CBRE RESEARCH

2017 SCORING CANADIAN TECH TALENT



Ranking Canadian cities on advantages and appeal to tech workers and employers





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Scoring Canadian Tech Talent is a comprehensive analysis of labour market conditions, cost and quality for highly-skilled tech workers. 10 Canadian cities were ranked according to their competitive advantages and appeal to tech-talent workers and tech employers. This study also provides insight into the quality of tech talent, and how their growth patterns are impacting cities and real estate markets across Canada.

○ 4 WHAT IS TECH TALENT AND WHY IS IT IMPORTANT?

Tech talent is a group of highly-skilled workers in more than 16 technology-oriented occupations driving innovation across industry sectors.

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The tech talent employment base and growth rates are the best and most easily quantified indicator of labour pool momentum and patterns across markets. Quality of labour is also a critical draw for employers.

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Tech talent markets are characterized by high concentrations of university-educated workers and major universities producing tech graduates.

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Local market profiles including statistics, demographics and leasing indicators that highlight aspects of tech talent activity and attractiveness in cities across Canada.

WHAT IS TECH TALENT AND WHY IS IT IMPORTANT?

5%

Percentage of total

Canadian workforce.

workers over the past

Technology has become integrated into nearly everything we do. A growing number of devices and software form the ever expanding internet of things, which depends upon highly skilled tech workers to create and enable this evolving culture.

The tech sector is changing the way that we interact, influencing the way we live and shaping how we work.

As companies from all industries expand their technological capabilities, they are fueling innovation within non-traditional tech sectors, increasing productivity and strengthening the national economy. Prime examples of this include agricultural technology in Winnipeg and marine bio technology in Halifax, which highlight the breadth of technology applications in the Canadian marketplace.

Starting with a combination of 16 occupational codes, our definition of tech talent includes the four groupings shown in Figure 1: computer support and database

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systems workers, technology and engineering, software developers and programmers, and

computer systems managers. These jobs are highly concentrated within the high-tech industry, but span a broad range of companies across various sectors of the economy. Using this definition, a software developer who works for a logistics company is

captured in our analysis.

Tech talent comprises 776,000 jobs or 5.1% of the total Canadian workforce. This relatively small labour force has an outsized impact on real estate markets and the economy. The number of tech talent workers has increased 21.7% from 2011 to 2016, adding more than 130,000 jobs to the Canadian economy. In turn, tech firms have been one of the largest drivers of office leasing activity in the Canadian real estate market. Tech companies account for 30.0% of current office demand as of Q3 2017.

Landlords are competing for tech tenants and are most successful when leasing existing character-filled, brick and beam buildings. As supply dwindles, landlords are increasingly defixturing office towers to fashion desirable office space in

amenity-filled neighbourhoods.

2017 SCORING CANADIAN TECH TALENT

CBRE Research

FIGURE 1: TECH TALENT LABOUR POOL BY OCCUPATION GROUP



28.4% TECHNOLOGY & ENGINEERING**

25.4%

SOFTWARE

DEVELOPERS &

PROGRAMMERS**

8.9% COMPUTER & INFORMATIONAL SYSTEMS MANAGERS

- Including: Information systems analysts, consultants and testing technicians; database analysts and administrators; and user support technicians
- ** Including: Mechanical, aerospace, computer, electrical/electronics and other professional engineers; mechanical engineering, electrical/electronics engineering and computer network technologists/technicians
- ***Including: Software engineers and designers; computer programmers and interactive media developers; web designers and developers

Source: Statistics Canada LFS (NOCs); CBRE Research, June 2017.



WHICH ARE THE TOP-RANKED TECH TALENT MARKETS?

CBRE Research analyzed 10 of Canada's largest cities to create a scorecard which ranks their tech talent offerings. The scorecard uses 14 metrics to assess each market's depth, vitality and attractiveness to tech employers and potential employees.

In order to identify specific strengths and variations between cities, metrics have been categorized into four thematic buckets that reflect the key factors in tech talent decision making: Tech Talent Employment, Education, High-Tech Clustering and Cost Competitiveness.

To generate an overall score, the metrics within each thematic bucket have been weighted by relative importance to companies seeking tech talent. For example, tech talent concentration metrics, including the percentage of total employment within a market that tech represents, are more heavily weighted as they signify clustering of tech workers. Additionally, tech labour costs have a higher weighting than office rents because companies allocate more capital to labour than to real estate. Overall, the top three Canadian tech talent markets in 2017 were Toronto, Ottawa and Vancouver, respectively. These locations possess the strongest combination of attributes that the technology sector requires to flourish including, most importantly, a high concentration of tech employment.

Comparing the 2017 market rankings with the 2016 results reveals changing fortunes as cities and landlords hone their efforts to appeal to tech employers. Ottawa rose to the number two spot as its concentration of tech workers and growing number of tech employees over the last year propelled it up the rankings and pushed Vancouver into third. Waterloo Region's explosive growth as an internationally respected start-up hub saw it climb three places to fifth overall.

These markets round out the top five Canadian tech talent cities and offer a range of technology applications, including gaming and media production in Vancouver and Montreal, and software and cybersecurity in Waterloo Region. Just as the types of employers varies by market, cities offer different drawing cards to tech companies and employers.

FIGURE 2: OVERALL 2017 RANKING



Source: Statistics Canada; CMHC; Environics Analytics; CBRE Econometric Advisors; CBRE Labor Analytics; CBRE Research, 2017.



TECH TALENT EMPLOYMENT



Tech labour concentration is an important indicator of the a city's current labour market focus as well as its potential for tech growth. Concentration can be viewed in two ways:

- The proportion of Canada's tech jobs located in each city.
- The significance of tech employment compared to a city's overall labour pool.

No matter the size of the market, there are advantages to be had both ways. Large markets tend to have a deeper pool of talent, while comparatively smaller markets attract firms with more competitive business incentives and living costs.

