Scoring Tech Talent

How Tech Labor Trends Inform Workforce Decisions & Influence Real Estate in 50 U.S. & Canadian Markets

CBRE

Tech Talent Job Growth Shows Economic Importance During Pandemic

Technology's importance during the COVID-19 pandemic will endure and act as an accelerator of economic transformation.

The opportunity to fulfill business and consumer demand for new and improved technology products and services resulted in U.S. tech talent employment growth of 0.8% in 2020, making it one of the most resilient professions during the pandemic. In contrast, total non-tech occupations fell by 5.5%, office-based administrative and sales occupations declined by 5.8% and finance occupations increased by half the rate of tech at 0.4%.

Tech talent workforce growth last year did slow significantly from its 4.1% rate in 2019 due to nearly 57,000 fewer jobs at non-tech industry employers, primarily in the third-party administrative services, retail and information industries. The tech industry accounted for 45% of the 99,200 tech talent jobs added. Other industries adding tech talent jobs included Financial Activities, Professional & Business Services and Government. By far, software developers and programmers across all industries were the most in-demand workers: 85,000 of them were added in 2020, representing a 4.8% year-over-year growth rate.

Companies and tech talent professionals leading North America's innovation have a unique opportunity to drive economic growth and shape how and where we work. Technology will be critical to support a new hybrid approach to work, in which team members can work either in-person, remotely or from widely dispersed locations. Tech talent employers increased job postings that offer remote working arrangements to 12% for the 12 months ending in February 2021, up from only 5.5% in the previous 12-month period, according to EMSI data. This same approach shows promise to expand tech talent recruitment across all markets and increase workforce diversity—a subject that is included in our annual Scoring Tech Talent report for the first time this year.

Scoring Tech Talent is intended to serve as a resource for decision-making and success in building tech talent teams to fulfill critical business and innovation objectives in the years ahead.

Scoring Tech Talent

is a comprehensive analysis of labor market conditions, cost and quality in North America for highly skilled tech workers. The top 50 markets in the U.S. and Canada were ranked according to their competitive advantages and appeal to both employers and tech talent employees. Twenty-five additional North American Tech Talent markets were analyzed, as well as 10 up-and-coming Latin American markets. The analysis provides further insight into the quality of tech workers, their demographics and diversity and how tech talent growth patterns are impacting cities and real estate markets.

#Score

This year's top-ranked tech talent markets are the San Francisco Bay Area, Seattle and Washington, D.C. Markets that climbed the most in the rankings are Greater Los Angeles/ Orange County, Detroit and Calgary.

Brain Gain

Toronto, Seattle, Montreal, Vancouver and Charlotte produced more jobs than graduates and were the biggest "brain gain" markets, while New York Metro, Boston, Chicago and Washington, D.C. produced more graduates than jobs and were the biggest "brain drain" markets. The number of tech degree graduates was compared with tech talent job creation in each market to determine brain gains or brain drains.

Key Takeaways

Diversity

Tech talent across all industries was predominantly White, Asian and male relative to total employment and office-using employment in 2020. Hispanics, Blacks and females were underrepresented in both tech talent occupations and the tech industry. Relative to an office-using employment benchmark, Pittsburgh, Charlotte and Nashville have the most diverse tech talent workforces, while San Antonio, Greater Los Angeles/ Orange County and Austin have the least diverse. Washington, D.C. had the highest relative share of females and Cleveland had the lowest share. Underrepresented race/ethnic groups accounted for 23.5% of 2019 tech degree graduates, moderately less than their share of all degree graduates (29%). Females accounted for only 24.9% of tech degree graduates, significantly lower than their share of all degree graduates (58%).

$Cost

The total annual labor and real estate costs ranged from $31 million in Waterloo, Canada to $68 million in the San Francisco Bay Area for the typical 500-person tech company using 75,000 sq. ft. of office space.

Opportunity Markets

Fostering talent development in lesser-known and underdeveloped markets could offer additional talent pools to employers seeking to expand their geographical reach, uncover opportunities and increase cost efficiency. These markets include Dayton, Huntsville and Colorado Springs in the U.S. and Sao Paulo, Mexico City and Santiago in Latin America.

What is Tech Talent?

Highly skilled North American tech talent workers total 6.4 million and comprise 20 occupations—from software developers who enable the devices we depend on, to systems and data managers who ensure the functionality of our tech ecosystems.[1] Although these positions are concentrated within the high-tech industry, they are spread across all industry sectors (Figure 1). Through this occupational lens, a software developer who works for a logistics or health-care company is considered tech talent.

The 5.4 million tech talent workers in the U.S. and 1.0 million in Canada account for a respective 3.9% and 6.5% of the total workforce in each country. This relatively small share of the total workforce has an outsized impact on real estate markets and the economy. The number of U.S. tech talent workers has increased by 640,700 over the past five years for a growth rate of 13%—more than double the overall national job growth rate. They are fueling innovation and adapting technology within nontraditional tech sectors to increase productivity and strengthen the national economy.

[1] Tech talent includes the following occupation categories: software developers and programmers; computer support, database and systems; technology- and engineering-related; and computer and information system managers.

The number of U.S. tech talent workers has increased by 13% in the past five years.

Figure 1

U.S. Tech Talent Labor by Industry (2020)
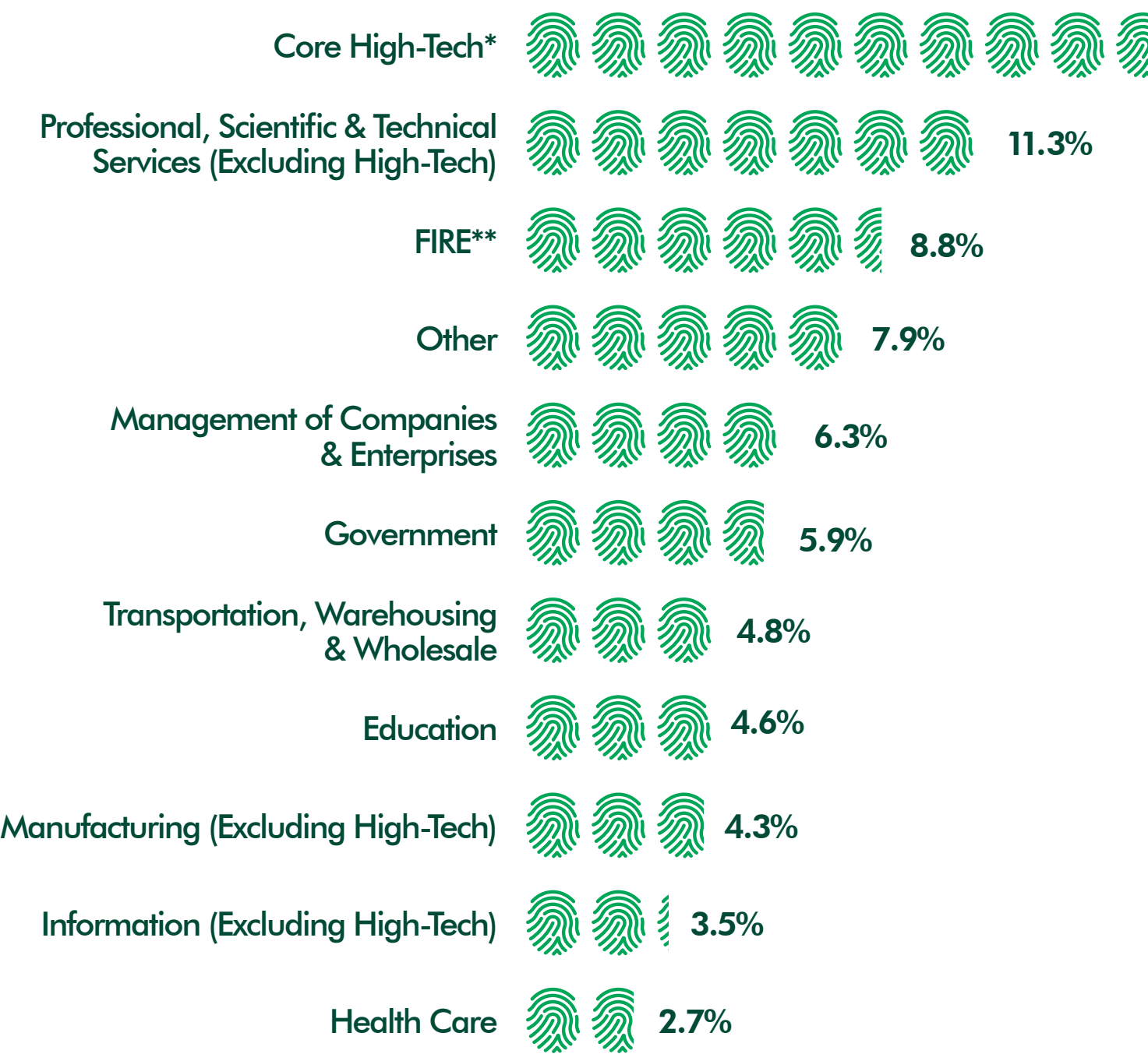
Core High-Tech*	
Professional, Scientific & Technical Services (Excluding High-Tech)	11.3%
FIRE**	8.8%
Other	7.9%
Management of Companies & Enterprises	6.3%
Government	5.9%
Transportation, Warehousing & Wholesale	4.8%
Education	4.6%
Manufacturing (Excluding High-Tech)	4.3%
Information (Excluding High-Tech)	3.5%
Health Care	2.7%

40.1%

Which are the top-ranked Tech Talent markets?

During the pandemic-induced economic slowdown, businesses pivoted, innovated and relied even more on tech talent workers to meet challenges. This kept the tech talent labor market highly competitive and supply-constrained last year as hiring expanded beyond major tech hubs. Tech talent occupations that kept companies productive in a remote working environment led the charge, with software developers drawing the most demand. Smaller markets benefitted from remote work as some urban workers left densely populated major markets amid pandemic concerns.

Fifty of the largest markets by number of tech talent professionals in the U.S. and Canada were analyzed to create a scorecard ranking them comparatively (Figure 2). The scorecard uses 13 metrics to measure each market's depth, vitality and attractiveness to companies seeking tech talent and to tech workers seeking employment. Each metric is weighted by its relative importance to job creation and innovation. Tech talent concentration metrics have the highest weights because they signify clustering of tech workers. Labor costs for tech talent are weighted more heavily than office rents because companies allocate more capital to labor than to real estate.

The San Francisco Bay Area retained the top spot, while Seattle and Washington, D. C. switched positions from 2020 to second and third, respectively. Data changes by the Bureau of Labor Statistics led to three less individual markets this year: Newark and Long Island were merged into the New York Metro and Orange County was merged with Greater Los Angeles. This allowed three Canadian markets to enter the top 50 tech talent markets this year: Waterloo Region (21), Quebec City (37) and Edmonton (38). The biggest movers were Greater Los Angeles/ Orange County, rising by eight spots, and Detroit and Calgary, both rising by six spots.

The San Francisco Bay Area retained the top spot, while Seattle and Washington, D.C. switched positions from 2020 to second and third, respectively.
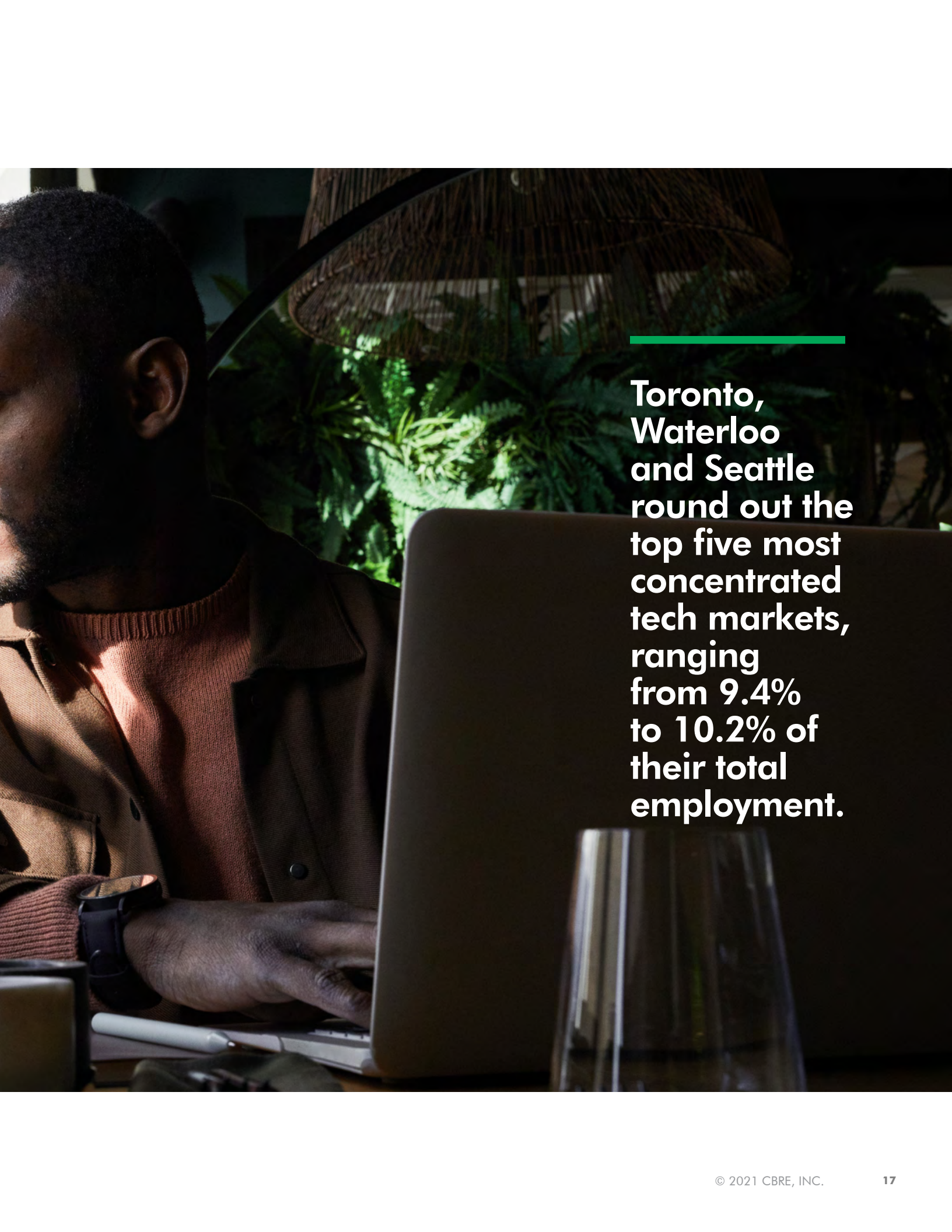
Figure 2

Tech Talent Scorecard Ranking

As companies across all industries expand their technology services, there is high demand for tech talent in both large and small markets. Major gateway markets such as New York Metro, Toronto and the San Francisco Bay Area dominate overall tech talent growth because of their size. These and other markets with tech talent labor pools of more than 50,000 workers are categorized as "large," while those below this threshold are categorized as "small." Both large and small markets have their advantages: While large markets generally have a deeper pool of talent, small markets typically offer business and cost-of-living savings.

Tech talent concentration—the percentage of total employment—is a barometer of how "tech" the market is and in its growth potential. Tech talent comprises 11.6% of total employment in Ottawa and 10.9% in the San Francisco Bay Area—the highest concentrations and more than double the 50-market average of 5.5% tech talent density. Toronto, Waterloo and Seattle round out the top five most concentrated tech markets, ranging from 9.4% to 10.2% of their total employment. This sizeable concentration of highly skilled workers offers an environment conducive to innovation.

Toronto, Waterloo and Seattle round out the top five most concentrated tech markets, ranging from 9.4% to 10.2% of their total employment.

Figure 3
Tech Talent Labor Pools (2020)

Large Tech Talent Markets (>50,000 Labor Pool)

Market	Tech Talent Total	Percent Change[1]	by Volume[2]	Concentration[3]
SF Bay Area	373,430	16.4%	52,670	10.9%
New York Metro	348,330	6.7%	21,930	3.9%
Toronto	270,400	42.8%	81,100	10.2%
Washington, D.C.	265,370	10.0%	24,080	8.8%
Los Angeles/Orange Co.	228,720	18.6%	35,870	3.7%
Dallas/Ft. Worth	189,200	16.3%	26,570	5.3%
Seattle	184,660	35.4%	48,300	9.4%
Boston	168,090	7.2%	11,360	6.5%
Chicago	167,380	4.6%	7,330	3.8%
Montreal	160,700	31.4%	38,400	8.6%
Atlanta	143,780	15.2%	18,960	5.5%
Denver	114,900	31.1%	27,290	7.0%
Philadelphia	112,740	9.3%	9,630	4.2%
Phoenix	98,220	14.2%	12,180	4.7%
Minneapolis/St. Paul	97,470	5.3%	4,940	5.3%
Houston	96,420	-5.9%	-6,030	3.2%
Vancouver	91,200	36.1%	24,200	8.1%
Detroit	89,680	4.5%	3,870	4.5%
Baltimore	81,770	16.2%	11,430	6.4%
Austin	79,230	10.0%	7,200	7.5%
Ottawa	74,000	22.5%	13,600	11.6%
San Diego	70,350	4.1%	2,760	5.0%
South Florida	67,500	18.0%	10,280	2.7%
Raleigh-Durham	67,050	20.2%	11,260	7.2%
Charlotte	62,110	31.3%	14,810	5.1%
Portland	60,330	27.7%	13,090	5.3%
St. Louis	55,080	9.9%	4,950	4.2%
Tampa	53,960	23.5%	10,250	4.1%
Kansas City	52,630	8.5%	4,120	5.1%
Salt Lake City	50,070	33.9%	12,680	5.1%

Small Tech Talent Markets (<50,000 Labor Pool)

Market	Tech Talent Total	Percent Change[1]	by Volume[2]	Concentration[3]
Columbus	47,940	5.1%	2,310	4.7%
Calgary	46,700	17.9%	7,100	7.1%
Orlando	43,340	30.0%	10,000	3.6%
Pittsburgh	43,080	10.7%	4,150	4.0%
Sacramento	40,160	10.7%	3,890	4.1%
Indianapolis	39,990	23.2%	7,520	3.9%
Cincinnati	39,080	9.6%	3,420	3.8%
Cleveland	36,320	14.6%	4,620	3.7%
Nashville	35,190	36.1%	9,330	3.6%
Edmonton	34,500	53.3%	12,000	5.7%
San Antonio	33,080	8.9%	2,690	3.3%
Milwaukee	29,810	-4.2%	-1,320	3.7%
Virginia Beach	29,420	2.8%	810	4.1%
Quebec City	29,400	18.1%	4,500	7.8%
Hartford	26,440	11.9%	2,820	4.8%
Waterloo Region	25,900	47.2%	8,300	9.6%
Madison	24,580	31.9%	5,940	6.4%
Richmond	24,520	7.9%	1,800	3.9%
Jacksonville	21,840	20.4%	3,700	3.2%
Rochester	20,840	-0.8%	-170	4.4%

Source: U.S. Bureau of Labor Statistics (Metro) April 2021, Statistics Canada (Metro), 2021.
(1) 2015-2020;   (2) 2015-2020;   (3) 2020.

What defines a Tech Talent market?

Two key aspects that top tech talent markets share are high educational attainment and tech workers' preference to live in urban areas. Four-fifths of the top 50 tech talent markets have a metro-level educational attainment rate above the U.S. average (33.1%). The top 10 markets have 43% or more of residents over 25 years old with a bachelor's degree or higher (Figure 4). The San Francisco Bay Area and Washington, D.C. have rates of 51% or more.

Education, particularly with a focus on technology,[2] is best analyzed through degrees issued by higher educational institutions. Metro areas that produced the largest number of tech graduates last year with bachelor's or higher degrees were New York Metro, Greater Los Angeles/Orange County, Washington, D.C., Boston and the San Francisco Bay Area (Figure 5). Large tech talent markets dominate the top 10 degree-granting regions. Demand is high for tech-related classes and degrees, and tech-related degree completions have grown by an average 52% since 2015. Although these figures do not account for tech bootcamps or shorter certifications, they provide insight into which markets produce the highest amount of tech talent entering the labor pool each year.

[2]Tech degree fields include computer engineering and information sciences; mathematics and statistics; electrical and electronics engineering; mechanical and industrial engineering; other engineering.

Tech-related degree completions have grown by an average 52% since 2015.

Figure 4
Top 10 Markets for Educational Attainment
25+ years old, Bachelor's Degree or higher
U.S. Average = 33.1%

#1	**SF Bay Area**	51.7%
#2	**Washington, D.C.**	51.4%
#3	**Boston**	49.3%
#4	**Madison, WI**	48.6%
#5	**Raleigh-Durham**	47.4%
#6	**Austin**	46.2%
#7	**Denver**	45.8%
#8	**Ottawa**	45.7%
#9	**Seattle**	44.1%
#10	**Minneapolis/St. Paul**	43.2%

Source: U.S. Census Bureau and Statistics Canada (Metro) 2021.

Figure 5
Top 10 Markets for Tech Degree Completions
Tech Degree Completions (2019) and
% Growth (2014-2019)

#1	New York Metro	20,576	69.4%
#2	LA/Orange Co.	13,923	56.9%
#3	Washington, D.C.	12,623	42.3%
#4	Boston	12,183	80.0%
#5	SF Bay Area	10,965	65.2%
#6	Chicago	8,548	48.3%
#7	Atlanta	8,361	90.5%
#8	Detroit	6,790	45.5%
#9	Dallas/Ft. Worth	6,672	71.5%
#10	Philadelphia	6,277	41.1%

Source: The National Center for Education Statistics (Region),
Canadian Universities, July 2021.
Note: Bachelor's Degree or Higher.

The increase in tech-degree graduates is beginning to better supply the labor market for tech talent.

Graduates do not always remain in the labor market where they earn their degrees; they often migrate to locations that offer the most job opportunities or have the best pay. Analyzing tech-related graduation data and tech-related employment growth, Figure 6 presents the difference between where tech talent workers are employed and where they were educated. Tech degrees cover the most recent five-year period available (2015-2019) and tech talent jobs added cover the period when most graduates would be counted in employment figures (2016-2020). Toronto is an outlier for tech talent job creation, adding 54,862 more tech talent jobs than graduates. Other top tech talent job creators are Seattle, Montreal, Vancouver and Charlotte. On the other end of the spectrum, New York Metro, Boston, Chicago and Washington, D.C posted the deepest deficits in employing their tech-degree graduates locally and thus experienced the biggest talent drain.

Reflected in the brain gain/drain calculation, the increase in tech-degree graduates is beginning to better supply the labor market for tech talent. In 2020, 16 markets posted a five-year brain gain, the same number of markets as in 2019, but at a lower total gain volume. This still indicates a high level of demand and inadequate supply for the most sought-after tech skills and locations.

Figure 6
Where are Tech Talent Workers Coming From and Where are They Headed?

Market	Tech Degrees (2015-2019)*	Tech Jobs Added (2016-2020)*	Brain Gain or Drain?	Market	Tech Degrees (2015-2019)*	Tech Jobs Added (2016-2020)*	Brain Gain or Drain?
Toronto	26,338	81,200	54,862	Hartford	8,081	2,820	-5,261
Seattle	18,964	48,300	29,336	Cincinnati	9,115	3,420	-5,695
Montreal	22,628	38,400	15,772	Austin	12,962	7,200	-5,762
Vancouver	12,944	24,200	11,256	Raleigh-Durham	18,078	11,260	-6,818
Charlotte	7,291	14,810	7,519	Baltimore	18,276	11,430	-6,846
Edmonton	5,522	12,000	6,478	Cleveland	11,534	4,620	-6,914
SF Bay Area	47,065	52,670	5,605	Virginia Beach	8,038	810	-7,228
Ottawa	8,134	13,600	5,466	Kansas City	12,566	4,120	-8,446
Denver	21,946	27,290	5,344	Milwaukee	7,366	-1,320	-8,686
Nashville	4,323	9,330	5,007	Columbus	11,231	2,310	-8,921
Calgary	3,634	7,100	3,466	Salt Lake City	22,551	12,680	-9,871
Quebec City	2,136	4,500	2,364	Rochester	11,208	-170	-11,378
Tampa	7,976	10,250	2,274	Minneapolis/St. Paul	17,752	4,940	-12,812
Indianapolis	5,524	7,520	1,996	Phoenix	25,519	12,180	-13,339
Jacksonville	2,026	3,700	1,674	Atlanta	34,623	18,960	-15,663
Portland	11,778	13,090	1,312	San Diego	18,875	2,760	-16,115
Richmond	3,544	1,800	-1,744	Philadelphia	28,963	9,630	-19,333
South Florida	12,677	10,280	-2,397	Houston	13,629	-6,030	-19,659
Orlando	12,560	10,000	-2,560	Pittsburgh	23,972	4,150	-19,822
San Antonio	5,580	2,690	-2,890	Los Angeles/Orange Co.	61,261	35,870	-25,391
Madison	9,144	5,940	-3,204	Detroit	30,853	3,870	-26,983
Dallas/Ft. Worth	30,700	26,570	-4,130	Washington, D.C.	55,931	24,080	-31,851
St. Louis	9,527	4,950	-4,577	Chicago	39,737	7,330	-32,407
Waterloo Region	12,894	8,300	-4,594	Boston	48,736	11,360	-37,376
Sacramento	9,117	3,890	-5,227	New York Metro	87,408	21,930	-65,478

Brain Gain or Drain?

+54,862 Toronto

+29,336 Seattle

+15,772 Montreal

+11,256 Vancouver

+7,519 Charlotte
+6,478 Edmonton
+5,605 SF Bay Area
+5,466 Ottawa
+5,344 Denver
+5,007 Nashville

+3,466 Calgary
+2,364 Quebec City
+2,274 Tampa
+1,996 Indianapolis
+1,674 Jacksonville
+1,312 Portland

-1,744 Richmond
-2,397 South Florida
-2,560 Orlando
-2,890 San Antonio
-3,204 Madison

-4,130 Dallas/Ft. Worth
-4,577 St. Louis
-4,594 Waterloo Region
-5,227 Sacramento
-5,261 Hartford
-5,695 Cincinnati
-5,762 Austin

-6,818 Raleigh-Durham
-6,846 Baltimore
-6,914 Cleveland
-7,228 Virginia Beach

-8,446 Kansas City
-8,686 Milwaukee
-8,921 Columbus
-9,871 Salt Lake City

-11,378 Rochester
-12,812 Minneapolis/St. Paul
-13,339 Phoenix
-15,663 Atlanta
-16,115 San Diego

-19,333 Philadelphia
-19,659 Houston
-19,822 Pittsburgh

-25,391 Los Angeles/Orange Co.
-26,983 Detroit

-31,851 Washington, D.C.
-32,407 Chicago

-37,376 Boston

-65,478 New York Metro

Tech degree graduates not employed in the market where they were educated tend to migrate to markets with high volumes of tech talent job creation and consistent brain gain. According to an analysis of LinkedIn data, the San Francisco Bay Area (37%) and Seattle (40%) had the lowest proportions of tech talent workers who were educated there, which means more than 60% educated elsewhere work in these markets (Figure 7). The next highest migration markets were Dallas/Ft. Worth and Toronto, with 36% and 33% of their tech talent workforces educated elsewhere, respectively. Overwhelmingly, tech talent in most markets we analyzed was sourced locally, suggesting employers with workplace locations near tech degree-producing universities tend to absorb that local talent. Furthermore, analysis of LinkedIn data for software engineers found that approximately 21% left their employers for another job in the 12 months ending February 2021, reinforcing the need to have proximity to sources of tech talent.

Figure 7
Tech Talent Employment & University Degree by Market

Market	Total Number Employed[1]	Top 25 Degree Producing Universites[2] (% of Total Employed)	Share of Top 25 from within Market[2] (Locally Employed and Educated)
San Francisco Bay Area	373,430	41%	37%
New York Metro	348,330	31%	75%
Toronto	270,400	54%	67%
Washington, D.C.	265,370	43%	70%
Los Angeles/Orange Co.	228,720	43%	73%
Dallas/Ft. Worth	189,200	41%	64%
Seattle	184,660	35%	40%
Boston	168,090	48%	73%
Chicago	167,380	47%	80%
Montreal	160,700	66%	93%
10 Largest "Large" Market Aggregate	2,356,280	41%	61%
Columbus	47,940	54%	75%
Calgary	46,700	71%	82%
Orlando	43,340	55%	76%
Pittsburgh	43,080	59%	79%
Sacramento	40,160	42%	70%
5 Largest "Small" Market Aggregate	221,220	57%	77%

Source: (1) U.S. Bureau of Labor Statistics (Metro), April 2021, Statistics Canada (Metro), 2021. (2) LinkedIn Talent Insights (LTI) and analysis by CBRE Research, May 2021. Tech Talent figures from LTI were defined by CBRE Research as software engineers, data engineers, cyber security analysts, system engineers, data scientists, information security analysts, infrastructure engineers, and database administrators.

LinkedIn Disclaimer: LinkedIn Talent Insights data is derived by aggregating profile data voluntarily submitted by LinkedIn members. As such, LinkedIn cannot guarantee the accuracy of LinkedIn Talent Insights data.

Another notable characteristic of tech talent markets is the number of millennials[3] in the workforce. The younger part of this generation has grown up in the internet-connected world and expect an integrated and a more tech-enabled working environment. Generally, this well-educated cohort prefers urban living, which has contributed to many revitalized downtown neighborhoods.

As the largest demographic cohort, millennials' presence and maturity within the labor pool has fueled the growth of tech talent across all 50 markets (Figure 8). Seventeen large tech markets have increased their millennial populations by more than 10% since 2014. Seattle's grew the fastest at 22%. During the same period, seven of the smaller tech markets increased their millennial populations by more than 10%, with Nashville growing the fastest in the U.S. and Waterloo the fastest in Canada. Austin, Seattle and Denver are the most concentrated millennial markets with about one-third of their population in this cohort. The 10 most concentrated tech markets for millennials are well above the U.S. national population concentration of 22% (Figure 9).

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[3]Analysis conducted in this report includes millennials aged 23-38 years.

Millennials' presence and maturity within the labor pool has fueled the growth of tech talent across all 50 markets.

Figure 8
Millennial Population* Change by Market Since 2014

Large Tech Talent Markets (>50,000 Labor Pool)

Geography	% Change
Seattle	21.5%
Toronto	21.2%
Denver	20.1%
Austin	20.1%
Vancouver	19.8%
Ottawa	19.6%
Portland	18.0%
Charlotte	17.1%
Dallas/Ft. Worth	14.7%
Tampa	14.5%
SF Bay Area	14.4%
Kansas City	12.5%
Phoenix	11.9%
Montreal	11.9%
Salt Lake City	11.6%
Atlanta	11.6%
Raleigh-Durham	11.0%
Houston	10.4%
Minneapolis/St. Paul	9.3%
Washington, D.C.	7.3%
South Florida	5.7%
Detroit	2.3%
New York Metro	2.2%
Boston	2.0%
Philadelphia	1.8%
St. Louis	1.8%
Baltimore	1.3%
Los Angeles/Orange Co.	1.3%
San Diego	0.7%
Chicago	0.0%

Small Tech Talent Markets (<50,000 Labor Pool)

Geography	% Change
Waterloo Region	26.3%
Nashville	14.8%
Edmonton	13.8%
Orlando	13.0%
Jacksonville	12.2%
Indianapolis	10.4%
San Antonio	9.4%
Columbus	9.1%
Calgary	8.5%
Richmond	7.6%
Quebec City	7.0%
Sacramento	5.6%
Cincinnati	2.1%
Milwaukee	0.4%
Madison	0.1%
Cleveland	-0.1%
Pittsburgh	-0.2%
Virginia Beach	-3.9%
Hartford	-4.7%
Rochester	-7.5%

Source: U.S. Census Bureau (Metro), Statistics Canada (Metro), 2021.
*Millennials aged 23-38 years.

Figure 9
Top 10 Most Concentrated Millennial* Markets (2019)
U.S. Average = 22.0%

#1	**Austin**	34.6%
#2	**Seattle**	33.3%
#3	**Denver**	32.4%
#4	**SF Bay Area**	32.0%
#5	**San Diego**	31.7%
#6	**Los Angeles/Orange Co.**	31.2%
#7	**Portland**	30.9%
#8	**Salt Lake City**	30.6%
#9	**Nashville**	30.4%
#10	**Columbus**	30.4%

Source: U.S. Census Bureau (Metro), 2021.
*Millennials aged 23-38 years.

Tech talent clusters tend to form in markets with a strong concentration of high-tech companies.

Similar traits among markets cause many of them to appear equivalent, but top tech markets distinguish themselves from the rest with tech clusters and higher concentrations of tech talent. These clusters typically form around preeminent universities that tend to invest the most in innovation and provide a constant flow of new talent for local companies. Tech clusters also form around leading companies that draw other companies to a region and support an innovative ecosystem that spawns new entrepreneurs. Tech companies use these clusters for synergy and competition, thereby accelerating the innovation process. These companies in the core high-tech industry are heavily concentrated, with about half of their workers doing tech-related jobs (Figure 10). Consequently, tech talent clusters tend to form in markets with a strong concentration of high-tech companies.

Figure 10
U.S. Tech Talent Labor Concentration by Industry (2020)
Tech Talent As % Of Total Industry Occupations
Total U.S. Employment = 3.9%
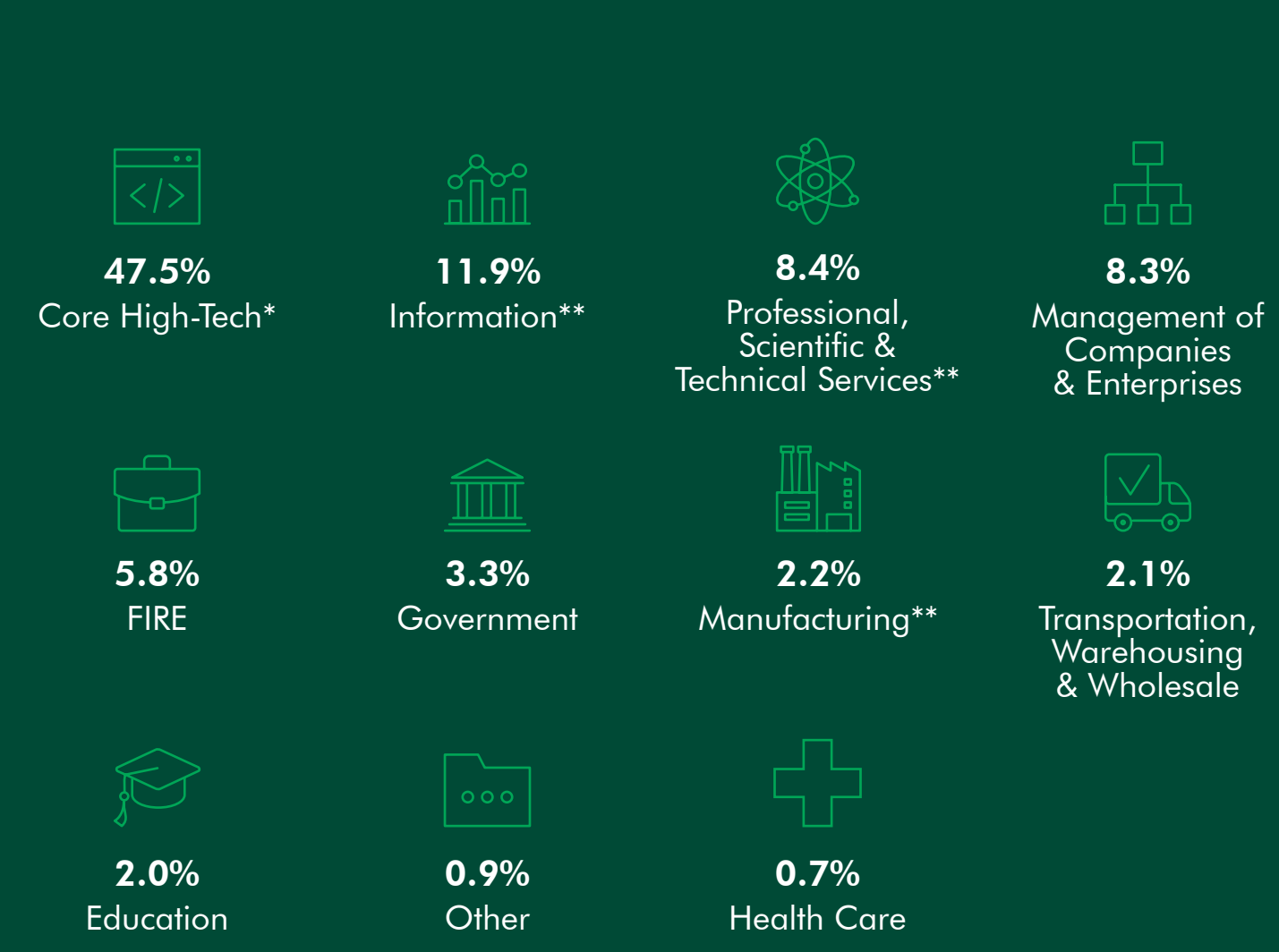
47.5%
Core High-Tech*

11.9%
Information**

8.4%
Professional,
Scientific &
Technical Services**

8.3%
Management of
Companies
& Enterprises

5.8%
FIRE

3.3%
Government

2.2%
Manufacturing**

2.1%
Transportation,
Warehousing
& Wholesale

2.0%
Education

0.9%
Other

0.7%
Health Care

Source: U.S. Bureau of Labor Statistics (National), April 2021.
*Includes computer software and services and computer product manufacturing.
**Excluding High-Tech

How diverse are Tech Talent markets?

Tech talent diversity by race/ethnicity and sex has occurred slowly. The COVID-19 pandemic has created an opportunity to accelerate the process via expanded remote work and workforce analytics. Strategic approaches to diverse team building can be enhanced by greater use of data and benchmarking analytics that identify where diverse talent is located and being developed. Our analysis details workforce race/ethnicity and sex by geography, industry and job classification; and college tech degree graduates' race/ethnicity and sex by geography.

The COVID-19 pandemic has created an opportunity to accelerate the process via expanded remote work and workforce analytics.

INDUSTRY DIVERSITY

Tech talent across all industries was little changed over the past five years and remains predominantly White, Asian and male relative to total employment and office-using employment.[4] According to 2019 data from the U.S. Census Bureau, Hispanics, Blacks and females were underrepresented (Figure 11). The tech industry, which accounts for 40% of tech talent in the U.S.,

had demographics similar to tech talent across all industries. The tech industry overall, which includes a 47% to 53% split between tech and non-tech occupations, also was underrepresented by Hispanics, Blacks and females.

[4] Race/Ethnicity as reported herein is based in standards from the U.S. Office of Management and Budget, Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting.
Office-using employment includes industries that heavily use office space for their operations including information, professional & business services and financial activities.

Figure 11
U.S. Workforce by Race/Ethnicity for Selected Industries (2019)

White   Asian   Hispanic   Black   Other

Tech Talent Workforce (All Industries)

White	Asian	Hispanic	Black	Other
57.4%	22.5%	8.7%	8.4%	3.0%

Tech Talent Workforce (Tech Industry)

White	Asian	Hispanic	Black	Other
54.6%	28.8%	7.7%	5.9%	2.9%

Tech Industry Workforce (All Occupations, Tech & Non-Tech)

White	Asian	Hispanic	Black	Other
61.1%	21.1%	8.5%	6.4%	2.9%

Office-Using Industry Workforce (All Occupations)

White	Asian	Hispanic	Black	Other
64.7%	9.0%	13.7%	10.0%	2.6%

Total Workforce (All Industries and Occupations)

White	Asian	Hispanic	Black	Other
56.5%	7.3%	20.8%	12.7%	2.7%

Source: U.S. Census, IPUMS and CBRE Research, May 2021.
Note: Office-using industries include information, financial activities and professional & business services (excluding tech industry within these categories).

Females were significantly underrepresented within tech talent occupations across all industries (Figure 12). Within the tech industry, females were more underrepresented in tech occupations at 22% compared with 27% across all industries. Females accounted for 43% of non-tech occupations within the tech industry, below the 46% share for total employment and 51% share for office-using industries. Females within underrepresented race/ethnicity groups (Hispanic, Black and Other) had a higher share of jobs than White and Asian females in four of the five workforce categories, with all employment being the exception. Black females had the highest share of jobs for all race/ethnicity groups and workforce categories.

Black females had the highest share of jobs for all race/ethnicity groups and workforce categories.

