
- The 4,000 people who work at the airport and live in Halton, combined with the 1,000 who live in Halton and whose job is indirectly related to the airport, generate a significant amount of spending. This in turn creates jobs in the local area – in retail, service and other sectors that people need at and around their home. This '**induced**' employment effect is likely to support **1,000 more jobs in Halton**.
- Many of the induced jobs (jobs facilitated by the direct and indirect workforce's spending) are located in the City of Toronto and Region of Peel, but are taken by people who live outside of the city - in places like

Halton. As a result, **almost 2,000 Halton residents have jobs that are facilitated by direct and indirect workers' expenditure.**

- Given Halton's proximity to the airport, the region is positioned to benefit from the spending effects of inbound visitors. The **spending of these visitors during their time in Ontario supports around 3,000 (direct and indirect) jobs in Halton, and around 2,000 Halton residents are in work facilitated by this spending.**
- Halton is also a key location for businesses in sectors that rely on international connectivity - including major international corporation HQs like Evertz Microsystems, UTC Aerospace, Siemens, Ford and Amec FW. As a result, Halton is estimated to be **home to 14,000 jobs that are facilitated by Toronto Pearson's international connectivity benefits.**
- The **combined effects of Toronto Pearson are estimated to support around 18,000 jobs in Halton, and provide employment for about 19,000 Halton residents.**
- This is equivalent to around 1 in 10 jobs in Halton.

A.3 The Impact on the City of Toronto

Figure 29. The City of Toronto's Economic Characteristics



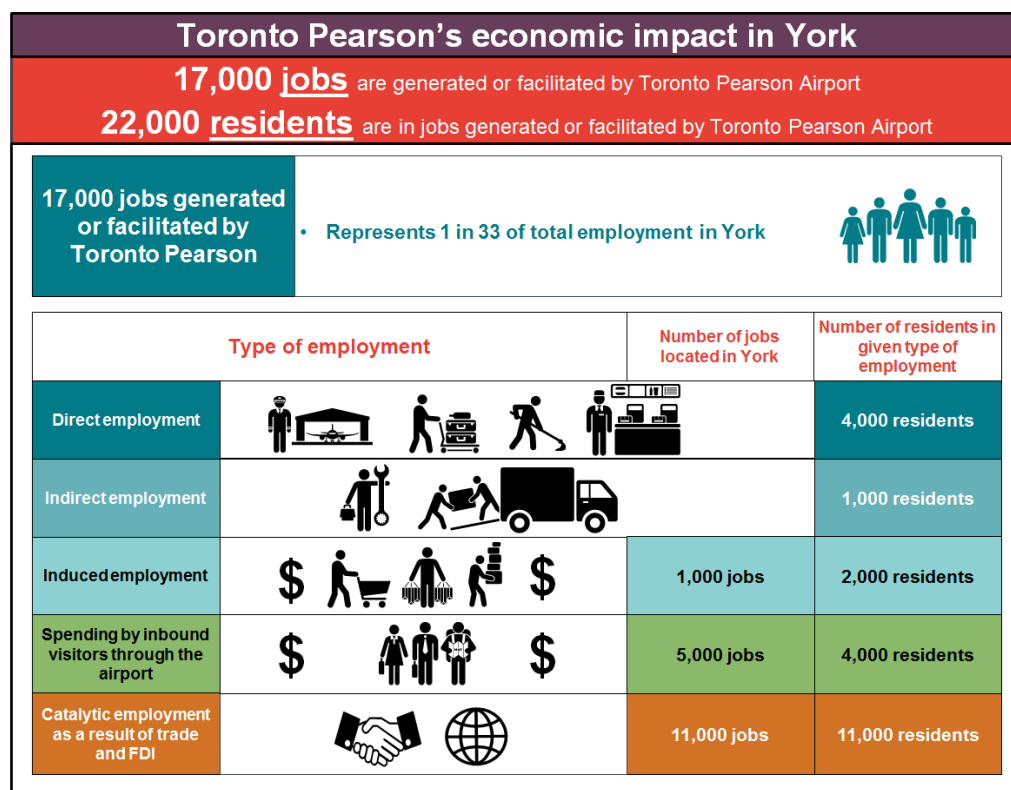
Source: Quod / Statistics Canada / City of Toronto

- Around 5,000 of Toronto Pearson's **direct jobs** are in the City of Toronto, likely to be close to the airport in hotel, parking and transportation sectors. Toronto Pearson therefore supports as many direct jobs in the City as PATH.
 - Given the City's high population density and good accessibility, it also provides a home for around 13,000 **people who work at the airport**.
- Toronto Pearson - and the GTAA - relies on the City of Toronto for its supply chain, supporting in the region of (at least) 5,000 **indirect jobs** through activities such as commercial and professional services, construction, finance and service sectors that supply the airport and its operations with the goods and services it needs to operate. Around 5,000 Toronto residents are in work indirectly related to the airport.
- The 13,000 people who work at the airport directly and live in Toronto, combined with the 5,000 who live in Toronto and whose job is indirectly related to the airport, generate a significant amount of spending. This in turn creates jobs in the local area – in retail, service and other sectors that people need at and around their home. This '**induced' employment effect is likely to support 5,000 more jobs in Toronto**.

- The City of Toronto is well defined as a leisure, recreation, retail and accommodation hub for inbound passengers arriving in Ontario through Toronto Pearson. The **spending of these visitors during their time in Toronto supports around 13,000 (direct and indirect) jobs in the City, and around 10,000 Toronto residents are in work facilitated by this spending.**
- Toronto is also a key location for businesses in sectors that rely on international connectivity - for example finance - and international trade. It is an area of dense, high-skilled and high-earning employment and is the driver of Ontario's GDP. As a result, the city of Toronto is estimated to be **home to 32,000 jobs that are facilitated by Toronto Pearson's international connectivity benefits.**
- The **combined effects of Toronto Pearson are estimated to support around 60,000 jobs in Toronto,** and provide employment for about 60,000 Toronto residents.
 - This is equivalent to around 1 in 20 jobs in the City of Toronto.

A.4 The Impact on York

Figure 30. York's Economic Characteristics



Source: Quod, Statistics Canada, Frontier Economics

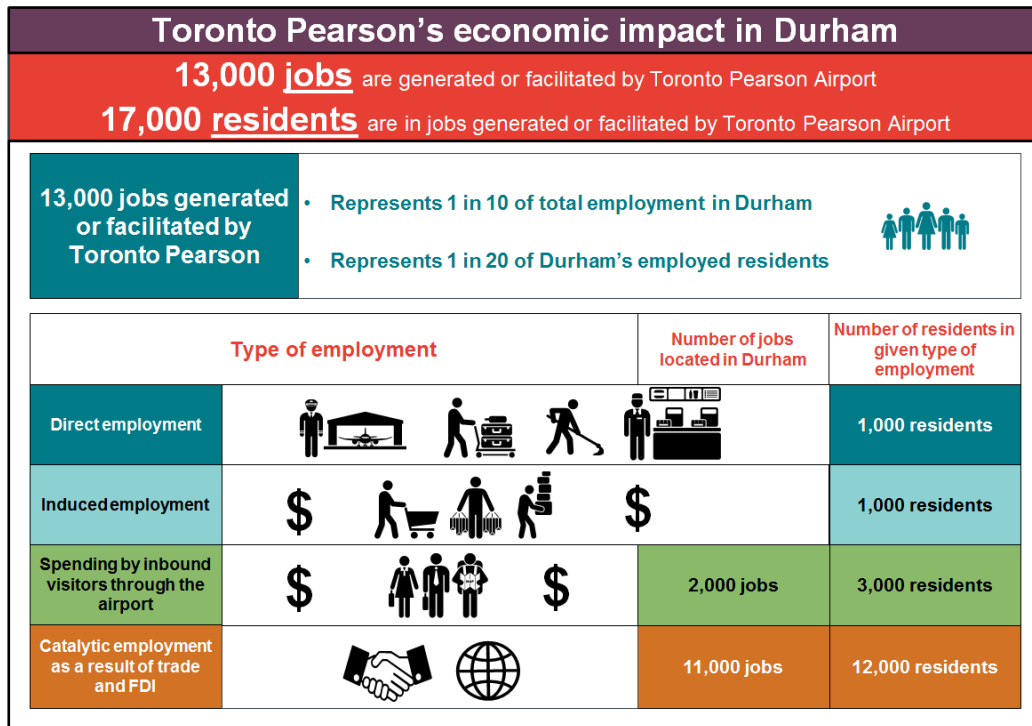
- Around 4,000 of Toronto Pearson's **direct jobs** are taken by residents of York.
- Toronto Pearson - and the GTAA - relies on York for part of its local supply chain workforce. Around 1,000 York residents work in **indirect** jobs related to the airport's supply chain through activities such as commercial and professional services, construction, finance and service sectors that supply the airport and its operations with the goods and services it needs to operate.
- The 4,000 people who work at the airport directly and live in York, combined with the 1,000 who live in York and whose job is indirectly related to the airport, generate a significant amount of spending. This in turn creates jobs in the local area – in retail, service and other sectors that people need at and around their home. This '**induced**' **employment effect is likely to support 1,000 more jobs in York.**
 - Many of the induced jobs (jobs facilitated by the direct and indirect workforce's spending) are located in the City of Toronto and Region of Peel, but are taken by people who live outside of the city - in places like

York. As a result, **almost 2,000 York residents have jobs that are facilitated by direct and indirect workers' expenditure.**

- Given York's relatively close proximity to the airport, the region is well positioned to benefit from the spending effects of inbound visitors. The **spending of these visitors during their time in Ontario supports around 5,000 (direct and indirect) jobs in York**, and **around 4,000 York residents are in work facilitated by this spending.**
- York is also a key location for businesses in sectors that rely on international connectivity for trade and investment, for example transport and warehousing and goods-producing sectors (manufacturing in York, especially in transportation equipment - one of Canada's most prominent export commodities - has shown significant growth in recent years). As a result, York is estimated to be **home to 11,000 jobs that are facilitated by Toronto Pearson's international connectivity benefits.**
- The **combined effects of Toronto Pearson are estimated to support around 17,000 jobs in York**, and provide employment for about 22,000 York residents.
 - This is equivalent to around 1 in 33 jobs in York.

A.5 The Impact on Durham

Figure 31. Durham's Economic Characteristics



Source: Quod, Statistics Canada, Frontier Economics

- Over 1,000 of Toronto Pearson's **direct jobs** and indirect (supply chain) jobs are taken by residents of Durham.
- Spending by people who live in Durham and work in jobs directly or indirectly related to the airport in turn creates more jobs in the local area – in retail, service and other sectors that people need at and around their home. This **'induced' employment effect is likely to support up to 1,000 more jobs in Durham.**
- Given Durham's links to the airport, the region is positioned to benefit from the spending effects of some inbound visitors. The **spending of these visitors during their time in Ontario supports around 2,000 (direct and indirect) jobs in Durham, and around 3,000 Durham residents are in work facilitated by this spending.**
- Durham is also a key location for global, national and provincial businesses in sectors that rely on international connectivity - for example engineering and automotive technology (General Motors and TDS), logistics and business services. As a result, Durham is estimated to be **home to 11,000 jobs that are facilitated by Toronto Pearson's international connectivity benefits.**

- The **combined effects of Toronto Pearson are estimated to support around 13,000 jobs in Durham**, and provide employment for about 17,000 Durham residents.
 - This is equivalent to around 1 in 10 jobs in Durham.
 - Around 1 in 20 of the Durham's employed residents is in a job facilitated by Toronto Pearson.

ANNEX B DETAILED METHODOLOGY FOR DIRECT EMPLOYMENT ESTIMATES

The starting point for any economic impact assessment is the direct employment facilitated by the airport. MNP has drawn on a wide range of data sources to develop estimates for direct employment. In this annex, the methodology used by MNP for estimating direct employment at Toronto Pearson is provided.

B.1 How do we define employment at Toronto Pearson?

To estimate employment associated with the ongoing operations of Toronto Pearson Airport, MNP first needed to define the types of employment that are relevant. Figure 32 shows the two types of direct employment.

Figure 32. Direct employment at Toronto Pearson



As can be seen above, the employment associated with the ongoing operations of Toronto Pearson falls into the following two categories:

- **Jobs that are physically located at Toronto Pearson** which includes:
 - Employment of the Greater Toronto Airports Authority (GTAA);
 - Employment associated with the ongoing maintenance of Toronto Pearson's facilities (for example, landscaping, snow removal, janitorial, and pest removal);
 - Employment of businesses, organizations and government agencies located at, or operating from Toronto Pearson (for example airline

customer service staff, ground handling, retail shops in the terminals, air traffic control, cargo handlers, and security);

- Employment located in the vicinity of Toronto Pearson that is related to the provision of cargo services (for example, couriers, trucking and cargo handlers);
- Employment of businesses engaged in aerospace manufacturing located in the vicinity of Toronto Pearson; and
- **Jobs that are not physically located Toronto Pearson** – for example, taxi, limousine and bus drivers, Union Pearson Express attendants, and inflight crew based out of Toronto Pearson as well as hotel employment.

Employment associated with capital investment projects was excluded from the estimates. This is because employment as a result of capital projects such as construction workers is only temporary and not part of the ongoing employment at Toronto Pearson.

What are our data sources?

MNP used a number of different data sources to develop the employment estimate. These include:

- Publicly available sources such as Statistics Canada for the number of jobs located at Toronto Pearson;
- Administrative data provided by GTAA such as Restricted Area Identify Cards and data from the Ground Transportation Survey; and
- Data collected from an online survey of businesses operating at Toronto Pearson.

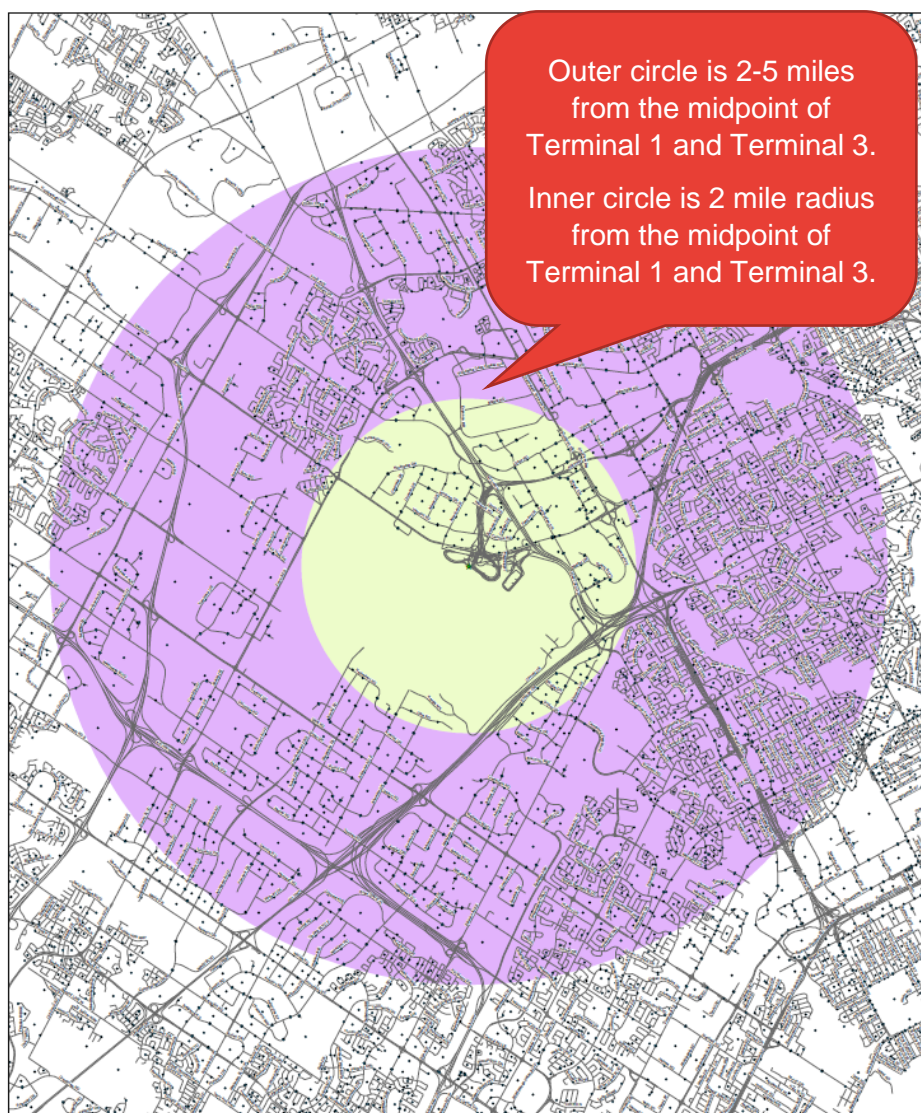
The online survey of businesses was conducted between May 16, 2016 and June 6, 2016, and was designed to gather information on the number of full-time, part-time and contract employees, and payroll at businesses and organizations operating at Toronto Pearson airport. The survey was distributed to 186 businesses and organizations and a total of 53 responses were received.

B.2 How do we estimate employment at Toronto Pearson?

B.2.1 Jobs physically located at Toronto Pearson

To estimate jobs that were physically located at Toronto Pearson, data on employment within a five mile radius¹³ of Toronto Pearson from Statistics Canada's National Household Survey ('NHS') 2011 was used. The area located within a five mile radius of Toronto Pearson is shown in Figure 33.

¹³ The five mile radius was measured from the midpoint between Terminal 1 and Terminal 3

Figure 33: Two and Five Mile Radii of Toronto Pearson

Source: GTAA

- According to the NHS data, in 2011 there were approximately 288,475 people working at a fixed place of work within a five-mile radius of Toronto Pearson and of those, 44,805 worked within two miles of Toronto Pearson. To estimate which of those jobs were related to the ongoing operations of Toronto Pearson MNP conducted a detailed examination of the four-digit North American Industry Classification System (NAICS) codes associated with the NHS data and identified the jobs in industries that were relevant to the operations of Toronto Pearson. The list of relevant industries and the associated jobs were reviewed and agreed with the GTAA.
- Within the industries relevant to the operations of Toronto Pearson, all jobs within the two-mile radius were assumed to be related to Toronto Pearson's ongoing operations. Within the two to five-mile radius only those jobs in aerospace manufacturing, support activities for air transportation, and

scheduled and non-scheduled air transportation were assumed to be related to the ongoing operations of Toronto Pearson.

As data for jobs within the two and five-mile radius is only available from Statistics Canada for 2011, MNP needed to adjust the 2011 figures to reflect the 2015 employment situation. To estimate employment in 2015, MNP adjusted the 2011 figure based on the percentage change in employment by industry between 2011 and 2015 in Ontario from Statistics Canada's CANSIM Table 281-0024 Survey of Employment, Payrolls and Hours (SEPH), employment by type of employee and detailed North American Industry Classification System (NAICS).

This is summarised in Figure 12 below.

Figure 34. Estimating direct jobs physically located at Toronto Pearson

Methodology to estimate direct jobs physically located at Toronto Pearson	
Input Data	Calculations
Statistics Canada's 2011 NHS data on employment in a fixed place of work within: <ul style="list-style-type: none"> • 2 miles of Toronto Pearson • Within 2 and 5 miles of Toronto Pearson 	1 Estimate the proportion of this employment relating to direct jobs physically located at Toronto Pearson
	2 Adjust the 2011 figures to reflect the 2015 employment situation.

B.2.2 Jobs not physically located at Toronto Pearson

MNP estimated the number of jobs related to airline staff, ground transportation and hotel employment. Each of the categories requires a number of assumptions.

Airline Staff

These include inflight crew based out of Toronto Pearson and Air Canada operations centre employees handling flights at Toronto Pearson.

The number of inflight crew jobs based out of Toronto Pearson was estimated based on the number of Restricted Area Identify Cards by airline, estimated employment attributed to scheduled air transportation from the NHS and information gathered from airlines through the survey of businesses.

The number of Air Canada operations centre jobs was estimated using publicly available information from Air Canada's website on the number of flights operated from Toronto Pearson and the number of employees at the operations centre.¹⁴

¹⁴ Air Canada's Operations Centre moved to Brampton, Ontario in 2013/14. According to the press release there are 400 employees at the operations centre and they handle 600 flights a day. (<http://aircanada.mediaroom.com/index.php?s=43&item=682>). Air Canada operates approximately 355 flights operate out of Toronto Pearson daily (<http://www.aircanada.com/en/travelinfo/airport/toronto.html>).

Ground Transportation

This refers to employment related to the operation of taxis, limousines, buses, hotel shuttles and the Union-Pearson Express.

The number of ground transportation jobs was estimated based on administrative data provided by the GTAA on the number of trips by mode and information on average trip length by mode from the GTA 2011 Ground Transportation Survey. The number of trips by mode was converted to number of hours of operation using the assumptions shown in Figure 35. The number of hours were converted to full-time equivalents (FTEs) based on 1 FTE = 1,800 hours.¹⁵

Figure 35: Assumptions Used to Convert Number of Trips to Hours of Operation

Mode	Average Trip Distance*	Assumptions
Taxi and limousines	Regular trip – 37 km	Distance travelled per hour is 50 km. Time cab is occupied is 50 percent ¹⁶
Uber	Short trip – 7.7 km	Distance travelled per hours is 50km. Time car is occupied is 75 percent.
Pre-arranged and itinerant buses		Distance travelled per hour is 50 km. Time per trip is twice the travel time to account for loading, unloading and standing.
Out of town shuttles (AGTA T1/T3)	84 km	Distance travelled per hour is 90 km. Time per trip is twice the travel time to account for loading, unloading and standing.
Hotel courtesy shuttles	Not applicable	Two trips per hour.

*Weighted average by mode from the GTA 2011 Ground Transportation Survey

Employment associated with the TTC 192 Rocket shuttle bus service was estimated using data on the annual hours of operation provided by the Toronto Transit Commission. Union-Pearson Express employment was estimated based on information provided through the survey of businesses.

Hotel Employment

With the exception of the onsite hotel properties, not all hotel employment within five miles of the airport is directly attributable to Toronto Pearson. Consequently MNP has estimated it separately and included both employment within 5 miles and employment outside of five miles.

Hotel employment at properties located onsite at Toronto Pearson was assumed to be associated with the ongoing operations of Toronto Pearson and was estimated based on information provided through the survey of businesses.

¹⁵ This is a standard full-time work definition in North America. It assumes an individual works 37.5 hours per week and has some combination of vacation and leave equal to 4 weeks each year.

¹⁶ Standing time was determined based on information in a study of New York Taxi Cabs http://www.nyc.gov/html/tlc/downloads/pdf/2014_taxicab_fact_book.pdf and prior work undertaken by MNP.

Employment at off-site properties was calculated based on estimates of the number of room nights attributable to passengers and air crew and estimates of the employment/room ratio published by the American Lodging Association (0.38 jobs per room).¹⁷

Room nights attributable to passengers were estimated using information provided by the GTAA on the number of passengers travelling through Toronto Pearson and the share of passengers travelling on hotel shuttles from the 2011 Ground Transportation Survey. For each passenger travelling on a hotel shuttle there was one room night attributed to Toronto Pearson. This assumption is considered reasonable as not all hotel patrons take the shuttle bus to/from the airport.

Room nights associated with airline crew were estimated using information provided through the survey of businesses on the number of rooms purchased outside of a five-mile radius of Toronto Pearson.

B.2.3 What additional assumptions are required?

To develop the total direct employment estimates, MNP had to make a number of assumptions:

- **Conversion to full-time equivalent (FTEs) jobs** – where information on the number of FTEs was not available, the number of jobs was converted to FTEs based on the ratio of FTEs to jobs for the relevant category of business received from the survey of businesses.
- **Payroll** was calculated based on average earnings for the relevant category of business from the survey of businesses and annual earnings in Ontario by NAICS from Statistics Canada's CANSIM Table 281-0027 Survey of Employment, Payrolls and Hours (SEPH), average weekly earnings by type of employee, overtime status and detailed North American Industry Classification System (NAICS), annual (current dollars).

B.3 What are our results?

B.3.1 Jobs physically located at Toronto Pearson

According to the NHS data, in 2011 there were approximately:

- 288,475 people working at a fixed place of work within a five-mile radius of Toronto Pearson and of those;
- 44,805 worked within two miles of Toronto Pearson.

As stated above, MNP undertook a detailed analysis of the types of jobs in the two and five-mile radius based on NHS data for 2011 and then adjusted these to reflect growth in jobs since 2011. The results are shown in Figure 36 which

¹⁷ See Lodging Industry Trends 2015, American Hotel and Lodging Association. Available at https://www.ahla.com/uploadedFiles/Common/pdf/Lodging_Industry_Trends_2015.pdf

shows that the total employment physically located at Toronto Pearson is estimated at approximately 38,900 FTEs.

Figure 36: Number of People Working at a Fixed Place of Work within Five Miles of Toronto Pearson

Distance From Toronto Pearson Airport	Total Employed Labour Force, 2011 (NHS)	Baseline Estimated Employment Associated with Toronto Pearson, 2011	Estimated Employment Associated with Toronto Pearson, 2015
0 - 2 miles	44,805	18,721	21,050
2 - 5 miles	243,670	15,162	17,850
Total	288,475	33,883	38,900

Source: Statistics Canada, National Household Survey 2011, Custom Tabulation and MNP Estimates

B.3.2 Jobs not physically located at Toronto Pearson

As stated above, there are three categories of jobs that are related to ongoing operations but not physically located at Toronto Pearson:

- Airline staff including inflight crew based out of Toronto Pearson and Air Canada operations centre employees handling flights at Toronto Pearson;
- Ground transportation employment related to the operation of taxis, limousines, buses, hotel shuttles and the Union-Pearson Express; and
- Hotel employment.

Figure 37 shows that MNP estimated the number of jobs not physically located at Toronto Pearson at approximately 10,500.

Figure 37: Estimated number of Jobs not Physically Located at Toronto Pearson

Category	Jobs
Airline Staff	6,700
Ground Transportation Employment	2,600
Hotel Employment	1,200
Total	10,500

B.3.3 Total number of jobs at Toronto Pearson

Overall, we estimated that the total number of jobs facilitated directly by Toronto Pearson is approximately 49,400. This includes jobs physically located at the airport and those related to the airport such as ground transportation, hotel employment and air crew.

Figure 38. Total estimate of direct jobs at Toronto Pearson

Jobs physically located at Toronto Pearson	38,900
Jobs not physically located at Toronto Pearson	10,500
Total	49,400

ANNEX C DETAILED METHODOLOGY FOR INDIRECT AND INDUCED ESTIMATES

This annex describes the process used by Quod for defining and estimating the **indirect** and **induced** employment impacts resulting from direct employment at the airport, as described in Annex B.

C.1 Defining indirect employment

Indirect employment is defined as employment in the airport's supply chain that supports the direct activity of the airport. This can include the provision of goods and services, for example the purchase of fuel or food/drink by an airline, maintenance contracts by the GTAA, and supplies for retailers.

C.2 Calculating indirect employment

C.2.1 Indirect employment in 2016

In order to estimate the scale of this type of employment, we use a combination of the identified direct employment identified, and published data from Statistics Canada's (2010) Input-Output tables¹⁸, which capture the relationship between direct employment (by 3-digit NAICS) and Type I multipliers within Ontario.

The Type I multiplier takes account of the direct and indirect effect of a one unit increase in demand for the output of an industry. For example, a Type I multiplier of 1.5 for an item or sector implies that demanding the production of an additional item unit would lead to an increase of 0.5 units in the industries that produce inputs for the production of the item.

As identified in Annex B, the main outputs produced directly by Toronto Pearson are in the form of jobs in the Air Transport and Support Services for Transportation sectors (accounting for around half of the direct jobs). These sectors have Type I employment multipliers (within Ontario) of 1.90 and 2.06 respectively - higher than the average for all sectors combined (1.44). This reflects the capital intensive supply chains of these sectors specifically - for example the need to produce goods, materials, fuels, value-added services that keep the sector in operation. Furthermore, air transportation is a high wage industry and generates demand for goods and services in other high wage industries such as mining (oil & gas) and finance, insurance and real estate.

It should be noted that these are not the only direct outputs of the airport - around half of the direct employment is accounted for by other sectors including

¹⁸ Statistics Canada *Provincial Input-Output Multipliers* (2010) Cat. No. 15F0046XDB

transport, administrative and support services, retail accommodation, food and drink, security and maintenance and other sectors.

As such, we have applied each Statistics Canada multiplier specific to each direct sector identified, by the number of direct FTEs in those sectors. This generates a total of 32,971 jobs, and creates an aggregate Type I multiplier for the airport of 1.67 (i.e. each direct job supports 0.67 jobs in the economy as a result of supply chain spending). The following table identifies the sector-specific multipliers used to calculate this figure, and the sub-sectoral effects of each direct job on indirect employment. It also includes Type II employment multipliers for induced employment effects described later in this annex:

Figure 39. Direct Employment, Type I/II Employment Multipliers and calculated Indirect and Induced Employment

Direct Sector	Direct Jobs	Type I Multiplier	Indirect Jobs	Type II Multiplier	Induced Jobs
Machinery Manufacturing	65	1.48	31	1.86	25
Navigational, measuring, medical and control instruments manufacturing	528	1.49	257	1.89	212
Aerospace Manufacturing	1,760	1.39	694	1.76	653
Food and Beverage Stores	734	1.17	125	1.34	122
Clothing and Accessories	1,482	1.25	363	1.43	268
Air Transportation	18,244	1.90	16,349	2.42	9,491
Rail Transportation	25	1.67	17	2.09	10
Truck Transportation	1,040	1.44	453	1.67	242
Transit and Ground Passenger Transportation	2,945	1.21	632	1.40	559
Support Activities for Transportation	8,902	2.06	9,471	2.51	3,967
Postal Services	140	1.29	41	1.55	37
Couriers and Messengers	709	1.29	206	1.55	186
Warehousing and Storage	538	1.14	76	1.39	131
Telecommunications	40	1.79	31	2.26	19
Rental and Leasing Services	1,158	1.71	828	2.06	396
Professional, Scientific and Technical Services	781	1.32	252	1.61	226
Management of companies and enterprises	155	1.66	102	2.17	79
Administrative and Support Services	3,265	1.23	753	1.45	731
Waste Management and Remediation	135	1.39	53	1.69	40
Accommodation Services	1,231	1.32	397	1.57	299
Food Services and Drinking Places	1,538	1.29	444	1.47	276
Repair and Maintenance	343	1.21	72	1.39	61
Personal and laundry services	519	1.21	108	1.32	58
Professional and Similar organizations	668	1.36	243	1.67	205
Federal Government Public Administration	1,095	1.46	504	1.94	522
Wholesale Trade	336	1.54	183	1.91	123
Other Retail Trade	1,020	1.28	285	1.50	220
TOTAL	49,395	1.67	32,971	1.23	19,156

Source: MNP, Quod and Statistics Canada

C.2.2 Indirect employment in 2030

Indirect employment is calculated based on the total number and sectors of direct employment, as described above. Therefore, any estimate of future indirect employment is likely to be proportional to the number and type of **direct** jobs in the future.

It is not possible to state with any degree of confidence the sectoral breakdown of jobs directly related to the operation of the airport - there will be productivity gains, technological advancements and operational efficiencies, and commercial decisions that affect this breakdown. It is therefore assumed that, on average, the overall multiplier for the aggregated direct sectors should be used as a baseline.

It is, however, possible to estimate the overall number of direct jobs in the future, based on projected relationships between aircraft movements/million passengers p/a (MPPA) per job. Previous research undertaken by HRD/HLB Decision Economics (2012) in collaboration with GTAA estimated the relationship between direct employment in aviation, operations, commercial services and cargo at the airport and passenger movements, forecasting this forward to 2030. The overall number of jobs per MPPA in 2030 was estimated to be around 81.9% of today's value due to aggregated overall productivity/efficiency gains.

Using Toronto Pearson's estimates for future MPPAs (around 63 in 2030, supporting 66,167 direct jobs), this would support around 44,166 indirect jobs in 2030 using today's multipliers. Evidence from Statistics Canada's historical Input-Output tables suggests that weighted multipliers do not change significantly over time.

C.3 Defining induced employment

Induced employment is defined as employment supported by the spending of people whose job is directly or indirectly related to the airport, in their home location. This spending supports a range of service-sector jobs, for example retail jobs in local shops, personal service and care sectors, and public services.

C.4 Calculating induced employment

C.4.1 Induced employment in 2016

To calculate induced employment, we have used Statistics Canada's (2010) Input-Output tables and the Type II employment multipliers, by detailed 3-digit NAICS sector, for Ontario. As we know the breakdown of direct employment by 3-digit NAIC sector, we can use this table to calculate an aggregated multiplier based on the distribution of direct and indirect jobs by sector, using the methodology described above.

Using this methodology, the aggregated Type II multiplier generated by the direct and indirect employment is approximately 1.23 (i.e. each direct and indirect job supports 0.23 jobs in the economy as a result of supply chain spending).

As such, 49,395 direct jobs and 32,971 indirect jobs support an additional 19,156 jobs through induced spending.

C.4.2 Induced employment in 2030

Induced employment is calculated based on the total number and sectors of direct employment, and indirect employment as described above. Therefore, any

estimate of future induced employment is likely to be proportional to the number and type of **direct and indirect** jobs in the future.

It is not possible to state with any degree of confidence the sectoral breakdown of jobs directly related to the operation of the airport - there will be productivity gains, technological advancements and operational efficiencies, and commercial decisions that affect this breakdown. It is therefore assumed that, on average, the overall multiplier for the aggregated direct sectors should be used as a baseline.

It is, however, possible to estimate the overall number of direct jobs in the future, based on projected relationships between aircraft movements/million passengers p/a (MPPA) per job. Previous research undertaken by HRD/HLB Decision Economics (2012) in collaboration with GTAA estimated the relationship between direct employment in aviation, operations, commercial services and cargo at the airport and passenger movements, forecasting this forward to 2030. The overall number of jobs per MPPA in 2030 was estimated to be around 81.9% of today's value due to aggregated overall productivity/efficiency gains.

Using Toronto Pearson's estimates for future MPPAs (around 63 in 2030, supporting 66,167 direct jobs), this would support around 44,166 indirect jobs in 2030 using today's multipliers. Applying this total to today's Type II employment multipliers results in approximately 25,661 induced jobs in 2030. Evidence from Statistics Canada's historical Input-Output tables suggests that weighted multipliers do not change significantly over time.

C.5 Literature and Comparisons

A review of literature and other studies suggests that this is broadly in line with other relationships found between direct and indirect employment. For example:

- Research by the Canadian Airports Council (2013)¹⁹ explains that, combined, the Air Transport and Support Services for Transportation sector could have a combined (Type I and II) multiplier of up to 3.46 (not including other direct non-air-transport sectors at Canadian Airports). Including all activity at Canadian airports, the employment multiplier is estimated at around 2.26.
- This study includes reference to other industry-wide DII studies by NACC (2010)²⁰, Oxford Economics (2011)²¹ and SLI/CBoC (2012)²², which estimate a range of multipliers from 1.83 to 2.83.
- Frontier Economics' (2014) research for Heathrow Airport in the UK as part of the airport's submission to the Davies Commission found that Heathrow's Indirect multiplier effect on GVA (converted to employment) is approximately 1.63²³ using ONS Input-Output tables;

¹⁹ Canadian Airports Council (2013) *The Economic Impact of Air Transportation in Canada*

²⁰ DF Lazar / NACC (2010) *The Economic Impact of Member Carriers of the National Airlines Council of Canada*

²¹ Oxford Economics (2011) *Economic Benefits of Air Transportation in Canada*

²² Conference Board of Canada (2012) *Driven Away: Why More Canadian Airports are Choosing Cross-Border Airports*

²³ Heathrow Airport Ltd (2014) *Taking Britain Further: Technical Submission Vol. 2*

- Optimal Economics' (2011) research into the scale of Heathrow-related employment included a detailed survey methodology for identifying indirect effects, including a census of direct employment at the airport and a telephone survey of indirect employment, based on information on the airport's supply chain sectors. This identified a Type I multiplier effect of around 1.52²⁴.
- Research undertaken by the Association for European Transport (2006)²⁵ included a review of various multipliers from airports across Europe and North America, finding that multipliers vary from around 1.3 to 8.5, with an average of around 2.6, including 1.5 at Brussels and 4.1 in Milan. It also found that there is no evident correlation between annual traffic and the size of the multiplier. Research by ATAG (2005)²⁶ found that overall multipliers tend to be towards the lower end of identified ranges.

²⁴ Optimal Economics (2011) *Heathrow-related Employment*

²⁵ AET / Molde University College (2006) *An Inquiry into the link between Air Transport and Employment in Norway*

²⁶ ATAG (2005) *The Economic and Social Benefits of Air Transport*

ANNEX D DETAILED METHODOLOGY FOR IMPACT OF TOURIST SPENDING BY INBOUND VISITORS

Our 'what-if' scenario for estimating this impact is to assume that the airport did not exist. There will therefore be a direct effect on spending by inbound visitors: if fewer people visit Ontario (regardless of the purpose of their travel), inbound visitor spending decreases. Inbound visitor spending includes spending on (for example) accommodation, food and beverages, entertainment and land transport.

Figure 40. Overview of impact through tourist spending by inbound visitors



Source: Quod and Frontier Economics

D.1 Relationship between connectivity and inbound visitor spending

Passengers who travel to and from Ontario will generate tourism spending regardless of their trip purpose through their spending on subsistence, goods and services, etc. A decrease in the number of passengers travelling to Ontario will inevitably result in a decrease in inbound total tourism spending (or tourism exports).

Likewise, a decrease in the number of outbound passengers from Ontario (which would happen in our what-if scenario if the airport did not exist) results in a decrease in outbound tourism spending (or tourism imports). For the purpose of this report, we have calculated the gross effect of inbound tourism rather than the net effect by subtracting the effect of outbound tourism. This enables us to estimate the impact on employment in the GTA.

To estimate the impact of connectivity on tourism spending, we have obtained data on tourism spending per passenger-visit. Evidence on tourism spending on a country of origin basis is limited. In general, most evidence is based on tourism surveys. We have reviewed the a range of data sources from Statistics Canada, the Ministry of Tourism, Culture and Sport, the Canadian Tourism Commission and the Ontario Ministry of Tourism, Culture and Sport.

Our assumptions on tourism spending per passenger-visit by country of origin are based on the Statistics Canada International Travel 2010 survey. It provides the most comprehensive country-level data. It provides data on a person's average spending per trip for 14 countries across four continents, as well as data by continent and region. We cross-checked our assumptions with the other sources to ensure they were consistent.

Given that data on tourism spending by non-Canadians in Ontario was not available for every country, we used either the respective continent and regional values or a geographically similar country where there was missing data. For example, for Taiwan we used China's average spending per person-trip and an 'Other European' average for Albania.

We use the Ontario Ministry of Tourism, Culture and Sport's visits and spending statistics for our assumption on tourism spending between different provinces. This provides an average tourism spend by Canadians from other provinces in Ontario of CAN\$366, in 2011.

Figure 41 below summarizes our assumptions on tourism spending per passenger-visit.

Figure 41. Tourism spending per passenger-visit

Direction	Location	Average tourism spending per passenger visit
Inbound (tourism exports)	Rest of world (including US) to Ontario	\$440 - \$1,990
	Canadian provinces to Ontario	\$360

Note: These figures are rounded and are in Canadian dollars

D.2 A change in inbound visitor spending has an impact on GDP and employment

Inbound visitor spending supports direct and indirect employment. Spending by visitors in Ontario positively impacts on the economy, given it involves an inward flow of economic value in the purchase of goods and services from (for example) the food and drink, accommodation, recreation and travel sectors. We have estimated that inbound visitors spent approximately \$3.1 billion in 2014 during their time in Ontario. We further estimate that inbound tourist spending will amount to \$7.8 billion in 2030.

We can convert this spending to employment and estimate the GDP generated using a number of methods.

Firstly, we can use data on employment in the tourist industry in Canada (approx. 630,000 jobs in). We also know how much money is spent by tourists in Canada, and can therefore estimate an average spend per job – around \$112,000 per job. This would suggest that the annual spend of \$3.1bn would support around

27,600 jobs in Ontario's tourist-related sectors (predominantly accommodation, food and drink service, retail, art/culture).

Alternatively, we can use information from Statistics Canada to calculate the total employment in retail, accommodation and food service activities in Canada, and the GDP that these sectors produce, to estimate the GDP per job supported in these sectors. On aggregate, this is around \$37,000 GDP per job for the combined sectors.

We can then calculate the ratio of GVA (approximately GDP in this case) to turnover (or spending in this case) using the 2010 Supply and Use tables published by Statistics Canada for these sectors. The ratio is approximately 0.54, resulting in a spend-per-job of around \$57,300. As such, spending of \$3.1bn in Ontario would support up to 54,000 jobs.

Both methods are valid approaches – as such we have taken a mid-point for the estimate of 40,900 direct inbound visitor spending jobs used in this report.

These jobs will support additional supply chain employment. Using the same methodology as described in Annex C, we have established Type I multipliers for the accommodation and food and drink service and retail sectors using Input-Output tables. These multipliers (1.31 and 1.25 respectively), applied to the direct inbound visitor spending employment calculated, results in a total estimate of approximately 52,000 jobs in these sectors in Ontario as a result of the \$3.1bn annual inbound visitor spend. Using the average GDP per job above, this spending activity and resulting employment supported can be estimated to contribute around \$1.9bn per year in GDP to Ontario's economy.

Assuming productivity remains constant, inbound visitor spending of \$7.8bn in 2030 could support up to 131,000 jobs and contribute \$4.8bn to Ontario's GDP using the same methodology.

ANNEX E DETAILED METHODOLOGY FOR CATALYTIC IMPACT

This Annex provides a detailed description of our methodology for estimating catalytic employment estimates.

E.1 How does air connectivity facilitate economic value?

This section provides an overview of the key elements of our approach. We first clarify how we define economic value in the context of connectivity and discuss the issue of causality. We also provide a detailed description of the key relationships that underpin our analysis. Lastly, we discuss the role of connecting passengers and our approach to estimating economic value in the future.

E.1.1 What do we mean by economic value?

Our analysis is aimed at estimating the economic value facilitated by Toronto Pearson Airport. It is therefore useful to clarify what we mean by economic value. Ultimately we are interested in Toronto Pearson's contribution to Ontario's GDP and employment. GDP is generally defined as the sum of all goods and services produced in the economy, and is therefore closely related to living standards. Similarly, employment is one of the key factors that determine economic well-being. The way in which air travel relates to GDP and employment – through trade and foreign direct investment (FDI) – is indirect. This is illustrated in Figure 42 below.

Figure 42. Drivers of economic value considered in analysis



Source: Frontier Economics

For trade and FDI we consider two-way flows so we have included imports and exports, as well as outward and inward FDI flows.

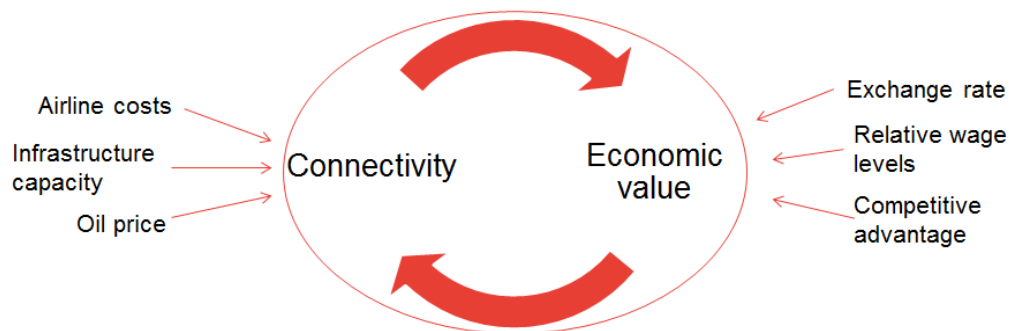
E.1.2 What about causality?

Studies on the relationship between connectivity and economic value are often criticized as there are a range of other factors that influence economic value. This implies that connectivity should be viewed as one of the factors contributing

to economic value. While connectivity is one important factor that enables international business relationships to develop, alone connectivity is not a sufficient condition for economic growth. Clearly, other factors influence both connectivity and economic value.

In addition, we acknowledge that there is a two-way relationship between connectivity and economic value. As such, we interpret our results as the economic value *facilitated* by the airport rather than the economic value *generated* by the airport. The best way to describe this relationship is a virtuous circle (shown in Figure 42 below). The relationship goes both ways: economic growth creates demand for connectivity, but connectivity enables growth. But the fact that causation works both ways does not devalue the vital and unique contribution that an airport like Toronto Pearson makes to its local economy. The best way of thinking about this is that connectivity represents an element in a virtuous circle of economic activity and growth. The connectivity enabled by Toronto Pearson is not a sufficient condition on its own for creating economic activity, but the role the Airport plays in the economy is a necessary condition in helping a well-functioning and open economy to achieve its full potential.

Figure 43. The virtuous circle between connectivity and economic value



Source: Frontier Economics

E.1.3 What is our overall approach?

To quantify Toronto Pearson's contribution to economic value today, we consider the economic value that would be lost if Toronto Pearson did not provide the current level of connectivity. The size of the loss can then be interpreted as the value facilitated by the current level of connectivity. There are a number of options for defining the "what-if" or counterfactual scenario.

First, we considered a "what-if" scenario in which Toronto Pearson does not exist. In this scenario air connectivity to and from Toronto would be severely decreased and travel times would increase substantially. However, we do not think this is a credible approach as it would lead to an unrealistically large estimate of Toronto Pearson's value.

Instead, we took a more conservative approach. Our "what-if" scenario assumes that Toronto Pearson does not provide any direct flights, so all passengers have

to take indirect flights via another hub airport to get to their final destinations. As such, our “what-if” scenario measures the economic value of being directly connected to destinations. We concluded that this provides a realistic approach to valuing Toronto Pearson’s connectivity as a hub airport.

To develop a realistic view of the alternative travel times of indirect connections, we selected four North American hub airports for indirect international connections from Toronto. These were: Chicago, Atlanta, New York and Los Angeles. For indirect connections in Canada we added 2.5 hours of travel time to reflect the availability of a range of airports that could be used for connections. In addition, we also considered road and rail alternatives to destinations within 800 kilometres of Toronto to capture the possibility that some passengers would use these modes of transport as an alternative to flying.

We can illustrate the “what-if” scenario with the following example: passengers travelling on a direct flight from Toronto to London, UK take about 7 hours. In the “what-if” scenario the travel time increases by just less than three hours, as passengers would have to fly via New York. As a result, a small proportion of passengers would choose not to take the trip as the increase in travel time implies that the trip is not worthwhile. It is the impact of this reduction in passengers that measures the economic value of a direct connection to London, UK provided by Toronto Pearson.

In addition to the reduction in passengers in the what-if scenario, there may also be loss of productivity for the remaining passengers who must spend more time on essential business travel. However, we do not attempt to measure this effect as it requires a number of assumptions on the effect of increased travel time on economic output. This can be considered a conservative assumption.

To estimate the economic value facilitated by Toronto Pearson we need to distinguish different passenger types. Figure 44 shows that we have assumed 40 per cent business passengers, based on survey data provided by Toronto Pearson. As detailed information on the split of Canadian and foreign passengers on each route is not available, we have used an aggregate figure from Statistics Canada that is applied to all routes.

Figure 44. Assumptions on passenger types

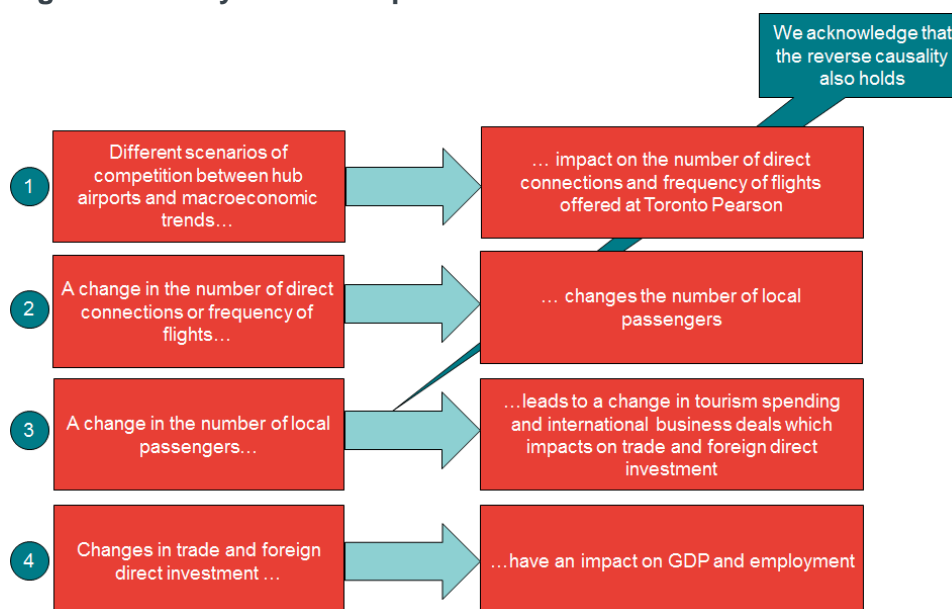
Parameter	Assumed value	Rationale/Source
Business passengers	40 per cent	Based on Toronto Pearson survey data
Proportion of Canadian/ non-Canadians on each route	70 per cent Canadian / 30 per cent non- Canadian	Based on Statistics Canada this is an aggregate figure for all routes.

E.2 How do we quantify the catalytic economic impact of Toronto Pearson?

In order to quantify Toronto Pearson’s contribution to economic value, we divided the relationship between connectivity and economic value into a number of steps.

Figure 45 summarizes the four key relationships we have identified. Each of the relationships is explained in detail below.

Figure 45. Key relationships



Source: Frontier Economics

E.2.1 Key relationship 1 – Macroeconomic trends and hub competition determine connectivity at Toronto Pearson

We define connectivity at Toronto Pearson as the number of direct connections and the frequency of flights. For the “current” economic impact of Toronto Pearson, we have used passenger data for 2014. Passenger numbers in the 2030 baseline scenario are based on the following assumptions:

- **GDP growth** - we have obtained projections of GDP growth from HSBC Bank (2012).²⁷ We have used the HSBC source as it provides projections for a large number of countries up until 2030. There are few alternative sources that provide projections for so many countries over such a long time period. To ensure the robustness of the HSBC projections we have cross-checked them against a range of international sources including the IMF.
- **Income elasticities** - the income elasticity describes the increase in demand for travel for every 1 per cent increase in GDP. We have reviewed a number of sources (such as IATA (2007) and UK Department for Transport (2013)) that suggest that the income elasticity is likely to be between 1 and 2. We also found evidence to suggest that the income elasticity is higher in countries with a lower GDP per capita. As a result, we have differentiated income elasticities for countries with different levels of GDP per capita.