Toronto comes out ahead from an employment perspective with 27.4% of Canada's tech talent, far outstripping Montreal in second place with 16.0% of the nation's tech employees. Ottawa and Vancouver round out the top four, with tech talent pools greater than 8.0% of the Canadian tech labour force.

When looking at the significance of tech talent within each city's economy, Ottawa comes out on top with tech accounting for 10.9% of its labour force, two times higher than the national average of 5.1%. Waterloo, Toronto and Montreal also have significant concentrations of highly skilled tech workers, exceeding 7.0% of their respective labour forces, which creates an environment that is conducive to collaboration, inspiration and innovation.

As all sectors of the economy expand their technological capabilities, markets that have experienced the most tech employment growth have the most momentum and likelihood of expanding their pool of tech talent. Major markets such as Toronto, Vancouver and Montreal led in terms of absolute growth due to their size and strength, however, technology employment growth over a five-year period was widespread with seven cities recording growth rates above the national average of 21.7%. Waterloo Region, a tech innovation and startup hub for the country, was the fastest growing tech labour pool in Canada between 2011 - 2016, with a 65.6% increase in tech jobs – the second fastest rate in North America after Charlotte, NC at 77.1%. Vancouver and Toronto also experienced considerable growth, with each of their tech labour pools increasing by over 30.0%. Analyzing tech labour growth over a shorter time period than the five-year horizon shows that momentum has shifted. Growth between 2014 -2016 remained strong in Waterloo Region; however, markets like Ottawa and London showed fluctuation in tech employment as seen in Figures 5.2 and 5.3.

FIGURE 3: TECH TALENT LABOUR POOLS (2016)

FIGURE 3: TECH TALENT LABOUR FIGURE 4: TECH TALENT GROWTH

Market	Tech Talent Total	City Tech % of Canadian Tech	Tech Talent Jobs as % of Total Jobs	Market	Growth by Volume (2011 - 2016)	Growth Rate (2011 - 2016)	Momentum Growth Rate (2014 - 2016)
Toronto, ON	212,500	27.4%	8.0%	Toronto, ON	51,300	31.8%	16.1%
Montreal, QC	124,600	16.0%	7.0%	Montreal, QC	24,600	24.6%	5.0%
Ottawa, ON	68,600	8.8%	10.9%	Vancouver, BC	17,500	36.8%	13.4%
Vancouver, BC	65,100	8.4%	5.7%	Waterloo Region, ON	8,400	65.6%	53.6%
Calgary, AB	35,300	4.5%	5.2%	Ottawa, ON	6,300	10.1%	-8.7%
Edmonton AB	23,900	3.1%	3.6%	Edmonton AB	4,600	23.8%	11.2%
Waterloo Region, ON	21,200	2.7%	8.6%	Calgary, AB	3,300	10.3%	-2.8%
Winnipeg, MB	15,400	2.0%	4.0%	Winnipeg, MB	2,800	22.2%	-1.9%
Halifax, NS	11,100	1.4%	5.6%	Halifax, NS	220	24.7%	-6.7%
London, ON	5,600	0.7%	2.6%	London, ON	100	1.8%	-24.3%
Canada	776,500		5.1%	Canada	138,300	21.7%	5.8%

Source: Statistics Canada LFS (NOCs), June 2017.

Source: Statistics Canada LFS (NOCs), June 2017.

FIGURE 5.1: MOMENTUM OF TOP TECH TALENT LABOUR POOLS 2014-2016 (TOP 5)





FIGURE 5.2: MOMENTUM OF LARGE TECH TALENT LABOUR POOLS (>50K EMPLOYMENT)

Source: Statistics Canada LFS (NOCs), June 2017.

FIGURE 5.3: MOMENTUM OF SMALL TECH TALENT LABOUR POOLS (<50K EMPLOYMENT)



Source: Statistics Canada LFS (NOCs), June 2017.



These highly skilled and educated workers command more than double the average nontech salary. Since the cost of talent

is the largest expense for most firms, assessing the quality of a labour market is also an important consideration.

Figure 6 depicts a quality assessment for software developers against the average salary and helps to visualize the relative trade-off across markets. Labour quality was measured by the number and concentration of software engineers with three or more years of experience and who have graduated from one of the top 25 computer science programs in the U.S. and Canada. While being amongst the highest cost tech labour markets, Waterloo Region also offers the highest concentration of quality tech talent. Toronto and Vancouver offer a good balance between quality and cost, while London provides the best overall value. Concentrations of quality tech talent are available in moderate and low-cost markets, which provides a range of options. Of note, the average wage across all occupations in Calgary, Edmonton and Ottawa exceed the average Canadian wage by 16.8%. As such, high wages in these cities reflect salary expectations on par with their respective labour markets.

Compared to the rest of North America, the Canadian labour pool offers great options for companies contemplating where to set up shop, especially when taking into consideration the lower Canadian dollar relative to the U.S. and lower wages in general.



FIGURE 6: TECH QUALITY VS. COST

*Concentration of software engineers/developers with 3 + years of experience that have heard degrees from the Top 25 Computer Information Science programs in the U.S. and Canada as rated by U.S. News, 2017. **Average Annual Salary for Software Engineers

Source: Statistics Canada LFS (NOCs) June 2017, U.S. News & World Report, CBRE Labor Analytics, CBRE Research, 2017.

EDUCATIONAL ATTAINMENT



The tech sector faces a war for talent like all other industries. One commonality amongst Canada's top tech-talent markets is high educational attainment, which for the purposes of this study is defined as a minimum of a university undergraduate degree or higher. All 10 of the cities studied have an educational attainment rate above the 28.4% Canadian average. In Ottawa, more than 40.0% of the working age population has high educational attainment, with Toronto, Vancouver, Halifax, Calgary and Montreal exceeding 30.0%. Edmonton and Ottawa lead forecast degree completion growth with 22.9% and 22.3%, respectively, expected from 2016 – 2021. Top tech markets distinguish themselves with the presence of tech clusters which typically form around preeminent universities allowing for improved access to a constant flow of new talent. Many universities in Canada have created partnerships with incubation labs to help foster the development of tech communities, creating a strong link between the industry and the labour force. Ryerson University houses DMZ labs, Innovate Calgary is located at the University of Calgary, and TEC Edmonton is partnered with the University of Alberta.

