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REGION

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Mississauga

CITY OF TORONTO

# HELP WANTED 2

*A Data-Driven Approach to Workforce Development*



TORONTO  
REGION  
BOARD OF TRADE

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# INTRODUCTION

In June 2019, the Toronto Region Board of Trade, together with the Metcalf Foundation and United Way Greater Toronto, released a report titled *Help Wanted: Modernizing Employment and Skills Training Services in Ontario*.<sup>1</sup> The report made recommendations to the Government of Ontario on how its proposed transformation to service system managers (SSMs) can better match existing talent pools with in-demand jobs. At the time, Ontario was boasting historically low unemployment rates and strong economic growth.

Then came the COVID-19 pandemic, and with it shuttered businesses, over a million job losses, and a steep drop into a recession.

While the long-term impact of COVID-19 and measures to prevent its spread remain to be seen, research thus far indicates a disproportional and particularly harsh toll on already vulnerable workers. These include young people, newcomers, women and those in low-wage occupations. Evidence from past recessions shows two main trends that

Ontario should prepare for. First, short-term unemployment could transform into permanent disconnection from the labour market. Second, accelerated adoption of technology and automation could heighten workforce displacement and skills shifts.<sup>2</sup>

As widespread employment is both a marker and driver of strong economic growth, governments have an opportunity to align workforce interventions with broader economic development and recovery strategies. Without meaningful intervention from government and appropriate employment and training programs, many of the workers displaced during the pandemic may not return to their previous occupations. Many will face extended periods of unemployment, and potentially face lower future earnings.

While the guiding principles and recommendations of *Help Wanted* remain relevant, there is now an even greater impetus and new set of economic challenges we must collectively seek to address. We believe that a valuable place to start is with reliable, timely and geographically granular

labour force data and analysis that is easy to understand by both service providers and job seekers.

In this report, the Economic Blueprint Institute (EBI) — the Board's research and data arm — uses the Peel Region, one of the three pilot regions selected for the SSM transformation, as a case study to:

- Introduce a place-based analysis of the existing talent and occupations in Peel;
- Identify the top in-demand occupations that do not require a four-year degree; and,
- Propose a skills development framework that is more responsive to the changing realities of both workers and employers.

By using data for the Peel Region, it will be easier for the SSM and service providers to match local job seekers with in-demand jobs, tailoring services to support responsive and proactive labour market planning and talent development. Accessible data can inform career options and labour mobility opportunities for job seekers across the metropolitan area, especially when complemented with a further skills analysis of occupations.

## SSM TRANSFORMATION

Although timelines have been extended until January 2021, the Ontario government has moved forward with the integration and transformation of employment and social assistance services. The government has announced both the three regional pilots and new service providers taking over as the new regional SSMs<sup>3</sup>:

### WCG, part of the APM Group, in the Region of Peel.

WCG is a Canadian subsidiary of The International APM Group Pty Ltd (APM), a global human service organization based in Australia. In the last year, APM supported more than 350,000 people across 10 countries by designing and delivering employment, health and rehabilitation services.

### Consortium led by Fedcap in Hamilton-Niagara.

The consortium led by Fedcap includes two current Employment Ontario service providers (Canadian Council on Rehabilitation and Work and Operation Springboard) and two current providers of Ontario Disability Support Program Employment Supports (Corbrook and Community Living Toronto).

### Fleming College in Muskoka-Kawartha Region.

Fleming College has more than 50 years of experience delivering education, skills training and employment services to students, job seekers and employers. Each year, 3,000 job seekers access Employment Ontario services via Fleming College.

This service transformation is occurring at the same time as significant and unexpected economic disruption. The diversity in providers at the three pilots and the flexibility to deliver services in a more innovative and responsive way hold important opportunities for transformation towards more effective practices that will better respond to job seekers' and employers' needs.

<sup>1</sup> Toronto Region Board of Trade. "Help Wanted: Modernizing Employment and Skills Training Services in Ontario". June 2019.

<sup>2</sup> Alexandr Kopytov, Nikolai Roussanov, Mathieu Taschereau-Dumouchel. "Short-Run Pain, Long-Run Gain? Recessions and Technological Transformation". 2018. & Data & Society. "Why Are Good Jobs Disappearing if Robots Aren't Taking Them?". June 2020. & National Post. "Canada's near-term economic outlook brightens; joblessness a risk". July 2020.

<sup>3</sup> Government of Ontario. "Ontario Moving Ahead with the Reform of Employment Services". February 2020.



# SUMMARY OF 2019 HELP WANTED REPORT

The following six guiding principles and seven recommendations build on effective practices from Ontario and other jurisdictions. They offer an inclusive path forward for the government and the SSM's consideration as they take on this transformational system change.

The underpinning assumption is that with the right support, partnerships, flexibility and incentives, and the effective integration of employment services, there is an opportunity to provide better quality and more responsive services for job seekers, workers, and employers.

## 6 GUIDING PRINCIPLES FOR SYSTEM REFORM

- 1 Establish a “demand-driven” system**  
that aligns skills training with industry demand for talent.
- 2 Double-down on high growth sectors**  
with strong long-term employment prospects that are aligned with regional economic development planning.
- 3 Support “learning-while-earning”**  
by focusing on employer-recognized and workplace training for new entrants and incumbent workers.
- 4 Anchor program design in robust, timely, and easily accessible labour market data and analysis**
- 5 Tailor flexible services to the needs of job seekers, workers and businesses**  
to achieve quality, sustainable employment and avoid one-size-fits-all approaches that cannot adequately serve the spectrum of people looking for work, especially those facing complex barriers.
- 6 Incentivize innovation and continuous improvement**  
aligning resources with impact objectives such as employment quality, retention, economic mobility, and long-term outcomes rather than outputs.

## 7 Specific Recommendations for new SSMs

- 1 Anchor decisions based on regional labour market information.**
- 2 Develop partnerships with local industry employers.**
- 3 Provide flexible and continuous wraparound support following employment placement.**
- 4 Encourage innovative approaches to serve the most vulnerable.**
- 5 Target training resources to incumbent and mid-career workers.**
- 6 Align infrastructure and workforce investments.**
- 7 Invest in capacity-building, technical assistance and document-learning about what works.**





# THE REGION OF PEEL

The Region of Peel is made up of the three municipalities of Mississauga, Brampton, and Caledon. It neighbours the City of Toronto to the west and is home to the Toronto Pearson Airport - Canada’s second largest employment zone after downtown Toronto. Over the last decade, Peel has attracted an increasingly ethnically diverse and educated labour force. The region has a strong outlook for skills and talent as educated workers, skilled jobs and innovative companies continue to grow.

Peel had a population of 1.3 million and a labour force of more than 750,000 in 2016 when the last Statistics Canada Census was completed. That number was projected to have increased to 1.5 million residents and more than 930,000 workers by the end of 2019, according to the Region of Peel’s own assessment.<sup>4</sup> The Region’s economic outlook further noted that population growth is primarily driven by immigration, which is expected to slow down this year as a result of COVID-related restrictions.

4 Region of Peel. “Peel’s Economic Pulse – 2019 Year in Review and 2020 Outlook”. [https://www.peelregion.ca/finance/\\_media/peel-economic-pulse.pdf](https://www.peelregion.ca/finance/_media/peel-economic-pulse.pdf)

TOP 5 SECTORS IN THE REGION OF PEEL*	% OF ALL JOBS IN PEEL
Manufacturing	14.17%
Retail trade	12.32%
Transportation and warehousing	10.85%
Professional, scientific and technical services	8.11%
Wholesale trade	7.91%

TOP 5 OCCUPATIONAL CATEGORIES IN THE REGION OF PEEL*	% OF ALL JOBS IN PEEL
Sales and Service	23.45%
Business, Finance, and Administration	19.53%
Management	12.65%
Trades, Transport and Equipment Operators	12.44%
Education, law and social, community and government services	9.39%

TOP 5 JOBS IN THE REGION OF PEEL*	# OF JOBS
Retail salespersons	23,165
Material handlers	17,115
Retail and wholesale trade managers	14,815
Elementary school and kindergarten teachers	12,950
Transport truck drivers	12,845

55% of Peel residents had a post-secondary certification, diploma or degree.

### QUICK FACTS: REGION OF PEEL LABOUR FORCE CHARACTERISTICS\*

51% of Peel residents identified as **immigrants**.

55% of Peel residents had a **post-secondary certification**, diploma or degree.

46% of Peel residents were under the **age of 35**.

53% of jobs in Peel were within its **top 5 sectors**.

77% of **jobs** in Peel were in its top 5 occupational groups.

Average monthly Ontario Works caseload is **16,790**, as of March 2020.

\*Based on the 2016 Census

# LABOUR MARKET ANALYSIS

The first recommendation of the initial *Help Wanted* report stated that the new SSM’s service delivery decisions should be based on robust, timely, geographically granular, and easily accessible labour market data and trends.

However, this is easier said than done. Limited, fragmented, and outdated data has been a long-standing issue within Ontario and within Canada more broadly. Available public datasets are also often not granular enough for the local level at which SSMs will operate.

The predominant labour market sources released by Statistics Canada include the Census, released every five years, and the monthly Labour Force Survey, which provides more timely but aggregate sectoral trends at the provincial and national level, or data averaged over three-months at the CMA level. Many municipalities also conduct annual employment surveys within their jurisdiction. However, these are not coordinated across the region, with no alignment in questions or metrics to be able to compare one municipality with another. An analysis of municipal surveys by the Centre for Urban Research & Land Development concluded that because the methodologies used in these surveys were inconsistent or problematic, municipalities should “*set up a provincial or a single GTA body to oversee, conduct, and fund the employment surveys for the entire region using a single methodology.*”<sup>5</sup>

Working within the limitations of the datasets available and from previous consultations with service providers, we identified three areas that would be the most useful for the SSM:

- Place-based analysis on the jobs and employed residents in the Region of Peel;
- In-demand occupations in the wider regional labour market that require a four-year degree and those that do not; and,
- Skills-based analysis for each set of occupations.

