

2020 ECONOMIC IMPACT STUDY

Winnipeg James Armstrong Richardson International Airport (YWG)

PREPARED FOR



WINNIPEG
AIRPORTS AUTHORITY

PREPARED BY

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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

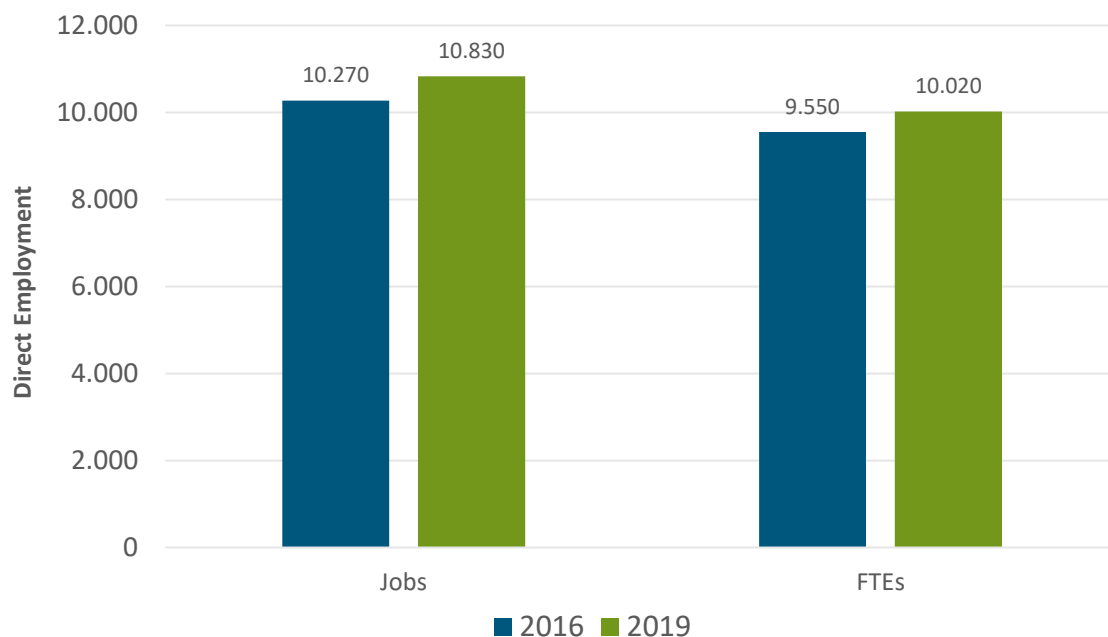


Impact	Employment		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
	FTEs	Jobs			
Direct	10,020	10,830	\$580	\$1,260	\$2,920
Indirect	4,370	4,720	\$280	\$460	\$890
Induced	2,730	2,950	\$130	\$340	\$510
Total	17,120	18,500	\$990	\$2,060	\$4,320

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.

**Tax Impact of YWG,
2019**

Total Tax Impact:

- \$288 million

Federal Government:

- \$201 million (70% of total)

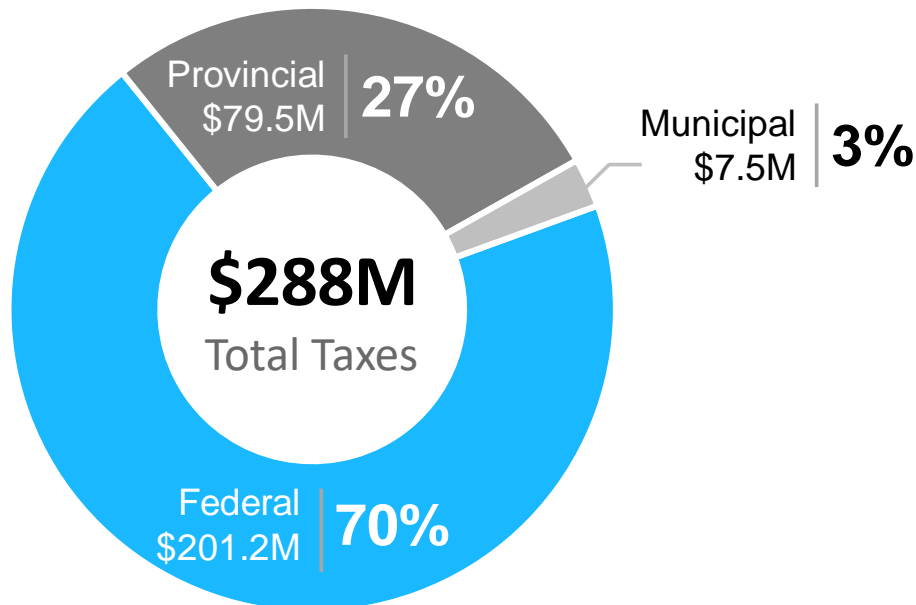
Provincial Government:

- \$80 million (27% of total)

Municipal Government:

- \$8 million (3% of total)

Figure ES-3: Estimated Annual Tax Revenues from YWG, 2019



Note: Taxation impacts are based on 2019 tax rates.