Figure 12
U.S. Workforce by Sex for Selected Industries (2019)

% Female of Total Workforce (Male and Female)

Legend:
- Tech Talent Workforce (All Industries)
- Tech Talent Workforce (Tech Industry)
- Tech Industry Workforce (All Occupations, Tech & Non-Tech)
- Office-Using Industry Workforce (All Occupations)
- Total Workforce (All Industries & Occupations)
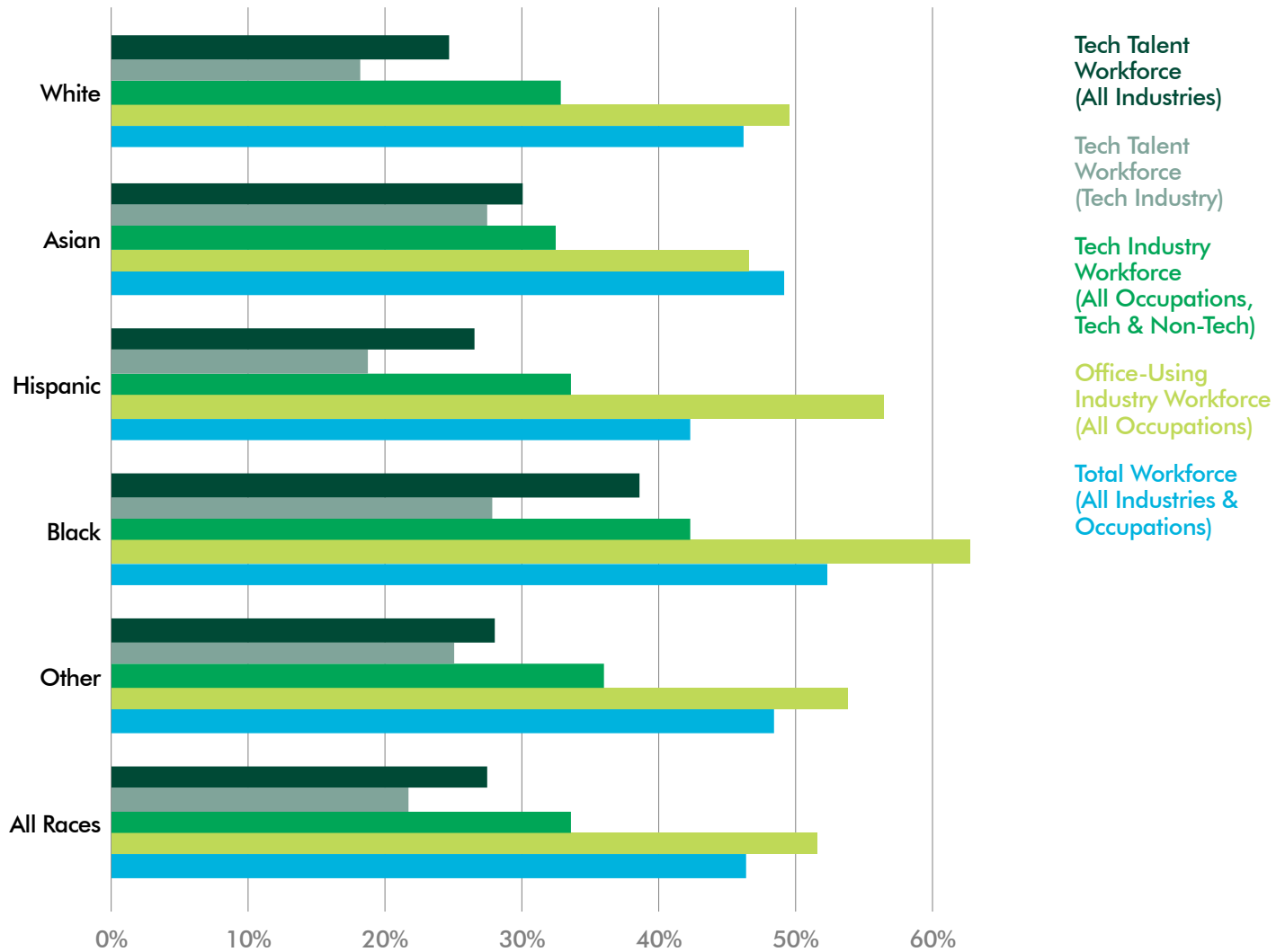
Source: U.S. Census, IPUMS and CBRE Research, May 2021.
Note: Office-using industries include information, financial activities and professional & business services (excluding tech industry within these categories).

OCCUPATION DIVERSITY

Segmenting tech talent occupations across all industries in two broad categories showed that female workers were concentrated within Computer Support, Database & Systems occupations at 69%. The other 31% of female workers were Software Developers, Programmers & Engineers (Figure 13). By race/ethnicity within these same occupations, females were less underrepresented than males in the Black and Other categories.

Figure 13
U.S. Tech Talent Occupation Category by Race/Ethnicity & Sex (2019)

Tech Talent Occupation Category	Share of Occupations	RACE/ETHNICITY SHARE OF OCCUPATIONS BY SEX				
		White	Asian	Hispanic	Black	Other
Software Developers, Programmers & Engineers (2.2M Jobs)						
Female	20.5%	43.4%	41.4%	5.7%	6.6%	2.8%
Male	79.5%	57.0%	29.4%	6.6%	4.2%	2.8%
Total (Both Sexes)	100.0%	54.2%	31.9%	6.4%	4.7%	2.8%
Computer Support, Database & Systems (3.2M Jobs)						
Female	32.0%	55.8%	17.1%	9.8%	14.2%	3.1%
Male	68.0%	61.4%	15.1%	10.7%	9.6%	3.1%
Total (Both Sexes)	100.0%	59.6%	15.8%	10.4%	11.1%	3.1%
Total Tech Talent (5.4M Jobs)						
Female	27.2%	51.9%	24.8%	8.5%	11.8%	3.0%
Male	72.8%	59.4%	21.7%	8.8%	7.1%	3.0%
Total (Both Sexes)	100.0%	57.4%	22.5%	8.7%	8.4%	3.0%

Source: U.S. Census, IPUMS and CBRE Research, May 2021.

Female workers were concentrated within Computer Support, Database & Systems occupations at 69%.

GEOGRAPHIC/MARKET DIVERSITY

Demographics should be benchmarked by the representative workforce within a geographical or market area. For tech talent markets, there was variability in underrepresented race/ethnic groups and females when benchmarked by office-using industries. If the difference between tech talent and the office-using benchmark was a positive number, it means there was no underrepresentation using this metric. For underrepresented race/ethnic groups, the most diverse tech talent markets were Pittsburgh, Charlotte, Nashville, Atlanta and Rochester (Figure 14). The least diverse markets were San Antonio, Greater Los Angeles/Orange County, Austin, San Francisco Bay Area and San Diego.

For females, the most diverse tech talent markets were Washington, D.C., Sacramento, Kansas City, Boston and Hartford (Figure 15). The least diverse markets were Cleveland, South Florida, Richmond, Orlando and St. Louis.

Figure 14
Underrepresented Race/Ethnic Groups in
U.S. Tech Talent Workforce by Market (2019)

Market	Difference*	Tech Talent Share of Underrepresented Groups**	Office-Using Share of Underrepresented Groups**
Most Diverse			
Pittsburgh	3.5%	12.2%	8.7%
Charlotte	0.8%	25.5%	24.7%
Nashville	0.4%	17.1%	16.7%
Atlanta	0.2%	36.1%	35.9%
Rochester	-0.6%	11.9%	12.6%
Least Diverse			
San Antonio	-14.7%	39.8%	54.5%
Los Angeles/Orange Co.	-12.6%	24.3%	36.9%
Austin	-10.5%	18.4%	28.9%
San Francisco Bay Area	-9.6%	10.7%	20.3%
San Diego	-9.1%	20.1%	29.2%

Source: U.S. Census, IPUMS and CBRE Research, May 2021.
*Difference calculation: Tech Talent Share minus Office-Using Share Benchmark
**Hispanic, Black, Other Non-White/Non-Asian

Figure 15
Females in U.S. Tech Talent Workforce by Market (2019)

Market	Difference*	Tech Talent Share of Females	Office-Using Share of Females
Most Diverse			
Washington, D.C.	-17.4%	32.3%	49.7%
Sacramento	-17.6%	35.6%	53.3%
Kansas City	-17.9%	33.2%	51.2%
Boston	-18.4%	30.3%	48.6%
Hartford	-19.5%	30.1%	49.6%
Least Diverse			
Cleveland	-29.7%	24.6%	54.2%
South Florida	-29.1%	23.2%	52.3%
Richmond	-28.5%	26.2%	54.6%
Orlando	-28.0%	25.0%	53.0%
St. Louis	-27.8%	24.9%	52.7%

Source: U.S. Census, IPUMS and CBRE Research, May 2021.
*Difference calculation: Tech Talent Share minus Office-Using Share Benchmark

TECH DEGREE GRADUATE DIVERSITY & CURRENT ENROLLMENT

The pipeline of recent tech degree graduates offers opportunities to build the next generation of talent and use analytics to measure success. These graduates, like the existing tech talent workforce, were predominantly White, Asian and male. Of the 318,000 U.S. tech degree graduates in 2019, 23.5% were from underrepresented race/ethnicity groups and 24.9% were female (Figure 16). Underrepresented race/ethnicity groups accounted for 29.1% of total college graduates in 2019 and females accounted for 58.3%. Asian, Hispanic and other race/ethnicity groups have materially increased their shares of tech degrees since 2010, while the shares of Whites have declined, Blacks have remained about the same and females have increased slightly.

For underrepresented race/ethnicity groups, the most diverse markets for tech degree graduates were South Florida, San Antonio,

The U.S. has a future tech degree graduate pipeline of about 1 million for students enrolled in bachelor's or higher programs as of Fall 2020.

Houston, Washington, D.C. and Tampa (Figure 17). The least diverse markets were Madison, Cincinnati, Milwaukee, Rochester and Detroit.

For females, the most diverse markets for tech degree graduates were Pittsburgh, Seattle, New York Metro, Boston and Houston (Figure 17). The least diverse markets were Salt Lake City, Orlando, Milwaukee, South Florida and Portland.

The U.S. has a future tech degree graduate pipeline of about 1 million, according to the National Student Clearinghouse Research Center and estimates by CBRE Research for students enrolled in bachelor's or higher programs as of Fall 2020. While diversity breakdowns for these students were not available, trends suggest they will represent greater tech talent workforce diversity than exists today.

Figure 16
U.S. Tech Degree Graduates' Race/Ethnicity & Sex (2019)

Bachelor's Degree or Higher

White Asian Hispanic Black Other Female Share of Tech Graduates

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
156,333	166,344	178,283	192,191	211,353	233,970	263,364	288,446	304,692	318,659

TECH DEGREE GRADUATES
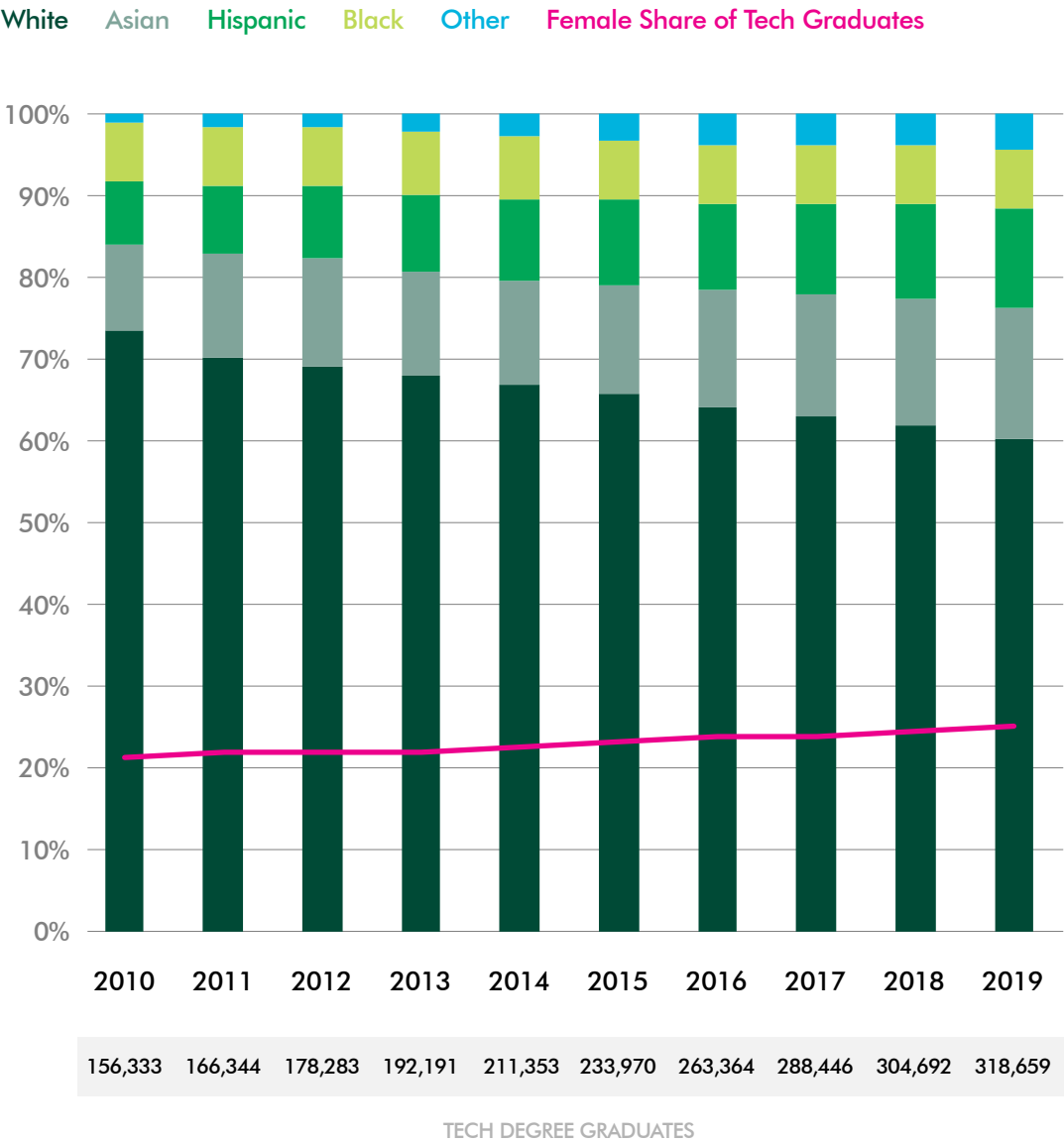
Source: IPEDS.
Note: Total tech degree graduates and sex breakdown includes U.S. resident and foreigners.
Race/ethnicity breakdown excludes unknown races and foreigners.

Figure 17
U.S. Tech Degree Graduates' Race/Ethnicity & Sex by Market (2019)
Bachelor's Degree or Higher

Market	Total Graduates	RACE/ETHNICITY**					
		White	Asian	Under-represented*	Hispanic	Black	Other
Most Diverse (Highest % Underrepresented Groups*)							
South Florida	2,770	25.8%	6.1%	68.1%	49.9%	15.1%	3.1%
San Antonio	1,328	32.2%	9.9%	57.8%	47.1%	6.5%	4.2%
Houston	3,054	34.2%	25.3%	40.5%	24.6%	14.0%	1.9%
Washington, D.C.	12,623	48.2%	16.8%	35.0%	8.7%	21.5%	4.7%
Tampa	1,868	56.1%	9.1%	34.7%	18.7%	12.8%	3.3%
Least Diverse (Lowest % Underrepresented Groups*)							
Madison	2,214	81.9%	9.5%	8.5%	3.9%	1.5%	3.1%
Cincinnati	2,310	78.7%	11.9%	9.4%	3.1%	3.6%	2.7%
Milwaukee	1,594	81.2%	7.5%	11.2%	5.0%	3.4%	2.8%
Rochester	2,467	76.6%	11.4%	12.0%	6.3%	2.5%	3.3%
Detroit	6,790	71.2%	16.5%	12.3%	4.5%	4.1%	3.7%

Market	Total Graduates	SEX			Market	Total Graduates	SEX	
		Male	Female				Male	Female
Most Diverse (Highest % Female)					**Least Diverse (Highest % Male)**			
Pittsburgh	5,414	69.1%	30.9%		Salt Lake City	5,844	86.8%	13.2%
Seattle	4,847	69.5%	30.5%		Orlando	2,793	83.7%	16.3%
New York Metro	20,576	69.7%	30.3%		Milwaukee	1,594	79.8%	20.2%
Boston	12,183	69.9%	30.1%		South Florida	2,770	79.3%	20.7%
Houston	3,054	70.4%	29.6%		Portland	2,931	77.9%	22.1%

Source: IPEDS and CBRE Research, May 2021.
Total tech degree graduates and sex breakdown includes U.S. resident and foreigners. Race/ethnicity breakdown excludes unknown races and foreigners.

*Aggregate of Hispanic, Black, Other Non-White/Non-Asian **Race/ethnicity breakdown excludes unknown races and foreigners.

TECH TALENT DIVERSITY PROGRESS

Greater diversity of the tech talent workforce should continue to slowly progress. Our review of U.S. Equal Employment Opportunity Commission diversity data and publicly released data from private tech companies confirms this. Changing the pace of workforce diversity is both a challenge and opportunity.

Technology will be critical to support a new hybrid approach to work, in which team members can work either in-person, remotely or from widely dispersed locations. Tech talent employers increased job postings that offer remote working arrangements to 12% for the 12 months ending in February 2021, up from only 5.5% in the previous 12-month period, according to EMSI data. This hybrid approach shows promise to expand tech talent recruitment across all markets and increase workforce diversity.

Technology will be critical to support a new hybrid approach to work, in which team members can work either in-person, remotely or from widely dispersed locations.

Which are the highest- and lowest-cost markets to operate in?

Employee wages are the greatest cost for companies in tech talent markets. These highly skilled and educated workers command a premium that often is more than double the average non-tech salary. The San Francisco Bay Area ranked highest for average tech talent worker salary at $144,000 per year, about $20,000 more than the next highest market (Seattle). The average tech worker salary in 13 of the 50 top tech talent markets was at or above the U.S. tech talent worker average.

Office rent is the second-highest cost for most companies. Even as remote work becomes more common, companies understand the benefits of tech clustering and often place a higher value on specific submarkets and even specific streets convenient to tech talent. Manhattan has the highest average office rents, followed by the San Francisco Bay Area, Greater Los Angeles/Orange County and Boston.

Combining wage and real estate costs provides insight into what a tech company might pay to operate in any of the top 50 tech talent markets. For this comparison, U.S. occupational averages were analyzed to determine the makeup of a typical 500-person tech company using 75,000 sq. ft. of office space. This occupational breakdown provides interesting insight into each market's relative costs (Figure 18).

Local market wages were applied to the various occupations to determine total annual wage costs by market, while local market rents were used to estimate the annual cost of renting a 75,000-sq.-ft. office to house 500 employees.[5] The San Francisco Bay Area topped the list with the highest estimated annual cost at more than $68 million, followed distantly by the other major tech markets of New York Metro, Seattle and Washington, D.C. (Figure 19).

Employee wages are the greatest cost for companies in tech talent markets.

[5] The COVID-19 outbreak may have lasting effects on office use and density.

Figure 18
Average U.S. Tech Company Occupation Pools
Typical 500-Person Tech Company
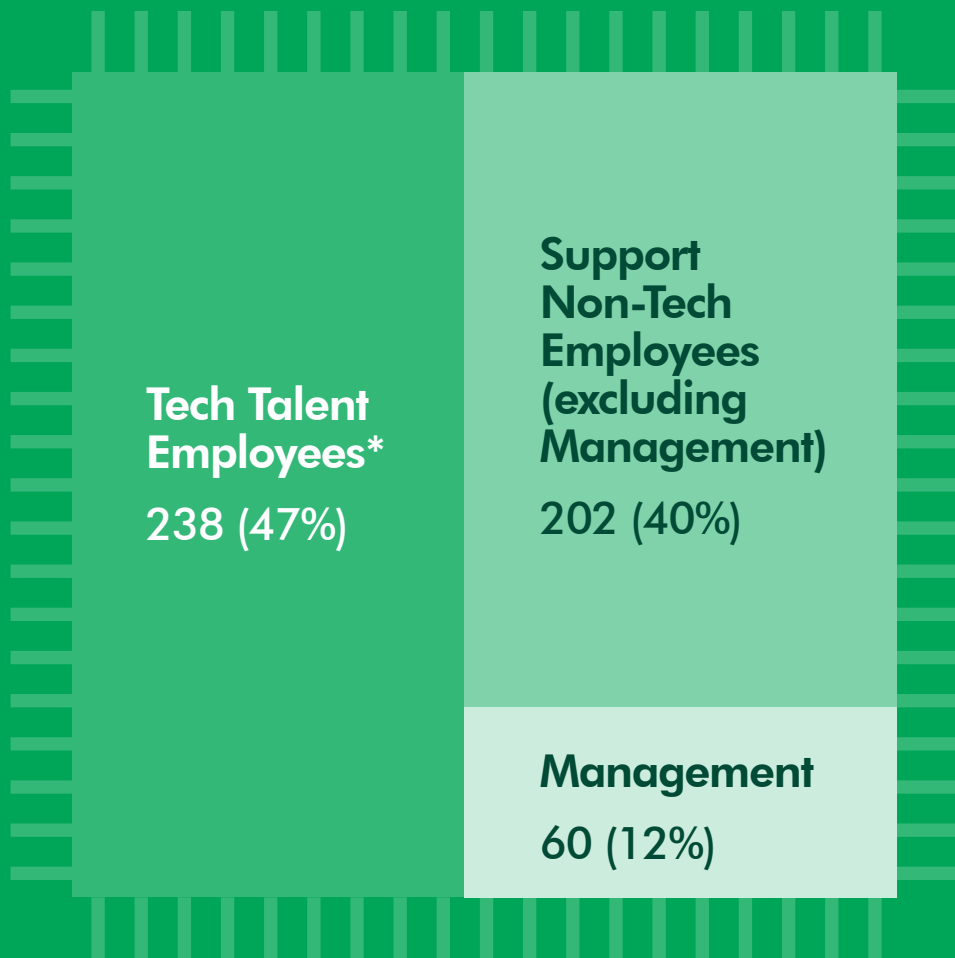
Tech Talent Employees*

238 (47%)

Support Non-Tech Employees (excluding Management)

202 (40%)

Management

60 (12%)

Figure 19
Estimated One-Year Company Costs by Market (500 Employees; 75,000 SF)

Market	Rent Cost (avg rent x 75,000 sf)	Tech Talent Wages (avg wage x 238 people)	Support Non-Tech Wages (avg wage x 202 people)	Management Wages (avg wage x 60 people)	Total
SF Bay Area	$5,253,336	$34,360,103	$15,694,420	$13,303,186	$68,611,046
New York Metro	$5,793,750	$28,119,799	$13,218,948	$12,079,200	$59,211,697
Seattle	$3,001,500	$30,161,857	$13,299,959	$10,273,800	$56,737,116
Washington, D.C.	$3,084,750	$27,900,741	$14,129,507	$10,670,400	$55,785,397
Boston	$3,148,500	$27,154,520	$13,221,127	$10,050,000	$53,574,148
Los Angeles/Orange Co.	$3,388,831	$26,180,345	$11,448,430	$11,050,200	$52,067,806
Denver	$2,183,250	$25,580,375	$12,952,469	$10,716,304	$51,432,398
San Diego	$2,866,500	$26,176,882	$11,542,894	$10,174,200	$50,760,476
Baltimore	$1,770,000	$26,252,880	$11,251,684	$9,516,600	$48,791,163
Philadelphia	$2,132,250	$24,389,860	$11,273,558	$9,677,400	$47,473,068
Minneapolis/St. Paul	$1,960,500	$24,369,018	$11,571,166	$9,358,200	$47,258,884
Sacramento	$1,890,000	$24,369,838	$10,857,432	$9,600,000	$46,717,270
Chicago	$2,426,250	$23,931,175	$10,807,378	$9,417,600	$46,582,403
Houston	$2,224,500	$24,220,443	$10,428,254	$9,690,000	$46,563,197
Dallas/Ft. Worth	$1,931,250	$24,371,839	$10,363,358	$9,730,800	$46,397,248
Charlotte	$2,312,250	$23,790,169	$10,901,353	$9,175,200	$46,178,972
Raleigh-Durham	$2,229,750	$23,953,048	$11,259,793	$8,705,915	$46,148,506
Atlanta	$2,215,500	$23,737,874	$10,617,225	$9,123,600	$45,694,199
Portland	$2,341,500	$23,653,419	$11,133,274	$8,557,800	$45,685,993
Austin	$2,954,250	$23,022,375	$10,350,230	$9,325,200	$45,652,055
Richmond	$1,593,750	$23,484,266	$10,825,808	$9,583,200	$45,487,023
Hartford	$1,466,250	$23,902,569	$11,323,251	$8,704,200	$45,396,270
South Florida	$3,047,299	$21,918,770	$9,677,489	$9,507,000	$44,150,558
Phoenix	$2,108,250	$22,289,794	$10,052,516	$8,789,400	$43,239,960
Columbus	$1,479,750	$22,058,820	$10,310,880	$8,644,800	$42,494,249
Detroit	$1,452,000	$21,806,161	$10,662,772	$8,535,876	$42,456,808
St. Louis	$1,578,293	$21,872,253	$10,177,794	$8,622,600	$42,250,940
Madison	$1,559,250	$21,982,411	$10,395,305	$8,118,600	$42,055,566
Tampa	$2,063,989	$21,544,833	$9,413,474	$9,009,000	$42,031,296
Cincinnati	$1,459,500	$21,799,883	$10,201,132	$8,527,200	$41,987,715
Cleveland	$1,402,500	$21,913,476	$10,190,782	$8,240,400	$41,747,158
San Antonio	$1,629,750	$21,797,565	$9,051,310	$9,022,800	$41,501,424
Virginia Beach	$1,520,250	$21,577,743	$9,313,768	$9,067,800	$41,479,561
Milwaukee	$1,512,750	$21,185,787	$10,319,091	$8,355,600	$41,373,228
Orlando	$1,857,000	$21,224,752	$9,145,449	$8,854,800	$41,082,002
Salt Lake City	$1,870,500	$21,225,684	$9,588,092	$8,359,260	$41,043,536
Pittsburgh	$1,730,250	$21,106,981	$9,466,876	$8,556,600	$40,860,707
Rochester	$1,462,500	$20,290,958	$10,146,031	$8,813,400	$40,712,889
Indianapolis	$1,605,750	$20,553,891	$10,302,026	$7,854,000	$40,315,666
Kansas City	$1,594,500	$20,651,272	$10,314,941	$7,584,000	$40,144,713
Nashville	$2,130,000	$20,138,320	$9,974,898	$7,691,400	$39,934,617
Jacksonville	$1,600,500	$19,991,529	$9,129,482	$8,182,800	$38,904,311
Calgary	$2,251,500	$17,000,811	$11,161,282	$5,454,342	$35,867,935
Ottawa	$1,885,762	$16,262,772	$10,537,009	$5,308,312	$33,993,855
Edmonton	$1,858,927	$16,458,281	$10,374,124	$5,166,888	$33,858,219
Toronto	$1,985,837	$15,904,751	$9,743,196	$5,135,266	$32,769,051
Vancouver	$2,683,563	$15,823,496	$9,330,227	$4,858,949	$32,696,235
Quebec City	$1,440,179	$15,096,634	$9,228,907	$6,730,734	$32,496,454
Montreal	$1,918,748	$14,945,300	$9,159,593	$5,571,569	$31,595,210
Waterloo Region	$1,475,401	$15,598,536	$9,177,296	$5,112,009	$31,363,242

Source: U.S. Bureau of Labor Statistics, April 2021, Canada Statistics 2021, CBRE Research (Metro), Q4 2020.
*in US$

How is Tech Talent quality vs. cost measured?

Assessing the quality of a labor market is challenging because there are no standard metrics to measure. Since salaries are the largest expense for most companies seeking tech talent, the quality of that tech talent is becoming one of their most important considerations. Figure 20 plots a quality assessment for software engineers (developers & programmers) against their average salary by market to illustrate this trade-off across the top 50 tech talent markets.

Labor quality was measured by the number and concentration of software engineers with three or more years of experience and who graduated from one of the top 25 computer science programs in North America, including the top three in Canada, as determined by U.S. News & World Report. The highest-cost markets (San Francisco Bay Area and Seattle) also have the highest concentration of quality tech talent. Nevertheless, good, high and very high concentrations

of quality tech talent are available in moderate and low-cost markets, providing a range of options. Due in part to exchange rates, Toronto, Vancouver, Montreal, Ottawa and Waterloo provide the best value when it comes to cost and quality, followed by Madison, Pittsburgh, Detroit, Indianapolis and Milwaukee.

Good, high and very high concentrations of quality tech talent are available in moderate and low-cost markets, providing a range of options.

Figure 20
Tech Talent Quality vs. Cost Analysis
Average Annual Salary for Software Engineer (US$)

LABOR COST

LABOR QUALITY*

The skills of the available labor pool are rising, but still not keeping pace with available jobs, causing a structural barrier to growth for companies across North America and slowing job creation. Jobs that require specific skills, such as software development and machine learning, remain in high demand, while the pool of available talent to fill them is limited. Only 40% of all tech talent workers are employed in the high-tech industry (Figure 1), meaning tech companies must compete with all other industries that employ the remaining 60% of tech workers. The COVID-19 pandemic has altered overall labor market dynamics as the unemployment rate for college-educated workers increased from 2.0% in 2019 to 8.7% in April 2020 before dropping to 3.4% by April 2021. Tech talent employment is more resilient and demand for tech skills remains high, which keeps labor costs rising across all markets even as remote work becomes more prevalent.

How does Tech Talent impact commercial real estate?

U.S. tech talent growth, primarily in the high-tech industry, has totaled 640,700 jobs over the past five years and been the top driver of U.S. office leasing activity during that time. While the high-tech industry's share of major leasing activity[6] nationwide fell to 17% in 2020 from a high of 21% in 2019, it remains the largest single share of any industry. Many tech talent markets, especially those with high concentrations or clusters of tech companies, have seen rising rents and declining vacancies as a result. Significant demand for office space in top markets that have added tens of thousands of workers over the past five years raised rents to their highest levels and pushed down vacancy rates to their lowest levels.

Office rent growth is highest in up-and-coming tech markets like Charlotte, Nashville and Atlanta— all 35% to 38% higher than they were five years ago. The pandemic has caused vacancy rate spikes in some of the larger tech markets like the San Francisco Bay Area and New York Metro. The largest increases have been in energy markets like Calgary, Dallas/Ft. Worth, Houston and Edmonton. Vacancy rates in Vancouver, Madison, Quebec City and Waterloo are the lowest of the top 50 tech talent markets (Figure 21).

The in-migration of talent to these tech markets also has a sizeable impact on residential real estate. New York Metro remains the most expensive market in which to rent an apartment. Apartment costs have increased in all markets except Calgary and Houston. Comparing the annual average apartment rent with the annual average tech-worker salary shows that tech salaries generally can cover the cost of living in even the most expensive markets (Figure 23), based on the affordability standard of 30% of income to housing.

COVID-19 has changed economic and real estate market dynamics across North America, with office demand lower and some housing demand shifted away from urban centers. Real estate demand will likely remain bifurcated in 2021 as the economy adjusts to pandemic changes. The ongoing structural impact of technological innovation on the economic cycle will endure and rise once again at a faster rate than the overall economy. Disruption is part of the innovation process, and tech talent markets across North America will provide both occupiers and investors with good real estate opportunities.

Real estate demand will likely remain bifurcated in 2021 as the economy adjusts to pandemic changes.
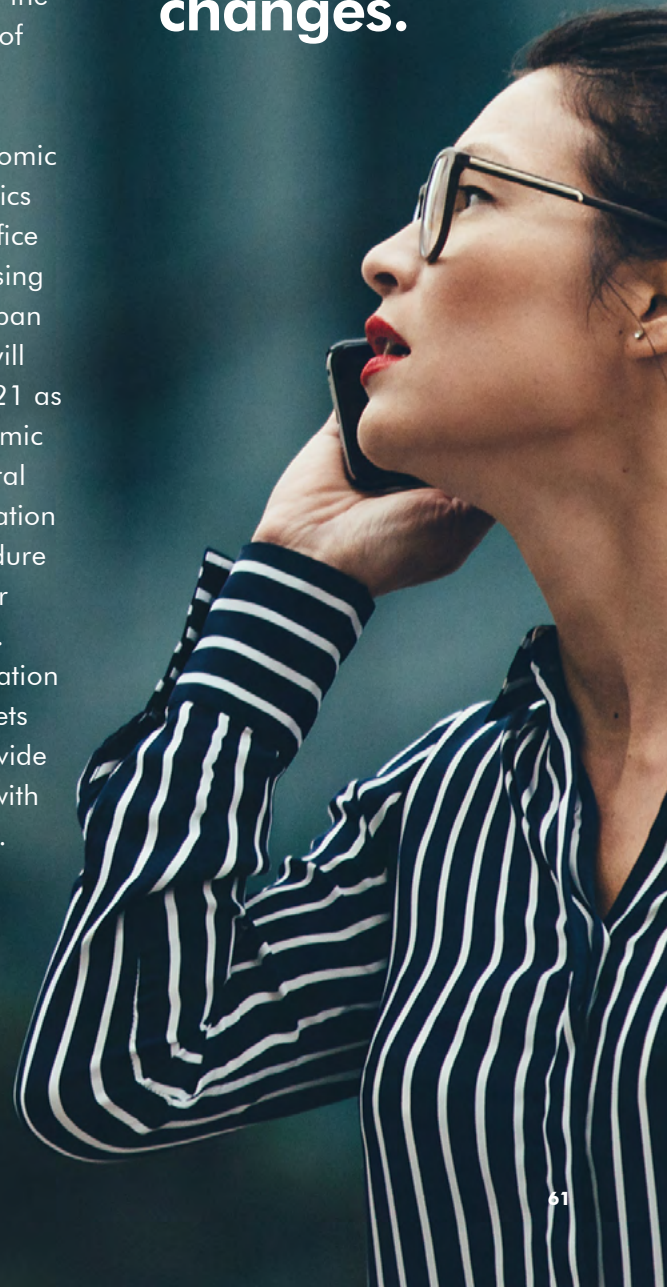
Figure 21
Office Asking Rent by Market (Q4 2020)

Market	Annual Gross Direct Asking Rent Per SF	Vacancy Rate
Manhattan	$77.25	11.3%
SF Bay Area	$70.04	12.2%
Los Angeles	$45.18	16.3%
Boston	$41.98	13.2%
Washington, D.C.	$41.13	17.7%
South Florida	$40.63	15.5%
Seattle	$40.02	12.3%
Austin	$39.39	16.7%
San Diego	$38.22	14.0%
Vancouver*	$35.78	6.2%
Chicago	$32.35	20.4%
Portland	$31.22	14.4%
Charlotte	$30.83	12.3%
Calgary*	$30.02	27.0%
Raleigh-Durham	$29.73	11.3%
Houston	$29.66	22.3%
Atlanta	$29.54	19.1%
Denver	$29.11	15.6%
Philadelphia	$29.07	16.2%
Nashville	$28.40	15.5%
Phoenix	$28.11	17.4%
Tampa	$27.84	13.9%
Toronto*	$26.48	10.9%
Minneapolis/St. Paul	$26.14	18.6%
Dallas/Ft. Worth	$25.75	23.4%
Montreal*	$25.58	12.3%
Sacramento	$25.20	11.2%
Ottawa*	$25.14	8.7%
Salt Lake City	$24.94	15.6%
Edmonton*	$24.79	20.6%
Orlando	$24.76	11.7%
Baltimore	$23.60	15.7%
Pittsburgh	$23.07	16.3%
San Antonio	$21.73	15.2%
Indianapolis	$21.41	19.6%
Jacksonville	$21.34	15.9%
Kansas City	$21.26	14.6%
St. Louis	$21.04	12.9%
Madison	$20.79	6.6%
Richmond	$20.66	8.5%
Virginia Beach	$20.27	10.0%
Milwaukee	$20.17	16.0%
Columbus	$19.73	19.4%
Waterloo Region*	$19.67	7.7%
Hartford	$19.55	20.1%
Rochester	$19.50	12.8%
Cincinnati	$19.46	18.4%
Detroit	$19.36	14.6%
Quebec City*	$19.20	7.3%
Cleveland	$18.70	16.4%

Source: CBRE Research (Office Market), Q4 2020.
*in US$
Note: New York represents Manhattan only.

Figure 22
Average Monthly Apartment Rent by Market (Q4 2020)

Market	Average Monthly Apartment Rent	Apt Rent 5 Yr. Growth
New York Metro	$2,589	-4%
SF Bay Area	$2,504	-8%
Los Angeles/Orange Co.	$2,222	8%
Boston	$2,120	6%
San Diego	$2,072	17%
Seattle	$1,744	13%
Washington, D.C.	$1,735	3%
South Florida	$1,712	8%
Sacramento	$1,602	37%
Denver	$1,518	9%
Chicago	$1,473	2%
Philadelphia	$1,458	14%
Portland	$1,429	11%
Hartford	$1,413	10%
Baltimore	$1,391	10%
Minneapolis/St. Paul	$1,340	14%
Virginia Beach	$1,314	15%
Atlanta	$1,302	20%
Tampa	$1,292	19%
Austin	$1,259	5%
Orlando	$1,253	14%
Phoenix	$1,250	33%
Nashville	$1,244	9%
Madison	$1,220	9%
Milwaukee	$1,212	11%
Dallas/Ft. Worth	$1,210	11%
Salt Lake City	$1,204	20%
Charlotte	$1,200	16%
Pittsburgh	$1,182	5%
Richmond	$1,182	20%
Raleigh-Durham	$1,181	16%
Jacksonville	$1,142	20%
Toronto*	$1,139	27%
Vancouver*	$1,124	32%
Rochester	$1,114	25%
Houston	$1,092	-1%
Detroit	$1,070	19%
Cincinnati	$1,033	16%
Columbus	$1,028	17%
Ottawa*	$1,012	29%
San Antonio	$1,010	8%
Kansas City	$1,004	12%
St. Louis	$992	10%
Cleveland	$973	11%
Indianapolis	$951	17%
Waterloo Region*	$910	29%
Calgary*	$891	-1%
Edmonton*	$859	1%
Montreal*	$664	20%
Quebec City*	$652	15%

Source: CBRE Econometric Advisors (Metro), Axiometrics, CMHC, Q4 2020.
*in US$

Figure 23
Tech Wage to Apartment Rent Ratio
(Q4 2020)

Market	Annualized Apartment Rent (2020)	Average Annual Tech Wage (2020)	Rent-to-Tech Wage Ratio
New York Metro	$31,070	$118,150	26.3%
Los Angeles/Orange Co.	$26,669	$110,001	24.2%
San Diego	$24,869	$109,987	22.6%
South Florida	$20,544	$92,096	22.3%
Boston	$25,444	$114,095	22.3%
SF Bay Area	$30,049	$144,370	20.8%
Toronto*	$13,668	$66,827	20.5%
Vancouver*	$13,489	$66,485	20.3%
Sacramento	$19,221	$102,394	18.8%
Ottawa*	$12,148	$68,331	17.8%
Washington, D.C.	$20,825	$117,230	17.8%
Nashville	$14,929	$84,615	17.6%
Chicago	$17,670	$100,551	17.6%
Virginia Beach	$15,768	$90,663	17.4%
Portland	$17,148	$99,384	17.3%
Tampa	$15,508	$90,525	17.1%
Philadelphia	$17,497	$102,478	17.1%
Denver	$18,217	$107,481	16.9%
Hartford	$16,960	$100,431	16.9%
Orlando	$15,033	$89,180	16.9%
Waterloo Region*	$10,922	$65,540	16.7%
Seattle	$20,923	$126,730	16.5%
Milwaukee	$14,544	$89,016	16.3%
Jacksonville	$13,710	$83,998	16.3%
Salt Lake City	$14,452	$89,184	16.2%
Phoenix	$14,995	$93,655	16.0%
Pittsburgh	$14,190	$88,685	16.0%
Madison	$14,640	$92,363	15.9%
Minneapolis/St. Paul	$16,075	$102,391	15.7%
Rochester	$13,368	$85,256	15.7%
Atlanta	$15,627	$99,739	15.7%
Austin	$15,111	$96,733	15.6%
Baltimore	$16,688	$110,306	15.1%
Calgary*	$10,690	$71,432	15.0%
Edmonton*	$10,314	$69,152	14.9%
Charlotte	$14,397	$99,959	14.4%
Richmond	$14,184	$98,673	14.4%
Dallas/Ft. Worth	$14,521	$102,403	14.2%
Raleigh-Durham	$14,176	$100,643	14.1%
Detroit	$12,845	$91,623	14.0%
Kansas City	$12,043	$86,770	13.9%
Cincinnati	$12,391	$91,596	13.5%
Columbus	$12,338	$92,684	13.3%
San Antonio	$12,120	$91,586	13.2%
Indianapolis	$11,407	$86,361	13.2%
St. Louis	$11,905	$91,900	13.0%
Houston	$13,107	$101,767	12.9%
Montreal*	$7,970	$62,795	12.7%
Cleveland	$11,677	$92,073	12.7%
Quebec City*	$7,818	$63,431	12.3%

Source: U.S. Bureau of Labor Statistics April 2021, Statistics Canada May 2021,
CBRE Econometric Advisors, Axiometrics, CMHC Q4 2020.
*in US$

Where else is tech headed?

The rising importance of technology in business and society has caused a global expansion of tech talent labor pools and implementation of more distributed labor strategies by tech talent employers seeking innovation potential and efficiency.

LATIN AMERICA'S TOP 10 MARKETS

The rising importance of technology in business and society has caused a global expansion of tech talent labor pools and implementation of more distributed labor strategies by tech talent employers seeking innovation potential and efficiency.

Latin America has long been an important source of tech talent in North America, initially focused on manufacturing and business services. During the most recent economic growth cycle, Latin America's tech talent has increasingly focused on software development and innovation. This has attracted many multinational technology companies to the region, as well as further developed Latin America's own technology industry.

Over the past five years, Latin America's tech talent workforce has grown about twice as fast as that of the U.S. While costs have risen with rapid growth, average wages in Latin America remain about one-third of those in the U.S. The three largest Latin American tech talent markets are Sao Paulo, Mexico City and Santiago, while the fastest growing by far is Bogota.

Real estate costs are also relatively low, making Latin America an even more attractive option for tech talent employers.