²⁷ Note that GTAA has not updated the GDP forecasts in the latest version of the model.

- **Ticket price growth** - we have researched likely movements in the ticket price based on changes in cost inputs. IATA (2012) suggests that the oil price is one of the main drivers of changes in ticket prices as it accounts for as much as 34 per cent of total input costs. Oil price projections by the World Bank show a slight decline in the oil price. This would suggest a potential reduction in ticket prices. We have assumed no change in ticket prices as the oil price decline may be offset by increases in other input costs.

Combining income elasticities with GDP forecasts, we estimated Toronto Pearson to grow from around 38 million passengers in 2014 to around 63 million passengers by 2030. This represents a 65 per cent increase in size over the period 2014-2030, or an average annual growth rate of around 3.2 per cent

Different scenarios of competition with other North American hub airports can also have an impact on the number of passengers connecting through Toronto Pearson. For the base case results presented in this report we have not assumed any significant increase in Toronto Pearson's market share.

Figure 46 summarises our main assumptions.

Figure 46. Overview of key assumptions and selected values

Parameter	Assumed value	Rationale/Source
Parameter	Assumed value	Rationale / Source
Annual GDP forecast by country 2014-2030	0.7 per cent - 7.7 per cent depending on country	HSBC (2012) growth forecasts, cross-checked against IMF forecasts
Annual real ticket price change	Zero change	The key input is oil prices (accounts for 34 per cent of total airline costs according to IATA), oil price forecast to decrease so we used zero as a conservative assumption. This is in line with Airbus' assumption (Airbus, 2012). This assumes nominal prices will increase in line with inflation.
Annual technology growth in aircraft size	1 per cent	We expect aircraft size to grow and have used 1 per cent as a conservative assumption.
Frequency elasticity	For low-frequency countries: 0.8 For high-frequency countries: 0.6	The frequency elasticities are based on a literature review. Frequency cut-off (flights per day based on 2011 data): 0.5
Income elasticities	Various between 1.22 and 2.03	Based on IATA (2007)

E.2.2 Key relationship 2 – A change in connectivity has an impact on demand

A change in connectivity has an impact on the travel times for local passengers. For example, an indirect flight may take an additional 2-3 hours in travel time when compared to a direct flight. A passenger makes a decision to travel based,

in part, on the travel time. As a direct connection is always faster than flying indirect via another airport, some passengers will choose not to travel if there is no direct connection available or may travel less frequently.

The relationship can be seen in the following formula:

((Additional travel time x Value of time)/ Ticket price) x Price elasticity of demand =

Change in number of passengers

First, the change in travel time is calculated on the basis of additional travel distance divided by average speed. We distinguish speed for take-off and landing from the speed during the flight and use the following assumptions:

- average speed during flight: 500 mph; and
- average speed for take-off and landing: 250mph.

Distance is calculated on the basis of great circle routes.²⁸ We add additional connecting time at the airport. Our results are based on an assumption of 2 hours of connecting time. This implies that passengers would need 2 hours between landing and take-off for their connecting flights. We consider this assumption to be conservative, as this is likely to be close to the minimum rather than the average connecting time. The total additional connecting time is therefore equal to the additional flight time plus the connecting time. Our results show that the additional travel time varies from 2.4 hours to 3.5 hours.

Second, we monetized the additional travel time by applying a “value of time” to the additional journey time. This approach is commonly used in land transport evaluation. For business travellers, we assumed a value of time of \$75 per hour and for leisure travellers we assumed a value of \$24.50 per hour. These are based on average wage rates as shown in Figure 47. We further assumed that there would be no change in ticket prices between direct and indirect routes. This assumption was informed by an analysis of price data from Sabre that shows no difference in average ticket prices for indirect and direct flights on the same route. Finally, we used price elasticities of demand to estimate the change in demand as a result of the price increasing due to an increase in travel time. We distinguish different price elasticities for different countries, based on a study by IATA (2007).

Figure 47 provides the assumptions we have used to quantify key relationship 2.

²⁸ The great circle route methodology can underestimate the flight time, which implies that our estimates of time-savings and so, catalytic impact are conservative.

Figure 47. Assumptions on key relationship 2

Parameter	Assumed value	Rationale/Source
Flight speed	500mph during flight, 250mph for take-off/landing	Based on industry standards.
Average airport connecting time	2 hours	Based on a conservative estimate of the minimum connection time.
Travel Time Value Business Travellers	\$75 per hour	Double the average wage rate of management occupations (Statistics Canada Table 282-0070 Labour force survey estimates (LFS), wages of employees by type of work)
Travel Time Value Leisure and VFR (visiting friends and relatives)	\$24.50 per hour	Based on average wage (Statistics Canada Table 282-0070 Labour force survey estimates (LFS), wages of employees by type of work)
Price Increase for direct v. Indirect Routing	Zero	Based on data from Sabre on fares which revealed that there is no price difference between direct and indirect flights on the same route from/to Toronto Pearson
Price elasticities	Transatlantic: -0.72 Transpacific: -0.36 Intra America (including of North and South America): -0.60	Based on IATA (2007)

E.2.3 Key relationship 3 – A change in the number of local passengers impacts international business deals

A change in the number of local passengers has an impact on international business deals that drive trade and foreign direct investment.

Our analysis of the value of Toronto Pearson's connectivity requires us to make an assumption on the relationship between air travel, trade and FDI. Despite the rise of technologies such as videoconferencing, face-to-face meetings still play an important role in developing and maintaining successful business relationships. Most relationships are built on trust between business partners and face-to-face meetings are still the most effective way to build and establish trust. In addition, in-person meetings can be used to inspect production sites and meet larger teams which cannot be done through videoconferencing.

Face-to-face meetings as a result of air travel increase the likelihood of closing business deals which has a positive impact on trade and FDI. Face-to-face meetings are also important to manage increasingly globalized supply chains. This relationship is supported by qualitative literature, but it is difficult to quantify the relationship.

The relationship between face-to-face meetings and trade and FDI is unlikely to be the same for all of Ontario's business relationships. We think that the

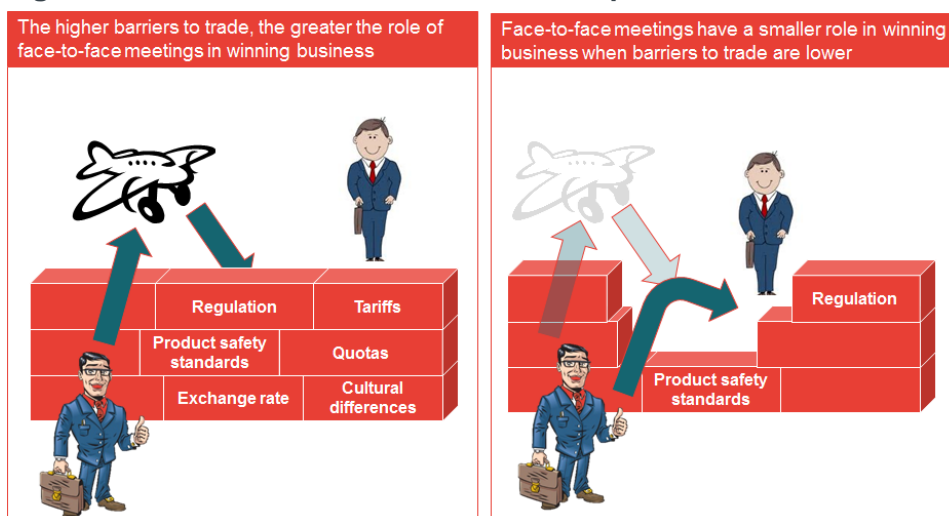
relationship is likely to differ for transactions between Ontario and other provinces, the US and other international countries. This is because face-to-face meetings are likely to play a bigger role in overcoming trade and FDI barriers between economies that are more dissimilar. The most common barriers include:

1. **Product market regulation** – a range of different types of regulation (product standards, safety regulation, etc.) can inhibit trade and FDI across borders;
2. **Tariffs and quotas, local content requirements** – formal trade barriers such as tariffs also reduce the likelihood of trade;
3. **Exchange rate** – the risk of changes in the exchange rate can pose a significant barrier to trade and FDI, as exchange rate volatility can increase the spread of potential returns; and
4. **Cultural differences** – language differences and different business cultures can impede business relationships across cultures as it is more difficult to build trust.

Business travel can reduce or overcome some of these barriers, as face-to-face meetings enable a better understanding of local product market regulation and formal trade barriers. Face-to-face meetings are also one of the key ways to build trust across cultures.

These barriers are much lower when considering trade and FDI between Ontario and the US compared to international transactions. This is because cultural differences are much smaller (for example, common language), formal trade barriers have been removed by NAFTA and product market regulations are more likely to be aligned. Trade barriers between Ontario and other provinces in Canada are likely to be even lower as there is no exchange rate risk and product market regulation is even more likely to be harmonized. Figure 12 illustrates this concept.

Figure 48. Illustration of how air travel helps overcome trade barriers



Source: Frontier Economics

There is a range of qualitative, survey-based evidence that suggests face-to-face meetings play an important role in business relationships. The importance of in-person meetings for trade facilitation is also supported by the existence of trade missions. For example, the Canada Trade Commissioner Service organizes a number of trade missions to different countries each year. These trade missions provide access to foreign markets, including networking opportunities, first-hand experiences and opportunities to initiate business relationships (Government of Canada, 2012).

The World Travel and Tourism Council (2012) finds that sales conversion rates with an in-person meeting are 50 per cent, compared to conversion rates of 31 per cent without an in-person meeting. The results are based on surveys in Brazil, China, Germany, the UK and the USA and are consistent across these countries. In 2011, the WTTC conducted another survey on the importance of business travel and found that 28 per cent of existing business could be lost without face-to-face meetings and sales conversion rates are estimated to be 20-25 per cent higher with face-to-face meetings. This is further supported by a range of qualitative studies.

- Frankel (1997) illustrates the importance of face-to-face meetings as follows:
- *Consider a kind of export important to the United States: high-tech capital goods. To begin sales in a foreign country may involve many trips by engineers, marketing people, higher ranking executives to clinch a deal, and technical support staff to help install the equipment or to service it when it malfunctions.*
- A survey by the UK Institute of Directors (2008) asked about the impact on businesses if the amount of business travel by air was significantly curtailed. 30 per cent of respondents said that there would be significant adverse effects while 44 per cent indicated small adverse effects.
- Poole (2010) finds that business travel to the United States by non-resident, non-citizens has a positive impact on export margins.
- Aradhyula & Tronstad (2003) find that their results support the hypothesis that both formal business exploration and casual exposure to cross-border business opportunities have a positive impact on trade.
- Strauss-Kahn & Vives (2005) find that headquarters relocate to metropolitan areas with good airport facilities, low corporate taxes, low average wages, high levels of business services, and an agglomeration of headquarters in the same sector of activity. The effects are quantitatively significant (for airport facilities in particular).
- The City of London (2008) surveyed finance and insurance companies on the importance of air travel. They found that 69 per cent of firms consider air travel to be critical for business travel by their staff, with only 2 per cent viewing it as not important.

- Boeh & Beamish (2012) demonstrate that travel time between different locations has a significant predictive power in firm governance and location decisions, as travel time could otherwise be employed for productive purposes.
- Napier University (2004) finds that “[...] *air transport per se is not a necessary condition, but what is important are: the extent to which that area is plugged directly into other major international hubs - availability and efficiency of routes (direct, hubbed); costs and the level of competition in global transport market, and; perceived and actual interchange efficiencies. This is a key consideration in the level of foreign investment into an area and is most important for firms with international trading or contacts such as, high-tech firms, financial services and pharmaceutical firms*”.

Survey-based evidence also suggests that the importance of face-to-face meetings depends on differences between business partners. Evidence from the World Travel and Tourism Council (WTTC) and the Harvard Business Review indicates that international business travel plays a more important role in generating and sustaining business than domestic travel. The WTTC (2012) found that:

- One extra dollar invested in international business travel would generate on average US\$17 in trade; and
- One extra dollar invested in domestic US business travel by companies results in an increase in revenue of US\$9.50.
- This implies that the return on investment for international travel is roughly half of domestic travel.

Similarly the Harvard Business Review (2009) confirms the role of face-to-face meetings in facilitating and sustaining business deals and also provides some evidence for the specific role of business travel to overcome barriers to trade across different cultures. For example, it found that:

- 93 per cent of survey respondents agreed that in-person meetings are helpful in negotiating with people from different language and cultural backgrounds;
- One survey respondent said that “*Communicating with our Chinese partners is enough of a challenge without face-to-face, because it is very difficult to explain a difference in perspective without body language*”; and
- A number of respondents described the need to work with clients in their own environment to get a full picture of the challenges and opportunities they face.

There is a small amount of literature that supports this view.

- Cristea (2011) found robust evidence that the demand for business-class air travel is directly related to volume and composition of exports in differentiated products. The paper finds that trade in R&D intensive manufactures and goods facing contractual frictions is most dependent on face-to-face meetings. Contractual frictions are more likely to occur with higher trade

barriers so this would support a lower elasticity for trade between Ontario and the US/Canada compared to the rest of the world.

- Poole (2010) finds that business travel for the purpose of communication acts as an input to international trade. The effect is stronger for differentiated products and for higher-skilled travellers, reflecting the information intensive nature of differentiated products. The effect is driven by travel from non-English speaking countries, for which communication with the U.S. by other means may be less effective. The findings therefore also confirm our view that business travel plays a bigger role when connecting firms from different cultural backgrounds.

Quantitative evidence on the relationship between face-to-face meetings and trade/FDI is difficult to obtain. We considered a range of values and concluded that an assumption of 0.3 is reasonable as this value is at the lower end of the spectrum. So we assume that a 1 per cent increase in face-to-face meetings increases trade and FDI by 0.3 per cent.

This is based on the following evidence:

- The UK Airports Commission (2015) assessed the need for a new runway in the southeast of England. Part of the comprehensive assessment was an estimate of the wider economic benefits which include productivity gains from trade. The Airports Commission used elasticities of around 0.3 for the relationship between air connectivity and exports. The Commission estimated a negative relationship for imports.
- Analysis of exports and outbound flights as well as inward FDI and inbound flights at Toronto Pearson suggests an elasticity of air connectivity with respect to trade of 1.15 and an elasticity of air connectivity with respect to FDI of 0.6. The regression coefficients will be overstated as the regressions omit other explanatory variables that influence trade and FDI. However, we can interpret the coefficient as the upper value elasticity, as introducing other variables would always reduce the coefficient.
- The World Travel and Tourism Council (WTTC) performed an analysis of the link between trade and business travel for a range of countries as shown in Figure 49. The figure shows the correlation coefficient as well as the results of the Granger test for causality. The figure shows that the correlations vary between 0.17 for outbound business travel from Italy to 0.98 for outbound business travel from Brazil. It also estimates that 38% of customers would be lost without face-to-face meetings.
- Similarly the US Travel Association (2009) estimates that 25% of customers and 28% of revenue would be lost without in-person meetings.
- Aradhyule and Tronstad (2003) estimate that the impact of an individual's venture visit to explore a joint business or trade opportunity to site visit to a similar business increases the probability of cross-border trade for this individual by 51.5%

- Poole (2010) estimates that a 1% increase in inbound business travel leads to 0.13% increase in volume of exports.
- A survey of businesses in Munich estimated that 55% of foreign businesses would not be located in the region if air connectivity in the region was not satisfactory.

Figure 49. Trade and business travel by country

Trade & Business Travel by country						
	Inbound business travel vs imports			Outbound business travel vs exports		
	Causality (% confidence)			Causality (% confidence)		
	Correlation	Travel causes Trade	Trade causes Travel	Correlation	Travel causes Trade	Trade causes Travel
US	0.87	95%	26%	0.65	82%	86%
Canada	0.92	100%	99%	0.85	98%	87%
UK	0.54	65%	85%	0.61	95%	80%
France	0.49	57%	85%	0.63	61%	92%
Germany	0.97	90%	81%	0.69	60%	98%
Italy	0.52	99%	100%	0.17	58%	99%
Spain	0.20	75%	99%	0.74	91%	80%
Japan	0.91	97%	53%	0.40	74%	92%
China	0.32	92%	95%	0.67	90%	99%
Russia	0.83	50%	90%	0.52	100%	95%
Brazil	0.57	100%	100%	0.98	88%	87%
India	0.72	84%	66%	0.46	99%	58%
UAE	0.42	83%	49%	0.82	95%	64%
Singapore	0.70	96%	94%	0.74	83%	53%
Hong Kong	0.67	95%	100%	0.43	86%	78%

Note: causality is shown as the probability that the identified casual relationship is true

Our evidence also suggests that the elasticities should be lower for trade/FDI between Ontario and the US and even lower for trade/FDI between Ontario and other provinces as compared to the rest of the world. As there is little evidence on the magnitude of the difference, we consider the following assumptions to be conservative estimates:

- Ontario and rest of the world: 1 per cent increase in face-to-face meetings increases trade and FDI by 0.3 per cent;
- Ontario and US: 1 per cent increase in face-to-face meetings increases trade and FDI by 0.2 per cent; and
- Ontario and other Canadian Provinces: 1 per cent increase in face-to-face meetings increases trade and FDI by 0.1 per cent.
- These assumptions are broadly consistent with the WTTC findings.

Figure 50 summarizes our assumptions for key relationship 3.

Figure 50. Assumptions on Key Relationship 3

Parameter	Assumed value	Rationale/Source
Business travel elasticity of trade - change in trade as a result of a 1 per cent drop in business travel	0.3	For travel between Ontario and international countries except the US. Based on literature review, see Appendix 1 for more detail
	0.2	For travel between Ontario and the US.
	0.1	For travel between Ontario and other provinces in Canada.
Business travel elasticity of FDI - Change in FDI as a result of a 1 per cent drop in business travel.	0.3	For travel between Ontario and international countries except the US. Based on literature review, see Appendix 1 for more detail
	0.2	For travel between Ontario and the US.
	0.1	For travel between Ontario and other provinces in Canada.

E.2.4 Key relationship 4 – A change in trade and FDI spending has an impact on GDP and employment

Changes in trade and foreign direct investment affect GDP and employment. We have distinguished the short-term static impact on GDP and the long-term dynamic impact. The short-term view of trade is that exports have a positive impact on GDP and imports have a negative impact – this is based on a country's trade balance in an accounting context. The same holds for inward and outward investment. An equal increase in exports and imports would therefore have no impact on GDP, as the positive impact of exports would cancel out the negative impact of imports.

However, this short-term view does not take account of the long-term dynamic effects of having an open economy. An open economy that trades with the rest of the world – both importing and exporting – is likely to be more productive in the long term. Productivity is one of the key drivers of GDP growth as it describes the efficiency of production. For example, if the same output can be produced with fewer inputs, productivity increases. We reviewed a large body of academic research that investigates the positive impact of imports and exports as well as inward and outward investment on long-term productivity. Most of the literature is focused on examining the impact of trade and FDI on productivity at the firm level. The literature suggests that not only do exports and inward investment have a positive impact on productivity growth but imports and outward investment also contribute to the level of “openness” of the economy, which has a positive impact on productivity.

There are three main channels by which imports, exports, inward and outward investment can increase long-term productivity.

- **Innovation** – Trade is one of the key “transmitters” of innovation as it exposes companies to a wider range of products and processes in other countries. FDI can provide access to new technologies and cheaper inputs,

which has a positive impact on productivity. This is particularly true for imports and outward investment.

- **Competition** puts pressure on companies to be more efficient. Exporting companies are faced with more competition as they compete in a larger market. Imports also put more pressure on domestic firms as they compete with a greater number of competitors.
- **Economies of scale** – Larger market sizes imply that production processes can benefit from economies of scale. Both trade and FDI can provide access to markets outside Ontario so that firms can reduce costs by realizing economies of scale. This is particularly true for exporting firms who can access foreign markets and therefore increase their size.

For example, the OECD, (2012) finds that:

A main channel through which trade increases income is productivity growth. Importing creates competition that forces domestic firms to become more efficient and provides access to inputs of international calibre; exporting creates incentives for firms to invest in the most modern technologies, scales of production and worker training. The combined effect is to spawn a process of continual resource reallocation, shifting capital and labour into activities with higher productivity.

Instead of focusing on the short-term impact of trade and FDI on GDP our methodology emphasises the long-term benefit that trade and FDI generate by increasing “openness” of the economy. Therefore, our conclusion is that both exports, imports alongside inward and outward investment, have positive long-term effects on an economy.

The OECD has undertaken a study with data from 21 high-income countries over nearly 30 years controlling for other factors: every 10-percentage point increase in trade exposure (as measured by trade share of GDP) contributes a 4-percent increase in GDP per capita. This study is quoted by the Canadian government in “The State of Trade 2012” and provides the main evidence source for our assumption.

We have also reviewed evidence to suggest that the impact of trade on productivity may be lower when comparing domestic trade to international trade:

- Therrien and Hanel (2012) provide evidence supporting the idea that the productivity gains from trade are stronger with trade to foreign markets compared to the domestic market: they find that Canadian firms who export to foreign markets have higher labour productivity. Their results are based on the following steps.
 - They find that Canadian firms who export to non-US markets and US markets are more likely to innovate than firms who do not.
 - Canadian firms who innovate more have higher innovation-related sales.
 - Finally, firms that have higher innovation-related sales also have higher labour productivity.

- Ito (2011) examines whether first-time Japanese exporters achieve productivity improvements through learning-by-exporting effects. The results suggest that exporting to North America or Europe has a strong positive effect on sales and employment growth, R&D activity, and productivity growth. On the other hand, exporting to Asia does not have any strong productivity enhancing effects. This would suggest that exporting to countries that are more similar (or geographically close) has a lower impact on productivity.

However, on the other hand we also found a range of papers that do not identify a difference. For example, Wagner (2012) undertakes a literature review of the impact of trade on productivity and finds that exporters are more productive than non-exporters but finds no difference to where you export.

On the specific question of the impact of Canadian internal trade on productivity, we have found that:

- Agnosteva and Anderson (2013) estimate the existence and impact of intra-provincial trade barriers. They find that there is substantial intra-provincial 'home bias'. Home bias is the tendency to trade much more within a region than to another region, and is often a sign of the presence of formal or informal trade barriers. This suggests that the Canadian provinces and territories are not fully integrated yet and there is significant scope for internal trade policy intervention.
- This would suggest that inter-provincial trade still has some impact on productivity.

We have relied on the findings by the OECD (reported by the Canadian government) to assume that a 1 per cent increase in real openness (ratio of trade to GDP) increases GDP by 0.4 per cent. We apply this assumption to international trade. The evidence suggests that the impact of interprovincial trade is likely to be lower. We therefore assume that a 1 per cent increase in interprovincial trade increases GDP by 0.2 per cent.

To convert the contribution of GDP into employment, we have used the same conversion rate as Foreign Affairs and International Trade in their analyses of free trade agreements: for every \$150,000 of GDP, one full-time job is created.

Both inward and outward FDI have a positive impact on productivity and competitiveness. Our research suggests that access to new markets, cheaper inputs and new technology or know-how boosts the scale and efficiency of domestic production. The underlying theory is similar to that applied to free trade agreements. Evidence on the specific impact of FDI on productivity is limited. We have found the following studies:

- DIW (2009) studies the relationship between outward FDI and economic growth. They find that FDI enables firms to enter new markets, import intermediate goods from foreign affiliates at lower costs and access foreign technology. As a result the domestic economy benefits from outward FDI due to increased competitiveness of the investing companies and associated

productivity spill-over to local firms. The analysis shows that for every 1 per cent increase in outward FDI stock, local GDP increases by 0.19 per cent.

- Korea Institute for International Economic Policy (2008) studies the relationship of inward FDI and productivity using Ireland as a case study. They find that FDI advances new foreign technology or import of new intermediary goods and enhances growth by accumulation of human capital by means of labour training or absorption of technology and new management techniques. Their analysis shows that for a 1 per cent increase in inward FDI stock, local GDP increases by 0.24 per cent.

Based on the quantitative analysis we reviewed, we make the following assumptions:

- a 1 per cent increase in inward FDI increases productivity by 0.24 per cent; and
- a 1 per cent increase in outward FDI increases productivity by 0.19 per cent.

We have investigated the potential to use a different elasticity for the US. For example, Borensztein, Gregorio and Lee (1998) analyze FDI flows from industrial to developing countries. They find that FDI contributes to economic growth only if a minimum level of human capital is met in the receiving country. This is likely to hold for most connected countries. Similarly, Alfaro, Chanda, Kalemli-Ozcan and Sayek (2006) find that holding FDI constant, financially well-developed economies experience higher growth rates. They identify human capital as one of the key factors that influences this effect. However, none of the literature that we reviewed indicated that the FDI between the US and Canada would be expected to have a different impact on Ontario than FDI with other countries.

Figure 51 provides a summary of the assumptions for key relationship 4.

Figure 51. Assumptions on Key Relationship 4

Parameter	Assumed value	Rationale/Source
Parameter	Assumed value	Rationale / Source
Openness elasticity of GDP (Openness is defined as trade/GDP)	0.44	For international trade, based on OECD study quoted by Canada's State of Trade and Investment Update (2012) by Foreign Affairs and Trade International
	0.2	For interprovincial trade, see Appendix 1 for more detail
Outbound FDI elasticity of GDP	0.19	Based on literature review, see Appendix 1 for more detail
Inbound FDI elasticity of GDP	0.24	Based on literature review, see Appendix 1 for more detail
GDP per job	\$150,000	Based on Canadian government figures for free trade agreement impact assessments.

E.3 What are our results?

E.3.1 Economic value facilitated by Toronto Pearson today

Based on the approach and assumptions described in the previous section, the economic value to Ontario facilitated by Toronto Pearson today equates to **4.4 per cent of Ontario's GDP**, equivalent to \$28 billion. This implies that Ontario's GDP would be 4.4% lower if Toronto Pearson did not facilitate the direct connections it provides today. This is the value of having direct as opposed to indirect air connections from Toronto Pearson.

Based on this estimate, Toronto Pearson currently facilitates **179,000 jobs** within Ontario. If Toronto Pearson only provided indirect connections instead of direct connections, 179,000 jobs would be lost. GDP and jobs are driven by trade and FDI that is facilitated by connectivity to and from Toronto Pearson, as our results show:

- **Exports:** \$11 billion exports, which is equivalent to around 3 per cent of Ontario's total exports. Approximately, 68 per cent of those exports are to the US, 19 per cent to other international countries and 12 per cent to other provinces in Canada.
- **Imports:** \$17 billion imports, which represents around 3 per cent of Ontario's total imports. Approximately, 54 per cent of those exports are to the US, 36 per cent to other international countries and 10 per cent to other provinces in Canada.
- **FDI:** \$48 billion of the total inward and outward FDI stock, which is around 5 per cent of the Ontario's total FDI stock.

Figure 52. Economic value facilitated by Toronto Pearson today

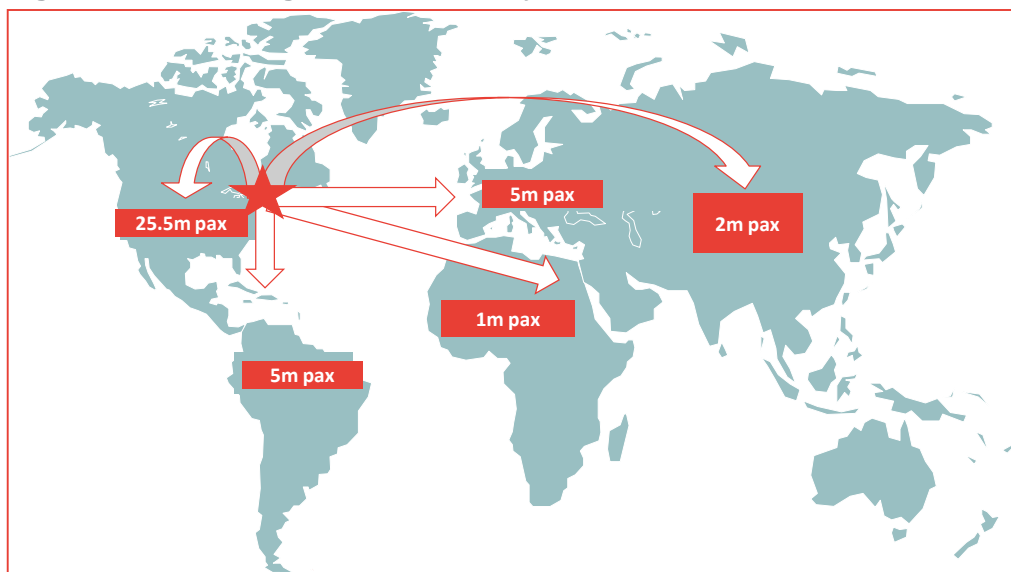
Economic measure	Result \$ million
Exports	11,000
Imports	17,000
Total trade	28,000
Outward FDI	25,000
Inward FDI	23,000
Total FDI	48,000
Total GDP facilitated	28,000
% of Ontario GDP	4.4%
Jobs	179,000

Source: Frontier analysis, numbers may not add up due to rounding

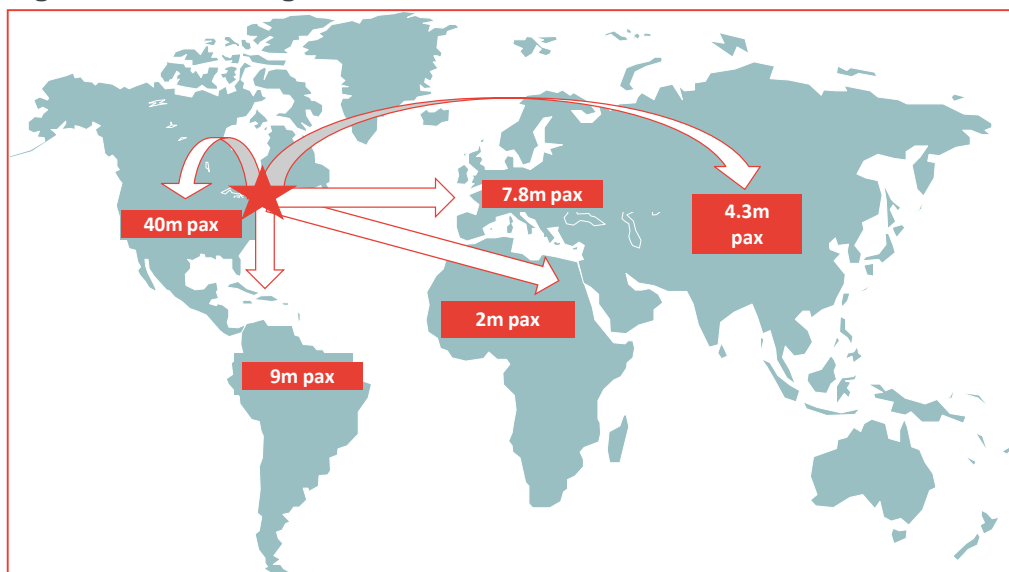
E.3.2 Economic value facilitated by Toronto Pearson in 2030

Passenger volumes in 2030

Our baseline projections of travel demand at Toronto Pearson (based on income growth only) suggest that the airport will handle around 63 million passengers in 2030. This is equivalent to an average growth of 3.2 per cent per year. Travel to and from high growth countries such as Brazil, India and China will increase faster than travel to and from North America and Europe. The baseline scenario only takes into account income growth, and it is assumed that Toronto Pearson's market share of the North American connecting passenger market remains unchanged.

Figure 53. Passenger volumes today

Source: Based on Sabre data

Figure 54. Passenger volumes in 2030

Source: Frontier Economics

Results in 2030

Our results suggest that Toronto Pearson will facilitate economic value to Ontario equal to **4.7 per cent of Ontario's GDP** in 2030, equivalent to around \$42 billion. The results are bigger than for today, as demand for travel grows faster than Ontario's GDP growth as it is partly based on GDP growth in high growth economies. We estimate that by 2030 that Toronto Pearson will facilitate **275,000 jobs** in Ontario.

Our results for the trade and FDI figures, that underpin the economic value results for 2030, are:

- **Exports:** \$18 billion of exports;
- **Imports:** \$26 billion of imports; and
- **FDI:** \$74 billion of FDI stock.
- The table below shows a breakdown of our results for 2030.

Figure 55. Economic value facilitated by Toronto Pearson in 2030

Economic measure	Result \$ million
Exports	18,000
Imports	26,000
Total trade	44,000
Outward FDI	41,000
Inward FDI	32,000
Total FDI	74,000
Total GDP facilitated	42,000
% of Ontario GDP	4.7%
Jobs	275,000

Source: Frontier analysis, numbers may not add up due to rounding

ANNEX F DETAILED METHODOLOGY FOR SPATIAL BREAKDOWN

This annex describes the methodology and datasets used to estimate the spatial disaggregation of direct, indirect and induced jobs, jobs supported by inbound visitor spending, and catalytic jobs. This has been informed by data provided or generated by MNP, GTAA, Frontier Economics and Statistics Canada.

F.1 Direct Employment

F.1.1 Workplace

Annex B describes the factors that inform the location of direct jobs – by definition many are located within the boundary of the airport itself, or close to the airport, while others have a less well-defined place of work (including airline staff, ground transportation and hotel employment).

The vast majority of the 49,395 direct jobs are contained within the GTA, with the majority in the Region of Peel (mainly the City of Mississauga) and the remainder in the City of Toronto (Etobicoke). MNP's analysis suggests that:

- 21,050 FTE jobs are located within 0-2 miles (of the centre-point of the airport);
- 17,850 FTE jobs are located within 2-5 miles; and
- 10,500 FTE jobs are related to on-going operations but not physically located at the airport.

F.1.2 Resident Location

In order to estimate the distribution of direct employment at GTAA across the wider area (i.e. where direct workers at the airport live), we have reviewed and triangulated a number of datasets including:

- Data provided by GTAA that shows the residential location of anyone with a RAIC security pass – this includes both direct employees and other staff who access the airport as suppliers, traders etc. – it also double counts to some extent where people have more than one RIAC card.
- NHS Commuter flow for people working within 0-2 miles of the Airport, by occupational groups provided by Statistics Canada²⁹; and
- Estimates for direct employment, by NAICS (industry/sector) at the airport generated by MNP (See Annex B).

²⁹ E2426 Table 2: Commuting Flow, Occupation - National Occupational Classification (NOC 2011) (43), Mode of Transportation (20) and Commuting Duration (7) for the Employed Labour Force 15 Years of Age and Over Having a usual Place of Work of the Greater Golden Horseshoe Area FSAs as Place of Residence and 3 Custom Area Places of Work, 2011 National Household Survey

The first step was to use MNP's breakdown of direct employment and estimate the weighting of occupational classifications within each NAIC sector by applying information from Statistics Canada on occupation by industry. This effectively allows us to estimate the commuting characteristics of the subset of direct employees in this public dataset.

Once this breakdown had been estimated, it was possible to distribute these occupational groupings according to Statistics Canada's commuting flow data for the area around the airport by FSA.

The final step was to take this output distribution data and triangulate it with known travel-to-work patterns from RAIC data in order to give the most reasonable estimate based on a combination of:

- Known patterns of commuting by people working at the airport; and
- Trends in commuting patterns by occupational classification, weighted by the industry of employment at the airport.

The overall estimate for direct employment by sector/occupation was then applied to this weighted distribution. In the absence of data specific to the actual workers, this approach therefore represents the best estimate for the residential location of these direct employees using information available.

The following table and maps show the estimated disaggregation of direct employees at a range of spatial scales from FSA to Division:

Figure 56. *Distribution of Direct Jobs (Residence) by Selected Geography (Census Division and Sub-Division)*

	Direct Jobs (Rounded)	Per cent
Peel	25,000	51%
<i>of which in Mississauga</i>	13,000	26%
<i>of which in Brampton</i>	11,300	23%
<i>of which in Caledon</i>	700	1%
City of Toronto	12,600	26%
<i>of which in Ebitocoke</i>	6,000	12%
Halton	3,900	8%
York	3,700	7%
Durham	900	2%
GTA Total	46,000	93%
Rest of Ontario	3,400	7%
TOTAL	49,400	

Source: GTAA, MNP, Statistics Canada, Quod

F.2 Indirect Employment

Indirect employment (i.e. the employment generated in the airport's supply chain) has been split into two elements due to the availability of data. In total, these account for 32,971 jobs, including:

- Employment generated by GTAA's annual spend on various contracts for services, goods and supplies, using data supplied by GTAA's procurement department for 2015; and
- Employment generated by the rest of the activity at the airport – for example airlines, retailers, security, transport and other direct employment generators, using public data on business/employee location by sector from Statistics Canada.

F.2.1 GTAA spend (Workplace)

The GTAA spends a significant amount annually in the local and wider area on goods and services, some generating employment at the airport (e.g. through on-site contractors, construction/maintenance workers, cleaning and other services) and others generating employment in the wider supply chain (e.g. the production of food for flights, or the refining of airline fuel, which may not happen at or even close to the airport).

We have reviewed GTAA's database of contractors and suppliers (having first isolated and extracted those suppliers included in the 'direct' estimates) for a given year (2015 in this case), by sector.

This process included a review of lines to include/exclude in the overall net employment-generating spend based on GTAA's data on the type of spend, date of contract and likelihood for generating employment. For example, through this process we isolated and removed lines related to accounting, landing fees, finance (e.g. debt issuance fees) and HR spend.

The majority of the remaining value - defined as any contract that buys either physical goods (i.e. hardware, software, vehicles etc.) or services/labour (i.e. consultancy, operations, maintenance, repairs etc.) and comprising the bulk of the expenditure made by the airport that generates employment at the airport or elsewhere - was split into sectors.

By way of an example, around 15% of the remaining value was in taxes, 16% in professional services, 15% in repair and maintenance, with smaller proportions split across a variety of other indirect sectors including security, facilities and operations, energy/utilities, parking, waste management, IT software and hardware.

Each contract line also has an associated address, which is the business location of the company from which the goods/service was procured. We recognise that this may not necessarily correspond to the FSA location at which employment is generated, but has been used as a proxy.

The overall contract values were then converted to employment using an average GVA per worker in Ontario, resulting in approximately 4,700 jobs supported by this annual spend. The following table re-aggregates the values from FSA to selected Census Division / Sub-Division level:

Figure 57. Distribution of GTAA-related Indirect Jobs (Workplace) by Selected Geography

	GTAA Indirect Jobs (Rounded)	Per cent
Peel	1,200	26%
<i>of which in Mississauga</i>	1,000	21%
<i>of which in Brampton</i>	200	4%
City of Toronto	1,300	28%
Halton	300	6%
York	300	6%
GTA Total	3,000	64%
Rest of Ontario	1,700	36%
<i>of which Middlesex/London</i>	600	13%
<i>of which Hamilton</i>	400	9%
TOTAL	4,700	

Source: GTAA and Quod

F.2.2 Other Indirect Employment (Workplace)

In order to estimate the location of the remaining indirect employment (approximately 28,300 jobs), we have undertaken the following process:

- Using a locational quotient approach and aggregated business count data³⁰ (by size band) at Dissemination Area level, identified the 3-digit NAICS sectors within 5 miles and 10 miles of the airport (not including the jobs identified as Direct jobs in Annex B) that are 'over-represented' (i.e. have a greater representation (number of jobs) in these areas compared to their representation in Canada as a whole);
- Compared the 'over-represented' sectors to the 3-digit NAICS sectors that supply goods and services to the Air Transport sector, using the Statistics Canada Supply and Use tables (2010);
- Identified the sectors which have the following attributes:
 - Are key suppliers to the Air Transport sector;
 - Are concentrated in this area; and
 - Require proximity to the airport in their supply chain role.

³⁰ December 2011 Establishment Counts by Dissemination Area, 6-digit NAICS and Employment Size Range

- The concentration of sectors has been sense-checked by comparing their concentration at 5-miles and 10-miles, where it is not clear that a sector is in fact located here due to the airport or other external factors.

Where sectors appear in the list of sectors that are the key suppliers to Air Transport, and are also over-represented compared to national average concentrations (using a 'locational quotients' approach), it is considered that this over-representation is primarily as a result of their role in supplying the airport (having first stripped out those jobs/businesses considered 'direct').

The jobs over the 'normal' representation could be assumed to have located in the area as a direct result of the presence of the airport, as contractors or suppliers.

The key sectors identified in this process are:

- Air Transportation (where not included in Direct estimates);
- Warehousing and storage and other ground transportation, truck freight and postal, courier and logistics;
- Rental and leasing;
- Repair and maintenance; and
- Manufacturing and wholesaling sectors including food and drink.

These represent up to approximately 13,000 jobs within 5 miles of the airport, and it is assumed that the remainder are located elsewhere in the GTA, Ontario, Canada and in some cases the rest of the world.

These jobs have been re-disaggregated based on their DA-level distribution within the 5-mile area, and then re-aggregated by CD/CSD to estimate their distribution:

Figure 58. *Distribution of Other Indirect Jobs (Workplace) by Selected Geography*

	Other Indirect Jobs (Rounded)	Per cent
Within 5 miles	13,100	46%
Peel	9,400	33%
<i>of which in Mississauga</i>	7,100	25%
<i>of which in Brampton</i>	2,300	8%
City of Toronto	3,700	13%
TOTAL	28,300	

Source: Statistics Canada, Quod

F.2.3 Resident location

In order to estimate the residential location of indirect employment, we have analysed commuting-to-work patterns at a Census Division and Sub-Division scale using data from the 2011 National Household Survey (Statistics Canada)³¹.

This identifies the residential CD/CSD for workers in any given location. We have applied the proportional breakdown of residential origins for each CD/CSD to the overall number of indirect jobs identified (workplace) by CD/CSD:

Figure 59. *Distribution of Combined Indirect Jobs (Residence) by Selected Geography*³²

	Combined Indirect Jobs (Rounded)	Per cent
Peel	7,300	22%
<i>of which in Mississauga</i>	4,000	12%
City of Toronto	4,800	15%
Halton	1,300	4%
York	1,300	4%
Durham	400	1%
GTA	15,100	46%
Rest of Ontario	Up to 17,900	
TOTAL	33,000	

Source: Statistics Canada, Quod

F.3 Induced Employment

F.3.1 Location of Jobs

Induced employment is defined as the jobs that are supported by the spending of direct and indirect workers, at home, on goods and services. As such, the spatial distribution of induced jobs is assumed to be directly proportional to the distribution of the residential location of direct and indirect jobs.

These jobs are likely to match the existing sectoral profile of the area (i.e. they are split across the 'normal' distribution of jobs in any location).

As such, the distribution of induced employment requires applying the total number of induced jobs (19,156) to the spatial proportions of direct + indirect jobs identified above, as follows:

³¹ NHS Cat. No. 99-012-X2011032 - Commuting Flow - Census Subdivisions: Sex (3) for the Employed Labour Force Aged 15 Years and Over Having a Usual Place of Work, for Census Subdivisions, Flows Greater than or Equal to 20, 2011 National Household Survey

³² As identified in this section, we have only identified the 'other' indirect jobs within 5 miles

Figure 60. Distribution of Induced Jobs by Selected Geography (Census Division and Sub-Division)

	Induced Jobs (Rounded)	Per cent
Peel	10,300	54%
<i>of which in Mississauga</i>	6,100	32%
<i>of which in Brampton</i>	4,000	21%
<i>of which in Caledon</i>	200	1%
City of Toronto	5,100	27%
Halton	1,200	6%
York	1,100	6%
Durham	200	1%
GTA Total	17,900	93%
Rest of Ontario	1,300	7%
TOTAL	19,200	

Source: Quod

F.3.2 Resident location

In order to estimate the residential location of induced employment, we have analysed commuting-to-work patterns at a Census Division and Sub-Division scale using data from the 2011 National Household Survey (Statistics Canada)³³.

This identifies the residential CD/CSD for workers in any given location. We have applied the proportional breakdown of residential origins for each CD/CSD to the overall number of induced jobs identified (workplace) by CD/CSD:

Figure 61. Distribution of Induced Jobs (Residence) by Selected Geography

	Induced Jobs (Rounded)	Per cent
Peel	7,400	39%
<i>of which in Mississauga</i>	4,000	21%
City of Toronto	5,100	27%
Halton	1,900	10%
York	1,800	9%
Durham	700	4%
GTA	16,900	88%
Rest of Ontario	2,300	12%
TOTAL	19,200	

Source: Statistics Canada, Quod

³³ NHS Cat. No. 99-012-X2011032 - Commuting Flow - Census Subdivisions: Sex (3) for the Employed Labour Force Aged 15 Years and Over Having a Usual Place of Work, for Census Subdivisions, Flows Greater than or Equal to 20, 2011 National Household Survey

F.4 Inbound Visitor Spending Employment

F.4.1 Location of Jobs

The distribution of jobs supported by inbound visitor spending is directly related to the existing distribution of jobs in the sectors that benefit most from spending – retail, accommodation, food and drink service and art/culture/recreation sectors.

These sectors have been mapped at Census Metropolitan Area and CSD-level across Ontario³⁴, and the overall number of jobs supported by inbound visitors (see above) applied proportionately:

Figure 62. Distribution of Jobs Supported by Inbound Visitor Spending via YYY by Selected Geography (Census Division and Sub-Division)

	Direct Jobs (Rounded)	Per cent
Peel	5,600	11%
<i>of which in Mississauga</i>	3,600	7%
<i>of which in Brampton</i>	1,800	3%
City of Toronto	12,800	25%
Halton	2,600	5%
York	4,700	9%
Durham	2,400	5%
GTA Total	28,100	54%
Rest of Ontario	23,900	46%
<i>of which in Ottawa</i>	4,500	9%
<i>of which in Niagara</i>	2,700	5%
TOTAL	52,000	

Source: Statistics Canada, Quod

F.4.2 Resident location

In order to estimate the residential location of employment supported by inbound visitor expenditure, we have analysed commuting-to-work patterns at a Census Division and Sub-Division scale using data from the 2011 National Household Survey (Statistics Canada)³⁵.

³⁴ 2011 NHS EO2102 - Table 3: Place of Work Status (3), Industry - North American Industry Classification System 2007 (21) and work Activity (4) for the Employed Labour Force 15 Years and over in Private Households Having a Usual Place of Work or Working at Home

³⁵ NHS Cat. No. 99-012-X2011032 - Commuting Flow - Census Subdivisions: Sex (3) for the Employed Labour Force Aged 15 Years and Over Having a Usual Place of Work, for Census Subdivisions, Flows Greater than or Equal to 20, 2011 National Household Survey

This identifies the residential CD/CSD for workers in any given location. We have applied the proportional breakdown of residential origins for each CD/CSD to the overall number of jobs identified (workplace) by CD/CSD:

Figure 63. Distribution of Jobs Supported by Inbound Visitor Spending via YYY (Residence) by Selected Geography

	Combined Inbound Visitor Jobs (Rounded)	Per cent
Peel	5,600	11%
<i>of which in Mississauga</i>	3,100	6%
City of Toronto	10,500	20%
Halton	2,400	5%
York	4,500	9%
Durham	3,100	6%
GTA	26,100	50%
Rest of Ontario	25,900	50%
TOTAL	52,000	

Source: Statistics Canada, Quod

F.5 Catalytic Employment

F.5.1 Location of Jobs

In order to estimate the location of jobs supported by the airport's connectivity (as defined at Annex E), we have used a number of datasets held by GTAA and Statistics Canada. The key spatial influences on the distribution of catalytic employment are:

- The local-level **distribution of GDP** within Toronto and Ontario;
- The location of jobs in sectors with a high **dependence on FDI** (i.e. the ratio of GDP to FDI by sector at a local-level);
- The location of **manufacturing sectors and the extent to which they trade internationally**; and
- The **origin of business passengers** who travel internationally through Toronto Pearson.

As identified in Annex E, the two key influences on GDP generated in Ontario by the connectivity supported by Toronto Pearson are through the facilitation of inward investment (FDI) and export trade, in roughly equal measure.

The starting point for this analysis is to identify a theoretical distribution of local-level output, based on the overall GDP produced by each NAICS sector in

Ontario³⁶, distributed on an assumed equal 'GDP-per-job' basis, based on the distribution of jobs in those sectors around Ontario³⁷.

The resulting local GDP by sector database can then be weighted based on the ratio of FDI³⁸ to GDP to account for the spatial concentration of sectors that are more reliant on FDI to generate output. For example, the ratio of FDI:GDP is relatively high in the 'management of companies and enterprises' sector, compared to utilities, transport/warehousing, and agriculture sectors, and as such the weighting will favour locations with more jobs in this sector (e.g. downtown Toronto).

The overall number of catalytic jobs supported by the influence of Toronto Pearson's connectivity on FDI in Ontario (approx. 89,500 jobs) is then applied to this weighting.

In order to estimate the spatial distribution of catalytic jobs facilitated by Toronto Pearson's connectivity on international trade, we have combined the derived dataset on the local-level output and jobs by NAICS sectors across Ontario, with the ratio of GDP to international trade in those sectors that manufacture goods³⁹. This allows us to account for the fact that, for example, the 'transport equipment manufacture' sector captures a large proportion of international export trade per job supported, and to map the distribution of those jobs.

A similar process as above was undertaken to disaggregate the catalytic jobs supported by the influence of Toronto Pearson's connectivity on international trade in Ontario, by applying the total number (approx. 89,500 jobs) to this weighting.