FIGURE 7: EDUCATIONAL ATTAINMENT

25-64 YEARS OLD, BACHELOR'S DEGREE OR HIGHER

45.2% Ottawa, ON	22.9
39.0% Toronto, ON	22.3
37.3% Vancouver, BC	17.1
36.4% Halifax, NS	15.4
36.0% Calgary, AB	15.2
31.2% Montreal, QC	14.0
29.9% Edmonton, AB	12.8
29.8% Winnipeg, MB	11.1
29.2% Waterloo Region, ON	10.5
27.8% London, ON	10.2
28.4% Canada	

FIGURE 8: FORECAST EDUCATIONAL ATTAINMENT GROWTH UNDERGRADUATE DEGREE OR HIGHER, PER CAPITA (2016-2021)



Source: Environics Analytics, 2016.

Source: Environics Analytics, 2016.

HIGH-TECH CLUSTERING



Tech clusters can form around leading-edge companies that attract and feed smaller organizations and are a key factor in tech talent attractiveness. With companies in the core hightech industry devoting about half of their workers to tech-related jobs, tech clusters are most likely to form in markets with a strong concentration of high-tech companies.



The resulting collaboration and competition between these companies helps to support entrepreneurs as they develop advancements in the sector, accelerating the innovation process. Examples of this can be found in Ottawa and Waterloo Region where Shopify and OpenText spur growth, respectively. The high-tech industry comprises 4.3% of employment in the Waterloo Region, nearly two times the national high-tech concentration of 2.3%. Toronto and Ottawa round out the top three, each with 3.9% concentration. Toronto, Montreal and Waterloo rounded out the top three in this category. Major markets such as Toronto, Montreal and Vancouver lead in terms of absolute high-tech job growth, however, in percentage terms eight Canadian cities reported growth above the national average of 26.5%. between 2011 and 2016.

Waterloo Region was able to rank in the top three as it reported the fastest growth in Canada over the last five years, increasing by 61.3%. The momentum of this market is also reflected in the 51.3% high-tech growth rate between 2014 -2016. Meanwhile, markets like Ottawa, Winnipeg and London have slowed in recent years.

FIGURE 9: HIGH-TECH INDUSTRY LABOUR POOL (2016)

Market	High-Tech Industry Employment	High-Tech Industry as % of Total Labour Force
Toronto, ON Montreal, QC Vancouver, BC Ottawa, ON Calgary, AB Edmonton, AB Waterloo Region, ON Halifax, NS Winnipeg, MB London, ON	126,300 77,400 46,100 27,800 22,100 12,400 12,100 6,400 5,400 4,000	3.9% 3.7% 3.4% 3.9% 2.8% 1.6% 4.3% 2.8% 1.3% 1.6%
Canada	419,500	2.3%

Source: Statistics Canada LFS (NAICs), June 2017.

FIGURE 10: HIGH-TECH INDUSTRY GROWTH

Market	Growth by Volume (2011 - 2016)	Growth Rate (2011 - 2016)	Momentum Growth Rate (2014 - 2016)
Waterloo Region, ON	4,600	61.3%	51.3%
Winnipeg, MB	1,800	50.0%	-15.6%
Calgary, AB	7,200	48.3%	4.2%
Vancouver, BC	14,500	45.9%	17.9%
Halifax, NS	1,800	39.1%	-5.9%
Toronto, ON	34,400	37.4%	17.7%
Edmonton, AB	3,200	34.8%	8.8%
Montreal, QC	17,700	29.6%	14.0%
London, ON	300	8.1%	-7.0%
Ottawa, ON	-	0.0%	-16.3%
Canada	89,200	26.5%	7.7%

Source: Statistics Canada LFS (NAICs), June 2017.

COST COMPETITIVENESS



Despite being the second highest operating cost for technology companies, real estate costs, including monthly rent and additional fees, are often not a barrier to choosing a market. This is especially true for companies that pursue the benefits of tech clustering. Location benefits are the dominant concern and tech companies continue to place a higher value on specific submarkets that contain other top tech firms, character-filled office space and neighbourhood amenities.

Vancouver has the highest average gross office rents, followed by Toronto and Edmonton. Despite being the second largest city by population, Montreal has the fifth highest office rent, which provides the city with a competitive advantage equal to midsized cities like Ottawa.

Many tech-talent markets, especially those with high concentrations or clusters of tech companies, have seen vacancies decline. Toronto's downtown office market for example has emerged as one of the best performing in North America with vacancy dipping to 4.0% as of Q3 2017.

The greatest cost for companies within tech talent markets is employee wages. Tech workers command 40.0% more than non-tech employees on average in Canada. Combining wage and real estate costs provides insight into what a tech company might pay

and a state of the state of the

to operate in one or more markets. For this comparison, Canadian averages were analyzed to determine the occupational makeup of a typical 500-person tech company occupying 75,000 sq. ft. of office space. This breakdown provides interesting insight into relative costs market-by-market. Calgary, Edmonton and Ottawa topped the list with the highest estimated annual costs at more than \$40.0 million. This was followed by Waterloo Region, Toronto and Vancouver, which offer a combination of great value and deep talent pools.



The migration of talent to tech markets has an impact on residential real estate as well. Comparing the annual average apartment rent with the annual average tech-worker salary, it is apparent that even

among the most expensive markets, tech salaries can cover the high cost of living based on the affordability standard of 30% of income to housing. Considering the underlying fundamentals of tech talent markets, both occupiers and investors can pursue profitable real estate strategies in top tech talent markets.