Figure 24
Latin America's Top 10 Markets

Market	Total Tech Employment (2020)[1]	Total Tech Growth (5 years)[1]	Total Tech Wages (US$) (2020)[2]	Total Tech Wage Growth (local currency) (5 years)[2]	Software Developer Wages (US$) (2020)[2]	Software Developer Wage Growth (local currency) (5 years)[2]	Total Tech Degree Graduates (2020)	Total Tech Degree Growth (5 years)
São Paulo, Brazil	201,000	6%	$54,661	39%	$56,157	30%	12,093	0
Mexico City, Mexico	171,000	20%	$28,737	25%	$35,314	18%	19,100	4%
Santiago, Chile	112,806	13%	$39,818	8%	$45,958	20%	6,677	-2%
Buenos Aires, Argentina	86,722	20%	$18,785	-39%	$29,888	-34%	4285	8%
Bogota, Colombia	88,500	174%	$16,441	16%	$27,605	5%	6,666	84%
San Jose, Costa Rica	50,016	54%	$22,690	12%	$40,366	16%	2,670	9%
Guadalajara, Mexico	43,000	54%	$24,161	26%	$40,778	22%	4,970	21%
Monterrey, Mexico	28,000	84%	$29,053	22%	$35,606	17%	2770	39%
Panama City, Panama	14,997	0%	$23,998	6%	$27,391	1%	940	27%
Campinas, Brazil	17,500	37%	$40,893	35%	$50,052	28%	2,254	0
10-Market Averages	813,541	38%	$33,851	17%	$41,303	14%	62,425	18%
U.S. Overall Averages	5,408,660	13%	$102,423	13%	$109,763	12%	251,582	51%

(1) Jobs related to the development, operation, monitoring and support of the digitized information transmission processes.
(2) Based on 2020 annual average exchange rates.
(3) Submarkets where tech firms are predominantly located.
(4) Submarkets where tech employees predominantly live.

Monterrey, Mexico
Guadalajara, Mexico
Mexico City, Mexico
San Jose, Costa Rica
Panama City, Panama
Bogota, Colombia
Campinas, Brazil
São Paulo, Brazil
Santiago, Chile
Buenos Aires, Argentina

Annual Avg. Office Asking Rent Per SF (US$) (Q4 2020)[3]	Office Rent Growth (5 years)[3]	Office Vacancy Rate	Avg. Monthly Apartment Rent (US$) (Q4 2020)[4]	Apt Rent Growth (5 years)[4]
$22.94	-34%	16%	$750	24%
$22.68	-10%	20%	$750	22%
$23.69	16%	7%	$600	14%
$24.05	-6%	12%	$475	-21%
$17.54	-19%	12%	$612	22%
$18.00	-18%	14%	$625	7%
$20.23	13%	24%	$650	22%
$18.45	-24%	19%	$700	22%
$17.20	-33%	24%	$1,000	1%
$12.21	-57%	17%	$610	24%
$19.70	-15%	17%	$677.20	14%
$36.60	22%	15%	$1,668	6%

NORTH AMERICA'S NEXT 25

Fostering talent development in lesser-known and underdeveloped U.S. and Canadian markets could offer additional talent pools to employers seeking to expand their geographical reach and uncover opportunities. These 25 smaller markets represent potential and in the U.S. are concentrated in the Midwest and South. They have been separately ranked from the top 50 markets according to their relative strength.

Figure 25
The Next 25 Markets
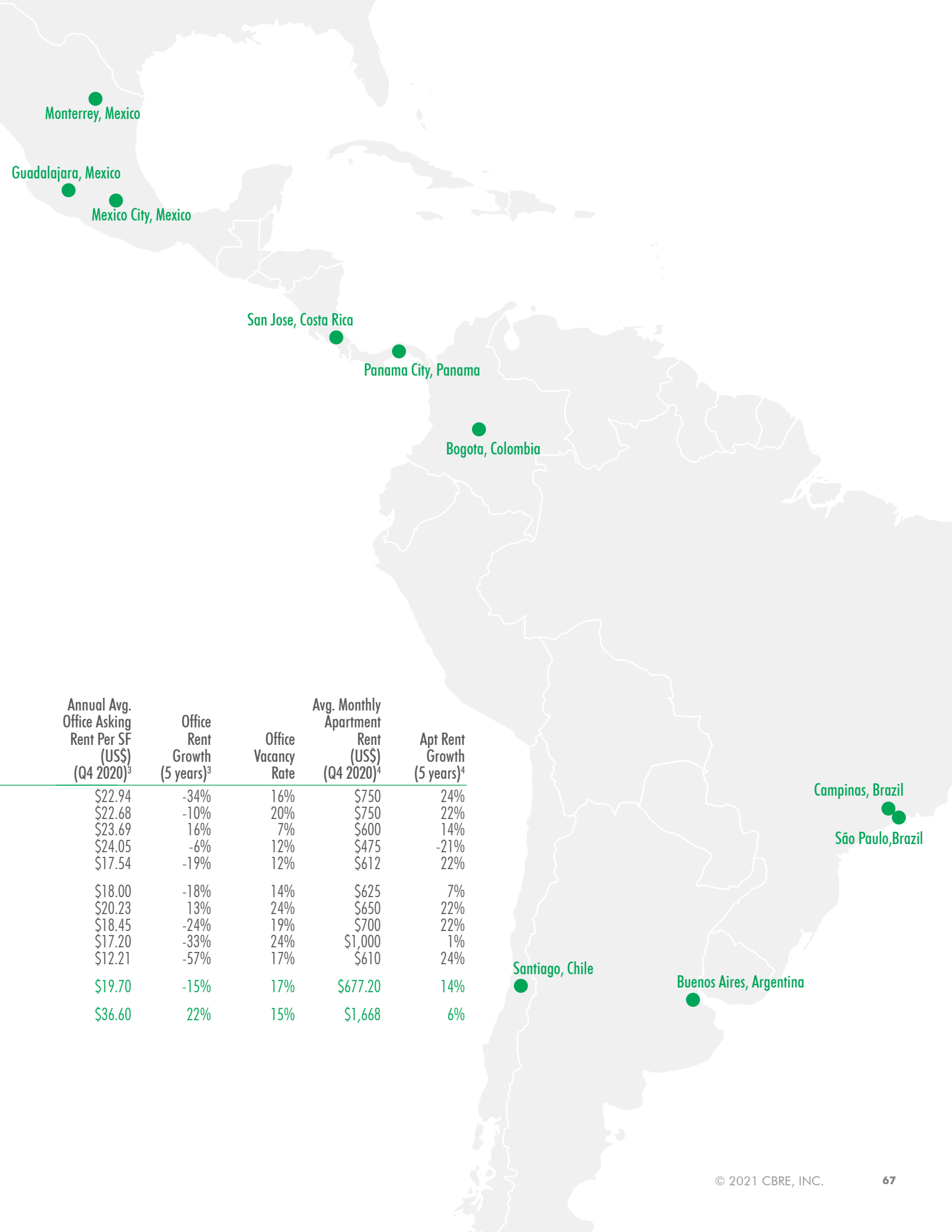
Market	Total Tech Employment (2020)	Total Tech Growth (5 years)	Total Tech Wages (2020)	Total Tech Wage Growth (5 years)	Software Developer Wages (2020)	Software Developer Wage Growth (5 years)	Tech Talent Degree Graduates (2019)
1. Dayton	18,930	31%	$90,125	11%	$92,548	19.2%	1,655
2. Huntsville	20,540	9%	$101,129	7%	$108,089	5.3%	819
3. Colorado Springs	19,380	21%	$102,630	11%	$107,859	4.4%	1,449
4. Omaha	22,600	17%	$88,613	13%	$92,255	13.3%	876
5. Des Moines	18,320	43%	$90,630	12%	$92,321	9.3%	2,243
6. Albany	18,840	3%	$89,321	11%	$90,886	12.7%	1,914
7. Halifax	14,700	24%	$55,241	9%	$59,643	15.6%	834
8. Providence	17,160	-3%	$100,137	15%	$104,860	14.8%	1,924
9. Tucson	15,850	47%	$85,786	13%	$96,868	20.5%	1,238
10. London, Ontario	13,500	67%	$52,767	13%	$51,851	19.2%	761
11. Trenton	12,850	-5%	$104,718	8%	$104,180	3.1%	693
12. Inland Empire	22,910	37%	$91,585	18%	$96,085	5.3%	1,476
13. Louisville	19,290	31%	$83,934	16%	$90,113	22.2%	641
14. Stamford	14,590	-4%	$116,918	18%	$115,390	17.8%	496
15. Tulsa	12,460	19%	$82,815	13%	$86,092	9.7%	304
16. Las Vegas	18,430	29%	$81,821	2%	$89,151	9.1%	365
17. Buffalo	13,990	3%	$83,990	19%	$85,528	9.9%	1,867
18. Harrisburg	12,960	1%	$87,266	15%	$85,111	10.8%	866
19. Palm Bay, FL	13,170	11%	$97,633	14%	$107,925	15.5%	477
20. Boise	12,680	41%	$80,476	10%	$89,977	31.3%	690
21. Winnipeg	18,800	37%	$58,682	6%	$57,731	12.8%	538
22. Honolulu	12,050	18%	$87,783	13%	$95,708	29.4%	471
23. Albuquerque	12,500	-7%	$88,012	10%	$92,424	-0.2%	503
24. Oklahoma City	19,410	3%	$83,054	17%	$85,405	12.9%	1,166
25. Birmingham	15,550	1%	$90,249	13%	$93,238	13.1%	527

Source: U.S. Bureau of Labor Statistics, Statistics Canada, CBRE Research, 2021.
* Wages in US$
Note: Markets were separately ranked according to their relative strength based on eight of the 13 metrics used for the top 50.
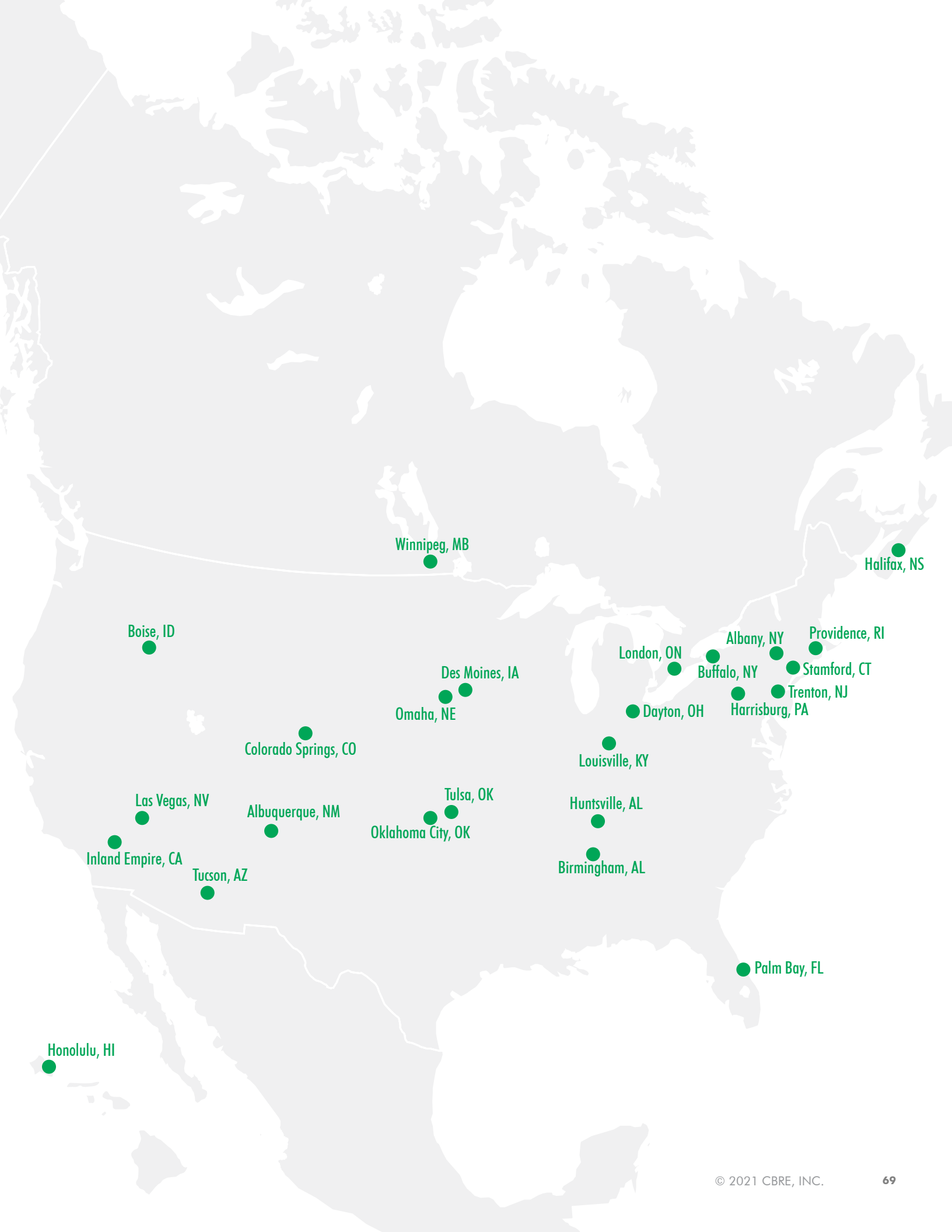
Winnipeg, MB

Halifax, NS

Boise, ID

Albany, NY
Providence, RI

London, ON
Buffalo, NY
Stamford, CT

Des Moines, IA
Trenton, NJ
Harrisburg, PA

Omaha, NE
Dayton, OH

Colorado Springs, CO

Louisville, KY

Las Vegas, NV
Tulsa, OK

Albuquerque, NM
Huntsville, AL

Oklahoma City, OK

Inland Empire, CA

Tucson, AZ
Birmingham, AL

Palm Bay, FL

Honolulu, HI

APPENDIX

EX PRIX

1 SF Bay Area

SCORE
86.40

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**373,430**	**16.4%**	**$144,370**	**16.6%**
Software Developers & Programmers	166,020	14.6%	$147,747	13.9%
Computer Support, Database & Systems	130,600	27.6%	$120,342	15.8%
Computer & Information Systems Managers	40,360	62.0%	$221,720	20.9%
Technology Engineering-Related	36,450	-24.9%	$129,434	10.3%
Total Non-Tech Occupations	**407,650**	**0.4%**	**$77,695**	**15.6%**
Sales	63,540	11.0%	$112,113	17.4%
Administrative & Office Support	202,710	-11.0%	$50,751	13.7%
Business Operations & Finance	92,570	17.1%	$102,187	5.0%
Marketing	48,830	15.8%	$98,333	4.4%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

The population of millennials grew by 211,414 (14.4%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		-3.1%
Millennial (23-38 Years)		**14.4%**
Gen X (39-54 Years)		-4.1%
Baby Boom (55-73 Years)		-8.8%
Silent (74+ Years)		-32.5%

-200 -150 -100 -50 0 50 100 150 200 250 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 4.4M)   Female
38% | 30% | 23% | 5% | 4% | 45%

Office-Using Industry Workforce (All Occupations, 2.0M)
44% | 36% | 13% | 4% | 4% | 46%

Tech Industry Workforce (All Occupations, 435K)
39% | 48% | 7% | 3% | 4% | 33%

Tech Talent Workforce (All Industries, 373K)
33% | 56% | 6% | 2% | 3% | 26%

Tech Talent Workforce (Tech Industry, 209K)
31% | 59% | 4% | 2% | 3% | 23%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$70.04
12.2%

— Rent (FSG)
— Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$2,504
PER UNIT/MO.

-7.9%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#1 RANK | **$63M** TALENT | + | **$5M** OFFICE RENT | = | **$68.6M** TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	7,195	89%	71%	29%
Math/Statistics	1,642	35%	66%	34%
Other Tech Engineering	2,128	32%	74%	26%
Totals	10,965	65%	71%	29%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	7,195	30%	50%	12%	2%	6%
Math/Statistics	1,642	37%	38%	17%	1%	7%
Other Tech Engineering	2,128	40%	31%	18%	2%	9%
Totals	10,965	33%	44%	14%	2%	7%

Source: The National Center for Education Statistics (Region), 2020.

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**184,660**	**35.4%**	**$126,730**	**15.3%**
Software Developers & Programmers	114,800	56.3%	$134,430	12.2%
Computer Support, Database & Systems	47,770	7.8%	$100,410	14.6%
Computer & Information Systems Managers	10,560	26.9%	$171,230	12.9%
Technology Engineering-Related	11,530	12.2%	$118,356	16.4%
Total Non-Tech Occupations	**235,720**	**14.0%**	**$65,841**	**27.8%**
Sales	23,350	26.5%	$87,088	27.9%
Administrative & Office Support	130,460	-1.5%	$46,878	21.1%
Business Operations & Finance	49,330	35.0%	$87,165	14.0%
Marketing	32,580	68.3%	$94,262	23.5%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

The population of millennials grew by 184,646 (21.5%) since 2014.
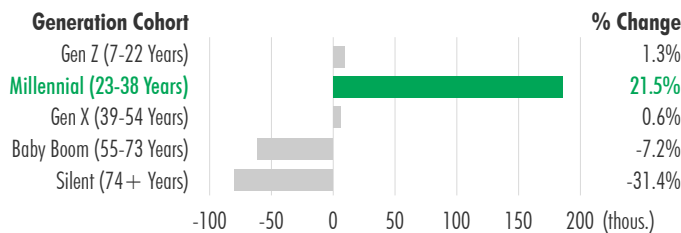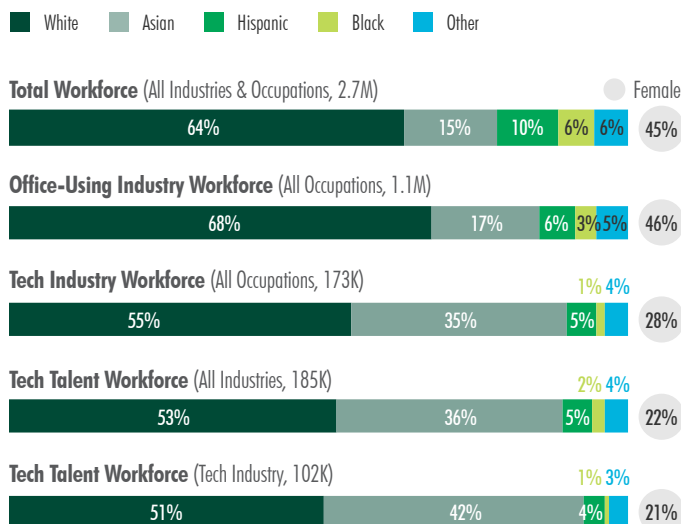
Generation Cohort	% Change
Gen Z (7-22 Years)	1.3%
Millennial (23-38 Years)	21.5%
Gen X (39-54 Years)	0.6%
Baby Boom (55-73 Years)	-7.2%
Silent (74+ Years)	-31.4%

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

Legend: White | Asian | Hispanic | Black | Other

Total Workforce (All Industries & Occupations, 2.7M) — Female 45%
64% | 15% | 10% | 6% | 6%

Office-Using Industry Workforce (All Occupations, 1.1M) — Female 46%
68% | 17% | 6% | 3% | 5%

Tech Industry Workforce (All Occupations, 173K) — Female 28%
55% | 35% | 5% | 1% | 4%

Tech Talent Workforce (All Industries, 185K) — Female 22%
53% | 36% | 5% | 2% | 4%

Tech Talent Workforce (Tech Industry, 102K) — Female 21%
51% | 42% | 4% | 1% | 3%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$40.02

12.3%

Rent (FSG) — Vacancy (%)
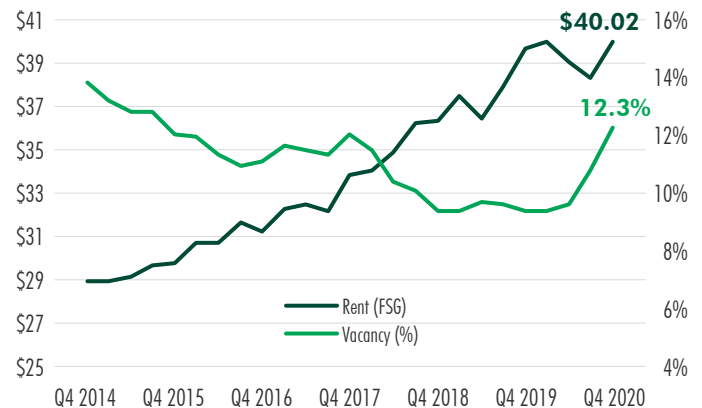
Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,744 PER UNIT/MO.

13.2% FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#3 RANK

$53M TALENT + **$3M** OFFICE RENT = **$56.7M** TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	3,365	110%	70%	30%
Math/Statistics	668	28%	63%	37%
Other Tech Engineering	814	44%	74%	26%
Totals	4,847	80%	69%	31%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	3,365	47%	33%	6%	5%	8%
Math/Statistics	668	62%	26%	6%	1%	5%
Other Tech Engineering	814	61%	21%	8%	2%	9%
Totals	4,847	51%	30%	6%	4%	8%

Source: The National Center for Education Statistics (Region), 2020.

3 Washington, D.C.

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**265,370**	**10.0%**	**$117,230**	**10.5%**
Software Developers & Programmers	91,690	20.9%	$116,402	6.1%
Computer Support, Database & Systems	138,270	4.8%	$109,307	12.5%
Computer & Information Systems Managers	19,130	11.4%	$177,840	10.7%
Technology Engineering-Related	16,280	-0.2%	$117,966	14.0%
Total Non-Tech Occupations	**404,060**	**4.3%**	**$69,948**	**15.7%**
Sales	41,910	20.8%	$94,450	12.2%
Administrative & Office Support	204,370	-5.5%	$46,028	14.5%
Business Operations & Finance	104,030	11.9%	$96,113	8.9%
Marketing	53,750	23.8%	$91,151	9.6%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

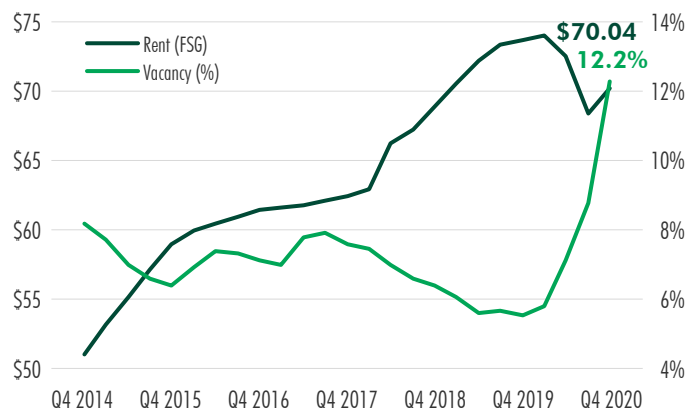The population of millennials grew by 99,663 (7.3%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		0.3%
Millennial (23-38 Years)		7.3%
Gen X (39-54 Years)		-1.9%
Baby Boom (55-73 Years)		-8.9%
Silent (74+ Years)		-30.3%

-150 -100 -50 0 50 100 150 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 4.2M) — ○ Female
| 46% | 10% | 17% | 24% | 3% | 47% |

Office-Using Industry Workforce (All Occupations, 1.8M)
| 55% | 12% | 9% | 21% | 3% | 50% |

Tech Industry Workforce (All Occupations, 224K)
| 52% | 22% | 7% | 16% | 3% | 34% |

Tech Talent Workforce (All Industries, 265K)
| 48% | 24% | 6% | 19% | 3% | 32% |

Tech Talent Workforce (Tech Industry, 113K)
| 48% | 29% | 6% | 14% | 2% | 25% |

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

— Rent (FSG)
— Vacancy (%)

17.7%
$41.13

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,735
PER UNIT/MO.

2.9%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#4 RANK | **$53M** TALENT + **$3M** OFFICE RENT = **$55.8M** TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	10,126	50%	74%	26%
Math/Statistics	985	37%	56%	44%
Other Tech Engineering	1,512	6%	81%	19%
Totals	12,623	42%	74%	26%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	10,126	46%	16%	9%	24%	5%
Math/Statistics	985	57%	23%	7%	9%	4%
Other Tech Engineering	1,512	63%	16%	8%	9%	4%
Totals	12,623	48%	17%	9%	22%	5%

Source: The National Center for Education Statistics (Region), 2020.

4 Toronto

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	270,400	42.8%	$89,648	12.6%
Software Developers & Programmers	75,900	31.3%	$89,690	13.8%
Computer Support, Database & Systems	114,900	74.4%	$84,219	8.5%
Computer & Information Systems Managers	32,000	77.8%	$114,816	11.0%
Technology Engineering-Related	47,500	-0.2%	$85,717	15.5%
Total Non-Tech Occupations	380,000	10.9%	$64,705	9.7%
Sales	27,900	3.3%	$59,322	-4.8%
Administrative & Office Support	170,600	5.0%	$50,440	16.8%
Business Operations & Finance	124,900	21.9%	$83,054	7.5%
Marketing	56,600	11.4%	$69,867	-1.2%

Source: Statistics Canada (Metro Area), April 2021.
*Data in C$

OFFICE RENT & VACANCY TRENDS

10.9%
$35.52

Rent (FSG)
Vacancy (%)

Source: CBRE Research (Metro Area), Q4 2020.
*Data in C$

POPULATION TRENDS

The population of millennials grew by 277,938 (21.2%) since 2014.
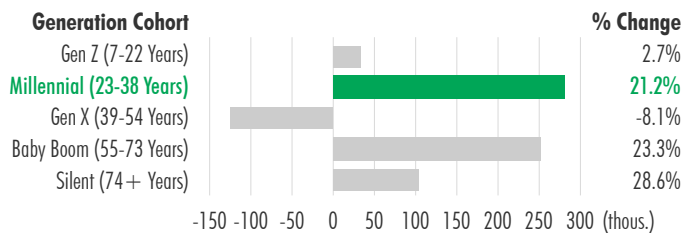
Generation Cohort		% Change
Gen Z (7-22 Years)		2.7%
Millennial (23-38 Years)		21.2%
Gen X (39-54 Years)		-8.1%
Baby Boom (55-73 Years)		23.3%
Silent (74+ Years)		28.6%

-150 -100 -50 0 50 100 150 200 250 300 (thous.)
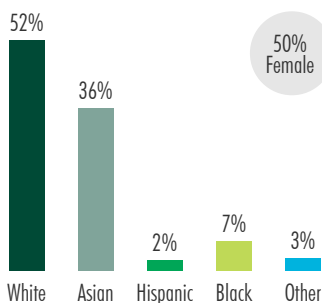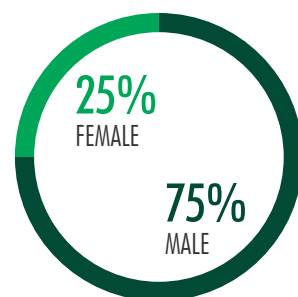
Source: Statistics Canada, April 2021.
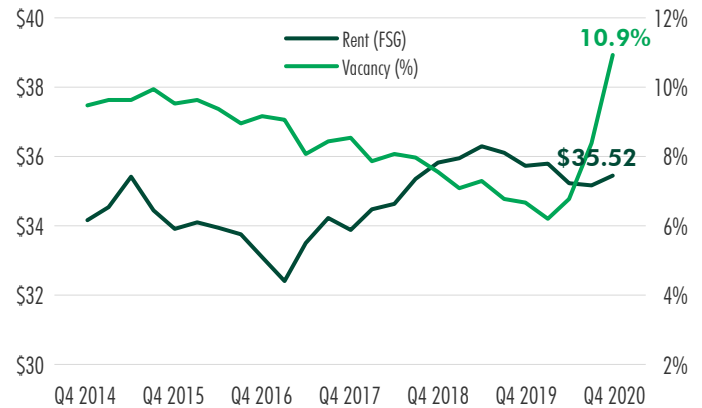
AVERAGE APARTMENT RENT

$1,139*
PER UNIT/MO.

27.1%
FIVE-YEAR GROWTH

Source: Apt. rent data from CMHC (Metro), Q4 2020.
*US$ ($1,528 in C$)

AVERAGE ANNUAL OPERATING COSTS

#46
RANK

$31M
TALENT

+

$2M
OFFICE RENT

=

$32.8M
TOTAL

Source: Statistics Canada (Metro Area), CBRE Research, 2021.
US$

WORKFORCE DIVERSITY

Total Workforce by Race/Ethnicity
(All Industries & Occupations)

52% White
36% Asian
2% Hispanic
7% Black
3% Other

50% Female

Tech Talent by Sex

25% FEMALE
75% MALE

Source: Statistics Canada Census, 2016.

Source: Statistics Canada, April 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19
Computer Engineering	1,896	84%
Math/Statistics	1,311	120%
Other Tech Engineering	3,010	29%
Totals	6,217	57%

Source: Various Canadian Ministries of Education (Region), 2021.

5 New York Metro

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**348,330**	**6.7%**	**$118,150**	**13.3%**
Software Developers & Programmers	136,120	9.1%	$117,902	12.3%
Computer Support, Database & Systems	157,230	7.5%	$100,258	10.9%
Computer & Information Systems Managers	37,080	16.1%	$201,320	16.2%
Technology Engineering-Related	17,900	-23.4%	$104,922	13.0%
Total Non-Tech Occupations	**1,211,660**	**-4.3%**	**$65,440**	**18.8%**
Sales	107,570	-1.3%	$92,247	9.8%
Administrative & Office Support	719,620	-13.3%	$43,521	13.5%
Business Operations & Finance	262,710	16.1%	$105,625	12.6%
Marketing	121,760	20.7%	$84,601	13.4%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

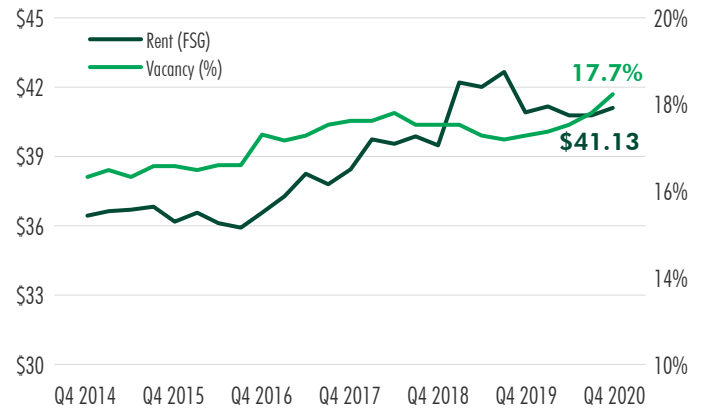The population of millennials grew by 96,136 (2.2%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		-4.0%
Millennial (23-38 Years)		2.2%
Gen X (39-54 Years)		-4.9%
Baby Boom (55-73 Years)		-8.7%
Silent (74+ Years)		-34.6%

-600 -500 -400 -300 -200 -100 0 100 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 12.5M) ● Female

| 48% | 11% | 24% | 15% | 2% | 47% |

Office-Using Industry Workforce (All Occupations, 4.4M)

| 58% | 13% | 15% | 11% | 2% | 51% |

Tech Industry Workforce (All Occupations, 298K)

| 57% | 25% | 10% | 6% | 3% | 35% |

Tech Talent Workforce (All Industries, 348K)

| 48% | 31% | 10% | 8% | 2% | 26% |

Tech Talent Workforce (Tech Industry, 118K)

| 47% | 35% | 10% | 5% | 3% | 22% |

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

— Rent (FSG)
— Vacancy (%)

$77.25
11.3%

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Manhattan only), Q4 2020.

AVERAGE APARTMENT RENT

$2,589
PER UNIT/MO.

-3.7%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#2
RANK

$53M
TALENT

+

$6M
OFFICE RENT

=

$59.2M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	13,616	96%	71%	29%
Math/Statistics	3,776	44%	58%	42%
Other Tech Engineering	3,184	24%	77%	23%
Totals	**20,576**	**69%**	**70%**	**30%**

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	13,616	35%	35%	17%	11%	3%
Math/Statistics	3,776	48%	28%	15%	7%	2%
Other Tech Engineering	3,184	55%	24%	13%	5%	3%
Totals	**20,576**	**41%**	**32%**	**16%**	**9%**	**3%**

Source: The National Center for Education Statistics (Region), 2020.

6 Boston

SCORE

62.60

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**168,090**	**7.2%**	**$114,095**	**11.5%**
Software Developers & Programmers	68,590	5.9%	$116,838	7.7%
Computer Support, Database & Systems	63,530	15.3%	$95,781	11.5%
Computer & Information Systems Managers	19,320	36.3%	$167,500	13.1%
Technology Engineering-Related	16,650	-26.6%	$110,704	15.2%
Total Non-Tech Occupations	**321,710**	**11.8%**	**$65,451**	**18.2%**
Sales	37,660	0.8%	$94,641	-6.3%
Administrative & Office Support	180,320	-5.0%	$47,288	14.4%
Business Operations & Finance	73,610	13.2%	$90,878	6.1%
Marketing	30,120	10.8%	$75,549	5.4%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

The population of millennials grew by 28,538 (2.0%) since 2014.

Generation Cohort	% Change
Gen Z (7-22 Years)	6.8%
Millennial (23-38 Years)	**2.0%**
Gen X (39-54 Years)	-1.2%
Baby Boom (55-73 Years)	-6.9%
Silent (74+ Years)	-33.7%

-200 -150 -100 -50 0 50 100 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 3.4M)   ○ Female

72% | 8% | 11% | 7% | 3% | 47%

Office-Using Industry Workforce (All Occupations, 1.3M)
2%
78% | 9% | 6% | 5% | 49%

Tech Industry Workforce (All Occupations, 142K)
3% 2%
74% | 16% | 5% | 35%

Tech Talent Workforce (All Industries, 168K)
3% 2%
68% | 21% | 6% | 30%

Tech Talent Workforce (Tech Industry, 64K)
3% 2%
67% | 23% | 6% | 27%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$41.98

13.2%

Rent (FSG)
Vacancy (%)
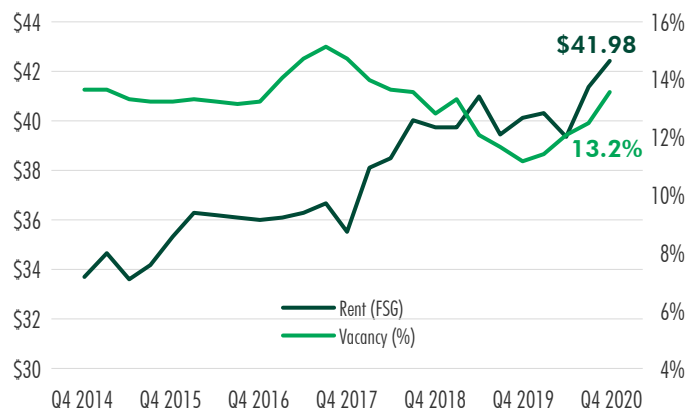
Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$2,120
PER UNIT/MO.

5.7%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#5
RANK

$50M
TALENT

+

$3M
OFFICE RENT

=

$53.6M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	7,173	92%	72%	28%
Math/Statistics	1,852	98%	57%	43%
Other Tech Engineering	3,158	51%	72%	28%
Totals	12,183	80%	70%	30%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	7,173	55%	26%	9%	5%	4%
Math/Statistics	1,852	60%	25%	9%	2%	4%
Other Tech Engineering	3,158	66%	15%	10%	4%	6%
Totals	12,183	59%	23%	9%	4%	5%

Source: The National Center for Education Statistics (Region), 2020.

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7 Austin

SCORE

58.87

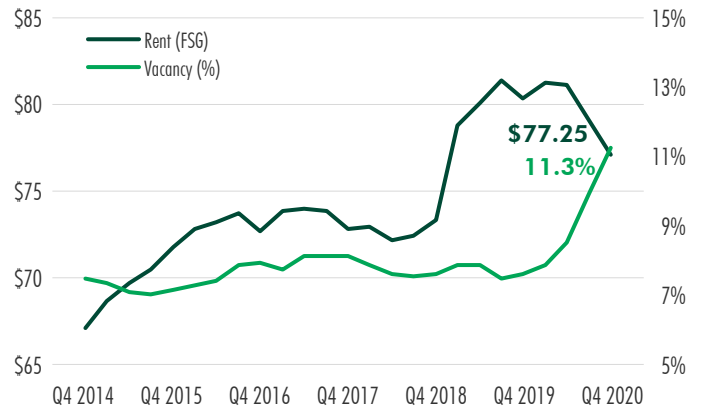## EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**79,230**	**10.0%**	**$96,733**	**7.8%**
Software Developers & Programmers	30,670	23.2%	$105,404	11.0%
Computer Support, Database & Systems	38,470	15.6%	$83,655	8.2%
Computer & Information Systems Managers	3,330	7.8%	$155,420	0.7%
Technology Engineering-Related	6,760	-37.2%	$102,905	5.8%
Total Non-Tech Occupations	**154,070**	**4.8%**	**$51,239**	**7.1%**
Sales	18,610	-4.9%	$71,678	1.8%
Administrative & Office Support	98,100	6.4%	$38,726	13.3%
Business Operations & Finance	25,070	3.2%	$75,764	6.3%
Marketing	12,290	12.0%	$70,139	-0.2%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

The population of millennials grew by 100,952 (20.1%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		9.4%
Millennial (23-38 Years)		20.1%
Gen X (39-54 Years)		5.8%
Baby Boom (55-73 Years)		0.2%
Silent (74+ Years)		-26.9%

-40 -20 0 20 40 60 80 100 120 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

● White ● Asian ● Hispanic ● Black ● Other

Total Workforce (All Industries & Occupations, 1.6M) — Female
54% | 6% | 32% | 7% 2% — 45%

Office-Using Industry Workforce (All Occupations, 641K)
63% | 8% | 22% | 5% 2% — 48%

Tech Industry Workforce (All Occupations, 95K)
64% | 18% | 12% | 3% 3% — 31%

Tech Talent Workforce (All Industries, 79K)
58% | 23% | 12% | 3% 4% — 25%

Tech Talent Workforce (Tech Industry, 43K)
60% | 25% | 10% | 2% 3% — 20%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$39.39
16.7%

— Rent (FSG)
— Vacancy (%)

Q4 2014 — Q4 2015 — Q4 2016 — Q4 2017 — Q4 2018 — Q4 2019 — Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,259
PER UNIT/MO.

5.1%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#22 RANK | **$42M** TALENT + **$3M** OFFICE RENT = **$45.7M** TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	1,691	50%	76%	24%
Math/Statistics	491	23%	66%	34%
Other Tech Engineering	659	19%	79%	21%
Totals	2,841	37%	75%	25%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	1,691	43%	28%	20%	6%	4%
Math/Statistics	491	49%	22%	21%	4%	4%
Other Tech Engineering	659	53%	23%	16%	4%	4%
Totals	2,841	46%	26%	19%	5%	4%

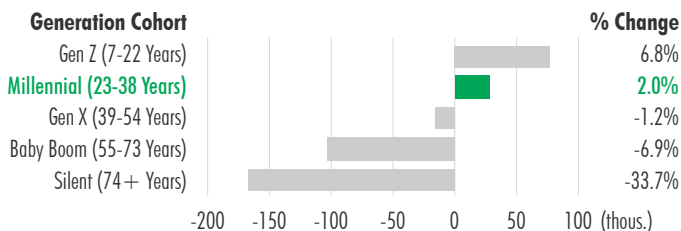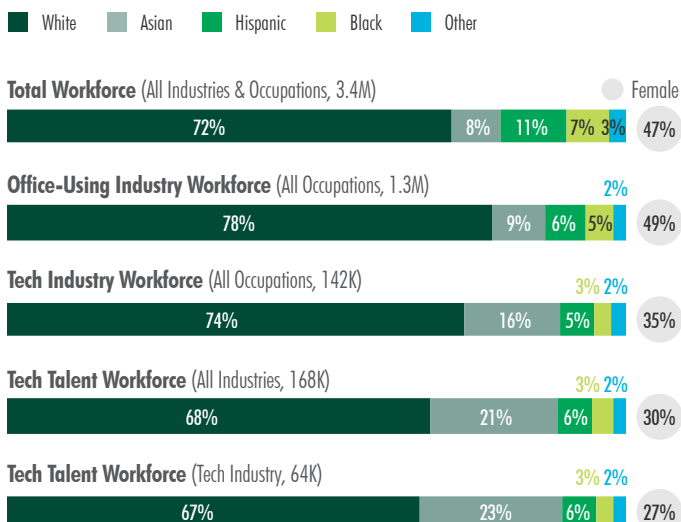Source: The National Center for Education Statistics (Region), 2020.

8 Atlanta

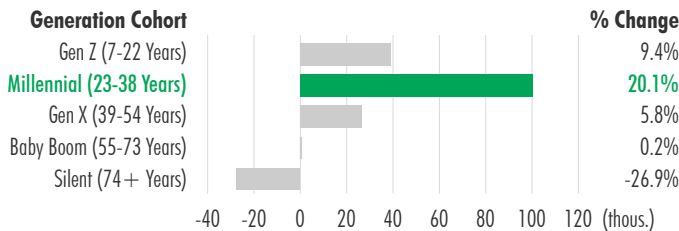## EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	143,780	15.2%	$99,739	13.7%
Software Developers & Programmers	49,900	17.7%	$103,217	11.1%
Computer Support, Database & Systems	71,350	15.3%	$88,786	14.3%
Computer & Information Systems Managers	12,560	28.8%	$152,060	11.8%
Technology Engineering-Related	9,970	-7.9%	$94,802	16.7%
Total Non-Tech Occupations	338,720	0.7%	$52,561	11.7%
Sales	40,380	11.4%	$76,007	7.7%
Administrative & Office Support	209,220	-4.4%	$37,962	9.0%
Business Operations & Finance	63,740	9.4%	$80,099	9.8%
Marketing	25,380	9.8%	$66,439	9.6%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

OFFICE RENT & VACANCY TRENDS

19.1%
$29.54

- Rent (FSG)
- Vacancy (%)

Source: CBRE Research (Metro Area), Q4 2020.