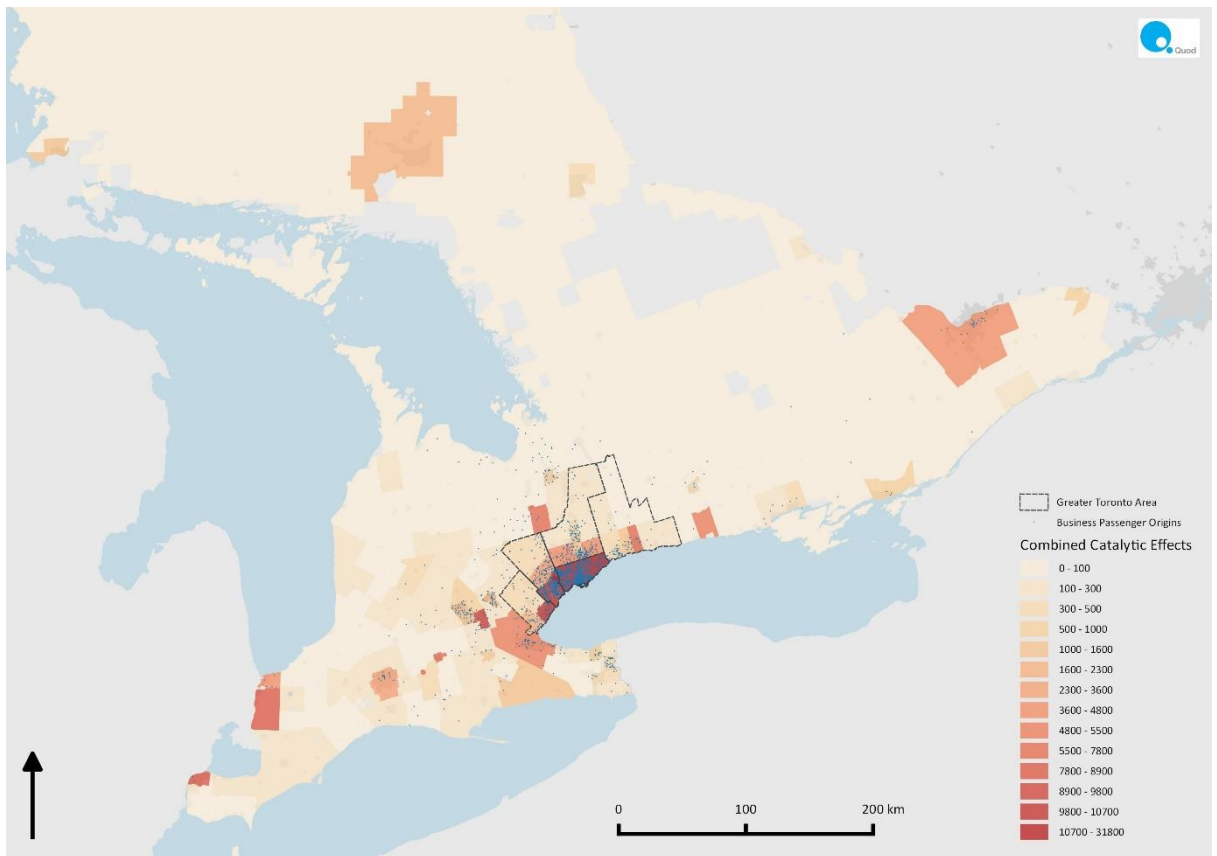
In order to sense-check these assumptions, we then mapped existing data collected by GTAA on the origin of business passengers using Toronto Pearson across Ontario, as shown in the following map:

³⁶ Statistics Canada Table 379-0030 1, 2, 60, 63, 64: Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS), provinces and territories (annual)

³⁷ 2011 NHS EO2102 - Table 3: Place of Work Status (3), Industry - North American Industry Classification System 2007 (21) and work Activity (4) for the Employed Labour Force 15 Years and over in Private Households Having a Usual Place of Work or Working at Home

³⁸ Statistics Canada Table 376-0052 International investment position, Canadian direct investment abroad and foreign direct investment in Canada, by North American Industry Classification System (NAICS) and region (annual)

³⁹ Statistics Canada & US Census Bureau Trade Data Online (TDO)



The following table summarises the overall catalytic employment distributions:

Figure 64. Distribution of Catalytic Jobs by Selected Geography (Census Division and Sub-Division)

	Catalytic Jobs (FDI) (Rounded)	Catalytic Jobs (Trade) (Rounded)	Total Catalytic (Rounded)	Per cent
Peel	12,300	2,900	15,200	8%
City of Toronto	30,300	2,200	32,500	18%
Halton	4,400	9,400	13,900	8%
York	10,100	1,400	11,500	6%
Durham	2,700	8,200	11,000	6%
GTA Total	59,900	24,100	84,000	47%
Rest of Ontario	29,700	65,400	95,000	53%
<i>of which in Ottawa</i>	16,800	300	17,100	10%
TOTAL	89,500	89,500	179,000	

Source: Statistics Canada, Quod

F.5.2 Resident location

In order to estimate the residential location of catalytic employment, we have analysed commuting-to-work patterns at a Census Division and Sub-Division scale using data from the 2011 National Household Survey (Statistics Canada)⁴⁰.

This identifies the residential CD/CSD for workers in any given location. We have applied the proportional breakdown of residential origins for each CD/CSD to the overall number of jobs identified (workplace) by CD/CSD:

Figure 65. Distribution of Catalytic Jobs (Residence) by Selected Geography

	Catalytic Jobs (Rounded)	Per cent
Peel	15,800	9%
<i>of which in Mississauga</i>	8,900	5%
City of Toronto	27,200	15%
Halton	10,400	6%
York	11,300	6%
Durham	12,200	7%
GTA	76,900	43%
Rest of Ontario	102,100	57%
TOTAL	179,000	

Source: Statistics Canada, Quod

⁴⁰ NHS Cat. No. 99-012-X2011032 - Commuting Flow - Census Subdivisions: Sex (3) for the Employed Labour Force Aged 15 Years and Over Having a Usual Place of Work, for Census Subdivisions, Flows Greater than or Equal to 20, 2011 National Household Survey



Vancouver International Airport Economic Impact Assessment

December 2019

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1 EXECUTIVE SUMMARY

Overview of YVR's Economic Contributions

YVR is a vital component of BC's transportation infrastructure, linking domestic, regional and international markets. As such, it impacts the economy in two ways. First, YVR directly impacts the BC economy through the employment and purchases of goods and services associated with its operations. Second, YVR impacts the economy through the facilitation of the movement of people and goods.

Table 1 summarizes the estimated economic impacts in Canada of YVR's operations and the economic impacts supported by YVR due to its role in facilitating the movement of people and goods.

Table 1: Summary of Estimated Economic Impacts (\$ in millions), 2015 and 2018

		2015	2018	Percentage Change
Economic Impacts of YVR's Operations				
Employment (FTEs)	Direct	22,440	23,840	6%
	Indirect	17,360	14,840	-15%
	Induced	10,860	9,740	-10%
	Total	50,660	48,420	-4%
Output	Direct	\$4,800	\$5,200	8%
	Indirect	\$3,500	\$3,600	3%
	Induced	\$2,000	\$1,900	-5%
	Total	\$10,300	\$10,700	4%
GDP	Direct	\$1,920	\$2,140	11%
	Indirect	\$1,720	\$1,710	-1%
	Induced	\$1,110	\$1,080	-3%
	Total	\$4,750	\$4,930	4%
Government Revenue	Direct	\$872	\$918	5%
	Indirect	\$430	\$404	-6%
	Induced	\$310	\$290	-6%
	Total	\$1,612	\$1,612	0%
Economic Impacts Associated with the Production of Goods Exported through YVR				
Total Output		\$5,600	\$6,870	23%
Total GDP		\$3,160	\$3,810	21%
Total Employment (FTEs)		33,250	37,230	12%
Economic Impacts in BC Associated with Visitors Arriving through YVR				
Total Output		\$4,620	\$6,700	45%
Total GDP		\$2,560	\$3,600	41%
Total Employment (FTEs)		41,940	57,910	38%

YVR: Operational Impacts

YVR's operations generate impacts through the purchase of goods and services, the generation of employment and the generation of tax revenue for local, provincial and federal governments. The estimated economic impacts of YVR's operations in 2018 were approximately:

- \$8.4 billion in total output in BC and \$2.3 billion in total output in other parts of Canada for a total of \$10.7 billion in total output in Canada.
- \$3.9 billion in total GDP in BC and \$1.0 billion in total GDP in other parts of Canada for a total of \$4.9 billion in total GDP in Canada.
- 39,460 FTEs of total employment in BC and 8,960 FTEs of total employment in other parts of Canada for a total of 48,420 FTEs of total employment in Canada.
- \$1.3 billion in total government revenue in BC and \$0.3 billion in total government revenue in other parts of Canada for a total of \$1.6 billion in total government revenue.

Table 2 summarizes the estimated economic impacts of YVR's operations in 2018.

Table 2: Economic Impacts in Canada of YVR's Operations (\$ in millions), 2018

	Output	GDP	Employment (FTEs)	Federal Government Revenue	Provincial Government Revenue	Municipal Government Revenue
Direct Impacts						
BC	\$5,200	\$2,140	23,840	\$680	\$200	\$38
Indirect Impacts						
BC	\$1,900	\$940	9,080	\$130	\$80	\$23
Rest of Canada	\$1,700	\$770	5,760	\$70	\$80	\$21
Induced Impacts						
BC	\$1,300	\$800	6,540	\$80	\$70	\$35
Rest of Canada	\$600	\$280	3,200	\$40	\$40	\$25
Total Impacts						
BC	\$8,400	\$3,880	39,460	\$890	\$350	\$96
Rest of Canada	\$2,300	\$1,050	8,960	\$110	\$120	\$46
Total	\$10,700	\$4,930	48,420	\$1,000	\$470	\$142

Between 2015 and 2018 air capacity grew by approximately 8.3 percent annually, while passenger volumes grew by approximately 8.5 percent annually.¹ This growth contributed to an increase in estimated employment related to YVR's operations of approximately 800 FTEs while the growth of the McArthur Glen Designer Outlet Mall was estimated to contribute a further increase of 500 FTEs of employment between 2015 and 2018.

Table 3 summarizes the change in the economic impacts of YVR's operations between 2015 and 2018. Direct output was estimated to have grown by 8 percent, direct GDP was estimated to have grown by 11 percent, and government revenues were estimated to have grown by 5 percent.

¹ Vancouver Airport Authority

Table 3: Growth in the Economic Impacts of YVR's Operations (\$ in millions), 2015 to 2018

	2015	2018	Percentage Change
Output			
Direct	\$4,800	\$5,200	8%
Indirect and Induced	\$5,500	\$5,500	0%
Total	\$10,300	\$10,700	4%
GDP			
Direct	\$1,920	\$2,140	11%
Indirect and Induced	\$2,830	\$2,790	-1%
Total	\$4,750	\$4,930	4%
Employment (FTEs)			
Direct	22,440	23,840	6%
Indirect and Induced	28,220	24,580	-13%
Total	50,660	48,420	-4%
Government Revenue			
Direct	\$872	\$918	5%
Indirect and Induced	\$740	\$694	-6%
Total	\$1,612	\$1,612	0%

Cargo: Economic Impacts of Goods Brought to Market

YVR is an important gateway that links markets in Asia and the Americas, and it offers some of the most direct connections to Asia from North America. As such, YVR plays an important role in the supply chains of many Canadian industries. To illustrate the importance of that role, MNP estimated the economic impacts of the production of the goods exported through YVR. While these impacts are not directly attributable to YVR, the linkages to international markets provided through YVR are an important part of the transportation network that supports the creation of these impacts.

Table 4 shows the estimated economic impacts associated with goods exported through YVR in 2018. The production of goods exported through YVR was estimated to generate approximately:

- \$3.1 billion of direct output and \$2.0 billion of indirect and induced output in BC, and an additional \$1.8 billion of total output in other parts of Canada.
- \$1.7 billion of direct GDP and \$1.2 billion of indirect and induced GDP in BC, and an additional \$0.9 billion of total GDP in other parts of Canada.
- 17,150 FTEs of direct employment and 11,810 FTEs of indirect and induced employment in BC, and an additional 8,270 FTEs of total employment in other parts of Canada.

Table 4: Estimated Economic Impacts Associated with Goods Exported through YVR (\$ in millions), 2018

	Output (millions)	GDP (millions)	Employment (FTEs)
Direct Impacts			
BC	\$3,070	\$1,710	17,150
Rest of Canada	\$340	\$190	1,520
Indirect and Induced Impacts			
BC	\$2,040	\$1,190	11,810
Rest of Canada	\$1,420	\$720	6,750
Total Impacts			
BC	\$5,110	\$2,900	28,960
Rest of Canada	\$1,760	\$910	8,270
Total	\$6,870	\$3,810	37,230

Between 2015 and 2018, the value of goods exported through YVR increased by approximately 25 percent. This increase in cargo values corresponded to an increase in estimated total output of 23 percent, an increase in total GDP of 21 percent and an increase in total employment of 12 percent.

Tourism: Economic Impacts of Arriving Visitors

The airlines serving YVR provide non-stop service to destinations in Europe, Asia, the South Pacific and across North America.² That connectivity plays an important role in attracting visitors to BC and Canada.

To illustrate how YVR's connectivity contributes to the economy of BC and Canada, we estimated the economic impact of the spending of visitors to BC that arrive through YVR. While these impacts are not directly attributable to YVR, the connectivity provided through YVR is an important factor in supporting the creation of these impacts.

Table 5 shows the estimated economic impacts associated with spending of visitors arriving through YVR. In 2018, the spending of visitors arriving in BC through YVR were estimated to generate approximately:

- \$4.0 billion of direct output and \$2.7 billion of indirect and induced output in BC, and an additional \$1.6 billion of indirect and induced output in other parts of Canada.
- \$2.0 billion of direct GDP and \$1.6 billion of indirect and induced GDP in BC, and an additional \$0.8 billion of indirect and induced GDP in other parts of Canada.
- 43,940 FTEs of direct employment and 13,970 FTEs of indirect and induced employment in BC, and an additional 6,200 FTEs of indirect and induced employment in other parts of Canada.

Table 5: Economic Impacts in BC Associated with Visitors to BC Arriving through YVR, 2018

	Output (millions)	GDP (millions)	Employment (FTEs)
Direct Impacts			
BC	\$3,990	\$2,000	43,940
Indirect and Induced Impacts			
BC	\$2,710	\$1,600	13,970
Rest of Canada	\$1,580	\$750	6,200
Total Impacts			
BC	\$6,700	\$3,600	57,910
Rest of Canada	\$1,580	\$750	6,200
Total	\$8,280	\$4,350	64,110

Between 2015 and 2018, the number of visitors arriving in BC through YVR increased by approximately 23 percent, while average spending per visitor increased by approximately 21 percent. The corresponding total economic impacts of the spending of those visitors was estimated to have increased by between 38 and 45 percent.

² YVR "Airlines and Destinations." Available here: <http://www.yvr.ca/en/passengers/flights/airlines-and-destinations>.

Economic Impacts of a New Flight

Each new flight that is added at YVR creates incremental economic impacts, which arise from the operational impacts associated with the flight itself, the additional visitors that are brought to BC and the incremental cargo space that is available for shipments of goods to other regions. To illustrate the magnitude of the impacts of a new flight, we estimated the annual economic impacts on a per flight basis for each of the following scenarios:

- A wide-body aircraft carrying 300 passengers between Vancouver and China, operating 7 frequencies per week year-round.
- A narrow-body aircraft carrying 150 passengers on a transborder route, operating 7 frequencies per week year-round.

Table 6 shows the estimated economic impacts associated with each of the scenarios.

Table 6: Estimated Economic Impacts of a New Flight (\$ in millions)

	Flight Between Vancouver and China			Transborder Flight		
	Output	GDP	Employment (FTEs)	Output	GDP	Employment (FTEs)
Operational Impacts						
Direct	\$10.9	\$5.1	41.7	\$4.5	\$2.2	16.0
Indirect and Induced	\$11.9	\$6.3	58.3	\$4.9	\$2.6	24.5
Total	\$22.7	\$11.4	100.0	\$9.4	\$4.8	40.5
Economic Impacts Associated with Visitors Arriving Through YVR						
Direct	\$21.1	\$10.3	244.0	\$4.0	\$2.0	44.3
Indirect and Induced	\$23.8	\$13.0	117.4	\$4.3	\$2.3	21.3
Total	\$44.9	\$23.3	361.4	\$8.3	\$4.3	65.6
Economic Impacts Associated with Producing \$1 Million of Goods for Export through YVR						
Total	\$2.0	\$1.0	11.5	\$1.9	\$1.1	10.3

2 INTRODUCTION

Background and Purpose

YVR plays a significant role in the economy of British Columbia (“BC”) through its operations and by facilitating the movement of people and goods. To demonstrate the economic contribution of YVR in BC and Canada, the Vancouver Airport Authority (“VAA”) periodically undertakes economic impact studies.

In 2016, the VAA engaged MNP LLP (“MNP”) to refresh the methodology employed for estimating economic impacts and develop estimates of YVR’s impacts in 2015. The refreshed methodology provides comparisons of economic impacts over time, showing how YVR’s growth contributes to output, GDP, employment and government revenues in BC and throughout Canada.

To track how YVR’s economic contributions have changed since 2015, MNP was engaged to develop updated estimates of the economic impacts of YVR’s ongoing operations and its economic contributions due to its role in facilitating the movement of goods and people in 2018, using the refreshed methodology.

Scope

The scope of the study was to:

- Develop estimates of the economic impacts of YVR’s operations in 2018.
- Develop estimates of the economic impacts associated with the movement of goods through YVR in 2018.
- Develop estimates of the economic impacts of tourism associated with visitors arriving in BC through YVR in 2018.
- Develop estimates of the economic impacts of a new flight.

Methodology and Data Sources

Economic Impact Methodology

To estimate the economic impacts, MNP employed an input-output methodology that uses multipliers published by Statistics Canada. Input-output modeling is a widely-used and widely-accepted approach, making it recognizable by many different stakeholders and audiences. The structure of the approach also facilitates easy comparisons between reported results for different projects and facilities. In general, economic impacts are viewed as being restricted to quantitative, well-established measures of economic activity. The most commonly used of these measures are output, GDP, employment, and government revenues:

- **Output** is the total gross value of goods and services produced by a given company or industry measured by the price paid to the producer. This is the broadest measure of economic activity.
- **Gross Domestic Product (“GDP”)**, or value added, refers to the additional value of a good or service over the cost of inputs used to produce it from the previous stage of production. Thus, GDP is equal to the unduplicated value of goods and services produced.
- **Employment** is the number of jobs created. Employment is measured in terms of full-time equivalents (“FTEs”). One FTE may be considered one person-year of employment. That is, one FTE is the equivalent of one person working full-time for a period of one year.
- **Government Revenues** are the total amount of revenues generated for different levels of government. Tax revenues arise from personal income taxes, corporate income taxes, taxes on products, and taxes on production. Government revenues also include non-tax revenues like Employment Insurance and Workers Compensation Board payments. Please note that because tax revenues can frequently change due to modifications in tax policy, the tax revenue impacts in this report are estimates only and subject to change. They should be viewed as approximate in nature.

Economic impacts may be estimated at the direct, indirect, and induced levels.

- **Direct impacts** are due to changes to “front end” businesses that would initially receive operating revenue as a direct consequence of the operations and activities of a facility or industry.
- **Indirect impacts** arise from changes in activity for suppliers of the “front end” businesses.
- **Induced impacts** arise from shifts in spending on goods and services as a consequence of changes to the payroll of the directly and indirectly affected businesses.

Data Sources

Information used in the study was gathered from both primary and secondary sources. These included:

- Destination BC, BC Stats, and Statistics Canada.
- VAA administrative sources.

Organization of the Report

The remainder of the report is organized as follows:

- Section 3 contains a description of YVR’s economic contributions.
- Section 4 contains estimates of the economic impacts associated with YVR’s operations in 2018 and compares those with the economic impact of other industries in BC.
- Section 5 contains an illustration of the economic impacts of YVR’s role in moving goods to market.
- Section 6 contains an illustration of the economic impacts of YVR’s role in bringing visitors to BC.
- Section 7 contains estimates of the economic impacts of a new flight at YVR.
- Section 8 provides a comparison of the 2018 and 2015 economic impacts.
- Section 9 summarizes the economic impacts associated with YVR.

3 OVERVIEW OF YVR'S ECONOMIC CONTRIBUTIONS

Overview of YVR's Operations

YVR is Canada's second busiest airport and serves as a gateway between North America and the Asia-Pacific region. In 2018, YVR was served by 48 airlines providing non-stop service to 50 destinations in Canada, 29 destinations in the United States and 43 international destinations.

In addition to YVR's direct operations, there are a number of businesses located on Sea Island that are linked to YVR including:

- **BCIT Aerospace Campus** – programs include aircraft maintenance engineering, aircraft gas turbine technician, avionics technician, airline and flight operations commercial pilot and airport operations.
- **Aerospace Manufacturers** – provide jet engine repair and maintenance services.
- **Canada Post Sorting Facility** – is one of three international access points operated by Canada Post. It is located at YVR to improve efficiency and support expansion of services between Canada and the Pacific Rim.
- **MacArthurGlen Designer Outlet** – opened in 2015 and has expanded from 47 stores to 75 stores in 2019.³

YVR's Economic Contributions

YVR is a vital component of BC's transportation infrastructure, linking domestic, regional and international markets. As such, it impacts the economy in two ways. First, YVR directly impacts the BC economy through the employment of people and purchases of goods and services associated with its operations. The second way in which it impacts the economy is through the facilitation of the movement of people and goods between markets. This impact reaches beyond BC and impacts other regions of Canada.

To estimate YVR's economic contributions, we categorized the impacts as follows:

- **Operational Impacts** are economic impacts arising from the ongoing operations of YVR. This includes the Vancouver-based operations of airlines and air cargo operators serving YVR, catering and ground handling companies providing services at YVR, training to support the operations of YVR, retail services located at YVR, ground transportation operators providing services to and from YVR, and other services directly supporting the operations of YVR (e.g., aircraft maintenance facilities, and aviation manufacturing related to servicing aircraft operating at YVR).
- **Impacts of Bringing Goods to Market** are economic impacts arising from trade that are linked to the movement of goods through YVR. These impacts are not directly attributable to YVR but are associated with YVR through the role that YVR plays in linking markets.
- **Impacts of Tourism** are the economic impacts arising from visitors that arrive in BC through YVR. This includes impacts associated with visitors from other parts of Canada and visitors from other parts of the world. Like the impacts of bringing goods to market, these impacts are not directly attributable to YVR but are associated with YVR through the role that YVR plays in linking markets.

The estimated economic impacts within each category of impacts are described in the sections that follow.

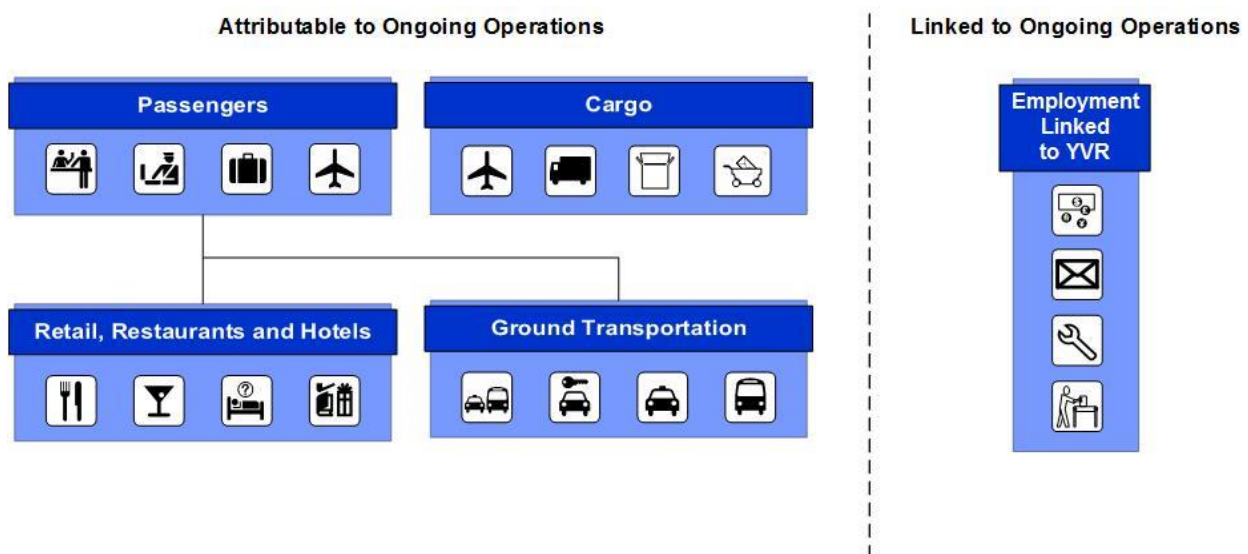
³ McArthur Glen.

4 YVR: OPERATIONAL IMPACTS

Estimates of the economic impacts of YVR's operations were developed based on direct employment related to YVR's operations. Direct employment was defined to include:

- **Employment Attributable to YVR's Ongoing Operations** which includes employment related to the provision of services to passengers, the movement of cargo or the operations of the facility, ground transportation and aircraft maintenance.
- **Employment Linked to YVR's Operations** which includes employment at the McArthurGlen Designer Outlets, employment at BCIT's School of Transportation related to the aviation programs, employment at aerospace manufacturing companies located at YVR, and employment at Canada Post's sorting facility at YVR. Figure 1 shows the sources of direct employment related to YVR's operations.

Figure 1: Direct Employment Related to YVR's Operations



Appendix B provides a description of the methodology used to estimate direct employment.

Employment

Employment related to YVR was categorized as follows:

- Commercial Air Carriers – staff at scheduled and charter airlines operating passenger services out of YVR.
- Cargo – couriers, warehousing and storage staff, and staff at cargo integrators operating out of YVR.
- Aviation Support and Facilities Operations – baggage and cargo handlers, air traffic controllers, refueling and de-icing crews, airplane maintenance staff and staff at miscellaneous airport support services.
- Public Safety – airport security, on-site RCMP officers and security administration staff.
- Ground Transportation – taxi drivers, limousine drivers, shuttle drivers, car rental staff, public transportation staff at YVR and parking staff.
- Retail and Food – restaurant, bar and retail business staff at YVR.
- Hotels and Accommodation – hotel staff on Sea Island and at hotels providing direct shuttles to YVR.
- Corporate Aviation – staff at non-scheduled air transportation services operating out of YVR.

Table 7 shows the estimated direct employment related to YVR's operations. In 2018 an estimated 23,700 individuals (21,700 FTEs) were employed in roles directly attributable to YVR's ongoing operations, while 2,840 (2,140 FTEs) individuals were employed in roles linked to YVR's operations. The total payroll from direct employment was an estimated \$1.4 billion, with \$1.3 billion for roles directly attributable to YVR's ongoing operations.

Table 7: Direct Employment Related to YVR's Operations, 2018

Category of Employer	Jobs	FTEs	Payroll (\$ millions)
Employment Attributable to YVR's Ongoing Operations			
Commercial Air Carriers	8,000	7,300	\$541
Aviation Support and Facilities Operations	4,100	3,700	\$257
Retail and Food	3,000	2,800	\$87
Public Safety	2,300	2,100	\$112
Cargo	2,100	2,000	\$117
Ground Transportation	2,000	1,800	\$107
Hotels and Accommodation	1,700	1,500	\$53
Corporate Aviation	500	500	\$32
Employment Linked to YVR's Operations			
Designer Outlet	1,200	800	\$23
Canada Post Sorting Facility	1,000	700	\$47
Manufacturing	600	600	\$39
BCIT School of Transportation	40	40	\$4
Total	26,540	23,840	\$1,419

Jobs at YVR

To support YVR's operations requires a wide variety of skills. The occupations at YVR include customer service, skilled trades, technicians, drivers, logistics, professionals, managers, administrators, security, first responders, aircrew, maintenance and airline operations. Table 8 provides a list of common jobs and the associated wage ranges.

Table 8: Jobs at YVR and Hourly Wage Range, 2018

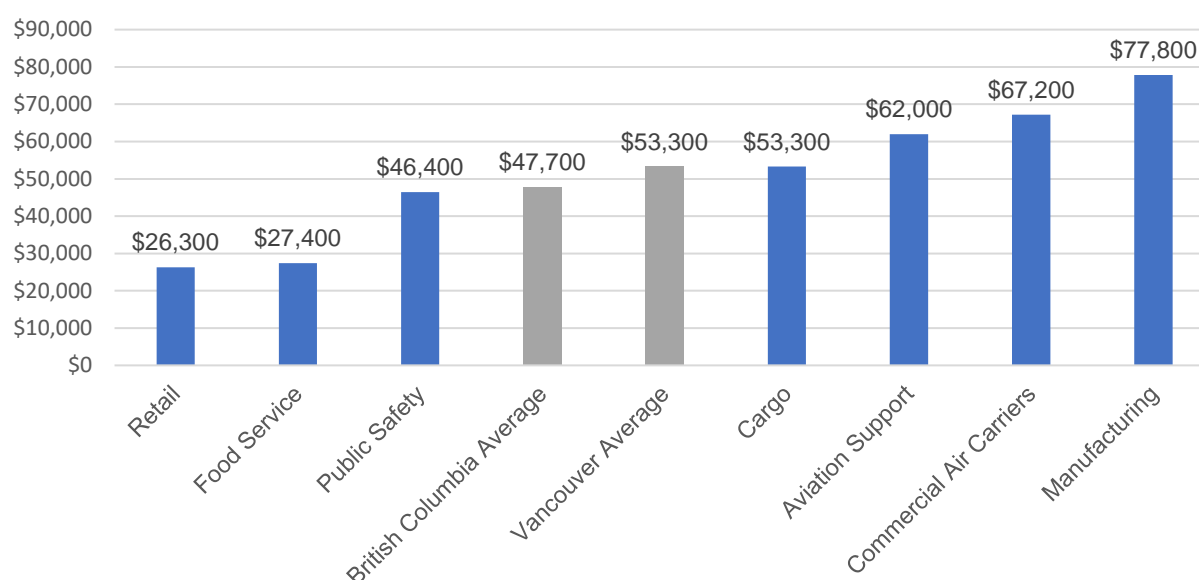
	Description	Hourly Wage Range	Percentage
Restaurants and Stores	Retail salespeople, cashiers, cooks and food service staff are employed by contracted service providers to operate restaurants and stores in the airport terminals.	\$12.65 - \$22.00 per hour	86%
	Managers and directors employed by contracted service providers.	\$25.00 - \$45.00 per hour	14%
Airline Operations	Customer service staff, cabin service and cleaning attendants, baggage handlers, tow drivers and ramp agents employed by commercial airlines.	\$15.00 - \$20.00 per hour	86%
	Airport managers and supervisors employed by commercial airlines.	\$35.00 - \$50.00 per hour	14%
Inflight Crew	Flight attendants employed by commercial airlines.	\$20.00 - \$40.00 per hour	82%
	Pilots employed by commercial airlines.	\$30.00 - \$75.00 per hour	18%
Catering	Cooks, food packers and drivers employed by contracted service providers to prepare meals for commercial airlines.	\$15.00 - \$25.00 per hour	80%
	Supervisors and management employed by contracted service providers.	\$30.00 - \$40.00 per hour	20%
Cargo	Freight agent, package handler and logistics coordinators employed by integrators and freight forwarders.	\$14.00 - \$22.00 per hour	Not available
	Drivers.	\$16.00 - \$25.00 per hour	Not available
Security	Airport security officers employed by contracted service providers to manage passenger and baggage security.	\$15.00 - \$20.00 per hour	60%
	Supervisors and management employed by contracted security providers.	\$35.00 - \$55.00 per hour	Not available
	Border security and policing.	\$32.00 - \$45.00 per hour	Not available
Janitorial	Janitors and supervisors employed by contracted service providers.	\$12.65 - \$25.00 per hour	100%
Maintenance	Facilities maintenance and aircraft fueling employed by contracted service providers.	\$20.00 - \$30.00 per hour	91%
	Aircraft maintenance, engineers and supervisors employed by both contracted service providers and commercial airlines.	\$35.00 - \$55.00 per hour	9%
Ground Handling	Baggage handlers and ground crew employed by contracted service providers.	\$12.65 - \$20.00 per hour	100%
Ground Transportation	Shuttle drivers, parking attendants, bus drivers and taxi/limousine drivers.	\$15.00 - \$25.00 per hour	100%

Job quality is typically measured in terms of earnings, stability and the work environment. Good quality jobs tend to provide stable employment and a level of earnings that is sufficient to provide economic security. To provide perspective on the quality of jobs at YVR we compared average earnings by service area with the living wage in Metro Vancouver and with the average wage in Metro Vancouver and BC.

A living wage is the hourly wage rate that is required for a family of four to meet its basic needs and provide a basic level of economic security.⁴ The living wage in Metro Vancouver for 2018 was \$20.91/hour.⁵ Comparing the living wage to the hourly wage ranges for jobs at YVR suggests that earnings for most workers in skilled positions are above the living wage. However, jobs in retail and food service, hotels, janitorial, ground handling and some operations jobs at commercial airlines and in security pay below the living wage. Jobs that pay below the living wage tend to be entry-level and/or unskilled or semi-skilled, meaning that they require less than a college level credential and typically involve manual labour.

Figure 2 compares the average annual earnings at YVR for select occupation groups with the annual average earnings in BC and Vancouver in 2018. The average income for service jobs in BC in 2018 was approximately \$47,700 while the average income for individuals over the age of 15 in Vancouver in 2018 was approximately \$53,300. Average earnings at YVR were estimated to be similar or higher than average wages in BC and Vancouver for occupations in Public Safety, Cargo, Aviation Support, Manufacturing and at Commercial Air Carriers. Average earnings in occupations in Retail and Food Service were estimated to be below average earnings in BC and Vancouver.

Figure 2: Average Annual Earnings for Select Occupational Groups at YVR, 2018



Source: Statistics Canada and MNP Primary Research

⁴ Living Wage Canada. *What is a Living Wage*. Available here : <http://www.livingwagecanada.ca/index.php/about-living-wage/what/>

⁵ ibid. Available here: http://www.livingwageforfamilies.ca/2018_living_wage

Economic Impacts of YVR's Operations

YVR's operations generate positive impacts through the purchase of goods and services, the generation of employment and the generation of revenues for local, provincial and federal governments.

Table 9 shows the estimated economic impacts of YVR's ongoing operations and economic impacts linked to YVR in BC. In 2018, YVR's operations generated approximately:

- \$5.2 billion in direct output and \$8.4 billion in total output in BC.
- \$2.1 billion in direct GDP and \$3.9 billion in total GDP in BC.
- 23,840 FTEs of direct employment and 39,460 FTEs of total employment in BC.
- \$918 million in direct government revenue and \$1.3 billion in total government revenue.

The majority of the direct impacts would be expected to be realized in the Lower Mainland

Table 9: Economic Impacts in BC Attributable to YVR's Operations (\$ in millions), 2018

	Output	GDP	Employment (FTEs)	Federal Government Revenue*	Provincial Government Revenue*	Municipal Government Revenue*
Attributable to YVR's Ongoing Operations						
Direct	\$4,900	\$1,990	21,700	\$660	\$190	\$35
Indirect and Induced	\$3,000	\$1,640	14,770	\$200	\$140	\$54
Total	\$7,900	\$3,630	36,470	\$860	\$330	\$89
Linked to YVR's Operations						
Direct	\$300	\$150	2,140	\$20	\$10	\$3
Indirect and Induced	\$200	\$100	850	\$10	\$10	\$4
Total	\$500	\$250	2,990	\$30	\$20	\$7
Total						
Direct	\$5,200	\$2,140	23,840	\$680	\$200	\$38
Indirect and Induced	\$3,200	\$1,740	15,600	\$210	\$150	\$58
Total	\$8,400	\$3,880	39,460	\$890	\$350	\$96

* Government revenues include taxes attributable to YVR's operations as well as contributions to government programs such as Employment Insurance and the Canada Pensions Plan, and payments to WorkSafe BC. Appendix C provides a description of the methodology used to estimate government revenues.

Through supply chains YVR's operations also create impacts in other parts of Canada. Table 10 shows the estimated economic impacts of YVR's operations in Canada. In 2018, YVR's ongoing operations were estimated to generate approximately:

- \$8.4 billion in output in BC and \$2.3 billion in output in other parts of Canada for total of \$10.7 billion.
- \$3.9 billion in total GDP in BC and \$1.0 billion in total GDP in other parts of Canada for a total of \$4.9 billion in total GDP in Canada.
- 39,460 FTEs of total employment in BC and 8,960 FTEs of total employment in other parts of Canada for a total of 48,420 FTEs of total employment in Canada.
- \$1.3 billion in total government revenues in BC and \$300 million in total government revenues in other parts of Canada for a total of \$1.6 billion in total government revenues in Canada.

Table 10: Total Economic Impacts (\$ in millions), 2018

	Output	GDP	Employment (FTEs)	Federal Government Revenue*	Provincial Government Revenue*	Municipal Government Revenue*
Direct Impacts						
BC	\$5,200	\$2,140	23,840	\$680	\$200	\$38
Indirect Impacts						
BC	\$1,900	\$940	9,080	\$130	\$80	\$23
Rest of Canada	\$1,700	\$770	5,760	\$70	\$80	\$21
Induced Impacts						
BC	\$1,300	\$800	6,540	\$80	\$70	\$35
Rest of Canada	\$600	\$280	3,200	\$40	\$40	\$25
Total Impacts						
BC	\$8,400	\$3,880	39,460	\$890	\$350	\$96
Rest of Canada	\$2,300	\$1,050	8,960	\$110	\$120	\$46
Total	\$10,700	\$4,930	48,420	\$1,000	\$470	\$142

* Government revenues include taxes attributable to YVR's operations as well as contributions to government programs such as Employment Insurance and the Canada Pensions Plan, and payments to WorkSafe BC. Appendix C provides a description of the methodology used to estimate government revenues.

Comparison with Other Industries

To provide perspective on how YVR's operations compare with other key components of the BC economy, we compared YVR's 2018 economic impacts to those of the residential construction industry, the forest industry and the Port of Vancouver.

Residential Construction

YVR's 2018 operations were estimated to have generated total direct and indirect employment in Canada of approximately 40,000 FTEs, which is equivalent to the direct and indirect employment supported by the construction of approximately 15,000 new homes in Canada in 2018.⁶

Within BC, the 35,000 FTEs of direct and indirect employment generated by YVR's operations is equivalent to that supported by the construction of 13,200 new homes or 33 percent of housing starts in BC in 2018.⁷

Forestry

YVR's 2018 operations were estimated to have generated total employment (direct, indirect and induced) in Canada of approximately 48,420 FTEs, which is equivalent to approximately 35% of the annual total employment generated by the BC forest industry in 2016, the largest producer of softwood lumber in North America.⁸

⁶ Canadian Home Builders Association. Available here: <http://www.chba.ca/impacts>

⁷ BC Stats. Building Permits, Housing Starts and Sales. Available here: <https://www2.gov.bc.ca/gov/content/data/statistics/economy/building-permits-housing-starts-sales>


⁸ BC Council of Forest Industries. Available here: <https://www.cofi.org/forest-facts/>



Port of Vancouver

YVR's 2018 operations were estimated to have generated total GDP (direct, indirect and induced) in Canada of approximately \$4.9 billion, which his equivalent to approximately 41 percent of the annual total GDP supported or facilitated by the Port of Vancouver in 2016, the largest port in Canada.⁹

⁹ Port of Vancouver. 2016 Economic Impact Study. May 2017, InterVISTAS Consulting Inc.



5 CARGO: IMPACTS OF GOODS BROUGHT TO MARKET

YVR is an important gateway that links markets in Asia and the Americas, offering some of the most direct connections to Asia from North America. As such, YVR plays an important role in getting final goods to market and in the supply chains for many Canadian industries.

Table 11 shows the total value of goods exported through YVR in 2018 and the share of BC origin goods exported through YVR. In 2018, the value of goods exported through YVR was approximately \$3.4 billion, of which roughly 90 percent originated in BC.

Table 11: Value of Goods Exported Through YVR, 2018

	2018 Value (millions)	BC Origin (% Value)	Rest of Canada Origin (% Value)
Agricultural Products	\$556	91%	9%
<i>Fish and Seafood</i>	\$358	97%	3%
<i>Oil Seed</i>	\$3	43%	57%
<i>Fresh Vegetables</i>	\$17	97%	3%
<i>Fresh Fruit</i>	\$47	100%	0%
<i>Meat</i>	\$32	15%	85%
<i>Other</i>	\$99	90%	10%
Machinery and Electronics	\$1,873	92%	8%
<i>Electrical Machinery</i>	\$636	97%	3%
<i>Industrial Machinery</i>	\$540	85%	15%
<i>Technical and Optical Instruments</i>	\$543	91%	9%
<i>Aircraft Parts</i>	\$113	97%	3%
<i>Household Tools</i>	\$41	90%	10%
Natural Resources	\$578	87%	13%
<i>Precious Metals and Stones</i>	\$413	84%	16%
<i>Chemical Products</i>	\$72	99%	1%
<i>Inorganic Chemicals</i>	\$48	99%	1%
<i>Other</i>	\$45	90%	10%
Other	\$404	86%	14%
<i>Goods for Repair</i>	\$70	98%	2%
<i>Apparel and Clothing</i>	\$50	85%	15%
<i>Plastic Products</i>	\$50	93%	7%
<i>Pharmaceuticals</i>	\$33	100%	0%
<i>Other</i>	\$201	77%	23%
Total	\$3,411	90%	10%

Table 12 shows the primary destinations of exports shipped through YVR by major category of good. Approximately 85 percent of agricultural exports were sent to Asia, while 60 percent of natural resources were sent to the United States. Machinery and electronics exports were relatively evenly distributed across Asia, Europe, the United States and other regions.

Table 12: YVR Cargo Destinations by Percentage of Total Value, 2018

	United States	Asia	Europe	Other	Total
Agricultural Products	4%	85%	7%	4%	100%
Machinery and Electronics	26%	26%	26%	22%	100%
Natural Resources	60%	23%	10%	7%	100%
Other	23%	31%	31%	15%	100%

Source: Statistics Canada

The production of goods exported through YVR generates positive economic impacts through the direct spending on inputs, the generation of employment throughout the cargo supply chains and the generation of municipal, provincial and federal tax revenue.

To illustrate how YVR's role in linking markets contributes to the economy of BC and Canada, we estimated the economic impacts of the production of the goods exported through YVR. While these impacts are not directly attributable to YVR, the linkages to international markets provided through YVR are an important part of the transportation network that supports the creation of these impacts.

Table 13 shows the estimated economic impacts associated with goods exported through YVR in 2018. The production of goods exported through YVR was estimated to generate approximately:

- \$3.1 billion of direct output and \$2.0 billion of indirect and induced output in BC, and an additional \$1.8 billion of total output in other parts of Canada.
- \$1.7 billion of direct GDP and \$1.2 billion of indirect and induced GDP in BC, and an additional \$0.9 billion GDP in other parts of Canada.
- 17,150 FTEs of direct employment and 11,810 FTEs of indirect and induced employment in BC, and an additional 8,270 FTEs of indirect and induced employment in other parts of Canada.

Table 13: Estimated Economic Impacts Associated with the Production of Goods Exported through YVR (\$ in millions), 2018

	Output (millions)	GDP (millions)	Employment (FTEs)
Direct Impacts			
BC	\$3,070	\$1,710	17,150
Rest of Canada	\$340	\$190	1,520
Indirect and Induced Impacts			
BC	\$2,040	\$1,190	11,810
Rest of Canada	\$1,420	\$720	6,750
Total Impacts			
BC	\$5,110	\$2,900	28,960
Rest of Canada	\$1,760	\$910	8,270
Total	\$6,870	\$3,810	37,230

YVR is also an important gateway for the import of goods into Canada. In 2018, approximately \$6.4 billion worth of goods were imported into Canada through YVR. Approximately 41 percent of imports were from Asia, 37 percent were from the Americas, 20 percent were from Europe, and the remaining imports were from the other regions of the world. Imported goods include both consumer products and inputs used by Canadian businesses.

While goods for export are produced in Canada, imported goods are either for purchase by consumers in Canada or to be used as intermediate inputs in the production of goods in Canada. The economic impacts in Canada of goods that are imported for purchase by consumers arise from the transportation of those goods and the operations of the retailer selling those goods. For imported intermediate goods the economic impacts in Canada arise from the transportation of those goods and the production of the final product.

Much of the transportation impacts associated with imported goods would be captured in the economic impacts of YVR's operations. Data were not available to estimate the retail impacts of the sale of imported goods or the contribution of intermediate goods to production in Canada. Consequently, we were unable to develop quantitative estimates of the economic contributions that goods imported through YVR make to the Canadian economy.

6 TOURISM: IMPACTS OF ARRIVING VISITORS

YVR's connectivity plays an important role in supporting BC's tourism industry. In 2018, airlines operating out of YVR offered direct flights to 13 destinations in other provinces and the territories, 29 destinations in the United States, 7 destinations in Mexico and 36 international destinations.¹⁰ These flights bring visitors to BC from other parts of Canada and the world. Visitors contribute to the economy through spending on accommodations, transportation, recreation and entertainment, food and beverages, and retail goods. While the impacts associated with visitor spending are not directly attributable to YVR, the role that YVR plays in facilitating the movement of these visitors to BC is an important factor in supporting the creation of these impacts.

Table 14 shows the estimated number of visitors arriving in BC through YVR and their associated spending by region of origin. In 2018, approximately 3.6 million visitors to BC arrived through YVR. The majority of the visitors were from other parts of Canada (25 percent), the United States (26 percent) and Asia (24 percent). Visitors to BC were estimated to spend an average of \$1,252 per person in 2018, which led to approximately \$4.6 billion of spending in BC by visitors arriving through YVR.

Table 14: Spending and Number of Visitors to BC Arriving through YVR by Region of Origin, 2018

Visitor Region of Origin	Number of Visitors (thousands)	Average spending per person	Total Spending (\$ in millions)
Canada (outside BC)	928	\$1,013	\$940
United States	933	\$840	\$784
Asia	891	\$1,642	\$1,463
Europe	507	\$1,547	\$784
Other International	388	\$1,534	\$595
Total	3,647	\$1,252	\$4,566

Source: Destination BC

Table 15 shows the share of spending by category of spending for visitors from each region. Excluding visitors from Asia, accommodation accounts for the largest share of spending by visitors to BC, followed by spending on food and beverages. Among visitors from Asia, retail spending tended to account for a significantly higher share of spending than for North American and European visitors.

¹⁰ YVR, Non-stop destinations 2018

Table 15: Share of Spending by Category of Spending and Visitor Region of Origin, 2018

	Canada (outside BC)	United States	Asia	Europe	Other International
Food and Beverages	23%-33%	25%-29%	14%-25%	20%-22%	18%-25%
Accommodation	29%	34%-39%	20%-39%	40%	20%-34%
Private Vehicle	12%-16%	0%	0%	0%	0%
Public/Local Transportation	10%-25%	15%-16%	11%-18%	9%-19%	8%-14%
Entertainment and Recreation	5%-8%	9%-11%	6%-19%	8%-11%	6%-19%
Retail	4%-6%	10%-12%	11%-35%	11%-20%	11%-40%

Source: Destination BC

We used the average spending by visitor and the share of spending by category of spending to estimate the economic impacts associated with visitors arriving in BC through YVR (Table 16). In 2018, the spending of visitors arriving in BC through YVR was estimated to generate approximately:

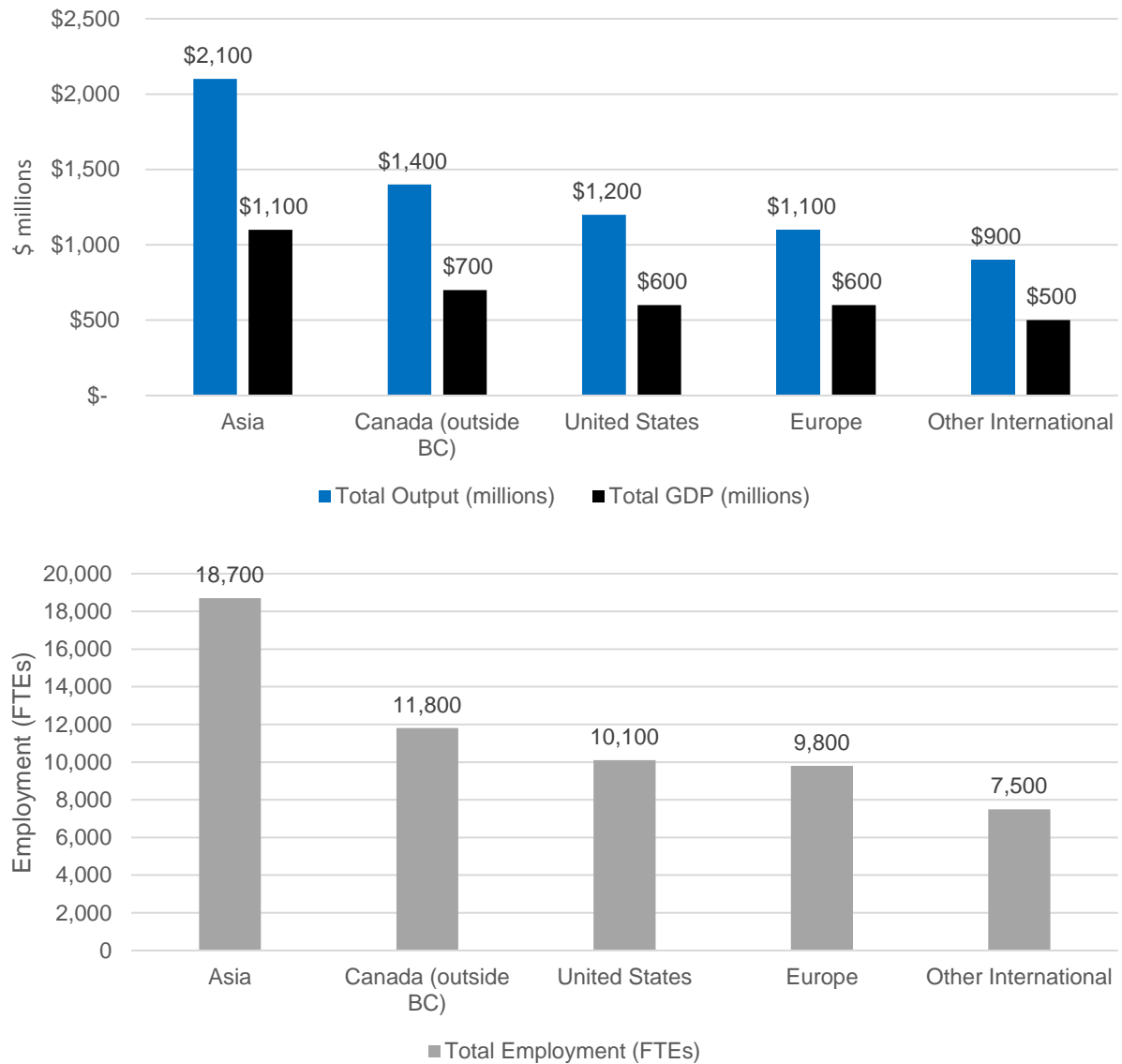
- \$4.0 billion of direct output and \$2.7 billion of indirect and induced output in BC, and an additional \$1.6 billion of indirect and induced output in other parts of Canada.
- \$2.0 billion of direct GDP and \$1.6 billion of indirect and induced GDP in BC, and an additional \$0.8 billion of indirect and induced GDP in other parts of Canada.
- 43,940 FTEs of direct employment and 13,970 FTEs of indirect and induced employment in BC, and an additional 6,200 FTEs of indirect and induced employment in other parts of Canada.