The in-demand analysis is based on regional growth trends, occupational retirement expectations, and the implications of the COVID-19 containment measures on the labour force. The full methodology is available in Appendix B. The analysis demonstrates the available information, its limitations, and proposes opportunities to help improve the nature and frequency of data gathering.

5 Ryerson University, Centre for Urban Research & Land Development. “What Municipal Employment Surveys Tell Us About Growth in the Greater Toronto Area”. October 2016. [https://www.ryerson.ca/content/dam/cur/pdfs/Projects/CUR%20Report\\_Municipal%20Employment%20Surveys\\_2016.10.03.pdf](https://www.ryerson.ca/content/dam/cur/pdfs/Projects/CUR%20Report_Municipal%20Employment%20Surveys_2016.10.03.pdf)





# PLACE-BASED ANALYSIS OF JOBS AND EMPLOYED RESIDENTS

We begin by looking at the difference between where the employed labour force lives in Peel (referred to as **employed residents**) and where jobs are located (referred to as **jobs**). This type of analysis requires geographically granular data. Only Statistics Canada’s quinquennial census provides detailed sector and occupational data at the neighbourhood level for both the place of employment and the place of residence. Our place-based analysis uses data from the last 2016 census.

Of the three municipalities, Mississauga contains almost 70% of jobs in Peel and is a net importer of jobs (See Figure 1). That means that the number of jobs in Mississauga exceeds the number of employed residents. In contrast, employed residents in Brampton and Caledon exceed the number of jobs in the two municipalities. This indicates that a greater proportion of residents in Brampton and Caledon are likely to commute to other municipalities for work than residents in Mississauga.

Figure 2 shows the distribution of jobs across Peel Region, and highlights where employed residents in Peel live.

Further, our place-based data can be broken down by sector and occupation categories to understand the potential mismatch of the local labour force to the sector composition in Peel. For example, there are 48,140 jobs in Wholesale in Peel, but 37,490 people who live in Peel that work in the sector. Potentially, that means that more than 10,000 workers need to travel to Peel to fill the jobs in that sector. On the other hand, there are 45,055 jobs in Health Care and Social Assistance in Peel, but 52,370 Peel residents who identify as working in the sector. Potentially, that means that more than 7,000 people in this sector travel outside of Peel for work. The full breakdown of jobs and employed residents by sector and occupational groups can be found in Appendix A.

Although we cannot make the direct connection between where a particular individual lives and where they work to more accurately map out commutes, a place-based analysis of residence and jobs is necessary for better transit planning, understanding issues of housing affordability, and successful settlement for newcomers, to name a few.

FIGURE 1 – JOBS AND EMPLOYED RESIDENTS BY MUNICIPALITY

MUNICIPALITY	JOBS	JOBS %	EMPLOYED RESIDENTS	EMPLOYED RESIDENTS %
Caledon	22,625	3.72%	31,710	5.26%
City of Brampton	168,820	27.73%	252,455	41.86%
City of Mississauga	417,280	68.55%	318,870	52.88%
Peel Region	608,725	100%	603,035	100%



FIGURE 2  
Employed Residents in Peel

FIGURE 2  
Location of Jobs in Peel



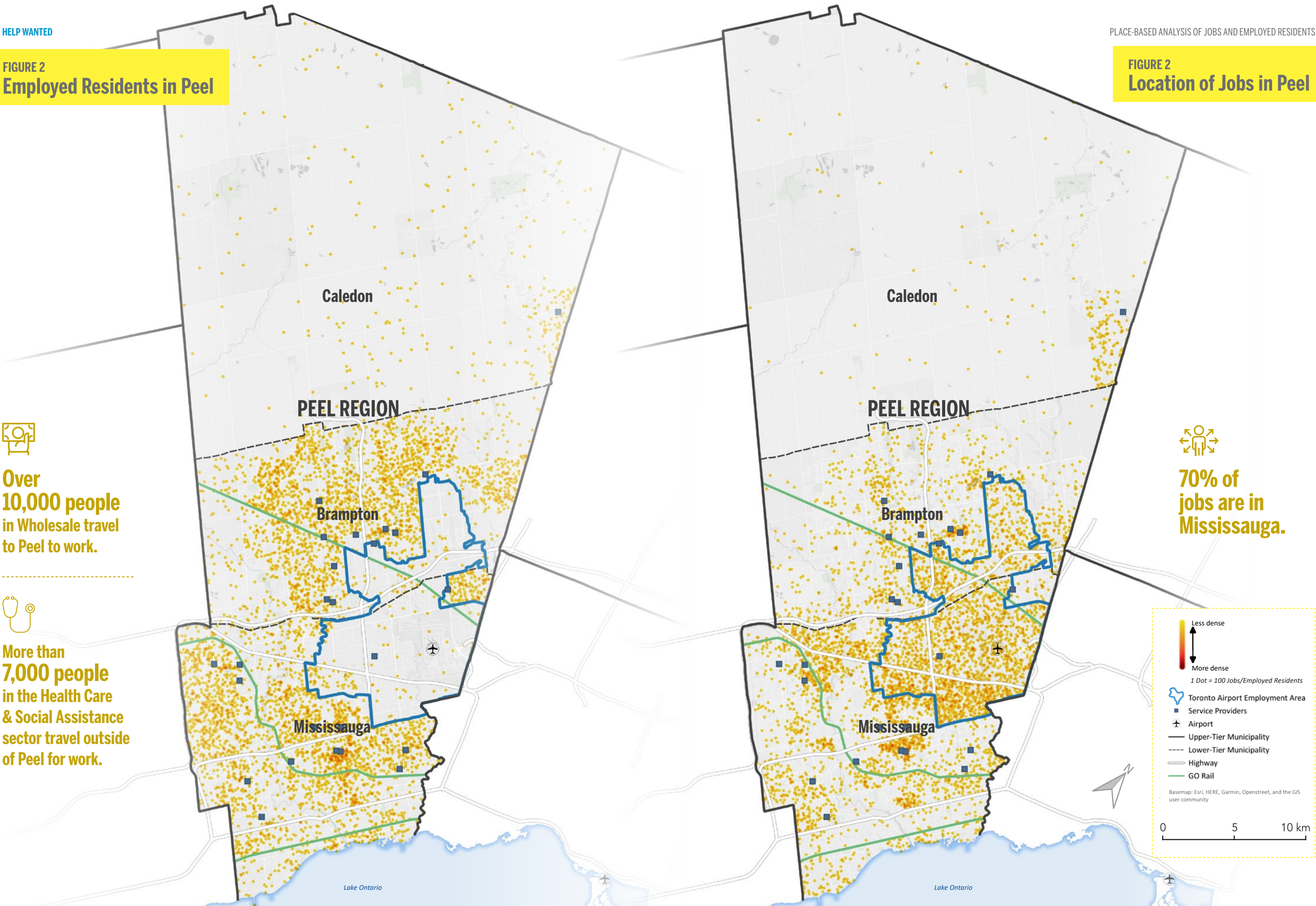
Over 10,000 people in Wholesale travel to Peel to work.



More than 7,000 people in the Health Care & Social Assistance sector travel outside of Peel for work.



70% of jobs are in Mississauga.





# IN-DEMAND OCCUPATIONS IN PEEL

To help enable the Peel SSM and regional service providers, we have identified two sets of local in-demand occupations based on growth trends: 1) those that do not require a four-year degree; and 2) those that require one, referring to a university degree at a Bachelor's level or higher.<sup>6</sup> The methodology of the analysis can be found in Appendix B.

Occupations that do not require a four-year degree are particularly important for service providers and job seekers. It means that people looking for work or looking to switch careers may be able to do so with short and minimal additional training or with training that allows them to maintain employment (such as a paid apprenticeship). For in-demand jobs that do not require a degree, a disproportionately large number fall under Sales and Services and Skilled Trades occupations.

We found that there are more than double the number of jobs within in-demand occupations that do not require a degree than those occupations that do, based on the last 2016 Census. There were 53,990 jobs in in-demand occupations that require a degree, compared to 132,980 jobs in in-demand occupations that do not. In-demand occupations without a degree made up 21.8% of total employment in Peel, compared to 8.9% for the number of jobs for in-demand occupations with a degree.

However, on average in-demand occupations that require a degree earn almost twice as much income. In 2016, the average income for the in-demand occupations without a degree was \$33,657, whereas in-demand occupations with a degree earned \$63,824. For all occupations without a degree, the average income was \$40,605, compared to an average income of \$59,794 for all occupations with a degree. This suggests that a raise in wages for the in-demand occupations that do not require a four-year degree can make them more competitive and desirable for workers.

<sup>6</sup> Employment and Social Development Canada. "National Occupational Classification Skill Level". Modified January 2020. <https://noc.esdc.gc.ca/Training/SkillLevel/664ba46e287841a68023a169dc5533be?GoCTemplateCulture=en-CA>

**On average, 19.8% of Peel workers are expected to retire by 2025.**

**Occupations in Skilled Trades have a much higher expected retirement rate, with nearly 1 in 4 workers expected to retire within the next 5 years.**

## Expected Retirements

With an aging population, there is a significant segment of the labour force that will be retiring in the next five years. Foresight of in-demand occupations that do not require a degree indicates which workers will be aged 64 years and over in 2025. Retirements are often used as a component in predicting job openings, as seen with the Canadian Occupational Projection System (COPS)<sup>7</sup> used by ESDC to predict occupational employment growth by 2028.