POPULATION TRENDS

The population of millennials grew by 140,948 (11.6%) since 2014.
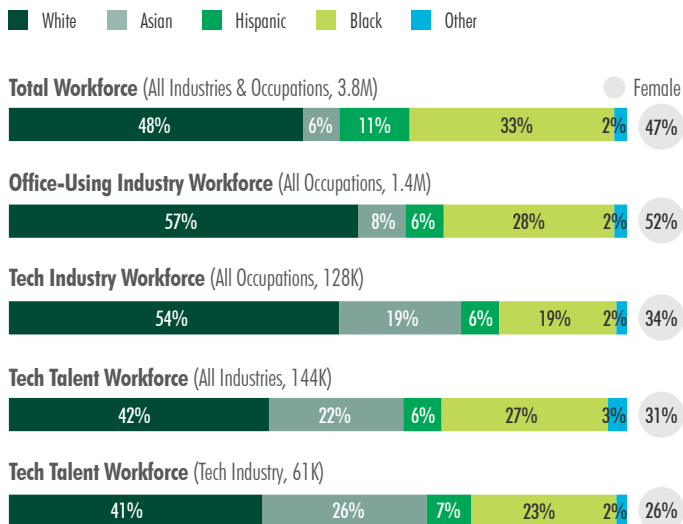
Generation Cohort		% Change
Gen Z (7-22 Years)		2.3%
Millennial (23-38 Years)		11.6%
Gen X (39-54 Years)		1.6%
Baby Boom (55-73 Years)		-4.6%
Silent (74+ Years)		-29.7%

-150 -100 -50 0 50 100 150 200 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

AVERAGE APARTMENT RENT

$1,302
PER UNIT/MO.

19.5%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#18 RANK

$43M TALENT

$2M OFFICE RENT

$45.7M TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

WORKFORCE DIVERSITY

- White
- Asian
- Hispanic
- Black
- Other

Female

Total Workforce (All Industries & Occupations, 3.8M)

48%	6%	11%	33%	2%	47%

Office-Using Industry Workforce (All Occupations, 1.4M)

57%	8%	6%	28%	2%	52%

Tech Industry Workforce (All Occupations, 128K)

54%	19%	6%	19%	2%	34%

Tech Talent Workforce (All Industries, 144K)

42%	22%	6%	27%	3%	31%

Tech Talent Workforce (Tech Industry, 61K)

41%	26%	7%	23%	2%	26%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	5,384	136%	77%	23%
Math/Statistics	725	51%	57%	43%
Other Tech Engineering	2,252	38%	77%	23%
Totals	8,361	90%	75%	25%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	5,384	46%	25%	7%	18%	4%
Math/Statistics	725	56%	17%	7%	16%	4%
Other Tech Engineering	2,252	62%	18%	9%	7%	4%
Totals	8,361	51%	22%	8%	15%	4%

Source: The National Center for Education Statistics (Region), 2020.

9 Los Angeles/Orange Co.
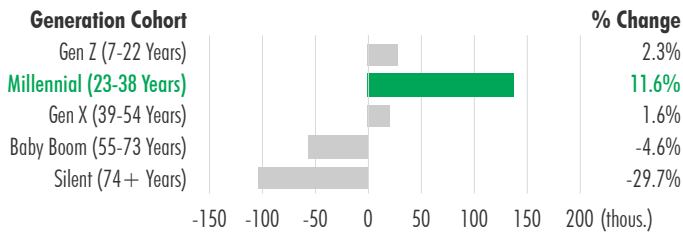
EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	228,720	18.6%	$110,001	13.6%
Software Developers & Programmers	80,440	23.3%	$113,528	9.5%
Computer Support, Database & Systems	97,100	16.9%	$90,565	11.0%
Computer & Information Systems Managers	22,790	60.8%	$184,170	24.8%
Technology Engineering-Related	28,390	-6.6%	$106,948	6.9%
Total Non-Tech Occupations	706,490	-4.6%	$56,675	13.6%
Sales	66,260	-16.1%	$76,622	5.8%
Administrative & Office Support	450,400	-8.7%	$44,035	17.0%
Business Operations & Finance	129,520	14.0%	$83,517	7.1%
Marketing	60,310	10.7%	$71,512	3.2%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

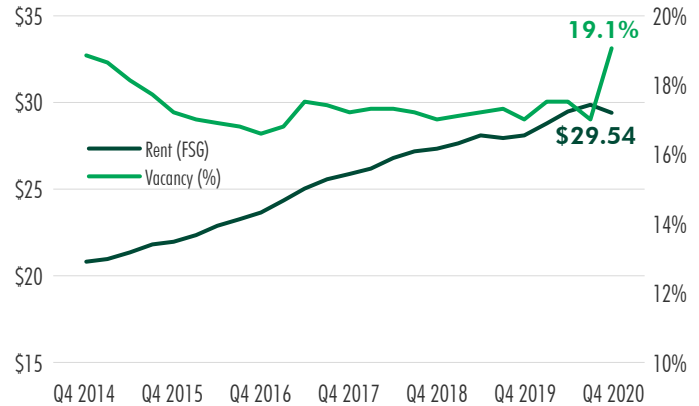The population of millennials grew by 33,452 (1.3%) since 2014.

Generation Cohort	% Change
Gen Z (7-22 Years)	-3.6%
Millennial (23-38 Years)	1.3%
Gen X (39-54 Years)	-5.0%
Baby Boom (55-73 Years)	-8.5%
Silent (74+ Years)	-33.7%

-300 -250 -200 -150 -100 -50   0   50 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 8.8M) ○ Female

| 32% | 16% | 44% | 6% | 3% | 45% |

Office-Using Industry Workforce (All Occupations, 3.0M)

| 43% | 20% | 28% | 5% | 3% | 51% |

Tech Industry Workforce (All Occupations, 173K)

| 52% | 27% | 13% | 4% | 4% | 33% |

Tech Talent Workforce (All Industries, 229K)

| 42% | 34% | 16% | 4% | 4% | 26% |

Tech Talent Workforce (Tech Industry, 70K)

| 46% | 36% | 11% | 3% | 4% | 19% |

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

16.3%

$45.18

— Rent (FSG)
— Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Los Angeles only), Q4 2020.

AVERAGE APARTMENT RENT

$2,222
PER UNIT/MO.

7.6%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#6 RANK | $49M TALENT | + | $3M OFFICE RENT | = | $52.1M TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	8,264	74%	77%	23%
Math/Statistics	2,292	51%	56%	44%
Other Tech Engineering	3,367	29%	79%	21%
Totals	13,923	57%	74%	26%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	8,264	26%	42%	24%	3%	5%
Math/Statistics	2,292	34%	33%	26%	2%	5%
Other Tech Engineering	3,367	36%	26%	30%	2%	5%
Totals	13,923	30%	36%	26%	3%	5%

Source: The National Center for Education Statistics (Region), 2020.

10 Ottawa

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**74,000**	**22.5%**	**$91,666**	**10.5%**
Software Developers & Programmers	21,900	43.1%	$92,144	16.3%
Computer Support, Database & Systems	32,500	27.0%	$86,632	7.0%
Computer & Information Systems Managers	6,000	11.1%	$118,685	19.8%
Technology Engineering-Related	13,600	-3.5%	$91,042	7.9%
Total Non-Tech Occupations	**79,000**	**5.9%**	**$69,977**	**13.9%**
Sales	3,700	-19.6%	$60,466	2.8%
Administrative & Office Support	37,100	3.6%	$55,973	21.4%
Business Operations & Finance	26,800	11.2%	$88,379	10.2%
Marketing	11,400	12.9%	$75,379	4.4%

Source: Statistics Canada (Metro Area), April 2021.
*Data in C$

POPULATION TRENDS

The population of millennials grew by 53,842 (19.6%) since 2014.
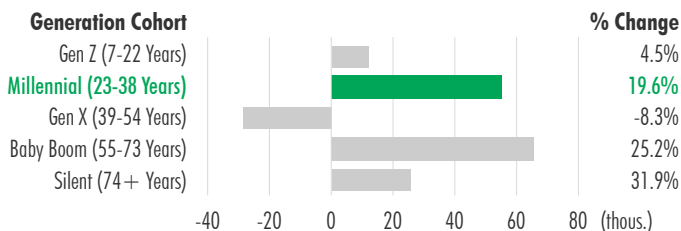
Generation Cohort		% Change
Gen Z (7-22 Years)		4.5%
Millennial (23-38 Years)		19.6%
Gen X (39-54 Years)		-8.3%
Baby Boom (55-73 Years)		25.2%
Silent (74+ Years)		31.9%

-40 -20 0 20 40 60 80 (thous.)

Source: Statistics Canada, April 2021.

WORKFORCE DIVERSITY

Total Workforce by Race/Ethnicity
(All Industries & Occupations)

49% Female

White	Asian	Hispanic	Black	Other
81%	12%	1%	5%	1%

Source: Statistics Canada Census, 2016.

Tech Talent by Sex

23% FEMALE

77% MALE

Source: Statistics Canada, April 2021.

OFFICE RENT & VACANCY TRENDS

$33.73

8.7%

- Rent (FSG)
- Vacancy (%)

Q4 2014   Q4 2015   Q4 2016   Q4 2017   Q4 2018   Q4 2019   Q4 2020
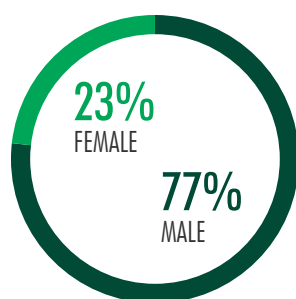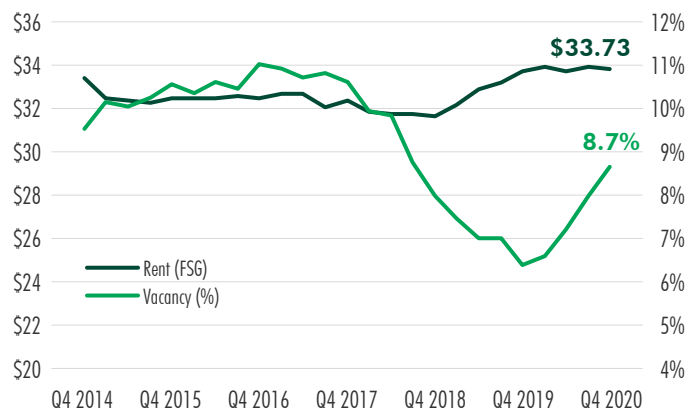
Source: CBRE Research (Metro Area), Q4 2020.
*Data in C$

AVERAGE APARTMENT RENT

$1,012*
PER UNIT/MO.

28.6%
FIVE-YEAR GROWTH

Source: Apt. rent data from CMHC (Metro), Q4 2020.
*US$ ($1,358 in C$)

AVERAGE ANNUAL OPERATING COSTS

#45 RANK	**$32M** TALENT	+	**$2M** OFFICE RENT	=	**$34M** TOTAL

Source: Statistics Canada (Metro Area), CBRE Research, 2021.
US$

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19
Computer Engineering	644	128%
Math/Statistics	142	33%
Other Tech Engineering	1,255	53%
Totals	2,041	69%

Source: Various Canadian Ministries of Education (Region), 2021.

11 Vancouver

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**91,200**	**36.1%**	**$89,190**	**17.7%**
Software Developers & Programmers	36,300	50.6%	$97,718	24.2%
Computer Support, Database & Systems	35,200	63.7%	$77,418	12.7%
Computer & Information Systems Managers	7,300	28.1%	$108,638	10.0%
Technology Engineering-Related	12,400	-21.0%	$86,258	18.5%
Total Non-Tech Occupations	**137,800**	**10.3%**	**$61,963**	**22.5%**
Sales	7,100	-35.5%	$55,182	-2.9%
Administrative & Office Support	63,600	-12.6%	$52,541	19.7%
Business Operations & Finance	37,000	31.2%	$76,752	23.8%
Marketing	30,100	133.3%	$65,291	12.7%

Source: Statistics Canada (Metro Area), April 2021.
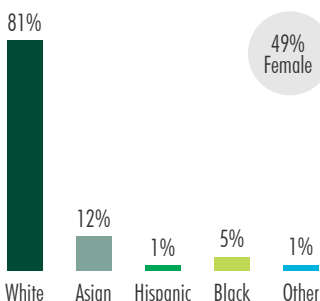*Data in C$

POPULATION TRENDS

The population of millennials grew by 111,433 (19.8%) since 2014.
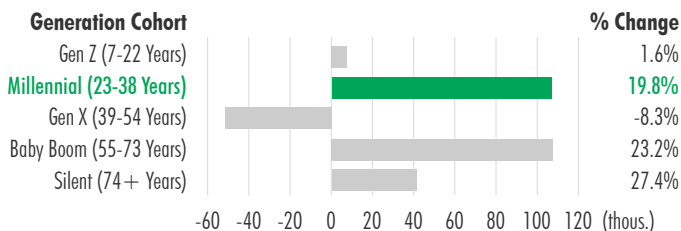
Generation Cohort		% Change
Gen Z (7-22 Years)		1.6%
Millennial (23-38 Years)		19.8%
Gen X (39-54 Years)		-8.3%
Baby Boom (55-73 Years)		23.2%
Silent (74+ Years)		27.4%

-60 -40 -20 0 20 40 60 80 100 120 (thous.)

Source: Statistics Canada, April 2021.

WORKFORCE DIVERSITY

Total Workforce by Race/Ethnicity
(All Industries & Occupations)

49% Female

- White 54%
- Asian 42%
- Hispanic 2%
- Black 1%
- Other 1%

Source: Statistics Canada Census, 2016.

Tech Talent by Sex

27% FEMALE
73% MALE

Source: Statistics Canada, April 2021.

OFFICE RENT & VACANCY TRENDS

$48.00

6.2%

Rent (FSG)
Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020
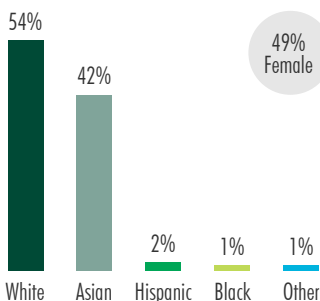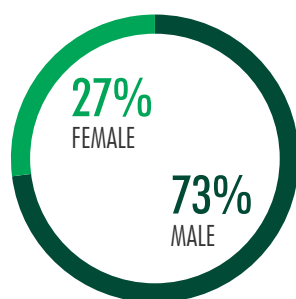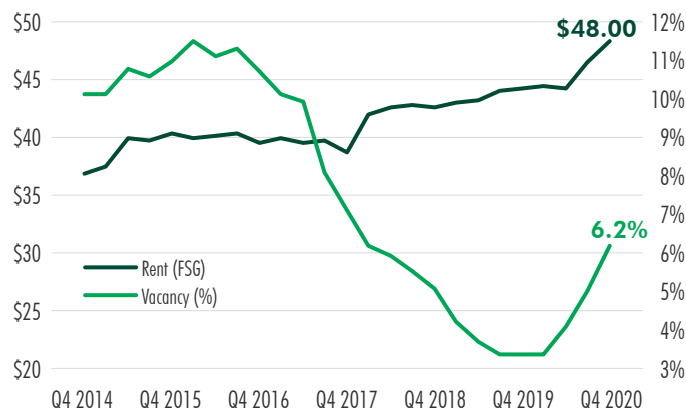
Source: CBRE Research (Metro Area), Q4 2020.
*Data in C$

AVERAGE APARTMENT RENT

$1,124*
PER UNIT/MO.

31.8%
FIVE-YEAR GROWTH

Source: Apt. rent data from CMHC (Metro), Q4 2020.
*US$ ($1,508 in C$)

AVERAGE ANNUAL OPERATING COSTS

#47 RANK	$30M TALENT	+	$3M OFFICE RENT	=	$32.7M TOTAL

Source: Statistics Canada (Metro Area), CBRE Research, 2021.
US$

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19
Computer Engineering	1,277	65%
Math/Statistics	436	52%
Other Tech Engineering	1,276	30%
Totals	**2,989**	**47%**

Source: Various Canadian Ministries of Education (Region), 2021.

12 Denver

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**114,900**	**31.1%**	**$107,481**	**10.9%**
Software Developers & Programmers	44,140	35.5%	$110,356	7.1%
Computer Support, Database & Systems	51,950	29.7%	$95,799	14.1%
Computer & Information Systems Managers	6,690	26.9%	$178,605	10.6%
Technology Engineering-Related	12,120	24.7%	$107,820	14.3%
Total Non-Tech Occupations	**218,990**	**3.7%**	**$64,121**	**19.1%**
Sales	32,070	22.6%	$93,179	17.9%
Administrative & Office Support	111,100	-10.6%	$43,440	14.4%
Business Operations & Finance	51,790	15.6%	$84,553	10.6%
Marketing	24,030	52.0%	$76,925	5.7%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

OFFICE RENT & VACANCY TRENDS

Rent (FSG)
Vacancy (%)
$29.11
15.9%

Source: CBRE Research (Metro Area), Q4 2020.

POPULATION TRENDS

The population of millennials grew by 155,222 (20.1%) since 2014.
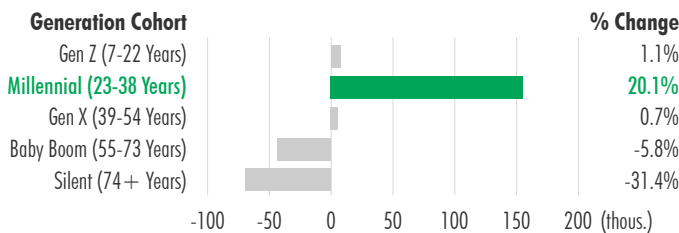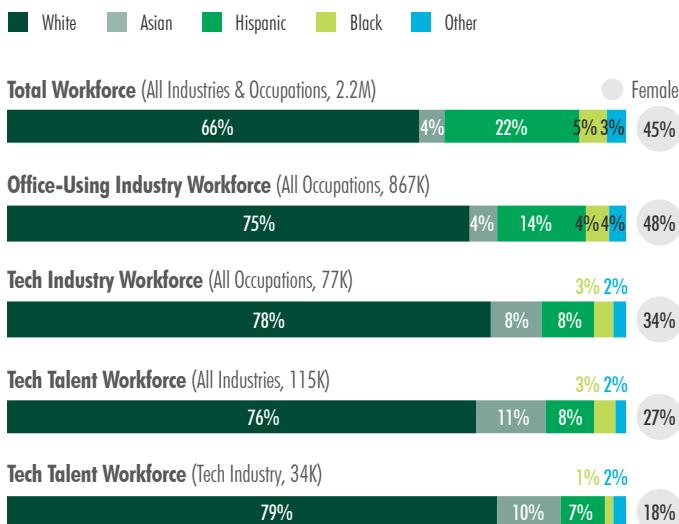
Generation Cohort	% Change
Gen Z (7-22 Years)	1.1%
Millennial (23-38 Years)	20.1%
Gen X (39-54 Years)	0.7%
Baby Boom (55-73 Years)	-5.8%
Silent (74+ Years)	-31.4%

Source: U.S. Census Bureau (Metro), 2021.
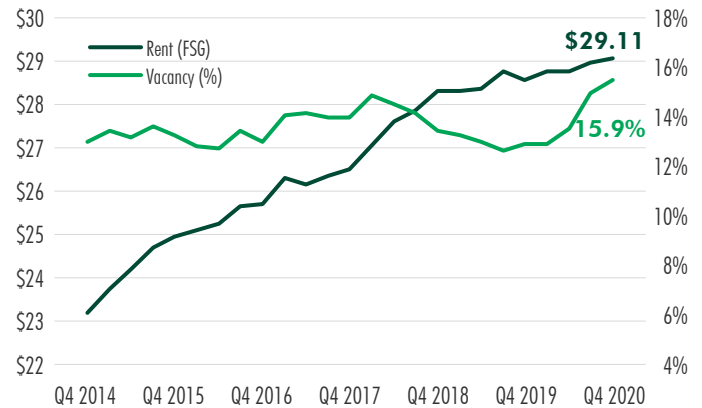
AVERAGE APARTMENT RENT

$1,518
PER UNIT/MO.

9.3%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#7 RANK

$49M TALENT + $2M OFFICE RENT = $51.4M TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 2.2M)   ○ Female
66% | 4% | 22% | 5% | 3%   45%

Office-Using Industry Workforce (All Occupations, 867K)
75% | 4% | 14% | 4% | 4%   48%

Tech Industry Workforce (All Occupations, 77K)
3% 2%
78% | 8% | 8%   34%

Tech Talent Workforce (All Industries, 115K)
3% 2%
76% | 11% | 8%   27%

Tech Talent Workforce (Tech Industry, 34K)
1% 2%
79% | 10% | 7%   18%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	2,710	57%	77%	23%
Math/Statistics	662	36%	63%	37%
Other Tech Engineering	1,793	39%	81%	19%
Totals	5,165	47%	76%	24%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	2,710	71%	10%	10%	5%	4%
Math/Statistics	662	77%	9%	9%	2%	4%
Other Tech Engineering	1,793	79%	5%	11%	1%	5%
Totals	5,165	75%	8%	10%	3%	4%

Source: The National Center for Education Statistics (Region), 2020.

13 Dallas/Ft. Worth

SCORE
56.47

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**189,200**	**16.3%**	**$102,403**	**13.9%**
Software Developers & Programmers	66,910	36.0%	$109,197	11.7%
Computer Support, Database & Systems	94,990	9.9%	$89,639	11.3%
Computer & Information Systems Managers	12,440	58.7%	$162,180	8.4%
Technology Engineering-Related	14,860	-22.6%	$103,358	18.4%
Total Non-Tech Occupations	**482,460**	**5.7%**	**$51,304**	**7.1%**
Sales	44,480	-11.3%	$68,646	-1.8%
Administrative & Office Support	321,980	4.2%	$39,185	9.7%
Business Operations & Finance	84,960	13.5%	$80,368	5.0%
Marketing	31,040	37.8%	$72,611	1.8%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

OFFICE RENT & VACANCY TRENDS

$25.75

23.4%

Rent (FSG)
Vacancy (%)

Source: CBRE Research (Metro Area), Q4 2020.

POPULATION TRENDS

The population of millennials grew by 230,676 (14.7%) since 2014.
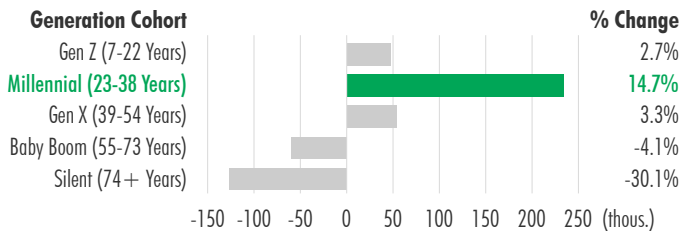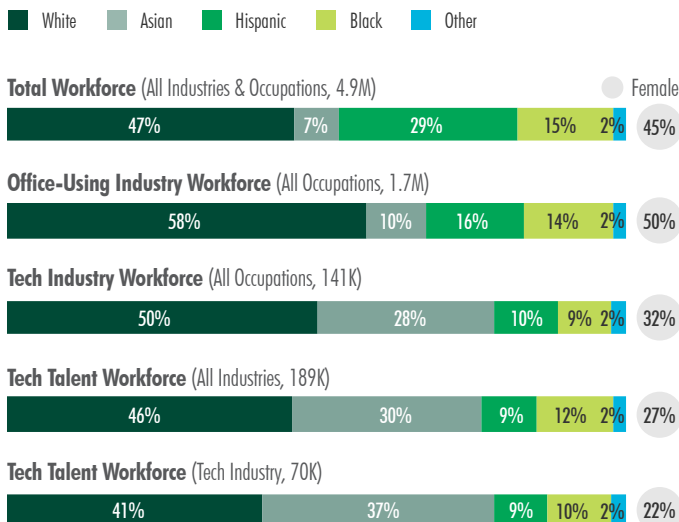
Generation Cohort	% Change
Gen Z (7-22 Years)	2.7%
Millennial (23-38 Years)	14.7%
Gen X (39-54 Years)	3.3%
Baby Boom (55-73 Years)	-4.1%
Silent (74+ Years)	-30.1%

Source: U.S. Census Bureau (Metro), 2021.

AVERAGE APARTMENT RENT

$1,210 PER UNIT/MO.

10.6% FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#15 RANK | **$44M** TALENT + **$2M** OFFICE RENT = **$46.4M** TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

WORKFORCE DIVERSITY

White | Asian | Hispanic | Black | Other

Total Workforce (All Industries & Occupations, 4.9M) — Female
47% | 7% | 29% | 15% | 2% | 45%

Office-Using Industry Workforce (All Occupations, 1.7M)
58% | 10% | 16% | 14% | 2% | 50%

Tech Industry Workforce (All Occupations, 141K)
50% | 28% | 10% | 9% | 2% | 32%

Tech Talent Workforce (All Industries, 189K)
46% | 30% | 9% | 12% | 2% | 27%

Tech Talent Workforce (Tech Industry, 70K)
41% | 37% | 9% | 10% | 2% | 22%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	4,428	70%	70%	30%
Math/Statistics	827	103%	56%	44%
Other Tech Engineering	1,417	63%	83%	17%
Totals	6,672	71%	71%	29%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	4,428	44%	27%	16%	8%	5%
Math/Statistics	827	57%	12%	16%	6%	8%
Other Tech Engineering	1,417	53%	13%	21%	7%	6%
Totals	6,672	48%	21%	17%	7%	6%

Source: The National Center for Education Statistics (Region), 2020.

14 Raleigh-Durham

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	67,050	20.2%	$100,643	10.2%
Software Developers & Programmers	27,810	39.7%	$108,251	10.3%
Computer Support, Database & Systems	28,930	14.6%	$85,529	8.2%
Computer & Information Systems Managers	5,500	20.4%	$145,099	8.5%
Technology Engineering-Related	4,810	-20.6%	$96,725	9.4%
Total Non-Tech Occupations	125,820	13.3%	$55,742	19.7%
Sales	17,760	55.8%	$91,877	18.4%
Administrative & Office Support	74,480	0.8%	$38,989	13.5%
Business Operations & Finance	23,350	33.8%	$75,588	8.8%
Marketing	10,230	23.6%	$69,679	7.9%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

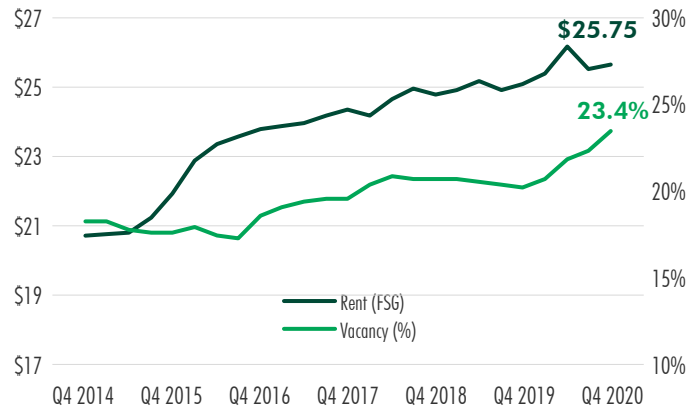The population of millennials grew by 44,458 (11.0%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		10.0%
Millennial (23-38 Years)		11.0%
Gen X (39-54 Years)		4.5%
Baby Boom (55-73 Years)		-0.6%
Silent (74+ Years)		-27.0%

-40 -30 -20 -10 0 10 20 30 40 50 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 945K)   ● Female

| 62% | 5% | 11% | 19% | 2% | 46% |

Office-Using Industry Workforce (All Occupations, 371K)

| 73% | 7% | 5% | 13% | 2% | 48% |

Tech Industry Workforce (All Occupations, 51K)   1%

| 69% | 21% | 2% | 6% | | 29% |

Tech Talent Workforce (All Industries, 67K)   1%

| 63% | 24% | 2% | 10% | | 27% |

Tech Talent Workforce (Tech Industry, 25K)   0%

| 60% | 32% | 2% | 6% | | 23% |

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$29.73

11.3%

— Rent (FSG)
— Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,181
PER UNIT/MO.

16.1%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#17 RANK | **$44M** TALENT + **$2M** OFFICE RENT = **$46.1M** TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	2,510	57%	74%	26%
Math/Statistics	742	44%	59%	41%
Other Tech Engineering	846	17%	79%	21%
Totals	4,098	45%	72%	28%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	2,510	59%	23%	6%	8%	5%
Math/Statistics	742	65%	21%	4%	5%	5%
Other Tech Engineering	846	77%	10%	7%	4%	3%
Totals	4,098	65%	19%	6%	6%	4%

Source: The National Center for Education Statistics (Region), 2020.

A15

15 Baltimore

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**81,770**	**16.2%**	**$110,306**	**11.5%**
Software Developers & Programmers	24,240	25.1%	$111,616	3.5%
Computer Support, Database & Systems	43,710	17.5%	$102,946	15.3%
Computer & Information Systems Managers	6,120	44.3%	$158,610	11.8%
Technology Engineering-Related	7,700	-19.0%	$109,573	10.2%
Total Non-Tech Occupations	**156,610**	**-7.8%**	**$55,701**	**13.7%**
Sales	18,080	2.1%	$87,504	22.6%
Administrative & Office Support	99,110	-10.7%	$41,059	10.7%
Business Operations & Finance	30,260	-7.1%	$80,489	8.5%
Marketing	9,160	6.5%	$69,476	13.3%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

OFFICE RENT & VACANCY TRENDS

Source: CBRE Research (Metro Area), Q4 2020.

POPULATION TRENDS

The population of millennials grew by 8,106 (1.3%) since 2014.
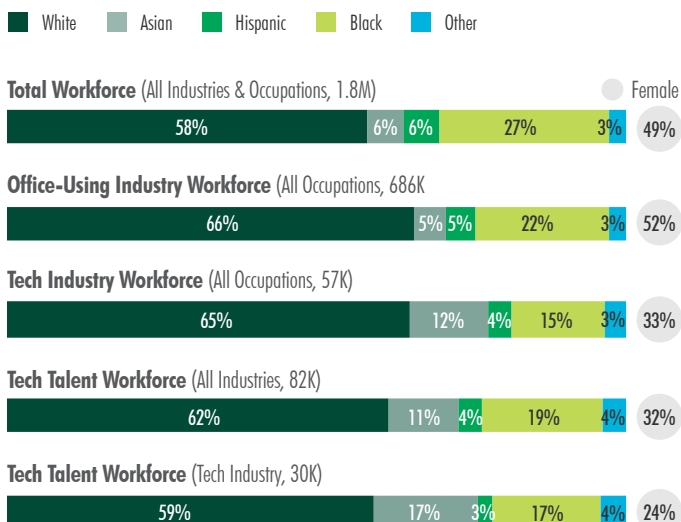
Generation Cohort		% Change
Gen Z (7-22 Years)		-0.4%
Millennial (23-38 Years)		**1.3%**
Gen X (39-54 Years)		-2.6%
Baby Boom (55-73 Years)		-9.0%
Silent (74+ Years)		-34.5%

Source: U.S. Census Bureau (Metro), 2021.
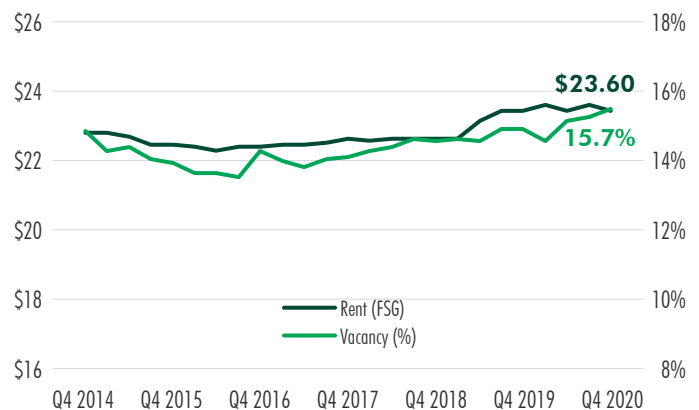
AVERAGE APARTMENT RENT

$1,391
PER UNIT/MO.

10.2%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#9
RANK

$47M
TALENT

+

$2M
OFFICE RENT

=

$48.8M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other ● Female

Total Workforce (All Industries & Occupations, 1.8M)

58%	6%	6%	27%	3%	49%

Office-Using Industry Workforce (All Occupations, 686K)

66%	5%	5%	22%	3%	52%

Tech Industry Workforce (All Occupations, 57K)

65%	12%	4%	15%	3%	33%

Tech Talent Workforce (All Industries, 82K)

62%	11%	4%	19%	4%	32%

Tech Talent Workforce (Tech Industry, 30K)

59%	17%	3%	17%	4%	24%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	2,597	35%	72%	28%
Math/Statistics	560	33%	63%	37%
Other Tech Engineering	916	-2%	79%	21%
Totals	4,073	24%	72%	28%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	2,597	48%	21%	6%	21%	5%
Math/Statistics	560	58%	17%	8%	9%	8%
Other Tech Engineering	916	62%	12%	10%	12%	5%
Totals	4,073	53%	18%	7%	17%	5%

Source: The National Center for Education Statistics (Region), 2020.

16 Montreal

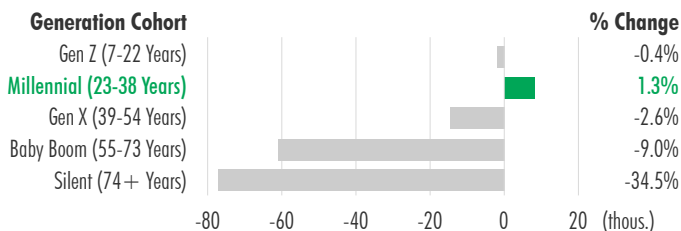## EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**160,700**	**31.4%**	**$84,240**	**17.7%**
Software Developers & Programmers	46,000	75.6%	$77,085	11.6%
Computer Support, Database & Systems	63,900	30.9%	$82,576	19.9%
Computer & Information Systems Managers	7,500	-7.4%	$124,571	36.1%
Technology Engineering-Related	43,300	10.5%	$87,277	20.4%
Total Non-Tech Occupations	**216,400**	**9.0%**	**$60,830**	**18.2%**
Sales	14,800	-5.7%	$50,336	9.4%
Administrative & Office Support	106,800	-0.6%	$48,339	15.7%
Business Operations & Finance	57,500	15.9%	$82,285	22.1%
Marketing	37,300	44.6%	$67,683	4.9%

Source: Statistics Canada (Metro Area), April 2021.
*Data in C$

POPULATION TRENDS

The population of millennials grew by 104,718 (11.9%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		2.2%
Millennial (23-38 Years)		**11.9%**
Gen X (39-54 Years)		-5.7%
Baby Boom (55-73 Years)		17.6%
Silent (74+ Years)		26.8%

-100   -50   0   50   100   150   (thous.)

Source: Statistics Canada, April 2021.

WORKFORCE DIVERSITY

Total Workforce by Race/Ethnicity
(All Industries & Occupations)

80% White
11% Asian
3% Hispanic
6% Black
<1% Other

49% Female

Tech Talent by Sex

22% FEMALE
78% MALE

Source: Statistics Canada Census, 2016.

Source: Statistics Canada, April 2021.

OFFICE RENT & VACANCY TRENDS

$34.32

12.3%

— Rent (FSG)
— Vacancy (%)

Q4 2014   Q4 2015   Q4 2016   Q4 2017   Q4 2018   Q4 2019   Q4 2020
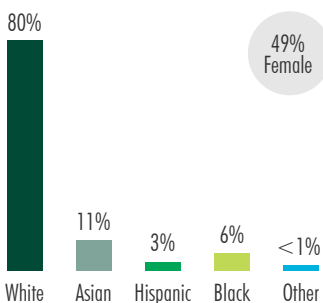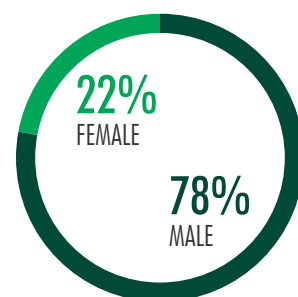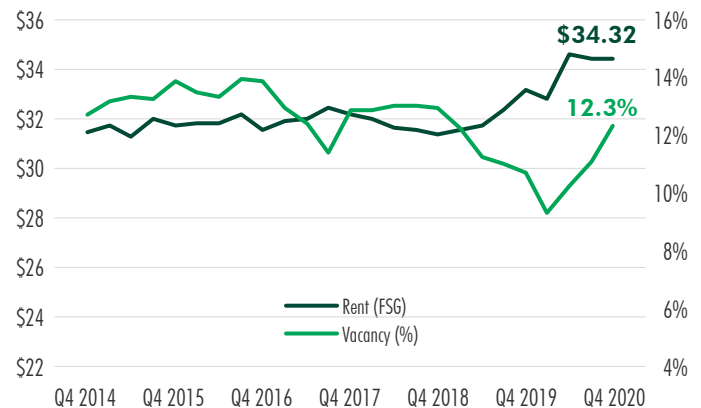
Source: CBRE Research (Metro Area), Q4 2020.
*Data in C$

AVERAGE APARTMENT RENT

$664*
PER UNIT/MO.

19.8%
FIVE-YEAR GROWTH

Source: Apt. rent data from CMHC (Metro), Q4 2020.
*US$ ($891 in C$)

AVERAGE ANNUAL OPERATING COSTS

#49
RANK

$30M
TALENT

+

$2M
OFFICE RENT

=

$31.6M
TOTAL

Source: Statistics Canada (Metro Area), CBRE Research, 2021.
US$

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19
Computer Engineering	1,528	81%
Math/Statistics	368	23%
Other Tech Engineering	3,372	35%
Totals	**5,268**	**45%**

Source: Various Canadian Ministries of Education (Region), 2021.

17 Phoenix

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	98,220	14.2%	$93,655	8.1%
Software Developers & Programmers	32,310	25.3%	$102,039	12.7%
Computer Support, Database & Systems	47,640	10.6%	$79,189	3.5%
Computer & Information Systems Managers	8,440	45.5%	$146,490	3.5%
Technology Engineering-Related	9,830	-13.7%	$90,836	3.4%
Total Non-Tech Occupations	301,350	21.0%	$49,765	17.4%
Sales	31,460	29.9%	$76,050	20.2%
Administrative & Office Support	204,080	14.0%	$39,503	15.3%
Business Operations & Finance	47,370	45.1%	$70,543	9.8%
Marketing	18,440	39.9%	$65,118	7.8%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

The population of millennials grew by 119,442 (11.9%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		3.8%
Millennial (23-38 Years)		11.9%
Gen X (39-54 Years)		4.3%
Baby Boom (55-73 Years)		4.0%
Silent (74+ Years)		-26.5%

-150 -100 -50 0 50 100 150 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 3.1M)   ● Female
| 56% | 4% | 30% | 5% | 4% | 45% |

Office-Using Industry Workforce (All Occupations, 1.1M)
| 65% | 5% | 21% | 5% | 3% | 51% |

Tech Industry Workforce (All Occupations, 66K)
| 65% | 14% | 11% | 5% | 5% | 29% |

Tech Talent Workforce (All Industries, 98K)
| 60% | 18% | 12% | 6% | 4% | 26% |

Tech Talent Workforce (Tech Industry, 29K)
| 58% | 22% | 8% | 7% | 6% | 19% |

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$28.11

17.4%

— Rent (FSG)
— Vacancy (%)

Q4 2014   Q4 2015   Q4 2016   Q4 2017   Q4 2018   Q4 2019   Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,250
PER UNIT/MO.

32.9%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#24 RANK	$41M TALENT	+	$2M OFFICE RENT	=	$43.2M TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	4,105	-4%	74%	26%
Math/Statistics	325	61%	71%	29%
Other Tech Engineering	1,241	93%	85%	15%
Totals	5,671	11%	76%	24%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	4,105	53%	11%	16%	14%	5%
Math/Statistics	325	65%	9%	18%	4%	5%
Other Tech Engineering	1,241	65%	8%	19%	2%	5%
Totals	5,671	57%	10%	17%	11%	5%

Source: The National Center for Education Statistics (Region), 2020.

18 Salt Lake City

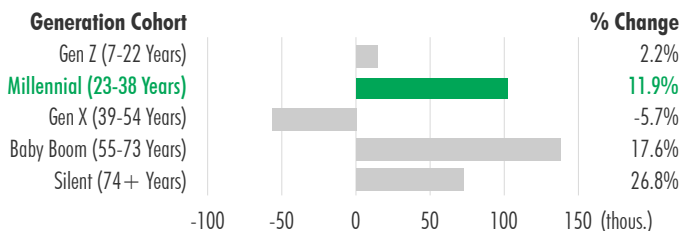## EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**50,070**	**33.9%**	**$89,184**	**14.4%**
Software Developers & Programmers	19,980	37.0%	$99,517	12.3%
Computer Support, Database & Systems	23,690	35.0%	$73,016	17.2%
Computer & Information Systems Managers	4,000	53.3%	$139,321	12.9%
Technology Engineering-Related	2,400	-9.4%	$79,188	0.4%
Total Non-Tech Occupations	**139,310**	**3.5%**	**$47,466**	**15.5%**
Sales	12,340	-27.5%	$77,486	30.3%
Administrative & Office Support	94,740	1.4%	$37,702	18.3%
Business Operations & Finance	21,710	30.8%	$66,353	0.0%
Marketing	10,520	39.0%	$61,207	4.7%

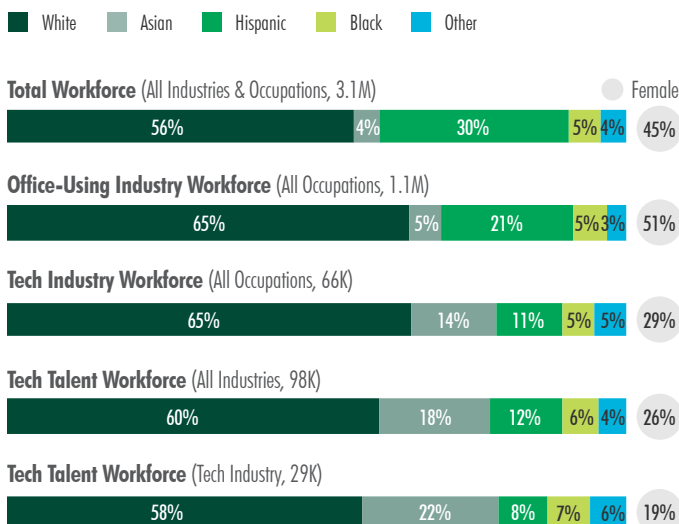Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

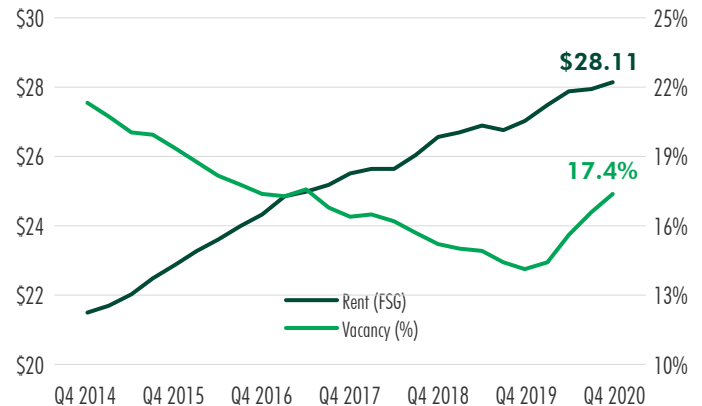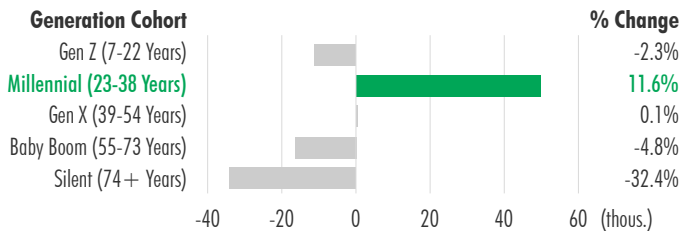The population of millennials grew by 50,145 (11.6%) since 2014.