On a North American scale, the talented Canadian labour pool, combined with favourable rental rates, offers great options for companies contemplating where to set up shop. The location benefits rise for international businesses especially when taking the lower Canadian dollar relative to the U.S. into consideration.

FIGURE 11: OVERALL OFFICE ASKING RENT BY MARKET*

Markot	Annual Gross Direct	Asking Rent	Vacancy	Vacancy Rate
Murker	Asking kenn rei Sr	101 % Chunge	Kule	ior phy clique
Vancouver, BC	\$39.84	-1.6%	8.1%	-330
Toronto, ON	\$34.25	1.5%	8.5%	-60
Edmonton AB	\$34.21	1.5%	19.7%	520
Calgary, AB	\$32.91	-7.0%	25.2%	280
Montreal, QC	\$32.15	0.2%	11.4%	-250
Ottawa, ON	\$32.11	-1.3%	11.0%	50
Halifax, NS	\$27.32	-1.7%	15.0%	10
Winnipeg, MB	\$25.10	1.8%	9.1%	-110
London, ON	\$23.34	-1.2%	18.5%	20
Waterloo Region, ON	\$22.54	1.2%	18.1%	250

*May not be reflective of downtown and/or tech-hub rents

Source: CBRE Research, Q3 2017.

FIGURE 12: ESTIMATED 1 YEAR COSTS BY MARKET: WAGE AND RENT OBLIGATION FOR TYPICAL TECH FIRM Sample Tech Firm Estimates: 500 employees, 75,000 SF

Obligation for iffical feel firm sample feel firm Estimates: 500 employees, 75,000 SP

	Overall Rent Cost*	Tech Talent Wages	Support Non-Tech Wages	Management Wages	Total Estimated
Market	(Avg. Gross Rent x 75,000 SF)	(Avg. Wage x 250 People)	(Avg. Wage x 213 People)	(Avg. Wage x 37 People)	Cost
Calgary, AB	\$2,468,250	\$23,059,083	\$14,361,157	\$4,032,704	\$43,921,194
Edmonton, AB	\$2,565,750	\$22,340,810	\$13,553,752	\$4,352,858	\$42,813,170
Ottawa, ON	\$2,408,250	\$21,355,301	\$13,059,337	\$4,267,432	\$41,090,319
Toronto, ON	\$2,568,750	\$20,596,214	\$12,397,574	\$3,834,917	\$39,397,455
Vancouver, BC	\$2,988,000	\$19,850,541	\$11,440,895	\$3,512,454	\$37,791,890
Waterloo Region, ON	\$1,690,500	\$19,699,145	\$11,665,355	\$3,820,968	\$36,875,968
Montreal, QC	\$2,411,250	\$19,129,665	\$10,896,400	\$3,988,837	\$36,426,151
Winnipeg, MB	\$1,882,500	\$18,351,610	\$10,293,688	\$3,514,763	\$34,042,561
Halifax, NS	\$2,049,000	\$17,556,699	\$11,241,387	\$3,063,778	\$33,910,864
London, ON	\$1,750,500	\$16,576,207	\$10,863,944	\$3,820,968	\$33,011,619

*May not be reflective of downtown and/or tech-hub rents

Source: Statistics Canada LFS (NOCs), June 2017; CBRE Research, Q3 2017.

FIGURE 13: PURPOSE-BUILT APARTMENT ASKING RENT BY MARKET

Market	Average Purpose-Built Apartment Monthly Rent	Monthly Rent YoY % Change	Vacancy Rate	Vacancy Rate YoY bps Change
Toronto, ON	\$1,233	2.6%	1.3%	-30
Vancouver, BC	\$1,223	6.9%	0.7%	-10
Edmonton, AB	\$1,143	0.5%	7.1%	290
Calgary, AB	\$1,113	-8.2%	7.0%	170
Ottawa, ON	\$1,073	1.6%	3.0%	-40
Waterloo Region, ON	\$1,007	6.3%	2.2%	-20
Halifax, NS	\$987	1.3%	2.6%	-80
Winnipeg, MB	\$ 9 27	2.3%	2.8%	-10
London, ON	\$918	4.2%	2.1%	-80
Montreal, QC	\$760	2.2%	3.9%	-10

Source: CMHC, 2016.

FIGURE 14: APARTMENT RENT-TO-TECH WAGE RATIO

Market	Annualized Apartment Rent	Average Annual Tech Wage	Rent-to-Tech Wage Ratio	Ratio YoY bps Change
Vancouver, BC	\$14,676	\$79,402	18.5%	-40
Toronto, ON	\$14,796	\$82,385	18.0%	10
Halifax, NS	\$11 <i>,</i> 844	\$70,227	16.9%	50
London, ON	\$11,016	\$66,305	16.6%	0
Edmonton, AB	\$13,716	\$89,363	15.3%	150
Waterloo Ŕegion, ON	\$12,084	\$78,797	15.3%	30
Winnipeg, MB	\$11,124	\$73,406	15.2%	-40
Ottawa, ÖN	\$12 <i>,</i> 876	\$85,421	15.1%	20
Calgary, AB	\$13,356	\$92,236	14.5%	160
Montreal, QC	\$9,120	\$76,519	11.9%	50

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Source: CMHC, Statistics Canada, CBRE Research, 2016.

CONCLUSION

Over the past decade, the development of software and devices, which form the internet of things, have helped to enable the proliferation of technology into nearly everything that we do.

Highly skilled talent has become integral to the future success of companies and key to their competitive advantage. The depth of a talent pool and where it is located will therefore be a critical decision-making factor for companies when selecting their home-base or expanding their network. Looking forward, the potential for a market to emerge as a tech-hub will be dependent on the growth of its labour pool, the development of tech communities, and the firms that follow the talent.