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1 Introduction

Winnipeg Airports Authority (WAA) commissioned Inter VISTAS 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 Inter VISTAS 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.



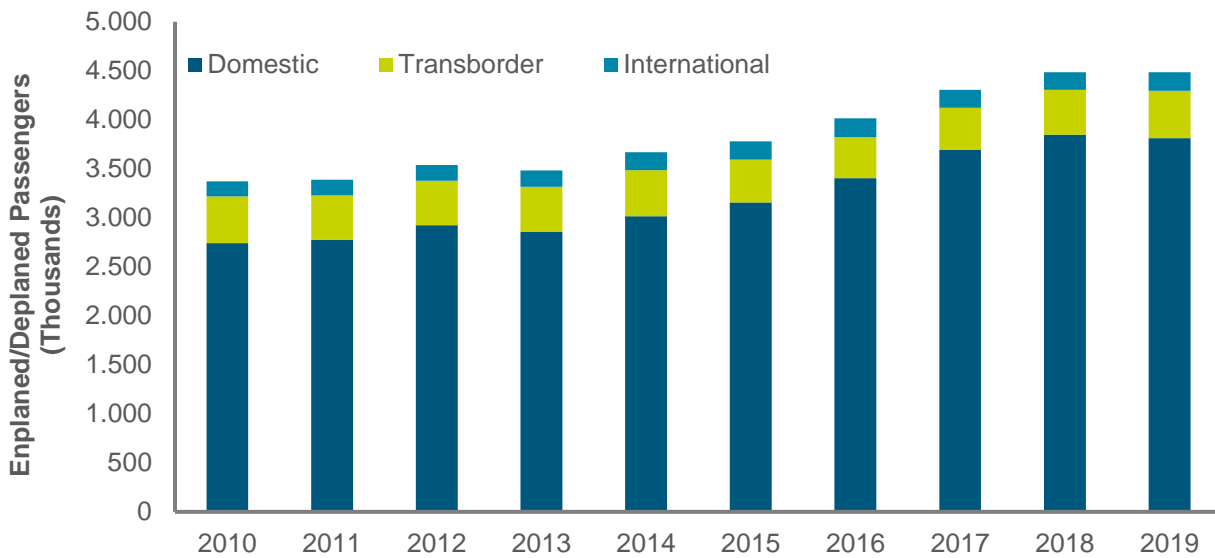
1.1 Winnipeg James Armstrong Richardson International Airport

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.

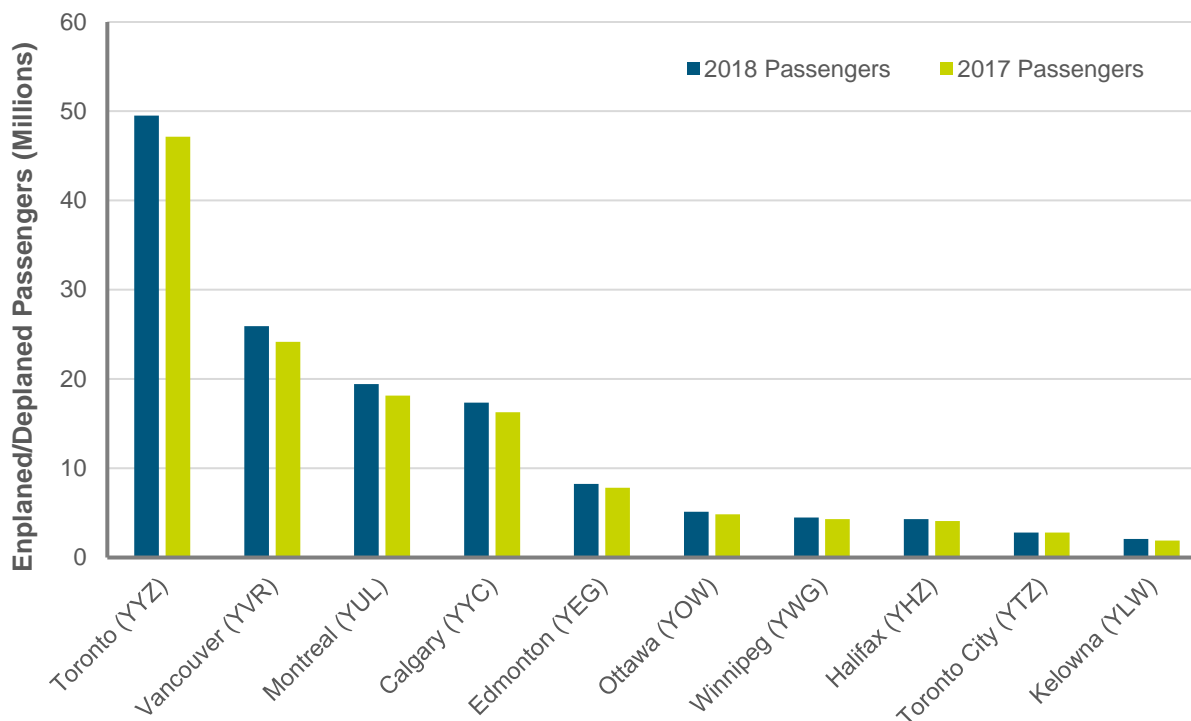
Figure 1-1 displays the passenger traffic at YWG over the last ten years. YWG is the seventh busiest airport in Canada by passenger volume (see **Figure 1-2**).