Generation Cohort	% Change
Gen Z (7-22 Years)	-2.3%
Millennial (23-38 Years)	11.6%
Gen X (39-54 Years)	0.1%
Baby Boom (55-73 Years)	-4.8%
Silent (74+ Years)	-32.4%

-40   -20   0   20   40   60   (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 1.2M)
75% | 5% | 16% | 3% | 1% | Female 44%

Office-Using Industry Workforce (All Occupations, 467K)
82% | 5% | 11% | 1% | 3% | 47%

Tech Industry Workforce (All Occupations, 46K)
83% | 8% | 7% | 0% | 2% | 24%

Tech Talent Workforce (All Industries, 50K)
77% | 11% | 8% | 1% | 3% | 24%

Tech Talent Workforce (Tech Industry, 21K)
81% | 12% | 4% | 0% | 3% | 11%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$24.94
15.6%

— Rent (FSG)
— Vacancy (%)

Q4 2014   Q4 2015   Q4 2016   Q4 2017   Q4 2018   Q4 2019   Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,204
PER UNIT/MO.

19.7%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#36 RANK   **$39M** TALENT   +   **$2M** OFFICE RENT   =   **$41M** TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	4,918	95%	88%	12%
Math/Statistics	405	36%	72%	28%
Other Tech Engineering	521	44%	88%	12%
Totals	5,844	83%	87%	13%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	4,918	76%	6%	8%	6%	4%
Math/Statistics	405	84%	4%	4%	1%	7%
Other Tech Engineering	521	83%	3%	8%	0%	6%
Totals	5,844	77%	5%	8%	5%	4%

Source: The National Center for Education Statistics (Region), 2020.

19 San Diego

SCORE
51.66

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	70,350	4.1%	$109,987	11.1%
Software Developers & Programmers	24,140	4.8%	$115,601	13.4%
Computer Support, Database & Systems	29,260	19.2%	$94,255	13.3%
Computer & Information Systems Managers	6,720	57.7%	$169,570	3.5%
Technology Engineering-Related	10,230	-35.0%	$102,596	0.9%
Total Non-Tech Occupations	147,390	-6.2%	$57,143	17.7%
Sales	17,830	1.7%	$77,998	14.6%
Administrative & Office Support	89,800	-13.8%	$43,737	18.5%
Business Operations & Finance	27,830	15.4%	$82,072	7.7%
Marketing	11,930	6.2%	$68,731	3.0%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

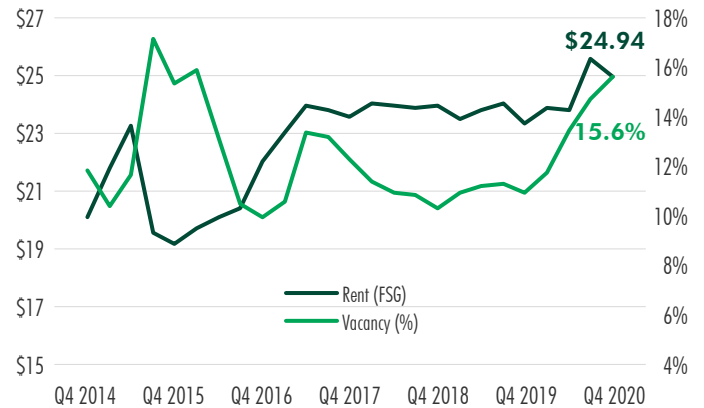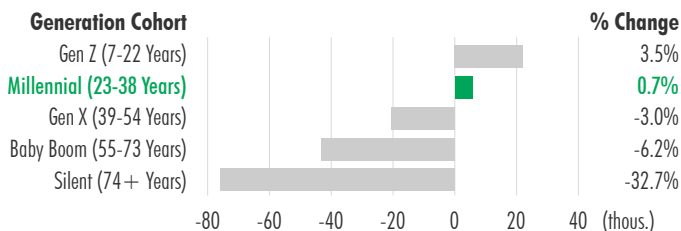The population of millennials grew by 6,243 (0.7%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		3.5%
Millennial (23-38 Years)		0.7%
Gen X (39-54 Years)		-3.0%
Baby Boom (55-73 Years)		-6.2%
Silent (74+ Years)		-32.7%

-80 -60 -40 -20 0 20 40 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 2.1M)   ● Female

| 47% | 12% | 32% | 5% | 4% | 44% |

Office-Using Industry Workforce (All Occupations, 747K)

| 57% | 14% | 22% | 3% | 4% | 48% |

Tech Industry Workforce (All Occupations, 61K)

| 63% | 18% | 11% | 2% | 5% | 30% |

Tech Talent Workforce (All Industries, 70K)

| 51% | 29% | 14% | 2% | 4% | 26% |

Tech Talent Workforce (Tech Industry, 28K)

| 57% | 28% | 10% | 2% | 4% | 21% |

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$38.22
14.0%

— Rent (FSG)
— Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$2,072
PER UNIT/MO.

17.4%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#8
RANK

$48M
TALENT

+

$3M
OFFICE RENT

=

$50.8M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	2,289	84%	82%	18%
Math/Statistics	1,318	232%	58%	42%
Other Tech Engineering	1,052	56%	81%	19%
Totals	4,659	101%	75%	25%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	2,289	35%	37%	17%	4%	7%
Math/Statistics	1,318	30%	46%	17%	1%	6%
Other Tech Engineering	1,052	46%	22%	21%	2%	8%
Totals	4,659	37%	35%	18%	3%	7%

Source: The National Center for Education Statistics (Region), 2020.

20 Portland

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	60,330	27.7%	$99,384	11.7%
Software Developers & Programmers	19,930	7.8%	$107,789	14.1%
Computer Support, Database & Systems	23,540	12.7%	$87,080	11.3%
Computer & Information Systems Managers	5,180	45.1%	$142,630	12.4%
Technology Engineering-Related	11,680	171.6%	$90,662	5.0%
Total Non-Tech Occupations	130,500	5.5%	$55,115	18.6%
Sales	11,320	7.3%	$80,011	11.3%
Administrative & Office Support	84,050	-1.9%	$43,123	16.9%
Business Operations & Finance	23,270	20.1%	$78,074	13.4%
Marketing	11,860	45.7%	$71,295	16.2%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

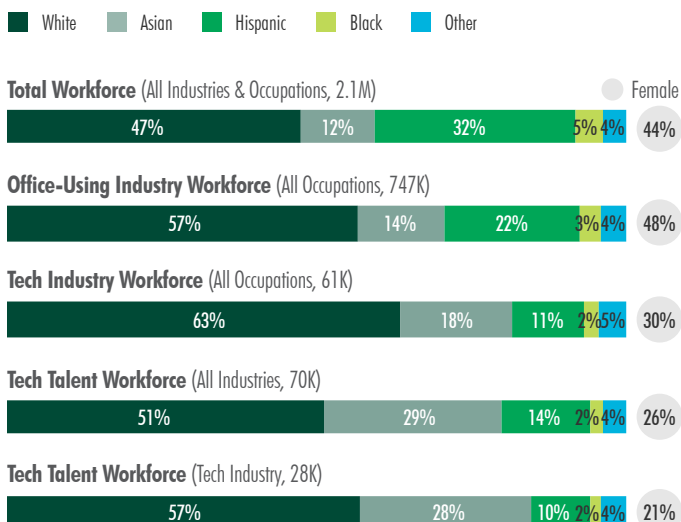## POPULATION TRENDS

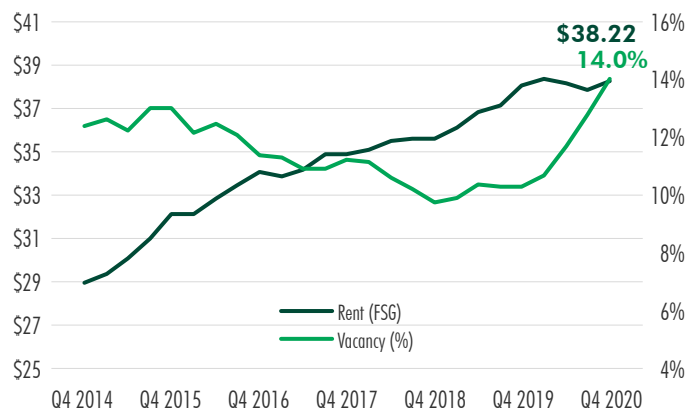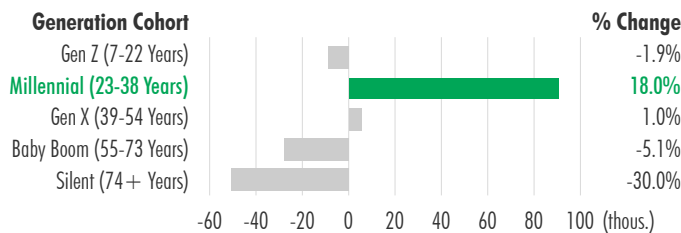The population of millennials grew by 92,261 (18.0%) since 2014.

Generation Cohort	% Change
Gen Z (7-22 Years)	-1.9%
Millennial (23-38 Years)	18.0%
Gen X (39-54 Years)	1.0%
Baby Boom (55-73 Years)	-5.1%
Silent (74+ Years)	-30.0%

-60 -40 -20 0 20 40 60 80 100 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

● White ● Asian ● Hispanic ● Black ● Other

Total Workforce (All Industries & Occupations, 1.7M) — Female
74% | 7% | 12% | 3% | 4% | 46%

Office-Using Industry Workforce (All Occupations, 612K)
79% | 8% | 6% | 2% | 4% | 50%

Tech Industry Workforce (All Occupations, 47K)
76% | 11% | 5% | 4% | 4% | 31%

Tech Talent Workforce (All Industries, 60K)
75% | 14% | 4% | 3% | 3% | 25%

Tech Talent Workforce (Tech Industry, 23K)
79% | 13% | 4% | 2% | 3% | 19%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$31.22
14.4%

— Rent (FSG)
— Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,429
PER UNIT/MO.

11.3%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#19 RANK | **$43M** TALENT + **$2M** OFFICE RENT = **$45.7M** TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	1,679	108%	81%	19%
Math/Statistics	540	57%	61%	39%
Other Tech Engineering	712	55%	84%	16%
Totals	2,931	82%	78%	22%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	1,679	68%	16%	7%	1%	7%
Math/Statistics	540	73%	8%	10%	3%	7%
Other Tech Engineering	712	75%	8%	8%	2%	8%
Totals	2,931	71%	12%	8%	1%	7%

Source: The National Center for Education Statistics (Region), 2020.

21 Waterloo Region

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**25,900**	**47.2%**	**$87,922**	**30.9%**
Software Developers & Programmers	11,900	105.2%	$96,574	32.4%
Computer Support, Database & Systems	8,400	52.7%	$77,605	8.7%
Computer & Information Systems Managers	800	-42.9%	N/A	N/A
Technology Engineering-Related	4,800	-2.0%	$75,067	0.3%
Total Non-Tech Occupations	**24,800**	**3.3%**	**$60,947**	**13.7%**
Sales	2,300	21.1%	$69,098	7.5%
Administrative & Office Support	13,800	-1.4%	$51,085	18.1%
Business Operations & Finance	5,800	5.5%	$79,435	16.6%
Marketing	2,900	11.5%	$64,438	-9.3%

Source: Statistics Canada (Metro Area), April 2021.
*Data in C$

POPULATION TRENDS

The population of millennials grew by 29,726 (26.3%) since 2014.
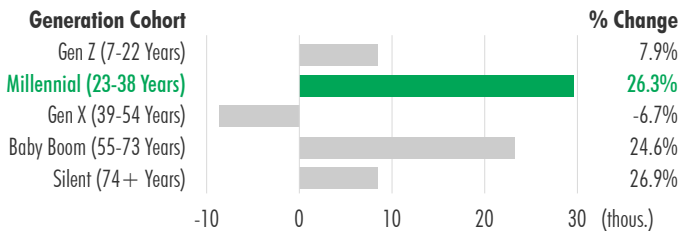
Generation Cohort	% Change
Gen Z (7-22 Years)	7.9%
Millennial (23-38 Years)	26.3%
Gen X (39-54 Years)	-6.7%
Baby Boom (55-73 Years)	24.6%
Silent (74+ Years)	26.9%

Source: Statistics Canada, April 2021.

WORKFORCE DIVERSITY

Total Workforce by Race/Ethnicity
(All Industries & Occupations)

46% Female

White	Asian	Hispanic	Black	Other
84%	11%	2%	2%	1%

Tech Talent by Sex

27% FEMALE

73% MALE

Source: Statistics Canada Census, 2016.

Source: Statistics Canada, April 2021.

OFFICE RENT & VACANCY TRENDS

Rent (FSG)
Vacancy (%)
$26.39
7.7%
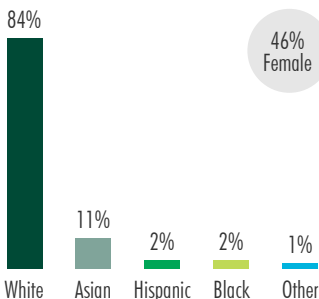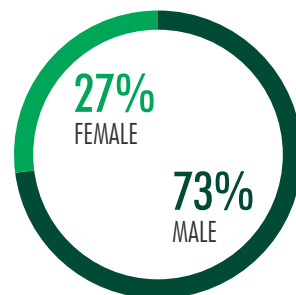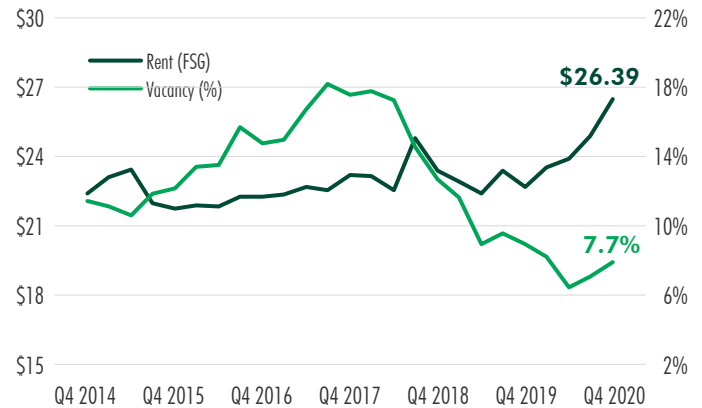
Source: CBRE Research (Metro Area), Q4 2020.
*Data in C$

AVERAGE APARTMENT RENT

$910*
PER UNIT/MO.

28.9%
FIVE-YEAR GROWTH

Source: Apt. rent data from CMHC (Metro), Q4 2020.
*US$ ($1,221 in C$)

AVERAGE ANNUAL OPERATING COSTS

#50
RANK

$30M
TALENT

+

$1M
OFFICE RENT

=

$31.4M
TOTAL

Source: Statistics Canada (Metro Area), CBRE Research, 2021.
US$

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19
Computer Engineering	1,165	105%
Math/Statistics	768	32%
Other Tech Engineering	1,502	37%
Totals	3,435	53%

Source: Various Canadian Ministries of Education (Region), 2021.

22 Minneapolis/St. Paul

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**97,470**	**5.3%**	**$102,391**	**14.7%**
Software Developers & Programmers	35,080	23.7%	$105,593	14.7%
Computer Support, Database & Systems	46,660	-3.1%	$90,014	12.9%
Computer & Information Systems Managers	9,520	11.7%	$155,970	14.2%
Technology Engineering-Related	6,210	-17.3%	$95,161	10.8%
Total Non-Tech Occupations	**230,210**	**-4.1%**	**$57,283**	**13.5%**
Sales	23,980	-7.0%	$77,307	-1.0%
Administrative & Office Support	136,990	-8.9%	$43,391	14.6%
Business Operations & Finance	45,700	-0.8%	$79,718	12.6%
Marketing	23,540	31.4%	$74,174	15.2%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

The population of millennials grew by 71,329 (9.3%) since 2014.

Generation Cohort	% Change
Gen Z (7-22 Years)	-1.4%
Millennial (23-38 Years)	9.3%
Gen X (39-54 Years)	-1.3%
Baby Boom (55-73 Years)	-6.4%
Silent (74+ Years)	-31.0%

-80 -60 -40 -20 0 20 40 60 80 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

Legend: White, Asian, Hispanic, Black, Other

Total Workforce (All Industries & Occupations, 2.5M) — Female
78% | 6% | 5% | 7% | 3% — 47%

Office-Using Industry Workforce (All Occupations, 942K)
84% | 6% | 3% | 4% | 3% — 48%

Tech Industry Workforce (All Occupations, 61K)
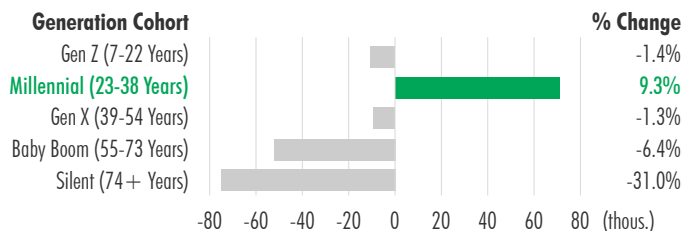81% | 11% | 4% | 2% | 3% — 26%

Tech Talent Workforce (All Industries, 97K)
79% | 12% | 2% | 3% | 3% — 23%

Tech Talent Workforce (Tech Industry, 29K)
75% | 17% | 4% | 0% | 4% — 10%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

18.6%
$26.14

Rent (FSG)
Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,340
PER UNIT/MO.

13.8%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#11 RANK | $45M TALENT + $2M OFFICE RENT = $47.3M TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	2,530	49%	78%	22%
Math/Statistics	616	24%	57%	43%
Other Tech Engineering	730	18%	77%	23%
Totals	3,876	38%	74%	26%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	2,530	61%	15%	4%	16%	4%
Math/Statistics	616	76%	13%	3%	3%	5%
Other Tech Engineering	730	80%	9%	3%	3%	5%
Totals	3,876	67%	13%	4%	12%	4%

Source: The National Center for Education Statistics (Region), 2020.

23 Chicago

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	167,380	4.6%	$100,551	15.3%
Software Developers & Programmers	60,030	17.6%	$105,069	17.7%
Computer Support, Database & Systems	79,840	-4.0%	$85,662	7.8%
Computer & Information Systems Managers	17,820	39.3%	$156,960	19.0%
Technology Engineering-Related	9,690	-25.5%	$91,505	7.6%
Total Non-Tech Occupations	558,000	2.9%	$53,502	13.5%
Sales	60,240	10.1%	$71,751	1.4%
Administrative & Office Support	354,000	-5.4%	$41,482	13.6%
Business Operations & Finance	97,180	13.8%	$79,242	7.2%
Marketing	46,580	65.5%	$67,546	10.0%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

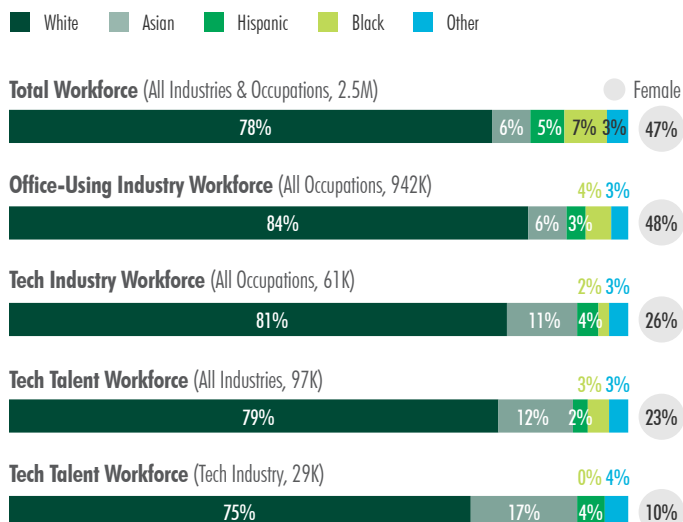## POPULATION TRENDS

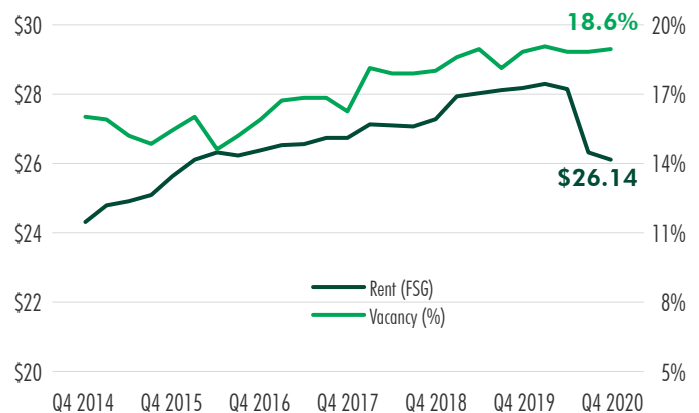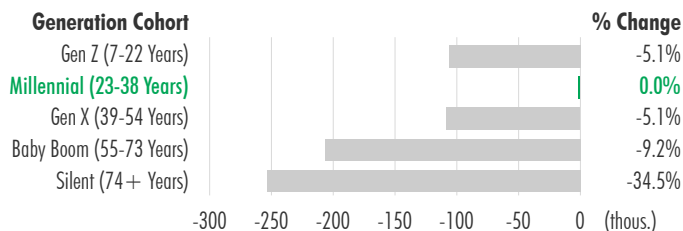The population of millennials declined by -885 (0.0%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		-5.1%
Millennial (23-38 Years)		0.0%
Gen X (39-54 Years)		-5.1%
Baby Boom (55-73 Years)		-9.2%
Silent (74+ Years)		-34.5%

-300 -250 -200 -150 -100 -50 0 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 6.0M) — Female
| 56% | 7% | 22% | 14% | 2% | 47% |

Office-Using Industry Workforce (All Occupations, 2.1M)
| 66% | 8% | 14% | 11% | 2% | 51% |

Tech Industry Workforce (All Occupations, 147K)
| 64% | 19% | 8% | 7% | 2% | 33% |

Tech Talent Workforce (All Industries, 167K)
| 55% | 24% | 11% | 8% | 3% | 29% |

Tech Talent Workforce (Tech Industry, 65K)
| 56% | 27% | 10% | 5% | 3% | 22% |

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

20.4%
$32.35

— Rent (FSG)
— Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,473
PER UNIT/MO.

1.9%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#13 RANK	$44M TALENT	+	$2M OFFICE RENT	=	$46.6M TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	5,509	51%	76%	24%
Math/Statistics	1,401	22%	64%	36%
Other Tech Engineering	1,638	71%	79%	21%
Totals	8,548	48%	75%	25%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	5,509	52%	19%	17%	9%	3%
Math/Statistics	1,401	61%	21%	12%	3%	3%
Other Tech Engineering	1,638	61%	15%	16%	4%	4%
Totals	8,548	56%	19%	16%	7%	3%

Source: The National Center for Education Statistics (Region), 2020.

24 Madison

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**24,580**	**31.9%**	**$92,363**	**24.0%**
Software Developers & Programmers	11,300	152.8%	$98,199	22.5%
Computer Support, Database & Systems	10,710	-6.6%	$81,179	18.9%
Computer & Information Systems Managers	1,250	-1.6%	$135,310	22.0%
Technology Engineering-Related	1,320	-7.7%	$92,474	24.8%
Total Non-Tech Occupations	**55,990**	**14.2%**	**$51,462**	**14.2%**
Sales	4,200	22.1%	$72,636	1.8%
Administrative & Office Support	35,880	9.5%	$41,505	16.2%
Business Operations & Finance	10,050	18.7%	$71,346	11.1%
Marketing	5,860	35.0%	$63,149	9.8%

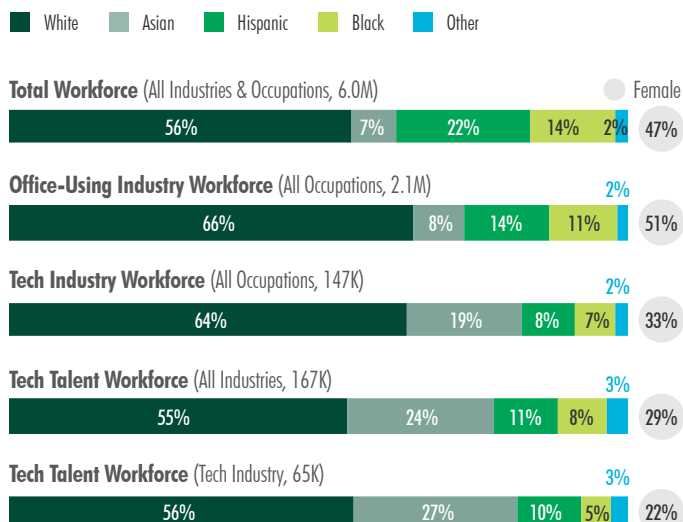Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

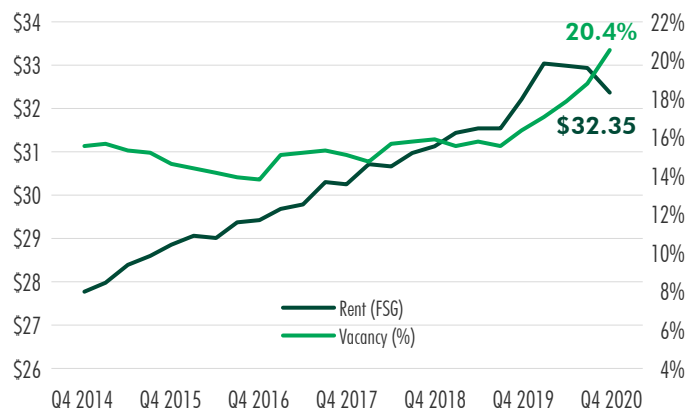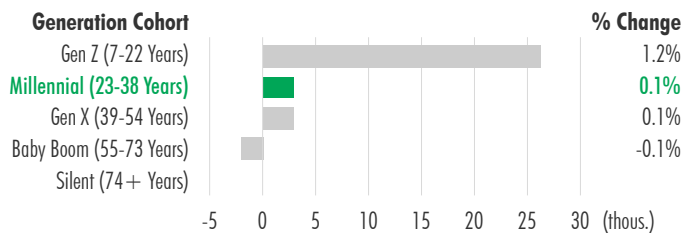The population of millennials grew by 3,000 (0.1%) since 2014.
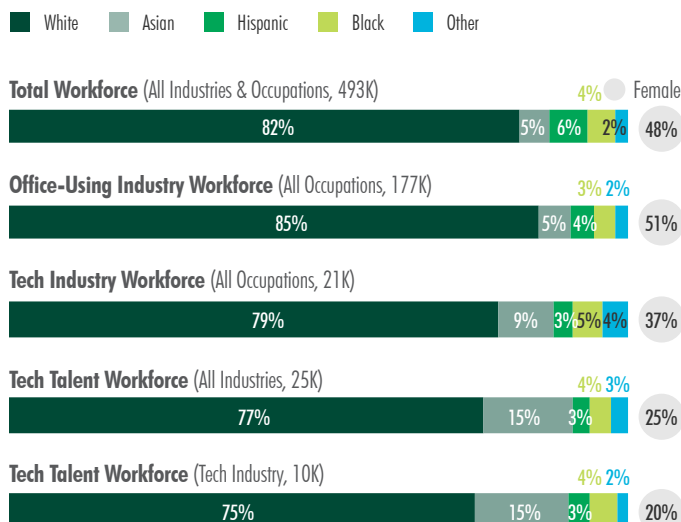
Generation Cohort		% Change
Gen Z (7-22 Years)		1.2%
Millennial (23-38 Years)		0.1%
Gen X (39-54 Years)		0.1%
Baby Boom (55-73 Years)		-0.1%
Silent (74+ Years)		

-5 0 5 10 15 20 25 30 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 493K)
4% Female
82% | 5% | 6% | 2% | 48%

Office-Using Industry Workforce (All Occupations, 177K)
3% 2%
85% | 5% | 4% | 51%

Tech Industry Workforce (All Occupations, 21K)
79% | 9% | 3% | 5% | 4% | 37%

Tech Talent Workforce (All Industries, 25K)
4% 3%
77% | 15% | 3% | 25%

Tech Talent Workforce (Tech Industry, 10K)
4% 2%
75% | 15% | 3% | 20%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$20.79

6.6%

— Rent (FSG)
— Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,220
PER UNIT/MO.

9.4%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#28
RANK

$40M
TALENT

+

$2M
OFFICE RENT

=

$42.1M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	1,079	72%	84%	16%
Math/Statistics	484	77%	66%	34%
Other Tech Engineering	651	18%	77%	23%
Totals	**2,214**	**52%**	**78%**	**22%**

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	1,079	79%	12%	3%	1%	4%
Math/Statistics	484	84%	10%	3%	1%	3%
Other Tech Engineering	651	85%	6%	5%	2%	2%
Totals	**2,214**	**82%**	**10%**	**4%**	**2%**	**3%**

Source: The National Center for Education Statistics (Region), 2020.

25 Detroit

SCORE
44.40

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	89,680	4.5%	$91,623	11.7%
Software Developers & Programmers	33,020	24.5%	$93,498	8.3%
Computer Support, Database & Systems	39,270	-4.8%	$79,489	7.3%
Computer & Information Systems Managers	7,200	31.1%	$142,265	14.4%
Technology Engineering-Related	10,190	-18.7%	$96,524	19.6%
Total Non-Tech Occupations	229,480	0.1%	$52,786	24.3%
Sales	21,770	1.7%	$78,365	4.0%
Administrative & Office Support	149,050	-16.8%	$40,026	15.9%
Business Operations & Finance	40,990	20.1%	$78,072	7.7%
Marketing	17,670	26.9%	$70,250	6.9%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

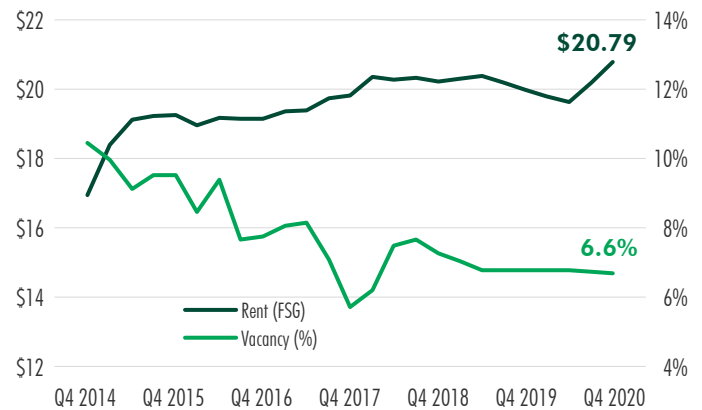The population of millennials grew by 22,726 (2.3%) since 2014.

Generation Cohort	% Change
Gen Z (7-22 Years)	-2.6%
Millennial (23-38 Years)	2.3%
Gen X (39-54 Years)	-2.0%
Baby Boom (55-73 Years)	-8.2%
Silent (74+ Years)	-34.6%

-140 -120 -100 -80 -60 -40 -20 0 20 40 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 2.9M)   ● Female
69% | 5% | 4% | 19% | 2%   47%

Office-Using Industry Workforce (All Occupations, 972K)
75% | 7% | 3% | 13% | 2%   49%

Tech Industry Workforce (All Occupations, 58K)
67% | 21% | 3% | 8% | 2%   40%

Tech Talent Workforce (All Industries, 90K)
62% | 24% | 3% | 9% | 2%   29%

Tech Talent Workforce (Tech Industry, 26K)
55% | 34% | 4% | 5% | 1%   23%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$19.36
14.6%

Rent (FSG)
Vacancy (%)

Q4 2014   Q4 2015   Q4 2016   Q4 2017   Q4 2018   Q4 2019   Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,070
PER UNIT/MO.

18.8%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#26
RANK

$41M
TALENT

+

$1M
OFFICE RENT

=

$42.5M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	3,443	63%	73%	27%
Math/Statistics	565	-4%	58%	42%
Other Tech Engineering	2,782	42%	80%	20%
Totals	6,790	46%	75%	25%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	3,443	69%	19%	3%	4%	4%
Math/Statistics	565	72%	16%	5%	4%	3%
Other Tech Engineering	2,782	74%	13%	6%	4%	3%
Totals	6,790	71%	17%	4%	4%	4%

Source: The National Center for Education Statistics (Region), 2020.

26 Philadelphia

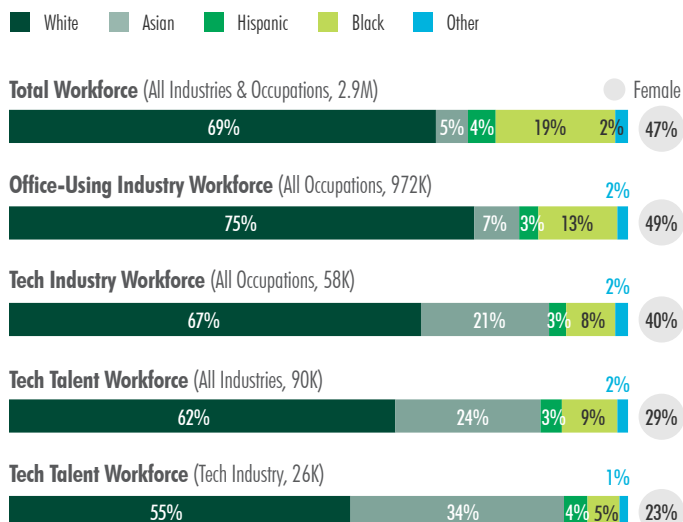## EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	112,740	9.3%	$102,478	12.2%
Software Developers & Programmers	37,500	4.6%	$104,709	11.9%
Computer Support, Database & Systems	55,980	10.0%	$90,501	12.0%
Computer & Information Systems Managers	10,370	37.0%	$161,290	4.9%
Technology Engineering-Related	8,890	1.4%	$99,890	12.1%
Total Non-Tech Occupations	356,420	-2.3%	$55,810	12.1%
Sales	31,020	-3.9%	$83,112	2.2%
Administrative & Office Support	236,090	-3.7%	$41,852	14.7%
Business Operations & Finance	66,210	2.8%	$86,334	10.7%
Marketing	23,100	0.7%	$74,306	8.2%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

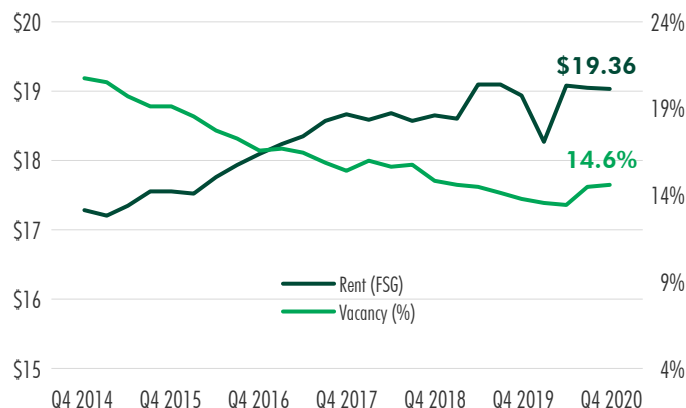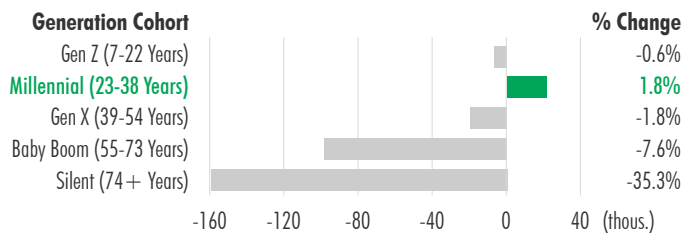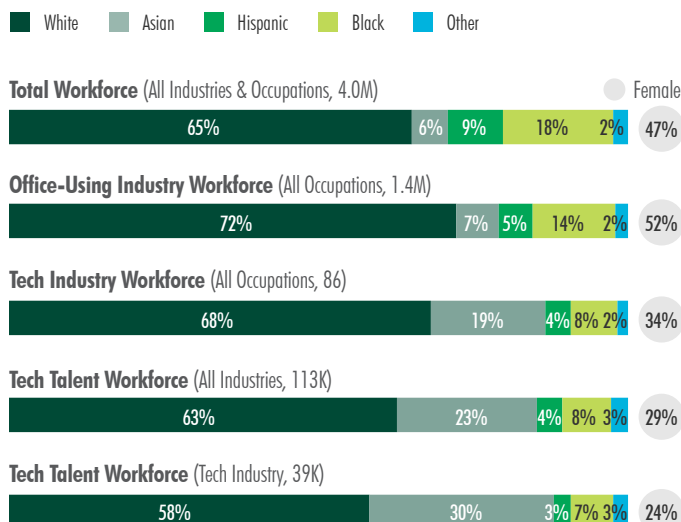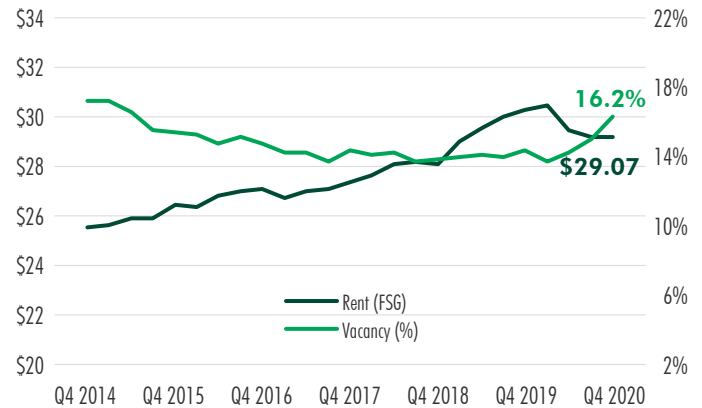The population of millennials grew by 21,489 (1.8%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		-0.6%
Millennial (23-38 Years)		**1.8%**
Gen X (39-54 Years)		-1.8%
Baby Boom (55-73 Years)		-7.6%
Silent (74+ Years)		-35.3%

-160   -120   -80   -40   0   40   (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 4.0M)   ● Female
65% | 6% | 9% | 18% | 2%   47%

Office-Using Industry Workforce (All Occupations, 1.4M)
72% | 7% | 5% | 14% | 2%   52%

Tech Industry Workforce (All Occupations, 86)
68% | 19% | 4% | 8% | 2%   34%

Tech Talent Workforce (All Industries, 113K)
63% | 23% | 4% | 8% | 3%   29%

Tech Talent Workforce (Tech Industry, 39K)
58% | 30% | 3% | 7% | 3%   24%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

16.2%
$29.07

—— Rent (FSG)
—— Vacancy (%)

Q4 2014   Q4 2015   Q4 2016   Q4 2017   Q4 2018   Q4 2019   Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,458
PER UNIT/MO.

13.6%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#10 RANK | **$45M** TALENT + **$2M** OFFICE RENT = **$47.5M** TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	4,008	56%	77%	23%
Math/Statistics	875	10%	60%	40%
Other Tech Engineering	1,394	29%	77%	23%
Totals	**6,277**	**41%**	**75%**	**25%**

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	4,008	62%	20%	7%	9%	3%
Math/Statistics	875	69%	18%	7%	3%	3%
Other Tech Engineering	1,394	73%	13%	7%	5%	2%
Totals	**6,277**	**65%**	**18%**	**7%**	**7%**	**3%**

Source: The National Center for Education Statistics (Region), 2020.

27 Charlotte

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	62,110	31.3%	$99,959	9.0%
Software Developers & Programmers	19,310	22.6%	$103,505	8.7%
Computer Support, Database & Systems	33,190	40.0%	$89,152	10.1%
Computer & Information Systems Managers	6,080	34.8%	$152,920	9.3%
Technology Engineering-Related	3,530	6.0%	$90,951	5.6%
Total Non-Tech Occupations	157,170	18.6%	$53,967	17.3%
Sales	18,290	36.3%	$73,501	2.7%
Administrative & Office Support	96,880	4.0%	$38,394	11.8%
Business Operations & Finance	31,620	40.2%	$84,844	8.9%
Marketing	10,380	56.2%	$70,839	31.8%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

The population of millennials grew by 85,468 (17.1%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		3.2%
Millennial (23-38 Years)		17.1%
Gen X (39-54 Years)		4.8%
Baby Boom (55-73 Years)		-1.9%
Silent (74+ Years)		-30.3%

-60 -40 -20 0 20 40 60 80 100 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 1.7M) — Female
61% | 4% | 11% | 22% | 2% | 47%

Office-Using Industry Workforce (All Occupations, 600K)
71% | 5% | 6% | 17% | 2% | 53%

Tech Industry Workforce (All Occupations, 38K)
63% | 18% | 5% | 11% | 3% | 31%

Tech Talent Workforce (All Industries, 62K)
57% | 18% | 6% | 17% | 3% | 32%

Tech Talent Workforce (Tech Industry, 18K)
56% | 23% | 6% | 11% | 3% | 22%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

— Rent (FSG)
— Vacancy (%)

$30.83
12.3%

Q4 2014 | Q4 2015 | Q4 2016 | Q4 2017 | Q4 2018 | Q4 2019 | Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,200
PER UNIT/MO.