APPENDI

Toronto, ON

RANKING SUMMARY



EMPLOYMENT BREAKDOWN

	Employment 2016	Growth 2011-16	Average Wage	Growth 2011-16
	212 500	21 80%	ČQ2 205	1/ 20/2
	Z1Z,JUU	31.070	202,30J	14.070
Somware Developers/ Programmers	52,100	26.2%	205,707	18.2%
Computer Support, Database & Systems	83,600	30.8%	\$74 <i>,</i> 422	6.8%
Computer & Info. Systems Managers	26,000	150.0%	\$103,646	9.5%
Technology Engineering-Related	50,800	11.4%	\$80,912	17.9%
TOTAL NON-TECH OCCUPATIONS	328,100	4.6%	\$58,205	13.9%
Sales	6,200	1.6%	\$32,656	18.8%
Administrative & Office Support	155,100	-17.7%	\$42,515	5.5%
Business Operations & Finance	118,400	39.5%	\$74,942	8.9%
Marketing	54,600	35.1%	\$66,477	3.5%
	C	C		0.017

Source: Statistics Canada LFS (NOCs), June 2017.

EDUCATIONAL ATTAINMENT



25-64 Year Olds Source: Environics Analytics, 2016.

TECH TALENT DIVERSITY



TECH MARKET TRENDS

- Toronto's relative physical proximity to U.S. markets, coupled with strong labour pools, a common language and affordable rent, has positioned it as an ideal tech hub. Favourable immigration policies have also increased international student applications to the city's post secondary institutions, adding to Toronto's brain-gain.
- Artificial intelligence is a leading industry in Toronto with major companies moving into the MaRS Discovery District where they can work with experts at the University of Toronto.
- As Canada's financial centre, Toronto offers a unique opportunity for smaller tech firms to receive Venture Capital funding or to partner with major financial institutions. Access to capital and world-class incubators has helped facilitate the rise of Toronto's tech scene.

OVERALL OFFICE RENT & VACANCY*



HOUSING COSTS



TOP TECH OFFICE DEALS (2017)

Tenant	Address	Sq. Ft.
Rangle.io	18 York St	53,000
Shopify Inc.	602-620 King St W	46,000
Indeed Canada	2 Bloor St W	40,000
Element Al	296 Richmond St W	17,000
EventMobi	207 Queens Quay	17,000
		Source: CBRE Research, 2017

2 Ottawa, ON

RANKING SUMMARY



EMPLOYMENT BREAKDOWN

	Employment	Growth	Average	Growth
	2016	2011-16	Wage	2011-16
TOTAL TECH OCCUPATIONS	68,600	10.1%	\$85,421	10.9%
Software Developers/Programmers	21,900	-3.9%	\$87,360	15.4%
Computer Support, Database & Systems	28,400	32.7%	\$78,312	10.3%
Computer & Info. Systems Managers	4,400	7.3%	\$115,336	24.9%
Technology Engineering-Related	13,900	-0.7%	\$87,422	4.3%
TOTAL NON-TECH OCCUPATIONS Sales	75,900 1,800	11.1% 20.0%	<mark>\$61,311</mark> \$39,853	13.3% 58.9%
Administrative & Office Support	35,300	-6.6%	\$44,699	6.4%
Business Operations & Finance	26,100	27.9%	\$80,309	14.0%
Marketing	14,500	43.6%	\$67,558	2.0%

Source: Statistics Canada LFS (NOCs), June 2017.

EDUCATIONAL ATTAINMENT



25-64 Year Olds Source: Environics Analytics, 2016.

TECH TALENT DIVERSITY



TECH MARKET TRENDS

- Shopify announced in March of 2017 a 325,000 sq. ft. expansion in downtown Ottawa. As Canada's tech unicorn, this expansion demonstrates the company's commitment to the city.
- Ford Motor Co. has announced plans to establish an R&D cen-. tre in Ottawa as part of a \$1.2 billion investment in Canadian operations over the next four years. The R&D centre will be focused on autonomous vehicles, hiring up to 300 engineers.
- . Known as the country's capital of SaaS, Ottawa is home to accelerator L-SPARK, and hosts the SaaS North conference.

Š34 14% \$32 12%

OVERALL OFFICE RENT & VACANCY*

\$30 10% Š28 8% Gross Rent Vacancy \$26 6% Q3 2011 Q3 2012 Q3 2013 Q3 2015 Q3 2017 03 2014 Q3 2016 Source: CBRE Research, Q3 2017.

*May not be reflective of downtown and/or tech-hub rents

HOUSING COSTS



Source: CMHC, 2016.

TOP TECH OFFICE DEALS (2017)

Tenant	Address			Sq. Ft.
Shopify Inc.	324 Laurier Ave W			325,000
EMS Technologies	400 Maple Grove Rd			107,000
Flextronics	3001 Solandt Dr			63,000
Calian	770 Palladium Dr			42,000
You.i TV	309 Legget Dr			40,000
		0	CDDE D	

Source: CBRE Research, 2017

3 Vancouver, BC

score

RANKING SUMMARY



Software app/ dev

Digital media/ gaming

EMPLOYMENT BREAKDOWN

	Employment 2016	Growth 2011-16	Average Wage	Growth 2011-16
	65 100	26 80%	\$70 <i>4</i> 02	12 80/2
Software Developers /Programmers	22,000	14 70/	\$70,402 \$70,519	Q 10/2
	22,000	44.770	277,010	7.470
Computer Support, Database & Systems	19,900	53.1%	\$75,046	18.0%
Computer & Info. Systems Managers	6,500	71.1%	\$94 <i>,</i> 931	9.7%
Technology Engineering-Related	16,700	7.1%	\$78,395	12.2%
TOTAL NON-TECH OCCUPATIONS	121,400	18.3%	\$53,713	8.7%
Sales	3,300	37.5%	\$31,574	7.3%
Administrative & Office Support	68,900	8.5%	\$44 <i>,</i> 949	12.4%
Business Operations & Finance	33,800	17.8%	\$67,371	2.0%
Marketing	18,700	79.8%	\$61,318	0.4%

Source: Statistics Canada LFS (NOCs), June 2017.