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%

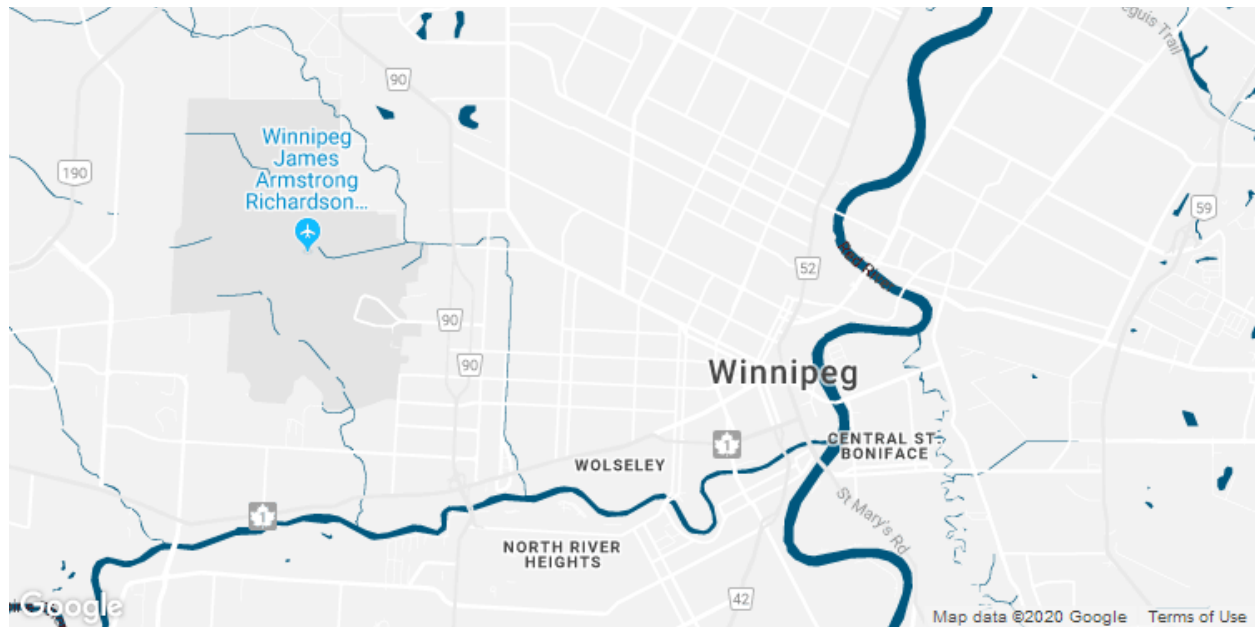
Country	City	Weekly Seat Capacity 2016	Weekly Seat Capacity 2019	% Change
Canada	Gods River	76	0	-100.0%
	Halifax	520	670	28.8%
	Hamilton	0	1134	N/A
	Island Lake/Garden H	348	0	-100.0%
	Kelowna	0	567	N/A
	Kenora	0	76	N/A
	London, ON	893	0	-100.0%
	Montreal-PET	3,010	3,520	16.9%
	Norway House	168	0	-100.0%
	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

<p>Employment (Full-time Equivalents)</p>	<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.
<p>Wages</p>	<ul style="list-style-type: none"> • The wages, salaries, bonuses, benefits and, other remuneration earned by the associated workforce.
<p>Gross Domestic Product (GDP)</p>	<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.
<p>Economic Output</p>	<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

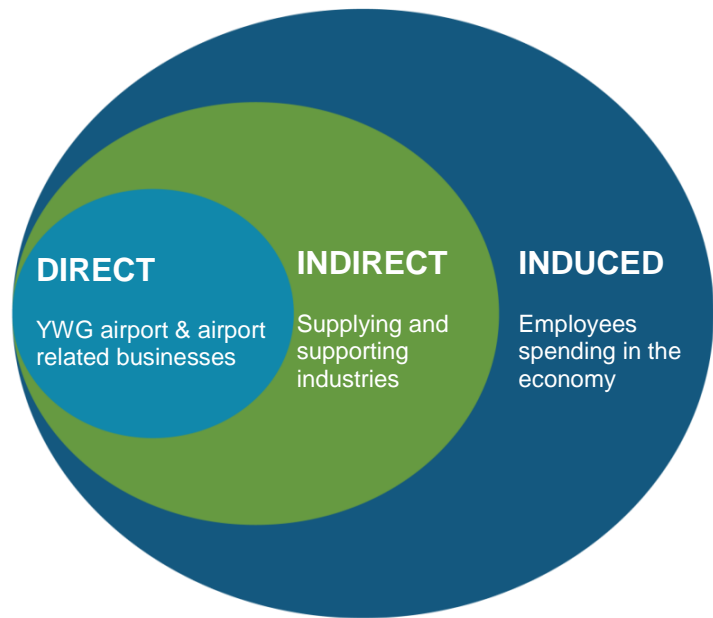
Indirect impacts are those that result because of the direct impacts. This involves employment in downstream industries that arise from the presence of YWG. For instance, indirect employment includes the portion of employment in supplier industries which are dependent on sales to the air transport sector, 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