15.8%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#16
RANK

$44M
TALENT

+

$2M
OFFICE RENT

=

$46.2M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	1,123	73%	76%	24%
Math/Statistics	301	26%	61%	39%
Other Tech Engineering	312	56%	88%	12%
Totals	1,736	59%	75%	25%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	1,123	55%	16%	8%	17%	4%
Math/Statistics	301	70%	8%	6%	14%	2%
Other Tech Engineering	312	81%	7%	6%	3%	2%
Totals	1,736	63%	13%	7%	14%	3%

Source: The National Center for Education Statistics (Region), 2020.

28 Calgary

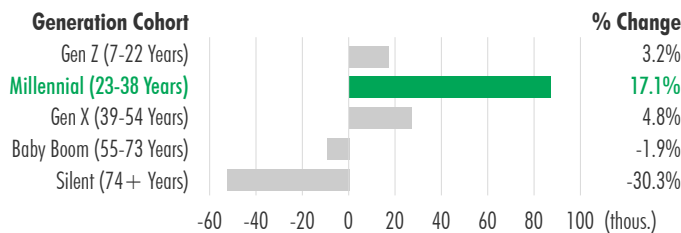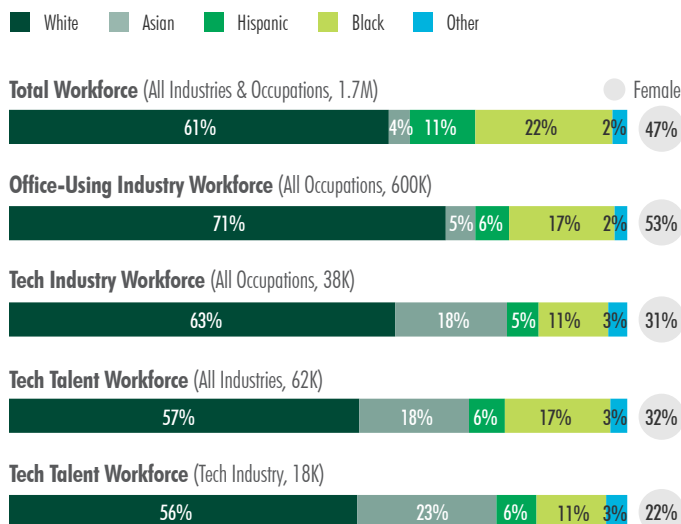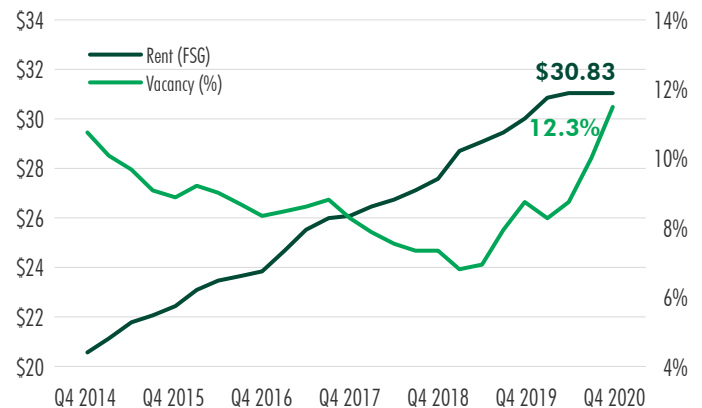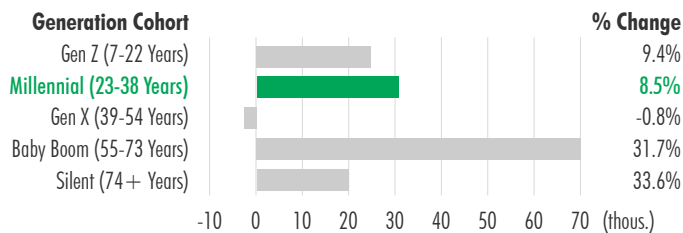## EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	46,700	17.9%	$95,826	5.9%
Software Developers & Programmers	12,700	19.8%	$94,806	13.9%
Computer Support, Database & Systems	16,300	101.2%	$90,709	8.0%
Computer & Information Systems Managers	3,700	19.4%	$121,950	12.6%
Technology Engineering-Related	14,000	-21.3%	$95,888	1.3%
Total Non-Tech Occupations	78,600	6.6%	$74,123	16.3%
Sales	6,200	17.0%	$75,400	3.3%
Administrative & Office Support	38,000	1.3%	$58,614	16.4%
Business Operations & Finance	21,200	-1.4%	$96,221	19.4%
Marketing	13,200	40.4%	$82,680	12.4%

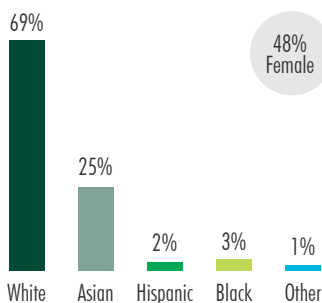Source: Statistics Canada (Metro Area), April 2021.
*Data in C$

OFFICE RENT & VACANCY TRENDS

27.0%

$30.02

— Rent (FSG)
— Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.
*Data in C$

POPULATION TRENDS

The population of millennials grew by 30,313 (8.5%) since 2014.

Generation Cohort	% Change
Gen Z (7-22 Years)	9.4%
Millennial (23-38 Years)	8.5%
Gen X (39-54 Years)	-0.8%
Baby Boom (55-73 Years)	31.7%
Silent (74+ Years)	33.6%

-10 0 10 20 30 40 50 60 70 (thous.)
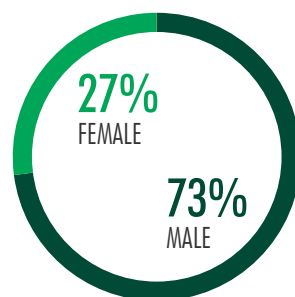
Source: Statistics Canada, April 2021.
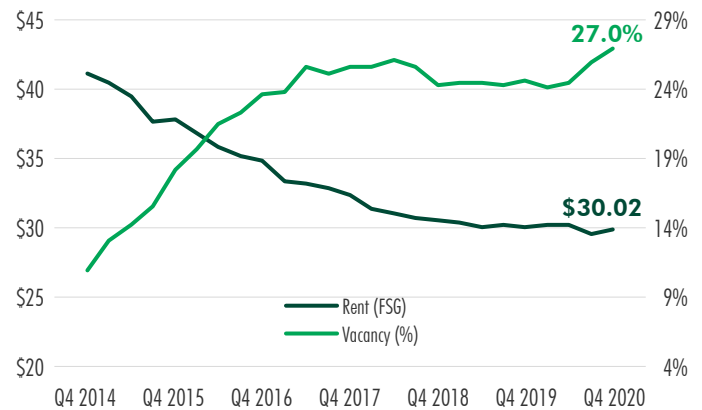
AVERAGE APARTMENT RENT

$891*
PER UNIT/MO.

-1.4%
FIVE-YEAR GROWTH

Source: Apt. rent data from CMHC (Metro), Q4 2020.
*US$ ($1,195 in C$)

AVERAGE ANNUAL OPERATING COSTS

#43
RANK

$34M
TALENT

+

$2M
OFFICE RENT

=

$35.9M
TOTAL

Source: Statistics Canada (Metro), CBRE Research, 2021.
US$

WORKFORCE DIVERSITY

Total Workforce by Race/Ethnicity
(All Industries & Occupations)

48% Female

White	Asian	Hispanic	Black	Other
69%	25%	2%	3%	1%

Tech Talent by Sex

27% FEMALE

73% MALE

Source: Statistics Canada Census, 2016.

Source: Statistics Canada, April 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19
Computer Engineering	298	63%
Math/Statistics	76	6%
Other Tech Engineering	375	-10%
Totals	749	11%

Source: Various Canadian Ministries of Education (Region), 2021.

29 Pittsburgh

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	43,080	10.7%	$88,685	15.1%
Software Developers & Programmers	12,750	8.1%	$92,449	15.5%
Computer Support, Database & Systems	21,710	7.5%	$77,424	11.5%
Computer & Information Systems Managers	3,820	43.6%	$142,610	12.4%
Technology Engineering-Related	4,800	12.1%	$86,705	17.7%
Total Non-Tech Occupations	134,080	-9.8%	$46,866	9.8%
Sales	8,940	-18.6%	$71,741	1.2%
Administrative & Office Support	95,980	-10.0%	$37,484	12.8%
Business Operations & Finance	21,290	-7.7%	$71,754	6.1%
Marketing	7,870	0.5%	$65,696	13.1%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

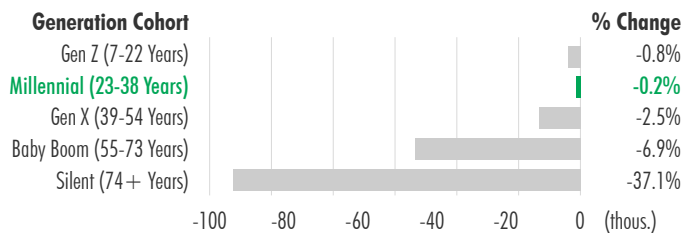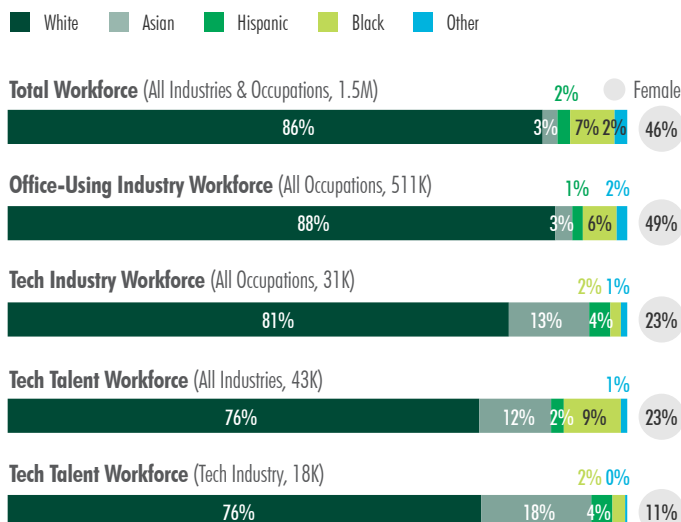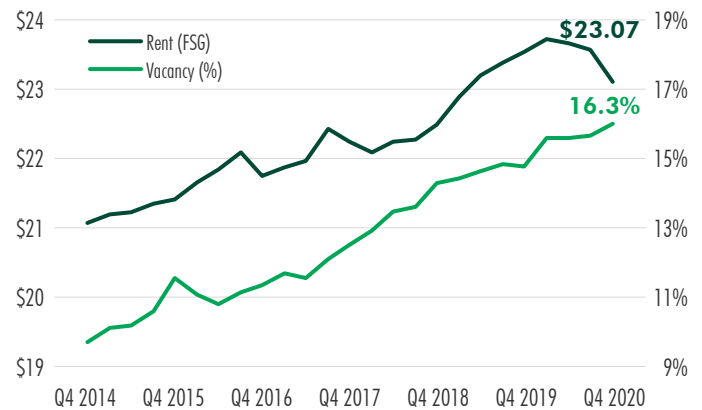The population of millennials declined by -870 (-0.2%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		-0.8%
Millennial (23-38 Years)		-0.2%
Gen X (39-54 Years)		-2.5%
Baby Boom (55-73 Years)		-6.9%
Silent (74+ Years)		-37.1%

-100   -80   -60   -40   -20   0   (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 1.5M)
White 86%, Asian 3%, Hispanic 2%, Black 7%, Other 2% — Female 46%

Office-Using Industry Workforce (All Occupations, 511K)
White 88%, Asian 3%, Hispanic 1%, Black 6%, Other 2% — Female 49%

Tech Industry Workforce (All Occupations, 31K)
White 81%, Asian 13%, Hispanic 2%, Black 4%, Other 1% — Female 23%

Tech Talent Workforce (All Industries, 43K)
White 76%, Asian 12%, Hispanic 2%, Black 9%, Other 1% — Female 23%

Tech Talent Workforce (Tech Industry, 18K)
White 76%, Asian 18%, Hispanic 2%, Black 4%, Other 0% — Female 11%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

Rent (FSG): **$23.07**
Vacancy (%): **16.3%**

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,182
PER UNIT/MO.

5.2%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#37 RANK | **$39M** TALENT + **$2M** OFFICE RENT = **$40.9M** TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	3,556	29%	69%	31%
Math/Statistics	666	43%	58%	42%
Other Tech Engineering	1,192	33%	75%	25%
Totals	5,414	32%	69%	31%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	3,556	65%	23%	4%	5%	4%
Math/Statistics	666	68%	21%	5%	2%	4%
Other Tech Engineering	1,192	73%	10%	7%	7%	3%
Totals	5,414	67%	19%	5%	5%	4%

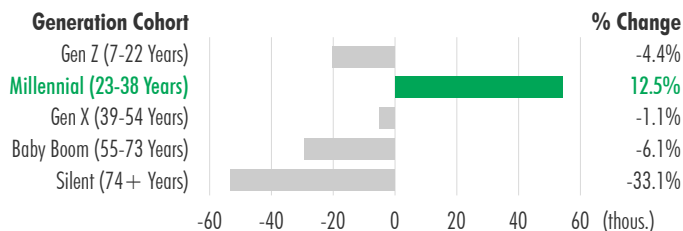Source: The National Center for Education Statistics (Region), 2020.

30 Kansas City

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**52,630**	**8.5%**	**$86,770**	**6.0%**
Software Developers & Programmers	19,450	29.8%	$94,199	7.4%
Computer Support, Database & Systems	26,740	5.4%	$76,851	6.5%
Computer & Information Systems Managers	3,380	-3.4%	$126,400	1.5%
Technology Engineering-Related	3,060	-34.3%	$82,453	-1.7%
Total Non-Tech Occupations	**126,420**	**-8.7%**	**$51,064**	**16.1%**
Sales	14,060	25.3%	$73,634	8.3%
Administrative & Office Support	78,870	-19.2%	$38,794	12.5%
Business Operations & Finance	24,130	16.1%	$72,655	6.7%
Marketing	9,360	5.6%	$64,895	5.1%

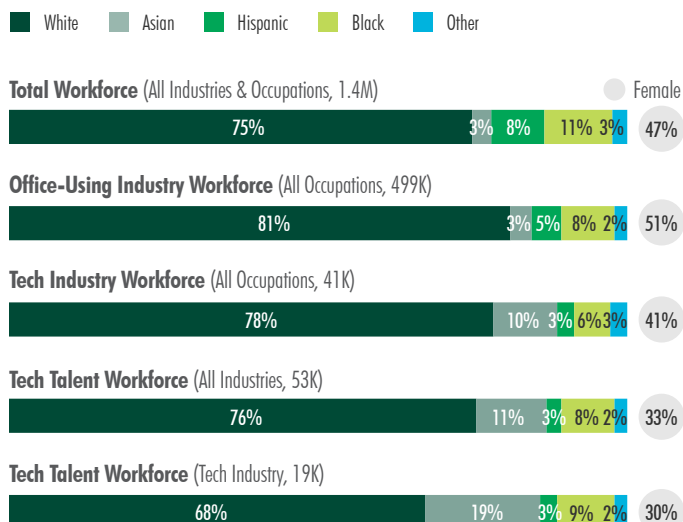Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

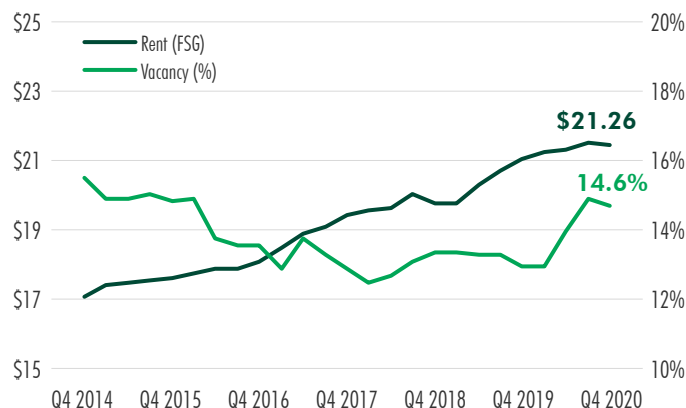The population of millennials grew by 53,932 (12.5%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		-4.4%
Millennial (23-38 Years)		12.5%
Gen X (39-54 Years)		-1.1%
Baby Boom (55-73 Years)		-6.1%
Silent (74+ Years)		-33.1%

-60 -40 -20 0 20 40 60 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 1.4M)   ● Female
75% 3% 8% 11% 3%   47%

Office-Using Industry Workforce (All Occupations, 499K)
81% 3% 5% 8% 2%   51%

Tech Industry Workforce (All Occupations, 41K)
78% 10% 3% 6% 3%   41%

Tech Talent Workforce (All Industries, 53K)
76% 11% 3% 8% 2%   33%

Tech Talent Workforce (Tech Industry, 19K)
68% 19% 3% 9% 2%   30%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

— Rent (FSG)
— Vacancy (%)

$21.26
14.6%

Q4 2014   Q4 2015   Q4 2016   Q4 2017   Q4 2018   Q4 2019   Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,004
PER UNIT/MO.

11.9%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

| #41 RANK | $38M TALENT | + | $2M OFFICE RENT | = | $40.1M TOTAL |

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	1,258	62%	76%	24%
Math/Statistics	184	-3%	61%	39%
Other Tech Engineering	297	30%	88%	12%
Totals	1,739	46%	77%	23%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	1,258	64%	9%	8%	14%	5%
Math/Statistics	184	80%	5%	5%	6%	3%
Other Tech Engineering	297	82%	4%	4%	5%	6%
Totals	1,739	70%	7%	7%	11%	5%

Source: The National Center for Education Statistics (Region), 2020.

31 Columbus

SCORE
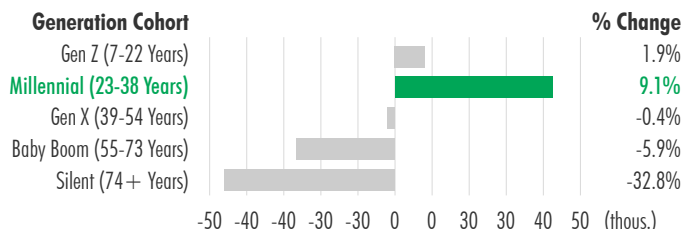## 40.10

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	47,940	5.1%	$92,684	10.5%
Software Developers & Programmers	17,740	26.3%	$97,959	10.6%
Computer Support, Database & Systems	24,080	-6.3%	$83,328	10.7%
Computer & Information Systems Managers	3,030	-13.7%	$144,080	8.3%
Technology Engineering-Related	3,090	29.8%	$84,916	11.5%
Total Non-Tech Occupations	134,730	3.2%	$51,044	13.3%
Sales	10,050	-14.6%	$68,717	0.3%
Administrative & Office Support	85,610	-2.0%	$39,140	15.1%
Business Operations & Finance	28,720	27.6%	$72,994	7.0%
Marketing	10,350	16.3%	$71,440	12.0%

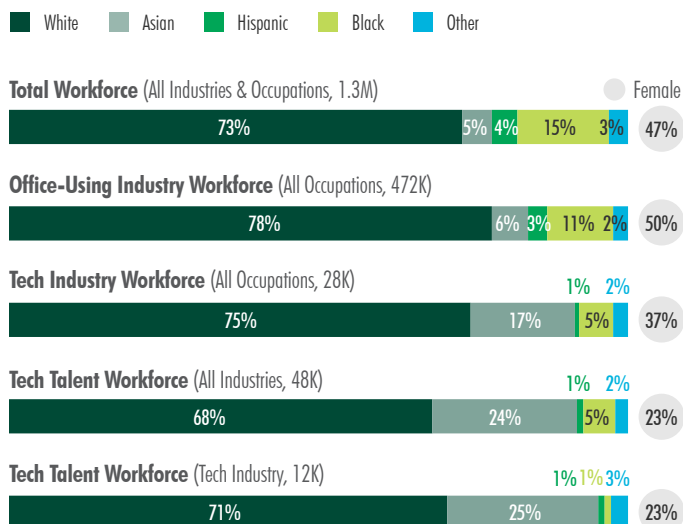Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

The population of millennials grew by 43,014 (9.1%) since 2014.

Generation Cohort	% Change
Gen Z (7-22 Years)	1.9%
Millennial (23-38 Years)	9.1%
Gen X (39-54 Years)	-0.4%
Baby Boom (55-73 Years)	-5.9%
Silent (74+ Years)	-32.8%

-50 -40 -40 -30 -30 0 0 30 30 40 50 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 1.3M) ● Female
73% 5% 4% 15% 3% | 47%

Office-Using Industry Workforce (All Occupations, 472K)
78% 6% 3% 11% 2% | 50%

Tech Industry Workforce (All Occupations, 28K)
75% 17% 5% 1% 2% | 37%

Tech Talent Workforce (All Industries, 48K)
68% 24% 5% 1% 2% | 23%

Tech Talent Workforce (Tech Industry, 12K)
71% 25% 1% 1% 3% | 23%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$19.73
19.4%

— Rent (FSG)
— Vacancy (%)
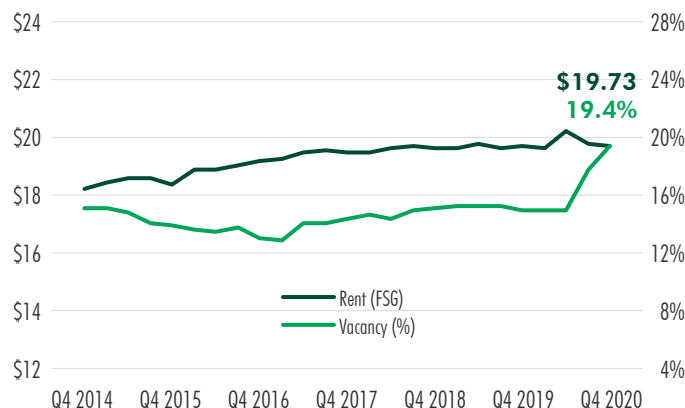
Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,028
PER UNIT/MO.

16.6%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#25 RANK | $41M TALENT + $1M OFFICE RENT = $42.5M TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	1,132	17%	83%	17%
Math/Statistics	501	86%	57%	43%
Other Tech Engineering	788	-2%	78%	22%
Totals	2,421	18%	76%	24%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	1,132	75%	11%	4%	6%	3%
Math/Statistics	501	77%	9%	4%	7%	3%
Other Tech Engineering	788	82%	7%	4%	3%	4%
Totals	2,421	78%	9%	4%	5%	4%

Source: The National Center for Education Statistics (Region), 2020.

EMPLOYMENT BREAKDOWN
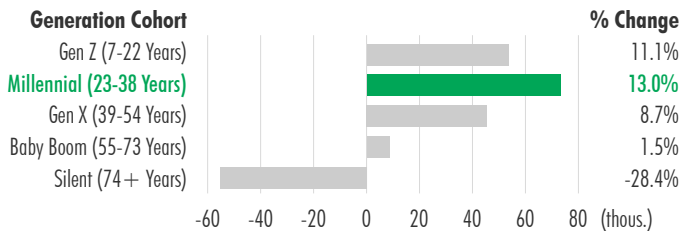
	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**43,340**	**30.0%**	**$89,180**	**13.6%**
Software Developers & Programmers	13,560	31.4%	$92,727	5.9%
Computer Support, Database & Systems	21,990	24.3%	$78,174	14.6%
Computer & Information Systems Managers	3,370	123.2%	$147,580	4.3%
Technology Engineering-Related	4,420	15.7%	$88,524	15.5%
Total Non-Tech Occupations	**152,940**	**5.0%**	**$45,275**	**14.0%**
Sales	18,190	29.6%	$58,751	-3.0%
Administrative & Office Support	100,940	-3.1%	$36,257	15.6%
Business Operations & Finance	23,030	11.6%	$68,398	8.7%
Marketing	10,780	58.1%	$57,568	5.9%

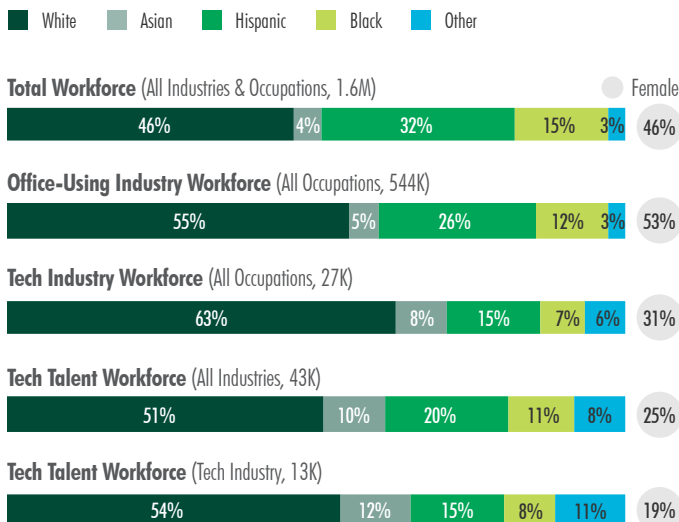Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

The population of millennials grew by 71,211 (13.0%) since 2014.

Generation Cohort	% Change
Gen Z (7-22 Years)	11.1%
Millennial (23-38 Years)	13.0%
Gen X (39-54 Years)	8.7%
Baby Boom (55-73 Years)	1.5%
Silent (74+ Years)	-28.4%

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other   ● Female

Total Workforce (All Industries & Occupations, 1.6M)
| 46% | 4% | 32% | 15% | 3% | 46% |

Office-Using Industry Workforce (All Occupations, 544K)
| 55% | 5% | 26% | 12% | 3% | 53% |

Tech Industry Workforce (All Occupations, 27K)
| 63% | 8% | 15% | 7% | 6% | 31% |

Tech Talent Workforce (All Industries, 43K)
| 51% | 10% | 20% | 11% | 8% | 25% |

Tech Talent Workforce (Tech Industry, 13K)
| 54% | 12% | 15% | 8% | 11% | 19% |

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

— Rent (FSG) **$24.76**
— Vacancy (%) **11.7%**
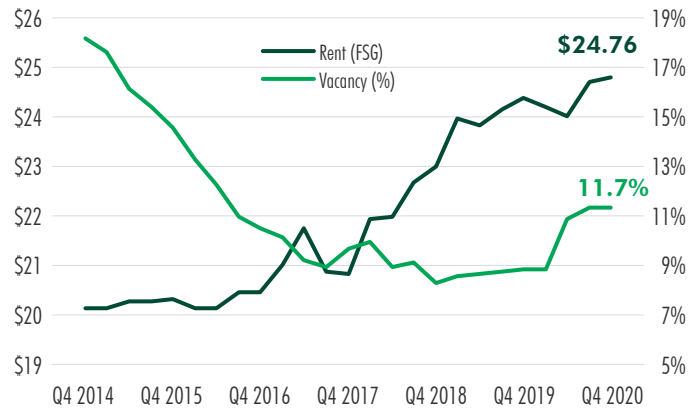
Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,253
PER UNIT/MO.

14.1%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#35 RANK | **$39M** TALENT + **$2M** OFFICE RENT = **$41.1M** TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	1,427	22%	84%	16%
Math/Statistics	124	38%	59%	41%
Other Tech Engineering	1,242	111%	86%	14%
Totals	2,793	51%	84%	16%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	1,427	52%	12%	23%	8%	4%
Math/Statistics	124	69%	11%	14%	5%	2%
Other Tech Engineering	1,242	62%	6%	21%	7%	5%
Totals	2,793	57%	9%	22%	7%	4%

Source: The National Center for Education Statistics (Region), 2020.

33 Tampa

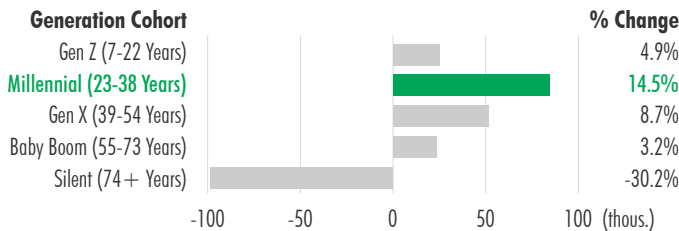## EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**53,960**	**23.5%**	**$90,525**	**16.7%**
Software Developers & Programmers	17,440	24.0%	$97,251	15.4%
Computer Support, Database & Systems	28,640	19.0%	$78,870	16.0%
Computer & Information Systems Managers	3,970	78.0%	$150,150	2.8%
Technology Engineering-Related	3,910	17.1%	$85,345	16.7%
Total Non-Tech Occupations	**194,270**	**8.1%**	**$46,601**	**15.4%**
Sales	18,810	-2.6%	$70,596	9.7%
Administrative & Office Support	135,210	3.9%	$37,165	19.3%
Business Operations & Finance	28,130	25.4%	$71,070	6.9%
Marketing	12,120	53.6%	$57,843	-3.1%

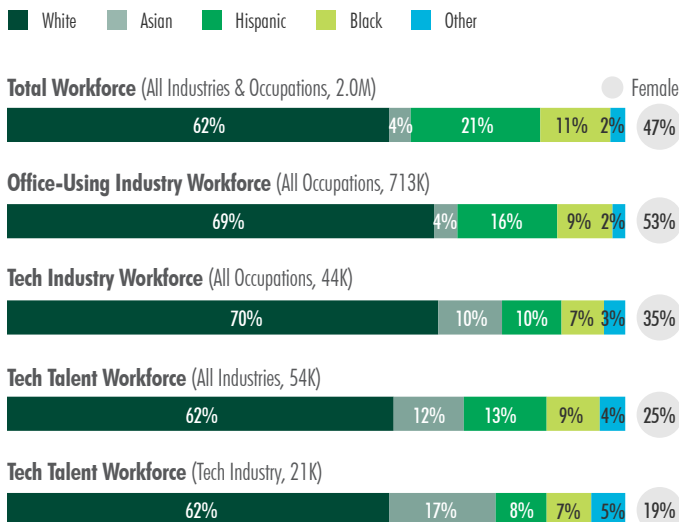Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

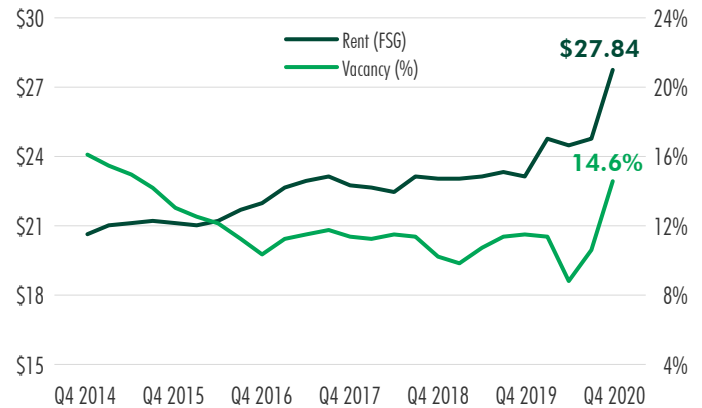The population of millennials grew by 84,525 (14.5%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		4.9%
Millennial (23-38 Years)		**14.5%**
Gen X (39-54 Years)		8.7%
Baby Boom (55-73 Years)		3.2%
Silent (74+ Years)		-30.2%

-100   -50   0   50   100 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 2.0M)   ● Female
| 62% | 4% | 21% | 11% | 2% | 47% |

Office-Using Industry Workforce (All Occupations, 713K)
| 69% | 4% | 16% | 9% | 2% | 53% |

Tech Industry Workforce (All Occupations, 44K)
| 70% | 10% | 10% | 7% | 3% | 35% |

Tech Talent Workforce (All Industries, 54K)
| 62% | 12% | 13% | 9% | 4% | 25% |

Tech Talent Workforce (Tech Industry, 21K)
| 62% | 17% | 8% | 7% | 5% | 19% |

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

— Rent (FSG)
— Vacancy (%)

$27.84
14.6%

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,292
PER UNIT/MO.

18.7%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#29 RANK	**$40M** TALENT	+	**$2M** OFFICE RENT	=	**$42M** TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	1,328	85%	76%	24%
Math/Statistics	127	19%	59%	41%
Other Tech Engineering	413	59%	84%	16%
Totals	**1,868**	**72%**	**76%**	**24%**

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	1,328	54%	10%	17%	16%	3%
Math/Statistics	127	60%	6%	24%	6%	5%
Other Tech Engineering	413	61%	7%	23%	5%	4%
Totals	**1,868**	**56%**	**9%**	**19%**	**13%**	**3%**

Source: The National Center for Education Statistics (Region), 2020.

34 Quebec City

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**29,400**	**18.1%**	**$85,093**	**36.4%**
Software Developers & Programmers	8,400	47.4%	$81,120	51.7%
Computer Support, Database & Systems	11,700	10.4%	$81,494	14.2%
Computer & Information Systems Managers	2,100	200.0%	$150,488	N/A
Technology Engineering-Related	7,200	-8.9%	$76,981	23.6%
Total Non-Tech Occupations	**42,700**	**-3.0%**	**$61,290**	**11.4%**
Sales	2,300	-11.5%	$58,074	17.0%
Administrative & Office Support	21,000	-16.3%	$48,048	7.1%
Business Operations & Finance	12,700	8.5%	$80,330	6.1%
Marketing	6,700	45.7%	$67,808	11.7%

Source: Statistics Canada (Metro Area), April 2021.
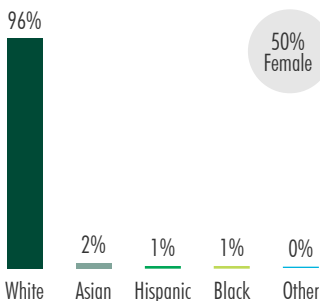*Data in C$

POPULATION TRENDS

The population of millennials grew by 11,734 (7.0%) since 2014.
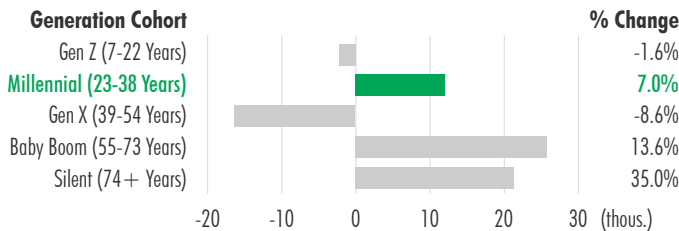
Generation Cohort		% Change
Gen Z (7-22 Years)		-1.6%
Millennial (23-38 Years)		7.0%
Gen X (39-54 Years)		-8.6%
Baby Boom (55-73 Years)		13.6%
Silent (74+ Years)		35.0%

-20   -10   0   10   20   30   (thous.)

Source: Statistics Canada, April 2021.

WORKFORCE DIVERSITY

Total Workforce by Race/Ethnicity
(All Industries & Occupations)

50% Female

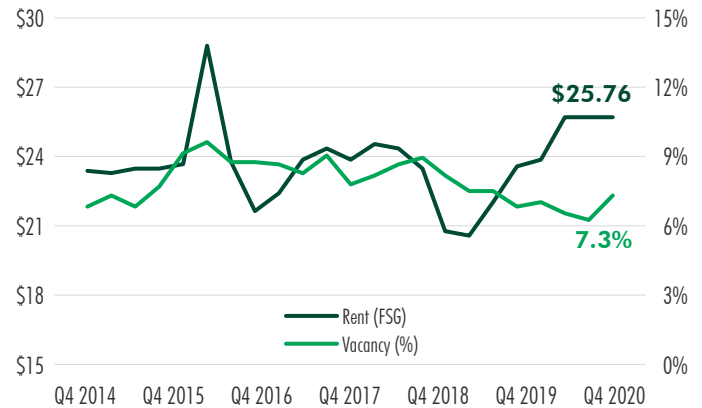96% White
2% Asian
1% Hispanic
1% Black
0% Other

Tech Talent by Sex

18% FEMALE
82% MALE

Source: Statistics Canada Census, 2016.

Source: Statistics Canada, April 2021.

OFFICE RENT & VACANCY TRENDS

$25.76

7.3%

Rent (FSG)
Vacancy (%)

Q4 2014   Q4 2015   Q4 2016   Q4 2017   Q4 2018   Q4 2019   Q4 2020
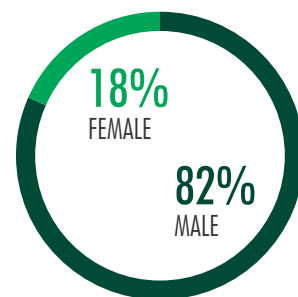
Source: CBRE Research (Metro Area), Q4 2020.
*Data in C$

AVERAGE APARTMENT RENT

$652*
PER UNIT/MO.

15.0%
FIVE-YEAR GROWTH

Source: Apt. rent data from CMHC (Metro), Q4 2020.
*US$ ($874 in C$)

AVERAGE ANNUAL OPERATING COSTS

#48 RANK	**$31M** TALENT	+	**$1M** OFFICE RENT	=	**$32.5M** TOTAL

Source: Statistics Canada (Metro), CBRE Research, 2021.
US$

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19
Computer Engineering	183	27%
Math/Statistics	42	11%
Other Tech Engineering	236	35%
Totals	461	29%

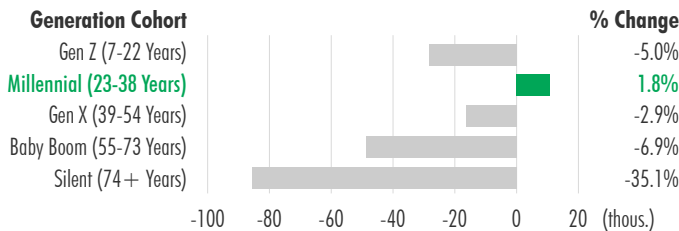Source: Various Canadian Ministries of Education (Region), 2021.

35 St. Louis

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**55,080**	**9.9%**	**$91,900**	**7.1%**
Software Developers & Programmers	17,920	25.7%	$96,166	4.5%
Computer Support, Database & Systems	28,220	1.6%	$79,964	5.3%
Computer & Information Systems Managers	4,070	26.8%	$143,710	7.1%
Technology Engineering-Related	4,870	-0.2%	$102,073	11.6%
Total Non-Tech Occupations	**159,800**	**-3.7%**	**$50,385**	**14.9%**
Sales	12,740	-15.2%	$76,628	25.7%
Administrative & Office Support	107,720	-9.1%	$39,191	14.3%
Business Operations & Finance	28,970	26.5%	$74,988	1.5%
Marketing	10,370	9.5%	$65,691	3.3%

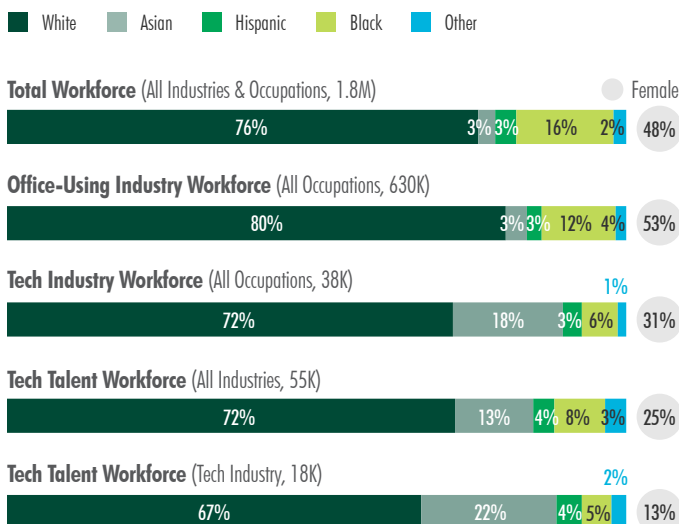Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

The population of millennials grew by 10,711 (1.8%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		-5.0%
Millennial (23-38 Years)		1.8%
Gen X (39-54 Years)		-2.9%
Baby Boom (55-73 Years)		-6.9%
Silent (74+ Years)		-35.1%

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

● White ● Asian ● Hispanic ● Black ● Other

Total Workforce (All Industries & Occupations, 1.8M) ○ Female
76% | 3% | 3% | 16% | 2% | 48%

Office-Using Industry Workforce (All Occupations, 630K)
80% | 3% | 3% | 12% | 4% | 53%

Tech Industry Workforce (All Occupations, 38K)
1%
72% | 18% | 3% | 6% | 31%

Tech Talent Workforce (All Industries, 55K)
72% | 13% | 4% | 8% | 3% | 25%

Tech Talent Workforce (Tech Industry, 18K)
2%
67% | 22% | 4% | 5% | 13%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

— Rent (FSG)
— Vacancy (%)

12.9%
$21.04
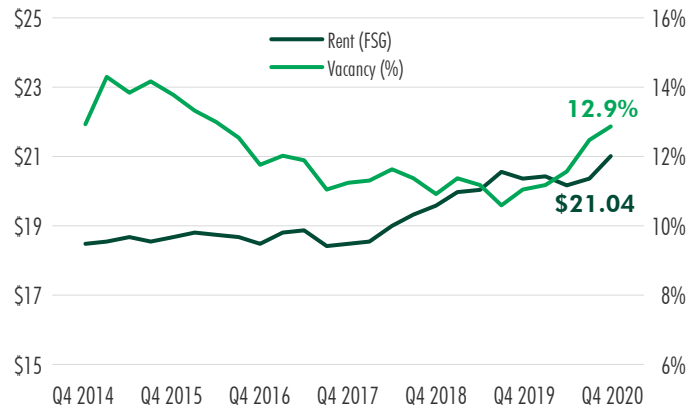
Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$992
PER UNIT/MO.