Our analysis found that the average percentage of expected retirement by 2025 for workers in Peel is 19.8%. This is slightly higher for occupations that do not require a degree, at 20.4%. Occupations that require a degree have a greater proportion of younger workers, translating to an average expected retirement of 16.5% by 2025. Among the top 30 occupations that do not require a degree, 11 exceed the average expected retirement percentage for occupations in this category. Notably, occupations in Skilled Trades have a much higher expected retirement rate, with nearly 1 in 4 workers expected to retire within the next 5 years.

It is important to keep in mind that the trend for increased labour force participation among aging workers is likely to delay retirement for all sectors.<sup>8</sup> In Ontario, employment has increased by 159.4% among males 55 years and older, and 267.5% among females 55 years and older between 1990 and 2019. Meanwhile, employment only grew 19.6% for males and 31.3% for females aged 15-54 years old during this time. The financial pressures that some individuals have faced due to the COVID-19 pandemic may further exacerbate this trend.

The implications of an occupation that is expected to have a higher proportion of retirements is that there would be a greater number of job openings to replace retired workers. However, retirements do not always translate in new available jobs, as certain retiring jobs are also at risk of automation in the medium-to long-term. Research shows that this is especially true for low-wage, low-skill jobs, such as those commonly found in Sales and Service occupations, and certain occupations in the Skilled Trades such as in transportation, distribution and manufacturing<sup>9</sup>.

Our in-demand list focuses on a short-term outlook, estimated to be no more than 5 years. For example, a shortage in the supply of transport truck drivers has been reported partly due to the rise of e-commerce, which has been exacerbated by the shift in consumer spending during COVID. However,

transport truck drivers have been identified as having a high probability of automation within the next 10-20 years.<sup>10</sup> Service providers and job seekers should be aware of the short and longer-term outlook for occupations.

## Impact of COVID-19 Analysis

In March 2020, the province of Ontario enacted a shutdown of non-essential businesses in response to the COVID-19 pandemic. The economic shutdown directly affected one in three jobs in Ontario<sup>11</sup>. The long-term implications of the pandemic on in-demand positions and work conditions have yet to be fully understood, but some permanent changes are expected. Notably, the prevalence of online merchants and the ability to work from home could create a significant shift in consumer demand and commuter patterns, which could realign expectations on occupational demand.

To understand which sectors and occupations were most vulnerable, we used three-month moving average employment trends in the Labour Force<sup>10</sup> for the Toronto CMA between February and June 2020. The sectors with the greatest employment losses were Wholesale and Retail Trade, Accommodation and Food Services, and Health Care and Social Assistance. While it may seem peculiar at a first glance, the decreases in Healthcare and Social Assistance employment are indicative of non-essential medical professions impacted by Ontario's emergency measures. These include laboratory technicians, dentists, and hygienists, as well as their many support staff like receptionists, administrative officers and light duty cleaners. When looking at specific occupations, the greatest employment losses were in Sales and Services, Business, Finance and Administration, and Trades, Transport and Equipment Operators.

Nearly half of job losses in Ontario were in Sales and Service occupations<sup>12</sup> with 26.6% of jobs in this occupation lost between February and May. Losses were especially prominent for sales representatives and salespersons, service support and service representatives, as well as transport and heavy equipment operators and administrative and financial supervisors. While we have seen some of those jobs recover with the gradual re-opening of the economy, longer-term trends are still uncertain. As such, we have used an asterisk in both lists of Figure 3 and 4 to indicate those in-demand occupations that could be negatively impacted.

<sup>7</sup> Employment and Social Development Canada. "Canadian Occupational Projection System (COPS)".

Modified January 2017. <http://occupations.esdc.gc.ca/sppc-cops/w.2lc.4m.2@-eng.jsp>

<sup>8</sup> Statistics Canada. "Labour Force Characteristics by Industry, Annual." <https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=1410002301>

<sup>9</sup> Statistics Canada. "Labour Force Characteristics by Industry, Annual." <https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=1410002301>

<sup>10</sup> Brookfield Institute for Innovation + Entrepreneurship. "The Talented Mr. Robot: The impact of automation on Canada's workforce". June 2016. <http://brookfieldinstitute.ca/report/the-talented-mr-robot/> and Carl Benedikt Frey & Michael Osborne. "The Future of Employment: How susceptible are jobs to computerisation?" September 2013 <https://www.oxfordmartin.ox.ac.uk/downloads/academic/future-of-employment.pdf>.

<sup>11</sup> Statistics Canada. "Employment by census metropolitan areas and occupation, three-month moving average, unadjusted for seasonality (x1,000)". <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410031301> and Statistics Canada.

"Employment by industry, three-month moving average, unadjusted for seasonality, census metropolitan areas (x1,000)".

<sup>12</sup> Statistics Canada. "Labour force characteristics by occupation, monthly, unadjusted for seasonality (x1,000)". <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410029601>



FIGURE 3  
Do Not Require a Four-Year Degree - Top 30 Occupations

RANK	OCCUPATION	EMPLOYMENT (2016)				2011-2016 Growth	AVERAGE EXPECTED RETIREMENT %	NUMBER OF WORKERS OVER 55 YEARS OLD (2016)
		Mississauga	Brampton	Caledon	Peel			
1	Material handlers*	10,035	6,475	605	17,110	3,635	19.41%	3,310
2	Transport truck drivers*	6,685	5,290	870	12,845	3,400	23.99%	2,905
3	Food counter attendants, kitchen helpers and related support occupations*	7,315	3,330	625	11,265	2,640	9.69%	1,080
4	Real estate agents and salespersons*	2,920	1,490	210	4,620	1,400	32.08%	935
5	Supervisors, supply chain, tracking and scheduling co-ordination occupations*	3,465	1,180	150	4,795	1,355	17.35%	825
6	Nurse aides, orderlies and patient service associates	2,470	1,370	155	3,990	1,355	26.38%	1,025
7	Program leaders and instructors in recreation, sport and fitness	1,615	1,265	180	3,065	960	4.48%	130
8	Janitors, caretakers and building superintendents*	3,655	1,750	270	5,675	885	34.43%	1,885
9	Air transport ramp attendants*	2,465	25	0	2,480	855	16.19%	400
10	Administrative officers*	6,700	2,340	460	9,505	840	25.74%	2,220
11	Medical administrative assistants*	905	315	25	1,240	760	26.67%	320
12	Store shelf stockers, clerks and order fillers*	4,580	2,665	255	7,500	700	15.91%	1,185
13	Labourers in food and beverage processing	2,310	2,090	130	4,520	670	26.28%	1,180
14	Automotive service technicians, truck and bus mechanics and mechanical repairers*	3,605	1,765	325	5,690	605	18.29%	1,025
15	Financial sales representatives*	2,675	545	55	3,275	600	15.96%	470
16	Security guards and related security service occupations*	4,210	840	65	5,110	580	24.38%	1,235
17	Labourers in metal fabrication	545	365	65	970	500	29.23%	285
18	Food and beverage servers*	3,165	1,185	245	4,595	485	8.03%	365
19	Cooks*	2,850	1,035	170	4,055	450	17.44%	695
20	Pursers and flight attendants*	2,185	0	10	2,185	445	10.78%	235
21	Bus drivers, subway operators and other transit operators*	1,745	995	375	3,110	435	33.12%	1,020
22	Estheticians, electrologists and related occupations*	955	595	80	1,630	420	12.14%	170
23	Chefs*	1,460	515	75	2,050	410	17.21%	345
24	Insurance agents and brokers*	2,470	520	55	3,050	390	18.73%	485
25	Labourers in rubber and plastic products manufacturing	405	285	25	715	350	20.00%	140
26	Licensed practical nurses	615	270	20	905	330	12.78%	115
27	Massage therapists	480	170	65	705	330	12.80%	80
28	Other technical occupations in therapy and assessment	320	150	0	470	300	14.13%	65
29	Technical sales specialists - wholesale trade*	3,935	805	130	4,865	290	17.28%	725
30	Specialized cleaners*	625	305	60	990	290	11.76%	110

\*Occupations within top impacted occupational categories during the COVID-19 pandemic (Sales and service, Business, finance and administration, and Trades, transport and equipment operators)