Table 16: Economic Impacts of Visitors to BC Arriving through YVR (\$ in millions), 2018

	Output (millions)	GDP (millions)	Employment (FTEs)
Direct Impacts			
BC	\$3,990	\$2,000	43,940
Indirect and Induced Impacts			
BC	\$2,710	\$1,600	13,970
Rest of Canada	\$1,580	\$750	6,200
Total Impacts			
BC	\$6,700	\$3,600	57,910
Rest of Canada	\$1,580	\$750	6,200
Total	\$8,280	\$4,350	64,110

Figure 3 shows the economic impacts of visitors to BC arriving through YVR, by region. Spending by visitors from Asia accounts for approximately 32 percent of economic impacts, while spending by visitors from the rest of Canada accounts for approximately 20 percent of economic impacts, spending by visitors from the United States accounts for approximately 17 percent of economic impacts, spending by visitors from Europe accounts for approximately 15 percent of economic impacts and spending by visitors from the rest of the world accounts for the remaining economic impacts.

Figure 3: Economic Impacts of Visitors to BC Arriving through YVR by Region, 2018



7 ECONOMIC IMPACTS OF A NEW FLIGHT

Each new flight that is added at YVR creates incremental economic impacts. Those impacts arise from the operational impacts associated with the flight itself, the additional visitors that are brought to BC and the incremental cargo space that is available for the export of goods. To illustrate the potential magnitude of the impacts of a new flight we estimated the annual economic impacts on a per flight basis for each of the following scenarios:

- A narrow-body aircraft carrying 150 passengers on a transborder route.
- A wide-body aircraft carrying 300 passengers between Vancouver and China.

Table 17 shows the assumptions used to estimate the economic impacts for each of the scenarios.

Table 17: Assumptions Used in Estimating the Economic Impact of a New Flight

	China	Transborder
Weekly Frequency	7	7
Annual Weeks of Operation	52	52
Share of Visitors to BC on the flight	59%	52%
Share of Visitors to BC that are Incremental	12%	11%

To estimate the operational impacts, the number of hours that would be associated with ground handling, security, passenger check-in and other functions at YVR were estimated and then converted to FTEs. The payroll for those FTEs was then estimated and economic impact estimates were developed using the same approach as was used to develop estimates of the economic impacts of YVR's operations.

Estimates of the impacts associated with the production of goods exported through YVR were estimated per million dollars of value. The distribution by product was based on the distribution by value of cargo shipped to each region through YVR between 2015 and 2018 from Statistics Canada.

Estimates of the impacts associated with incremental visitors were developed using the average spending per passenger and the spending profile for each region of origin from Destination BC.

Economic Impacts of a Daily Flight Between Vancouver and Asia

Table 18 shows the estimated economic impacts associated with the operation of a new daily flight between Vancouver and China. The operation of the flight was estimated to generate approximately:

- \$10.9 million of direct output and \$6.3 million of indirect and induced output in BC, and an additional \$5.6 million of indirect and induced output in other parts of Canada.
- \$5.1 million of direct GDP and \$3.6 million of indirect and induced GDP in BC, and an additional \$2.7 million of indirect and induced GDP in other parts of Canada.
- 41.7 FTEs of direct employment and 34.3 FTEs of indirect and induced employment in BC, and an additional 24.0 FTEs of indirect and induced employment in other parts of Canada.
- \$1.4 million of direct government revenue and \$1.0 million of indirect and induced government revenue in BC, and an additional \$0.7 of indirect and induced government revenue in other parts of Canada.

Table 18: Estimated Economic Impacts of a New Daily Flight Between Vancouver and China (\$ in millions)

	Output	GDP	Employment (FTEs)	Federal Government Revenue	Provincial Government Revenue	Municipal Government Revenue
Direct Impacts						
BC	\$10.9	\$5.1	41.7	\$0.6	\$0.4	\$0.4
Indirect Impacts						
BC	\$3.5	\$1.8	18.9	\$0.2	\$0.2	\$0.2
Rest of Canada	\$3.9	\$1.9	16.0	\$0.2	\$0.1	\$0.1
Induced Impacts						
BC	\$2.8	\$1.8	15.4	\$0.2	\$0.1	\$0.1
Rest of Canada	\$1.7	\$0.8	8.0	\$0.1	\$0.1	\$0.1
Total Impacts						
BC	\$17.2	\$8.7	76.0	\$1.0	\$0.7	\$0.7
Rest of Canada	\$5.6	\$2.7	24.0	\$0.3	\$0.2	\$0.2
Total	\$22.8	\$11.4	100.0	\$1.3	\$0.9	\$0.9

Table 19 shows the estimated economic impacts associated with spending of visitors to BC arriving on a new daily flight from China to YVR. The new daily flight between Vancouver and China was estimated to bring approximately 13,600 incremental visitors to BC each year. The spending of those visitors was estimated to generate approximately:

- \$21.1 million of direct output and \$14.9 million of indirect and induced output in BC, and an additional \$8.9 million of indirect and induced output in other parts of Canada.
- \$10.3 million of direct GDP and \$8.8 million of indirect and induced GDP in BC, and an additional \$4.2 million of indirect and induced GDP in other parts of Canada.
- 244.0 FTEs of direct employment and 76.6 FTEs of indirect and induced employment in BC, and an additional 40.8 FTEs of indirect and induced employment in other parts of Canada.

Table 19: Estimated Economic Impacts Associated with Visitors to BC Arriving through YVR on a New Daily Flight from China (\$ in millions)

	Output	GDP	Employment (FTEs)
Direct Impacts			
BC	\$21.1	\$10.3	244.0
Indirect and Induced Impacts			
BC	\$14.9	\$8.8	76.6
Rest of Canada	\$8.9	\$4.2	40.8
Total Impacts			
BC	\$36.0	\$19.1	320.6
Rest of Canada	\$8.9	\$4.2	40.8
Total	\$44.9	\$23.3	361.4

In addition, a new flight would provide additional cargo capacity between BC and China. Exports through YVR to China would be expected include both goods produced in BC and goods produced in other provinces.

Table 20 shows the estimated economic impacts of the production of one million dollars of goods for export through YVR to China. Each additional million dollars of goods produced for export to China was estimated to generate approximately:

- \$0.9 million of direct output and \$0.6 million of indirect and induced output in BC, and an additional \$0.5 million of total output in other parts of Canada.
- \$0.4 million of direct GDP and \$0.3 million of indirect and induced GDP in BC, and an additional \$0.3 million of total GDP in other parts of Canada.
- 5.1 FTEs of direct employment and 3.4 FTEs of indirect and induced employment in BC, and an additional 3.0 FTEs of total employment in other parts of Canada.

Table 20: Estimated Economic Impacts of Producing \$1 million of Goods for Export to China through YVR (\$ in millions)

	Output	GDP	Employment (FTEs)
Direct Impacts			
BC	\$0.9	\$0.4	5.1
Rest of Canada	\$0.2	\$0.1	0.8
Indirect and Induced Impacts			
BC	\$0.6	\$0.3	3.4
Rest of Canada	\$0.3	\$0.2	2.2
Total Impacts			
BC	\$1.5	\$0.7	8.5
Rest of Canada	\$0.5	\$0.3	3.0
Total	\$2.0	\$1.0	11.5

Economic Impacts of a Daily Transborder Flight

Table 21 shows the estimated economic impacts associated with the operation of a new daily transborder flight. The operation of the flight was estimated to generate approximately:

- \$4.5 million of direct output and \$2.6 million of indirect and induced output in BC, and an additional \$2.3 million of indirect and induced output in other parts of Canada.
- \$2.2 million of direct GDP and \$1.5 million of indirect and induced GDP in BC, and an additional \$1.1 million of indirect and induced GDP in other parts of Canada.
- 16.0 FTEs of direct employment and 14.5 FTEs of indirect and induced employment in BC, and an additional 10.0 FTEs of indirect and induced employment in other parts of Canada.
- \$0.7 million of direct government revenue and \$0.5 million of indirect and induced government revenue in BC, and an additional \$0.2 of indirect and induced government revenue in other parts of Canada.

Table 21: Estimated Operational Economic Impacts of a New Daily Transborder Flight (\$ in millions)

	Output	GDP	Employment (FTEs)	Federal Government Revenue	Provincial Government Revenue	Municipal Government Revenue
Direct Impacts						
BC	\$4.5	\$2.2	16.0	\$0.3	\$0.2	\$0.2
Indirect Impacts						
BC	\$1.4	\$0.7	7.7	\$0.1	\$0.1	\$0.1
Rest of Canada	\$1.6	\$0.8	6.6	\$0.1	\$0.0	\$0.1
Induced Impacts						
BC	\$1.2	\$0.8	6.8	\$0.1	\$0.1	\$0.0
Rest of Canada	\$0.7	\$0.3	3.4	\$0.0	\$0.0	\$0.0
Total Impacts						
BC	\$7.1	\$3.7	30.5	\$0.5	\$0.4	\$0.3
Rest of Canada	\$2.3	\$1.1	10.0	\$0.1	\$0.0	\$0.1
Total	\$9.4	\$4.8	40.5	\$0.6	\$0.4	\$0.4

Table 22 shows the estimated economic impacts associated with spending of visitors to BC arriving on a new daily transborder flight. The new daily flight was estimated to bring approximately 5,900 incremental visitors to BC each year. The spending of those visitors was estimated to generate approximately:

- \$4.0 million of direct output and \$2.7 million of indirect and induced output in BC, and an additional \$1.6 million of indirect and induced output in other parts of Canada.
- \$2.0 million of direct GDP and \$1.6 million of indirect and induced GDP in BC, and an additional \$0.7 million of indirect and induced GDP in other parts of Canada.
- 44.3 FTEs of direct employment and 14.1 FTEs of indirect and induced employment in BC, and an additional 7.2 FTEs of indirect and induced employment in other parts of Canada.

Table 22: Estimated Economic Impacts Associated with Visitors to BC Arriving through YVR on a New Daily Transborder Flight (\$ in millions)

	Output	GDP	Employment (FTEs)
Direct Impacts			
BC	\$4.0	\$2.0	44.3
Indirect and Induced Impacts			
BC	\$2.7	\$1.6	14.1
Rest of Canada	\$1.6	\$0.7	7.2
Total Impacts			
BC	\$6.7	\$3.6	58.4
Rest of Canada	\$1.6	\$0.7	7.2
Total	\$8.3	\$4.3	65.6

In addition, a new flight would provide additional cargo capacity between BC and the United States. The cargo shipped to the United States through YVR would be expected to be produced in BC. Table 23 shows the estimated economic impacts of the production of one million dollars of goods for export to the United States through YVR. Each additional million dollars of goods produced for export to the United States was estimated to generate approximately:

- \$1.0 million of direct output and \$0.8 million of indirect and induced output in BC, and an additional \$0.2 million of indirect and induced output in other parts of Canada.
- \$0.5 million of direct GDP and \$0.5 million of indirect and induced GDP in BC, and an additional \$0.1 million of indirect and induced GDP in other parts of Canada.
- 4.8 FTEs of direct employment and 4.7 FTEs of indirect and induced employment in BC, and an additional 0.8 FTEs of indirect and induced employment in other parts of Canada.

Table 23: Estimated Economic Impacts of Producing \$1 million of Goods for Export to the United States through YVR (\$ in millions)

	Output	GDP	Employment (FTEs)
Direct Impacts			
BC	\$1.0	\$0.5	4.8
Indirect and Induced Impacts			
BC	\$0.8	\$0.5	4.7
Rest of Canada	\$0.2	\$0.1	0.8
Total Impacts			
BC	\$1.8	\$1.0	9.5
Rest of Canada	\$0.2	\$0.1	0.8
Total	\$2.0	\$1.1	10.3

8 COMPARISONS WITH 2015

Between 2015 and 2018, the number of passengers at YVR increased by 8.5 percent annually and air capacity increased by 8.3 percent annually (Table 24). This was accompanied by annual increases in cargo volumes of approximately 7.6 percent. To accommodate this growth, YVR invested in technological improvements to increase the efficiency of baggage handling and border clearance.¹¹

Table 24: Passengers and Air Capacity, 2015-2018

	Passengers		Air Capacity*	
	Millions	Year-over-Year Growth	Millions of Seats	Year-over-Year Growth
2015	20.3	5.2%	12.6	5.9%
2016	22.3	9.9%	13.8	9.5%
2017	24.2	8.5%	15.0	8.7%
2018	25.9	7.0%	16.0	6.7%

*Non-stop, one way
Source: VAA

¹¹ Innovative Travel Solutions. Available here: <https://www.innovativetravelsolutions.ca/news/article/yvr-launches-worlds-most-efficient-self-service-bag-drop-system/>

Among service providers at YVR, there was consolidation of ground handling and an expansion of retail and food offerings in the terminals. At operations linked to YVR, the number of retailers at the MacArthurGlen Designer Outlet increased from 47 to 75 stores.¹²

Operations Economic Impact Comparisons

The changes contributed to overall growth in FTE employment at YVR of approximately six percent, most of which was in retail and cargo operations (Table 25). The expansion of the MacArthurGlen Designer Outlet contributed approximately half of the increase in retail employment. There were also modest increases in employment at Commercial Air Carriers and Hotels and Accommodations.

Table 25: Growth in Employment (FTEs) Related to YVR's Operations, 2015 and 2018

Category of Employer	2015	2018	Change
Employment Attributable to YVR's Ongoing Operations			
Commercial Air Carriers	7,200	7,300	1%
Aviation Support and Facilities Operations	3,900	3,700	-5%
Retail and Food	2,400	2,800	17%
Public Safety	2,100	2,100	0%
Ground Transportation	1,800	1,800	0%
Cargo	1,500	2,000	33%
Hotels and Accommodation	1,400	1,500	7%
Corporate Aviation	600	500	-17%
Employment Linked to YVR's Operations			
Designer Outlet	300	800	167%
Canada Post Sorting Facility	600	700	17%
Manufacturing	600	600	0%
BCIT School of Transportation	40	40	0%
Total	22,440	23,840	6%

Figure 4 and Figure 5 compare the economic impacts of YVR's operations in 2018 with the economic impacts of YVR's operations in 2015. YVR's direct output grew by approximately 8 percent over the period, while YVR's contribution to BC's direct GDP grew by approximately 11 percent, direct employment grew by approximately 6 percent and direct government revenue grew by approximately 5 percent.¹³ Total impacts in BC grew at rates similar to direct impacts. This is consistent with economic growth trends in BC over the same period. Outside of BC, the impacts associated with YVR's operations declined between 2015 and 2018.

¹² Interview findings.

¹³ Government revenues were relatively flat due to reductions in contribution rates for the Medical Services Plan, and WorkSafe BC, declines in alcohol purchases and average airfares and reductions in federal tax income rates.

Figure 4: Output, GDP and Government Revenue Impacts of YVR's Operations, 2015 and 2018

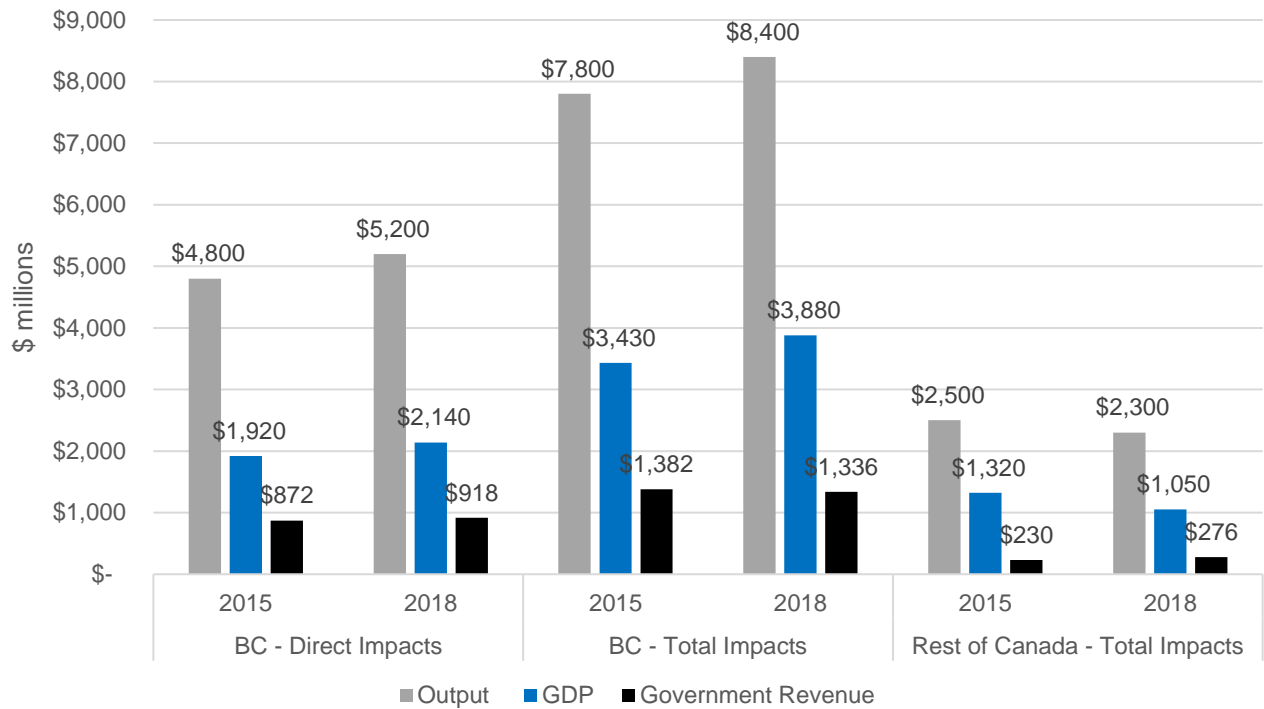
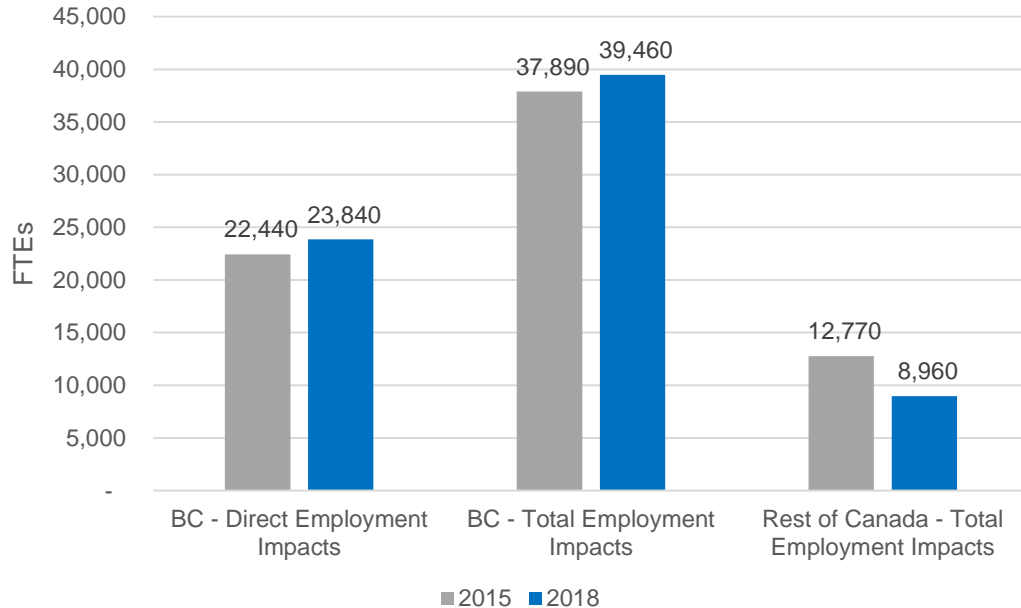


Figure 5: Employment Impacts of YVR's Operations, 2015 and 2018



Cargo Economic Impact Comparisons

Figure 6 and Figure 7 compare the impacts of the production of goods exported through YVR in 2018 with the impacts in 2015. The total output generated in BC by the production of goods exported through YVR grew by approximately 27 percent over the period, while GDP grew by approximately 23 percent and employment grew by approximately 14 percent. Total output in the rest of Canada from the production of

goods exported through YVR grew by 13 percent, total GDP grew by 15 percent and total employment grew by 5 percent.

Figure 6: Output and GDP Impacts of the Production of Goods Exported through YVR in BC, 2015 and 2018

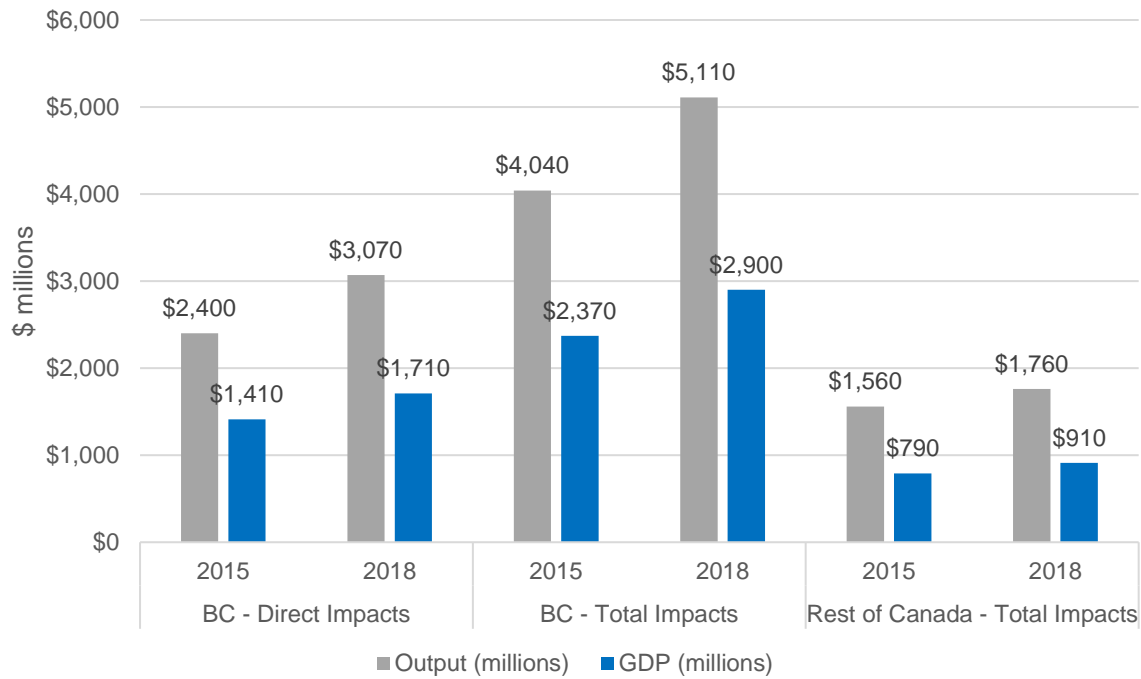
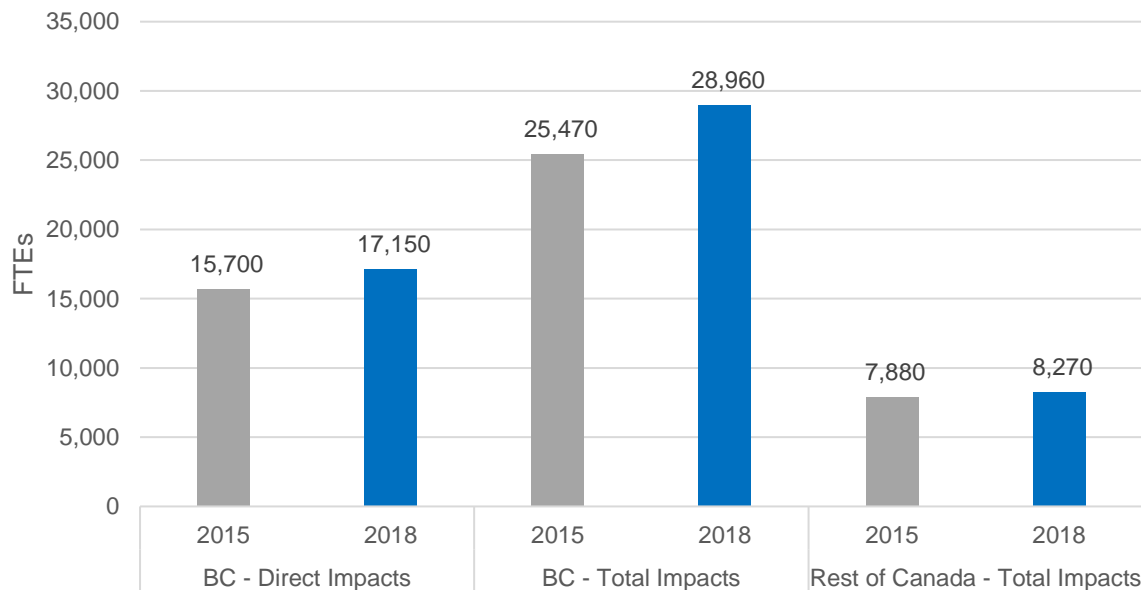


Figure 7: Employment Impacts of Goods Exported through YVR, 2015 and 2018



Tourism Economic Impact Comparisons

Table 26 compares the number of visitors arriving through YVR and their associated spending in 2018 with the estimates in 2015. Total visitor volumes were estimated to have increased by approximately 23 percent while visitor spending increased by approximately 48 percent.

Table 26: Spending and Visitors to BC Arriving through YVR, 2015 and 2018

Visitor Region of Origin	Number of Visitors (thousands)	2018		Number of Visitors (thousands)	2015	
		Average spending per person	Total Spending (millions)		Average spending per person	Total Spending (millions)
Canada (outside BC)	928	\$1,013	\$940	731	\$733	\$536
United States	933	\$840	\$784	939	\$752	\$706
Asia	891	\$1,642	\$1,463	634	\$1,363	\$864
Europe	507	\$1,547	\$784	446	\$1,453	\$648
Other International	388	\$1,534	\$595	227	\$1,445	\$328
Total	3,647	\$1,252	\$4,566	2,977	\$1,035	\$3,082

Figure 8 and Figure 9 compare the impacts of spending by visitors to BC arriving through YVR in 2018 with the impacts in 2015. Please note that the economic impacts of visitors to BC in the rest of Canada were not estimated in 2015, so comparisons of the impacts in the rest of Canada are not included. The total output in BC associated with spending by visitors arriving through YVR grew by approximately 45 percent over the period, while total GDP in BC grew by approximately 41 percent and total employment in BC grew by approximately 38 percent.

Figure 8: Output and GDP Impacts of Visitors to BC Arriving through YVR, 2015 and 2018

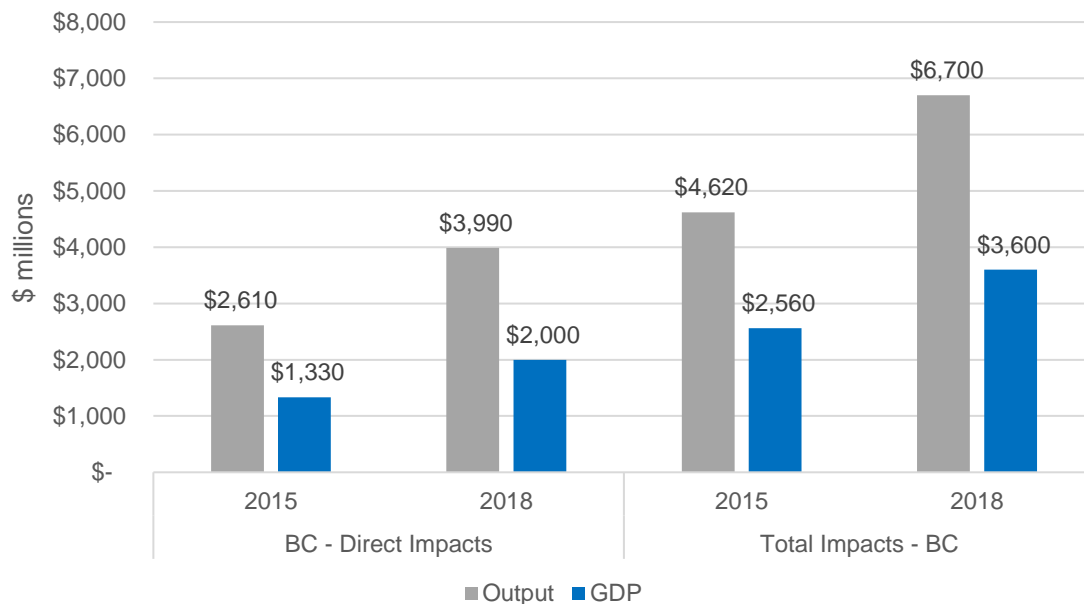
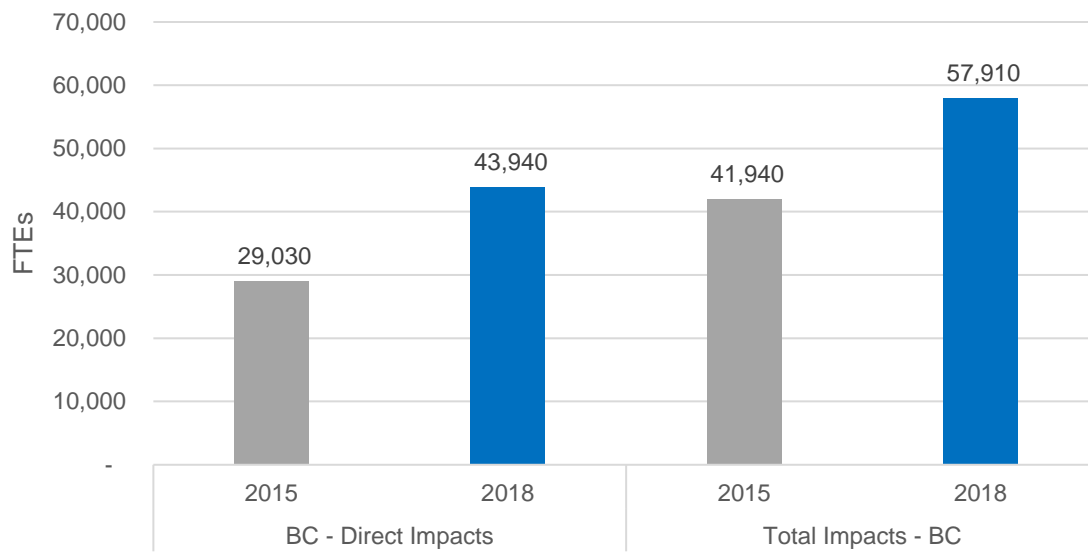


Figure 9: Employment Impacts of Visitors to BC Arriving through YVR, 2015 and 2018



9 SUMMARY

YVR's economic contributions extend beyond the impacts that arise from its operations. Through its role in facilitating the movement of people and goods between markets, YVR is an important part of the transportation infrastructure that supports a range of industries in BC and across Canada.

Table 27 summarizes the economic impacts of YVR's operations and the economic impacts supported by YVR due to its role in moving people and goods between markets.

Table 27: Summary of Economic Impacts, 2015 and 2018

		2015	2018	Percentage Change
Employment (FTEs)				
Attributable to YVR's Ongoing Operations		20,900	21,700	4%
Linked to YVR's Operations		1,540	2,140	39%
Total		22,440	23,840	6%
Economic Impacts of YVR's Operations				
Output	Direct	\$4,800	\$5,200	8%
	Indirect and Induced	\$5,500	\$5,500	0%
	Total	\$10,300	\$10,700	4%
GDP	Direct	\$1,920	\$2,140	11%
	Indirect and Induced	\$2,830	\$2,790	-1%
	Total	\$4,750	\$4,930	4%
Government Revenue	Direct	\$872	\$918	5%
	Indirect and Induced	\$740	\$694	-6%
	Total	\$1,612	\$1,612	0%
Economic Impacts Associated with Goods Exported through YVR				
Total Output		\$5,600	\$6,870	23%
Total GDP		\$3,160	\$3,810	21%
Total Employment (FTEs)		33,250	37,230	12%
Economic Impacts in BC Associated with Visitors Arriving through YVR				
Total Output		\$4,620	\$6,700	45%
Total GDP		\$2,560	\$3,600	41%
Total Employment (FTEs)		41,940	57,910	38%

Economic Impacts of a New Flight

Each new flight that is added at YVR creates incremental economic impacts. These impacts arise from the operational impacts of the flight itself, the spending of the incremental visitors that are brought to BC and the additional cargo space that is available for the export of goods.

Table 28 summarizes the estimated annual economic impacts of a daily flight carrying 300 passengers between Vancouver and China and a daily transborder flight carrying 150 passengers.

Table 28: Estimated Annual Economic Impacts of a New Daily Flight (\$ in millions)

	Flight Between Vancouver and China	Transborder Flight
Operational Impacts		
Total Output	\$22.8	\$9.4
Total GDP	\$11.4	\$4.8
Total Employment (FTEs)	100.0	40.5
Economic Impacts Associated with Visitors Arriving through YVR		
Total Output	\$44.9	\$8.3
Total GDP	\$23.3	\$4.3
Total Employment (FTEs)	361.4	65.6
Economic Impacts Per \$1 Million of Goods Exported through YVR		
Total Output	\$2.0	\$1.9
Total GDP	\$1.0	\$1.1
Total Employment (FTEs)	11.5	10.3

APPENDICES

Appendix A – Report Limitations

This report is provided for information purposes and is intended for general guidance only. It should not be regarded as comprehensive or a substitute for personalized business or investment advice.

We have relied upon the completeness, accuracy and fair presentation of all information and data obtained from secondary sources and VAA. The accuracy and reliability of the findings and opinions expressed in the presentation are conditional upon the completeness, accuracy and fair presentation of the information underlying them. As a result, we caution readers not to rely upon any findings or opinions expressed for business or investment purposes and disclaim any liability to any party who relies upon them as such.

Additionally, the findings and opinions expressed in the presentation constitute judgments as of the date of the presentation and are subject to change without notice. MNP is under no obligation to advise of any change brought to its attention which would alter those findings or opinions.

Finally, our analysis is based on approximations that rely on economic impact factors developed by government statistical agencies. These factors are founded on past events giving an expectation of current and future events. However, current and future events are not guaranteed to follow past events and results may vary, even significantly.

Appendix B – Approach to Developing Direct Employment Estimates

Employment was categorized as follows:

Employment Attributable to YVR's Ongoing Operations	Employment Linked to YVR's Operations
<ul style="list-style-type: none">• Jobs that are related to the provision of services to passengers, the movement of cargo or the operations of the facility• Ground transportation• Aircraft maintenance	<ul style="list-style-type: none">• McArthurGlen Designer Outlet• BCIT School of Transportation• Aerospace Manufacturing• Canada Post Sorting Facility

Employment attributable to the ongoing operations of YVR was defined to consist of:

- Employment of businesses, organizations and government agencies located at, or operating from, YVR and providing services either directly or indirectly to passengers travelling through YVR.
- Employment associated with the ongoing maintenance of YVR's facilities (e.g., landscaping, snow removal, janitorial and pest removal).
- Employment related to accommodations for inflight crew and passengers on stopovers.
- Employment located in the vicinity of YVR that is related to the provision of cargo services (e.g., couriers, trucking and cargo handlers).
- Employment of the Vancouver Airport Authority.
- Employment of businesses engaged in aerospace manufacturing located in the vicinity of YVR.
- Employment of inflight crew based out of YVR.

Data Sources

Data used to develop the employment estimates were gathered from publicly available sources and VAA administrative sources.

Estimating Employment

The employment associated with the ongoing operations of YVR falls into the following categories:

- Jobs that are physically located at YVR (e.g., airline customer service staff, VAA staff, ground handling, retail shops in the terminals, air traffic control, cargo handlers and security).
- Jobs that are not physically located at YVR (e.g., taxi, limousine and bus drivers, Canada Line attendants, and inflight crew based out of YVR).

To estimate jobs that are physically located at YVR, data on employment on Sea Island (see Figure 10) from Statistics Canada's 2016 Census was used.

A detailed map of the River Rock Casino Resort area in Richmond, British Columbia. The Fraser River flows through the center of the map, separating Sea Island (a large grey-shaded area) from the mainland. To the north of the river is Iona Beach Regional Park. To the south is the Quilchena Golf & Country Club. The River Rock Casino Resort is located on the east side of the river, near the intersection of SW Marine Dr and River Rd. Major roads shown include SW Marine Dr, River Rd, and various local streets like No 2 Rd, No 3 Rd, No 4 Rd, and Alderbridge Way. The map also shows the city of Richmond and the area around the casino.

Three categories of jobs are related to ongoing operations that are not physically located at YVR:

- Airline staff including inflight crew based out of YVR.
- Ground transportation employment related to the operation of taxis, limousines, buses, hotel shuttles and the Canada Line.
- Hotel employment.

The number of inflight crew jobs based out of YVR was estimated based on the number of Restricted Area Identify Cards by airline, estimated employment attributed to scheduled air transportation from the Census, and information gathered from airlines through interviews.

The number of ground transportation jobs was estimated based on administrative data provided by the VAA on the number of trips by mode.



Hotel Employment

Hotel employment at properties located on Sea Island was assumed to be associated with the ongoing operations of YVR.

Employment at off-site properties was estimated based on estimates of the number of room nights for inflight crew, and estimates of the number of room nights associated with passengers on stopovers.

FTE Estimates

Jobs were converted to FTEs based on the ratio of FTEs to jobs for the relevant category of employer, from a 2015 survey of businesses and interviews with employers.

Payroll Estimates

Payroll was calculated based on average earnings for the relevant category of business from the Census 2016 and annual earnings in BC by NAICS from Statistics Canada's *Table 14-10-0204-01 Survey of Employment, Payrolls and Hours (SEPH), average weekly earnings by type of employee, overtime status and detailed North American Industry Classification System (NAICS), annual (current dollars)*.

Appendix C – Government Revenue

Government Revenue Related to YVR

YVR's operations generate government revenues through excise taxes paid on goods and services, income taxes paid by employees, corporate taxes paid by businesses, property taxes and the lease of federal lands. In addition, employment related to YVR generates contributions to government programs such as Workers Compensation (WorkSafe BC), the Medical Services Plan ("MSP"), Employment Insurance ("EI") and the Canada Pension Plan ("CPP").

Table 29 shows the estimated direct government revenues attributable to YVR's ongoing operations.

Table 29: Direct Government Revenues Attributable to YVR's Ongoing Operations (\$ in millions), 2018

Revenue Type	Federal Revenue (millions)	Provincial Government (millions)	Municipal Government (millions)
Government Revenues Attributable to Employers			
Personal Income Tax	\$176.2	\$68.7	Not applicable
Corporate Income Tax	\$69.9	\$39.7	Not applicable
Jet Fuel Tax	\$14.8	\$7.4	Not applicable
Carbon Tax	Not applicable	\$4.6	Not applicable
Federal Lease Payments	\$59.5	Not applicable	Not applicable
Payment in Lieu of Taxes	Not applicable	Not applicable	\$17.2
Government Revenues Attributable to Airport Users			
GST on Airfares	\$132.8	Not applicable	Not applicable
GST on Airport Improvement Fee	\$8.6	Not applicable	Not applicable
GST on Air Traveller Security Charge	\$6.9	Not applicable	Not applicable
GST and PST on Food, Beverage, Alcohol, and Retail Sales	\$8.4	\$5.1	Not applicable
GST and Other Taxes on Ground Transportation, TransLink, Car Parking, and Car Rentals	\$14.0	\$15.3	\$9.1
Motor Fuel and Carbon Tax	\$3.7	\$3.5	\$3.6
GST, PST, and Other Taxes on Hotel Accommodation	\$8.0	\$12.8	\$4.8
Total Government Revenues	\$502.8	\$157.1	\$34.7
Contributions to Government Programs			
Canada Pension Plan Contributions	\$113.5	Not applicable	Not applicable
WorkSafe BC	Not applicable	\$22.0	Not applicable
Medical Services Plan Premiums	Not applicable	\$9.8	Not applicable
Employment Insurance Premiums	\$45.1	Not applicable	Not applicable
Total Contributions to Government Programs	\$158.6	\$31.8	\$0.00

A description of how each of the government revenue estimates was calculated is provided below.

Personal Income Tax

Employees pay federal and provincial income tax based on their earnings. Table 30 shows the 2018 income tax brackets and rates used to calculate federal income tax contributions, and Table 31 shows the 2018 income tax brackets and rates used to calculate provincial income tax contributions.

Table 30: 2018 Federal Income Tax Brackets and Rates

Income Range	Tax Rate
\$0-\$46,605	15%
\$46,605-\$93,208	20.5%
\$93,208-\$144,489	26%
\$144,489-\$205,842	29%
Over \$205,842	33%

Source: Canada Revenue Agency

Table 31: 2018 Provincial Income Tax Brackets and Rates

Income Range	Tax Rate
\$0 to \$39,676	5.06%
\$39,676.01 to \$79,353	7.70%
\$79,353.01 to \$91,107	10.50%
\$91,107.01 to \$110,630	12.29%
\$110,630.01 to \$150,000	14.70%
Over \$150,000	16.80%

Source: BC Government

For each category of organization, direct labour income was divided by the direct FTEs to estimate the average income per FTE. The 2018 federal and provincial income taxes were estimated based on the average income per FTE for each category of organization and the relevant income tax rate.

Table 32 shows the estimated federal and provincial income tax revenues by category of organization.

Table 32: Federal and Provincial Income Tax Paid by Category of Organization

Category of Organization	Payroll (millions)	Number of FTEs	Average Income per FTE	Federal Income Tax (millions)	Provincial Income Tax (millions)
Employment Attributable to YVR's Ongoing Operations					
Aviation Support and Facilities Operations	\$257	3,700	\$69,508	\$34.1	\$13.3
Car Rental, Taxis and Ground Transportation	\$107	1,800	\$59,279	\$12.8	\$5.1
Cargo	\$117	2,000	\$58,577	\$14.0	\$5.6
Commercial Air Carriers	\$541	7,300	\$74,196	\$74.3	\$28.9
Corporate Aviation	\$32	500	\$64,254	\$4.1	\$1.6
Hotels	\$53	1,500	\$35,278	\$4.5	\$1.7
Public Safety	\$112	2,100	\$53,551	\$12.5	\$5.0
Retail and Food Outlets	\$87	2,800	\$30,864	\$6.7	\$2.4
Employment Linked to YVR's Operations					
Manufacturing	\$39	600	\$64,354	\$4.9	\$1.9
Designer Outlet	\$23	800	\$28,918	\$1.7	\$0.6
BCIT School of Transportation	\$4	40	\$90,487	\$0.5	\$0.2
Canada Post Sorting Facility	\$47	700	\$66,857	\$6.1	\$2.4
Total	\$1,419	23,840		\$176.2	\$68.7

Corporate Income Tax

Companies related to YVR pay federal and provincial income tax based on the type of company, number of employees, and the province. As detailed financial information for the businesses related to YVR was not available, we followed the approach used in the 2015 study and assumed that each company paid tax at the average rate per FTE. According to data collected from Statistics Canada, BC Stats, the BC Provincial Budget and the Public Accounts of Canada, the average federal and provincial corporate income tax revenue collected per employee in 2018 was estimated to be \$2,931 and \$1,667, respectively.

Based on the above, the federal revenue from corporate income tax was estimated to be approximately \$69.9 million, and the provincial revenue was estimated to be \$39.7 million in 2018.

Jet Fuel Tax

Fuel used for domestic flights was subject to a federal jet fuel tax of 4 cents per litre and a provincial jet fuel tax of 2 cents per litre in 2018. According to data provided by VAA, we estimated that domestic flights used approximately 368.6 million litres of jet fuel.

Based on the above, the 2018 federal tax revenue from jet fuel was estimated to be approximately \$14.8 million, and the provincial tax revenue was estimated to be \$7.4 million.

Carbon Tax

Fuel for intra-BC flights was subject to BC's carbon tax of 10.44 cents per litre in 2018. According to data provided by VAA, we estimated that intra-BC flights used approximately 44.2 million litres of fuel in 2018.

Based on the above, the 2018 provincial carbon tax revenue from jet fuel was estimated to be approximately \$4.6 million.

EI Premiums

According to CRA data, the 2018 EI premium rate for employees was 1.66 percent of earnings. Maximum annual insurable earnings per employee were \$51,700, with a maximum annual employee premium of \$858.22. Furthermore, the annual employer premium was 1.4 times the employee premium.

As a result, the EI premium for an FTE employee related to YVR with annual income less than \$51,700 was estimated as 1.66 percent of income and for an FTE employee with annual income greater than or equal to \$51,700 was estimated to be \$858.22. For each category of organization, direct labour income was divided by the direct FTEs to estimate the average annual income per FTE.

Based on the above, the total EI premiums paid by employees related to YVR in 2018 were estimated to be approximately \$18.8 million. The EI premiums paid by employers were estimated to be 1.4 times higher than this, namely \$26.3 million. Therefore, total 2018 EI premium contributions were estimated to be approximately \$45.1 million.

CPP Contributions

According to CRA data, the 2018 CPP contribution rate on earnings was 4.95 percent for both the employee and employer. Maximum annual contributory earnings per employee were \$52,400, based on maximum pensionable earnings of \$55,900 minus a basic exemption of \$3,500.

As a result, the employee and employer CPP contributions for an FTE employee related to YVR with annual income of less than \$55,900 were each estimated as 4.95 percent of contributory income, and for an FTE employee with annual income greater than or equal to \$55,900 were each estimated to be \$2,593.80. For each category of organization, direct labour income was divided by the direct FTEs to estimate the average annual income per FTE.

Based on the above, the total 2018 CPP contributions made by employees and employers related to YVR were estimated to be approximately \$56.77 million each, totalling \$113.54 million in federal government revenues.

WorkSafe BC Contributions

Based on WorkSafe BC data, the 2018 average base rate for WorkSafe BC contributions was 1.55 percent of employers' assessable payroll. The maximum assessable payroll per employee in 2018 was \$82,700.

For each category of organization, the assessable payroll per FTE employee related to YVR was estimated as the total payroll for the category of organization divided by the number of FTEs. The WorkSafe BC contribution per FTE was estimated 1.55 percent of assessable payroll up to a maximum contribution of \$1,282.

Based on the above, the total 2018 WorkSafe BC contributions in provincial government revenues were estimated to be approximately \$22.0 million.

MSP Premiums

According to premium information published by the BC Government, the maximum 2018 MSP premium for a single person with net income greater than \$42,000 was \$37.50 per month and for people earning below \$26,000, the MSP premium was zero. For people earning between \$26,000 and \$42,000 the average premium amount was \$22.50.¹⁴

For each category of organization, direct labour income was divided by the direct FTEs to estimate the average annual income per FTE. Following the approach used in the 2015 study, we assumed that each FTE employee related to YVR is covered by his/her own employer at the relevant maximum single person rate.

¹⁴ On January 1, 2018 MSP Premium rates were reduced by approximately 50 percent. On January 1, 2020 MSP premiums will be eliminated and replaced with an "employer health tax" (EHT).

Based on the above, the total 2018 annual MSP contributions in provincial government revenues were estimated to be approximately \$9.8 million.

Federal Lease Payments

According to data provided by VAA, it paid approximately \$59.5 million in land lease payments to the federal government in 2018.

Payment in Lieu of Taxes

As YVR is located on federal land, VAA is exempt from municipal taxes but has to make an annual payment in lieu of taxes to the City of Richmond.

According to data provided by VAA, it paid approximately \$17.2 million in lieu of taxes to the City of Richmond in 2018.

Government Revenue Related to Airport Uses

Government revenue related to YVR uses includes the following: applicable sales taxes on airfares; the Airport Improvement Fee (AIF); Air Traveller Security Charge (ATSC); purchases of food, beverages, liquor and retail products; ground transportation, parking, car rentals, and hotel accommodation; and motor fuel and carbon taxes.

Goods and Services Tax (GST) on Airfares

GST of 5 percent was charged on air tickets purchased in Canada for domestic and transborder flights. (International flights were zero-rated for GST purposes).

Table 33 shows the GST charged on domestic and transborder airfare attributed to YVR.

Table 33: GST on Airfare for Flights to and from YVR in 2018

Flight Type	2018 Airfare (millions)	Estimated GST Charged (millions)	Share of GST Attributed to YVR	Estimated GST Attributed to YVR (millions)
Domestic	\$2,489	\$124	50%	\$62
Transborder	\$1,412	\$71	100%	\$71
Total	\$3,901	\$195		\$133

Source: VAA data

GST on AIF

According to data provided by VAA, YVR earned approximately \$172.1 million in AIF in 2018. Federal government revenue from 5 percent GST charged on the 2018 AIF was estimated to be approximately \$8.6 million.

GST on ATSC

GST was charged on ATSC paid by each passenger that originated at YVR in 2018 on domestic, transborder and international flights.

Based on CRA data, the ATSC rates were as follows:

- Domestic flights: \$7.12 for each chargeable enplanement.
- Transborder flights: \$12.10 for each chargeable enplanement.
- International flights: \$25.91 for each chargeable enplanement.

According to data provided by VAA, an estimated 4.0 million passengers originated at YVR in 2018 for domestic flights, 2.5 million for trans-border flights and 3.1 million for international flights. Therefore, the total ATSC related to YVR was estimated to be \$137.8 million.

Based on the above, federal government revenue from the 5 percent GST charged on 2018 ATSC was estimated to be approximately \$6.9 million.

GST and PST on Food, Beverage, Alcohol, and Retail Sales

According to data provided by VAA, food and beverage sales in 2018 were approximately \$97.8 million. Federal government revenue from GST of 5 percent on these sales was estimated to be approximately \$4.9 million.

According to data provided by VAA, alcohol sales (excluding duty free) in 2018 were \$6.0 million and were subject to GST of 5 percent and Provincial Sales Tax (PST) of 10 percent. Federal government revenue from GST and provincial government revenue from PST was estimated to be approximately \$0.3 million and \$0.6 million, respectively.

According to data provided by VAA, retail sales and services (excluding duty free) in 2018 were \$64.2 million and were subject to GST of 5 percent and PST of 7 percent. Federal government revenue from GST and provincial government revenue from PST was estimated to be approximately \$3.2 million and \$4.5 million, respectively.

GST and Other Taxes on Ground Transportation, TransLink, Car Rentals, and Car Parking

GST of 5 percent applied to ground transportation sales. According to data provided by VAA, 2018 ground transportation sales (including taxis and TransLink) were estimated to be approximately \$64.3 million.¹⁵ Therefore, federal government revenue from GST on ground transportation sales in 2018 was estimated at approximately \$3.2 million

According to data provided by VAA, in 2018 car rental sales related to YVR were approximately \$168.0 million. Federal government revenue from GST of 5 percent on these sales was estimated to be approximately \$8.4 million while provincial government revenue from PST of 7 percent on these sales was estimated to be \$11.8 million. The BC government also charged a Passenger Vehicle Rental Tax of \$1.50 per rental day in 2018, which generated provincial government revenues of approximately \$3.5 million.¹⁶

In 2018, TransLink Parking Sales Tax was charged at a rate of 24 percent on all parking revenues generated at YVR, and GST of 5 percent was charged over and above the TransLink Parking Sales Tax. According to data provided by VAA, parking revenues of approximately \$37.9 million were collected in 2018. Therefore, municipal government revenues from the TransLink Parking Sales Tax were estimated at approximately \$9.1 million, and federal government revenues from GST on parking revenues were estimated at approximately \$2.4 million.