EDUCATIONAL ATTAINMENT



25-64 Year Olds Source: Environics Analytics, 2016.

TECH TALENT DIVERSITY



TECH MARKET TRENDS

- Stemming from the success of Vancouver start-ups like Slack, Hootsuite, Plenty of Fish, and Vision Critical, major multinational tech companies have announced blocks of hiring opportunities in the city, adding to bullish job growth expectations.
- Vancouver is easily accessible via plane, rail and highway along the Cascadia Innovation Corridor. There is further commitment from the local government to enhance these and other transportation routes over the coming years.
- Tech companies are attracting talent through employee benefits . and premium workspaces featuring natural West Coast amenities, such as lunchtime yoga, integration between the natural and built environment, and flexible work hours.

OVERALL OFFICE RENT & VACANCY* Š42 14% \$38 12% \$34 10% Š30 8% Gross Rent Vacancy \$26 6% Q3 2011 Q3 2012 Q3 2013 Q3 2014 Q3 2015 Q3 2016 Q3 2017 *May not be reflective of downtown and/or tech-hub rents Source: CBRE Research, Q3 2017.

HOUSING COSTS



Source: CMHC, 2016.

TOP TECH OFFICE DEALS (2017)

Tenant	Address	Sq. Ft.
FLIR Integrated Imaging Solutions Inc.	12051 Riverside Way	51,958
Visier Solutions Inc.	858 Beatty St	40,000
Scanline VFX	580 Granville St	35,880
Thunderbird Games	123 W 7th St	35,000
PerfectMind	4333 Still Creek Dr	18,403

Source: CBRE Research, 2017.

4 Montreal, QC

RANKING SUMMARY



Software app/ dev

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Digital media/ gaming

EMPLOYMENT BREAKDOWN

	Employment 2016	Growth 2011-16	Average Wage	Growth 2011-16
TOTAL TECH OCCUPATIONS	124,600	<mark>24.6%</mark>	\$76,519	18.6%
Software Developers/Programmers	33,800	26.1%	\$72,925	8.9%
Computer Support, Database & Systems	43,800	36.0%	\$71,718	18.2%
Computer & Info. Systems Managers	9,500	115.9%	\$107,806	32.0%
Technology Engineering-Related	37,500	2.5%	\$77,438	21.0%
TOTAL NON-TECH OCCUPATIONS	194,000	12.4%	\$51,157	10.9%
Sales	4,700	38.2%	\$31,803	-13.5%
Administrative & Office Support	114,400	5.4%	\$42,453	11.5%
Business Operations & Finance	47,600	20.5%	\$69,202	9.2%
Marketing	32,000	30.1%	\$55,432	2.6%

Source: Statistics Canada LFS (NOCs), June 2017.

EDUCATIONAL ATTAINMENT



25-64 Year Olds Source: Environics Analytics, 2016.

TECH TALENT DIVERSITY



TECH MARKET TRENDS

- With events such as the first Artificial Intelligence Forum and tech oriented university programs, Montreal is home to a blooming tech sector that is gaining international attention.
- The stability of Montreal's tech sector is due in part to its numerous and diversified companies located around the downtown core. The midtown market is also considered a top destination for tech companies, offering unique brick and beam space near the downtown.
- In addition to it's deep pool of tech engineering talent, Montreal is an international cosmopolitan city with a low cost of living and ranks amongst the most cost-effective cities in Canada in which to operate.



HOUSING COSTS



\$390,000 MED. HOME PRICE \$1,174 per unit/mo. AVG. CONDO RENT \$760 per unit/mo. AVG. PURPOSE-BUILT RENT 11.9% RENT-TO-WAGE RATIO

Source: CMHC, 2016.

TOP TECH OFFICE DEALS (2017)

Tenant	Address	Sq. Ft.
Ubisoft Divertissements Inc.	5445 De Gaspé Ave	86,715
Studios Framestore	5445 De Gaspé Ave	75,000
Element Al	6666 St-Urbain St	75,000
Keywords	1751 Richardson St	41,000
IBM Canada Limited	1 Place Ville Marie	39,535

Source: CBRE Research, 2017.

5 Waterloo Region, ON

RANKING SUMMARY



EMPLOYMENT BREAKDOWN

	Employment	Growth	Average	Growth
	2016	2011-16	Wage	2011-16
TOTAL TECH OCCUPATIONS	<mark>21,200</mark>	<mark>65.6%</mark>	\$78,797	17.9%
Software Developers/Programmers	7,800	110.8%	\$86,445	8.8%
Computer Support, Database & Systems	7,700	63.8%	\$74,672	30.2%
Computer & Info. Systems Managers	N/A	N/A	N/A	N/A
Technology Engineering-Related	5,700	29.5%	\$73,902	11.3%
TOTAL NON-TECH OCCUPATIONS	23,700	-0.4%	\$54,767	7.7%
Sales	N/A	N/A	N/A	N/A
Administrative & Office Support	13,900	-4.1%	\$43,430	8.7%
Business Operations & Finance	6,300	-13.7%	\$68,432	-4.1%
Marketing	3,500	75.0%	\$75,192	36.2%

Source: Statistics Canada LFS (NOCs), June 2017.

EDUCATIONAL ATTAINMENT



25-64 Year Olds Source: Environics Analytics, 2016.

TECH TALENT DIVERSITY



TECH MARKET TRENDS

- The Global Skills Strategy is designed by the Government of Canada to make it easier for businesses to attract high-skilled workers from abroad. With the list of eligible occupations focused on tech-related fields, the Waterloo Region is expected to see an influx of highly-skilled talent.
- Waterloo Region is home to two of the worlds' largest quantum computing research facilities, the Mike & Ophelia Lazaridis Quantum-Nano centre at the University of Waterloo and the Institute for Quantum Computing, drawing talent from nearby major post-secondary institutions.
- Benefiting from nearby incubators and innovation labs including Communitech, Velocity, and the Accelerator Centre, the Innovation District in downtown Kitchener and the Idea Quarter in Waterloo are hotspots for tech companies in the area.