FIGURE 4  
Require a Four-Year Degree - Top 30 Occupations

RANK	OCCUPATION	EMPLOYMENT (2016)				2011-2016 Growth	AVERAGE EXPECTED RETIREMENT %	NUMBER OF WORKERS OVER 55 YEARS OLD (2016)
		Mississauga	Brampton	Caledon	Peel			
1	Other financial officers*	3,640	950	115	4,700	1,675	18.60%	720
2	Information systems analysts and consultants	7,280	2,295	110	9,690	880	12.86%	1,040
3	Professional occupations in business management consulting*	3,030	915	85	4,035	820	15.47%	495
4	Human resources professionals*	2,240	600	45	2,880	675	13.04%	350
5	Pharmacists	750	435	25	1,210	445	18.49%	220
6	General practitioners and family physicians	895	530	10	1,435	410	38.35%	535
7	Database analysts and data administrators	830	285	0	1,125	360	16.67%	165
8	Specialist physicians	550	295	0	840	330	30.30%	250
9	Post-secondary teaching and research assistants	380	135	10	525	240	2.74%	10
10	Elementary school and kindergarten teachers	6,990	5,270	690	12,950	220	11.26%	1,450
11	Financial and investment analysts*	1,705	440	70	2,215	195	10.82%	225
12	Biologists and related scientists	585	70	40	695	190	14.07%	95
13	Electrical and electronics engineers	1,965	380	50	2,395	190	24.15%	535
14	University professors and lecturers	435	45	15	485	180	25.30%	105
15	Web designers and developers	590	140	10	735	160	4.21%	20
16	Dentists	565	255	35	850	155	32.73%	270
17	Architects	240	55	0	295	145	21.95%	45
18	Nursing co-ordinators and supervisors	265	140	0	415	130	23.08%	90
19	Educational counsellors	270	145	15	430	120	22.89%	95
20	Professional occupations in advertising, marketing and public relations*	2,565	590	40	3,200	100	8.14%	230
21	Other professional engineers	135	20	10	170	85	19.35%	30
22	Mathematicians, statisticians and actuaries	295	25	0	325	80	14.75%	45
23	Urban and land use planners	260	125	15	400	60	12.00%	45
24	Chiropractors	160	75	15	255	55	20.00%	45
25	Veterinarians	145	40	35	220	50	34.88%	75
26	Allied primary health practitioners	95	60	0	155	50	26.67%	40
27	Other professional occupations in health diagnosing and treating	70	45	25	135	50	24.00%	30
28	Securities agents, investment dealers and brokers*	460	95	10	575	40	17.05%	75
29	Physiotherapists	315	210	15	535	35	10.58%	55
30	Geological engineers	85	20	15	115	20	17.39%	20

\*Occupations within top impacted occupational categories during the COVID-19 pandemic (Sales and service, Business, finance and administration, or Trades, transport and equipment operators)



# PLACE-BASED ANALYSIS FOR IN-DEMAND JOBS

Figure 5 maps out the in-demand jobs in occupations that do not require a degree and those that do. It shows there are high concentrations of in-demand occupations without a degree within the Toronto Pearson Airport employment area - a manufacturing, transportation, and warehousing hub for many businesses in the region.

- The Manufacturing sector is the largest in all three municipalities of Peel. In the Toronto CMA, the Manufacturing sector employs the most workers in Manufacturing and Utilities occupations, with almost 3 in 4 workers.
- The Transportation and Warehousing sector is the third-largest in Peel. It employs the most workers in Trades, Transportation and Equipment Operation than any other sector, with nearly a quarter of workers.
- Also of note is the concentration of in-demand jobs predominantly in Sales, Services, and Skilled Trades in Bolton, a small settlement in Caledon near the Brampton border.

In-demand occupations that require a degree concentrate in the Airport Corporate Centre to the south of the Airport and around Meadowvale, an employment area in northwest Mississauga.

- There are fewer of these jobs in Brampton than Mississauga; this could be attributed to a significantly lower number of workers in the Finance and Insurance and the Professional, Scientific and Technical Services sectors within Brampton. In 2016, Peel Region comprised 5.46% of employment in Finance and Insurance, whereas 2.51% of jobs in Brampton and 6.85% in Mississauga were in this sector.
- For Professional, Scientific and Technical Services, Brampton employed 5.23% of workers in this sector, compared to 8.11% in Peel Region and 9.38% in Mississauga.
- In-demand jobs are also limited in Caledon. Similar to occupations without a degree, the largest concentration of these jobs is in the Bolton area.

FIGURE 5  
In-demand Occupations by Jobs

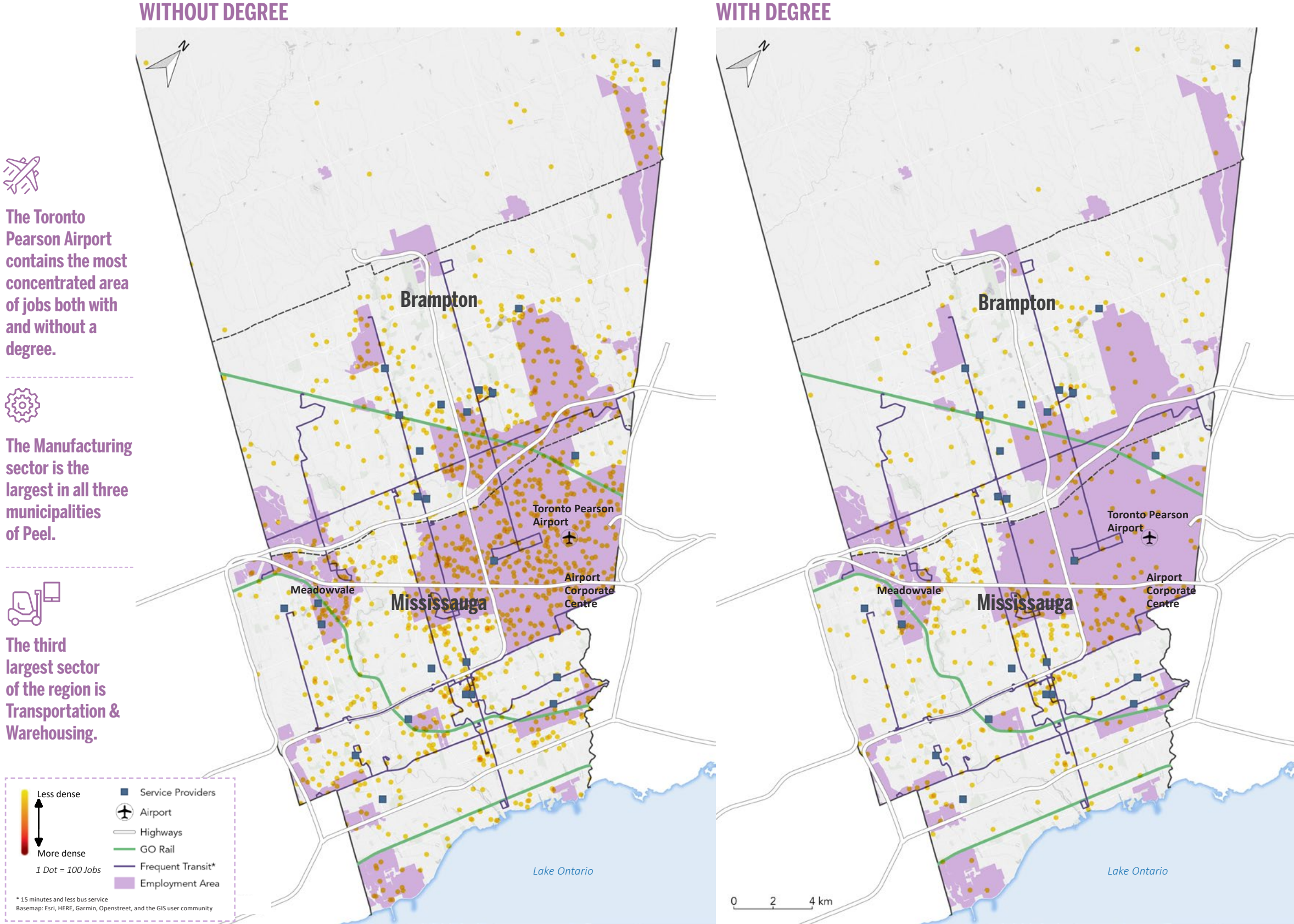
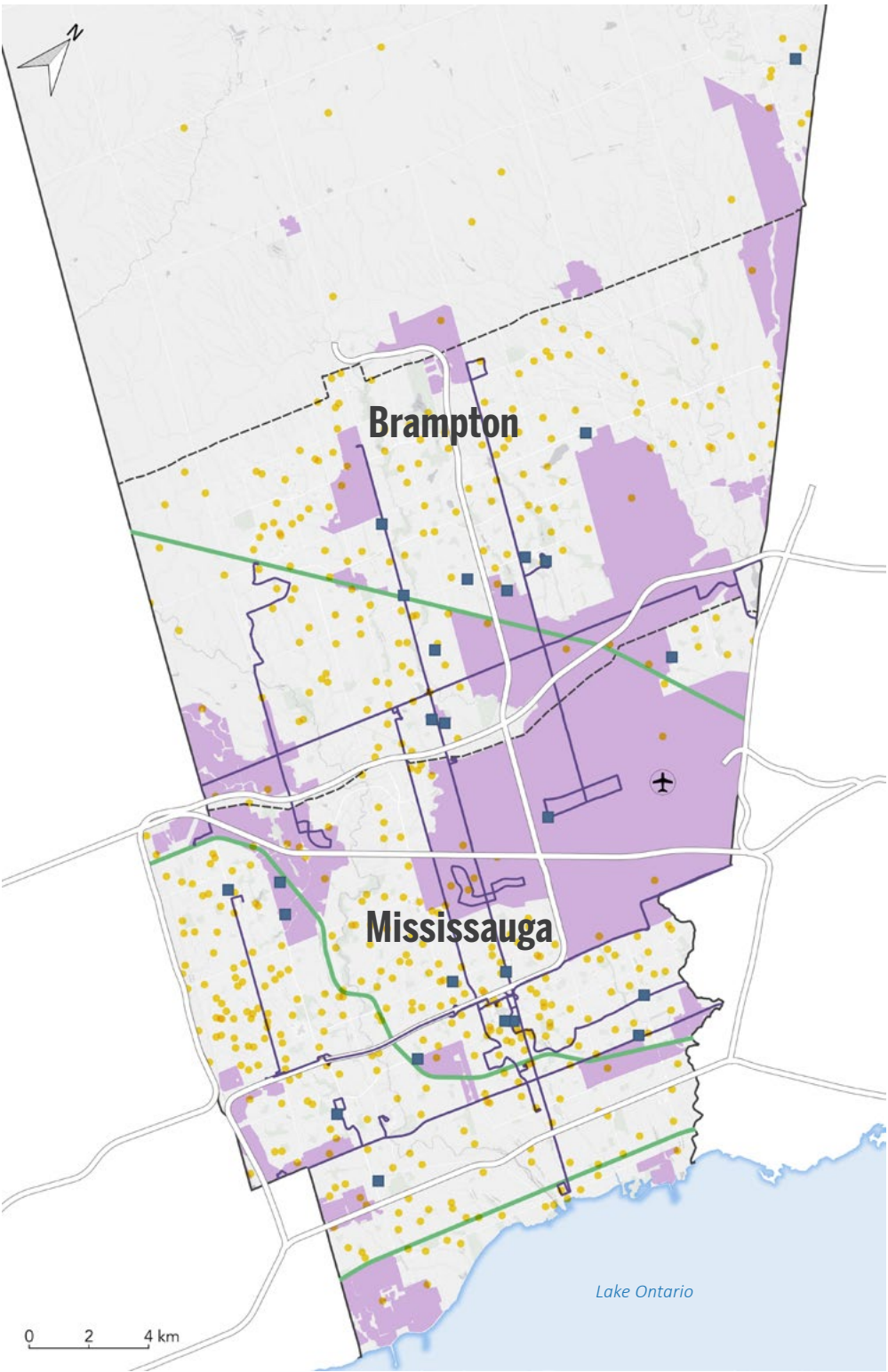