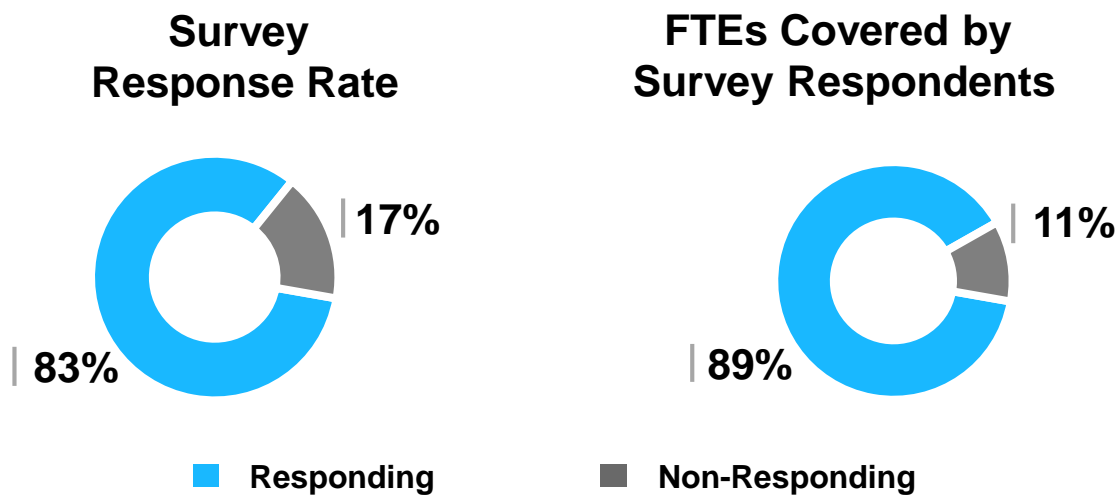
Employment attributable to ongoing YWG operations was measured by surveying over 200 firms and organizations that are either located at YWG or otherwise economically linked to the airport. Specifics of

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.

¹³The 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



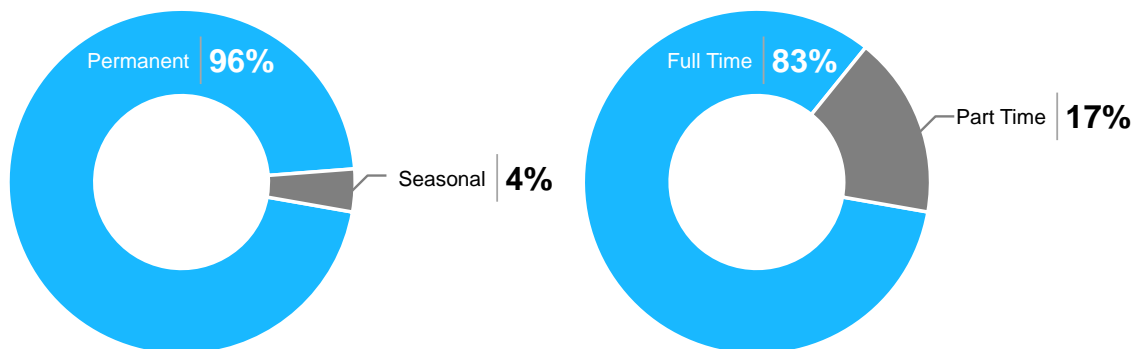
Type of Impact	Employment (Jobs)	Employment (FTEs)	Wages (\$ Millions)
Direct Employment	10,830	10,020	\$580

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.