Motor Fuel and Carbon Tax

Fuel consumed by car rental companies was subject to carbon and motor fuel taxes charged by the federal government, provincial government and TransLink.

Table 34 shows the 2018 tax rates.

Table 34: 2018 Motor Fuel and Carbon Tax Rates

Jurisdiction	Motor Fuel	Carbon Tax
Federal	\$0.1/litre	Not applicable
Provincial	\$0.085/litre	\$0.0778/litre
TransLink	\$0.17/litre	Not applicable

Source: BC Government Ministry of Finance and Natural Resources Canada.

¹⁵ According to data provided by VAA, taxi sales related to YVR were estimated to be approximately \$34.9 million based on the number of taxi trips related to YVR, the average fare by zone, and the share of taxi trips from YVR to each zone. TransLink sales related to YVR were estimated to be approximately \$29.4 million based on 2018 data provided by VAA regarding the number of domestic, transborder, and international passengers enplaning or deplaning at YVR (74 percent of passengers in each category) and the share of passengers using public transit (18 percent of enplaning or deplaning passengers). We assumed domestic passengers would use ticket machines, transit passes, and fare saver cards. Therefore, we estimated an average fare of \$8.45 for domestic passengers, based on the average TransLink fares for Zones 1 and 2. For transborder and international passengers, we estimated an average fare of \$9.25 based on the average TransLink fares plus the airport surcharge for Zones 1 and 2.

¹⁶ According to data provided by VAA, total car rental transactions were 487,097 in 2018.

According to data provided by the VAA, we estimated that approximately 21.3 million litres of fuel were consumed by car rental companies at YVR in 2018.¹⁷

Based on the above, in 2018 motor fuel and carbon taxes, as well as GST on fuel, generated revenues of approximately \$3.7 million for the federal government, \$3.5 million for the provincial government, and \$3.6 million for TransLink.

GST, PST, and Other Taxes on Hotel Accommodation

In 2018, GST of 5 percent and PST of 8 percent was charged on sales of hotel accommodations. In addition, the Richmond and Vancouver governments charged a 3 percent municipal and regional district tax. The number of rooms sold to passengers staying overnight immediately after arrival or before departure, air crew, and other people who regularly work onsite at YVR was estimated to be 800,413. Total hotel revenue attributed to YVR was estimated to be \$160.4 million.¹⁸

Based on the above, federal government revenues from GST paid on hotel accommodation attributed to YVR were estimated at approximately \$8.0 million, provincial government revenues from PST were \$12.8 million, and municipal government revenues from the municipal and regional district tax were estimated at approximately \$4.8 million.

Government Revenue from Operations Linked to YVR

All direct, indirect and induced government revenues from operations linked to YVR were calculated using the Statistics Canada input-output methodology.

Additionally, all indirect and induced government tax revenue estimates of employment attributable to YVR's ongoing operations were calculated using the Statistics Canada input-output methodology.

¹⁷ According to data provided by VAA, total car rental days of approximately 2.4 million were related to YVR in 2018. We assumed that the number of kilometres per car rental was 100 km. Based on average fuel usage of 0.09 litres per kilometre according to Natural Resources Canada's 2018 Fuel Consumption Guide, we estimated the total fuel usage to be approximately 21.3 million litres in 2018.

¹⁸ Source: Destination BC 2018 Provincial Tourism Indicators.

Appendix D – Employment Information

Unionization

A large number of employees that work at YVR are unionized. Through interviews conducted with businesses at YVR and secondary research, we estimated that approximately 60 percent of employees at YVR are unionized. Table 35 shows the estimated unionization rates at YVR by category of employer.

Table 35: Estimated Unionization Rates at YVR by Category of Employer

Category of Employer	Estimated Unionization Rate
Aviation Support and Facilities Operations	87%
Car Rental, Taxis and Ground Transportation	28%
Cargo	2%
Commercial Air Carriers*	69%
Corporate Aviation	17%
Hotels	40%
Public Safety	78%
Retail and Food Outlets	89%
Manufacturing	>90%
Designer Outlet	2%
BCIT School of Transportation	100%
Canada Post Sorting Facility	>90%

*In 2018, several groups of WestJet's staff were in the process of unionization. This estimate assumes that only pilots are unionized.

Benefits

Businesses at YVR provide their employees with a wide range of benefits. Through interviews conducted with businesses at YVR and secondary research, we estimated that the following benefits are provided to approximately 90 percent of employees at YVR:

- Extended health
- Dental
- Vision
- Life insurance
- Disability
- Paid sick days

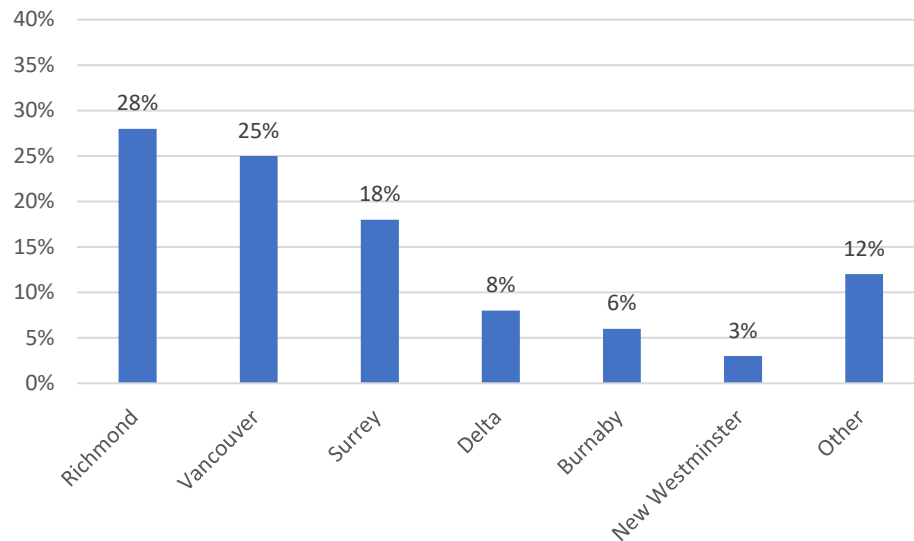
The following benefits were provided to some, but not all, employees at YVR:

- Paid personal days
- Accidental death
- Employee assistance programs

Place of Residence

Figure 11 shows the place of residence of individuals employed at YVR. The majority of individuals employed at YVR live in Metro Vancouver and approximately 71 percent of employees live in either Vancouver, Richmond or Surrey.

Figure 11: Place of Residence of Individuals Employed at YVR



Source: Statistics Canada, Custom Tabulation

Appendix E – About MNP

MNP is the fastest growing major chartered accountancy and business advisory firm in Canada. Founded in 1958, MNP has grown to more than 70 offices and 4,000 team members across Canada. In British Columbia, MNP has more than 800 staff located in 22 offices throughout the province.

MNP is a member of Praxity AISBL, a global alliance of independent firms, which enables us to access a broad range of industry specific expertise worldwide.

At MNP, our professionals are the driving force behind our success. They continue to demonstrate our culture and values which is integral to the way we conduct business, both internally and externally. As such, MNP is proud to be recognized as one of the *50 Best Employers in Canada* by *Report On Business* magazine.

MNP provides a wide range of accounting, finance and business advisory services to clients. These include:



- Assurance
- Taxation
- Corporate Finance
- Mergers and Acquisitions
- Enterprise Risk Services
- Forensic Accounting
- Consulting
- Insolvency and Corporate Recovery
- Succession
- Valuations and Litigation Support

About MNP's Economics and Research Practice

Economic and industry studies are carried out by MNP's Economics and Research practice. Based in Vancouver, the Economics and Research practice consists of a team of professionals that has a successful track record of assisting clients with a wide variety of financial and economic impact studies. Our work has encompassed a wide range of programs, industries, company operations and policy initiatives, and has helped clients with decision-making, communication of economic and financial contributions, documentation of the value of initiatives and activities, and development of public policy.

Victoria International Airport (YYJ) 2017 Economic Impact Study



Photo Credit:
Victoria Airport Authority
Victoria Airport Authority

PREPARED BY
InterVISTAS Consulting Inc.

19 December 2017

Executive Summary

The Victoria International Airport (YYJ) contributes significantly to employment and economic development in both the local community, as well as throughout Vancouver Island and the Province of British Columbia (BC) as a whole. This study examines the current economic impacts generated from the operations of the Victoria International Airport and all businesses operating on Victoria Airport Authority (VAA) land, based on a review of the business in 2017.

Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project, or a change in government policy or regulation. In this case, economic impact refers to the economic contribution associated with the ongoing activities of the Victoria International Airport and all Victoria Airport Authority tenants, subtenants and associated firms located off-airport.¹ The economic contribution of the airport and VAA's tenants to the community is termed the *economic impact of YYJ*. The three major components of economic impact are classified as *direct, indirect and induced impacts*.² Together, they provide a snapshot of how the business of the airport can impact the local and provincial economy.

YYJ is an economic mainstay for the Vancouver Island communities and BC. The impact of the airport is reflected in the 2,500 direct full-time equivalents (FTEs)³ of employment that are supported or facilitated by YYJ, and the \$170 million in direct wages paid. Including indirect and induced impacts, YYJ generated a total of 4,200 FTEs of employment and \$270 million in total wages throughout the province in 2017.



Photo Credit: Victoria International Airport website

¹ Some Victoria Airport Authority tenants and subtenants operate businesses that are not airport/aviation related, but are included in the study as non-airport/non-aviation firms that reside on airport authority land.

² Direct impacts account for the economic activity of the target sector itself. Indirect impacts are those that result because of the direct impacts, which involve employment in downstream industries that arise from the presence of YYJ. Induced employment is generated from expenditures by individuals employed directly or indirectly by the airport.

³ FTE = full-time equivalent of employment. For purposes of this study, one full-time equivalent of employment corresponds to 1,832 hours of work annually. See **Appendix C** for further details.

Ongoing Economic Impacts

The current economic impact of Victoria International Airport, which includes the impact related to the Victoria Airport Authority's ongoing operations, is summarized in **Figure ES-1**.⁴ *Direct* economic impact measures the employment and economic impact directly associated with the airport. This includes employment of all airport terminal building tenants, VAA land tenants, subtenants, and also relevant employment of firms that are located off airport. *Indirect* and *induced* impacts are multiplier impacts in the wider economy stimulated by the airport's activities (e.g., other businesses that supply goods and services to the airport and spending by airport employees).

Emphasis is placed on the direct economic impacts as these are based on data from the employment survey and are clearly identifiable. The multiplier impacts are derived from Statistics Canada economic multipliers for British Columbia.⁵

The *direct* impacts of YYJ in 2017 are estimated to be 2,800 jobs (equivalent to 2,500 *direct* FTEs or person years of employment), earning approximately \$170 million in *direct* wages. Direct employment generates \$230 million in *direct* GDP and \$540 million in *direct* economic output annually.

Total impacts are calculated by adding together the *direct*, *indirect* and *induced* impacts. Including indirect and induced multiplier impacts, current economic impacts of YYJ include a *total* of 4,700 jobs or 4,200 FTEs. *Total* earnings of all employees amounts to \$270 million in wages. Furthermore, YYJ's operations contributed an estimated \$420 million and \$880 million in *total* GDP and *total* economic output, respectively, to the provincial economy.

In addition, beyond the direct, indirect and induced economic impacts, YYJ contributes positive effects to the region that can be more difficult to quantify. The airport also facilitates employment and economic development in the regional economy through increased trade, attracting new businesses to the region and encouraging investment. It supports long-term economic growth by providing linkages between the regional and national economy through increased employment, greater connections to business markets and greater access to resources. This yields additional benefits to direct users and generates further positive impact on the performance and economic activity of the region.

InterVISTAS surveyed stakeholders to review the impacts of the airport on the surrounding businesses and community. The responses range from the significance of YYJ in transporting company personnel to the involvement of the airport in community-building. Overall, YYJ is an important facilitator of economic development, and contributes to the region's attractiveness and competitiveness.

Ongoing Economic Impacts of YYJ





Annual *Direct* Impacts:

- 2,800 jobs
- 2,500 full-time equivalents
- \$170 million in wages
- \$230 million in gross domestic product (GDP)
- \$540 million in economic output

⁴ The results of this study are based on a review of 2017 operations.

⁵ The indirect and induced economic impacts are calculated using the latest available Statistics Canada multipliers for the Province of British Columbia (2013), adjusted for inflation. Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity.

Figure ES-1: Annual Ongoing Economic Impact of Victoria International Airport, 2017

					
Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	Jobs	FTEs			
Direct	2,800	2,500	\$170	\$230	\$540
Indirect	1,100	1,000	\$60	\$100	\$200
Induced	800	700	\$40	\$90	\$140
Total	4,700	4,200	\$270	\$420	\$880

Note: Totals may not sum due to rounding.

Annual Tax Contributions

Victoria International Airport is also an important generator of taxation revenues to all levels of government. Total taxes paid on an annual basis, by airport employers and employees, are estimated at \$81 million per year. Approximately 15% of taxes was paid by air passengers, 82% was paid by airport employers, VAA tenants and their employees, and the remaining 3% by Victoria Airport Authority.

The majority of taxes accrue to the federal government at 73% overall, while the provincial government receives 21% of tax revenue generated by YYJ. The municipal government also benefits from YYJ through the collection of property taxes amounting to over \$5 million paid by YYJ and its tenants.

Figure ES-2 provides a summary of the taxes collected.

Annual Tax Impact of YYJ

Total Tax Contribution:

- \$81 million

Federal Government:

- \$59 million (73% of total)

Provincial Government:

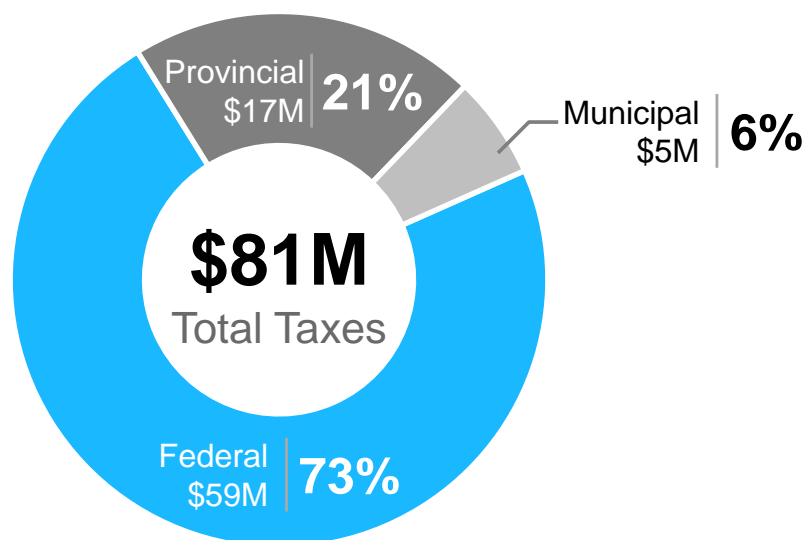
- \$17 million (21% of total)

Municipal Government:

- \$5 million (6% of total)

Note: Results are based on 2016 tax rates.

Figure ES-2: Estimated Annual Tax Revenues from Victoria International Airport, 2016



Note: Taxation impacts are based on 2016 tax rates.

One-Time Economic Impact of Capital Expenditures

There are additional one-time economic impacts associated with the Victoria Airport Authority's capital expenditure program. These impacts are considered separately from the airport's ongoing operations because capital spending can vary significantly over time and on a project-by-project basis.

Using economic multipliers, the economic impact of these capital expenditures can be estimated. Based on the analysis, YYJ's capital expenditures in 2016 generated approximately 80 *direct* FTEs or person years of employment and \$8 million in *direct* wages, as shown in **Figure ES-3**.⁶

Economic Impacts of Capital Expenditure at YYJ

2016 Capital Expenditure:

- \$24 million

2016 Direct Economic Impacts:

- 80 FTEs or Person Years
- \$8 million in wages

Figure ES-3:

One –Time Economic Impact of Capital Expenditures at Victoria International Airport, 2016

Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	Jobs	FTEs			
Direct	90	80	\$8	\$11	\$24
Indirect	60	50	\$4	\$5	\$10
Induced	40	30	\$2	\$4	\$7
Total	190	160	\$13	\$20	\$41

Note: Totals may not sum due to rounding.

⁶ It is assumed that all capital expenditures occur in the Province of British Columbia.

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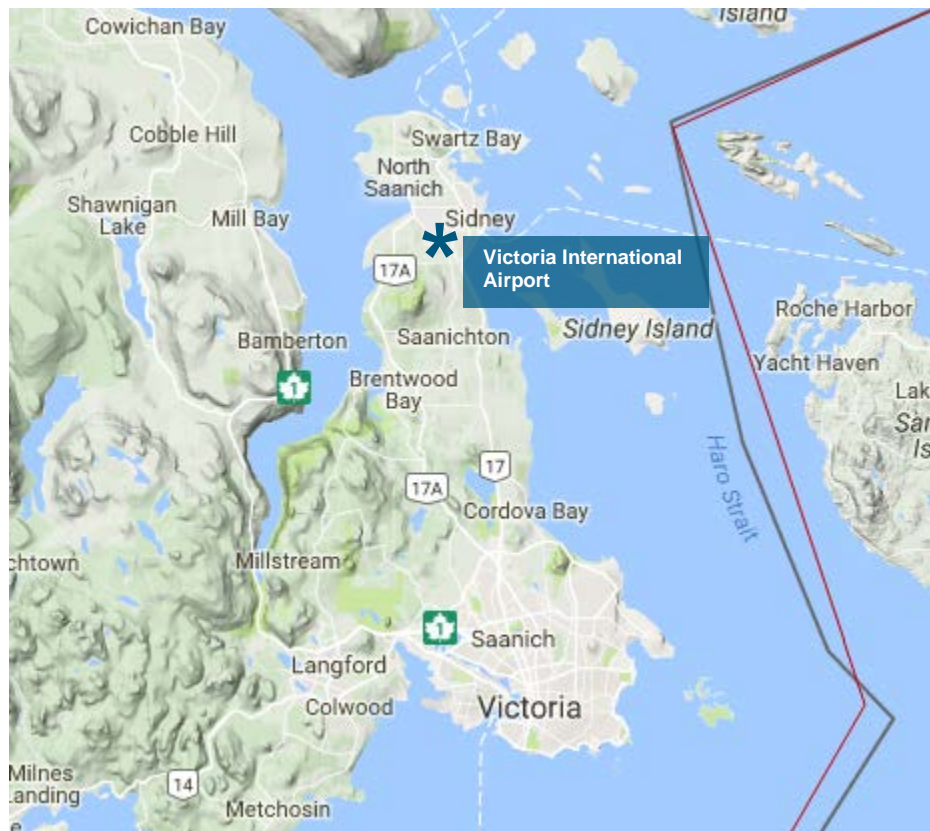
1 Introduction

Victoria Airport Authority (VAA) commissioned InterVISTAS Consulting Inc. to conduct an economic impact study of the Victoria International Airport (YYJ), based on its operations in 2017. The purpose of this study is to document the economic contribution of the airport and related businesses to the community and the province. The economic impact of other firms and businesses operating on VAA land is also estimated.

1.1 Victoria International Airport

As shown in **Figure 1-1**, Victoria International Airport is located on the southern tip of Vancouver Island on the Saanich Peninsula. The Greater Victoria region as a whole is comprised of 13 municipalities with a combined population of almost 400,000.

Figure 1-1: Map of Victoria International Airport and Surrounding Area



Source: Town of Sidney

Victoria International Airport was originally established in 1939 as a military airport, the Patricia Bay Air Station. In 1997, control of YYJ was transferred to the Victoria Airport Authority, a community-based non-share capital corporation that manages YYJ's operations and developments. Today YYJ is the tenth largest airport in the country based on passenger volumes.

YYJ is ranked among the lowest cost airports in the country, has been recognized twice by Airports Council International as being the Best Regional Airport in North America for Airport Service Quality, and despite having invested over \$150 million in capital for airport development is debt-free.

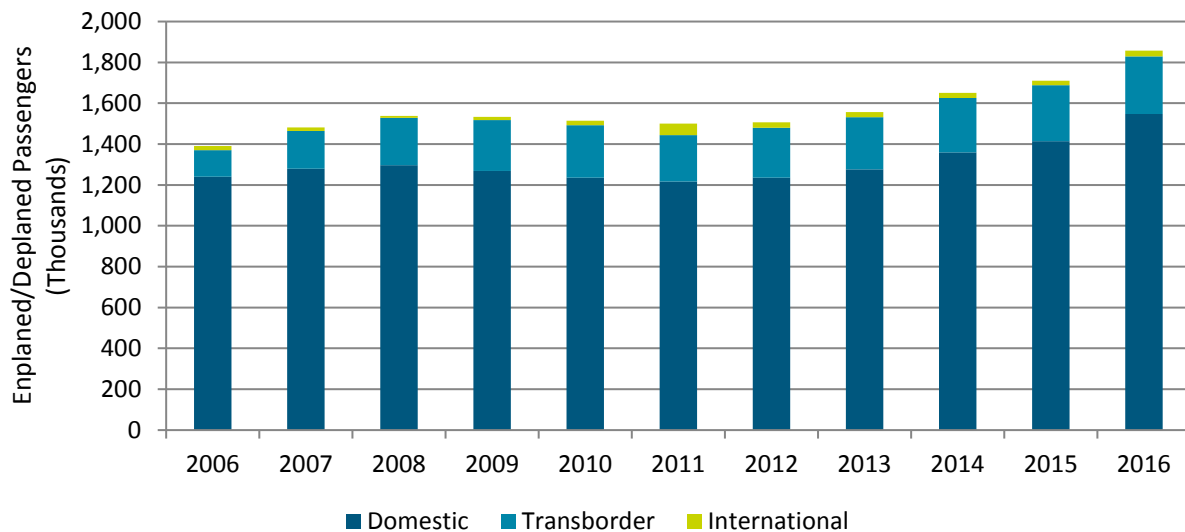
YYJ is a major contributor to the Vancouver Island economy – generating employment in sectors such as air service facilities, hospitality, manufacturing and ground transport. YYJ provides essential infrastructure that links Victoria and other Vancouver Island communities to the world, making it an important component of Canada's tourism and trade-related industries.



1.2 Passenger Traffic

Figure 1-2 illustrates passenger traffic at Victoria International Airport from 2006 to 2016. Traffic remained stable with the economic downturn from 2008 to 2011, but in the past five years increased 23% from 1.5 million to over 1.8 million in 2016. Traffic is expected to surpass 2 million passengers in 2018 and approach 3 million passengers by 2030. Traffic growth has been driven by new air services, a strong regional economy and favourable exchange rates.

Figure 1-2: Air Passenger Traffic at YYJ, 2006-2016



Source: Victoria International Airport Annual Reports

1.3 Industry and Economy of Vancouver Island



Vancouver Island

- **Population:** 799,400 (Vancouver Island, 2016)
- **GDP:** \$14.9 billion (Victoria CMA, 2013)
- **Median Household Income:** \$70,283 CAD (Victoria CMA, 2016)
- **Largest Industries:** Technology, tourism, forestry, fishing, and mining.

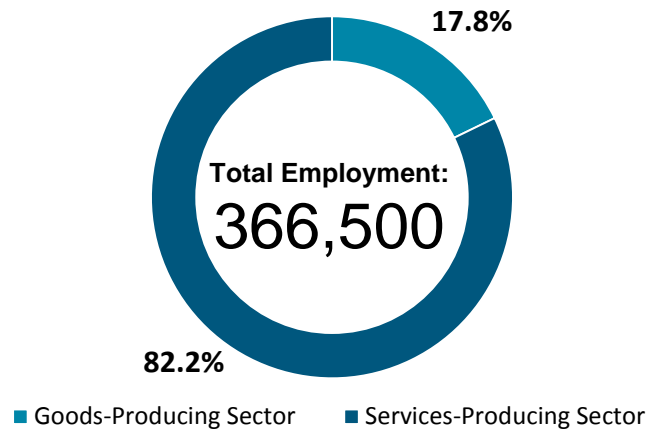
Vancouver Island covers an area of approximately 84,200 square kilometres, and had a population of 799,400 at the end of 2016. Despite the region's strong population growth in recent years, Vancouver Island was able to lower its unemployment rate to 6.0% in 2016, down from 6.3% in 2015. This is largely caused by an increase in jobs in the tourism, construction, public administration and real estate industries located in Victoria and Nanaimo.⁷

Vancouver Island's economy may be broadly categorized into goods-producing industries and services-producing industries. Services-producing industries account for roughly 82.2% of total employment, which is 2.1% higher than British Columbia's 2016 average rate. The remaining 17.8% of Vancouver Island's employment is centered on the goods-producing sector. Vancouver Island's employment may be further separated into a diverse range of industries, including tourism, technology, manufacturing, agriculture, aquaculture, and forestry.

Figures 1-4 and 1-5 contain data from the Chartered Professional Accountants of BC, and explore employment levels in the Vancouver Island/Coast Development region.

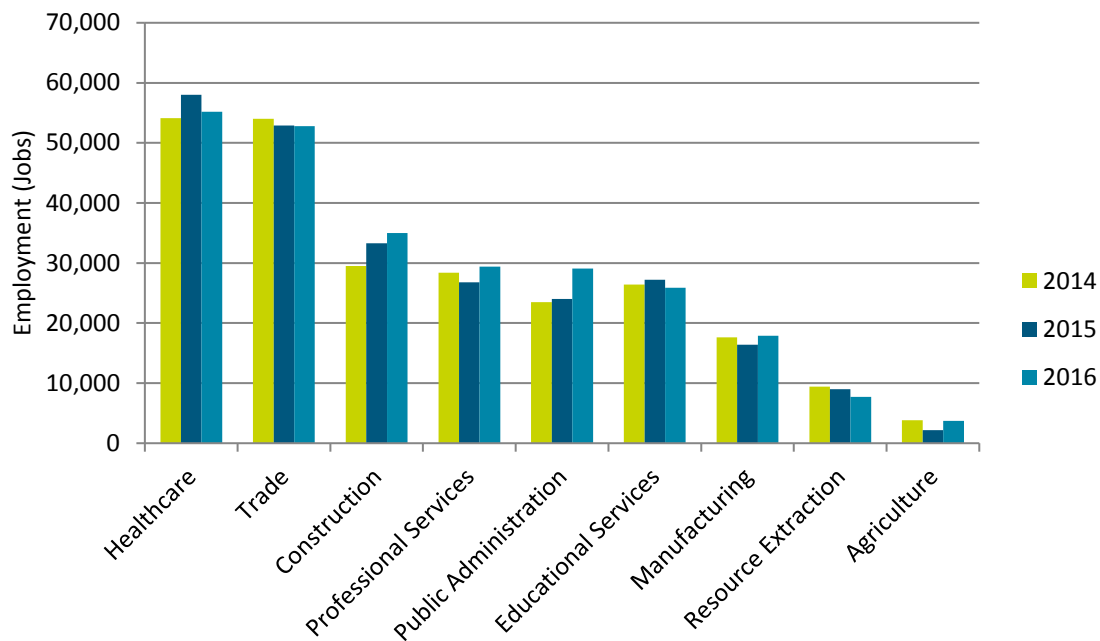
⁷ Source: 2016 State of the Island Economic Report, Vancouver Island Economic Alliance

Figure 1-4: Vancouver Island/Coast Development Region's Economy by Employment



Source: Regional Check-Up 2017, Chartered Professional Accountants of BC

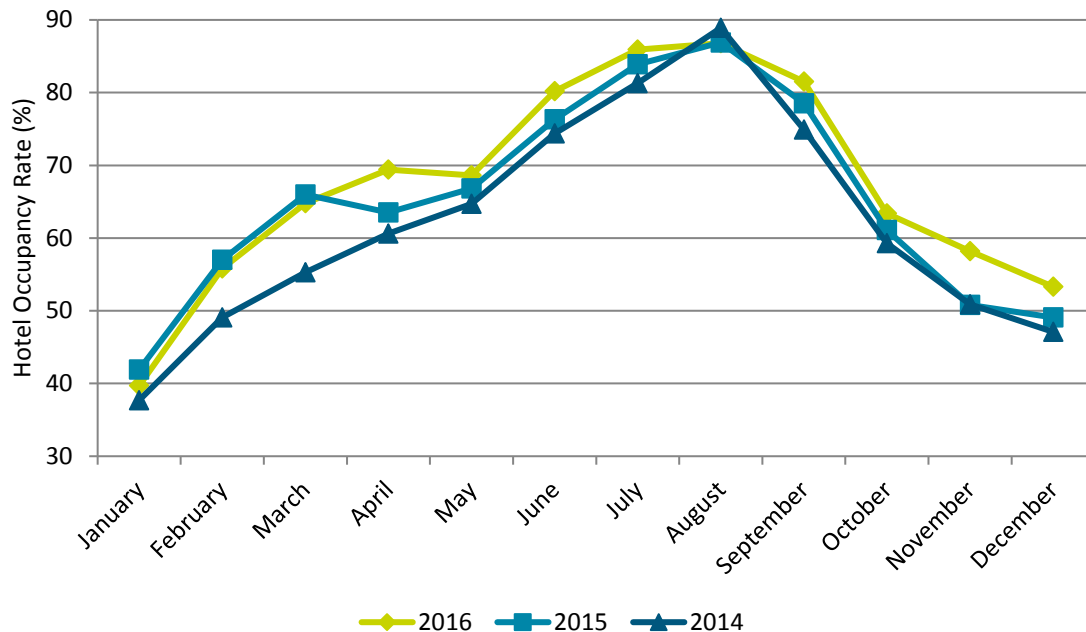
Figure 1-5: Breakdown of Select Vancouver Island/Coast Development Region Industries



Source: Regional Check-Up 2017, Chartered Professional Accountants of BC

Since the Canadian dollar has remained relatively weak against the USD over the past five years, it has made Canadians more inclined to take vacations in their own country. This has caused an uptick in domestic leisure visitors to the area, as well as an increase in foreigner visitors looking to take advantage of the favourable exchange rate. Although the weak Canadian dollar has made imports more costly, it has also enabled Canada's tourism industry to thrive. This is evident in **Figure 1-6**, where monthly Vancouver Island hotel occupancy rates from 2014 to 2016 are displayed.

Figure 1-6: Monthly Comparison of Vancouver Island Hotel Occupancy Rates, 2014-2016



Source: Destination British Columbia

Greater Victoria itself features a number of key demographic trends. At over half of Vancouver Island's population, its economy is a key determinant of economic activity around the island. It is important to note that the region has a strongly aging population. The median age in the Victoria CMA is 45, nearly four years above the national figure. However, even given its higher proportion of retirees, it manages to match national median household income values. Further details can be found in **Figure 1-7**.

Figure 1-7: Comparison of Population, Age and Income, 2006, 2011, 2016

	Victoria CMA	British Columbia	Canada
Population			
2016	367,770	4,648,055	35,151,728
2011	344,615	4,400,057	33,476,688
2006	330,088	4,113,487	31,612,897
Median Age (Years)			
2016	45.0	43.0	41.2
2011	44.2	41.9	40.6
2006	43.1	40.8	39.5
Median Household Income (Canadian dollars, nominal)			
2016	\$70,283	\$69,995	\$70,336
2011	\$61,553	\$60,333	\$61,072
2006	\$60,071	\$59,416	\$60,270

Source: National Household Survey Data, Statistics Canada

1.4 Economic Impact of YYJ

YYJ contributes directly to employment in the Vancouver Island region, as well as the provincial and national Gross Domestic Product (GDP) at large, through its business and commercial activities and operations. More importantly, it also acts as an economic catalyst, facilitating the growth of regional businesses and industrial sectors. The economic contribution of the airport and VAA's tenants to the community is termed the *economic impact* of YYJ.⁸

1.4.1 What is Economic Impact?

Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project (such as the construction of a new facility), or a change in government policy or regulation. Economic impact can be measured in various ways. Two of the most popular ways to assess economic impact are in terms of the dollar value of industrial output produced, or in terms of full-time equivalents (FTE) generated.⁹ Other measures are gross domestic product (GDP) and value of capital used and/or created. All of these are used to express the gross level of activity or expenditure from a sector of the economy, a specific project or a change in policy or regulation. These measures can be useful in developing an appreciation of projects, investments and economic sectors.¹⁰ The different measurements of economic impact, including employment, wages, gross domestic product (GDP) and economic output are explained in **Figure 1-8**.

This study examines the economic impact of YYJ on the provincial economy. One of the most important components of the YYJ economic impact is given particular attention here: *Employment Impact*. Other economic impact measures such as wages, GDP and economic output are also considered and presented.

⁸ This includes all airport terminal building tenants, VAA land tenants, subtenants, and also relevant employment of firms that are located off airport.

⁹ A full-time equivalent (FTE) or person year of employment accounts for part-time and seasonal employment.

¹⁰ Economic impact is different from a cost-benefit analysis that weighs benefits against costs.

Figure 1-8: Measurements of Economic Impact

Employment (Jobs & Full-time Equivalents)	<ul style="list-style-type: none"> •The number of full-time equivalents (FTEs) or person years of employment generated by a particular source. Because certain jobs may only be part-time or seasonal, the number of jobs is generally greater than the number of FTEs.
Wages	<ul style="list-style-type: none"> •The wages, salaries, bonuses, benefits and other remuneration earned by the associated workforce.
Gross Domestic Product (GDP)	<ul style="list-style-type: none"> •A measure of the value added by labour and capital services used to produce final goods and services, as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.
Economic Output	<ul style="list-style-type: none"> •The dollar value of industrial output produced. Sometimes referred to as “economic activity,” it reflects the spending (i.e., capital improvement plus revenue) by firms, organizations and individuals.

1.4.2 Categories of Economic Impact

The three major components of economic impact are *direct*, *indirect*, and *induced impacts*, as described below. These distinctions are used as a base for the estimation of the total economic impact of YYJ. Each of these three components requires different tools of analysis. Employment impact analysis determines the economic impact in terms of jobs created and salaries and wages paid. In the case of the airport, the direct, indirect, induced, and total numbers of person years created at the airport and at other businesses on VAA land are examined to produce a snapshot in time of YYJ operations.¹¹

Direct Impact

Direct impacts account for the economic activity of the target sector itself. For instance, all employment that is directly related to the operation and management of YYJ, including businesses located onsite at the airport and on VAA land. As well, airport-dependent businesses located offsite would be considered

¹¹ This includes employment of all airport terminal building tenants, VAA land tenants, subtenants, and also relevant employment of firms that are located off airport.

direct employment. Thus, the direct employment base includes airline employees, fixed base operators, aircraft maintenance, ground handling, customer service, airport authority staff, etc.

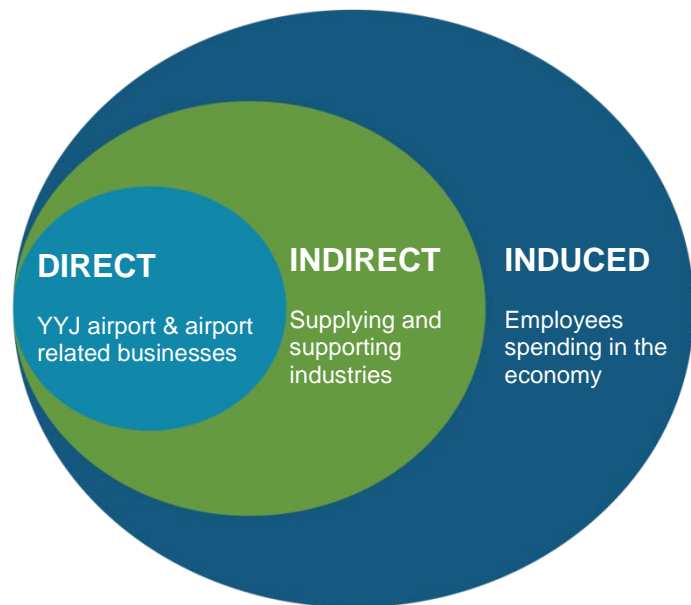
Indirect Impact

Indirect impacts are those that result because of the direct impacts. This involves employment in downstream industries that arise from the presence of YYJ. For instance, indirect employment includes the portion of employment in supplier industries which are dependent on sales to the air transport sector, e.g. food wholesalers that supply food for catering on flights.

Induced Impact

Induced employment is generated from expenditures by individuals employed directly or indirectly by the airport. For instance, if an airline employee at YYJ decides to renovate her home, this would result in induced employment hours in the general economy as the renovation would support hours of employment in the construction industry, the construction materials industry, etc. Induced impact is often called the “household-spending effect”.

Figure 1-9: Categories of Economic Impact Generated and Facilitated by YYJ



Total impacts are the sum of direct, indirect, and induced effects. These three categories of impacts are summarised in **Figure 1-9**.

2 Methodology

2.1 Introduction

InterVISTAS conducted this economic impact study during the summer and fall of 2017. The study estimates the economic impact of YYJ's operations in 2017.

The study is based on data collected from an employment survey of all employers associated with the operation of YYJ (e.g. airlines, general aviation businesses, security services, onsite retailers, etc.) and all tenants operating on VAA land, which is used as an input to assess the direct impacts of operations at the airport and on VAA land. The survey produced estimates of the number of people employed in directly-related occupations, as well as the total amount of earnings paid to these employees. The employment survey was used to classify the total direct employment and average wages paid by business type.

InterVISTAS estimates the indirect and induced effects using economic multipliers developed by Statistics Canada that are derived from models of how the Canadian national and provincial economies operate. InterVISTAS utilizes a proprietary economic model in order to conduct multiplier analysis and estimate indirect and induced impacts.¹²

Data collected from the employment survey is also used to calculate the associated tax impacts (government revenue) generated by the airport's operations.

Survey Response Rate

- 96% of tenants responded to the survey
- 99% of total direct full-time equivalents covered by the survey

Study Time Frame

- 2017 operations

Economic Multiplier Source

- Statistics Canada (Industry Accounts Division): Input-Output Multipliers for British Columbia, 2013

2.2 Estimating Current Economic Impacts

The direct employment base related to ongoing operations at YYJ is first measured.¹³ Employment figures are generally more understandable by the public than more abstract measures, such as economic output or GDP. Employment figures also have the advantage of being a more accurate measure, both because the firms are more likely to provide data on employment, as opposed to information on revenues, wages and other monetary amounts, and because there is less chance of double counting economic activity.¹⁴

The economic impact study then assesses the indirect and induced (or “multiplier”) employment supported by YYJ's related operations, as well as economic activity in terms of economic output and GDP using Statistics Canada's economic multipliers. The estimated tax revenues generated annually by operations at YYJ are also estimated.

¹² The indirect and induced economic impacts are calculated using the latest available Statistics Canada multipliers for the province of British Columbia (2013), adjusted for inflation. Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity.

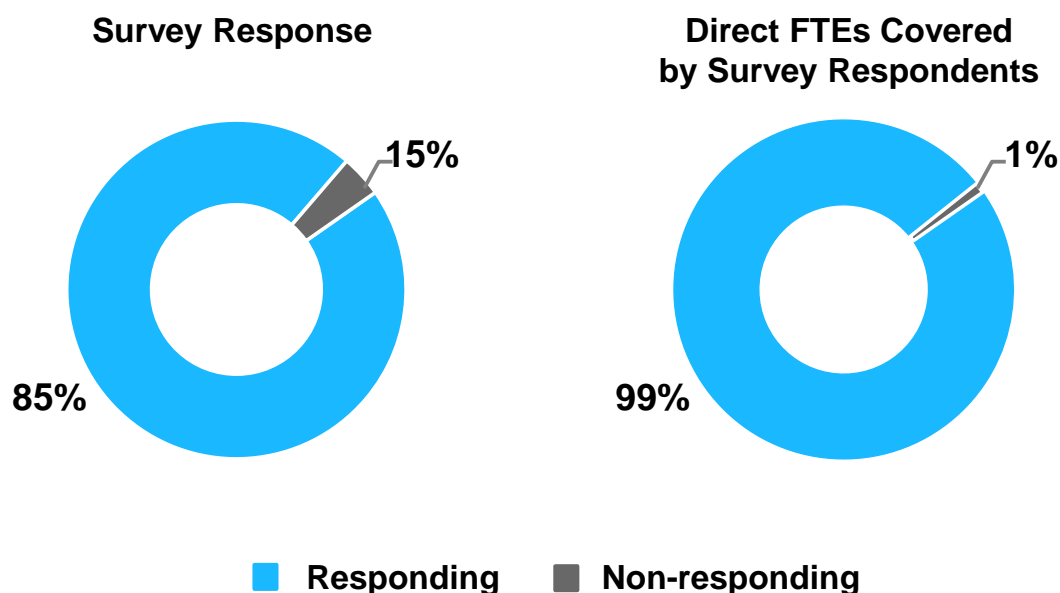
¹³ This includes employment of all airport terminal building tenants, VAA land tenants, subtenants, and also relevant employment of firms that are located off airport.

¹⁴ For example, revenues reported by an air carrier would double count revenues received by caterers. The caterer's revenue is an expense for the airline.

2.3 Surveying Direct Employment

Employment attributable to ongoing YYJ was measured by surveying nearly 110 tenants and subtenants located at YYJ, on VAA land and other businesses economically linked to the airport. Specifics of the survey methodology are contained in the Appendices. **Appendix A** shows a breakdown of survey responses by firm type. A sample copy of the survey is provided in **Appendix B**. Telephone follow-ups were conducted to increase the response rate. In total, 96% of the businesses and organisations contacted responded to the survey, representing 99% of total direct person years or FTEs of employment covered by the survey. A summary is provided in **Figure 2-1**.

Figure 2-1: Response Rate for YYJ Employment Survey



2.4 Inferring Employment

Employment was “inferred” for firms that did not respond to the survey by using a proven and accepted methodology.¹⁵ This includes using other sources of employment information, such as past employment surveys or using survey results for firms of similar types. A conservative approach was taken when using other survey or employment information to infer for non-responding firms.

There may be firms which were not surveyed simply because it was not known that they existed. We do not include an estimate of employment for such non-surveyed firms because there is no basis for an assessment. In any event, we expect most of these to be very small in terms of missed employment (See **Appendix E**).

¹⁵ The methodology employed in this study to infer for non-respondents is also used by the federal government for estimating the national income and product accounts.

2.5 Estimating Indirect and Induced Impacts with Economic Multipliers and Ratios

Measurement of indirect and induced economic activity is difficult. While it may be possible to conduct a survey of downstream employers, the survey would need to cover thousands of firms in order to completely cover indirect employment. For induced employment, the entire economy would need to be scrutinized. In addition to the time and financial resources needed to conduct such surveys, the quality of responses would be suspect.

As an alternative to costly and inaccurate surveys, indirect and induced effects are typically measured using *economic multipliers and ratios*. Multipliers are derived from models of the general economy. They come in a variety of forms and differ greatly in definition and application. Thus, great care must be exercised in choosing the appropriate set of multipliers to use. In addition, the use of multiplier analysis is limited by a number of factors, these being:

- the accuracy of the structure and parameters of the underlying model;
- the level of unemployment in the economy;
- the assumption of constant returns to scale in production;
- the assumption that the economy's structure is static over time; and
- the assumption that there are no displacement effects.

Statistics Canada economic multipliers and ratios (2013) for the Province of British Columbia were used for the analysis.

Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment, with emphasis nonetheless placed on the direct economic impacts as these are based on data from the employer survey and are clearly identifiable.

For this study, InterVISTAS applied economic multipliers and ratios for the Province of British Columbia based on Statistics Canada's 2013 Interprovincial Input-Output model, the most recent available. The multipliers and ratios are based on a highly detailed accounting of provincial economic structures or relationships. The model tracks how the goods and services produced by industry are used by other industries and final users. The provincial multipliers were updated with Consumer Price Indices to account for inflation.

2.6 Jobs vs. Full-Time Equivalents

Traditionally, one measures employment by the number of jobs. However, when part-time and/or seasonal workers are used, this can be a misleading measure resulting in an overstatement of economic

impact. Whenever possible, employment impacts are measured both in terms of the number of jobs and the number of full-time equivalents (FTEs), also called person years.¹⁶

2.7 Estimating One-Time Capital Expenditure Impacts

The airport's capital expenditure program also generates significant impacts to the regional economy. The capital expenditures include spending on construction, which supports employment, earnings, GDP, and economic output. Using the Statistics Canada multipliers, the economic impacts of the airport's capital expenditures in 2016 are estimated.¹⁷ The one-time economic effects of an airport's capital development are considered separate from an airport's ongoing operations because the capital spending can vary significantly over time and on a project-by-project basis.

2.8 Estimating Tax Revenue Impacts

The tax revenue contributions to the federal, provincial and municipal levels of government that are associated with airport operations are also estimated.¹⁸ This includes taxes paid by employers and employees (such as payroll taxes), passengers (such as sales taxes on expenditures), and VAA (property tax and the federal airport ground lease).

¹⁶ One full-time equivalent job is equivalent to 1,832 hours of work. See **Appendix C** for a detailed calculation of the number of hours per full-time equivalent job. Person years are the same as full time equivalents (FTEs).

¹⁷ It is assumed that all capital expenditures occur in the Province of British Columbia.

¹⁸ Taxation impacts are based on 2016 tax rates.

3 Economic Impact of YYJ's Ongoing Operations

SUMMARY

- Annual operations at YYJ and other VAA tenants support approximately 2,800 direct jobs, 2,500 direct FTEs, and \$170 million in direct wages.
- Direct employment related to operations of YYJ and VAA tenants includes 94% permanent jobs and 6% seasonal jobs.
- Indirect employment impacts of YYJ and VAA tenants include 1,000 indirect FTEs and \$60 million in indirect wages across the province.
- Induced employment impacts of YYJ and VAA tenants include 700 induced FTEs and \$40 million in induced wages across the province.
- Total employment impacts of YYJ include 4,200 FTEs and \$270 million in wages across the province.

3.1 Direct Economic Impacts

This section describes the employment, in terms of both jobs and FTEs or person years of employment, and estimated payroll attributable to employers *directly* related to ongoing operations at Victoria International Airport and other tenants operating on VAA land, including the West Sidney Business Park.

This section also examines the employment due to ongoing operations at YYJ in more detail. Employment is broken down by:

- Full-time versus part-time and seasonal employment;
- Employment by industry; and
- Employment by job category.

Every arrival of a flight at YYJ generates employment hours for individuals with jobs involved in handling passengers, their baggage, cargo and the aircraft. This employment includes customer service, airline crew, ground handling, cleaning, maintenance functions, etc. It also includes some overhead labour (e.g., clerical and administrative staff), and the associated employment of ground transportation firms and accommodation providers that service passengers of the airport. The direct impacts also include the employment of all firms operating on VAA land.

Direct employment related to ongoing operations at YYJ amounts to 2,800 direct jobs.¹⁹ After adjusting for part-time and seasonal employment, the 2,800 jobs equate to 2,500 FTEs or person years of direct employment.

Direct employment at YYJ receives an estimated \$170 million in wages, resulting in an average of \$68,000 per FTE. This compares to the average national wage of \$49,700 per FTE per annum.²⁰

In addition to employment and wages, the airport directly contributes a total of \$230 million to provincial GDP and over \$540 million in direct economic output. The direct economic impacts are summarized in **Figure 3-1**.

Figure 3-1: Direct Economic Impacts at YYJ, 2017



Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	Jobs	FTEs			
Direct	2,800	2,500	\$170	\$230	\$540

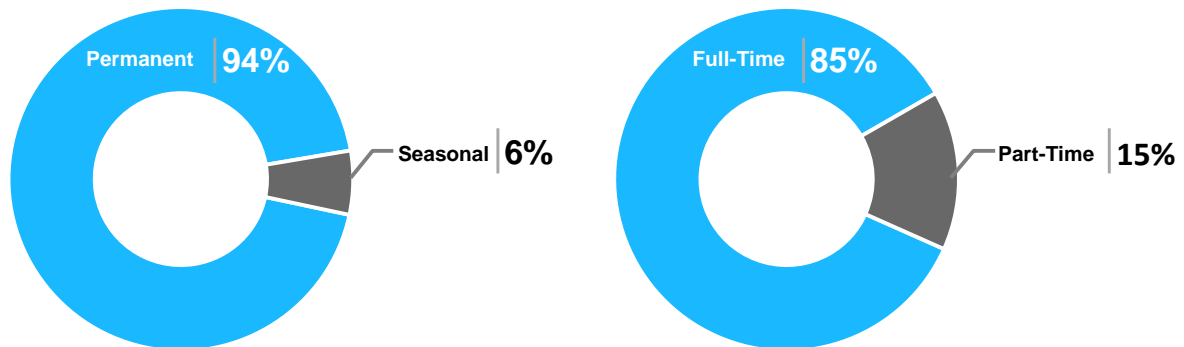
3.1.1 Direct Full-time, Part-Time, Seasonal and Contract Employment

A total of 2,800 direct jobs or 2,500 FTEs are attributable to YYJ's operations. Based on information provided in the survey, 94% of the jobs are permanent jobs while seasonal employment represented only 6% of jobs. Approximately 85% of all direct jobs are full-time positions. This demonstrates that YYJ and VAA tenants are a source of stable, year-round employment. The breakdown of permanent and seasonal jobs by full-time and part-time positions is presented in **Figure 3-2**.

¹⁹ This includes employment of all airport terminal building tenants, VAA land tenants, subtenants, and also relevant employment of firms that are located off airport.

²⁰ Statistics Canada, CANSIM, Table 281-0027, Earnings, average weekly, by industry (All industries), 2016, calculated for annual earnings.

Figure 3-2: Job Characteristics at YYJ, 2017



Contract Employment

Some employers contract out services to individuals and other firms. It is estimated that approximately 130 jobs, equivalent to roughly 30 FTEs, are accounted for by contract individuals and firms.²¹

3.1.2 Direct Employment by Industry

A wide range of businesses operate on VAA land, including the West Sidney Business Park. The West Sidney Business Park supports over 100 jobs. The various business types associated with the VAA can be grouped into the following categories:

- **Commercial Airlines & Air Carriers** includes all of the employment related to commercial service and other air carrier operations. This includes all staff employed by the airlines, such as ticket agents, gate agents and based crew. This category accounts for 600 jobs (21%) of direct employment.
- **Aviation Support Services** includes employment related to ground handling, aircraft maintenance, fixed base operators, airport operator and air traffic services. Employment related to aviation support services represents 600 jobs (21% of direct employment) at YYJ.
- **Other Manufacturing** includes all employment at firms on VAA land that manufacture non-aviation related products. This includes fabricated metal products, plastic products, chemicals and furniture, which account for approximately 400 jobs or 14% of total jobs on VAA land.
- **Government and Military Services** account for employment related to government agencies and departments operating at YYJ, as well as military operations based at YYJ. Examples of this employment include CBSA staff and the DND 443 Maritime Helicopter Squadron. This category accounts for roughly 300 jobs, or 11% of total onsite employment.
- **Aircraft Manufacturing** includes the employment associated with aircraft manufacturing firms situated on VAA land. They account for approximately 300 jobs, or nearly 11% of total employment.