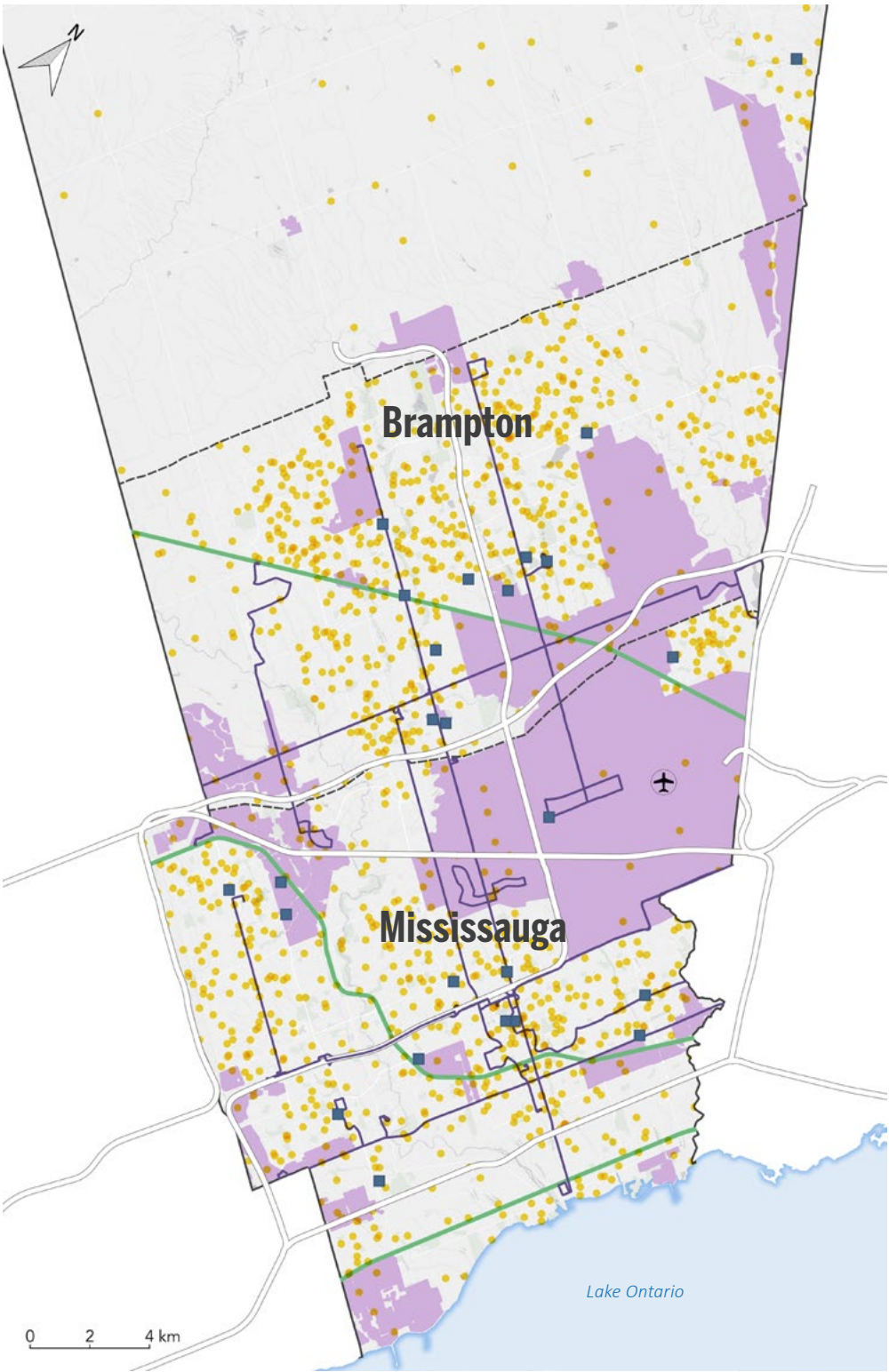


FIGURE 6  
In-demand Occupations  
by Employed Residents

WITH DEGREE



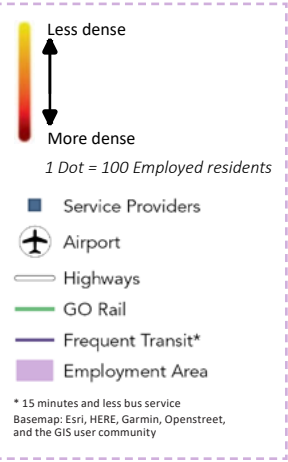
WITHOUT DEGREE



The region is a net importer of workers for in-demand occupations without a degree.



Over 90% of trips are by car to the airport employment zone.



What is lacking is a denser network of more frequent transit and other last mile mobility options to connect workers to different parts of these employment zones.

Figure 6 dives deeper to show where employed residents in Peel live for in-demand occupations for those that require and do not require a degree. Comparing Figures 5 and 6 give a sense of where jobs are relative to residents for each set of occupations.

In the last census, there were 132,890 jobs in Peel within in-demand occupations without a degree, while there were 132,560 residents in Peel who work in these occupations. A slight surplus of jobs to employed residents signifies that the region is a net importer of workers in these occupations.

As part of assessing job opportunities for job seekers in Peel Region, it is important to understand where jobs are accessible by transit. As part of our place-based analysis, we mapped the in-demand occupations by the location of the jobs and by the location of employed residents in conjunction with frequent transit. The frequent transit lines include GO Rail lines and bus lines in Mississauga (MiWay) and Brampton (Züm) that provide service during weekdays of 15 minutes or less.<sup>13</sup> This level of bus service has been identified by Metrolinx as being necessary for developing a Frequent Rapid Transit Network (FRTN) all day, every day.<sup>14</sup>

The mapping shows how the FRTN serves employment areas in Peel. What is lacking is a denser network of more frequent transit and other last mile mobility options to connect workers to different parts of these employment zones. Studies have shown that over 90% of trips are by car to the airport employment zone, where jobs in Skilled Trades are prevalent and where there is a concentration of jobs that do not require a degree.<sup>15</sup> More mobility options are needed in Peel Region to better connect the labour force to areas of economic opportunity. This includes developing a denser frequent transit bus network.

<sup>13</sup> Service levels for weekday bus service were derived from General Transit Feed Specification (GTFS)  
<sup>14</sup> Metrolinx Engage <https://www.metrolinxengage.com/en/content/glossary#FRTN>  
<sup>15</sup> This study found that 94% of trips made to the airport employment area surrounding Pearson airport is by automobile. [https://www.neptis.org/sites/default/files/amz\\_-\\_unlocking\\_the\\_potential\\_of\\_the\\_airport\\_megazone/amz\\_brief\\_neptis\\_final\\_lowresolution.pdf](https://www.neptis.org/sites/default/files/amz_-_unlocking_the_potential_of_the_airport_megazone/amz_brief_neptis_final_lowresolution.pdf)





# SKILLS ANALYSIS OF IN-DEMAND OCCUPATIONS WITHOUT A 4-YEAR DEGREE

Science and Literacy skills favoured in-demand occupations with a degree the most, while Hands-on skills favored in-demand occupations without a degree.