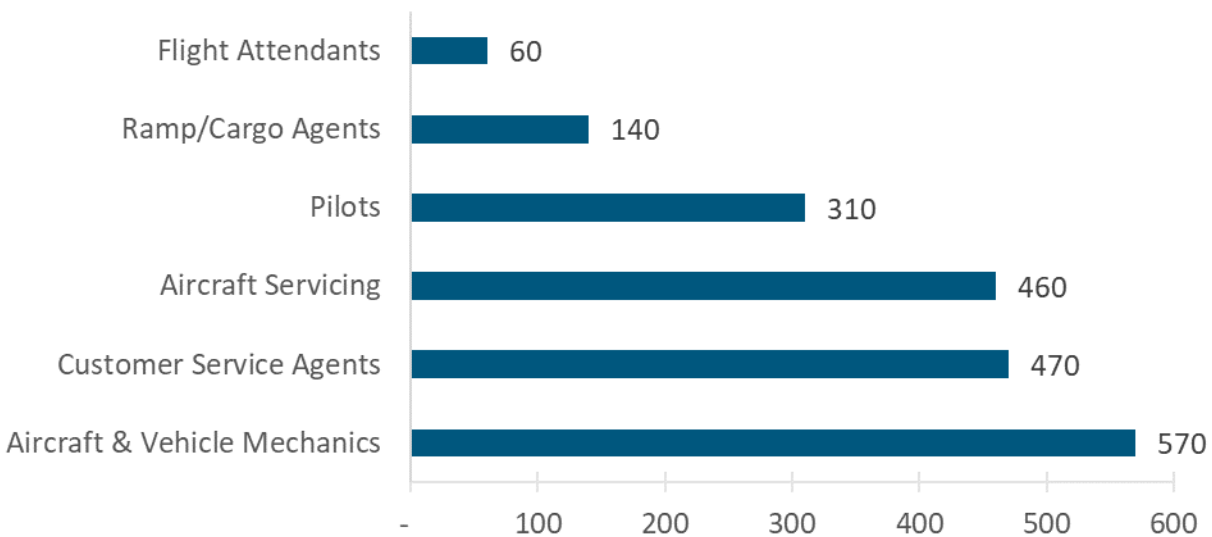
3.4 Direct Employment by Occupation

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

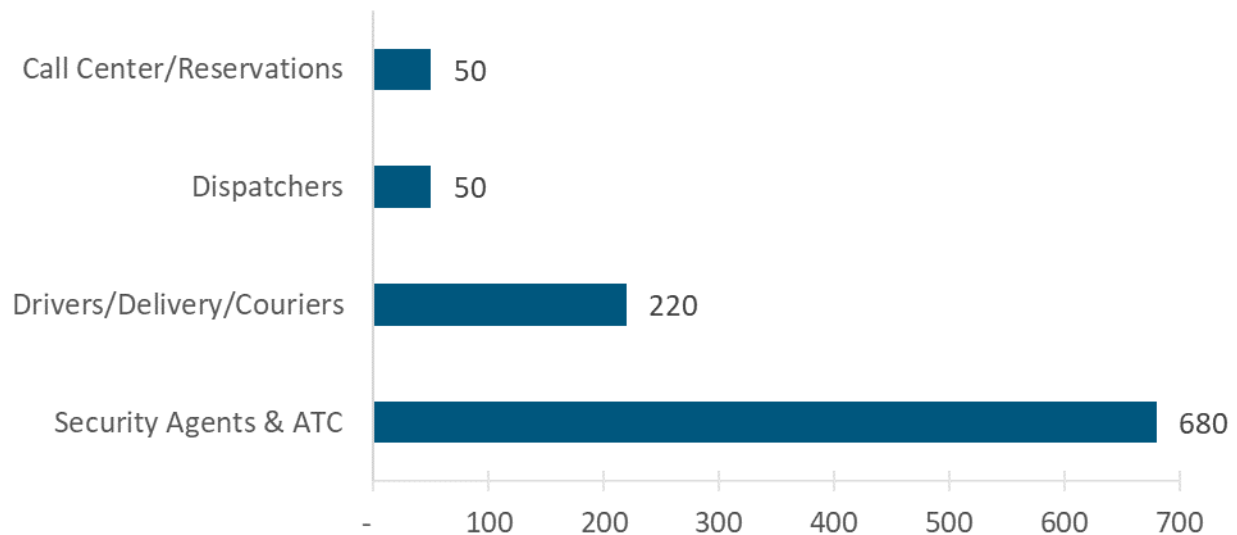


Note: This chart includes employment for surveyed jobs only.

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

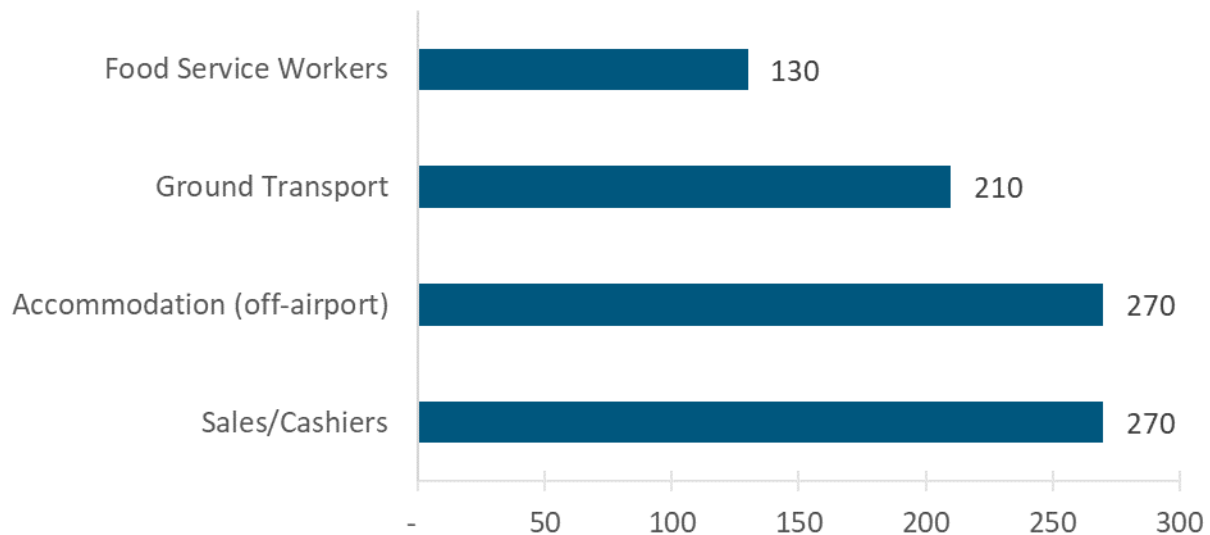


Note: This chart includes employment for surveyed jobs only.