OVERALL OFFICE RENT & VACANCY*



HOUSING COSTS



TOP TECH OFFICE DEALS (2017)

Tenant	Address	Sq. Ft.
Shopify Inc.	85 Willis Way	57,365
Sortable	160 King St E	22,500
Clearpath Robotics	97 Randall Dr	9,700
Alert Labs	132 Queen St S	8,100
SSIMWave Inc	140 Columbia St	6,063
		Source: CBRE Research, 2017.

6 Calgary, AB

RANKING SUMMARY



EMPLOYMENT BREAKDOWN

	Employment	Growth	Average	Growth
	2016	2011-16	Wage	2011-16
TOTAL TECH OCCUPATIONS	35,300	10.3%	\$92,236	13.2%
Software Developers/Programmers	9,200	26.0%	\$85,842	2.8%
Computer & Info. Systems Managers	2,800	0.0%	\$108,992	0.0%
Technology Engineering-Related	10,500	-21.6%	\$18,530	14.7%
TOTAL NON-TECH OCCUPATIONS	71,900	20.6%	\$67,423	19.8%
Sales	N/A	N/A	N/A	N/A
Administrative & Office Support	36,400	4.9%	\$53,248	27.2%
Business Operations & Finance	24,200	33.7%	\$86,050	-1.2%
Marketing	11,300	66.2%	\$73,195	

Source: Statistics Canada LFS (NOCs), June 2017.

EDUCATIONAL ATTAINMENT



25-64 Year Olds Source: Environics Analytics, 2016.

TECH TALENT DIVERSITY



Source: Statistics Canada LFS (NOCs), June 2017.

TECH MARKET TRENDS

- Calgary boasts an optimal ecosystem for tech growth due to it's deep talent pool with a high level of post-secondary attainment, comparatively low office and apartment rental costs, and a large selection of office space.
- Calgary is the second closest major Canadian market to Seattle, Portland and Silicon Valley with multiple direct flights all under three hours. This, along with only a one hour time zone difference with the west coast, has made it easy for tech firms to consider relocating or opening new locations in Calgary.
- Efforts to increase the city's feasibility as a tech hub has resulted in San Francisco-based RocketSpace occupying 75,000 sq. ft. in the Edison building.



HOUSING COSTS



Source: CMHC, 2016.

TOP TECH OFFICE DEALS (2017)

Tenant	Address	Sq. Ft.
Benevity	611 Meredith Rd NE	105,000
RocketSpace	150 9th Ave	75,000
Solium Capital	600 3 Ave SW	54,000
3 ES Innovation	300 2nd St SW	38,000

Source: CBRE Research, 2017.

/ Edmonton, AB

RANKING SUMMARY



Artificial intelligence

Software app/ dev

EMPLOYMENT BREAKDOWN

	Employment	Growth	Average	Growth
	2016	2011-16	Wage	2011-16
TOTAL TECH OCCUPATIONS	23,900	23.8%	\$89,363	15.5%
Software Developers/Programmers	4,500	40.6%	\$88,150	15.4%
Computer Support, Database & Systems	10,900	23.9%	\$81,682	18.3%
Computer & Info. Systems Managers	1,800	0.0%	\$117,645	11.1%
Technology Engineering-Related	6,700	21.8%	\$95,077	16.1%
TOTAL NON-TECH OCCUPATIONS	52,000	-3.3%	<mark>\$63,633</mark>	22.7%
Sales	1,900	26.7%	\$34,674	29.3%
Administrative & Office Support	30,000	-21.3%	\$50,606	16.0%
Business Operations & Finance	16,800	38.8%	\$84,552	15.1%
Marketing	5,200	44.4%	\$71,198	7.8%

Source: Statistics Canada LFS (NOCs), June 2017.

EDUCATIONAL ATTAINMENT



25-64 Year Olds Source: Environics Analytics, 2016.

TECH TALENT DIVERSITY



TECH MARKET TRENDS

- Edmonton's tech scene is supported by incubators such as TEC Edmonton, a joint venture between the University of Alberta and Edmonton Economic Development Corporation, as well as Startup Edmonton, a community hub supported by various corporate partners including the City of Edmonton and Edmonton Economic Development.
- DeepMind Alberta, the first international AI research lab for the company, will operate in partnership with the University of Alberta. In addition to contributing to the academic community through teaching and research, DeepMind intends to provide additional funding to support long-term artificial intelligence programs at the University of Alberta.



HOUSING COSTS



\$515,000 MED. HOME PRICE \$1,310 per unit/mo. AVG. CONDO RENT \$1,143 per unit/mo. AVG. PURPOSE-BUILT RENT 15.3% RENT-TO-WAGE RATIO

Source: CMHC, 2016.

8 Halifax, NS

31.0

RANKING SUMMARY



EMPLOYMENT BREAKDOWN

	Employment 2016	Growth 2011-16	Average Wage	Growth 2011-16
TOTAL TECH OCCUPATIONS	11,100	24.7%	\$70,227	16.3%
Software Developers/Programmers Computer Support, Database & Systems	2,800 3,700	55.6% -5.1%	\$70,595 \$68,598	10.5% 29.7%
Computer & Info. Systems Managers	1,000	100.0%	\$82,805	-2.1%
lechnology Engineering-Kelated	3,600	33.3%	\$68,120	5.8%
Sales	20,000 N/A	- 6.1% N/A	\$52,776 N/A	19.3% N/A
Administrative & Office Support	11,500	-18.4%	\$40,810	13.0%
Business Operations & Finance Marketina	6,200 2,300	14.8% 27.8%	\$69,659 \$67,101	15.1% 13.8%
0	_/		. /	

Source: Statistics Canada LFS (NOCs), June 2017.