The initial *Help Wanted* report also highlighted the need to modernize Ontario’s employment programs to address the skills mismatch between existing talent pools and available jobs. This mismatch, exacerbated by rapidly shifting labour market conditions, is a missed opportunity for a growing number of workers who are not able to secure a sustainable career path for themselves. The current skills mismatch between existing talent and available jobs also hinders the potential for economic growth. An innovative approach that should be adopted by service providers is to quickly and effectively assess job seekers’ skill sets to match them to the most appropriate available jobs and identify any additional training needed. This can help reduce short-term unemployment which stems from people moving from one job to another, or unemployment factors that are not related to labour market dynamics, and has the potential to generate greater productivity for businesses. However, any move to a skill-based analysis should be done in coordination with industry to ensure that skills and subsequent skills training is recognized by employers. To link skills to occupation, and in particular, the top 30 in-demand occupations that do not require a

4-year degree, EBI developed an analytical framework to understand the skills make-up of occupations needed to help workers make the transition from occupations that are vulnerable to disruptions to those that are more in-demand. This approach is based largely on David Autor’s “task-based” model of work<sup>16</sup> and identifies the tasks workers perform and the skills they require. This line of research shows that skills are more meaningful indicators of workers’ ability to work in different occupations than their formal or vocational education. To conduct our place-based skills analysis of the Peel Region labour force and link it to in-demand occupations that do not require a degree, we crosswalked NOC codes to 35 unique skills in O\*NET, a database linked to U.S. Standardized Occupational Codes (SOC)<sup>17</sup>. We then reduced the 35 skills to 12 skill families. (see Appendix note for methodology and details on 12 families of skills).<sup>18</sup> Our skills analysis was based on identifying which skills families had a high correlation with each list of in-demand occupations with and without a degree. Among the in-demand occupations with a degree, Active learning, Service Orientation, and Systems Evaluation are identified as the strongest skills

SKILLS FAMILY	O*NET SKILL
HANDS-ON	Quality Control Analysis
	Equipment Selection
	Troubleshooting
	Operation Monitoring
	Repairing
	Equipment Maintenance
	Operation and Control
TECH	Programming
	Mathematics
	Systems Analysis
MANAGERIAL	Management of Financial Resources
	Management of Material Resources
INSTALLATION	Installation
SERVICE ORIENTATION	Service Orientation
SCIENCE	Science
COGNITIVE	Complex Problem Solving
	Critical Thinking
	Judgment and Decision Making

SKILLS FAMILY	O*NET SKILL
LITERACY	Reading Comprehension
	Writing
ANALYTICAL	Technology Design
	Operations Analysis
SYSTEMS EVALUATION	Systems Evaluation
ACTIVE LEARNING	Active Learning
	Active Listening
	Learning Strategies
	Speaking
	Instructing
	Monitoring
	Time Management
	Management of Personnel Resources
	Persuasion
PEOPLE-ORIENTED	Negotiation
	Coordination
	Social Perceptiveness

families. Similarly, in-demand occupations without a degree had the same top three skills families as occupations without a degree, but with Service Orientation as the strongest skill. This underlines the value of these skills across professional, technical, and labour tasks. In-demand occupations with a degree are better at ten out of twelve skills families to a significant degree, with exceptions in hands-on and installation skills. Science and Literacy skills favoured in-demand occupations with a degree the most, while Hands-on skills favored in-demand occupations without a degree. Given the strength of Service Orientation skills and the unique capacity of Hands-on skills within in-demand occupations without a degree, a further analysis into these skills is explored. Service Orientation skills are defined as having an ability in “actively looking

for ways to help people.”<sup>19</sup> Hands-on skills are a subset of Technical skills, which are defined as “developed capacities used to design, set-up, operate, and correct malfunctions of machines or technological systems”.<sup>20</sup> This includes skills such as Equipment Maintenance and Selection, Repairing, and Quality Control Analysis, among others. Based on the scores in Hands-on and Service Orientation skills for in-demand occupations without a degree in Figure 8, we mapped the weighted strength of occupations for each skill for employed residents in Peel neighbourhoods in Figure 9. Visualizing the location of employed residents with valuable skills for in-demand occupations that do not require a degree can inform service providers of the talent pool that exists in Peel and the supply of residents with these skills.

16 David Autor and Anna Salomons. “New Frontiers: The Evolving Content and Geography of New Work in the 20th Century”. April 2019. <https://stuff.mit.edu/people/dautor/Autor-Salomons-NewFrontiers.pdf>  
17 Occupational Information Network. “O\*NET Data descriptors”. <https://www.onetonline.org/find/descriptor/browse/Skills/>  
18 The Labour Market Information Council (LMIC). LMIC is currently collaborating with Employment and Social Development Canada and Statistics Canada to develop a new method of mapping U.S. Standardized Occupational Codes (SOC) to Canadian National Occupational Codes (NOC) occupations, taking into account specific challenges identified with existing concordances. This would allow for further analysis of talent using Occupational Information Network (O\*NET) data as it relates to Canada’s workforce, given that O\*NET is originally based on U.S. SOC occupations.

19 Occupational Information Network. “Service orientation skills”. <https://www.onetonline.org/find/descriptor/result/2.8.1.f>  
20 Occupational Information Network. “Technical skills”. <https://www.onetonline.org/find/descriptor/browse/Skills/2.8.3/>



Our place-based analysis of where skilled residents are located shows that Brampton contains the highest concentration of Hands-on skills in Peel. Mississauga has a moderate concentration of residents with Hands-on skills, whereas there is a limited number in Caledon.

The residents directly north of Toronto Pearson Airport are especially adept with Hands-on skills. Compared to 19.5% of residents working in Skilled Trades in Peel in 2016, Brampton had 25.9% of total residents in Skilled Trades occupations, translating to over 65,000 workers.

Looking at Service Orientation skills, Mississauga has the highest concentration of residents in occupations that require this skill in Peel. Occupations that require Service Orientation skills are present in Brampton, but less so in Caledon (except for Bolton), which has the highest concentration of residents with this skill in Caledon. This could be attributed to the high concentration of residents in Retail trade and Accommodation and food services.

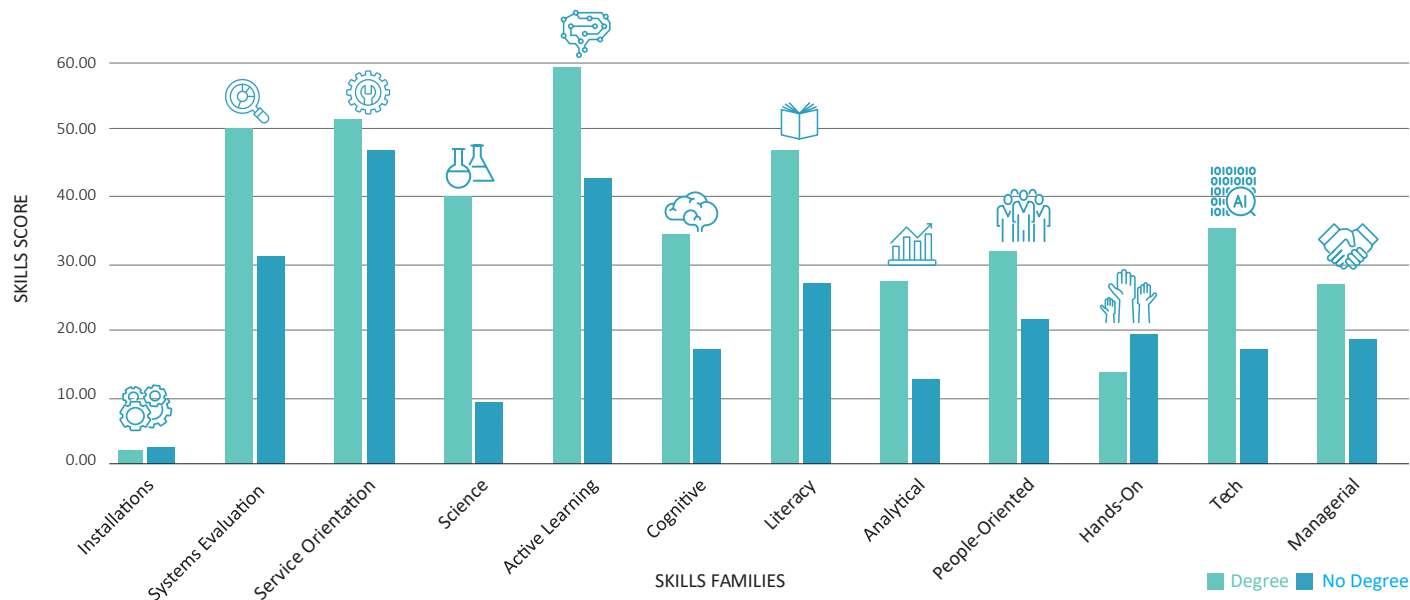
By analyzing the labour force by skills rather than simply education or occupation, service providers can improve their ability to match job seekers to employment opportunities in a world where the job market is in flux.

The O\*NET database identifies 35 skills which could be linked to specific U.S. Standard Occupational Classification (SOC) codes. The definitions of these skills are assessed based on two key measures:

- Importance (how relevant one skill is to an occupation)
- Level (how proficient an occupation is in one skill)