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

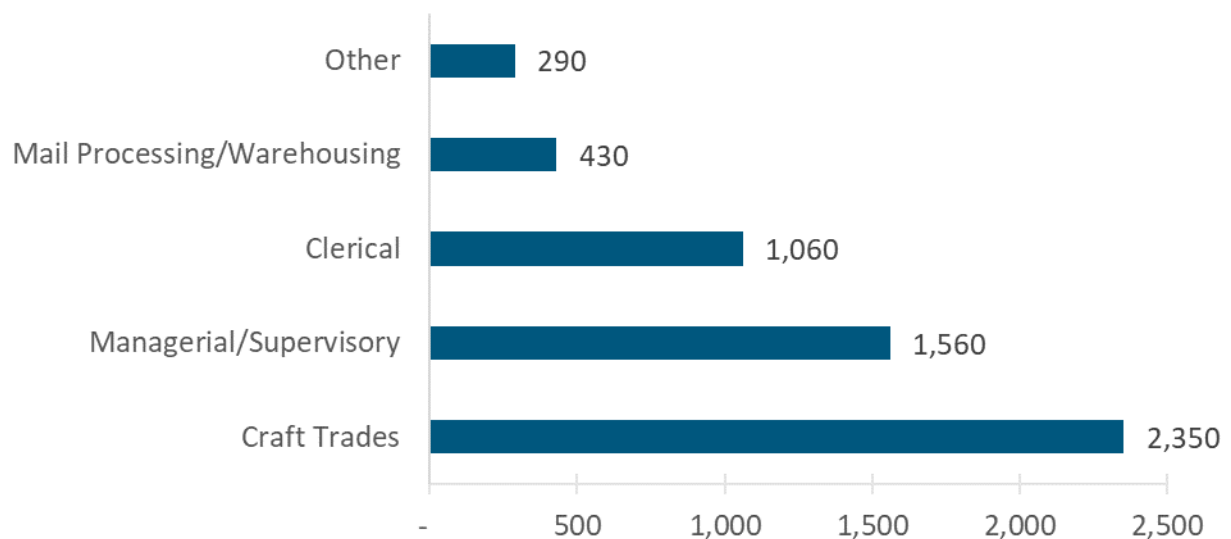


Note: This chart includes employment for surveyed jobs only.

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



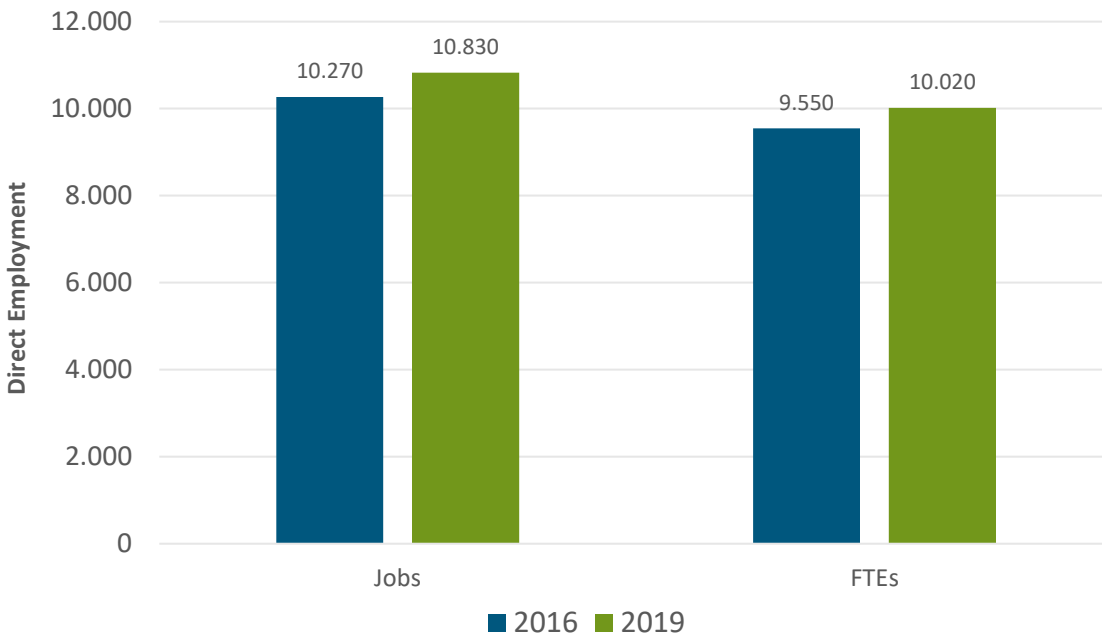
Note: This chart includes employment for surveyed jobs only.