²¹ See Appendix F for more details.

- **Ground Transportation and Car Rental** accounts for taxi and limo services, as well as all of the car rental firms associated with YYJ. The employment amongst these firms sums to almost 200 jobs, nearly 7% of the total jobs at the airport.
- **Food & Retail** employment accounts for employees associated with airport retail outlets, sit-down and fast food restaurants, and catering. This category of business type sums to 100 jobs, representing 4% of direct employment.
- **Other** employment includes employment of other VAA tenants, such as daycare facilities, construction and engineering firms, etc. These firms account for nearly 300 jobs or approximately 11% of YYJ's total direct jobs.

A breakdown of direct employment at VAA by business type is illustrated in **Figure 3-3**.

Figure 3-3: Direct Employment by Occupation at Victoria International Airport, 2017



3.2 Indirect and Induced Economic Impacts

The previous sections discussed how direct employment related to ongoing operations at YYJ was measured. However, the employment impact does not end there, as other sectors of the economy are dependent on these employers' businesses. Indirect employment is generated by suppliers to the businesses directly related to the airport. In addition, there may be additional impacts to the province-wide economy when direct (and indirect) employees spend their wages. These employment effects are referred to as induced employment. Total employment impacts therefore equal the sum of direct, indirect and induced effects.

The indirect and induced impacts were estimated using Statistics Canada's economic multipliers and ratios for the Province of British Columbia.²²

“

Our firm uses YYJ to transport company personnel as often as four times each month.

- Victoria Airport Authority
Stakeholder

”

3.2.1 Indirect Impacts

Indirect impacts are generated by industries that supply or provide services to the firms located at YYJ. Based on an analysis of the results of the employer survey and the application of the economic multipliers, it is estimated that 1,000 *indirect* FTEs are related to ongoing operations at YYJ in 2017. This indicates that 1,000 FTEs are indirectly generated in industries that supply the businesses at the airport. Labour wages associated with the indirect employment is estimated at \$60 million per annum. Indirect GDP contribution is estimated at \$100 million per year, and economic output at \$200 million annually.

3.2.2 Induced Impacts

Induced impacts are generated because of expenditures by individuals employed both directly and indirectly by the airport's businesses. It represents the demand for goods and services generated by wage earnings from economic activity directly related to the airport. *Induced* employment attributable to YYJ is estimated at 700 FTEs. Induced employment is estimated to generate \$40 million per annum in wages. Induced GDP and economic impact contributions amount to approximately \$90 million and \$140 million, respectively, each year nationwide.

3.3 Total Provincial Impacts





Ongoing YYJ operations including direct, indirect and induced effects generate 4,700 total jobs (equivalent to 4,200 FTEs) and \$270 million in wages throughout British Columbia. Including multiplier effects, operations at the airport support \$420 million in total GDP and \$880 million in total economic output.²³

²² The multipliers used for the analysis are based on Statistics Canada economic multipliers and ratios for British Columbia from the 2013 Interprovincial Input-Output model, the most recent data available. These multipliers were updated with Consumer Price Indices to account for inflation.

²³ The indirect and induced economic impacts are calculated using the latest available Statistics Canada multipliers for the province of British Columbia (2013).

Figure 3-4 summarizes the direct, indirect, induced and total employment and wages in the provincial economy attributable to ongoing operations at YYJ, as well as annual GDP and economic output contributions.

Figure 3-4: Annual Total Ongoing Economic Impacts of YYJ in British Columbia, 2017

Impact	 Employment		 Wages (\$ Millions)	 GDP (\$ Millions)	 Output (\$ Millions)
	Jobs	FTEs			
Direct	2,800	2,500	\$170	\$230	\$540
Indirect	1,100	1,000	\$60	\$100	\$200
Induced	800	700	\$40	\$90	\$140
Total	4,700	4,200	\$270	\$420	\$880

Note: Totals may not sum due to rounding.

4 Tax Impacts on Ongoing Airport Operations

4.1 Introduction

The ongoing operations of YYJ, as well as the associated economic activity in the region, generate a significant amount of tax revenue for the federal, provincial and municipal levels of government. Tax impacts are estimated separately from economic impacts, as the tax revenues generated by the airport's operations are different from its economic output. Tax impacts include income taxes and sales taxes, while economic output measures the spending of firms and individuals. This section summarizes the government revenues resulting from current YYJ operations.

Revenue impacts are presented based on who is making the payment:

- **Taxes paid by employers and employees.** These are taxes paid by the airport employers and employees. They include income and payroll taxes, social insurance contributions (such as the employment insurance premiums) and the federal and provincial fuel taxes.
- **Taxes paid by passengers.** Visitors pay various taxes and fees. For example, these include taxes on personal expenditures at YYJ such as taxes on food and beverages, taxes on airline tickets and taxes on single night hotel stays by connecting passengers and overnight flight crews, as well as the Airport Improvement Fee (AIF).
- **Taxes paid by VAA.** VAA pays taxes in the form of property taxes. VAA also makes a federal ground lease payment to the federal government.

“

Without YYJ, there would be fewer local businesses, fewer visitors in the area, as well as less sponsorship and participation in community-building.

*- Non-profit Organization
in Victoria*

”

For each of the tax revenue sources, taxes paid to the federal, provincial and municipal levels of government are identified separately.²⁴

The purpose of this section is to present the government tax revenue impacts resulting from economic activity that can be attributed directly to the VAA. As with all economic impact studies, a conceptual decision has to be made as to how broad a definition of *economic activity* should be used in measuring the impacts. For this study, a relatively narrow definition has been taken, for example, the following have **not** been included:

- Taxes associated with indirect or induced employment (i.e. multiplier effects).
- Consumption taxes paid by employees when they spend their income/wages and benefits.

²⁴ For the most part, this study **estimates** (some tax envelopes were measured directly, e.g., tenant property taxes) taxes paid from information on the passengers, employers and employees at the airports. In a few situations, such as the corporate income tax paid by employers, an approximate method was used to estimate taxes paid. In every case conservative methods were used. No major tax has been excluded.

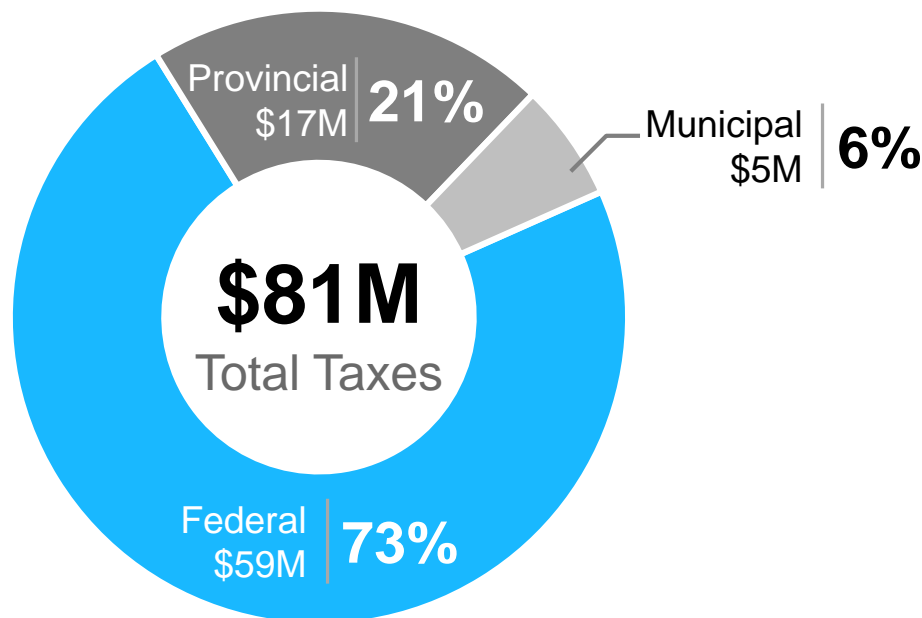
- Taxes paid by airport users outside of the airport.
- Property taxes paid by employees.

It would be exceedingly complex to broaden the scope of the tax base in this analysis to include taxes generated by indirect and induced employment. The level of detail collected on direct employment by the survey administered by InterVISTAS is critical to the tax impact analysis; however, such information is not available for the indirect and induced employment. Estimating the tax impacts associated with indirect and induced employment would be a complex process, requiring speculation about the general economy and resulting in averages that would not necessarily be accurate. Therefore, the tax impact analysis in this report is limited to government revenues generated from direct employment associated with airport operations only.

4.2 Tax Contributions by Level of Government

Ongoing economic activity at YYJ generates tax revenue contributions for all levels of government. In 2016, total tax contributions from YYJ-related *direct* employment to all levels of government are estimated to be in the order of roughly \$81 million. The federal government is the largest recipient of tax revenue, receiving \$59 million (73% of the total), as seen in **Figure 4-1**. The provincial government received a tax revenue contribution of \$17 million (21% of the total), while the municipal government received \$5 million in tax revenues (6% of the total).

Figure 4-1: Annual Estimated Tax Revenues of YYJ by Level of Government, 2016



Note: Taxation impacts are based on 2016 tax rates.

A complete summary of tax contributions by YYJ passengers, VAA and other employers and employees is provided in **Figure 4-2**.

Figure 4-2: Annual Estimated Tax Revenues of YYJ by Tax Payer, 2016

Taxpayer	Federal (\$ Millions)	Provincial (\$ Millions)	Municipal (\$ Millions)	Total (\$ Millions)
Passengers	\$11	\$1	\$0.01	\$12
VAA²⁵ and Other Employers/Employees	\$48	\$16	\$5	\$69
Total	\$59	\$17	\$5	\$81

Note: Taxation impacts are based on 2016 tax rates. Totals may not sum due to rounding.

²⁵ Includes \$1.5 million in Federal Ground Lease Payments and \$0.9 million in municipal property taxes paid by VAA.





5 Economic Impacts of One-Time Capital Expenditures

In addition to the employment and other economic impacts of ongoing YYJ operations, there are also economic impacts associated with the VAA's capital expenditures. The capital expenditures include spending on construction, equipment and raw and finished materials, all of which support employment, GDP and economic output. In total, \$24 million was spent in 2016.²⁶

A part of the direct impact arose from capital improvement that occurred at the airport in 2016. The economic effects of an airport's capital development are considered separate from an airport's ongoing operations because the capital spending can vary significantly over time and on a project-by-project basis.

This spending supported 160 FTEs of total employment along with \$13 million in earnings and \$20 million in value added.²⁷ The total economic impact of the airport's 2016 capital expenditures is summarized in **Figure 5-1**.

Figure 5-1: Total Economic Impact of YYJ's Capital Improvements in 2016

Impact	 Employment		 Wages (\$ Millions)	 GDP (\$ Millions)	 Output (\$ Millions)
	Jobs	FTEs			
Direct	90	80	\$8	\$11	\$24
Indirect	60	50	\$4	\$5	\$10
Induced	40	30	\$2	\$4	\$7
Total	190	160	\$13	\$20	\$41

Note: Employment figures (jobs and FTEs) are rounded to the nearest hundred. Totals may not sum due to rounding.

²⁶ Victoria Airport Authority, 2016 Annual Report, p.38-39.

²⁷ It is assumed that all capital expenditures occur in the Province of British Columbia.





6 Summary of Results

6.1 Economic Impacts

Ongoing operations at YYJ support a *total* of 4,200 FTEs or person years of employment and \$270 million of wages in British Columbia, when multiplier impacts are included. Of this employment, 2,500 FTEs or person years of employment are *directly* related to the airport.²⁸ Because employment related to the airport and VAA tenants extends far beyond YYJ, the total also includes both indirect (approximately 1,000 FTEs) and induced (700 FTEs) employment.

The VAA contributes to the provincial economy as well. The significance of the airport and VAA tenants is demonstrated by the *direct* economic impact of the airport on GDP and economic output in British Columbia, measured at \$230 million and \$540 million, respectively. Including indirect and induced impacts, the *total* impacts are approximately \$420 million and \$880 million, respectively, province-wide. **Figure 6-1** summarizes these 2017 economic impacts in total.

Figure 6-1: Annual Total Ongoing Economic Impact of YYJ in British Columbia, 2017

Impact	 Employment		 Wages (\$ Millions)	 GDP (\$ Millions)	 Output (\$ Millions)
	Jobs	FTEs			
Direct	2,800	2,500	\$170	\$230	\$540
Indirect	1,100	1,000	\$60	\$100	\$200
Induced	800	700	\$40	\$90	\$140
Total	4,700	4,200	\$270	\$420	\$880

Note: Totals may not sum due to rounding.

There are also economic impacts associated with the airport's spending on capital improvements, approximately \$24 million in 2016 alone.²⁹ This investment generated another 90 direct jobs and \$8 million in direct earnings.³⁰ The total economic impact of the airport's 2016 capital improvements is summarized in **Figure 6-2**.

²⁸ This includes employment of all airport terminal building tenants, VAA land tenants, subtenants, and also relevant employment of firms that are located off airport.

²⁹ Victoria Airport Authority, 2016 Annual Report, p.38-39.

³⁰ It is assumed that all capital expenditures occur in the Province of British Columbia.

Figure 6-2: Total Economic Impact of YYJ Spending on Capital Improvements, 2016

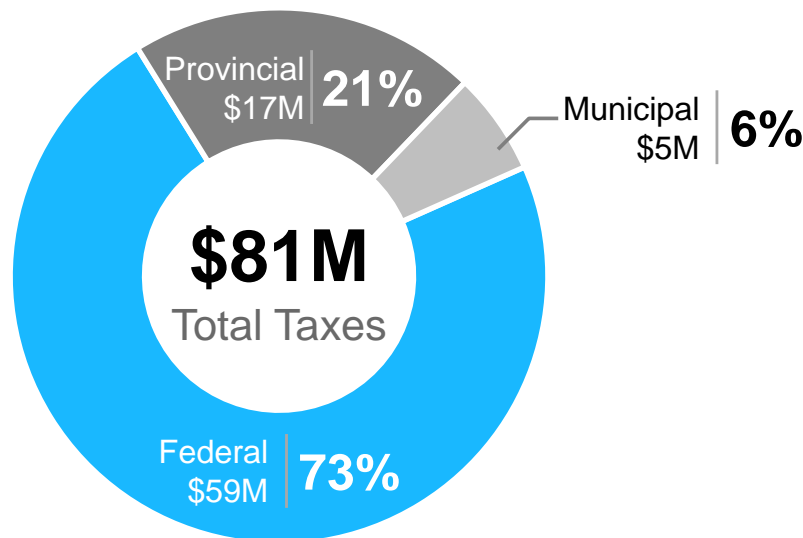
Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	Jobs	FTEs			
Direct	90	80	\$8	\$11	\$24
Indirect	60	50	\$4	\$5	\$10
Induced	40	30	\$2	\$4	\$7
Total	190	160	\$13	\$20	\$41

Note: Employment figures (jobs and FTEs) are rounded to the nearest hundred. Totals may not sum due to rounding.

6.2 Annual Tax Contribution

The VAA is also an important generator of taxation revenues to all levels of government. Total taxes paid on an annual basis, by the VAA, employers and employees are estimated at roughly \$81 million per year. The majority of taxes collected accrue to the federal and provincial governments at 73% and 21%, respectively. The municipal government also benefits from the VAA, such as through the collection of property taxes amounting to \$5 million, as shown in **Figure 6-3**.

Figure 6-3: Annual Estimated Tax Revenues of YYJ, 2017



Note: Taxation impacts are based on 2016 tax rates.

Appendix A: Employment Survey

Identification of the Survey Population

A total of 110 firms received employment surveys for the YYJ economic impact study including VAA tenants, offsite firms, hotels and ground transportation firms directly related or dependent upon the airport. VAA provided a list of tenants and, together with InterVISTAS, identified the offsite employers, hotels and ground transportation firms closely tied to airport operations.

Figure A-1: Total Number of Firms Surveyed

Type of Firm	Number of Firms Surveyed	Number of Responding Firms	Response Rate
ATB Tenant	21	21	100%
Land Tenant	27	27	100%
Subtenant	54	51	94%
Ground Transport	3	3	100%
Accommodations	5	4	80%
Total	110	106	96%

Questionnaire Design

The basic questionnaire was designed to be effective in obtaining information and, equally importantly, to be as clear and easy to understand as possible for respondent firms. The basic survey was provided to employers at the airport and VAA land. Other surveys were developed for hotel employment and ground transportation employment. The basic questionnaire provided to VAA tenants focused on questions in the following areas:

General Information

- Name and address of firm
- Contact person's name and title
- Phone and fax numbers
- Email and website address
- Type of business and the proportion related to the airport and/or air service

Total Employment Numbers (for calendar year 2017)

- Total employees
- Total annual payroll excluding benefits
- Number of onsite employees
- Number of offsite employees

Part-time and Full-time Employment

- Full-time permanent employees
- Part-time permanent employees
- Full-time seasonal employees
- Part-time seasonal employees
- Average hours and weeks for part-time and seasonal employees

Employment by Trade

- A selection of job trades was provided to categorise employment

Outsourcing and Contracting Out

- Number of individuals on contract
- Number and names of firms on contract

Taxes

- Property taxes paid in the previous year (2016)

Copies of the surveys are provided in **Appendix B**.

Conducting the Survey

The survey was mailed out electronically by InterVISTAS Consulting with a cover letter from VAA Vice-President of Operations and Development, James Bogusz. The letter explained the purpose of the study, the confidentiality of responses and encouraged members of the airport business community to participate.


Following the initial electronic mail-out of the surveys and throughout the following weeks, non-responding firms were contacted by telephone to follow up. Firms were encouraged to return the survey and new copies were offered if the originals were lost. The replacement surveys were emailed once again or sent via fax. Some survey responses were collected via a telephone interview with firms.

Analysis of the Results


The survey results were compiled into an MS Excel spreadsheet.

Appendix B: Sample Survey

Page 1



Victoria International Airport
Economic Impact Study
Employment Survey



The figures you provide in the following sections are **strictly confidential**. Only aggregate survey totals will be published in the final report.

Please complete this survey as soon as possible. In addition, please note that you are asked to provide values for the **calendar year 2017**, unless otherwise noted.

For the purposes of this study, it is important that the figures you provide are as accurate as possible. However, where it is not possible to provide precise information, we would appreciate estimates rather than no response at all. When answering the questions below regarding your business, please include all related subsidiary businesses.

Name of Company: _____

Address of Company: _____

Contact Person: _____ Phone number: _____

Email: _____

Q1. Principal Business Activity

Please indicate your principal business activity. If you are involved in more than one of the business types below, please choose the one that best describes your business (i.e., contributes the largest proportion of revenues).

Air Carriers	
<input type="checkbox"/> 1. Scheduled Canadian Carrier	<input type="checkbox"/> 5. Air Taxi
<input type="checkbox"/> 2. Scheduled Non-Canadian Carrier	<input type="checkbox"/> 6. Cargo Carrier
<input type="checkbox"/> 3. Charter Carrier	<input type="checkbox"/> 7. Courier / Integrator
<input type="checkbox"/> 4. Helicopter	<input type="checkbox"/> 8. Other: _____

Other Business Types	
<input type="checkbox"/> 9. Airport Operator	<input type="checkbox"/> 18. Aviation Related Manufacturing
<input type="checkbox"/> 10. Freight Forwarder, Cargo Agent, etc.	<input type="checkbox"/> 19. Aviation Related Training
<input type="checkbox"/> 11. Warehousing	<input type="checkbox"/> 20. In-flight Catering Company
<input type="checkbox"/> 12. Customs Broker	<input type="checkbox"/> 21. Security Services
<input type="checkbox"/> 13. Aircraft Maintenance, Repair and Overhaul	<input type="checkbox"/> 22. Airport Retail Outlet, Restaurant, etc.
<input type="checkbox"/> 14. Airport Ground Handler	<input type="checkbox"/> 23. Government Agency/Department
<input type="checkbox"/> 15. Fuelling Company	<input type="checkbox"/> 24. Car Rental
<input type="checkbox"/> 16. Fixed Base Operator	<input type="checkbox"/> 25. Taxi, Bus, Limousine, Shuttle
<input type="checkbox"/> 17. Aircraft Parts Supplier	<input type="checkbox"/> 26. Hotel/Accommodations Provider
	<input type="checkbox"/> 27. Other: _____



Q2. Business Related to Victoria International Airport (YYJ)

Please estimate the proportion of your company's business revenues that is related to activities at Victoria International Airport (YYJ).

For example, a freight forwarder or customs broker might attribute only 20%, as that is the proportion of their business that involves shipping out of YYJ (the other 80% of their business uses truck or rail for carriage of shipments to other exit and entry points). Alternatively, if your firm is located onsite at YYJ or if your firm's existence is completely dependent on YYJ's operations, please indicate a 100% relationship.

Airport	% Related Business Revenue (2016)
YYJ	%

Q3. Employment at Your Company Related to YYJ

Please provide the number of permanent & seasonal staff currently employed by your company. Please only report employees involved with operations related to Victoria International Airport. This should include employees both on-site at Victoria International Airport and off-site (only where off-site employees are involved with directly providing service to Victoria International Airport, e.g. catering employees at an off-site location). *Airlines only: for pilots and flight crew, please report their employment figures only if they are based at Victoria International Airport.*

Please break down the employment into permanent, seasonal, full-time and part-time. This should not include employment for work done on contract.

Location	PERMANENT EMPLOYEES		SEASONAL EMPLOYEES	
	Full-Time	Part-Time	Full-Time	Part-Time
YYJ				
Off-Site				

Please indicate how many hours per week part-time employees work on average.

	Number of Weeks per Year	Number of Weekly Hours
Part-time Employees		

For seasonal employees in general, please indicate how many weeks per year and how many hours per week seasonal employees worked on average.

	Number of Weeks per Year	Number of Weekly Hours
Seasonal Employees		



Q4. Payroll and Wages

Please state the total gross payroll paid by your company for the employees included in the question regarding Employment at Your Company Related to YYJ.

This figure should include all full-time, part-time and seasonal employees. If you are unable to estimate payroll for the calendar year 2017, please provide figures for your last financial period, and indicate which period that was.

Total Payroll (calendar year 2017):	\$
Financial Period (if not 2017):	

Note: Total payroll includes gross (pre-tax) wages or salaries, including overtime pay, commissions, allowances and bonuses.

Alternatively, if you are unable to answer this question, please provide an estimate of the average annual wage/salary per employee (including overtime pay, commissions, allowances and bonuses), or select one of the options below.

Average Annual Salary/Wage per Employee: \$ _____ per annum.

Or: Estimate of the average annual salary range per employee:

- ☐ Less than \$20,000
- ☐ \$20,000 - \$39,999
- ☐ \$40,000 - \$59,999
- ☐ \$60,000 - \$79,999
- ☐ \$80,000 - \$99,999
- ☐ \$100,000 or more



Q5. Employment by Occupation

Please estimate the number of employees included in the question regarding Employment at Your Company Related to YYJ that are in the following occupation categories.

The figures entered below should sum to the same total as Question 3.

Employment by Occupation		Number of Employees
General	Managerial/Supervisory	
	Administrative & Clerical	
	Craft Trades (Electricians, Steam Fitters, etc.)	
Airline & Airline Servicing Trades	Pilots	
	Flight Attendants	
	Aircraft & Vehicle Mechanics	
	Customer Service Agents	
	Aircraft Servicing	
Support Trades	Security Guards	
	Drivers / Delivery / Couriers	
	Call Center / Reservations/Dispatchers	
	Food Service Workers	
Government & Regulatory Trades	Air Traffic Control	
	Law Enforcement Officers	
	Security Agents (e.g. TSA)	
	Aviation Safety / Inspection Officers	
Retail Trades	Sales / Cashiers	
	Food & Beverage Staff	
Other (Please specify)		



Q6. Outsourcing and Contracting Out

Since we do not want to exclude any employment from the airport, we would like you to briefly comment on whether your firm contracts out any important services.

Individuals on Contract: If you pay some individuals through a contract, as opposed to through payroll, please indicate the number of such employees, how many hours per week worked, as well as how many weeks worked per year, on average.

	Number of Contract Employees	Number of Weeks per Year	Number of Weekly Hours
Contract Employees			

Firms on Contract: If you outsource or contract out any work to other companies (e.g., cleaning services, IT, ground handling, etc.), please complete the following table, indicating the functions you outsource to third party companies, and provide an estimate of the total contracted hours of work per annum. Also, please specify the company's name(s) and indicate whether they are located at the airport (i.e. located on-site). This will allow us to avoid any double counting of work performed by other companies which may also be surveyed as a part of this study.

Function	Name of Firm	Located On-site? (Check if Yes)	Number of Hours Performed by the Company in 2016
<i>Example: Cleaning services</i>	<i>Spic and Span Cleaners</i>	<input type="checkbox"/>	<i>100 hours per year (2 hours per week)</i>
		<input type="checkbox"/>	
		<input type="checkbox"/>	
		<input type="checkbox"/>	
		<input type="checkbox"/>	
		<input type="checkbox"/>	



Q7. Future Employment

We would like to be able to estimate forecasted employment levels for the end of 2017. Please help us by indicating the number or proportion of additional employees your firm plans to hire at YYJ by the end of 2017, over and above your current employment.

	Increase	Decrease	Unchanged	Number of Additional Employees
Additional Employment (2017) <i>Estimated New Employees since May 2017</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Alternatively, if you are unable to answer this question, please provide an estimated percentage growth in employment in 2017.

% Anticipated Growth in Workforce in 2017	%
--	---

Q8. Business Revenue Related to Air Cargo

We would like to be able to document the impact of air cargo services. Please help us by indicating the proportion of your business revenues that is related to servicing air cargo at YYJ.

% Business Revenue Related to Air Cargo (2017):	%
--	---

Note: The percentage entered should be the same or less than that entered in Question 2.

Q9. Provincial & Local Taxes

Please indicate the amount of property and/or other provincial and municipal taxes paid by your firm in British Columbia in 2016.

Property Taxes Paid in British Columbia (2016):	\$
Other Provincial & Municipal Taxes (2016):	\$

Please use the space below to provide any additional comments.

Additional Comments	

Please return this survey to:
[yyi.econimpact@intervistas.com](mailto:yji.econimpact@intervistas.com)

If you have any questions, please call
or Doris Mak / Celina Estrella at 1-877-717-6246.

Appendix C: Calculation of Full-time Equivalent or Person Years of Employment

The following are details of calculations for the average number of hours per full-time equivalent (FTE) or person year of employment.

Figure C-1: Full-time Equivalent Hours per Year

Calculation of FTE hours per year:		
	365	days per year
Less:	(104)	weekend days
	(11)	legal holidays
	(15)	average vacation days
	(6)	sick leave
	229	days per person year
	* 8	hours per work day
	1,832	hours per person year

Workdays vary anywhere from 6.5 to 8 hours; however, in order to be conservative, an 8 hour workday was assumed.³¹ Similarly, numbers of vacation and sick leave days may also vary.

³¹ Essentially, we are using a measure of paid hours per year. Using a measure of productive hours per year with 6.5 hour workdays (8 hours less 1 hour for lunch less two 15 minute work breaks) would give 1,489 hours per person year. Using this lower figure would result in inferring a greater number of FTEs from seasonal and part-time jobs. Using the 1,832 figure, we infer a lower number of FTEs.

Appendix D: Summary of Direct Jobs and Person Years

Figure D-1: Direct Jobs and Person Years

	Jobs	FTEs or Person Years of Employment
Surveyed employment ¹	2,660	2,460
Inferred employment for non-respondents ²	10	10
Contract employment ³	130	30
Total	2,800	2,500

Notes:

1. Refer to Appendix A
2. Refer to Appendix E
3. Refer to Appendix F
4. Rounded figures are presented throughout the report

Appendix E: Inferred Employment

Because not all employers responded to our requests for information in the survey, we statistically inferred some employment data to replace that which otherwise would be missing. This allows us to estimate the total amount and type of employment, which provides the basis for other estimates of economic impact.

In general, InterVISTAS' approach bases these inferred estimates on information provided by responding firms for each business type and validated against information from other publicly available sources of data. This approach is conservative in that we assumed that the non-responding firms are smaller than responding firms.

The employment data in this report was compiled from a combination of two sources:

1. **Employment reported by employers on surveys submitted to InterVISTAS.**
2. **Employment inferred for employers who did not provide a survey response.** Inferred employment was based on employment information from those firms in each business type that did respond to the survey. The mean employment of respondents in each business type was calculated, excluding outliers, and then conservatively adjusted downwards. For instance, those firms with especially large employment levels were excluded from the "mean without outliers" to obtain conservative results. This "adjusted mean" employment for each business type was then applied to those firms who did not respond to the survey.

Appendix F: Contract Employment

Some firms contract out services that they do not have expertise in providing or when there are cost advantages to doing so. For example, many airport firms contract out janitorial, elevator and maintenance services. The employment survey asked firms to identify whether they contracted out some of their work, and to estimate the number of annual hours involved.

Contract work was separated into two distinct categories in the employment survey: 1) individual “employees” paid through a contract, rather than via payroll, and 2) contracting out services to other firms.

The employment results for individuals on contract were derived by counting the number of individual positions for the number of *jobs* and dividing the total hours of employment by 1,832 to estimate a FTE or one person year of employment. The employment results for firms on contract were derived by dividing the total hours of employment by 1,832 to estimate FTEs or person years.

There were approximately 130 jobs equivalent to 30 person years of contract employment supplied by firms doing work for YYJ firms and VAA tenants, and contract employees working for firms at YYJ and VAA land.

Appendix G:

Tax Revenues Attributable to VAA Employers

Introduction

This appendix describes the employment and other assumptions on which tax revenue calculations are based. As well, the approaches used to estimate employer and employee contributions to local, provincial and federal governments are presented. All estimates are using 2016 rates, unless otherwise stated.

Some of the taxes pose conceptual questions about how much, or if any, tax revenue from a particular source should be attributed to firms serving YYJ and VAA land. These questions are highlighted and simplifying assumptions are put forth.

Employment at VAA

The majority of tax calculations in this report depend on direct employment and total wages. The total direct employment, in jobs, used for these calculations is 2,800 jobs. The total payroll is estimated at nearly \$170 million.

Personal Income Tax (Federal and Provincial)

Employees who work for employers located at YYJ are taxed on their income and, as a result, contribute to federal and provincial tax revenues.

Under the *Income Tax Act* federal income tax is paid on taxable income at a rate that increases with taxable income.

Estimation Method and Results

Provincial income tax was formerly calculated as a percentage of federal tax, but most provincial governments have begun collecting taxes on a sliding scale.

Because the tax rate is progressive, the tax paid by a group of employees depends on the distribution of income among those employees. Unfortunately, the distribution of income is not known and average incomes must be used.

The average tax rates used are derived from the more detailed calculations of taxes payable shown in **Figure G-1**. In those calculations, assumptions have been made about income from non-employment sources, tax deductions from income (e.g., RPP and RRSP contributions), and tax credits applied against tax otherwise payable (e.g., CPP, EI and charitable contributions). Average credits are calculated from Revenue Canada, *General Income Tax Forms, 2017*.

Each employee is assumed to pay tax as a single tax filer. Estimated income tax payable is \$22 million in federal tax and about \$8 million in provincial tax.

Figure G-1: British Columbia Single Tax Filer Income Tax Calculation

British Columbia Single Tax Filer Income Tax Calculation												
Income												
Employment	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000			
TOTAL	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000			
Deductions												
RRSP	571	495	616	678	1,548	1,927	2,408	3,222	3,964			
RPP	38	94	293	695	1,056	1,388	1,960	2,118	2,420			
Union	54	63	116	210	294	362	474	502	535			
Carrying Charges	105	113	139	202	242	284	353	441	511			
TOTAL	768	766	1,165	1,785	3,140	3,960	5,194	6,283	7,431			
Taxable Income	19,232	29,234	38,835	48,215	56,860	66,040	74,806	83,717	92,569			
Credits												
Basic Federal	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474	11,474			
Basic Provincial	10,027	10,027	10,027	10,027	10,027	10,027	10,027	10,027	10,027			
CPP	627	672	945	1,343	1,650	1,749	1,797	1,894	1,942			
EI	289	283	377	523	603	630	645	672	688			
Charity	25	49	76	99	126	143	170	189	210			
Fed. Total	12,414	12,478	12,873	13,439	13,853	13,996	14,086	14,230	14,314			
Prov. Total	10,967	11,031	11,426	11,992	12,406	12,549	12,639	12,783	12,867			
Federal Tax Credit Rate	15%	15%	15%	15%	15%	15%	15%	15%	15%			
Provincial Tax Credit Rate	5%	5%	5%	5%	5%	5%	5%	5%	5%			
Federal Credits	1,862	1,872	1,931	2,016	2,078	2,099	2,113	2,134	2,147			
Provincial Credits	555	558	578	607	628	635	640	647	651			
Tax Payable												
Federal - Bracket 1	2,885	4,385	5,825	6,792	6,792	6,792	6,792	6,792	6,792			
Federal - Bracket 2	0	0	0	645	2,547	4,567	6,495	8,456	9,962			
Federal - Bracket 3	0	0	0	0	0	0	0	0	522			
Federal - Bracket 4	0	0	0	0	0	0	0	0	0			
Federal - Bracket 5	0	0	0	0	0	0	0	0	0			
Federal Total	2,885	4,385	5,825	7,438	9,339	11,359	13,288	15,248	17,276			
Basic Federal		1,023	2,513	3,894	5,422	7,261	9,260	11,175	13,113			15,129
BC - Bracket 1	973	1,479	1,916	1,916	1,916	1,916	1,916	1,916	1,916			
BC - Bracket 2	0	0	74	797	1,462	2,169	2,844	2,916	2,916			
BC - Bracket 3	0	0	0	0	0	0	0	838	1,178			
BC - Bracket 4	0	0	0	0	0	0	0	0	690			
BC - Bracket 5	0	0	0	0	0	0	0	0	0			
BC Total	973	1,479	1,991	2,713	3,378	4,085	4,760	5,670	6,700			
Basic Provincial		418	921	1,412	2,106	2,751	3,450	4,121	5,023			6,049
TOTAL TAX PAYABLE		1,441	3,435	5,307	7,528	10,012	12,710	15,295	18,136			21,177
Average Rate of Tax	7.5%	11.7%	13.7%	15.6%	17.6%	19.2%	20.4%	21.7%	22.9%			
Federal	5.3%	8.6%	10.0%	11.2%	12.8%	14.0%	14.9%	15.7%	16.3%			
Provincial	2.2%	3.2%	3.6%	4.4%	4.8%	5.2%	5.5%	6.0%	6.5%			

Corporate Income Tax (Federal and Provincial)

All corporations are liable to pay federal income tax under the *Income Tax Act*. The tax rate varies by type and size of company and by province. Provincial governments also levy a corporation income tax on any company having a permanent establishment in that province.

Government agencies are not subject to corporate income tax, nor are public authorities.

Estimation Method and Results

To calculate tax liability precisely is very difficult. It requires knowledge of the total tax base, and the proportion of the tax base attributable to the province. Therefore, an approximate method has been used.

In British Columbia, the federal corporate income tax collected per employee was \$2,300 and the provincial corporate income tax collected per employee was \$1,200.

Assuming all companies pay tax at the average rate per employee calculated above, the corporation income tax liability of the YYJ employment sector is estimated to be \$6 million toward federal revenues and \$3 million toward provincial revenues. The estimated total corporate income tax revenue is roughly \$9 million.

Employment Insurance Premiums

In 2016, employees in Canada paid employment insurance (EI) premiums equal to 1.88% of earnings up to a maximum of \$955 per year. (Maximum insurable earnings are \$50,800). Employers paid EI premiums equal to 1.4 times employee premiums.

Estimation Method and Results

The employee premium rate is applied to total payroll costs for employees earning less than \$50,800 per year. The maximum contribution was used for employees earning more than \$50,800 per year. Estimated employee payments are about \$2 million.

The employer rate is applied to the employee payments. Estimated employer payments were about \$3 million.

Canada Pension Plan Contributions

Tax Base and Rates

In 2016, employee contributions for the Canada Pension Plan (CPP) were 4.95% of pensionable earnings. Pensionable earnings are actual earnings less \$3,500, to a maximum of \$54,900. The maximum annual employee contribution is \$2,544.30. The employer contribution is the same as the employee contribution.

Estimation Method and Results

The employee contribution rate is applied to average payroll for employees who are earning less than \$54,900 a year. The maximum contribution was used for employment earning more than the maximum pensionable earnings.

Estimated employer and employee contributions are about \$6 million each, for a total of \$12 million.

Workers' Compensation Board Contributions

Employers in British Columbia are required to make contributions to WorkSafeBC, the provincial workers' compensation board, to help offset the cost of on-the-job injuries. Employers are classified into industry groups. The contribution rate for each group is based on the injury costs associated with all companies in that group.³² The group contribution rate varies widely among industries and provinces. Some major companies are not included in the general "rateable" method of contribution but simply pay the actual cost of their claims plus an allowance for WorkSafeBC administration costs. As it is not generally known which firms contribute in this manner, nor the value of their claims, an estimate based on reported payroll has been made for all firms.

It is possible that some companies are self-insured and their payments could be viewed as a business expense rather than a tax. However, we have chosen to include their contribution because they are required to be part of this government-mandated program.

³² Subject to Experience Rating Adjustment for individual companies.

Estimation Method and Results

The contribution rates for each employment classification at YYJ and VAA land have been applied to the total payroll for that group. YYJ and VAA tenants' employees paid an estimated \$2 million to WorkSafeBC.

Medical Services Plan (MSP)

Tax Base and Rates

Health care premiums for single filers in British Columbia were \$75 per month.

Premiums must be paid by any person registered with the health care plan, whether they are employed or not. Therefore, premiums are not directly related to employment. Nevertheless, many employers pay premiums on behalf of their employees. Therefore, premiums are included as a tax contribution.

Estimation Method and Results

Many employees may be covered by premiums paid by or on behalf of a spouse. Therefore, an employee may not need the coverage offered by an employer. For any group of employees it is difficult to know how many have coverage through a spouse. Therefore, we have assumed that all employees are covered as a result of employment, but that the premium required is only the rate for single persons. The estimated MSP contribution by YYJ and VAA land employment is close to \$3 million.

Aviation Fuel Tax

The federal and provincial governments levy taxes on aviation fuel. The aviation fuel tax rates are shown in **Table G-2**.

Figure G-2: Fuel Tax Rates, 2017

Federal	British Columbia
\$ / Litre	
\$0.04	\$0.0938

Estimation Method and Results

The amount of taxable aviation gasoline (Avgas) sold at YYJ in 2016 was approximately 583,200 litres.³³ The total Avgas tax revenues at YYJ amount to approximately \$78,000. Of this total, about \$23,000 went to the federal government and the government of British Columbia collected \$54,000.

The fuel sold is also subject to the 5% tax rate payable to the federal government. The total tax revenues from Avgas sales at YYJ amount to \$13,000.

³³ Amount of taxable aviation gasoline (Avgas) sold was provided by the Victoria Airport Authority. This figure does not include the amount of jet fuel sold at YYJ. As the information on jet fuel sales at YYJ was not available, the jet fuel tax revenues at YYJ are not estimated.

Property Taxes

Governments levy property taxes to help them finance local services. Property taxes paid by VAA amounted to \$914,969 in 2016.³⁴ Additionally, VAA tenants paid close to \$4 million in property taxes.³⁵ In total, \$5 million in property taxes were paid to the municipal government by the airport authority and its tenants.

Federal Ground Lease Payable in 2016

VAA also made federal ground lease payments to the Federal Government in 2016, amounting to \$1.5 million.³⁶

³⁴ Victoria Airport Authority. 2016 Annual Report.

³⁵ Property taxes paid by VAA tenants were provided by the Victoria Airport Authority.

³⁶ Victoria Airport Authority. 2016 Annual Report.

Appendix H: Tax Revenues Attributable to Airport Users

YYJ Passengers in 2016

In 2016, nearly 1.9 million passengers enplaned and/or deplaned at YYJ. **Table H-1** shows the passenger movements used in this study including breakdown into sectors and percentage of connecting passengers at YYJ.

Figure H-1: Passenger Movements at YYJ, 2016

Sector	Enplaned plus Deplaned, 2016
Domestic	1,547,108
Transborder	282,742
International	26,571
Total	1,856,421
<i>Daily Average</i>	<i>5,086</i>

Source: Victoria Airport Authority. 2016 Annual Report.

GST on Air Fares, Insurance Surcharges and the Airport Improvement Fee (AIF)

Tax Base and Rate

The 5% Goods and Services Tax (GST) applies to all tickets purchased in Canada and includes all domestic, transborder and international flights.

VAA charges all passengers originating their journey at YYJ an Airport Improvement Fee (AIF) that is collected for the sole purpose of funding capital improvements at the airport. GST is levied on the fee.

Conceptual Issues. Taxes levied on the air fare should be shared among airports in Canada associated with the journey. The estimation method builds in a sharing assumption (50% YYJ and 50% other Canadian airports).

Estimation Method and Results

GST is levied on all air fares; however, due to the sharing assumption stated above, only 50% of the estimated taxes per departing passenger are attributable to YYJ. Total tax on airfares is estimated to be more than \$8 million.

VAA collected nearly \$14 million through the AIF in 2016. Tax revenue on this amount collected by the Federal government is approximately \$680,000.

GST on Air Traveller Security Charge

The Canadian Government enacted the Air Traveller Security Charge (ATSC) on April 1, 2002 to help fund security improvements at airports across Canada, as a result of the terrorist attacks on September 11, 2001. There is a flat rate fee of \$7.48 for each chargeable enplanement for domestic travel, \$12.71 for transborder travel, and \$25.91 for international travel.

Tax Base and Rate

The GST applies to the domestic and transborder ATSC.

Estimation Method

The volume of origin/destination traffic at YYJ was determined. It was assumed that 50% was origin traffic at YYJ. Each origin passenger pays the ATSC. A total of \$750,000 in taxes was collected on the ATSC in 2016.

GST on Aeronautical Revenue

The GST rate is applied to aeronautical fees.

Estimation Method and Results

Based on the information provided by VAA, aeronautical revenue received was \$7 million in 2016. Total tax collected is estimated at \$350,000 GST.

GST on Rental Revenue

The GST rate is applied to rent collected.

Estimation Method and Results

Based on the information provided by VAA, net revenue from rent was \$3 million in 2016. Total tax collected is estimated at \$150,000 GST.

GST on Other Revenue

The GST rate is applied to other revenue earned by the VAA.³⁷

Estimation Method and Results

Based on the information provided by VAA, other revenue amounted to close to \$800,000 in 2016. Total tax collected is estimated at \$40,000 GST.

³⁷ A conservative estimate applying only GST rates is used, as most other revenue is exempt from PST.

GST on Concession Revenue

Tax Base and Rate

The GST rate applies to parking and restaurant meals, while the GST and PST rates apply to car rental fees and retail concession purchases by travellers at the airport.³⁸

Estimation Method and Results

Total taxes based on concession revenue of over \$9 million (including parking, car rental and airport restaurant/gift shop sales) are approximately \$1.8 million GST and \$85,000 PST.³⁹

Tax on Accommodation Costs

Tax Base and Rates. The 5% Goods and Services Tax (GST) and 8% Provincial Sales Tax (PST) applies to accommodation costs by non-local visitors to Victoria staying in hotels.

In addition, a hotel tax of 2% is also levied on accommodation expenditure in the District of Saanich.

The average daily room rate forecast for 2016 was \$157.00.

Estimation Method and Results

In order to estimate the total accommodation costs of non-local visitors in Victoria, the average daily room rate was applied to the estimated total crew layover nights and connecting passenger nights determined from the hotel survey conducted. The total accommodations expenditure amounted to an estimated \$1 million, with revenue from total crew layover nights accounting for \$870,000 and revenue from total connecting passenger nights accounting for \$620,000.

PST and GST based on the expenditure for airline crew accommodation of \$870,000 is approximately \$110,000, while the hotel tax is estimated to be \$17,000. PST and GST based on accommodation costs of \$620,000 by connecting passengers is approximately \$80,000, while the hotel tax is estimated to be \$12,000.

Tax on Ground Transportation

The GST rate applies to taxi, limousine and bus transportation.

Estimation Method and Results

Based on the information provided by surveyed ground transportation firms, ground transportation revenues was \$6 million in 2016. Tax on these expenditures is estimated at \$310,000.

³⁸ The Provincial Passenger Vehicle Rental Tax of \$1.50 per day is not included, as information on length of lease of a vehicle is not available.

³⁹ The Victoria Airport Authority provided a breakdown of the concession revenue by type of purchase for appropriate application of GST and PST rates. Concession revenue does not include taxi and bus revenue, as these are estimated separately.

Appendix I: Glossary of Terms

Air Traveller Security Charge (ATSC): A fee collected by the Federal Government from air travellers to help fund security improvements at Canadian airports. The fee varies by region of travel and is charged to the passenger per enplanement.

Airport Improvement Fee (AIF): A fee collected by the airport authority from passengers to help with funding capital improvements at the airport. In some regions of Canada, this is also referred to as the Passenger Facility Charge (PFC).

Contract Work: Any work which is done for a company by an individual who is not on the payroll or work done for a company by another company. Generally speaking, firms will contract out work in areas in which they do not have expertise or when there are cost advantages to doing so.

Direct Employment: Direct employment is employment that can be directly attributable to the operations in an industry, firm, etc. It is literally a head count of those people who work in a sector of the economy. In the case of the airport, all of those people who work on airport property and in an aviation related capacity would be considered direct employment.

Economic Activity: (also Output, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, the process of transforming the factors of production into goods and services desired for consumption.

Economic Output: (also Economic Activity, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, it is defined as the process of transforming the factors of production into goods and services desired for consumption.

Employment Impact: Employment impact analysis determines the economic impact of employment in terms of jobs created and salaries and wages paid out. In the case of the airport, the direct, indirect, induced and total number of jobs or person years created at the airport is examined to produce a snapshot of airport operations.

Full Time Equivalent (FTE): (also Person Year) One full time equivalent (FTE) year of employment is equivalent to the number of hours that an individual would work on a full time basis for one year. In this study we have calculated one full time equivalent year to be equivalent to 1,832 hours. Full time equivalent years are useful because part time and seasonal workers do not account for one full time job.⁴⁰

Gross Domestic Product: (GDP, also value-added) A measure of the value added by labour and capital services used to produce final goods and services, as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.

Ground Transportation: Ground Transportation at the airport includes any vehicles which transport passengers from the airport to the cities or from the cities to the airport. This would include taxicab service, limousine service and hotel van service. Valet services as well as skycaps are included in this category.

⁴⁰ *The Dictionary of Modern Economics*, David W. Pearce, General Editor, The MIT Press, Cambridge Mass., 1984

Indirect Employment: Indirect employment is employment which results because of direct employment. For the airport, it would include that portion of employment in supplier industries which are dependent on sales to the air transport sector. In some cases, contract work would be considered indirect employment.

Induced Employment: Induced employment is employment created because of expenditures by direct and indirect employees.

Multiplier Analysis: Analysis using economic multipliers in which indirect and induced economic impacts is quantified. Essentially, a multiplier number is applied to the "directly traceable economic impact" to produce indirect and total effects (see Multiplier.)

Multiplier: Economic multipliers are used to infer indirect and induced effects from a particular sector of the economy. They come in a variety of forms and differ in definition and application. A multiplier is a number which would be multiplied by direct effects in order to calculate indirect or induced effects. In the case of the airport, as in many other cases, multipliers can lead to illusory results, and thus must be used with great care.

Seasonality: Seasonality results when the supply and demand for a good is directly related to the season in which is consumed. For example, ski resorts experience changes in net income as a result of seasonality. Airports and airport services also experience seasonality as a result of vacation times for families (typically during the summer) and/or temperatures abroad (typically at Christmas time). As a result of seasonality in demand for flights, some air carriers increase frequency of flights to certain areas during the busy season.

Tenant: A firm which pays a lease to a leasing company or to the airport authority directly.

Value-Added: (also GDP) A measure of the money value of final goods and services produced as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.



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2020 ECONOMIC IMPACT STUDY FINAL REPORT

Winnipeg James Armstrong Richardson International Airport (YWG)

PREPARED FOR



WINNIPEG
AIRPORTS AUTHORITY

PREPARED BY

InterVISTAS

a company of Royal HaskoningDHV

Executive Summary

Winnipeg James Armstrong Richardson International Airport (YWG or Winnipeg International Airport) contributes significantly to employment and economic development in both the local community and throughout the Province of Manitoba. This study examines the current economic impacts generated from the airport's operations, based on a review of the business in 2019.

Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project, or a change in government policy or regulation. In this case, economic impact refers to the economic contribution associated with the ongoing activities of Winnipeg International Airport. The three major components of economic impact are classified as *direct, indirect, and induced impacts*.¹ Together, they provide a snapshot of how the business of the airport can impact the local and provincial economy.

YWG's impact throughout the local region is reflected in the 10,020 direct full-time equivalents (FTEs)² of employment that are supported or facilitated by the airport and the \$580 million in direct wages paid. YWG's direct employment impact has grown 5% since 2016. Including indirect and induced impacts, YWG generated a total of 17,120 FTEs of employment and \$990 million in total wages throughout the Province of Manitoba in 2019.



The economic impact of Winnipeg Richardson International Airport includes 10,020 direct FTEs of employment and \$580 million in direct wages, reflecting a growth in direct FTEs of 5% since 2016.

¹ Direct impacts account for the economic activity of the target sector itself. Indirect impacts are those that result because of the direct impacts, which involves employment in downstream industries that arise from the presence of YWG. Induced employment is generated from expenditures by individuals employed directly or indirectly by the airport.

² FTE = full-time equivalent of employment. For purposes of this study, one full-time equivalent of employment corresponds to 1,832 hours of work annually. See Appendix C for further details.

Ongoing Economic Impacts

The current economic impact of YWG, which includes the impact related to the airport's ongoing operations, is summarized in **Figure ES-1**.³ *Direct* economic impact measures the employment and economic impact directly associated with the airport. This includes employment of all tenants located at YWG, as well as relevant employment of firms that are located off airport. *Indirect* and *induced* impacts are multiplier impacts in the wider economy stimulated by the airport's activities (e.g., other businesses that supply goods and services to the airport and spending by airport employees).⁴

Emphasis is placed on the direct economic impacts as these are based on data from the employer survey and are clearly identifiable. The multiplier impacts are derived from Statistics Canada data and are therefore less definite.