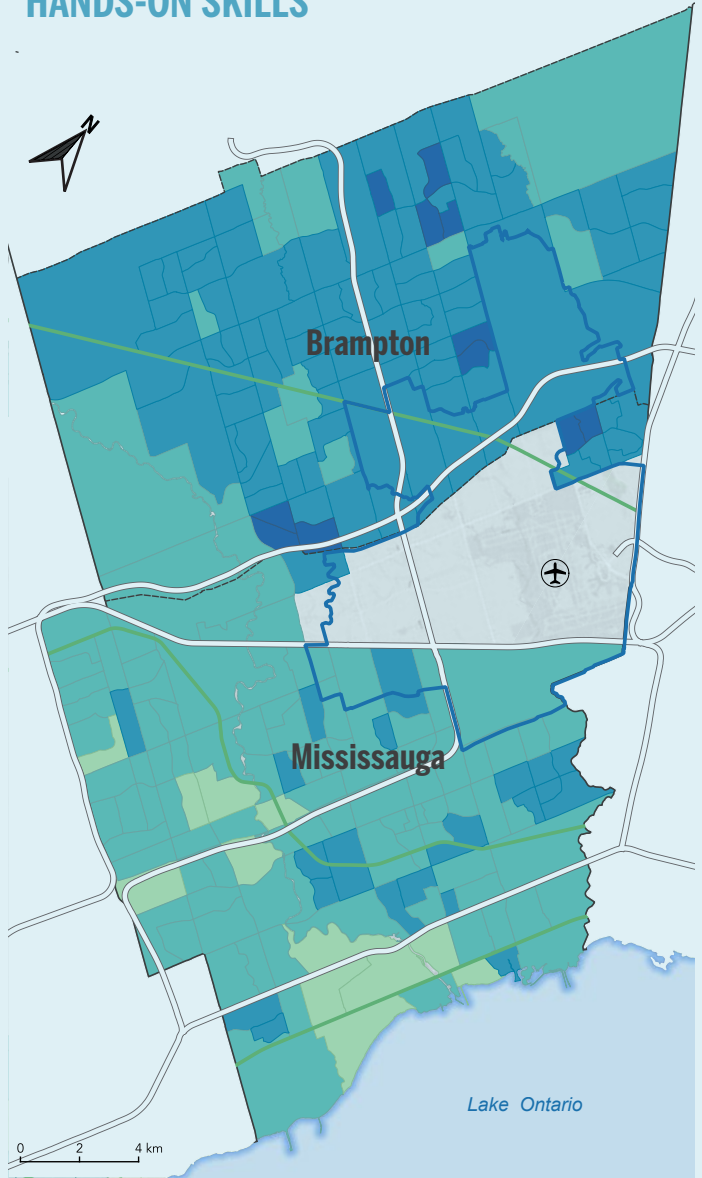
These two measures can be combined into one rating for standardized scores for each skill in each occupation. Using the Brookfield crosswalk<sup>24</sup>, SOC occupations in O\*NET were translated to Canadian NOCs. To deal with a NOC being made up of multiple SOC, the standardized skill scores were averaged out across those multiple SOC. The standardized skills scores for each occupation were then combined with factor scores (the relevance of each skill to a family) to determine scores for families. As shown, the result is a skills family score for each set of in-demand NOC occupations.

**FIGURE 8**  
**Skills Family Scores for In-demand Occupations, by Education Status**

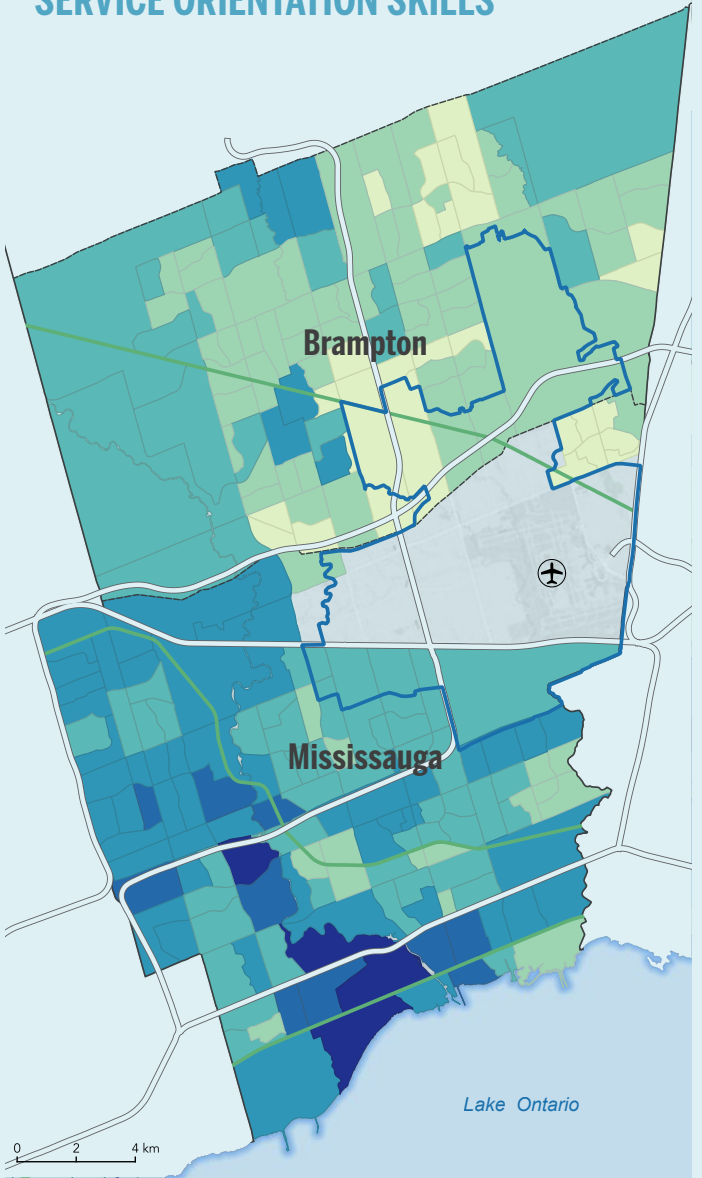


**FIGURE 9**  
**Skills Concentration map, Hands-On and Service Orientation skills by Employed Residents**

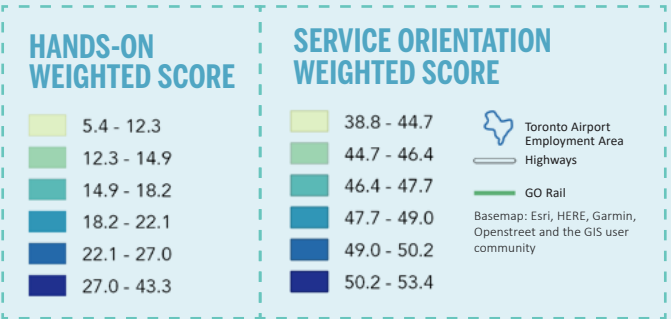
**HANDS-ON SKILLS**



**SERVICE ORIENTATION SKILLS**



**Brampton had 25.9% of total residents in Skilled Trades occupations, translating to over 65,000 workers.**



**Mississauga has the highest concentration of residents in service orientation skills.**



# RECOMMENDATIONS

The more timely, reliable, and geographically granular data we have, the stronger future analyses of labour market and industry trends will be. The three recommendations below can help improve data generation in the short and medium-term.



## #1

### Standardize annual municipal employment surveys

It is time to standardize the annual municipal survey and ensure that a common methodology is used - including sample size, mode, timing, output format, and questions - that is consistent across the region, and that the results of each survey are made publicly available on government websites. This will ensure robust, local, and timely data in between the major Census periods.

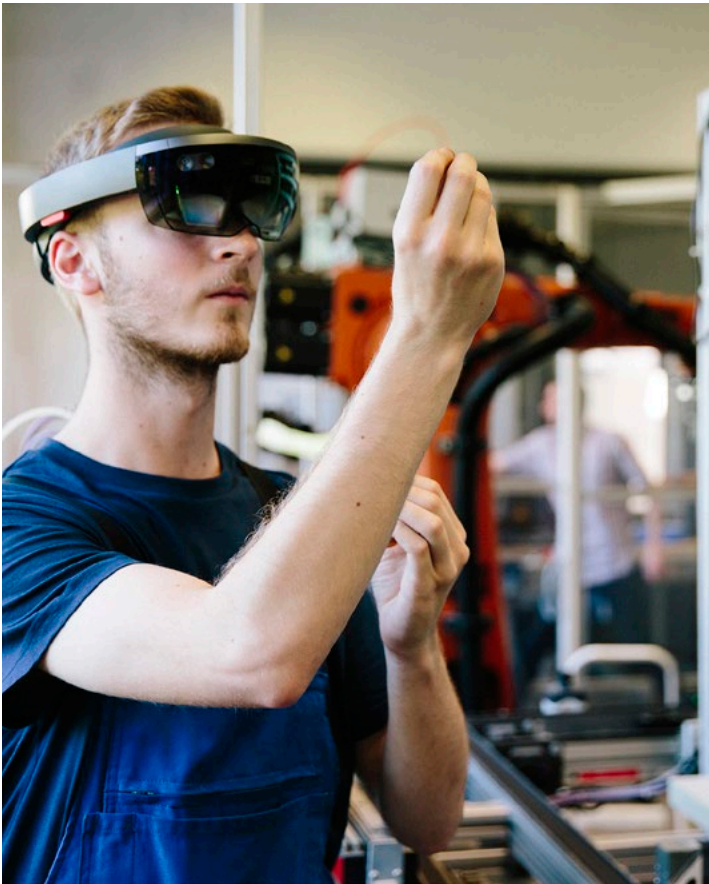
Ultimately, there should be a single provincial standard for all municipal surveys, designed in consultation with municipalities. Through regional partnerships, the province should ensure that quality data is available across Ontario and incentivize innovation regarding the collection and use of data to better facilitate workforce planning, outcomes and labour mobility across regions.

## #2

### Increase the robustness of Statistics Canada's monthly Labour Force Survey

The federal government should invest in expanding the monthly Labour Force Survey so that more granular employment change data can be made available at the Census Metropolitan Area (CMA) level. Currently, job numbers on a month-to-month basis are only available for three CMAs (Toronto, Montreal and Vancouver). But even these three CMAs do not have a sample size large enough to break down employment by sectors and use three month-rolling averages in its place like other CMAs. This work should be linked to Statistics Canada's Urban Data Centres Pilot. This pilot seeks to design and evaluate acquisition and dissemination of custom data / services to large cities and urban regions. The aim is to advance urban and regional planning with an increasing focus on data and analysis for "cities as units of observation."<sup>21</sup> The work should be accelerated as governments move into economic recovery as a result of the COVID-19 pandemic.

21. Statistics Canada. "Urban Data Centres Pilot-test". November 2019.



## #3

### Focus on skills data collection

Skills mapping can be a useful tool for service providers to better support job seekers and respond to industry demand for talent. The availability of national and regional skills-based datasets, rising trends in skills within in-demand occupations can also help students and graduates determine which skills are necessary in preparation for the workforce. This underscores the importance of current collaborations by institutions such as the Labour Market Information Council (LMIC), Employment and Social Development Canada, and Statistics Canada. This would allow for further analysis of talent using O\*NET data, with the application to Canada's workforce.