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

	 GDP (Millions)	 Economic Output (Millions)
Impact		
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

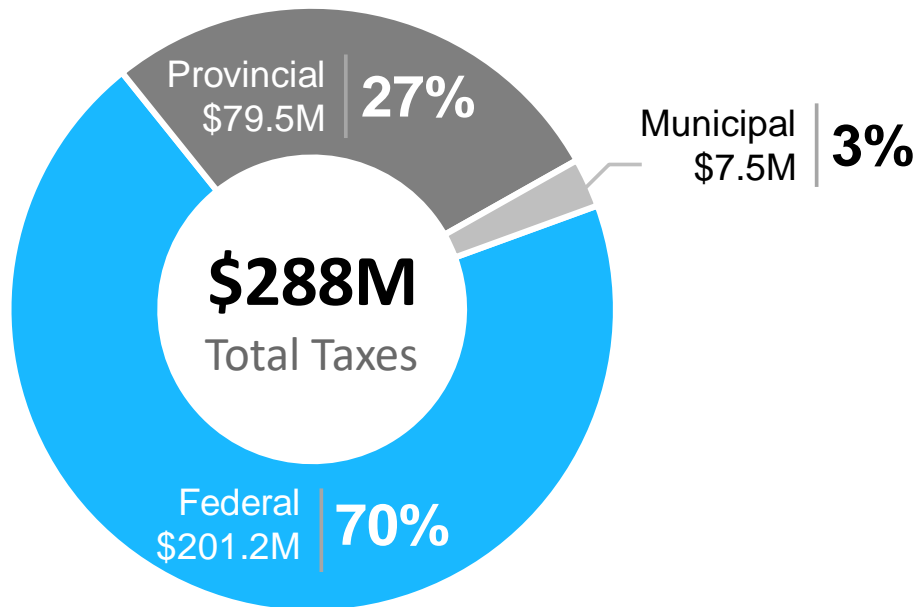
²¹ For the most part, this study **estimates** (some tax envelopes were measured directly, e.g., tenant property taxes) taxes paid from information on the passengers, employers, and employees at the airports. In a few situations, such as the corporate income tax paid by employers, an approximate method 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		Municipal		All Gov'ts Amount (\$ m)
	Tax	Amount (\$ m)	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	Total		17.3
Paid by Employers or Employees	Personal Income Tax	68.5	Personal Income Tax	53.9	Property Tax	5.3	
	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	Total	5.3	259.2
Paid by Winnipeg Airports Authority	Federal Ground Lease Payment	9.5			Property Tax	2.2	
	Total	9.5			Total	2.2	11.7
Grand Total	201.2	Grand Total	79.5	Grand Total	7.5	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

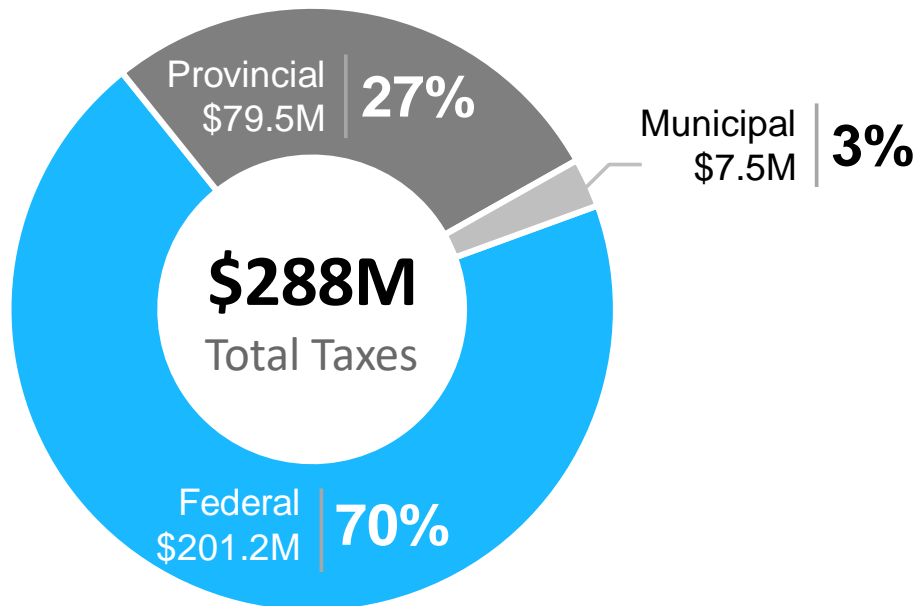
Note: Totals may not sum due to rounding.