The *direct* impacts of YWG in 2019 are estimated to be 10,020 *direct* FTEs or person years of employment, earning approximately \$580 million in *direct* wages. Direct employment generates \$1,260 million in *direct* GDP and \$2,920 million in *direct* economic output annually.

Total impacts are calculated by adding together the *direct*, *indirect*, and *induced* impacts. Including indirect and induced multiplier impacts, current economic impacts of YWG include a *total* of 18,500 jobs or 17,120 FTEs. *Total* wage of all employees amounts to \$990 million in wages. Furthermore, YWG's operations contributed an estimated \$2,060 million and \$4,320 million in *total* GDP and *total* economic output, respectively, to the provincial economy.⁵

Ongoing Economic Impacts of YWG

Annual DIRECT Impacts

- 10,830 jobs
- 10,020 FTEs
- \$580 million in wages
- \$1,260 million in gross domestic product (GDP)
- \$2,920 million in economic output

³ The results of this study are based on a review of 2019 operations.

⁴ Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity.

⁵ The indirect and induced economic impacts are calculated using the latest available Statistics Canada multipliers for the province of Manitoba (2016).

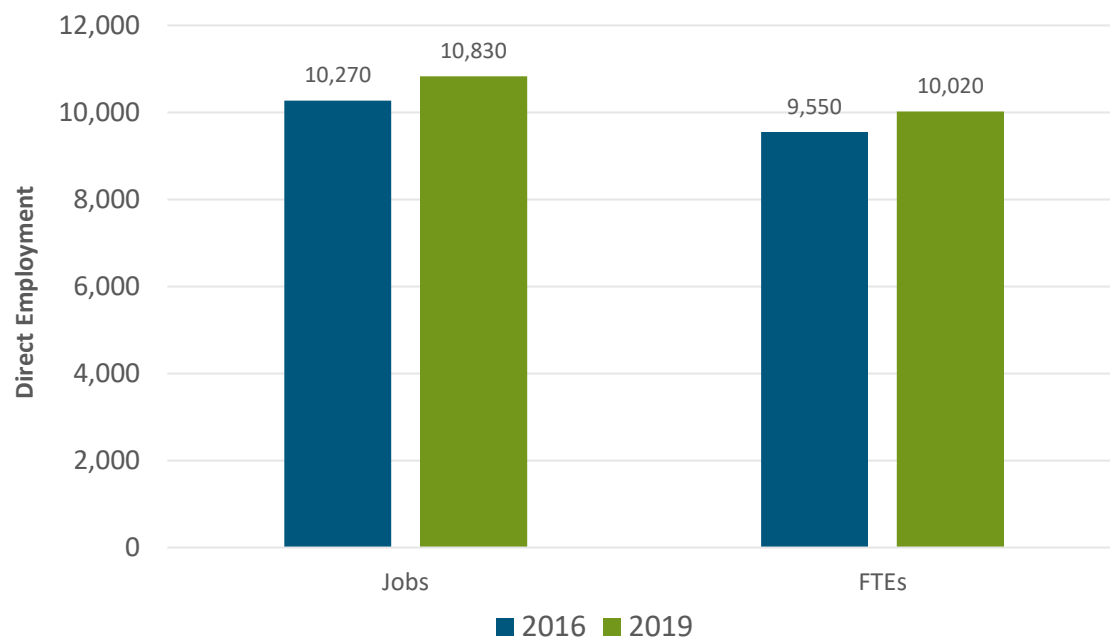
Figure ES-1: Ongoing Economic Impact of Winnipeg Richardson International Airport, 2019

Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	FTEs	Jobs			
Direct	10,020	10,830	\$580	\$1,260	\$2,920
Indirect	4,370	4,720	\$280	\$460	\$890
Induced	2,730	2,950	\$130	\$340	\$510
Total	17,120	18,500	\$990	\$2,060	\$4,320

Note: Totals may not sum due to rounding.

The direct economic impact of ongoing operations in 2019 has grown since 2016. Direct FTEs rose by 5% from about 9,550 to over 10,020 between 2016 and 2019. **Figure ES-2** summarizes employment growth between 2016 and 2019. The growth in direct employment at YWG was driven primarily by airlines and aviation support services such as aircraft maintenance and parts supply.

Figure ES-2: Direct Employment Levels from YWG Ongoing Operations, 2016 vs. 2019



Note: Figures are rounded.

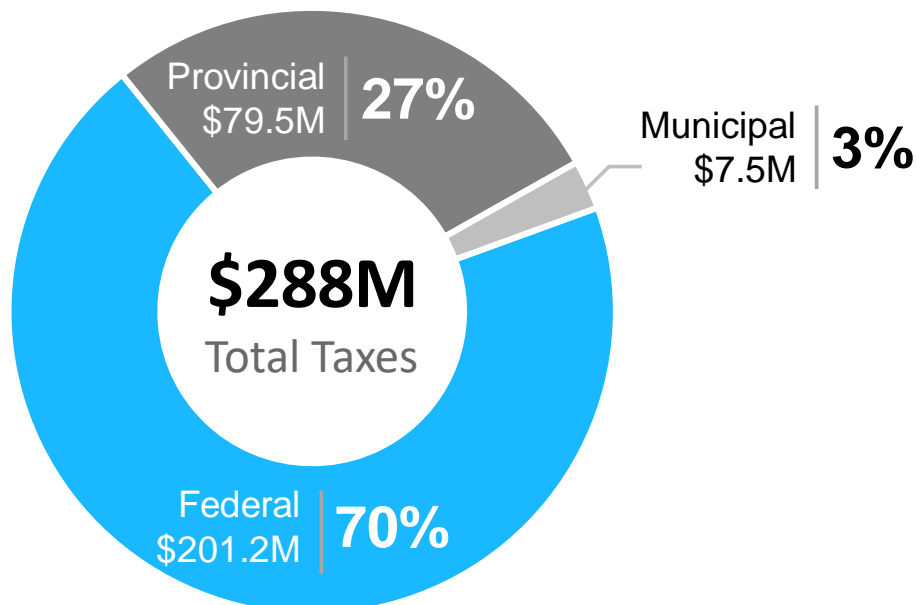
Annual Tax Contributions

YWG is also an important generator of taxation revenues to all levels of government. Total taxes paid on an annual basis, by airport employers and employees, are estimated at \$288 million per year. Approximately 6% of taxes was paid by air passengers, 90% was paid by the airport employers and their employees, and the remaining 4% by WAA.

The majority of taxes accrue to the federal government at 70% overall, while the provincial government receives 27% of tax revenue generated by YWG. The municipal government also benefits from YWG through the collection of property taxes amounting to nearly \$8 million paid by YWG and its tenants.

Figure ES-3 provides a summary of the taxes collected.

Figure ES-3: Estimated Annual Tax Revenues from YWG, 2019



Note: Taxation impacts are based on 2019 tax rates.

Tax Impact of YWG, 2019

Total Tax Impact:

- \$288 million

Federal Government:

- \$201 million (70% of total)

Provincial Government:

- \$80 million (27% of total)

Municipal Government:

- \$8 million (3% of total)

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1 Introduction

Winnipeg Airports Authority (WAA) commissioned InterVISTAS Consulting Inc. to conduct an update to the economic impact study prepared previously in 2016. The purpose of this update is to document the current economic contribution of the airport, its airlines and their partner businesses to the community and the province. Similar economic impact studies were previously conducted for YWG by InterVISTAS in 2012 and 2016.

WAA is a community-based, non-share capital corporation that operates, manages, maintains and invests in YWG. It is proud to be recognized as one of Manitoba's Top Employers for 2020, the ninth year in a row.



Economic impact studies help convey the significance of YWG's operations to the local economy and the Province of Manitoba.

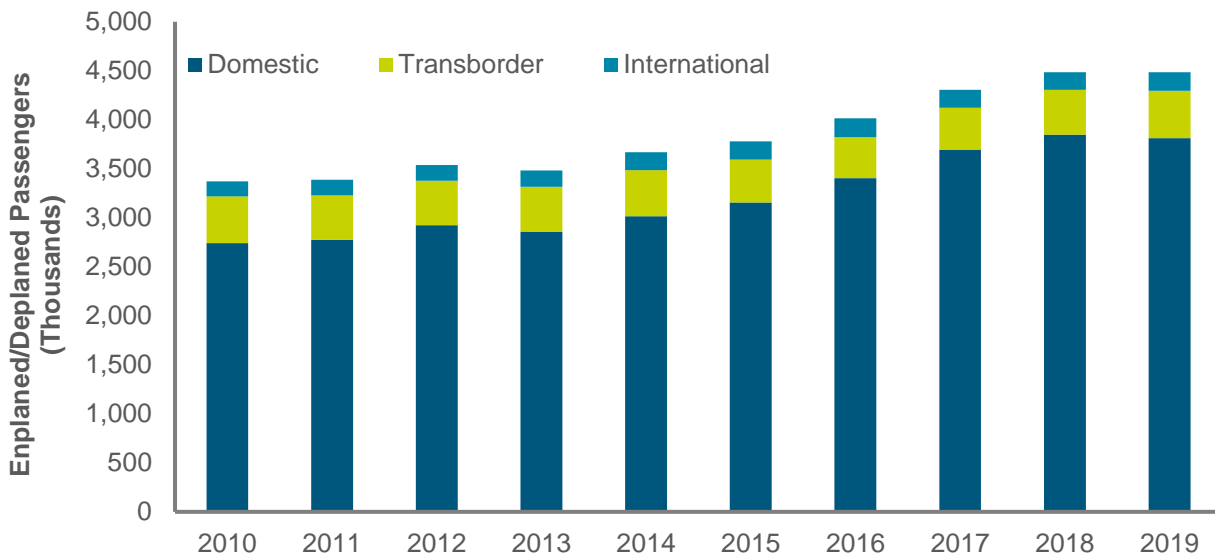
1.1 Winnipeg James Armstrong Richardson International Airport

YWG is a major contributor to the Manitoba economy – generating employment in sectors such as air services, facilities, hospitality, manufacturing, and ground transportation. YWG provides essential infrastructure that links Winnipeg and other Manitoba communities to cities around the world, making it an important component of Canada's trade and commerce with other countries.

Passenger traffic at YWG has grown considerably over the last decade, fuelled largely by increasing demand for domestic travel. The airport was on-track for another year of growth in 2019 but was set back by the grounding of the 737 MAX in March of the same year. The grounding forced airlines to cut capacity on many routes and adjust flight schedules to accommodate the reduced availability of aircraft.

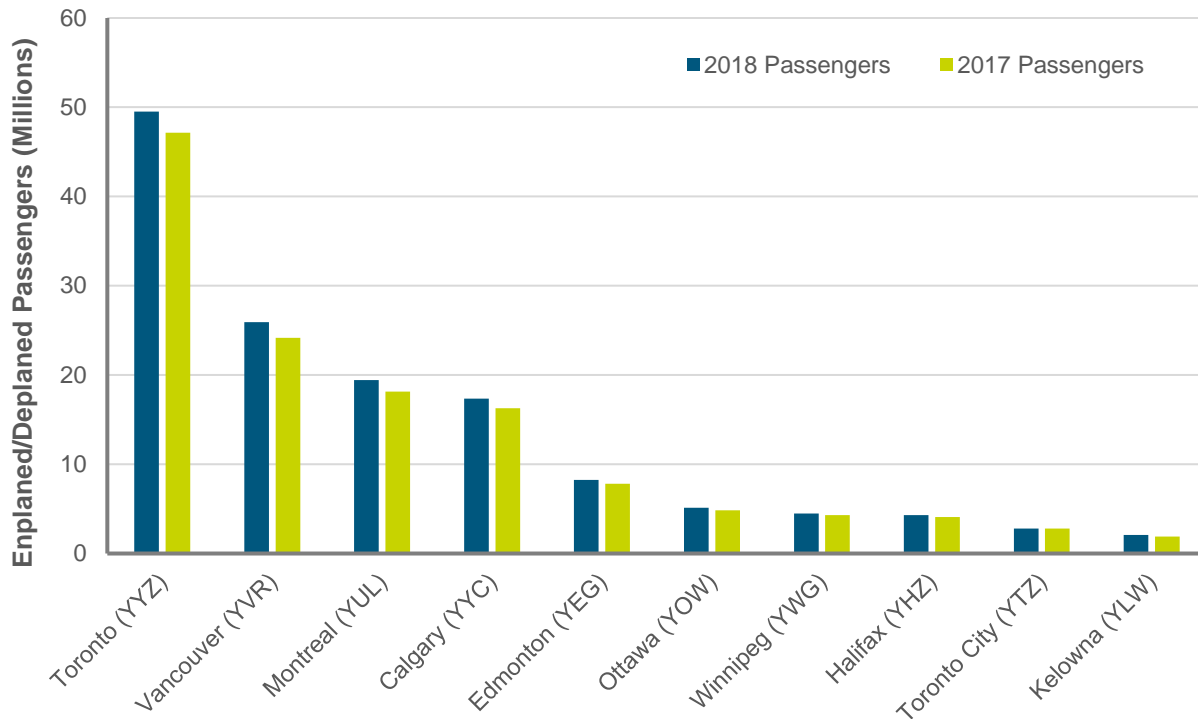
Figure 1-1 displays the passenger traffic at YWG over the last ten years. YWG is the seventh busiest airport in Canada by passenger volume (see **Figure 1-2**).

Figure 1-1: Growth of Air Passenger Traffic at YWG, 2010-2019



Source: WAA.

Figure 1-2: Canada's Busiest Airports by Passenger Volume, 2017 & 2018



Source: Airport websites, traffic statistics.

A summary of the summer air services to Winnipeg in July 2016 and July 2019 is outlined in **Figure 1-3**. The table suggests that carriers have added capacity on key domestic routes and increased services to Minneapolis/St. Paul.

Figure 1-3: Direct Non-stop Scheduled Seats Arriving at YWG, July 2016 and July 2019

Country	City	Weekly Seat Capacity 2016	Weekly Seat Capacity 2019	% Change
Canada	Abbotsford	0	756	N/A
	Berens River	54	0	-100.0%
	Calgary	8,550	8,731	2.1%
	Churchill	504	546	8.3%
	Cross Lake	70	0	-100.0%
	Dryden	0	38	N/A
	Edmonton	3,414	4,857	42.3%
	Flin Flon	210	272	29.5%
	Gillam	235	388	65.1%
	Gods Lake Narrows	227	0	-100.0%

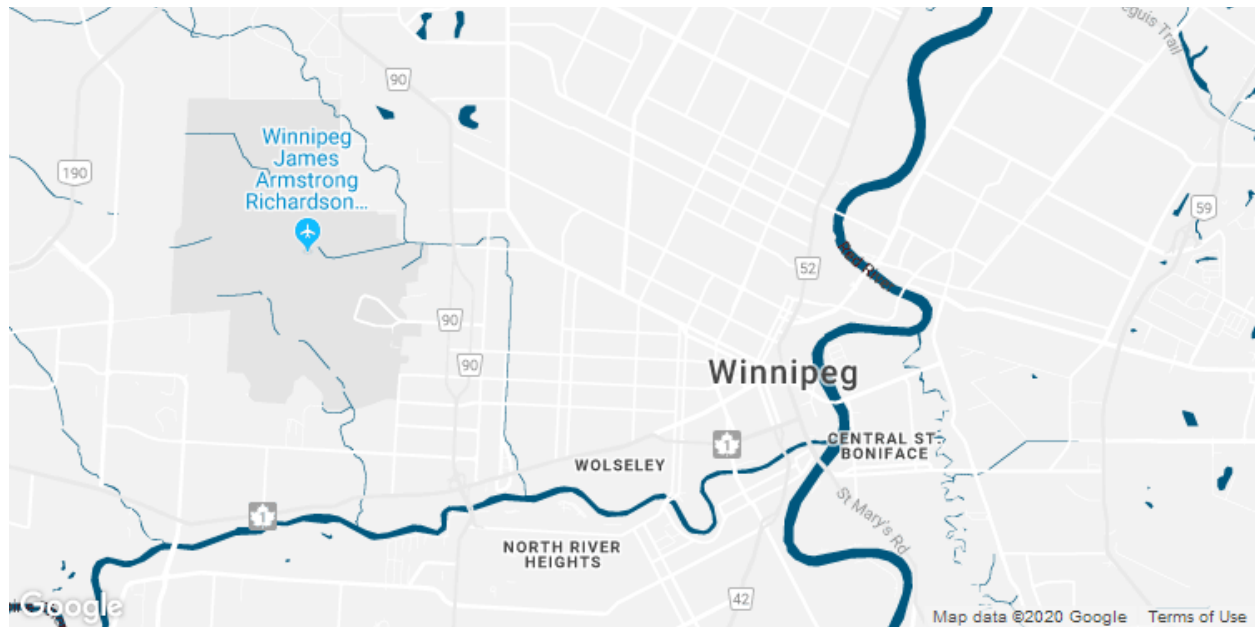
Country	City	Weekly Seat Capacity 2016	Weekly Seat Capacity 2019	% Change
	Gods River	76	0	-100.0%
	Halifax	520	670	28.8%
	Hamilton	0	1134	N/A
	Island Lake/Garden H	348	0	-100.0%
	Kelowna	0	567	N/A
	Kenora	0	76	N/A
	London, ON	893	0	-100.0%
	Montreal-PET	3,010	3,520	16.9%
	Norway House	168	0	-100.0%
	Ottawa	2,112	2,282	8.0%
	Oxford House	36	0	-100.0%
	Pikangikum	54	0	-100.0%
	Rankin Inlet	432	468	8.3%
	Red Lake	342	323	-5.6%
	Red Sucker Lake	139	0	-100.0%
	Regina	1508	1092	-27.6%
	Sanikiluaq	126	141	11.9%
	Saskatoon	1824	936	-48.7%
	Shamattawa	42	0	-100.0%
	Ste Theresa Point	696	0	-100.0%
	The Pas	294	252	-14.3%
	Thompson	755	653	-13.5%
	Thunder Bay	990	1092	10.3%
	Toronto	15,348	14,235	-7.3%
	Vancouver	5,117	6,321	23.5%
Canada Total		48,094	49,350	2.6%
United Kingdom	London, UK	262	262	0.0%
International Total		262	262	0.0%
United States	Chicago	1,000	700	-30.0%
	Denver	700	700	0.0%
	Las Vegas	298	268	-10.1%
	Minneapolis/St. Paul	2,353	3,018	28.3%
Transborder Total		4,351	4,686	7.7%
Grand Total		52,707	54,298	3.0%

Source: Diio Mi based on summer services for the weeks of 11 July 2016 and 8 July 2019.

1.2 Industry and Economy of Manitoba

Winnipeg James Armstrong Richardson International Airport is located less than 10km west of downtown Winnipeg, as shown in **Figure 1-4**. YWG services one of Canada's most populous metropolitan areas, as well as most air travellers in the province.

Figure 1-4: Map of Winnipeg James Armstrong Richardson International Airport and Surrounding Area



Manitoba serves as a major economic hub within the Canadian Prairies, boasting a population of approximately 1.3 million (832,200 in Winnipeg CMA)⁶ and a real GDP of over \$63 billion⁷ in 2018. An educated labour force, competitive business costs and taxes, and well-developed infrastructure contribute to Manitoba's ongoing economic success. The provincial labour force has continued its growth over the last five years and has grown approximately 1.4% between 2017 and 2018.⁸ Manitoba records an unemployment rate of 5%, which is lower than Canada's 5.6% unemployment rate for December 2019.⁹

⁶ <https://winnipeg.ca/cao/pdfs/population.pdf>

⁷ Statistics Canada. "Real gross domestic product, expenditure-based, by province and territory", 2018 (<http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/econ50-eng.htm>)

⁸ Statistics Canada, "Employment, payroll employment, by province and territory", 2015 (<http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/labr72-eng.htm>)

⁹ Statistics Canada, "Labour force characteristics, seasonally adjusted, by province (monthly)", November 2016. (<http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/lfs01b-eng.htm>)

1.3 Economic Impact of YWG

YWG contributes directly to employment in the Winnipeg region, as well as the provincial and national Gross Domestic Product (GDP) at large, through its business and commercial activities and operations. More importantly, it also acts as an economic catalyst, facilitating the growth of regional businesses and industrial sectors. The economic contribution of the airport to the community is termed the *Economic Impact* of YWG.

1.3.1 What is Economic Impact?

Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project (such as the construction of a new facility), or a change in government policy or regulation. Economic impact can be measured in various ways. Two of the most popular ways to assess economic impact are in terms of the dollar value of industrial output produced, or in terms of full-time equivalent (FTE) jobs generated.¹⁰ Other measures are gross domestic product (GDP) and value of capital used and/or created. All of these are used to express the gross level of activity or expenditure from a sector of the economy, a specific project, or a change in policy or regulation. These measures can be useful in developing an appreciation of projects, investments, and economic sectors.¹¹ The different measurements of economic impact, including employment, wages, gross domestic product (GDP), and economic output, are explained in **Figure 1-5**.

This study examines the economic impact of YWG on the provincial economy. One of the most important components of the YWG economic impact is given particular attention here: *Employment Impact*. Other economic impact measures such as wages, GDP, and economic output are also considered and presented.

¹⁰ A full-time equivalent (FTE) of employment accounts for part-time and seasonal employment.

¹¹ Economic impact is different from a cost-benefit analysis that weighs benefits against costs.

Figure 1-5: Measurements of Economic Impact

Employment (Full-time Equivalents)	<ul style="list-style-type: none"> • The number of full-time equivalents (FTEs) or person years generated by a particular source. Because certain jobs may only be part-time or seasonal, the number of jobs is generally greater than the number of FTEs.
Wages	<ul style="list-style-type: none"> • The wages, salaries, bonuses, benefits and, other remuneration earned by the associated workforce.
Gross Domestic Product (GDP)	<ul style="list-style-type: none"> • A measure of the value added by labour and capital services used to produce final goods and services, as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.
Economic Output	<ul style="list-style-type: none"> • The dollar value of industrial output produced. Sometimes referred to as “economic activity,” it reflects the spending (i.e., capital improvement plus revenue) by firms, organizations and individuals.

1.3.2 Categories of Economic Impact

The three major components of economic impact are *direct*, *indirect*, and *induced impacts*, as described below. These distinctions are used as a base for the estimation of the total economic impact of YWG. Each of these three components requires different tools of analysis. Employment impact analysis determines the economic impact in terms of jobs created and salaries and wages paid out. In the case of the airport, the direct, indirect, induced, and total numbers of FTEs or person years created at the airport are examined to produce a snapshot in time of airport operations.

Direct Impact

Direct impacts account for the economic activity of the target sector itself. For instance, all employment that is directly related to the operation and management of YWG, including businesses located onsite at the airport as well as airport-dependent businesses located offsite, would be considered direct employment. Thus, the direct employment base includes airline employees, fixed base operators, aircraft maintenance, ground handling, customer service, airport authority staff, etc.

Indirect Impact

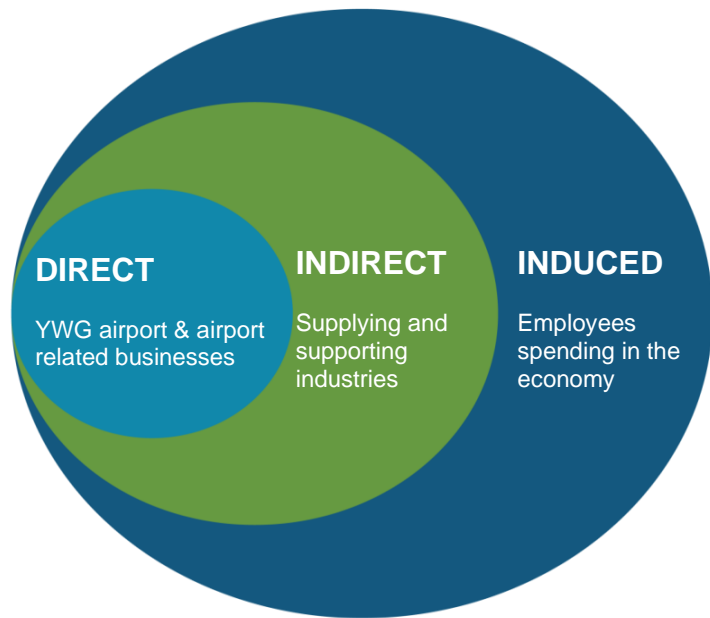
Indirect impacts are those that result because of the direct impacts. This involves employment in downstream industries that arise from the presence of YWG. For instance, indirect employment includes the portion of employment in supplier industries which are dependent on sales to the air transport sector, e.g. food wholesalers that supply food for catering on flights.

Induced Impact

Induced employment is generated from expenditures by individuals employed directly or indirectly by the airport. For instance, if an airline employee at YWG decides to renovate her home, this would result in induced employment hours in the general economy as the renovation would support hours of employment in the construction industry, the construction materials industry, etc. Induced impact is often called the “household-spending effect”.

Total impacts are the sum of direct, indirect, and induced effects. These three categories of impacts are summarised in **Figure 1-6**.

Figure 1-6: Categories of Economic Impact Generated and Facilitated by YWG



2 Methodology

2.1 Introduction

InterVISTAS conducted this economic impact study during the fall and winter of 2019. The study estimates the economic impact of YWG's operations in 2019.

The study is based on data collected from an employment survey of all employers associated with the operation of YWG (e.g. airlines, ground handlers, accommodations, etc.) which is used as an input to assess the direct impacts of the airport's operations. The survey produced estimates of the number of people employed in directly related occupations, as well as the total amount of earnings paid to these employees. The firms surveyed as part of this study are located both at the airport (onsite) and off airport land (offsite). The employment survey was used to classify the direct employment and average wages paid by business type.

InterVISTAS estimates the indirect and induced effects using economic multipliers developed by Statistics Canada that are derived from models of how the Canadian national and provincial economies operate. InterVISTAS utilizes a proprietary economic model in order to conduct multiplier analysis and estimate indirect and induced impacts.

Data collected from the employment survey is also used to calculate the associated tax impacts (government revenue) generated by the airport's operations.

Survey Response Rate

- 83% of firms responded to the survey
- 89% of direct FTEs covered by the survey

Study Time Frame

- 2019 operations

Economic Multipliers

- Statistics Canada (Industry Accounts Division): Input-Output Multipliers for Manitoba, 2016

2.2 Estimating Current Economic Impacts

The direct employment base related to ongoing operations at YWG is first measured. Employment figures are generally more understandable by the public than more abstract measures, such as economic output or GDP. Employment figures also have the advantage of being a more accurate measure, both because the firms are more likely to provide data on employment, as opposed to information on revenues, wages and other monetary amounts, and because there is less chance of double counting economic activity.¹²

The economic impact study then assesses the indirect and induced (or "multiplier") employment supported by YWG's related operations, as well as economic activity in terms of economic output and GDP using Statistics Canada's economic multipliers. The tax revenues generated annually by operations at YWG are also estimated.

2.3 Surveying Direct Employment

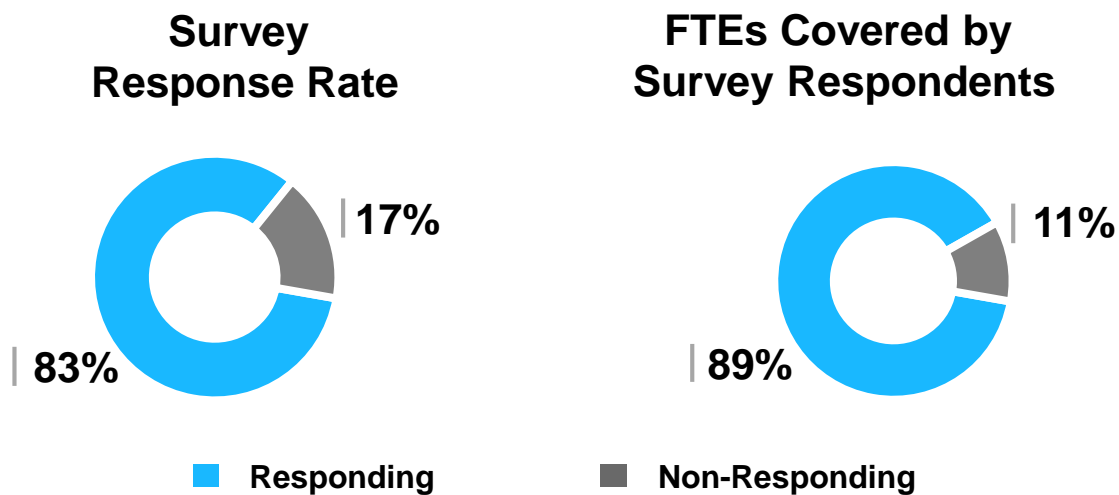
Employment attributable to ongoing YWG operations was measured by surveying over 200 firms and organizations that are either located at YWG or otherwise economically linked to the airport. Specifics of

¹² For example, revenues reported by an air carrier would double count revenues received by caterers who prepare the in-flight meals. The caterer's revenue is an expense for the airline.

the survey methodology are contained in the Appendices. **Appendix A** shows a breakdown of survey responses by firm type. A sample copy of the survey is provided in **Appendix B**. The team followed up with firms and organizations that had not responded to the emailed survey via telephone and email to encourage them to submit information. In total, 83% of the businesses and organizations contacted responded to the survey, representing 89% of the direct person years or full-time equivalents (FTEs) of employment covered by the survey. A summary is provided in **Figure 2-1**.

The direct employment estimate related to ground transportation was developed using a combination of firm surveys, as described above, and WAA-provided data on ground transport trips to and from YWG.

Figure 2-1: Response Rate for YWG Employment Survey



2.4 Inferring Employment

Employment was “inferred” for firms that did not respond to the survey by using a proven and accepted methodology.¹³ This includes using other sources of employment information, such as past employment surveys or using survey results for firms of similar types. A conservative approach was taken when using other survey or employment information to infer for non-responding firms. Refer to **Appendix E** for details on the methodology used to infer employment.

¹³ The methodology employed in this study to infer for non-respondents is also used by the federal government for estimating the national income and product accounts.

2.5 Estimating Indirect and Induced Impacts with Economic Multipliers and Ratios

Measurement of indirect and induced economic activity is difficult. While it may be possible to conduct a survey of downstream employers, the survey would need to cover thousands of firms in order to completely cover indirect employment. For induced employment, the entire economy would need to be scrutinized. In addition to the time and financial resources needed to conduct such surveys, the quality of responses would be suspect.

Statistics Canada economic multipliers and ratios (2016) for the Province of Manitoba were used for the analysis.

As an alternative to costly and inaccurate surveys, indirect and induced effects are typically measured using *economic multipliers and ratios*. Multipliers are derived from models of the general economy. They come in a variety of forms and differ greatly in definition and application. Thus, great care must be exercised in choosing the appropriate set of multipliers. In addition, the use of multiplier analysis is limited by a number of factors, these being:

- the accuracy of the structure and parameters of the underlying model;
- the level of unemployment in the economy;
- the assumption of constant returns to scale in production;
- the assumption that the economy's structure is static over time; and
- the assumption that there are no displacement effects.

Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment, with emphasis nonetheless placed on the direct economic impacts as these are based on data from the employer survey and are clearly identifiable.

For this study, InterVISTAS applied economic multipliers and ratios for the Province of Manitoba based on Statistics Canada's 2016 Interprovincial Input-Output model, the most recent available. The multipliers and ratios are based on a highly detailed accounting of provincial economic structures or relationships. The model tracks how the goods and services produced by industry are used by other industries and final users. The provincial multipliers were updated with Consumer Price Indices to account for inflation.

2.6 Jobs vs. Full-Time Equivalents

Traditionally, one measures employment by the number of jobs. However, when part-time and/or seasonal workers are used, this can be a misleading measure resulting in an overstatement of economic impact. Whenever possible, employment impacts are measured both in terms of the number of jobs and

the number of full-time equivalents (FTEs), also called person years.¹⁴ In our model, hours worked by part-time and/or seasonal employees are converted into FTEs.

2.7 Estimating Tax Revenue Impacts

The tax revenue contributions to the federal, provincial, and municipal levels of government that are associated with airport operations are also estimated.¹⁵ This includes taxes paid by employers and employees (such as payroll taxes), passengers (such as sales taxes on expenditures), and YWG (property tax and the federal airport ground lease). Refer to **Appendix G** and **Appendix H** for further details on the estimation of tax revenues.

¹⁴ One full-time equivalent job is equivalent to 1,832 hours of work. See **Appendix C** for a detailed calculation of the number of hours per full-time equivalent job. Person years are the same as full time equivalents (FTEs).

¹⁵ Taxation impacts are based on 2019 tax rates.

3 Direct Impacts of Airport Operations

SUMMARY

- Annual operations at YWG support approximately 10,830 direct jobs, 10,020 direct FTEs, and \$580 million in direct wages
- Direct employment related to YWG operations includes 96% permanent jobs and 4% seasonal jobs
- The larger job categories comprising employment at YWG are airline employees (e.g. mechanics, CSAs, pilots, and flight attendants), managerial and clerical staff, and airline support services

3.1 Introduction

This section describes the employment, in terms of both jobs and FTEs or person years of employment, and estimated payroll attributable to employers *directly* related to ongoing operations at YWG or otherwise *directly* dependent upon the airport.

This section also examines the employment from ongoing operations at YWG in more detail. FTEs or person years of employment are broken down by:

- Full-time versus part-time and seasonal employment;
- Employment by industry; and
- Employment by job category.

3.2 Direct Employment and Wages

Every arrival of a flight at YWG generates employment hours for individuals with jobs involved in handling passengers, their baggage, cargo, and the aircraft. This employment includes roles related to, among others, customer service, airline crew, ground handling, cleaning, and maintenance functions. It also includes some overhead labour (e.g., clerical and administrative staff), and the associated employment of ground transportation firms and accommodation providers that service passengers of the airport. Nonetheless, the direct impacts are generated largely within the aviation sector and are associated specifically with the operation of air services.

Direct employment related to YWG amounts to 10,830 direct jobs. After adjusting for part-time and seasonal employment, the 10,830 jobs equate to 10,020 FTEs or person years of direct employment.

Direct employment at YWG and related firms receive an estimated \$580 million in wages, resulting in an average of \$57,400 per FTE. This compares to an average annual wage in Manitoba of \$48,700 per annum, and the average national wage of \$52,100 per annum.¹⁶ Direct employment and wage figures are summarized in **Figure 3-1**.

Figure 3-1: Direct Employment and Wages at YWG, 2019



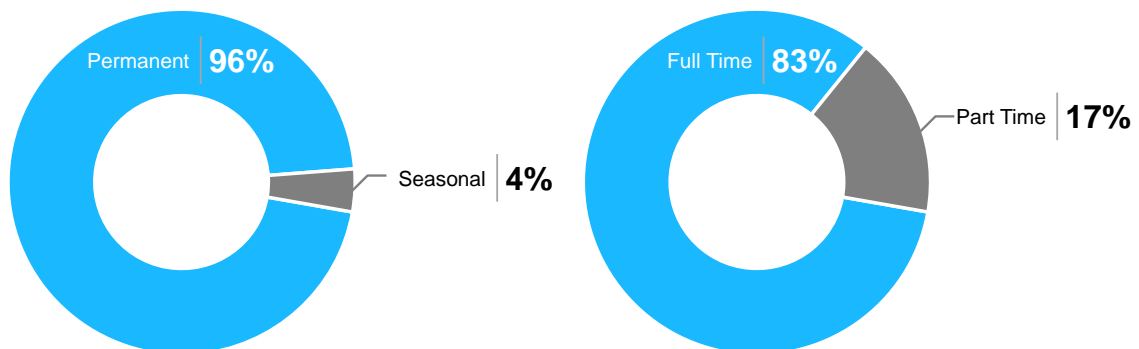

Type of Impact	Employment (Jobs)	Employment (FTEs)	Wages (\$ Millions)
Direct Employment	10,830	10,020	\$580

Note: Dollar figures are expressed in 2019 prices.

3.3 Direct Full-time, Part-Time, Seasonal and Contract Employment

A total of 10,830 direct jobs or 10,020 FTEs are attributable to YWG operations and other airport related businesses. Based on information provided by the survey of onsite and offsite employers, 96% of the jobs are permanent jobs while seasonal employment represented only 4% of jobs. Approximately 83% of all direct jobs are full-time positions. This demonstrates that YWG and its related businesses are a source of stable, year-round employment. The breakdown of permanent and seasonal jobs by full-time and part-time positions is presented in **Figure 3-2**.

Figure 3-2: Job Characteristics at YWG, 2019



¹⁶ Statistics Canada, CANSIM Table 14-10-0204-01, Average weekly earnings by industry (All industries), 2018, calculated for annual earnings.

3.3.1 Contract Employment

Some employers contract out services to individuals and other firms. It is estimated that approximately 90 jobs, equivalent to roughly 80 FTEs, are accounted for by contract individuals and firms. See **Appendix F** for more details.

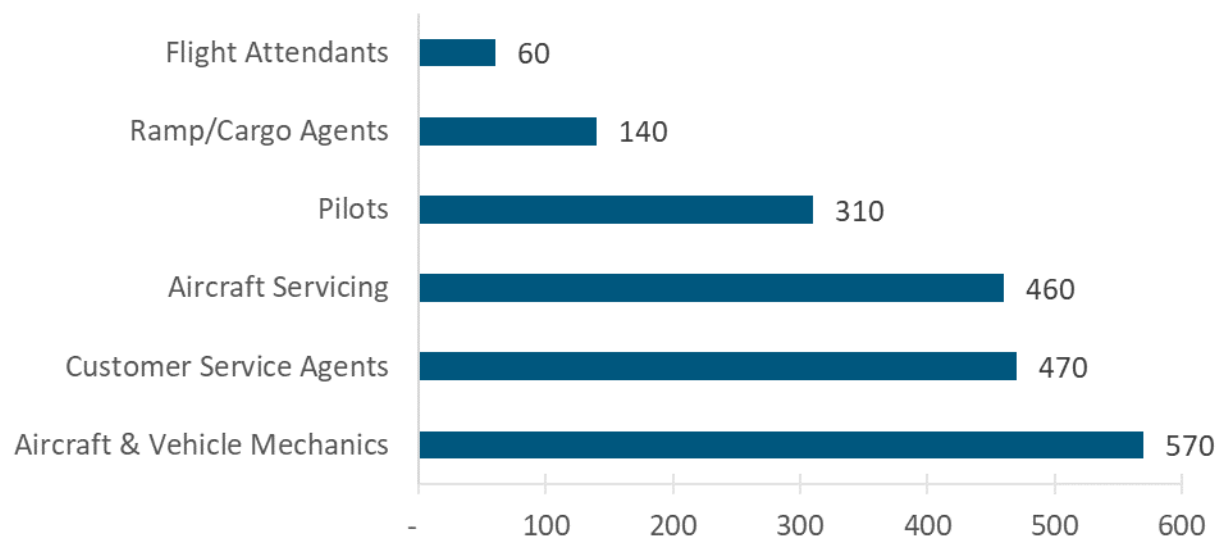
3.4 Direct Employment by Occupation

YWG is a source of employment opportunities for individuals with a broad range of skills. Most businesses require a combination of management, clerical, and trades employees. Beyond that breakdown, jobs can also be classified into airline and airline-servicing trades, support trades, retail trades, and general trades. More detail is provided below for these broad classes of job types and are reported for surveyed jobs only.

3.4.1 Airline and Aircraft Servicing Jobs

Approximately, 2,010 jobs (21% of total surveyed jobs) are classified as airlines and aircraft servicing jobs by employers at YWG and related businesses. Jobs classified as Aircraft and Vehicle Mechanics comprise the largest component (28% of total surveyed airline and aircraft servicing jobs) with over 570 jobs.

Figure 3-3: Breakdown of Surveyed YWG Airline and Aircraft Servicing Jobs

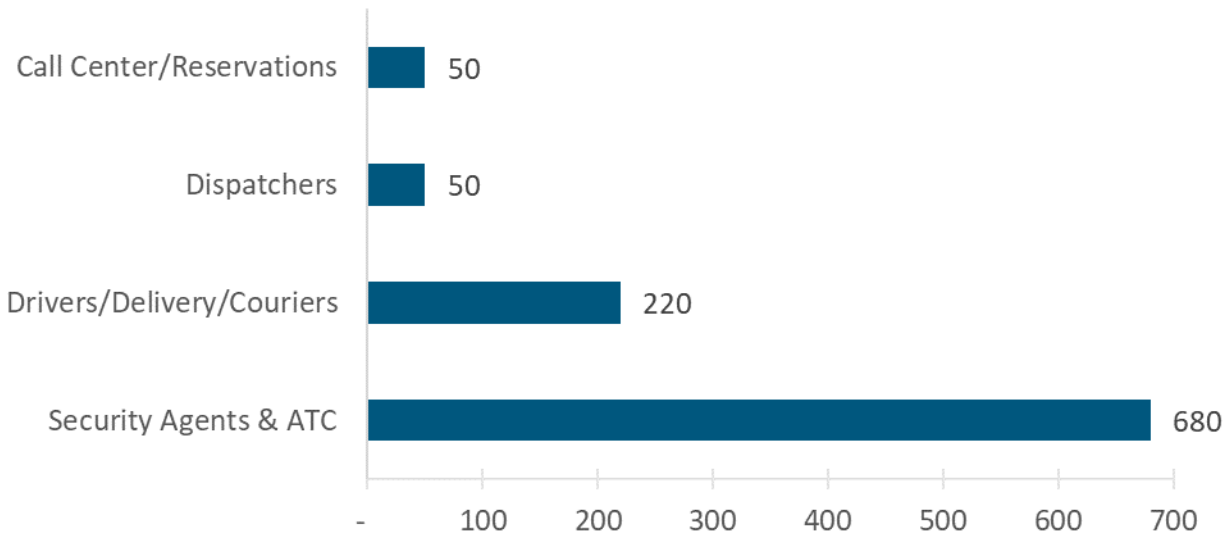


Note: This chart includes employment for surveyed jobs only.

3.4.2 Support Trades

Of surveyed employment, support trades account for 1,000 of YWG's surveyed direct employment base (10% of total surveyed jobs). Within this group, security agents and air traffic control (ATC) account for 680 jobs, making up 22% of total surveyed support trades jobs.

Figure 3-4: Breakdown of Surveyed YWG Support Trades Jobs

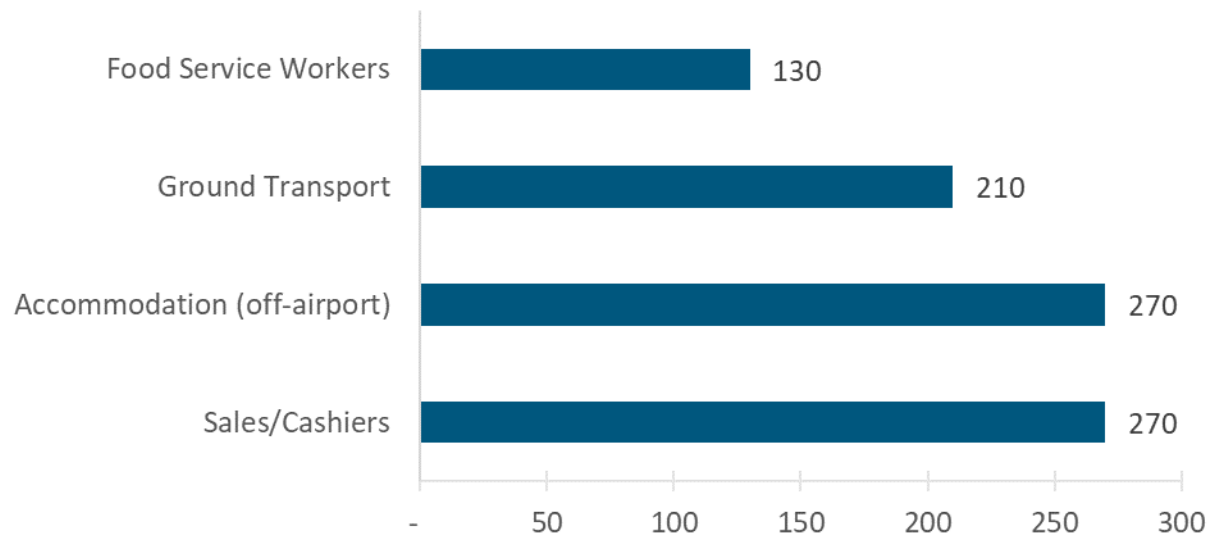


Note: This chart includes employment for surveyed jobs only.

3.4.3 Retail, Food & Beverage, Ground Transport, and Accommodations

On-going operations at YWG also support employment in the retail, food and beverage, ground transport, and accommodations sectors. Approximately 880 surveyed jobs (9% of total surveyed jobs) are employed in these trades.

Figure 3-5: Breakdown of Surveyed YWG Retail, Food & Beverage, Ground Transport, and Accommodations Jobs

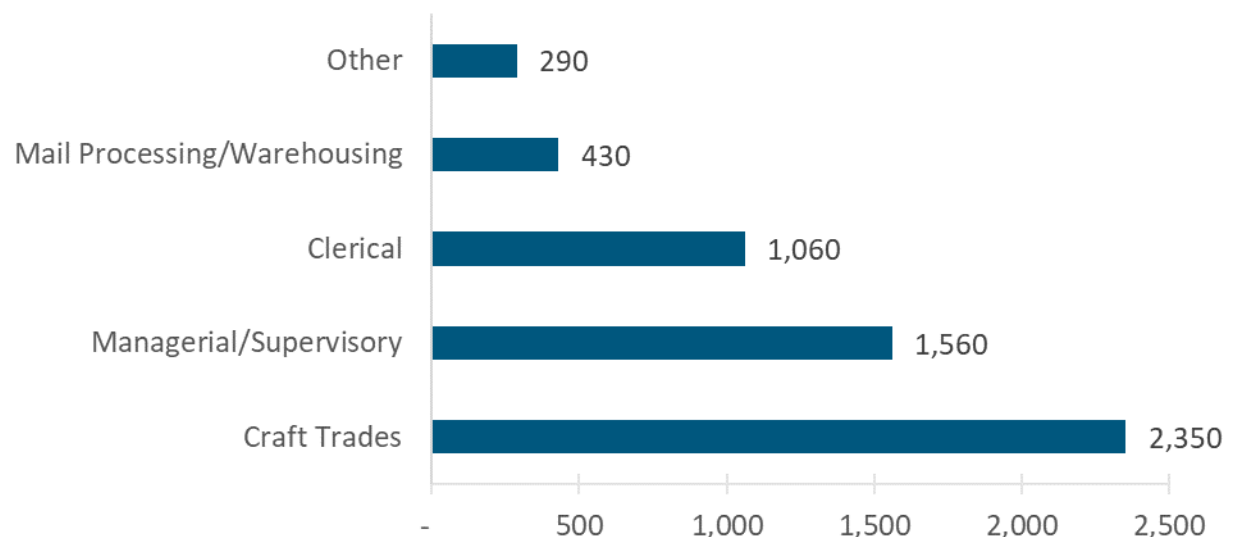


Note: This chart includes employment for surveyed jobs only.

3.5 General Jobs

Of the total surveyed employment, approximately 5,690 surveyed jobs (59% of total surveyed jobs) are classified as managerial/supervisory, clerical, craft trades, warehouse/labour, and other. Among these general jobs, craft trades comprise the largest employment (41% of surveyed general jobs) with 2,350 surveyed jobs.

Figure 3-6: Breakdown of Surveyed YWG General Jobs



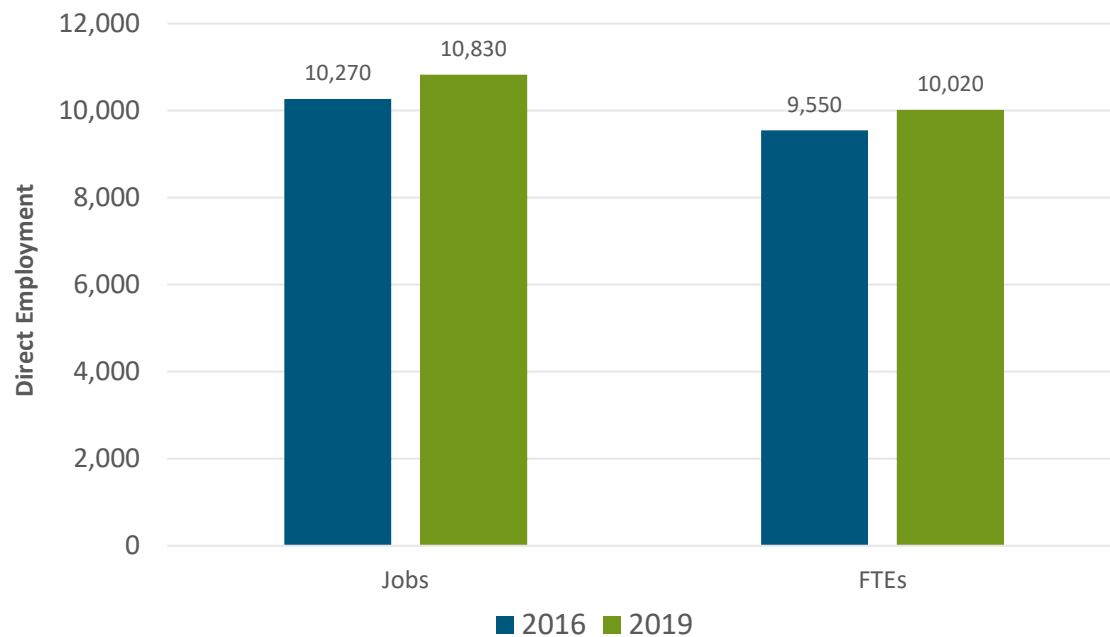
Note: This chart includes employment for surveyed jobs only.

3.6 Comparison of Employment: 2016 vs. 2019

YWG's direct employment base, in FTEs or person years, related to ongoing operations increased by 5%, equivalent to approximately 470 FTEs, compared to the direct employment generated by ongoing operations in 2016. Ongoing operations at YWG continue to make a considerable contribution to local employment and the provincial economy.

Figure 3-7 shows the direct employment generated by YWG ongoing operations in 2016 and 2019.

Figure 3-7: Direct Employment Levels from YWG Ongoing Operations, 2016 vs. 2019



Note: Figures are rounded.

3.7 Direct Gross Domestic Product and Economic Output

The two most common measures of economic contribution (in addition to employment) are *gross domestic product* (GDP) and *economic output*. Economic output roughly corresponds to the gross revenues of goods or services produced by an economic sector, while GDP measures only *value-added* revenues. As such, GDP removes the revenues to suppliers of *intermediate* goods and services and only includes the revenue from value-added production. Alternatively, economic output adds all revenues at each stage of production together as a measure of total production in the economy. Economic output will always be greater than GDP (also termed value-added).