EDUCATIONAL ATTAINMENT



25-64 Year Olds Source: Environics Analytics, 2016.

TECH TALENT DIVERSITY



TECH MARKET TRENDS

- The presence of Volta Labs has helped to develop the tech sector in Halifax and spark entrepreneurial action.
- The tech market is diverse, with businesses across industries establishing themselves in Halifax. Major tenants in the market range from communications, to health-tech and marine bio-tech.
- The Centre for Ocean Ventures & Entrepreneurship (COVE) is developing a \$20 million dollar institute on the Harbour front to support ocean technology development and commercialization. Marine Bio-Tech has found a home in Halifax due to its accessibility to open waters and deep-water dock access.

OVERALL OFFICE RENT & VACANCY*



HOUSING COSTS



\$430,000 MED. HOME PRICE \$1,347 per unit/mo. AVG. CONDO RENT \$987 per unit/mo. AVG. PURPOSE-BUILT RENT 16.9% RENT-TO-WAGE RATIO

Source: CMHC, 2016.

TOP TECH OFFICE DEALS (2017)

Tenant	Address	Sq. Ft.
Volta Labs	1505 Barrington St	58,000
REDspace	1595 Bedford Hwy	23,000
NewPace	1595 Bedford Hwy	10,000
Kinduct	1969 Upper Water St	10,000
Salesforce.com	1505 Barrington St	10,000
		C (DDE D 0017

Source: CBRE Research, 2017.



RANKING SUMMARY



EMPLOYMENT BREAKDOWN

	Employment	Growth	Average	Growth
	2016	2011-16	Wage	2011-16
TOTAL TECH OCCUPATIONS	15,400	<mark>22.2%</mark>	\$73,406	12.4%
Software Developers/Programmers	3,500	2.9%	\$71,136	1.2%
Computer Support, Database & Systems	6,100	38.6%	\$72,613	23.1%
Computer & Info. Systems Managers	900	-25.0%	\$94,994	34.8%
Technology Engineering-Related	4,900	36.1%	\$72,051	8.2%
TOTAL NON-TECH OCCUPATIONS	37,700	8.3%	\$48,327	8.1%
Sales	1,000	-33.3%	\$28,142	26.2%
Administrative & Office Support	26,100	5.2%	\$40,227	6.4%
Business Operations & Finance	8,000	9.6%	\$71,032	9.8%
Marketing	3,600	33.3%	\$56,597	4.7%

Source: Statistics Canada LFS (NOCs), June 2017.

EDUCATIONAL ATTAINMENT



25-64 Year Olds Source: Environics Analytics, 2016.

TECH TALENT DIVERSITY



TECH MARKET TRENDS

- Technology companies are recognizing the appeal of operating in Winnipeg due to lower business costs and high rates of post-secondary educational attainment.
- In conjunction with favourable tax credits provided by the municipal government, local resource groups like The Enterprise Machine Intelligence & Learning Initiative and the Manitoba Technology Accelerator work to play a critical role in fostering Winnipeg's growing tech community.

OVERALL OFFICE RENT & VACANCY*



HOUSING COSTS



\$400,000 MED. HOME PRICE \$1,185 per unit/mo. AVG. CONDO RENT \$927 per unit/mo. AVG. PURPOSE-BUILT RENT 15.2% RENT-TO-WAGE RATIO

Source: CMHC, 2016.

TOP TECH OFFICE DEALS (2017)

Tenant	Address	Sq. Ft.
SkiptheDishes	140 Bannatyne Ave	37,600
Farmers Edge	25 Rothwell Rd	16,253
iQMetrix	311 Portage Ave	10,000
Geofilter Studio	1765 Sargent Ave	5,180

Source: CBRE Research, 2017.

10 London, ON

RANKING SUMMARY



TECH MARKET TRENDS

- London technology companies, including Autodata, Info-Tech Research Group and Big Blue Bubble, are focused on interactive game development, financial services and creative content.
- Given its affordability and wide array of urban amenities, space in the downtown core has been sought after by tech companies.
- The London Economic Development Corporation has been very supportive of the tech industry and has worked with the city, industry partners, and support agencies to enhance the focus on higher visibility and talent development. Their aim is to build a stronger incubation environment and to improve the fiber optics infrastructure for the city.

EMPLOYMENT BREAKDOWN

Interactive technology

Digital media/

gaming

	Employment	Growth	Average	Growth
	2016	2011-16	Wage	2011-16
TOTAL TECH OCCUPATIONS	<mark>5,600</mark>	<mark>1.8%</mark>	<mark>\$66,305</mark>	<mark>6.9%</mark>
Software Developers/Programmers	N/A	N/A	N/A	N/A
Computer Support, Database & Systems	2,300	0.0%	\$65,312	9.3%
Computer & Info. Systems Managers	0	0	0	0
Technology Engineering-Related	3,300	3.1%	\$66,997	5.3%
TOTAL NON-TECH OCCUPATIONS	19,100	1.6%	\$51,004	17.2%
Sales	N/A	N/A	N/A	N/A
Administrative & Office Support	12,100	-20.4%	\$42,266	14.0%
Business Operations & Finance	4,800	33.3%	\$70,470	-0.4%
Marketing	2,200	0.0%	\$56,597	0.0%

Source: Statistics Canada LFS (NOCs), June 2017.

EDUCATIONAL ATTAINMENT



25-64 Year Olds Source: Environics Analytics, 2016.

TECH TALENT DIVERSITY



OVERALL OFFICE RENT & VACANCY*



HOUSING COSTS



\$415,000 MED. HOME PRICE \$995 per unit/mo. AVG. CONDO RENT \$918 per unit/mo. AVG. PURPOSE-BUILT RENT 16.6% RENT-TO-WAGE RATIO

Source: CMHC, 2016.

CONTACTS

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