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



WINNIPEG AIRPORTS AUTHORITY

Winnipeg James Armstrong Richardson International Airport
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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WINNIPEG
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Winnipeg James Armstrong Richardson International Airport
On-site Employment Survey

September 2019

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

- 9. Facility Operator
- 10. Freight Forwarder, Cargo Agent, etc.
- 11. Warehousing
- 12. Customs Broker
- 13. Aircraft Maintenance
- 14. Aircraft Ground Handler
- 15. Fuelling Company
- 16. Fixed Base Operator
- 17. Aircraft Parts Supplier
- 18. Aviation Related Manufacturing
- 19. Aviation Related Training
- 20. Caterer
- 21. Security Firm
- 22. Hotel
- 23. Taxi, Bus
- 24. Car Rental
- 25. Airport Retail Outlet, Restaurant, etc.
- 26. Government Agency/Department
- 27. Air Traffic Control
- 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)	



WINNIPEG AIRPORTS AUTHORITY

Winnipeg James Armstrong Richardson International Airport
On-site Employment Survey

September 2019

- 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:	



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:	
---	--



WINNIPEG AIRPORTS AUTHORITY

Winnipeg James Armstrong Richardson International Airport
On-site Employment Survey

September 2019

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	%
---	---



WINNIPEG
AIRPORTS AUTHORITY

Winnipeg James Armstrong Richardson International Airport
On-site Employment Survey

September 2019

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	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	350,000	
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	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	200,000	350,000	
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	2,140	2,935	3,659	4,643	7,864	16,681	31,623	
Carrying Charges	476	170	69	60	53	71	93	126	162	221	284	315	416	564	675	811	1,312	2,823	5,424	
Union	538	81	38	44	48	51	58	68	77	91	110	133	150	189	227	272	464	1,061	2,024	
TOTAL	2,393	544	254	330	384	507	792	1,139	1,581	1,994	2,481	3,049	3,737	5,034	6,534	8,881	15,262	32,725	62,182	
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	136,638	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	1,775	953	553	339	690	839	1,034	1,240	1,360	1,609	1,887	2,041	2,195	2,212	2,200	2,200	1,963	1,741	
ET	7,622	796	296	296	241	298	349	427	504	544	626	681	729	777	778	742	598	598	301	
Charity	34	11	16	37	58	69	89	100	110	132	137	151	178	201	212	237	336	774	1,083	
Fed. Total	27,272	14,009	12,854	12,929	12,907	13,125	13,341	13,520	13,629	14,144	14,481	14,920	14,815	15,038	15,202	15,291	15,267	15,363	15,214	
Prov. Total	24,429	11,666	10,491	10,482	10,464	10,682	10,898	11,187	11,486	11,661	12,038	12,249	12,372	12,553	12,809	12,848	12,904	12,920	16,811	
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	11.5%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	
Federal Credits	4,091	2,101	1,940	1,939	1,936	1,969	2,001	2,045	2,089	2,116	2,172	2,204	2,222	2,255	2,288	2,294	2,302	2,305	2,891	
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	1,384	1,393	1,395	1,818	
Tax Payable																				
Federal - Bracket 1	391	1,418	2,212	2,951	3,692	4,416	5,131	5,829	6,513	7,145	7,745	8,315	8,864	9,394	9,904	10,394	10,874	11,344	11,804	
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	391	1,418	2,212	2,951	3,692	4,416	5,131	5,829	6,513	7,145	7,745	8,315	8,864	9,394	9,904	10,394	10,874	11,344	11,804	
Basic Provincial	0	0	272	1,812	2,448	3,136	3,795	4,423	5,032	5,624	6,204	6,774	7,334	7,884	8,424	8,954	9,474	10,004	10,524	
Manitoba - Bracket 1	282	1,021	1,553	2,124	2,658	3,180	3,690	4,190	4,680	5,160	5,630	6,090	6,540	7,000	7,450	7,900	8,350	8,800	9,250	
Manitoba - Bracket 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
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	1,553	2,124	2,658	3,180	3,690	4,190	4,680	5,160	5,630	6,090	6,540	7,000	7,450	7,900	8,350	8,800	9,250	
Basic Provincial	0	0	460	992	1,438	2,038	2,847	3,109	3,658	4,234	4,799	5,301	5,741	6,211	6,701	7,201	7,701	8,201	8,701	
TOTAL TAX PAYABLE	0	0	721	2,884	3,285	4,474	5,877	6,894	8,082	9,356	10,713	12,153	13,614	15,094	16,594	18,094	19,594	21,094	22,594	
Average Rate of Tax	0.0%	0.0%	5.0%	10.2%	13.3%	15.2%	16.6%	17.7%	18.0%	18.5%	19.4%	20.4%	21.3%	22.0%	22.6%	23.0%	23.5%	24.0%	24.3%	
Federal	0.0%	0.0%	1.8%	5.1%	7.1%	8.3%	8.1%	8.7%	9.2%	10.2%	10.7%	11.4%	12.0%	12.2%	12.6%	12.8%	13.0%	13.2%	13.4%	
Provincial	0.0%	0.0%	3.1%	5.0%	6.2%	6.9%	7.4%	8.0%	8.4%	8.8%	9.1%	9.2%	9.6%	9.8%	10.4%	11.0%	11.6%	13.0%	10.9%	

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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