10.5%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#27 RANK | **$41M** TALENT | + | **$2M** OFFICE RENT | = | **$42.3M** TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	1,247	81%	76%	24%
Math/Statistics	351	37%	59%	41%
Other Tech Engineering	559	39%	78%	22%
Totals	**2,157**	**60%**	**73%**	**27%**

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	1,247	74%	11%	4%	8%	4%
Math/Statistics	351	75%	13%	5%	3%	4%
Other Tech Engineering	559	81%	8%	5%	4%	3%
Totals	**2,157**	**76%**	**10%**	**4%**	**6%**	**4%**

Source: The National Center for Education Statistics (Region), 2020.

36 Indianapolis

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**39,990**	**23.2%**	**$86,361**	**13.4%**
Software Developers & Programmers	14,420	44.3%	$92,621	19.9%
Computer Support, Database & Systems	20,510	18.2%	$75,693	6.4%
Computer & Information Systems Managers	2,830	11.0%	$130,900	17.7%
Technology Engineering-Related	2,230	-13.6%	$87,480	22.1%
Total Non-Tech Occupations	**120,520**	**5.1%**	**$51,000**	**11.9%**
Sales	12,640	-3.7%	$84,736	18.7%
Administrative & Office Support	77,730	5.1%	$38,898	11.6%
Business Operations & Finance	21,800	7.0%	$71,104	10.2%
Marketing	8,350	14.9%	$60,100	8.9%

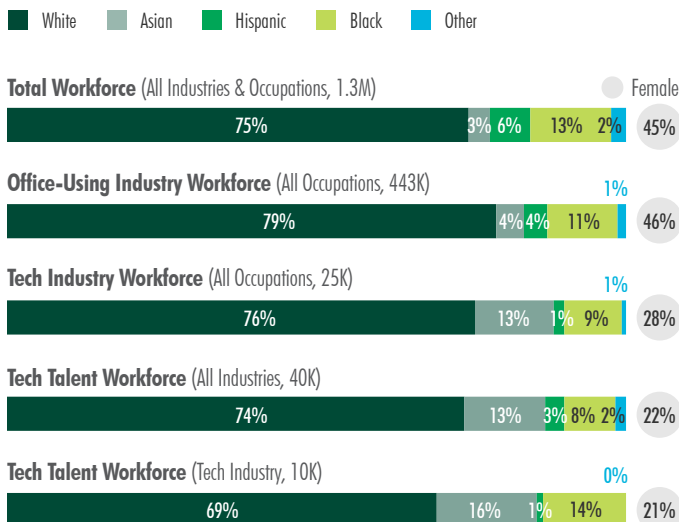Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

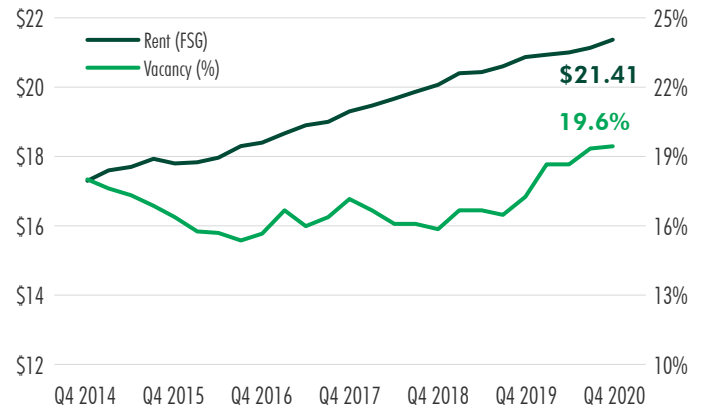The population of millennials grew by 44,413 (10.4%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		-1.0%
Millennial (23-38 Years)		10.4%
Gen X (39-54 Years)		-0.9%
Baby Boom (55-73 Years)		-6.1%
Silent (74+ Years)		-33.0%

-60 -40 -20 0 20 40 60 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 1.3M) ● Female
75% 3% 6% 13% 2% | 45%

Office-Using Industry Workforce (All Occupations, 443K) 1%
79% 4% 4% 11% | 46%

Tech Industry Workforce (All Occupations, 25K) 1%
76% 13% 1% 9% | 28%

Tech Talent Workforce (All Industries, 40K)
74% 13% 3% 8% 2% | 22%

Tech Talent Workforce (Tech Industry, 10K) 0%
69% 16% 1% 14% | 21%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

—— Rent (FSG)
—— Vacancy (%)

$21.41
19.6%

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$951
PER UNIT/MO.

16.8%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#39 RANK	$39M TALENT	+	$2M OFFICE RENT	=	$40.3M TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	932	140%	77%	23%
Math/Statistics	145	-2%	70%	30%
Other Tech Engineering	355	145%	82%	18%
Totals	1,432	110%	78%	22%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	932	71%	6%	7%	12%	4%
Math/Statistics	145	85%	7%	1%	4%	3%
Other Tech Engineering	355	81%	5%	6%	5%	3%
Totals	1,432	74%	6%	6%	10%	4%

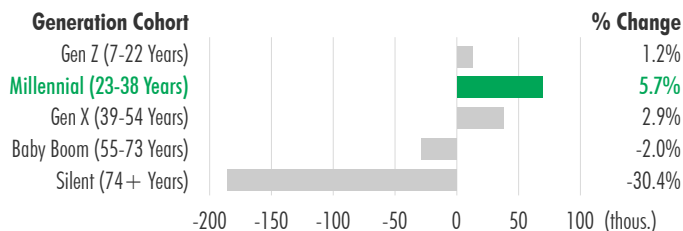Source: The National Center for Education Statistics (Region), 2020.

37 South Florida

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	67,500	18.0%	$92,096	17.9%
Software Developers & Programmers	22,090	20.0%	$96,638	20.0%
Computer Support, Database & Systems	34,880	13.2%	$77,914	11.5%
Computer & Information Systems Managers	6,180	74.6%	$158,450	12.3%
Technology Engineering-Related	4,350	-2.7%	$88,476	17.6%
Total Non-Tech Occupations	355,530	1.3%	$47,908	14.5%
Sales	35,530	-8.4%	$71,591	8.1%
Administrative & Office Support	242,680	-2.7%	$37,274	16.5%
Business Operations & Finance	53,130	14.3%	$74,014	8.1%
Marketing	24,190	47.9%	$62,471	6.3%

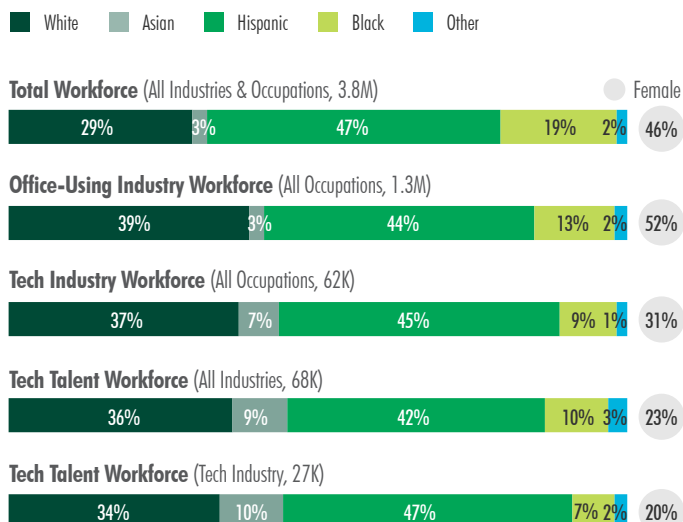Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

The population of millennials grew by 70,017 (5.7%) since 2014.

Generation Cohort	% Change
Gen Z (7-22 Years)	1.2%
Millennial (23-38 Years)	5.7%
Gen X (39-54 Years)	2.9%
Baby Boom (55-73 Years)	-2.0%
Silent (74+ Years)	-30.4%

-200 -150 -100 -50 0 50 100 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

Legend: White, Asian, Hispanic, Black, Other, Female

Total Workforce (All Industries & Occupations, 3.8M)
29% | 3% | 47% | 19% | 2% | 46% Female

Office-Using Industry Workforce (All Occupations, 1.3M)
39% | 3% | 44% | 13% | 2% | 52%

Tech Industry Workforce (All Occupations, 62K)
37% | 7% | 45% | 9% | 1% | 31%

Tech Talent Workforce (All Industries, 68K)
36% | 9% | 42% | 10% | 3% | 23%

Tech Talent Workforce (Tech Industry, 27K)
34% | 10% | 47% | 7% | 2% | 20%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

15.5%
$40.63
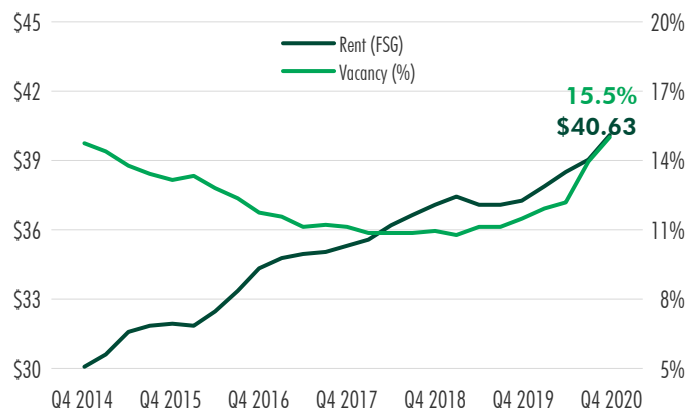
Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,712
PER UNIT/MO.

8.3%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#23
RANK

$41M
TALENT

+

$3M
OFFICE RENT

=

$44.2M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	2,032	28%	80%	20%
Math/Statistics	214	65%	69%	31%
Other Tech Engineering	524	33%	79%	21%
Totals	2,770	31%	79%	21%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	2,032	24%	6%	50%	17%	3%
Math/Statistics	214	40%	7%	44%	6%	3%
Other Tech Engineering	524	28%	4%	53%	12%	2%
Totals	2,770	26%	6%	50%	15%	3%

Source: The National Center for Education Statistics (Region), 2020.

38 Edmonton

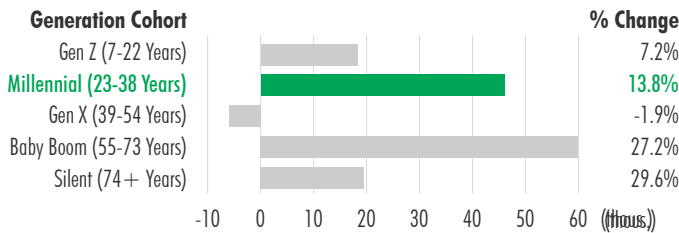## EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**34,500**	**53.3%**	**$92,768**	**26.9%**
Software Developers & Programmers	7,400	80.5%	$77,480	-0.3%
Computer Support, Database & Systems	13,400	94.2%	$94,037	22.3%
Computer & Information Systems Managers	2,800	64.7%	N/A	N/A
Technology Engineering-Related	10,900	11.2%	$90,854	11.9%
Total Non-Tech Occupations	**68,600**	**9.6%**	**$68,895**	**14.0%**
Sales	6,900	9.5%	$64,106	-3.0%
Administrative & Office Support	35,000	0.9%	$55,973	12.5%
Business Operations & Finance	19,900	11.2%	$89,981	15.8%
Marketing	6,800	83.8%	$78,562	16.5%

Source: Statistics Canada (Metro Area), April 2021.
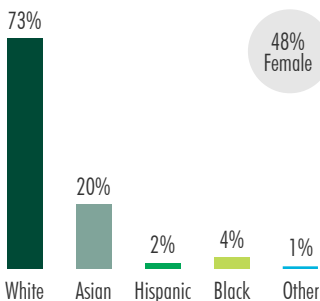*Data in C$

POPULATION TRENDS

The population of millennials grew by 45,854 (13.8%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		7.2%
Millennial (23-38 Years)		**13.8%**
Gen X (39-54 Years)		-1.9%
Baby Boom (55-73 Years)		27.2%
Silent (74+ Years)		29.6%

-10 0 10 20 30 40 50 60 (thous.)

Source: Statistics Canada, April 2021.

WORKFORCE DIVERSITY

Total Workforce by Race/Ethnicity
(All Industries & Occupations)

48% Female

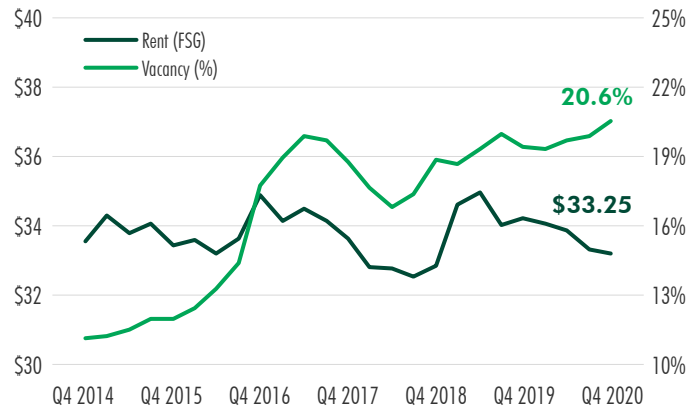73% White
20% Asian
2% Hispanic
4% Black
1% Other

Source: Statistics Canada Census, 2016.

Tech Talent by Sex

22% FEMALE
78% MALE

Source: Statistics Canada, April 2021.

OFFICE RENT & VACANCY TRENDS

— Rent (FSG)
— Vacancy (%)

20.6%
$33.25

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020
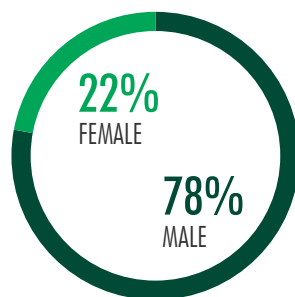
Source: CBRE Research (Metro Area), Q4 2020.
*Data in C$

AVERAGE APARTMENT RENT

$859*
PER UNIT/MO.

1.4%
FIVE-YEAR GROWTH

Source: Apt. rent data from CMHC (Metro), Q4 2020.
*US$ ($1,153 in C$)

AVERAGE ANNUAL OPERATING COSTS

#44 RANK	**$32M** TALENT	+	**$2M** OFFICE RENT	=	**$33.9M** TOTAL

Source: Statistics Canada (Metro), CBRE Research, 2021.
US$

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19
Computer Engineering	378	75%
Math/Statistics	172	41%
Other Tech Engineering	720	18%
Totals	**1,270**	**34%**

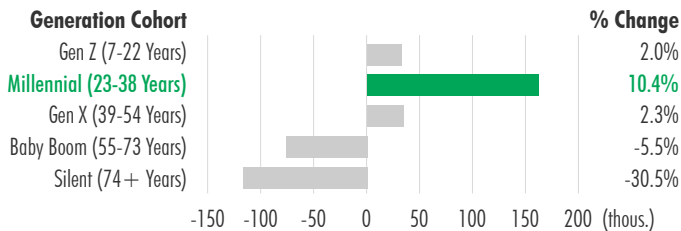Source: Various Canadian Ministries of Education (Region), 2021.

39 Houston

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**96,420**	**-5.9%**	**$101,767**	**8.5%**
Software Developers & Programmers	26,520	-1.7%	$106,451	7.9%
Computer Support, Database & Systems	51,320	-6.0%	$93,658	8.5%
Computer & Information Systems Managers	6,410	8.1%	$161,500	6.6%
Technology Engineering-Related	12,170	-18.5%	$94,291	5.7%
Total Non-Tech Occupations	**356,160**	**-5.8%**	**$51,625**	**3.0%**
Sales	36,050	-9.5%	$70,758	-6.6%
Administrative & Office Support	240,860	-5.6%	$39,834	9.1%
Business Operations & Finance	62,290	-8.0%	$82,376	-1.2%
Marketing	16,960	10.1%	$65,466	3.6%

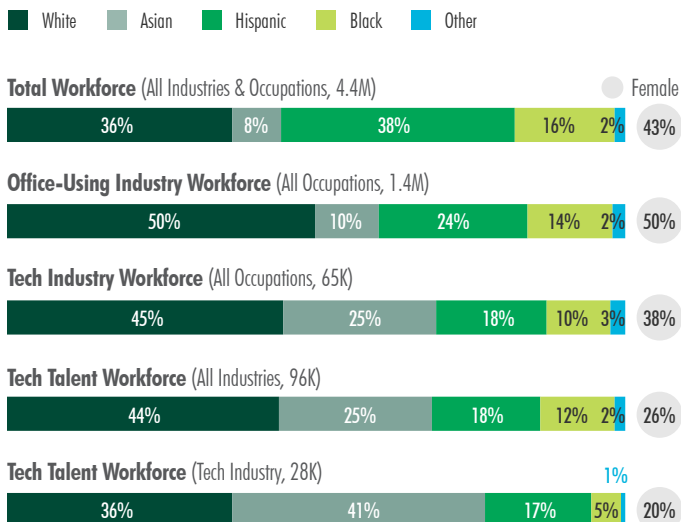Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

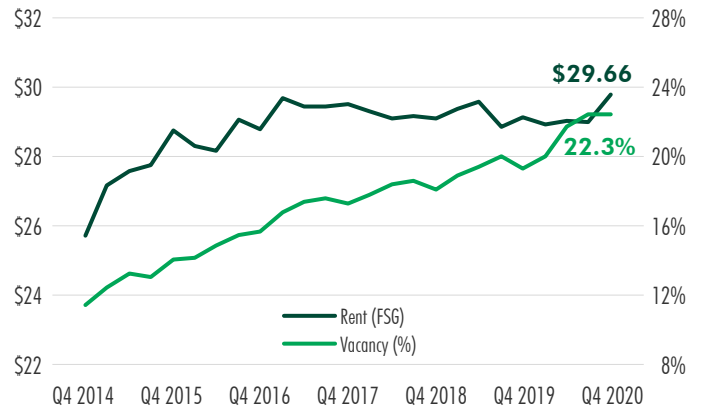The population of millennials grew by 157,096 (10.4%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		2.0%
Millennial (23-38 Years)		**10.4%**
Gen X (39-54 Years)		2.3%
Baby Boom (55-73 Years)		-5.5%
Silent (74+ Years)		-30.5%

-150 -100 -50 0 50 100 150 200 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 4.4M) — ● Female

36%	8%	38%	16%	2%	43%

Office-Using Industry Workforce (All Occupations, 1.4M)

50%	10%	24%	14%	2%	50%

Tech Industry Workforce (All Occupations, 65K)

45%	25%	18%	10%	3%	38%

Tech Talent Workforce (All Industries, 96K)

44%	25%	18%	12%	2%	26%

Tech Talent Workforce (Tech Industry, 28K) — 1%

36%	41%	17%	5%	20%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$29.66

22.3%

— Rent (FSG)
— Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,092
PER UNIT/MO.

-0.8%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#14
RANK

$44M
TALENT

+

$2M
OFFICE RENT

=

$46.6M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	1,862	85%	72%	28%
Math/Statistics	520	25%	53%	47%
Other Tech Engineering	672	79%	79%	21%
Totals	3,054	70%	70%	30%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	1,862	31%	29%	25%	14%	1%
Math/Statistics	520	42%	22%	24%	10%	2%
Other Tech Engineering	672	35%	18%	25%	18%	3%
Totals	3,054	34%	25%	25%	14%	2%

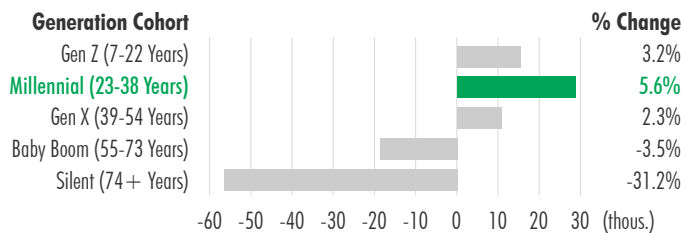Source: The National Center for Education Statistics (Region), 2020.

40 Sacramento

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	40,160	10.7%	$102,394	16.2%
Software Developers & Programmers	10,270	-21.8%	$111,984	17.6%
Computer Support, Database & Systems	22,640	31.2%	$92,515	20.3%
Computer & Information Systems Managers	3,540	66.2%	$160,000	23.9%
Technology Engineering-Related	3,710	-1.1%	$81,171	-11.7%
Total Non-Tech Occupations	106,110	-5.2%	$53,750	15.4%
Sales	7,570	-3.9%	$76,693	12.3%
Administrative & Office Support	68,920	-11.9%	$42,794	16.5%
Business Operations & Finance	22,250	9.9%	$80,726	14.5%
Marketing	7,370	32.1%	$51,191	-24.1%

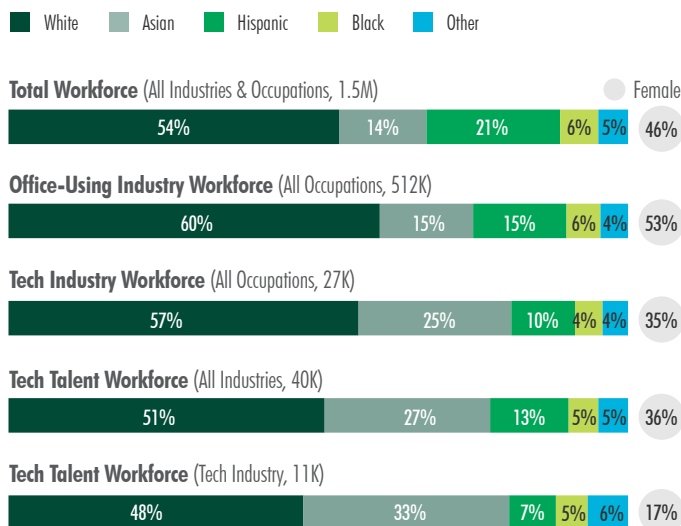Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

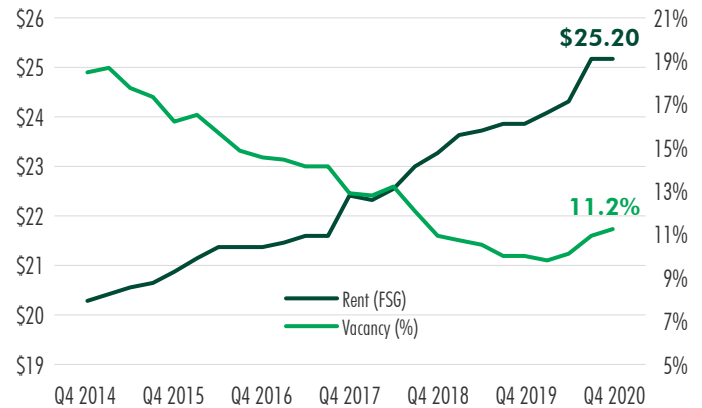The population of millennials grew by 28,407 (5.6%) since 2014.

Generation Cohort	% Change
Gen Z (7-22 Years)	3.2%
Millennial (23-38 Years)	5.6%
Gen X (39-54 Years)	2.3%
Baby Boom (55-73 Years)	-3.5%
Silent (74+ Years)	-31.2%

-60 -50 -40 -30 -20 -10 0 10 20 30 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 1.5M)　　Female
54% | 14% | 21% | 6% | 5% | 46%

Office-Using Industry Workforce (All Occupations, 512K)
60% | 15% | 15% | 6% | 4% | 53%

Tech Industry Workforce (All Occupations, 27K)
57% | 25% | 10% | 4% | 4% | 35%

Tech Talent Workforce (All Industries, 40K)
51% | 27% | 13% | 5% | 5% | 36%

Tech Talent Workforce (Tech Industry, 11K)
48% | 33% | 7% | 5% | 6% | 17%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$25.20

11.2%

Rent (FSG)
Vacancy (%)

Q4 2014　Q4 2015　Q4 2016　Q4 2017　Q4 2018　Q4 2019　Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,602
PER UNIT/MO.

36.5%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#12
RANK

$45M
TALENT

+

$2M
OFFICE RENT

=

$46.7M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	988	93%	77%	23%
Math/Statistics	532	145%	55%	45%
Other Tech Engineering	617	20%	82%	18%
Totals	2,137	72%	73%	27%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	988	32%	48%	11%	2%	7%
Math/Statistics	532	37%	37%	19%	1%	6%
Other Tech Engineering	617	43%	26%	22%	2%	7%
Totals	2,137	37%	39%	16%	2%	7%

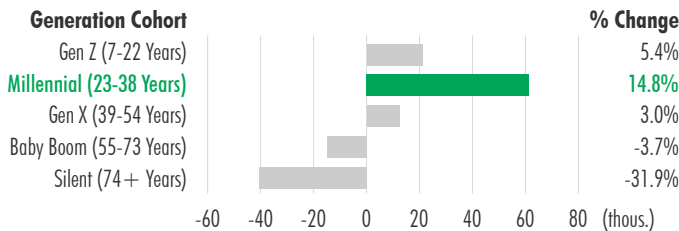Source: The National Center for Education Statistics (Region), 2020.

41 Nashville

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	35,190	36.1%	$84,615	10.1%
Software Developers & Programmers	10,260	59.3%	$90,821	10.9%
Computer Support, Database & Systems	19,100	38.8%	$73,170	6.6%
Computer & Information Systems Managers	3,870	19.1%	$128,190	23.7%
Technology Engineering-Related	1,960	-18.7%	$77,621	4.5%
Total Non-Tech Occupations	121,490	8.4%	$49,381	17.4%
Sales	13,620	22.8%	$73,358	21.9%
Administrative & Office Support	78,830	-1.1%	$38,657	13.5%
Business Operations & Finance	22,450	38.6%	$68,218	5.6%
Marketing	6,590	30.5%	$63,925	13.4%

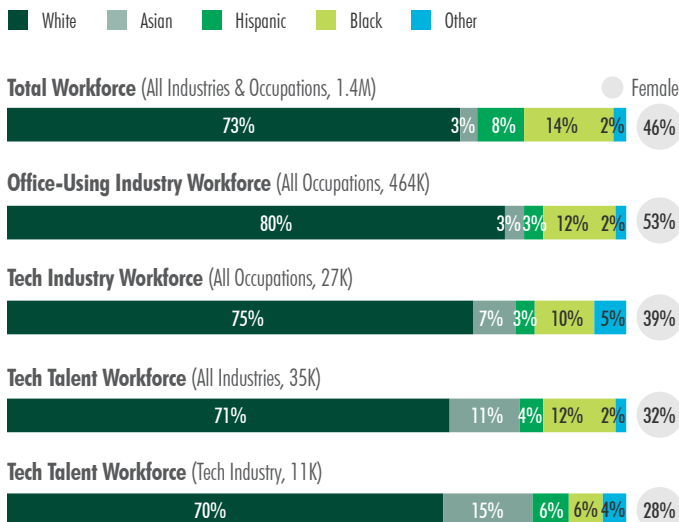Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

The population of millennials grew by 60,909 (14.8%) since 2014.

Generation Cohort	% Change
Gen Z (7-22 Years)	5.4%
Millennial (23-38 Years)	14.8%
Gen X (39-54 Years)	3.0%
Baby Boom (55-73 Years)	-3.7%
Silent (74+ Years)	-31.9%

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 1.4M)   ◯ Female
73% | 3% | 8% | 14% | 2% | 46%

Office-Using Industry Workforce (All Occupations, 464K)
80% | 3% | 3% | 12% | 2% | 53%

Tech Industry Workforce (All Occupations, 27K)
75% | 7% | 3% | 10% | 5% | 39%

Tech Talent Workforce (All Industries, 35K)
71% | 11% | 4% | 12% | 2% | 32%

Tech Talent Workforce (Tech Industry, 11K)
70% | 15% | 6% | 6% | 4% | 28%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS
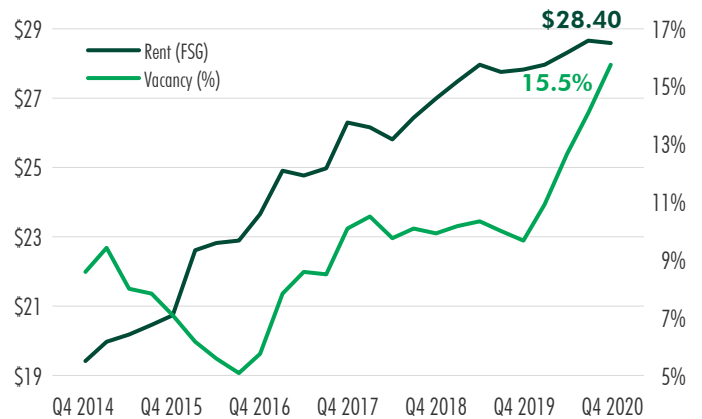
Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,244
PER UNIT/MO.

8.8%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#40
RANK

$38M
TALENT

+

$2M
OFFICE RENT

=

$39.9M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	501	59%	76%	24%
Math/Statistics	266	54%	67%	33%
Other Tech Engineering	264	66%	81%	19%
Totals	1,031	59%	75%	25%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	501	60%	17%	7%	13%	4%
Math/Statistics	266	62%	20%	6%	5%	7%
Other Tech Engineering	264	65%	8%	9%	14%	5%
Totals	1,031	62%	15%	7%	11%	5%

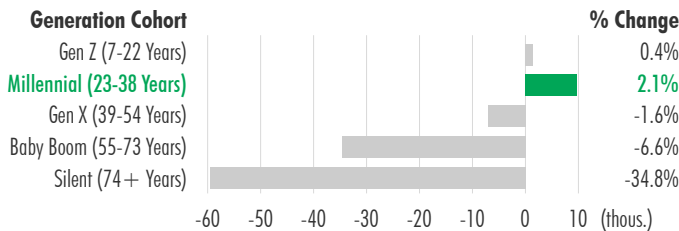Source: The National Center for Education Statistics (Region), 2020.

42 Cincinnati

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	39,080	9.6%	$91,596	12.4%
Software Developers & Programmers	12,850	35.7%	$102,568	27.0%
Computer Support, Database & Systems	20,000	-3.2%	$77,882	2.4%
Computer & Information Systems Managers	2,940	1.4%	$142,120	12.0%
Technology Engineering-Related	3,290	25.6%	$86,964	13.3%
Total Non-Tech Occupations	124,220	6.8%	$50,501	12.5%
Sales	11,290	-22.7%	$78,757	12.1%
Administrative & Office Support	79,830	4.5%	$38,623	14.1%
Business Operations & Finance	23,670	38.1%	$71,566	9.1%
Marketing	9,430	16.6%	$64,341	8.8%

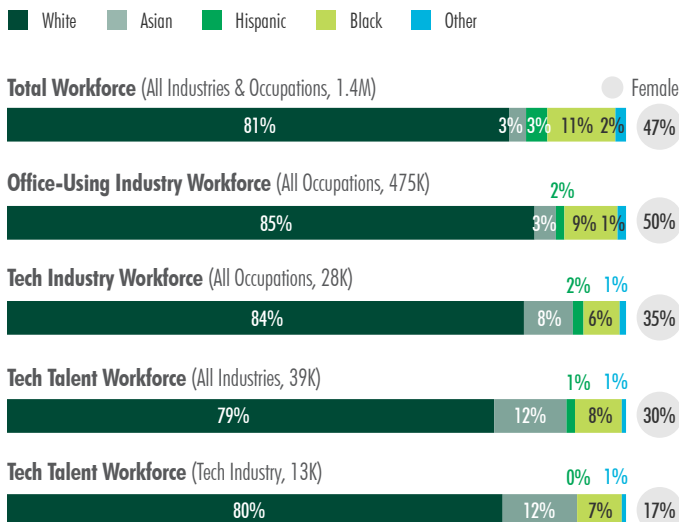Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

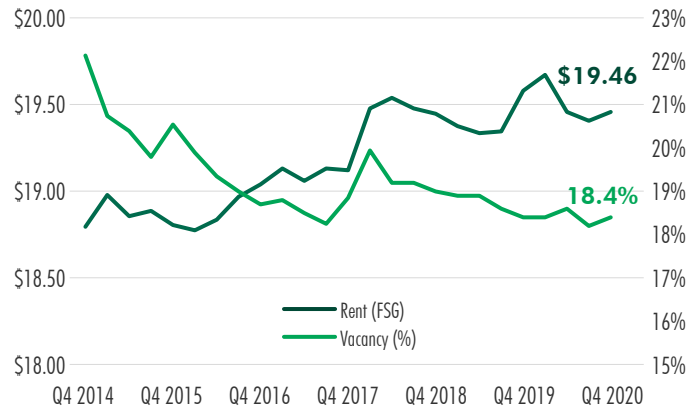The population of millennials grew by 9,811 (2.1%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		0.4%
Millennial (23-38 Years)		2.1%
Gen X (39-54 Years)		-1.6%
Baby Boom (55-73 Years)		-6.6%
Silent (74+ Years)		-34.8%

-60 -50 -40 -30 -20 -10 0 10 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White   ■ Asian   ■ Hispanic   ■ Black   ■ Other

Total Workforce (All Industries & Occupations, 1.4M)   ○ Female
81%   3% 3% 11% 2%   47%

Office-Using Industry Workforce (All Occupations, 475K)
2%
85%   3% 9% 1%   50%

Tech Industry Workforce (All Occupations, 28K)
2% 1%
84%   8% 6%   35%

Tech Talent Workforce (All Industries, 39K)
1% 1%
79%   12% 8%   30%

Tech Talent Workforce (Tech Industry, 13K)
0% 1%
80%   12% 7%   17%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$19.46
18.4%

—— Rent (FSG)
—— Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,033
PER UNIT/MO.

16.3%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#30
RANK

$41M
TALENT

+

$1M
OFFICE RENT

=

$42M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	1,418	124%	79%	21%
Math/Statistics	316	53%	59%	41%
Other Tech Engineering	576	23%	85%	15%
Totals	2,310	76%	78%	22%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	1,418	79%	10%	3%	5%	3%
Math/Statistics	316	66%	27%	2%	2%	3%
Other Tech Engineering	576	84%	7%	4%	3%	2%
Totals	2,310	79%	12%	3%	4%	3%

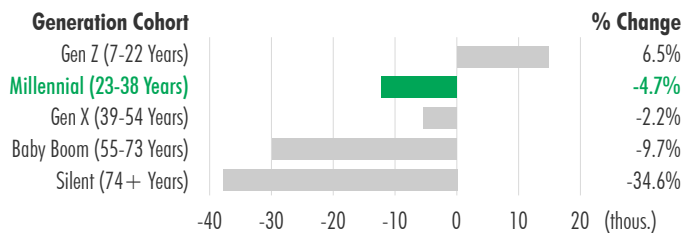Source: The National Center for Education Statistics (Region), 2020.

43 Hartford

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**26,440**	**11.9%**	**$100,431**	**7.7%**
Software Developers & Programmers	9,500	18.9%	$97,061	6.5%
Computer Support, Database & Systems	10,920	-0.5%	$84,943	2.0%
Computer & Information Systems Managers	4,540	52.9%	$145,070	3.5%
Technology Engineering-Related	1,480	-12.4%	$99,406	15.5%
Total Non-Tech Occupations	**64,100**	**-9.9%**	**$56,056**	**11.3%**
Sales	4,060	-28.6%	$77,325	7.0%
Administrative & Office Support	41,360	-16.8%	$43,834	8.4%
Business Operations & Finance	14,590	18.7%	$79,770	5.0%
Marketing	4,090	18.2%	$73,934	11.5%

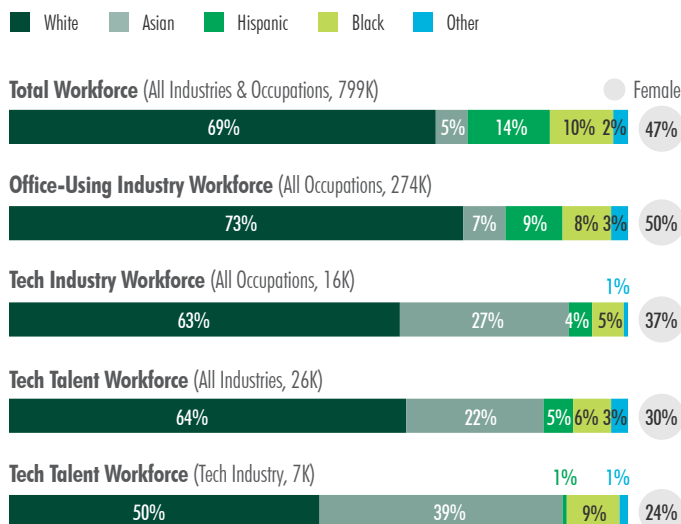Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

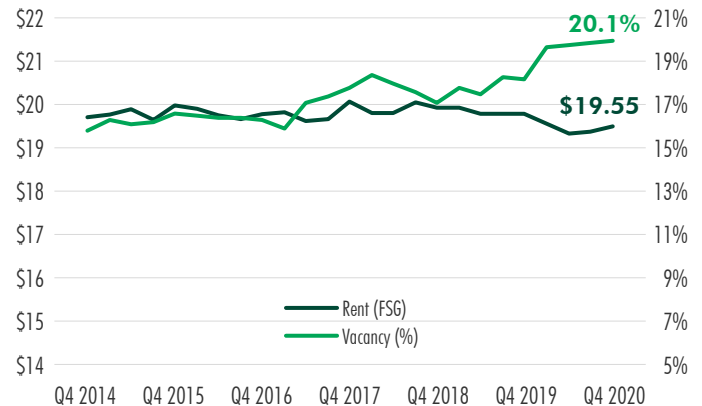The population of millennials declined by -12,276 (-4.7%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		6.5%
Millennial (23-38 Years)		-4.7%
Gen X (39-54 Years)		-2.2%
Baby Boom (55-73 Years)		-9.7%
Silent (74+ Years)		-34.6%

-40 -30 -20 -10 0 10 20 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 799K) ● Female
| 69% | 5% | 14% | 10% | 2% | 47% |

Office-Using Industry Workforce (All Occupations, 274K)
| 73% | 7% | 9% | 8% | 3% | 50% |

Tech Industry Workforce (All Occupations, 16K)
| 63% | 27% | 4% | 5% | 1% | 37% |

Tech Talent Workforce (All Industries, 26K)
| 64% | 22% | 5% | 6% | 3% | 30% |

Tech Talent Workforce (Tech Industry, 7K)
| 50% | 39% | 9% | 1% | 1% | 24% |

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

20.1%
$19.55

— Rent (FSG)
— Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,413
PER UNIT/MO.

10.3%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#21
RANK

$44M
TALENT

+

$1M
OFFICE RENT

=

$45.4M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	615	58%	80%	20%
Math/Statistics	571	56%	56%	44%
Other Tech Engineering	575	40%	84%	16%
Totals	1,761	51%	73%	27%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	615	62%	20%	9%	7%	3%
Math/Statistics	571	69%	15%	9%	3%	3%
Other Tech Engineering	575	75%	10%	8%	4%	3%
Totals	1,761	69%	15%	9%	5%	3%

Source: The National Center for Education Statistics (Region), 2020.

44 Cleveland

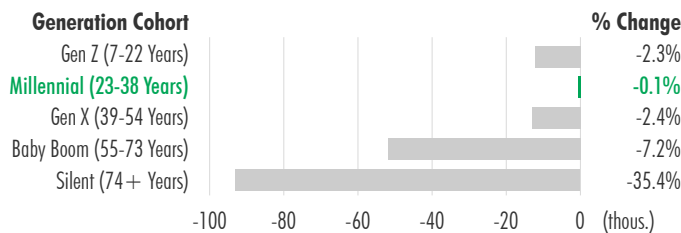## EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	36,320	14.6%	$92,073	17.1%
Software Developers & Programmers	11,790	15.7%	$107,205	35.1%
Computer Support, Database & Systems	19,180	15.1%	$77,784	9.5%
Computer & Information Systems Managers	2,800	2.9%	$137,340	8.4%
Technology Engineering-Related	2,550	19.7%	$79,887	9.3%
Total Non-Tech Occupations	122,850	6.8%	$50,449	8.6%
Sales	8,790	-37.6%	$77,513	5.1%
Administrative & Office Support	82,240	8.5%	$39,772	15.3%
Business Operations & Finance	23,610	30.4%	$72,862	5.2%
Marketing	8,210	16.0%	$63,973	3.5%

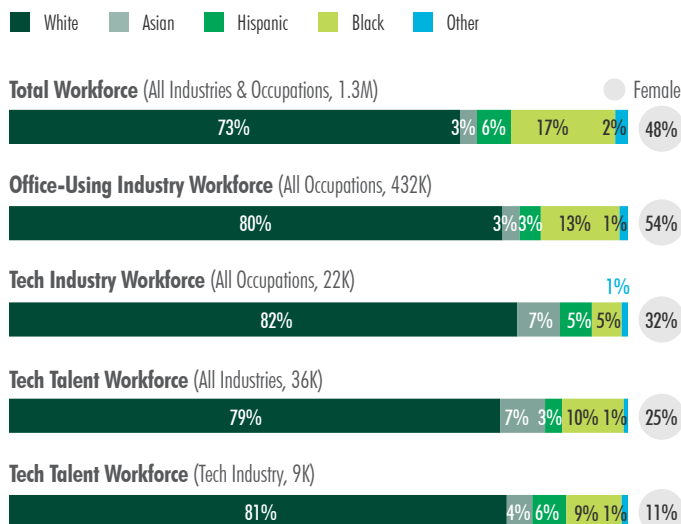Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

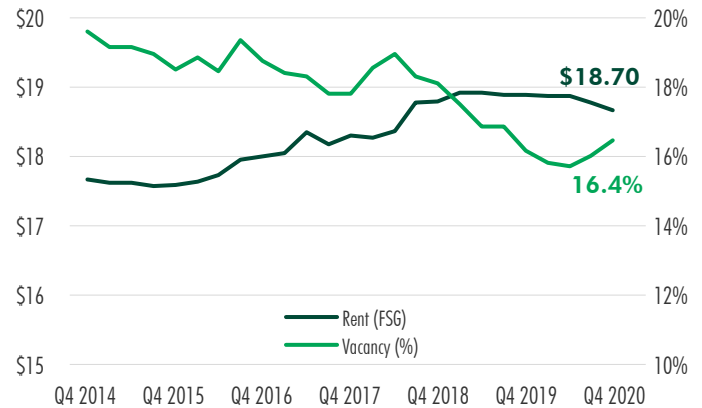The population of millennials declined by -632 (-0.1%) since 2014.