To estimate economic output for a sector, one might add up the gross revenues of the various firms in that sector. However, to find GDP for a sector, care must be taken to avoid double-counting. The revenues of one firm providing service to another are not incremental GDP. For example, in the automobile sector, one cannot add the value (gross revenue) of a finished auto to the value of the tires. The tires are already included in the value of the automobile.



One approach to measuring economic output and value-added is to ask firms in a survey to provide information on their gross revenues, payments to suppliers, etc. However, there are several problems with the approach. First, it is much too expensive to capture all of this information in a survey. Second, the double counting problem makes this approach impractical.

An alternative is to infer economic output and GDP for an economic sector from employment data using economic multipliers. Statistics Canada produces economic multipliers for Canada, and these are more cost effective and more accurate than obtaining the data from surveys. This method, using Statistics Canada economic multipliers and ratios for Manitoba, is the approach adopted here.¹⁷

3.7.1 Gross Domestic Product and Economic Output

The direct employment from current ongoing YWG operations generates approximately \$1,260 million in *direct* GDP and \$2,920 million in *direct* economic output, as shown in **Figure 3-8** below.

Figure 3-8: Annual Direct GDP and Economic Output Impacts at YWG in Manitoba, 2019

		
Impact	GDP (Millions)	Economic Output (Millions)
Direct	\$1,260	\$2,920

Note: Dollar figures are expressed in 2019 prices.

¹⁷ The multipliers used for the analysis are based on Statistics Canada economic multipliers for Manitoba from the 2016 Interprovincial Input-Output model, the most recent data available. These multipliers were updated with Consumer Price Indices to account for inflation.

4 Indirect and Induced Impacts of Airport Operations

SUMMARY

- **Indirect employment impacts of YWG include 4,370 indirect FTEs and \$280 million in indirect wages province-wide**
- **Induced employment impacts of YWG include 2,730 induced FTEs and \$130 million in induced wages province-wide**
- **Total employment impacts of YWG include 17,120 FTEs and \$990 million in wages province-wide**

4.1 Introduction

The employment impact of Winnipeg James Armstrong Richardson International Airport is not limited to direct aviation operations, as other sectors of the economy are in turn dependent on these businesses. Indirect employment is generated by suppliers to the businesses directly related to the airport. In addition, there may be additional impacts to the province-wide economy when direct (and indirect) employees spend their wages. These employment effects are referred to as induced employment. Total employment impacts therefore equal the sum of direct, indirect, and induced effects.

The indirect and induced impacts were estimated using Statistics Canada's economic multipliers and ratios for the Province of Manitoba.¹⁸

4.2 Limitations of Economic Multipliers

Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment, noting that these impacts have not been directly measured by the surveys conducted as part of the study.

The economic multipliers are derived from the 2016 Interprovincial Input-Output model, the most recent version available. Notably, the multipliers have been updated by Statistics Canada since previous

¹⁸ The multipliers used for the analysis are based on Statistics Canada economic multipliers and ratios for Manitoba from the 2016 Interprovincial Input-Output model, the most recent data available. These multipliers were updated with Consumer Price Indices to account for inflation.

economic impact studies conducted in 2016, 2012, and earlier.¹⁹ As a result, the indirect and induced impacts calculated here for 2019 are not directly comparable to the results in prior years.

The multipliers used to calculate the indirect and induced impacts in 2019 may better represent the current structure of the Canadian economy which has become less integrated domestically and more integrated internationally, meaning that indirect and induced job impacts *within Canada* may be lower. It is generally expected that multiplier impacts will decrease over time. For instance, as the economy becomes more global, more spending will occur outside of Canada, leading to lower employment impacts. In addition, the updated (lower) multipliers represent increased productivity in the aviation industry. This is consistent with more global data on employment in the post global economic downturn era, as employers are seeing improvements in worker productivity.

4.3 Indirect Impacts

Indirect impacts are generated by industries that supply or provide services to the firms located at YWG. Based on an analysis of the results of the employer survey and the application of the economic multipliers, it is estimated that 4,370 *indirect* FTEs are related to ongoing operations at YWG in 2019. This indicates that 4,370 FTEs are indirectly generated in industries that supply the businesses at the airport. Labour wages associated with the indirect employment is estimated at \$280 million per annum. Indirect GDP contribution is estimated at \$460 million per year, and economic output at \$890 million annually.

4.4 Induced Impacts

Induced impacts are generated because of expenditures by individuals employed both directly and indirectly by the airport's businesses. It represents the demand for goods and services generated by wage earnings from economic activity directly related to the airport. *Induced* employment attributable to YWG is estimated at 2,730 FTEs total. Induced employment is estimated to generate \$130 million per annum in wages. Induced GDP and economic output contributions amount to approximately \$340 million and \$510 million, respectively, each year nationwide.





¹⁹ For instance, the 2016 Interprovincial Input-Output model was released in November 2019 and therefore was unavailable during the 2016 study. Instead, the 2016 study refers to the multipliers derived from the 2010 Interprovincial Input-Output model, the most recent version available at the time.

4.5 Total Provincial Impacts

Ongoing YWG operations, including direct, indirect, and induced effects, generate 18,500 total jobs (equivalent to 17,120 FTEs) and \$990 million in wages throughout Manitoba. Including multiplier effects, operations at the airport support \$2,060 million in total GDP and \$4,320 million in total economic output.²⁰

Figure 4-1 summarizes the direct, indirect, induced, and total employment and wages in the provincial economy attributable to ongoing operations at YWG in 2019, as well as annual GDP and economic output contributions.

Figure 4-1: Annual Direct and Total Employment Impacts of YWG in Manitoba, 2019

Impact	 Employment		 Wages (\$ Millions)	 GDP (\$ Millions)	 Output (\$ Millions)
	FTEs	Jobs			
Direct	10,020	10,830	\$580	\$1,260	\$2,920
Indirect	4,370	4,720	\$280	\$460	\$890
Induced	2,730	2,950	\$130	\$340	\$510
Total	17,120	18,500	\$990	\$2,060	\$4,320

Note: Totals may not sum due to rounding.

Note: Dollar figures are expressed in 2019 prices.

²⁰ The indirect and induced economic impacts are calculated using the latest available Statistics Canada multipliers for the province of Manitoba (2016).

5 Tax Impacts

5.1 Introduction

The ongoing operation of YWG and associated economic activity in the region generate a significant amount of tax revenue for the federal, provincial, and municipal levels of government. Tax impacts are estimated separately from economic impacts, as the tax revenues generated by the airport's operations are different from its economic output. Tax impacts include income taxes and sales taxes, while economic output measures the spending of firms and individuals. This section summarizes the government revenues resulting from current YWG operations and associated economic activity.

Revenue impacts are presented based on who is making the payment:

- **Taxes paid by employers and employees.** These are taxes paid by the airport employers and employees. They include income and payroll taxes, social insurance contributions (such as employment insurance premiums), and federal fuel taxes.
- **Taxes paid by passengers.** Visitors pay various taxes and fees. For example, these include taxes on personal expenditures at YWG such as taxes on food and beverages, taxes on airline tickets, and taxes on single night hotel stays by connecting passengers and overnight flight crews, as well as the Airport Improvement Fee (AIF).
- **Taxes paid by WAA.** WAA pays taxes in the form of property taxes. WAA also makes a federal ground lease payment to the federal government.

For each of the tax revenue sources, taxes paid to the federal, provincial, and municipal levels of government are identified separately.²¹

The purpose of this section is to present the government tax revenue impacts resulting from economic activity that can be attributed directly to YWG. As with all economic impact studies, a conceptual decision must be made as to how broad a definition of *economic activity* should be used in measuring the impacts. For this study, a relatively narrow definition has been taken, for example, the following have **not** been included:

- Taxes associated with indirect or induced employment (i.e. multiplier effects).
- Consumption taxes paid by employees when they spend their income/wages and benefits.
- Taxes paid by airport users outside of the airport.
- Property taxes paid by employees.

It would be exceedingly complex to broaden the scope of the tax base in this analysis to include taxes generated by indirect and induced employment. The level of detail collected on direct employment by the survey administered by InterVISTAS is critical to the tax impact analysis; however, such information is not available for the indirect and induced employment. Estimating the tax impacts associated with indirect and induced employment would be a complex process, requiring speculation about the general economy

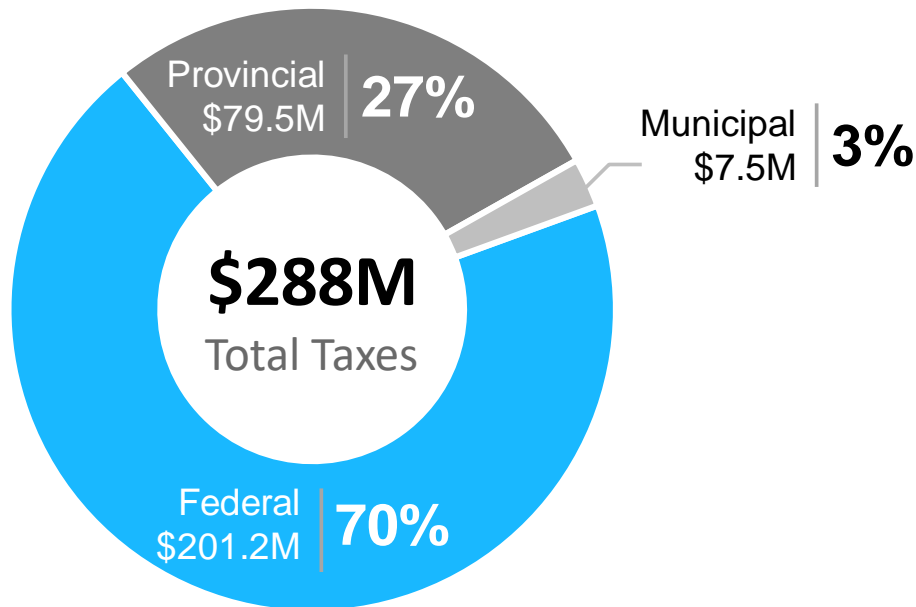
²¹ For the most part, this study **estimates** (some tax envelopes were measured directly, e.g., tenant property taxes) taxes paid from information on the passengers, employers, and employees at the airports. In a few situations, such as the corporate income tax paid by employers, an approximate method was used to estimate taxes paid. In every case conservative methods were used. No major tax has been excluded.

and resulting in averages that would not necessarily be accurate. Therefore, the tax impact analysis in this report is limited to government revenues generated from direct employment associated with airport operations only.

5.2 Summary of Tax Contributions by Level of Government

Ongoing economic activity at YWG generates tax revenue contributions for all levels of government. In 2019, total tax contributions from YWG-related *direct* employment to all levels of government are estimated to be in the order of roughly \$288 million. The federal government is the largest recipient of tax revenue, receiving over \$200 million (70% of the total), as seen in **Figure 5-1**. The provincial government received a tax revenue contribution of \$80 million (27% of the total), while the municipal government received nearly \$8 million in tax revenues (3% of the total).

Figure 5-1: Annual Estimated Tax Revenues of YWG by Level of Government, 2019



Note: Taxation impacts are based on 2019 tax rates.

A complete summary of tax contributions by YWG passengers and businesses is provided in **Figure 5-2**.

Figure 5-2: Current Tax Contributions of YWG Airport Passengers and Businesses – 2019

SUMMARY OF TAX CONTRIBUTIONS BY WINNIPEG JAMES ARMSTRONG RICHARDSON INTERNATIONAL AIRPORT (YWG) - 2019				
	Federal		Provincial	
	Tax	Amount (\$ m)	Tax	Amount (\$ m)
Paid by Passengers	GST on Airport Improvement Fee (AIF)	2.4	PST on Ground Transportation	1.3
	GST on Airfares	8.1	PST on Airport Concession	0.3
	GST on Air Traveller Security Charge (ATSC)	0.4	PST on Accommodation	1.5
	GST on Ground Transportation	0.9	Supplementary Hotel Room Tax	1.1
	GST on Airport Concession	0.2		
	GST on Accommodation	1.1		
	Total	13.1	Total	4.2
Paid by Employers or Employees	Personal Income Tax	68.5	Personal Income Tax	53.9
	Corporate Income Tax	26.0	Corporate Income Tax	8.5
	EI - Employer	10.9	Workers Compensation Board	3.5
	EI - Employee	7.8	PST on Airfield Fees	1.6
	CPP - Employer	24.7	PST on Passenger Processing Charges	1.8
	CPP - Employee	24.7	Aviation Fuel Tax	5.8
	GST on Airfield Fees	1.2	PST on Accommodation	0.1
	GST on Passenger Processing Charges	1.3	Supplementary Hotel Room Tax	0.1
	Aviation Fuel Tax	7.2		
	GST on Aviation Fuel	6.0		
	GST on Accommodation	0.1		
	Total	178.6	Total	75.3
Paid by Winnipeg Airports Authority	Federal Ground Lease Payment	9.5	Property Tax	5.3
	Total	9.5	Total	5.3
Grand Total	201.2	79.5	Grand Total	288.2

Notes:

- For the purposes of the tax analysis, the GST and PST components are displayed separately to document the federal and provincial portions of tax collected respectively.
- Summation totals may not add up due to rounding.

Figure 5-3: Annual Estimated Tax Revenues of YWG by Taxpayer, 2019

Taxpayer	Federal (\$ millions)	Provincial (\$ millions)	Municipal (\$ millions)	Total (\$ millions)
Passengers	13.1	4.2	0.0	17.3
WAA²² and Other Airport Employers/Employees	188.1	75.3	7.5	270.9
Total	201.2	79.5	7.5	288.2

Note: Taxation impacts are based on 2019 tax rates. Totals may not sum due to rounding.

²² Includes \$9.5 million in Federal Ground Lease Payments and \$2.2 million in municipal property taxes paid by WAA.

6 Summary of Economic Impact Results





6.1 Ongoing Economic Impacts

Ongoing operations at YWG support a *total* of 17,120 FTEs or person years of employment and \$990 million of wages in Manitoba, when multiplier impacts are included. Of this employment, 10,020 FTEs or person years of employment are *directly* related to the airport. Because employment related to the airport extends far beyond YWG, the total also includes both indirect (approximately 4,370 FTEs) and induced (2,730 FTEs) employment.

Direct person years or FTEs of employment from ongoing operations at YWG (i.e. WAA plus airport tenants and directly related offsite firms) grew by 5%, from about 9,550 to 10,020 between 2016 and 2019.

YWG contributes to the provincial economy as well. The significance of the airport is demonstrated by the *direct* economic impact of the airport on GDP and economic output in the Province of Manitoba, measured at \$1,260 million and \$2,920 million, respectively. Including indirect and induced impacts, the *total* impacts are approximately \$2,060 million and \$4,320 million, respectively, province wide. **Figure 6-1** summarizes these 2019 economic impacts in total.

Figure 6-1: Annual Total Ongoing Economic Impact of YWG in Manitoba, 2019

Impact	 Employment		 Wages (\$ Millions)	 GDP (\$ Millions)	 Output (\$ Millions)
	FTEs	Jobs			
Direct	10,020	10,830	\$580	\$1,260	\$2,920
Indirect	4,370	4,720	\$280	\$460	\$890
Induced	2,730	2,950	\$130	\$340	\$510
Total	17,120	18,500	\$990	\$2,060	\$4,320

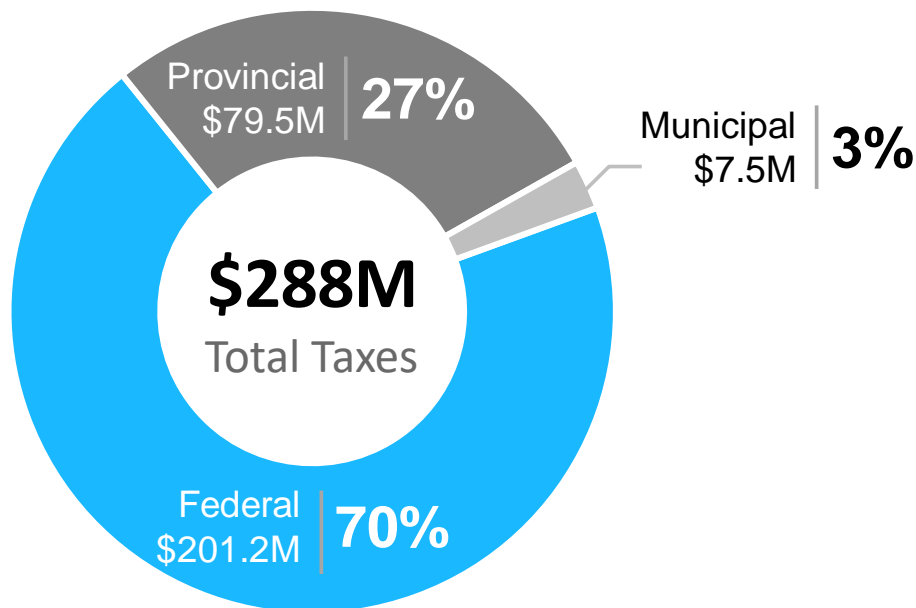
Note: Totals may not sum due to rounding.

Note: Dollar figures are expressed in 2019 prices.

6.2 Annual Tax Contribution

YWG is also an important generator of taxation revenues to all levels of government. Total taxes paid on an annual basis by the airport, its directly related employers, and their employees are estimated at roughly \$288 million per year. The majority of taxes collected accrue to the federal and provincial governments at 70% and 27%, respectively. The municipal government also benefits from YWG, such as through the collection of property taxes amounting to nearly \$8 million, as shown in **Figure 6-2**.

Figure 6-2: Annual Estimated Tax Revenues of YWG, 2019



Note: Taxation impacts are based on 2019 tax rates.

Appendix A: Employment Survey

Identification of the Survey Population

Over 200 firms received employment surveys for the YWG economic impact study including airport tenants, offsite firms, hotels, and ground transportation firms directly related to or dependent upon the airport. WAA provided a list of airport tenants and, together with InterVISTAS, identified the offsite employers, hotels, and ground transportation firms closely tied to airport operations.

Questionnaire Design

The basic questionnaire was designed to be effective in obtaining information and, equally importantly, to be as clear and easy to understand as possible for respondent firms. The basic survey was provided to employers at each airport. Three other surveys were developed for offsite employers, hotel employment, and ground transportation employment. The basic questionnaire provided to airport tenants focused on questions in the following areas:

General Information

- Name and address of firm
- Contact person's name, phone number, and email address
- Company website
- Type of business and the proportion related to the airport and/or air service

Total Employment Numbers in 2019

- Total current employees (as of September 2019)
- Anticipated gain/loss in employees by end of 2019
- Total annual payroll
- Number of onsite employees
- Number of offsite employees

Part-time and Full-time Employment

- Full-time permanent employees
- Part-time permanent employees
- Full-time seasonal employees
- Part-time seasonal employees
- Average hours and weeks for part-time and seasonal employees

Employment by Trade

- A selection of job trades was provided to categorise employment

Outsourcing and Contracting Out

- Number of individuals on contract
- Number and names of firms on contract

Taxes

- Property taxes paid in the previous year (2018)

A copy of the survey is provided in **Appendix B**.

Conducting the Survey

The survey was mailed out electronically by InterVISTAS Consulting with a cover letter from WAA Chief Commercial Officer, Pascal Bélanger. The letter explained the purpose of the study, the confidentiality of responses, and encouraged members of the airport business community to participate.

Following the initial electronic mail-out of the surveys and throughout the following weeks, non-responding firms were contacted by telephone to follow up. Firms were encouraged to return the survey, and new copies were offered if the originals were lost. The replacement surveys were emailed once again or sent via fax. Some survey responses were collected via a telephone interview with firms.

Estimating Ground Transportation Impacts

In addition to surveying key ground transportation firms across various vehicle types (e.g. taxis, buses, limousines, regional/hotel/offsite parking shuttles and corporate vehicles), the team assessed WAA-provided data on ground transport trips to and from the airport in order to estimate the scale of ground transport operations serving YWG.

Analysis of the Results

The survey results were compiled, cleaned, and analysed in MS Excel.

Appendix B: Sample Survey

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On-site Employment Survey

September 2019

The figures you provide in the following sections are strictly confidential and will be viewed only by InterVISTAS Consulting and reported only in an aggregate form with other survey responses. For the purposes of this study, it is important that the figures you provide are as accurate and current as possible.

When answering the questions below regarding your business, please include all related subsidiary businesses.

Name of Firm: _____

Address of Firm: _____

City, Province: _____ Postal Code: _____

Contact Person: _____ Phone number: _____

Email: _____

Q1. Location of Firm

Please indicate the general location of your firm:

- ☐ Winnipeg James Armstrong Richardson International Airport (YWG)
☐ Other, please specify: _____

Q2a. Business Related to Winnipeg James Armstrong Richardson International Airport

Please estimate the amount of your business (revenue) that is related to Winnipeg James Armstrong Richardson International Airport.

YWG Related Business: (as of September 2019)	%
--	---

Q2b. Cargo Related Business

We would like to be able to document the impact of the airport's air cargo services. Please help us by indicating the portion of your business that is involved in servicing air cargo.

Please estimate the proportion of your business (revenue) that can be attributed to air cargo related activities?

Air Cargo Related Business: (as of September 2019)	%
--	---



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Q3. Type of Business (check one)

If you are involved in more than one of the businesses below, please choose the one that best describes your business.

Air Carriers

- ☐ 1. Scheduled Canadian Carrier
- ☐ 2. Scheduled Non-Canadian Carrier
- ☐ 3. Charter Carrier
- ☐ 4. Helicopter
- ☐ 5. Air Taxi
- ☐ 6. Cargo Carrier
- ☐ 7. Courier
- ☐ 8. Other Type of Air Carrier:

Other Business Types

- | | |
|---|--|
| <input type="checkbox"/> 9. Facility Operator | <input type="checkbox"/> 19. Aviation Related Training |
| <input type="checkbox"/> 10. Freight Forwarder, Cargo Agent, etc. | <input type="checkbox"/> 20. Caterer |
| <input type="checkbox"/> 11. Warehousing | <input type="checkbox"/> 21. Security Firm |
| <input type="checkbox"/> 12. Customs Broker | <input type="checkbox"/> 22. Hotel |
| <input type="checkbox"/> 13. Aircraft Maintenance | <input type="checkbox"/> 23. Taxi, Bus |
| <input type="checkbox"/> 14. Aircraft Ground Handler | <input type="checkbox"/> 24. Car Rental |
| <input type="checkbox"/> 15. Fuelling Company | <input type="checkbox"/> 25. Airport Retail Outlet, Restaurant, etc. |
| <input type="checkbox"/> 16. Fixed Base Operator | <input type="checkbox"/> 26. Government Agency/Department |
| <input type="checkbox"/> 17. Aircraft Parts Supplier | <input type="checkbox"/> 27. Air Traffic Control |
| <input type="checkbox"/> 18. Aviation Related Manufacturing | <input type="checkbox"/> 28. Other: _____ |

Q4. Total Employment

Please state the total number of employees that you have at present. **This figure should include all full-time, part-time and seasonal work but should not include employment for work done on contract.**

Total Number of Employees: (as of September 2019)	
Total Estimated 2019 Annual Payroll: (Total payroll includes gross (pre-tax) wages or salaries, including overtime pay, commissions, allowances and bonuses)	



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- OR,** Provide an estimate of the average annual salary per employee \$ _____
- ☐ Less than \$20,000
 - ☐ Between \$20,000 and \$40,000
 - ☐ Between \$40,000 and \$60,000
 - ☐ Between \$60,000 and \$80,000
 - ☐ Between \$80,000 and \$100,000
 - ☐ More than \$100,000

Q5. On-site versus Off-site Employees

For the purpose of this study, on-site workers are employees who work on airport land. Off-site employees are those who do not work on airport land, but are primarily performing airport or aviation related duties (e.g., airline sales representatives at a downtown office). Of the total number of employees listed in September 2019, how many work on-site and how many work off-site?

Number or % of Employees On-Site:	
Number or % of Employees Off-Site:	

Q6. Part-Time and Full-Time Employees

A. Permanent Employees: A permanent employee is one who works year round. In reference to the number of total employees in September 2019, how many are permanent employees and how many are full-time and how many are part-time?

Number of Full-Time <u>Permanent</u> Employees:	
Number of Part-Time <u>Permanent</u> Employees:	
Total <u>Permanent</u> Employees:	

For part-time employees, on average, how many hours per week will they work this year?

# of Weekly Hours:	
--------------------	--

If it is difficult to obtain this information or if there is great variation, you may provide a range of weekly hours (i.e., less than 10 hours, 10-15 hours, etc).

B. Seasonal Employees: A seasonal employee is one who is hired for work during peak or specific time periods only. In reference to the number of total employees in September 2019, please indicate how many are seasonal full-time and part-time employees?

Number of Full-Time <u>Seasonal</u> Employees:	
Number of Part-Time <u>Seasonal</u> Employees:	
Total <u>Seasonal</u> Employees:	



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For seasonal workers, on average, how many **weeks** will they work this year (2019)?

Number of Weeks Per Year:	
----------------------------------	--

For part-time seasonal workers, on average, how many **hours per week** will they work this year (2019)?

Number of Weekly Hours:	
--------------------------------	--

If it is difficult to obtain this information or if there is great variation, you may provide a range of weekly hours (i.e., less than 10 hours, 10-15 hours, etc).

THE SUM OF THE PERMANENT AND SEASONAL EMPLOYEES LISTED IN Q6A AND Q6B SHOULD EQUAL THE NUMBER OF TOTAL EMPLOYEES IN Q4.

Q7. Employment by Trade

In order to reflect the diversity of employment at the airport, please provide us with a breakdown of your total payroll employees, by position.

Employment by Trade		Number or % of Employees
General	Managerial/Supervisory	
	Clerical	
	Craft Trades (Electricians, Steam Fitters, etc.)	
Airline & Airline Servicing Trades	Pilots	
	Flight Attendants	
	Aircraft & Vehicle Mechanics	
	Customer Service Agents	
	Aircraft Servicing	
Support Trades	Security Agents	
	Food Service Workers	
	Drivers / Delivery / Couriers	
	Dispatchers	
	Call Centre / Reservations	
	Air Traffic Control	
Retail Trades	Sales / Cashiers	
	Food & Beverage Staff	
Other (Please specify)		

Q8. Outsourcing and Contracting Out

Since we do not want to exclude any employment from the airport, we would like you to briefly comment on whether your firm contracts out any important services.

A. Individuals on Contract: If you pay some individuals through a contract, as opposed to through payroll, please indicate the number of such employees.

Number of <u>Contract</u> Employees:	
---	--



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Of these employees on contract, how many **weeks**, on average, will they work this year? And, on average, how many **hours per week** do they work?

Number of Weeks Per Year:	
Number of Weekly Hours:	

B. Firms on Contract: Do you contract any work out to other **firms**? For example, janitorial services, ground handling, etc.

- ☐ **No.** (continue to next question)
- ☐ **Yes. If yes,** please complete the following table indicating the functions you contract out to other firms and an estimate of the annual hours on contract. Also include the names of the firms you use so we can ensure that we do not double count any work performed by other firms that we are surveying as a part of this study.

Function	Name of Firm	Estimated Number of Hours to be Performed by Firm in 2019
<i>Example: Janitorial</i>	<i>Spic and Span Cleaners</i>	<i>100 a year (2 hours per week)</i>

Q9. Employment by End of 2019

Please indicate the number of additional employees your firm plans to hire at YWG by the end of 2019, relative to your current level of employment.

	Increase	Decrease	Unchanged	Number of Additional Employees
Additional Employment (2019) <i>Estimated new employees by end of 2019</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Alternatively, if you are unable to answer this question, please provide an **estimated percentage growth in employment** by end of 2019.

% Anticipated Growth in Workforce by end of 2019	%
---	----------



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Q10. Property Taxes Paid in 2018

Please indicate the amount of property taxes paid by your firm in 2018.

Total Property Taxes Paid (2018)	
--	--

Thank you for your assistance in completing this survey.

**Please return the completed survey electronically by
email / fax to:**

Attention: Kathryn Tooley

Email: ywg.econimpact@intervistas.com

Fax: 604-717-1818

If you have any questions, please call
Doris Mak at 1-604-717-1838 or Kathryn Tooley at 1-604-717-1810

Appendix C: Calculation of Full-time Equivalent Employment

The following are details of calculations for the average number of hours per full-time equivalent (FTE) or person year of employment.

Table C-1: Full-time Equivalent Hours per Year

Calculation of FTE hours per year:	
365	days per year
Less:	
(104)	weekend days
(11)	legal holidays
(15)	average vacation days
(6)	sick leave
229	days per person year
* 8	hours per workday
1,832	hours per person year

Workdays vary anywhere from 6.5 to 8 hours; however, in order to be conservative, an 8-hour workday was assumed.²³ Similarly, numbers of vacation and sick leave days may also vary.

²³ Essentially, we are using a measure of paid hours per year. Using a measure of productive hours per year with 6.5-hour workdays (8 hours less 1 hour for lunch less two 15-minute work breaks) would give 1,489 hours per person year. Using this lower figure would result in inferring a greater number of FTEs from seasonal and part-time jobs. Using the 1,832 figure, we infer a lower number of FTEs.

Appendix D: Summary of Direct Jobs and Person Years

Table D-1: Direct Jobs and Person Years

	Jobs	FTEs or Person Years of Employment
Surveyed employment ¹	9,417	8,795
Inferred employment for non-respondents ²	1,321	1,150
Contract employment ³	92	77
Total	10,830	10,022
Total – Rounded⁴	10,830	10,020

Notes:

1. Refer to Appendix A.
2. Refer to Appendix E.
3. Refer to Appendix F.
4. Rounded figures are presented throughout the report.

Appendix E: Inferred Employment

Because not all employers responded to our requests for information in the survey, we statistically inferred some employment data to replace that which otherwise would be missing. This allows us to estimate the total amount and type of employment, which provides the basis for other estimates of economic impact.

In general, InterVISTAS' approach bases these inferred estimates on information provided by responding firms for each business type and validated against information from other publicly available sources of data.²⁴ This approach is conservative in that we assumed that the non-responding firms are smaller than responding firms.

The employment data in this report was compiled from a combination of two sources:

1. **Employment reported by employers on surveys submitted to InterVISTAS.**
2. **Employment inferred for employers who did not provide a survey response.** Inferred employment was based on employment information from those firms in each business type that did respond to the survey. The mean employment of respondents in each business type was calculated, excluding outliers, and then conservatively adjusted downwards. For instance, those firms with especially large employment levels were excluded from the "mean without outliers" to obtain conservative results. This "adjusted mean" employment for each business type was then applied to those firms who did not respond to the survey.

²⁴ Our approach is broadly consistent with the donor imputation model typically used in survey work by government census and statistical agencies in Canada, the US and the European Commission.

Appendix F: Contract Employment

Some firms contract out services that they do not have expertise in providing or when there are cost advantages to doing so. For example, many airport firms contract out janitorial and maintenance services. The employment survey asked firms to identify whether they contracted out some of their work, and to estimate the number of annual hours involved.

Contract work was separated into two distinct categories in the employment survey: 1) individual “employees” paid through a contract, rather than via payroll, and 2) contracting out services to other firms.

The employment results for individuals on contract were derived by counting the number of individual positions for the number of *jobs* and dividing the total hours of employment by 1,832 to estimate an FTE or person year of employment. The employment results for firms on contract were derived by dividing the total hours of employment by 1,832 to estimate FTEs or person years.

There were approximately 92 jobs equivalent to 77 person years of contract employment supplied by firms doing work for YWG firms and contract employees working for firms at YWG.

Appendix G:

Tax Revenues Attributable to Airport Employers

Introduction

This appendix describes the employment and other assumptions on which tax revenue calculations are based. As well, the approaches used to estimate employer and employee contributions to local, provincial, and federal governments are presented. All estimates are for the 2019 calendar year, unless otherwise stated.

Some of the taxes pose conceptual questions about how much, or if any, tax revenue from a particular source should be attributed to firms serving YWG. These questions are highlighted and simplifying assumptions are put forth.

Employment at YWG

The majority of tax calculations in this report depend on direct employment and total wages. The total direct employment, in person years, used for these calculations is 10,020 person years. The total payroll is estimated at nearly \$580 million.

Personal Income Tax (Federal and Provincial)

Employees who work for employers located at YWG are taxed on their income and, as a result, contribute to federal and provincial tax revenues.

Under the *Income Tax Act* federal income tax is paid on taxable income at a rate that increases with taxable income.

Estimation Method and Results

Provincial income tax was formerly calculated as a percentage of federal tax, but most provincial governments have begun collecting taxes on a sliding scale.

Because the tax rate is progressive, the tax paid by a group of employees depends on the distribution of income among those employees. Unfortunately, the distribution of income is not known, and average incomes must be used.

The average tax rates used are derived from the more detailed calculations of taxes payable shown in **Figure G-2**. In those calculations, assumptions have been made about income from non-employment sources, tax deductions from income (e.g., RPP and RRSP contributions), and tax credits applied against tax otherwise payable (e.g., CPP, EI, and charitable contributions). Average credits are calculated from Revenue Canada, *General Income Tax Forms, 2019*.

Each employee is assumed to pay tax as a single tax filer. Estimated income tax payable is \$68.5 million in federal tax and about \$53.9 million in provincial tax.

Figure G-2: Manitoba Single Tax Filer Income Tax Calculation – 2019

Manitoba Single Tax Filer Income Tax Calculation																					
Income																					
Employment	5,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000	55,000	60,000	70,000	80,000	90,000	100,000	150,000	200,000	250,000	300,000	
TOTAL	5,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000	55,000	60,000	70,000	80,000	90,000	100,000	150,000	200,000	250,000	300,000	
Deductions																					
RPP	942	192	88	137	198	228	322	427	606	737	1,019	1,221	1,532	2,054	2,584	3,290	5,534	11,916	22,010		
RRSP	437	100	60	88	125	208	319	517	796	965	1,331	1,632	1,740	2,375	3,050	3,843	3,864	2,881	1,693		
Carrying Charges	476	170	69	60	53	71	93	126	162	183	221	264	315	416	564	975	511	312	223		
Union	538	81	38	44	48	51	68	69	77	91	110	133	150	189	227	272	484	1,361	4,824		
TOTAL	2,393	544	254	330	384	567	792	1,139	1,581	1,916	2,481	3,049	3,737	5,034	6,534	8,891	10,362	16,270	26,765		
Taxable Income	2,607	9,456	14,746	19,670	24,616	29,443	34,208	38,861	43,419	48,084	52,519	56,951	66,263	74,966	83,066	91,919	139,638	233,730	321,250		
Credits																					
Basic Federal	12,069	12,069	12,069	12,069	12,069	12,069	12,069	12,069	12,069	12,069	12,069	12,069	12,069	12,069	12,069	12,069	12,069	12,069	12,069		
Basic Provincial	9,626	9,626	9,626	9,626	9,626	9,626	9,626	9,626	9,626	9,626	9,626	9,626	9,626	9,626	9,626	9,626	9,626	9,626	9,626		
CRP	8,147	1,173	553	553	539	690	835	1,034	1,240	1,360	1,609	1,809	1,887	2,041	2,195	2,212	2,200	1,963	1,741		
EI	7,622	796	296	296	241	298	349	427	504	544	636	688	681	725	777	773	742	598	381		
Charity	34	11	16	37	58	69	89	100	110	132	137	151	178	201	212	237	336	774	5,083		
Fed. Total	27,272	14,039	12,594	12,520	12,507	13,125	13,341	13,830	13,929	14,104	14,481	14,692	14,815	15,038	15,202	15,291	15,267	15,363	15,274		
Prov. Total	24,829	11,966	10,831	10,482	10,464	10,682	10,898	11,187	11,486	11,681	12,038	12,249	12,372	12,593	12,809	12,848	12,804	12,920	16,831		
Federal Tax Credit Rate	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%		
Provincial Tax Credit Rate	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%		
Federal Credits	4,091	2,101	1,840	1,839	1,836	1,969	2,001	2,245	2,089	2,116	2,172	2,224	2,232	2,255	2,288	2,294	2,302	2,305	2,281		
Provincial Credits	2,682	1,249	1,133	1,132	1,130	1,154	1,177	1,208	1,241	1,259	1,300	1,323	1,336	1,360	1,383	1,388	1,384	1,396	1,818		
Tax Payable																					
Federal - Bracket 1	381	1,418	2,212	2,891	3,892	4,416	5,131	5,829	6,513	7,145	7,145	7,145	7,145	7,145	7,145	7,145	7,145	7,145	7,145		
Federal - Bracket 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Federal - Bracket 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Federal - Bracket 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Federal - Bracket 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Federal Total	381	1,418	2,212	2,891	3,892	4,416	5,131	5,829	6,513	7,145	7,145	7,145	7,145	7,145	7,145	7,145	7,145	7,145	7,145		
Basic Federal	0	0	272	1,812	1,796	2,448	3,138	3,785	4,423	5,122	5,875	6,591	7,238	7,942	8,601	9,264	9,930	10,596	11,262		
Manitoba - Bracket 1	282	1,021	1,593	2,124	2,658	3,180	3,528	3,528	3,528	3,528	3,528	3,528	3,528	3,528	3,528	3,528	3,528	3,528	3,528		
Manitoba - Bracket 2	0	0	0	0	0	0	196	789	1,370	1,965	2,531	3,096	4,283	4,837	4,837	4,837	4,837	4,837	4,837		
Manitoba - Bracket 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Manitoba Total	282	1,021	1,593	2,124	2,658	3,180	3,724	4,489	5,494	6,659	8,024	9,301	10,812	12,378	14,039	15,712	17,384	19,056	20,728		
Basic Provincial	0	0	469	992	1,838	2,036	2,447	2,847	3,189	3,659	4,204	4,799	5,391	5,979	6,564	7,145	7,724	8,303	8,882		
TOTAL TAX PAYABLE	282	0	721	2,884	3,285	4,474	5,877	6,894	8,082	9,356	10,733	12,151	13,673	15,218	16,762	18,306	19,850	21,394	22,938		
Average Rate of Tax	5.0%	0.0%	4.8%	14.4%	13.3%	15.0%	17.1%	17.9%	18.6%	19.5%	20.4%	21.3%	22.0%	22.8%	23.6%	24.4%	25.2%	26.0%	26.8%		
Federal	0.0%	0.0%	1.5%	14.4%	15.5%	14.8%	17.1%	17.9%	18.6%	19.5%	20.4%	21.3%	22.0%	22.8%	23.6%	24.4%	25.2%	26.0%	26.8%		
Provincial	0.0%	0.0%	3.3%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		

Corporate Income Tax (Federal and Provincial)

All corporations are liable to pay federal income tax under the *Income Tax Act*. The tax rate varies by type and size of company and by province. Provincial governments also levy a corporate income tax on any company having a permanent establishment in that province.

Government agencies are not subject to corporate income tax, nor are public authorities.

Estimation Method and Results

To calculate tax liability precisely is very difficult. It requires knowledge of the total tax base, and the proportion of the tax base attributable to the province. Therefore, an approximate method has been used.

In Manitoba, the federal corporate income tax collected per employee was \$2,700 and the provincial corporate income tax collected per employee was \$880 in 2018/2019.

Assuming all companies pay tax at the average rate per employee calculated above, the corporation income tax liability of the YWG employment sector is estimated to be \$26.0 million toward federal revenues and \$8.5 million toward provincial revenues. The estimated total corporate income tax revenue is roughly \$34.5 million.

Employment Insurance Premiums

In 2019, employees in Canada paid employment insurance (EI) premiums equal to 1.62% of earnings up to a maximum of \$860 per year. (Maximum insurable earnings are \$53,100). Employers paid EI premiums equal to 1.4 times employee premiums.

Estimation Method and Results

The employee premium rate is applied to total payroll costs for employees earning less than \$53,100 per year. The maximum contribution was used for employees earning more than \$53,100 per year. Estimated employee payments were about \$7.8 million in 2019.

The employer rate is applied to the employee payments. Estimated employer payments were about \$10.9 million in 2019.

Canada Pension Plan Contributions

Tax Base and Rates

In 2019, employee contributions for the Canada Pension Plan (CPP) were 5.10% of pensionable earnings. Pensionable earnings are actual earnings less \$3,500, to a maximum of \$53,900. The maximum annual employee contribution is \$2,748.90. The employer contribution is the same as the employee contribution.

Estimation Method and Results

The employee contribution rate is applied to average payroll for employees who are earning less than \$53,900 a year. The maximum contribution was used for employment earning more than the maximum pensionable earnings.

Estimated employer and employee contributions are about \$24.7 million each, for a total of \$49.5 million.

Workers' Compensation Board Contributions

Employers in each province are required to make contributions to the Workers' Compensation Board to help offset the cost of on-the-job injuries. Employers are classified into industry groups. The contribution rate for each group is based on the injury costs associated with all companies in that group.²⁵ The group contribution rate varies widely among industries and provinces. Some major companies are not included in the general "rateable" method of contribution but simply pay the actual cost of their claims plus an allowance for WCB administration costs. As it is not generally known which firms contribute in this manner, nor the value of their claims, an estimate based on reported payroll has been made for all firms.

It is possible that some companies are self-insured, and their payments could be viewed as a business expense rather than a tax. However, we have chosen to include their contribution because they are required to be part of this government-mandated program.

²⁵ Subject to Experience Rating Adjustment for individual companies.

Estimation Method and Results

The contribution rates for each employment classification at YWG have been applied to the total payroll for that group, up to the maximum assessable earnings per worker of \$127,000 in Manitoba in 2019. YWG employees paid an estimated \$3.5 million to Worker's Compensation in 2019.

Health Insurance Premiums

Tax Base and Rates

There are no Medical Services Plan (MSP) premiums for single filers in Manitoba.

Aviation Fuel Tax

The federal and provincial governments levy taxes on jet fuel. The aviation fuel tax rates are shown in **Table G-3**.

Table G-3: Fuel Tax Rates, 2019

Federal	Manitoba
\$/Litre	
\$0.04	\$0.032

Estimation Method and Results

The amount of aviation fuel sold at YWG in 2019 was approximately 181 million litres. The total aviation fuel tax revenues at YWG amount to approximately \$13.0 million. Of this total, about \$7.2 million went to the federal government and the government of Manitoba collected \$5.8 million.

The fuel sold is also subject to the 5% GST rate payable to the federal government. With GST included, the total tax revenues from fuel sales at YWG amount to \$19.1 million.

Property Taxes

Governments levy property taxes to help them finance local services. Property taxes paid by WAA amounted to \$2.2 million in 2019. Tenants at the airport paid \$5.3 million. In total, \$7.5 million in property taxes were paid to the municipal government by the airport authority and its tenants.

Federal Ground Lease Payable in 2019

WAA also made federal ground lease payments to the Federal Government in 2019, amounting to \$9.5 million.

Appendix H: Tax Revenues Attributable to Airport Users

YWG Passengers in 2019

In 2019, nearly 4.5 million passengers enplaned and/or deplaned at YWG. **Table H-1** shows the passenger movements in 2019, including breakdown into sectors.

Table H-1: Passenger Movements at YWG, 2019

Sector	Enplaned plus Deplaned, 2019
Domestic	3,812,530
Transborder	482,950
International	188,768
Total	4,484,248
<i>Daily Average</i>	<i>12,286</i>

GST on Air Fares, Insurance Surcharges, and the Airport Improvement Fee (AIF)

Tax Base and Rate

The 5% Goods and Services Tax (GST) applies to all tickets purchased in Canada and includes all domestic, transborder, and international flights.

WAA charges all passengers originating their journey at YWG an Airport Improvement Fee (AIF) that is collected for the sole purpose of funding capital improvements at the airport. GST is levied on the fee.

Conceptual Issues. Taxes levied on the air fare should be shared among airports in Canada associated with the journey. The estimation method builds in a sharing assumption (50% YWG and 50% other Canadian airports).

Estimation Method and Results

GST is levied on all air fares; however, due to the sharing assumption stated above, only 50% of the estimated taxes per departing passenger are attributable to YWG. Total tax on airfares is estimated to be \$8.1 million.

WAA collected nearly \$49 million through the AIF in 2019. Tax revenue on this amount collected by the Federal government is approximately \$2.4 million.

GST on Air Traveller Security Charge

The Canadian Government enacted the Air Traveller Security Charge (ATSC) on April 1, 2002 to help fund security improvements at airports across Canada, as a result of the terrorist attacks on September 11, 2001. There is a flat rate fee of \$7.12 for each chargeable enplanement for domestic travel, \$12.10 for transborder travel, and \$25.91 for international travel.

Tax Base and Rate

The GST applies to the domestic and transborder ATSC.

Estimation Method

The volume of origin/destination traffic at YWG was estimated, assuming that 50% of non-connecting passengers was origin traffic at YWG. Each origin passenger pays the ATSC. An estimated \$0.4 million in taxes was collected on the ATSC in 2019.

Tax on Airfield Fees

The GST and PST rates are applied to airfield fees.

Estimation Method and Results

Based on the information provided by WAA, net revenue from airfield fees was over \$18.9 million in 2015. Total tax collected is estimated at over \$2.4 million, including \$950,000 GST and \$1.5 million PST.

Tax on Passenger Processing Charges

The GST and PST rates are applied to passenger processing charges.

Estimation Method and Results

Based on the information provided by WAA, net revenue from passenger processing charges was \$25.8 million in 2019. Total tax collected is estimated at \$3.1 million, including \$1.3 million GST and \$1.8 million PST.

Tax on Concession Purchases

Tax Base and Rate

The GST and PST rates apply to most retail concession purchases by travellers at the airport.

Estimation Method and Results

Total taxes based on sales of \$4.1 million (including airport restaurant/gift shop sales) is \$0.5 million, of which approximately \$200,000 is attributed to GST and the remaining \$300,000 to the PST portion.

Tax on Ground Transportation, Parking, and Car Rentals

The PST and GST rates apply to taxi, limousine, and bus transportation, as well as to parking fees and car rentals.

Estimation Method and Results

Based on the information provided by WAA, parking and ground transportation revenues were \$18.7 million in 2019. Tax on these expenditures is estimated at over \$2.2 million.

Tax on Accommodation Costs

Tax Base and Rates. The 5% Goods and Services Tax (GST) and 7% Provincial Sales Tax (PST) applies to accommodation costs by non-local visitors to Winnipeg staying in hotels.

In addition, according to Tourism Winnipeg, a hotel tax of 5% is also levied on accommodation expenditure in Manitoba.

The Winnipeg Barometer Report published by Tourism Winnipeg indicates that the average daily room rate forecast for 2019 is \$127.00.

Estimation Method and Results

In order to estimate the total accommodation costs of non-local visitors in Winnipeg, the average daily room rate was applied to the estimated total crew layover nights and connecting passenger nights determined from the hotel survey conducted. The total accommodations expenditure amounted to an estimated \$24 million, with revenue from total crew layover nights accounting for \$1.9 million and revenue from total non-local passenger nights accounting for over \$22.0 million.

PST and GST based on the expenditure for airline crew accommodation of \$1.9 million is approximately \$0.2 million, while the hotel tax is estimated to be \$100,000. PST and GST based on accommodation costs of \$22.0 million by non-local passengers is approximately \$2.6 million, while the hotel tax is estimated to be \$1.1 million.

Appendix I: Glossary of Terms

Air Traveller Security Charge (ATSC): A fee collected by the Federal Government from air travellers to help fund security improvements at Canadian airports. The fee varies by region of travel and is charged to the passenger per enplanement.

Airport Improvement Fee (AIF): A fee collected by the airport authority from passengers to help with funding capital improvements at the airport. In some regions of Canada, this is also referred to as the Passenger Facility Charge (PFC).

Contract Work: Any work which is done for a company by an individual who is not on the payroll or work done for a company by another company. Generally speaking, firms will contract out work in areas in which they do not have expertise or when there are cost advantages to doing so.

Direct Employment: Direct employment is employment that can be directly attributable to the operations in an industry, firm, etc. It is literally a head count of those people who work in a sector of the economy. In the case of the airport, all of those people who work on airport property and in an aviation related capacity would be considered direct employment.

Economic Activity: (also Output, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, the process of transforming the factors of production into goods and services desired for consumption.

Economic Output: (also Economic Activity, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, it is defined as the process of transforming the factors of production into goods and services desired for consumption.

Employment Impact: Employment impact analysis determines the economic impact of employment in terms of jobs created and salaries and wages paid out. In the case of the airport, the direct, indirect, induced, and total number of jobs or person years created at the airport are examined to produce a snapshot of airport operations.

Full Time Equivalent (FTE): (also Person Year) One full time equivalent (FTE) year of employment is equivalent to the number of hours that an individual would work on a full-time basis for one year. In this study we have calculated one full time equivalent year to be equivalent to 1,832 hours. Full time equivalent years are useful because part time and seasonal workers do not account for one full time job.²⁶

Gross Domestic Product: (GDP, also value-added) A measure of the value added by labour and capital services used to produce final goods and services, as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.

Ground Transportation: Ground transportation at the airport includes any vehicles which transport passengers from the airport to the cities or from the cities to the airport. This would include taxicab service, limousine service, hotel van service, and transportation network companies (TNCs) or rideshares like Tapp Car and ReRyde in Winnipeg. Valet services as well as skycaps are also categorised as ground transportation.

²⁶ *The Dictionary of Modern Economics*, David W. Pearce, General Editor, The MIT Press, Cambridge Mass., 1984

Indirect Employment: Indirect employment is employment which results because of direct employment. For the airport, it would include that portion of employment in supplier industries which are dependent on sales to the air transport sector. In some cases, contract work would be considered indirect employment.

Induced Employment: Induced employment is employment created because of expenditures by direct and indirect employees.

Multiplier Analysis: Analysis using economic multipliers in which indirect and induced economic impacts is quantified. Essentially, a multiplier number is applied to the "directly traceable economic impact" to produce indirect and total effects (see Multiplier.)

Multiplier: Economic multipliers are used to infer indirect and induced effects from a particular sector of the economy. They come in a variety of forms and differ in definition and application. A multiplier is a number which would be multiplied by direct effects in order to calculate indirect or induced effects. In the case of the airport, as in many other cases, multipliers can lead to illusory results, and thus must be used with great care.

Seasonality: Seasonality results when the supply and demand for a good is directly related to the season in which is consumed. For example, ski resorts experience changes in net income as a result of seasonality. Airports and airport services also experience seasonality as a result of vacation times for families (typically during the summer) and/or temperatures abroad (typically at Christmas time). As a result of seasonality in demand for flights, some air carriers increase frequency of flights to certain areas during the busy season.

Tenant: A firm which pays a lease to a leasing company or to the airport authority directly.

Value-Added: (also GDP) A measure of the money value of final goods and services produced as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.



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