Appendix A  
NAICS employment, Jobs

NAICS SECTOR	EMPLOYMENT (2016)			
	Caledon	Brampton	Mississauga	Peel
Accommodation and food services	1,395	8,710	22,915	33,020
Administrative and support, waste management and remediation services	1,095	6,800	20,310	28,205
Agriculture, forestry, fishing and hunting	600	515	600	1,715
Arts, entertainment and recreation	620	1,530	3,590	5,740
Construction	2,105	5,490	13,270	20,865
Educational services	1,770	14,225	22,150	38,145
Finance and insurance	380	4,245	28,595	33,220
Health care and social assistance	1,270	14,535	29,250	45,055
Information and cultural industries	215	5,160	11,690	17,065
Management of companies and enterprises	15	605	1,555	2,175
Manufacturing	4,180	29,160	52,930	86,270
Mining, quarrying, and oil and gas extraction	95	65	455	615
Other services (except public administration)	855	6,095	14,730	21,680
Professional, scientific and technical services	1,430	8,825	39,145	49,400
Public administration	700	8,895	11,550	21,145
Real estate and rental and leasing	495	3,285	8,915	12,695
Retail trade	2,405	25,875	46,730	75,010
Transportation and warehousing	2,125	15,215	48,745	66,085
Utilities	35	495	2,075	2,605
Wholesale trade	950	9,065	38,125	48,140
Grand Total	22,735	168,790	417,325	608,850

NAICS employment, Employed Residents

NAICS SECTOR	EMPLOYMENT (2016)			
	Caledon	Brampton	Mississauga	Peel
Accommodation and food services	1,745	14,430	20,315	36,490
Administrative and support, waste management and remediation services	1,305	12,480	13,965	27,750
Agriculture, forestry, fishing and hunting	525	515	705	1,745
Arts, entertainment and recreation	675	2,660	4,270	7,605
Construction	2,270	8,305	9,920	20,495
Educational services	2,770	13,205	20,420	36,395
Finance and insurance	1,520	15,175	27,205	43,900
Health care and social assistance	2,310	21,310	28,750	52,370
Information and cultural industries	650	5,580	9,085	15,315
Management of companies and enterprises	130	515	1,050	1,695
Manufacturing	3,945	42,140	36,945	83,030
Mining, quarrying, and oil and gas extraction	50	185	365	600
Other services (except public administration)	1,315	9,280	12,720	23,315
Professional, scientific and technical services	2,375	16,915	32,835	52,125
Public administration	1,760	9,090	10,850	21,700
Real estate and rental and leasing	585	4,955	7,500	13,040
Retail trade	3,750	31,585	40,065	75,400
Transportation and warehousing	2,010	28,010	19,870	49,890
Utilities	115	780	1,740	2,635
Wholesale trade	1,890	15,335	20,265	37,490
Total	31,695	252,450	318,840	602,985

Appendix B

In-demand jobs selection

Using the Labour Force Survey<sup>22</sup> from Statistics Canada, 40 2-digit NOC occupations are narrowed down to those growing in the Toronto CMA between 2015-2019. This reduces the list to 29 2-digit occupations, or 289 4-digit occupations (from a full list of 500). Taking the remaining 289 4-digit occupations, the list is narrowed down to occupations in Peel Region that displayed growth between the 2011 and 2016 Censuses<sup>23,24</sup>. The employment data is taken as Place of Work (referred to as jobs in the analysis) as opposed to Place of Residence (referred to as employed residents in the analysis), for Total Place of Work designation. The determination for the top 30 occupations is based on ranking occupations with the largest amounts of employment growth. These criteria is used for both subsets of in-demand occupations with and without a 4-year degree.

We identified high-level occupational groups based on 1-digit NOCs, which show broader groupings such as Business, Finance and Administration, Sales and Service, and Skilled Trades (a grouping of Trades, Transport, and Equipment Operators, Natural Resources and Agriculture, and Occupations in Manufacturing and Utilities).

In the 89 occupations that require a degree, there are no jobs in Sales and service occupations or Skilled Trades that require a degree, according to the standard NOC definition. From the top 30 occupations identified, the majority of the growing jobs are in Natural and Applied Sciences (i.e. Information Systems Analysts, Database Analysts, and Data Administrators) and Health (i.e. Pharmacists, General Practitioners and Family Physicians). However, Business, Finance, and Administration jobs dominate the top 4 occupations. In the 363 occupations that do not require a degree, almost half of the occupations are in Skilled Trades. Despite the large number of Skilled Trades occupations, only 28.6% of the total employment in Peel worked in Skilled Trades in 2016. From the top 30 occupations identified, Sales and Service and Skilled Trades occupations are the most frequent.

Skills families

The Economic Blueprint Institute (EBI), like many other data and research groups in Canada has been working on analyzing the crosswalk between O\*NET-SOC skills and NOC codes. O\*NET defines 35 skills. Each occupation has a level rating, and an importance rating for each skill. These two measures can be standardized into one rating for standardized scores. EBI’s work was validated by Brookfield Institute for Innovation + Entrepreneurship, who also developed a concordance file<sup>25</sup> that was then used by EBI. Further EBI then used factor and manual analysis to group the skills together into skills families for the purpose of analysis.

The Level and Importance scales each has a different range of possible scores. Ratings on Level are collected on a 0-7 scale, and ratings on Importance are collected on a 1-5 scale. To make reports generated by O\*NET more intuitively understandable to users, descriptor average ratings are standardized to a scale ranging from 0 to 100. The equation for conversion of original ratings to standardized scores is:

S = ( (O - L) / (H - L) ) \* 100

where S is the standardized score, O is the original rating score on one of the three scales, L is the lowest possible score on the rating scale used, and H is the highest possible score on the rating scale used. For example, an original Importance rating score of 3 converts to a standardized score of 50 (50 = [ 3 - 1] / [5 - 1] ] \* 100). In another example, an original Level rating score of 5 converts to a standardized score of 71 (71 = [ 5 - 0] / [7 - 0] ] \* 100).

EBI standardized these measures to be out of 100. The number of skills is reduced by employing a method called Factor Analysis. It groups variables (skills, in this case) together. This is useful as some skills correlate a lot with each other. It is run on the initial O\*NET data (not linked to NOC). Based on the data, the recommended number of factors is 5. This results in 4 different factors where at least one skill loads with a correlation coefficient of more than |0.7| (correlation matrix). The fifth factor only has coefficients below the threshold. The first four groups are determined by the factor analysis. The rest are assigned manually.

Every NOC in the Brookfield conversion file now also has a rating for each of these skills (or skill families). As there are NOCs that are repeated, it means they are made up of multiple O\*NET codes. To address this, a group by is performed, grouping by occupation, and obtaining its average rating for a skill. Every occupation now has a rating for each of these 12 skill families. This creates the final table that was used for this analysis. Every occupation has now a rating for each of these 12 skill families.

22 Statistics Canada. "Employment by census metropolitan areas and occupation, annual (x1000)".  
23 Statistics Canada. "Census Profile, 2011 Census". <https://www12.statcan.gc.ca/census-recensement/2011/dp-pd/prof/search-recherche/lst/page.cfm?Lang=E&TABID=1&G=1&Geo1=PR&Code1=01&Geo2=PR&Code2=01&GEOCODE=35>  
24 Statistics Canada. "Census Profile, 2016 Census". <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/search-recherche/lst/results-resultats.cfm?Lang=E&TABID=1&G=1&Geo1=&Code1=&Geo2=&Code2=&GEOCODE=35&type=0>  
25 Brookfield Institute for Innovation + Entrepreneurship. "NOC-O\*NET Crosswalk". May 2018. [https://github.com/BrookfieldIIE/NOC\\_ONet\\_Crosswalk/blob/master/onetnoc.csv](https://github.com/BrookfieldIIE/NOC_ONet_Crosswalk/blob/master/onetnoc.csv)



Skills Scores

A two-sample t-test (unpaired, unequal variance) is performed to see whether in-demand workers with a degree are better at a given skill than in-demand workers who do not. For each skill, a t-test is performed, unequal variance is assumed, with 0.05 for alpha. This means that every p-value of each test (one-tailed), if it is over 0.05 then it is accepted that there is no difference between the two groups for a given skill.

Our sample size is 30 jobs in each group. However, O\*NET surveyed around 8 people for each occupation. This means that the true sample size is greater than 30 in each group. The assumptions are the following:

- The data follows a normal distribution.
- The samples are independent.
- The dependent variable (skills score) is continuous (i.e. interval or ratio level).
- The independent variable (education, degree or no degree) is categorical (i.e. two or more groups).
- In cases that have values on both the dependent and independent variables, every skill is measured across both groups.
- The samples/groups are independent (i.e. independence of observations); this is a fair assumption given O\*NET surveyed different workers for different occupations.
- There is no relationship between the subjects in each sample. This means that:
  - Subjects in the first group cannot also be in the second group.
  - No subject in either group can influence subjects in the other group.
  - No group can influence the other group.
  - Violation of this assumption will yield an inaccurate p-value.
- The data is a random sample from the population.
- There is a normal distribution (approximately) of the dependent variable for each group; this is not the case for some skills, especially installation, which is heavily skewed to the right.
- Non-normal population distributions, especially those that are thick-tailed or heavily skewed, considerably reduce the power of the test.
- Among moderate or large samples, a violation of normality may still yield accurate-p values.
- There is non-homogeneity of variances (i.e., variances approximately equal across groups).



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