Generation Cohort	% Change
Gen Z (7-22 Years)	-2.3%
Millennial (23-38 Years)	-0.1%
Gen X (39-54 Years)	-2.4%
Baby Boom (55-73 Years)	-7.2%
Silent (74+ Years)	-35.4%

-100 -80 -60 -40 -20 0 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

Legend: White, Asian, Hispanic, Black, Other

Total Workforce (All Industries & Occupations, 1.3M) — Female
| 73% | 3% | 6% | 17% | 2% | — 48% |

Office-Using Industry Workforce (All Occupations, 432K)
| 80% | 3% | 3% | 13% | 1% | — 54% |

Tech Industry Workforce (All Occupations, 22K)
| 82% | 7% | 5% | 5% | 1% | — 32% |

Tech Talent Workforce (All Industries, 36K)
| 79% | 7% | 3% | 10% | 1% | — 25% |

Tech Talent Workforce (Tech Industry, 9K)
| 81% | 4% | 6% | 9% | 1% | — 11% |

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$18.70

16.4%

Rent (FSG)
Vacancy (%)

Q4 2014   Q4 2015   Q4 2016   Q4 2017   Q4 2018   Q4 2019   Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$973
PER UNIT/MO.

10.7%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#31 RANK	$40M TALENT	+	$1M OFFICE RENT	=	$41.7M TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	1,233	63%	77%	23%
Math/Statistics	381	25%	63%	37%
Other Tech Engineering	757	95%	82%	18%
Totals	2,371	63%	76%	24%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	1,233	76%	10%	4%	6%	4%
Math/Statistics	381	79%	9%	6%	4%	3%
Other Tech Engineering	757	82%	7%	5%	3%	3%
Totals	2,371	78%	9%	4%	5%	4%

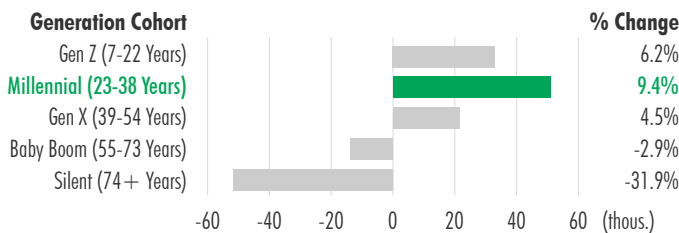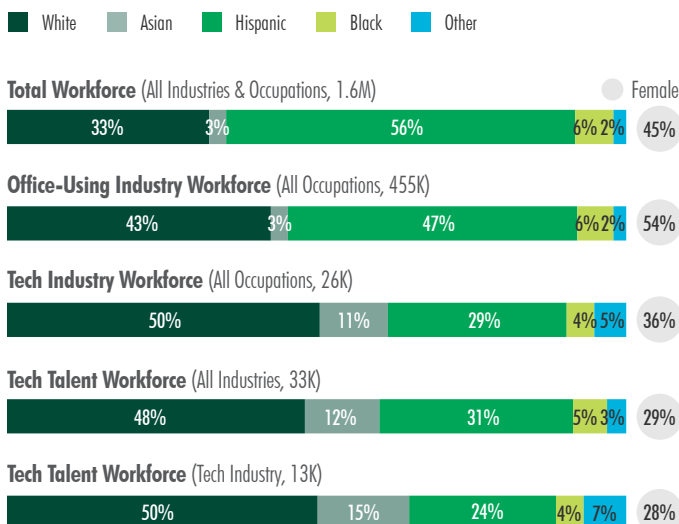Source: The National Center for Education Statistics (Region), 2020.

45 San Antonio

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**33,080**	**8.9%**	**$91,586**	**17.3%**
Software Developers & Programmers	7,870	-12.1%	$103,900	34.1%
Computer Support, Database & Systems	20,340	13.0%	$81,811	11.6%
Computer & Information Systems Managers	2,170	77.9%	$150,380	3.1%
Technology Engineering-Related	2,700	21.6%	$82,084	0.4%
Total Non-Tech Occupations	**128,590**	**0.0%**	**$44,808**	**8.2%**
Sales	9,080	-1.8%	$57,814	-4.0%
Administrative & Office Support	93,220	-2.2%	$36,097	10.1%
Business Operations & Finance	21,040	10.2%	$72,891	4.0%
Marketing	5,250	5.4%	$64,455	4.8%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

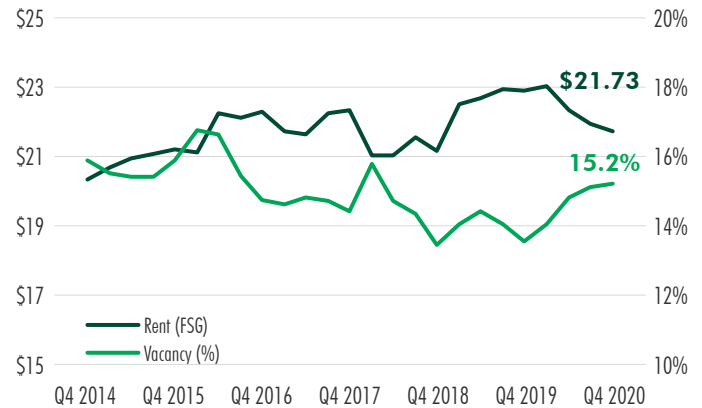The population of millennials grew by 52,099 (9.4%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		6.2%
Millennial (23-38 Years)		9.4%
Gen X (39-54 Years)		4.5%
Baby Boom (55-73 Years)		-2.9%
Silent (74+ Years)		-31.9%

-60 -40 -20 0 20 40 60 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 1.6M) ● Female

| 33% | 3% | 56% | 6% 2% | 45% |

Office-Using Industry Workforce (All Occupations, 455K)

| 43% | 3% | 47% | 6% 2% | 54% |

Tech Industry Workforce (All Occupations, 26K)

| 50% | 11% | 29% | 4% 5% | 36% |

Tech Talent Workforce (All Industries, 33K)

| 48% | 12% | 31% | 5% 3% | 29% |

Tech Talent Workforce (Tech Industry, 13K)

| 50% | 15% | 24% | 4% 7% | 28% |

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$21.73
15.2%

— Rent (FSG)
— Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,010
PER UNIT/MO.

7.5%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#32
RANK

$40M
TALENT

+

$2M
OFFICE RENT

=

$41.5M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	876	95%	80%	20%
Math/Statistics	158	11%	53%	47%
Other Tech Engineering	294	32%	81%	19%
Totals	1,328	63%	77%	23%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	876	33%	11%	46%	6%	5%
Math/Statistics	158	26%	8%	54%	7%	5%
Other Tech Engineering	294	33%	9%	46%	9%	3%
Totals	1,328	32%	10%	47%	7%	4%

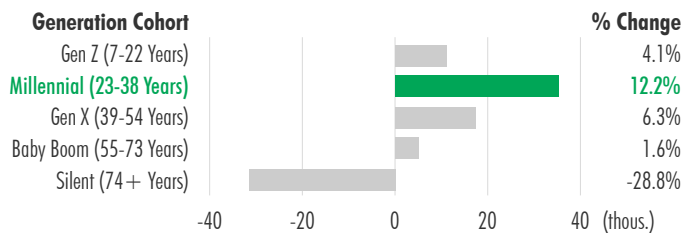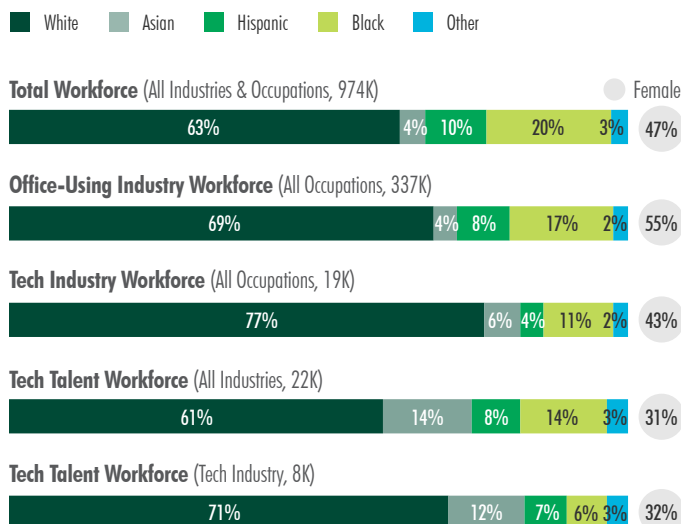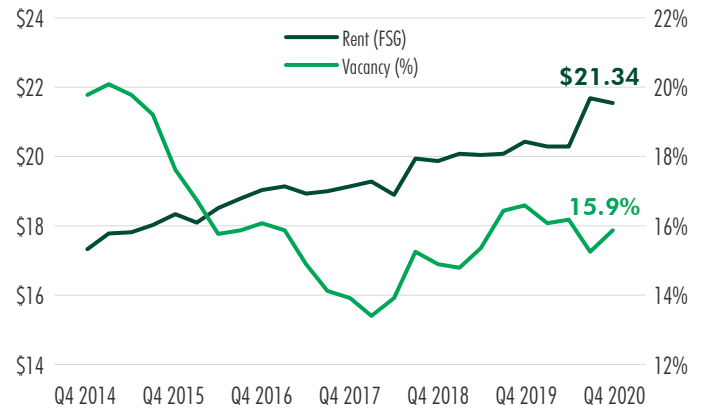Source: The National Center for Education Statistics (Region), 2020.

46 Jacksonville

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	21,840	20.4%	$83,998	4.9%
Software Developers & Programmers	6,590	6.5%	$90,694	-0.3%
Computer Support, Database & Systems	11,040	14.6%	$71,343	3.8%
Computer & Information Systems Managers	1,660	82.4%	$136,380	4.3%
Technology Engineering-Related	2,550	80.9%	$87,382	13.8%
Total Non-Tech Occupations	94,440	9.2%	$45,195	16.6%
Sales	7,370	3.1%	$73,195	32.1%
Administrative & Office Support	67,580	5.2%	$36,761	18.2%
Business Operations & Finance	14,270	19.6%	$65,418	0.9%
Marketing	5,220	67.3%	$59,570	2.8%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

OFFICE RENT & VACANCY TRENDS

Source: CBRE Research (Metro Area), Q4 2020.

POPULATION TRENDS

The population of millennials grew by 37,983 (12.2%) since 2014.

Generation Cohort	% Change
Gen Z (7-22 Years)	4.1%
Millennial (23-38 Years)	12.2%
Gen X (39-54 Years)	6.3%
Baby Boom (55-73 Years)	1.6%
Silent (74+ Years)	-28.8%

Source: U.S. Census Bureau (Metro), 2021.

AVERAGE APARTMENT RENT

$1,142
PER UNIT/MO.

20.1%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#42 RANK | **$37M** TALENT + **$2M** OFFICE RENT = **$38.9M** TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

WORKFORCE DIVERSITY

Legend: White, Asian, Hispanic, Black, Other

Total Workforce (All Industries & Occupations, 974K) — Female
63% | 4% | 10% | 20% | 3% | 47%

Office-Using Industry Workforce (All Occupations, 337K)
69% | 4% | 8% | 17% | 2% | 55%

Tech Industry Workforce (All Occupations, 19K)
77% | 6% | 4% | 11% | 2% | 43%

Tech Talent Workforce (All Industries, 22K)
61% | 14% | 8% | 14% | 3% | 31%

Tech Talent Workforce (Tech Industry, 8K)
71% | 12% | 7% | 6% | 3% | 32%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	343	44%	81%	19%
Math/Statistics	51	6%	53%	47%
Other Tech Engineering	86	91%	88%	12%
Totals	480	45%	79%	21%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	343	66%	8%	9%	13%	4%
Math/Statistics	51	82%	9%	4%	4%	0%
Other Tech Engineering	86	72%	5%	14%	2%	6%
Totals	480	69%	7%	10%	10%	4%

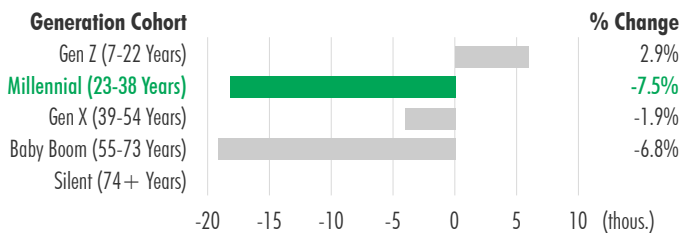Source: The National Center for Education Statistics (Region), 2020.

47 Rochester

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**20,840**	**-0.8%**	**$85,256**	**10.6%**
Software Developers & Programmers	7,290	16.1%	$89,733	9.1%
Computer Support, Database & Systems	9,600	-4.3%	$72,211	9.1%
Computer & Information Systems Managers	1,430	2.1%	$146,890	18.7%
Technology Engineering-Related	2,520	-23.6%	$87,025	8.2%
Total Non-Tech Occupations	**59,460**	**-13.3%**	**$50,228**	**15.2%**
Sales	4,750	-7.6%	$91,865	29.8%
Administrative & Office Support	40,630	-18.9%	$38,669	11.6%
Business Operations & Finance	10,420	10.9%	$72,216	5.0%
Marketing	3,660	-5.9%	$61,907	-0.3%

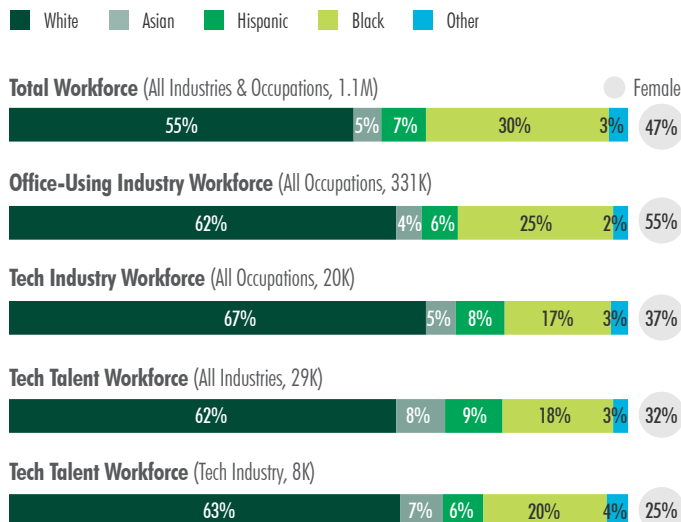Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

The population of millennials declined by -18,000 (-7.5%) since 2014.
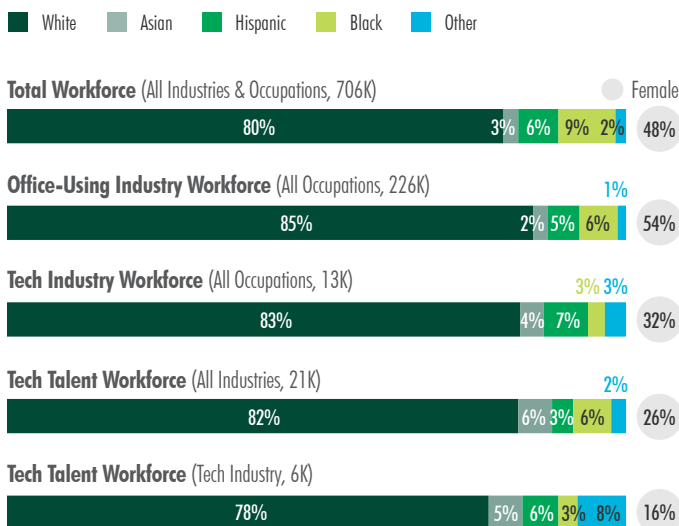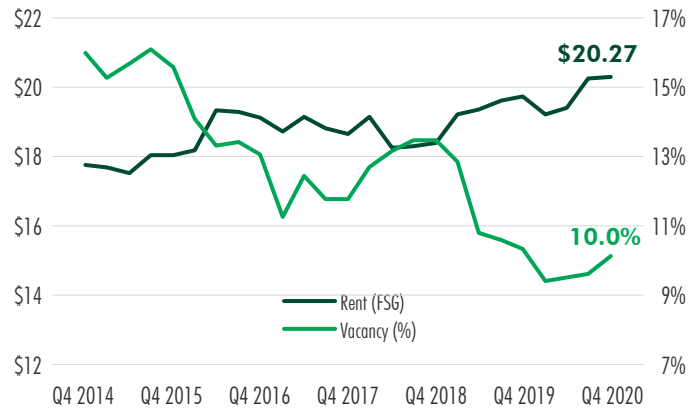
Generation Cohort		% Change
Gen Z (7-22 Years)		2.9%
Millennial (23-38 Years)		**-7.5%**
Gen X (39-54 Years)		-1.9%
Baby Boom (55-73 Years)		-6.8%
Silent (74+ Years)		

-20 -15 -10 -5 0 5 10 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other   ● Female

Total Workforce (All Industries & Occupations, 706K)
80% 3% 6% 9% 2%   48%

Office-Using Industry Workforce (All Occupations, 226K)
85% 2% 5% 6% 1%   54%

Tech Industry Workforce (All Occupations, 13K)
83% 4% 7% 3% 3%   32%

Tech Talent Workforce (All Industries, 21K)
82% 6% 3% 6% 2%   26%

Tech Talent Workforce (Tech Industry, 6K)
78% 5% 6% 3% 8%   16%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$19.50

12.8%

— Rent (FSG)
— Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020
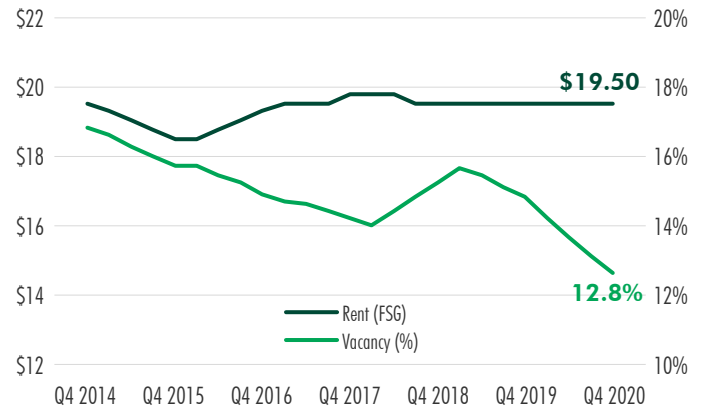
Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,114
PER UNIT/MO.

25.5%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#38 RANK | **$39M** TALENT + **$1M** OFFICE RENT = **$40.7M** TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	1,651	37%	81%	19%
Math/Statistics	313	-23%	54%	46%
Other Tech Engineering	503	28%	76%	24%
Totals	**2,467**	**23%**	**77%**	**23%**

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	1,651	75%	12%	6%	3%	4%
Math/Statistics	313	80%	11%	4%	2%	2%
Other Tech Engineering	503	79%	9%	8%	2%	2%
Totals	**2,467**	**77%**	**11%**	**6%**	**2%**	**3%**

Source: The National Center for Education Statistics (Region), 2020.

48 Virginia Beach

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**29,420**	**2.8%**	**$90,663**	**10.0%**
Software Developers & Programmers	7,840	4.7%	$90,543	0.7%
Computer Support, Database & Systems	15,270	6.6%	$84,617	13.1%
Computer & Information Systems Managers	1,720	10.3%	$151,130	11.6%
Technology Engineering-Related	4,590	-12.4%	$88,321	15.1%
Total Non-Tech Occupations	**81,110**	**-3.3%**	**$46,108**	**10.6%**
Sales	5,670	0.5%	$62,772	-6.1%
Administrative & Office Support	55,580	-8.7%	$35,406	9.8%
Business Operations & Finance	15,420	11.6%	$73,848	6.8%
Marketing	4,440	26.9%	$62,452	10.1%

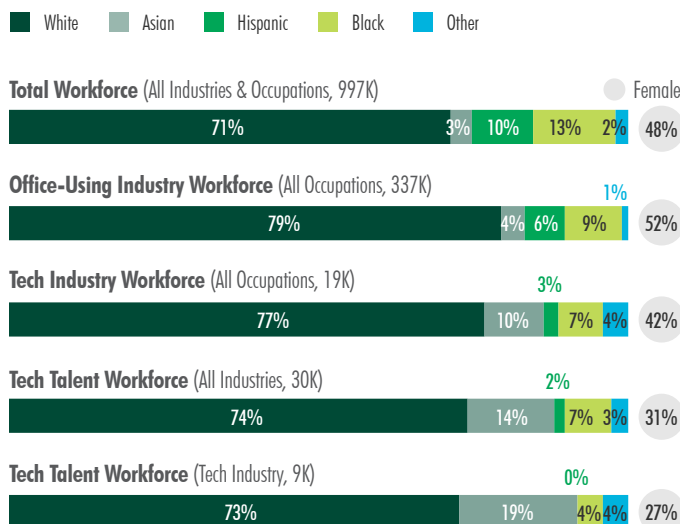Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

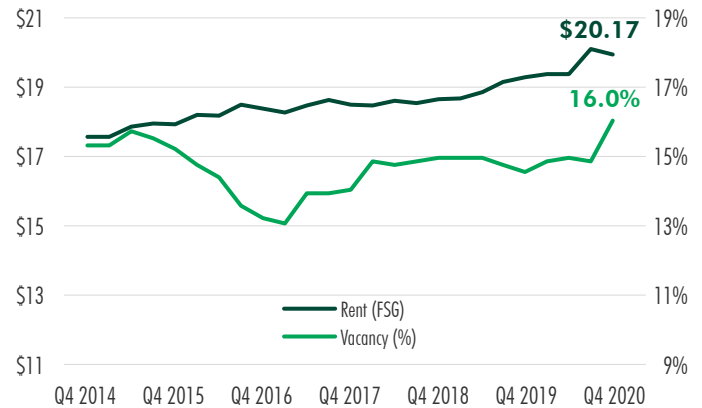The population of millennials declined by -17,205 (-3.9%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		4.4%
Millennial (23-38 Years)		-3.9%
Gen X (39-54 Years)		-4.9%
Baby Boom (55-73 Years)		-6.9%
Silent (74+ Years)		-33.1%

-50 -40 -30 -20 -10 0 10 20 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 1.1M) — Female
| 55% | 5% | 7% | 30% | 3% | 47% |

Office-Using Industry Workforce (All Occupations, 331K)
| 62% | 4% | 6% | 25% | 2% | 55% |

Tech Industry Workforce (All Occupations, 20K)
| 67% | 5% | 8% | 17% | 3% | 37% |

Tech Talent Workforce (All Industries, 29K)
| 62% | 8% | 9% | 18% | 3% | 32% |

Tech Talent Workforce (Tech Industry, 8K)
| 63% | 7% | 6% | 20% | 4% | 25% |

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$20.27

10.0%

— Rent (FSG)
— Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,314
PER UNIT/MO.

15.4%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#33 RANK | $40M TALENT + $2M OFFICE RENT = $41.5M TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	1,077	6%	79%	21%
Math/Statistics	158	1%	55%	45%
Other Tech Engineering	424	8%	82%	18%
Totals	**1,659**	**6%**	**78%**	**22%**

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	1,077	52%	8%	7%	29%	4%
Math/Statistics	158	67%	7%	5%	15%	6%
Other Tech Engineering	424	68%	5%	9%	13%	5%
Totals	**1,659**	**57%**	**7%**	**7%**	**24%**	**4%**

Source: The National Center for Education Statistics (Region), 2020.

49 Milwaukee

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**29,810**	**-4.2%**	**$89,016**	**11.5%**
Software Developers & Programmers	10,390	21.9%	$94,016	16.7%
Computer Support, Database & Systems	14,450	-10.7%	$78,228	5.5%
Computer & Information Systems Managers	2,280	-9.9%	$139,260	17.8%
Technology Engineering-Related	2,690	-31.0%	$85,064	11.0%
Total Non-Tech Occupations	**101,050**	**-1.3%**	**$51,085**	**12.3%**
Sales	9,570	9.2%	$76,596	8.5%
Administrative & Office Support	67,400	-4.8%	$40,245	11.6%
Business Operations & Finance	17,790	12.5%	$73,532	7.7%
Marketing	6,290	-9.9%	$64,929	11.7%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

The population of millennials grew by 1,415 (0.4%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		-3.8%
Millennial (23-38 Years)		0.4%
Gen X (39-54 Years)		-3.6%
Baby Boom (55-73 Years)		-7.9%
Silent (74+ Years)		-35.3%

-50 -40 -30 -20 -10 0 10 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

■ White ■ Asian ■ Hispanic ■ Black ■ Other

Total Workforce (All Industries & Occupations, 997K) — Female
71% 3% 10% 13% 2%   48%

Office-Using Industry Workforce (All Occupations, 337K)
1%
79% 4% 6% 9%   52%

Tech Industry Workforce (All Occupations, 19K)
3%
77% 10% 7% 4%   42%

Tech Talent Workforce (All Industries, 30K)
2%
74% 14% 7% 3%   31%

Tech Talent Workforce (Tech Industry, 9K)
0%
73% 19% 4% 4%   27%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$20.17

16.0%

Rent (FSG)
Vacancy (%)

Q4 2014   Q4 2015   Q4 2016   Q4 2017   Q4 2018   Q4 2019   Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,212
PER UNIT/MO.

10.5%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#34
RANK

$40M
TALENT

+

$2M
OFFICE RENT

=

$41.4M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	916	40%	80%	20%
Math/Statistics	150	15%	61%	39%
Other Tech Engineering	528	18%	85%	15%
Totals	1,594	29%	80%	20%

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	916	77%	10%	6%	5%	3%
Math/Statistics	150	89%	1%	6%	2%	2%
Other Tech Engineering	528	87%	6%	4%	1%	2%
Totals	1,594	81%	8%	5%	3%	3%

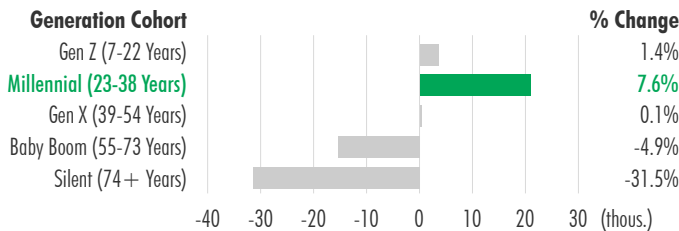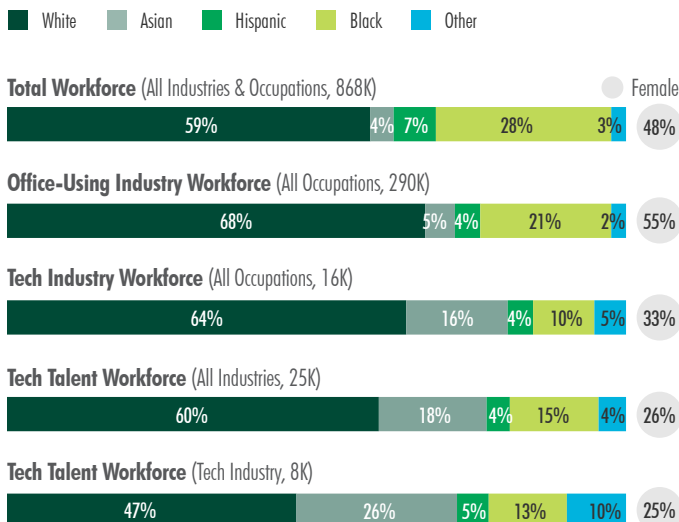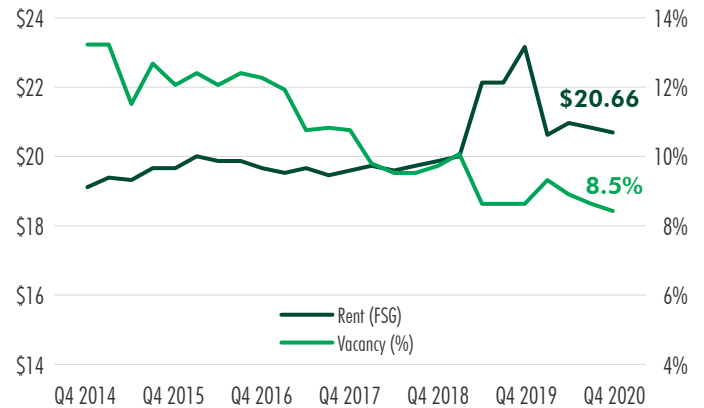Source: The National Center for Education Statistics (Region), 2020.

50 Richmond

EMPLOYMENT BREAKDOWN

	Employed 2020	Growth 2015-20	Average Wage	Growth 2015-20
Total Tech Occupations	**24,520**	**7.9%**	**$98,673**	**12.8%**
Software Developers & Programmers	9,090	27.8%	$101,169	14.3%
Computer Support, Database & Systems	12,460	1.5%	$89,709	12.0%
Computer & Information Systems Managers	1,580	-2.5%	$159,720	11.2%
Technology Engineering-Related	1,390	-18.7%	$93,320	12.1%
Total Non-Tech Occupations	**81,240**	**-0.7%**	**$53,593**	**14.1%**
Sales	6,820	-11.3%	$79,121	0.7%
Administrative & Office Support	50,320	-7.5%	$38,563	12.5%
Business Operations & Finance	17,930	17.7%	$80,912	14.3%
Marketing	6,170	38.0%	$68,565	4.3%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2021.

POPULATION TRENDS

The population of millennials grew by 21,111 (7.6%) since 2014.

Generation Cohort		% Change
Gen Z (7-22 Years)		1.4%
Millennial (23-38 Years)		**7.6%**
Gen X (39-54 Years)		0.1%
Baby Boom (55-73 Years)		-4.9%
Silent (74+ Years)		-31.5%

-40 -30 -20 -10 0 10 20 30 (thous.)

Source: U.S. Census Bureau (Metro), 2021.

WORKFORCE DIVERSITY

Legend: White, Asian, Hispanic, Black, Other — Female

Total Workforce (All Industries & Occupations, 868K)
59% | 4% | 7% | 28% | 3% — 48% Female

Office-Using Industry Workforce (All Occupations, 290K)
68% | 5% | 4% | 21% | 2% — 55%

Tech Industry Workforce (All Occupations, 16K)
64% | 16% | 4% | 10% | 5% — 33%

Tech Talent Workforce (All Industries, 25K)
60% | 18% | 4% | 15% | 4% — 26%

Tech Talent Workforce (Tech Industry, 8K)
47% | 26% | 5% | 13% | 10% — 25%

Source: U.S. Census (Metro), IPUMS and CBRE Research, May 2021.

OFFICE RENT & VACANCY TRENDS

$20.66

8.5%

Rent (FSG)
Vacancy (%)

Q4 2014 Q4 2015 Q4 2016 Q4 2017 Q4 2018 Q4 2019 Q4 2020

Source: CBRE Research (Metro Area), Q4 2020.

AVERAGE APARTMENT RENT

$1,182
PER UNIT/MO.

19.9%
FIVE-YEAR GROWTH

Source: Apt. rent data from CBRE EA (Metro), Q4 2020.

AVERAGE ANNUAL OPERATING COSTS

#20
RANK

$44M
TALENT

+

$2M
OFFICE RENT

=

$45.5M
TOTAL

Source: U.S. Bureau of Labor Statistics, CBRE Research, 2021.

TALENT PIPELINE AND DIVERSITY

Degree Completions (2019)	Total Degrees	Growth 2015-19	Male	Female
Computer Engineering	434	25%	76%	24%
Math/Statistics	124	41%	56%	44%
Other Tech Engineering	178	24%	76%	24%
Totals	**736**	**27%**	**73%**	**27%**

Degree Completions (2019)	Total Degrees	White	Asian	Hispanic	Black	Other
Computer Engineering	434	39%	27%	6%	23%	5%
Math/Statistics	124	57%	14%	4%	21%	4%
Other Tech Engineering	178	74%	9%	7%	7%	3%
Totals	**736**	**50%**	**21%**	**6%**	**19%**	**4%**

Source: The National Center for Education Statistics (Region), 2020.

FULL REPORT

DATA SUMMARY

What is tech talent?

TABLE 1: U.S. TECH TALENT LABOR BY INDUSTRY (2020)

Tech Talent Occupations in each industry as a % of U.S. Tech Talent

Industry	% of Total Tech Talent Labor
Core High-Tech*	40.1%
Professional, Scientific & Technical Services (Excluding High-Tech)	11.3%
FIRE	8.8%
Other	7.9%
Management of Companies & Enterprises	6.3%
Government	5.9%
Transportation, Warehousing & Wholesale	4.8%
Education	4.6%
Manufacturing (Excluding High-Tech)	4.3%
Information (Excluding High-Tech)	3.5%
Health Care	2.7%

Source: U.S. Bureau of Labor Statistics (National), April 2021.
*Includes computer software and services and computer product manufacturing

Which are the top-ranked tech-talent markets?

TABLE 2: TECH TALENT SCORECARD RANKING

Rank	Market	Score	Rank	Market	Score
1	SF Bay Area	86.40	26	Philadelphia	43.95
2	Seattle	73.16	27	Charlotte	43.81
3	Washington, D.C.	65.60	28	Calgary	42.68
4	Toronto	64.78	29	Pittsburgh	42.27
5	New York Metro	63.44	30	Kansas City	40.61
6	Boston	62.60	31	Columbus	40.10
7	Austin	58.87	32	Orlando	38.83
8	Atlanta	57.78	33	Tampa	37.70
9	Los Angeles/Orange Co.	57.62	34	Quebec City	37.02
10	Ottawa	57.34	35	St. Louis	36.99
11	Vancouver	57.09	36	Indianapolis	36.03
12	Denver	56.94	37	South Florida	35.74
13	Dallas/Ft. Worth	56.47	38	Edmonton	33.64
14	Raleigh-Durham	56.42	39	Houston	31.06
15	Baltimore	56.08	40	Sacramento	30.97
16	Montreal	55.20	41	Nashville	30.56
17	Phoenix	52.70	42	Cincinnati	30.01
18	Salt Lake City	52.55	43	Hartford	29.14
19	San Diego	51.66	44	Cleveland	28.06
20	Portland	49.44	45	San Antonio	24.34
21	Waterloo Region	47.88	46	Jacksonville	23.85
22	Minneapolis/St. Paul	47.11	47	Rochester	23.37
23	Chicago	46.40	48	Virginia Beach	21.10
24	Madison	45.04	49	Milwaukee	18.66
25	Detroit	44.40	50	Richmond	18.28

How to find tech-talent momentum markets?

TABLE 3: TECH TALENT LABOR CONCENTRATION

Market	Tech Talent Jobs as a % of Total Jobs	Market	Tech Talent Jobs as a % of Total Jobs
Ottawa	11.6%	Hartford	4.8%
SF Bay Area	10.9%	Columbus	4.7%
Toronto	10.2%	Phoenix	4.7%
Waterloo Region	9.6%	Detroit	4.5%
Seattle	9.4%	Rochester	4.4%
Washington, D.C.	8.8%	St. Louis	4.2%
Montreal	8.6%	Philadelphia	4.2%
Vancouver	8.1%	Sacramento	4.1%
Quebec City	7.8%	Tampa	4.1%
Austin	7.5%	Virginia Beach	4.1%
Raleigh-Durham	7.2%	Pittsburgh	4.0%
Calgary	7.1%	New York Metro	3.9%
Denver	7.0%	Indianapolis	3.9%
Boston	6.5%	Richmond	3.9%
Madison	6.4%	Chicago	3.8%
Baltimore	6.4%	Cincinnati	3.8%
Edmonton	5.7%	Los Angeles/Orange Co.	3.7%
Atlanta	5.5%	Milwaukee	3.7%
Portland	5.3%	Cleveland	3.7%
Dallas/Ft. Worth	5.3%	Nashville	3.6%
Minneapolis/St. Paul	5.3%	Orlando	3.6%
Charlotte	5.1%	San Antonio	3.3%
Salt Lake City	5.1%	Houston	3.2%
Kansas City	5.1%	Jacksonville	3.2%
San Diego	5.0%	South Florida	2.7%

Source: CBRE Research, U.S. Bureau of Labor Statistics, Statistics Canada, 2021.

TABLE 4: TECH TALENT LABOR POOLS BY MARKET (2020)

Large Tech Talent Markets (>50,000 Labor Pool)

Market	Tech Talent Total
SF Bay Area	373,430
New York Metro	348,330
Toronto	270,400
Washington, D.C.	265,370
Los Angeles/Orange Co.	228,720
Dallas/Ft. Worth	189,200
Seattle	184,660
Boston	168,090
Chicago	167,380
Montreal	160,700
Atlanta	143,780
Denver	114,900
Philadelphia	112,740
Phoenix	98,220
Minneapolis/St. Paul	97,470
Houston	96,420
Vancouver	91,200
Detroit	89,680
Baltimore	81,770
Austin	79,230
Ottawa	74,000
San Diego	70,350
South Florida	67,500
Raleigh-Durham	67,050
Charlotte	62,110
Portland	60,330
St. Louis	55,080
Tampa	53,960
Kansas City	52,630
Salt Lake City	50,070

Small Tech Talent Markets (<50,000 Labor Pool)

Market	Tech Talent Total
Columbus	47,940
Calgary	46,700
Orlando	43,340
Pittsburgh	43,080
Sacramento	40,160
Indianapolis	39,990
Cincinnati	39,080
Cleveland	36,320
Nashville	35,190
Edmonton	34,500
San Antonio	33,080
Milwaukee	29,810
Virginia Beach	29,420
Quebec City	29,400
Hartford	26,440
Waterloo Region	25,900
Madison	24,580
Richmond	24,520
Jacksonville	21,840
Rochester	20,840

Source: CBRE Research, U.S. Bureau of Labor Statistics, Statistics Canada, 2021.

TABLE 5: TECH LABOR POOL GROWTH RATES (2016-2020)

Large Tech Talent Markets (>50,000 Labor Pool)

Market	% Change	by Volume
Toronto	42.8%	81,100
Vancouver	36.1%	24,200
Seattle	35.4%	48,300
Salt Lake City	33.9%	12,680
Montreal	31.4%	38,400
Charlotte	31.3%	14,810
Denver	31.1%	27,290
Portland	27.7%	13,090
Tampa	23.5%	10,250
Ottawa	22.5%	13,600
Raleigh-Durham	20.2%	11,260
Los Angeles/Orange Co.	18.6%	35,870
South Florida	18.0%	10,280
SF Bay Area	16.4%	52,670
Dallas/Ft. Worth	16.3%	26,570
Baltimore	16.2%	11,430
Atlanta	15.2%	18,960
Phoenix	14.2%	12,180
Austin	10.0%	7,200
Washington, D.C.	10.0%	24,080
St. Louis	9.9%	4,950
Philadelphia	9.3%	9,630
Kansas City	8.5%	4,120
Boston	7.2%	11,360
New York Metro	6.7%	21,930
Minneapolis/St. Paul	5.3%	4,940
Chicago	4.6%	7,330
Detroit	4.5%	3,870
San Diego	4.1%	2,760
Houston	-5.9%	-6,030

Small Tech Talent Markets (<50,000 Labor Pool)

Market	% Change	by Volume
Edmonton	53.3%	12,000
Waterloo Region	47.2%	8,300
Nashville	36.1%	9,330
Madison	31.9%	5,940
Orlando	30.0%	10,000
Indianapolis	23.2%	7,520
Jacksonville	20.4%	3,700
Quebec City	18.1%	4,500
Calgary	17.9%	7,100
Cleveland	14.6%	4,620
Hartford	11.9%	2,820
Sacramento	10.7%	3,890
Pittsburgh	10.7%	4,150
Cincinnati	9.6%	3,420
San Antonio	8.9%	2,690
Richmond	7.9%	1,800
Columbus	5.1%	2,310
Virginia Beach	2.8%	810
Rochester	-0.8%	-170
Milwaukee	-4.2%	-1,320

What defines a tech talent market?

TABLE 6: EDUCATIONAL ATTAINMENT BY MARKET

25+ Years Old, Bachelor's Degree or Higher

Market	Educational Attainment Rate	Market	Educational Attainment Rate
SF Bay Area	51.7%	Rochester	37.1%
Washington, D.C.	51.4%	Salt Lake City	36.5%
Boston	49.3%	Milwaukee	36.4%
Madison	48.6%	Dallas/Ft. Worth	36.3%
Raleigh-Durham	47.4%	Charlotte	36.2%
Austin	46.2%	Pittsburgh	36.0%
Denver	45.8%	St. Louis	35.8%
Ottawa	45.7%	GLA/OC	35.5%
Seattle	44.1%	Cincinnati	35.4%
Minneapolis/St. Paul	43.2%	Indianapolis	35.2%
Toronto	43.1%	Montreal	34.2%
Baltimore	41.9%	Sacramento	34.2%
New York Metro	41.8%	Orlando	33.3%
Calgary	40.5%	Houston	33.3%
Portland	40.3%	South Florida	33.1%
Atlanta	39.9%	Virginia Beach	32.9%
San Diego	39.9%	Jacksonville	32.5%
Hartford	39.7%	Detroit	32.4%
Vancouver	39.7%	Quebec City	32.3%
Chicago	39.2%	Phoenix	32.2%
Philadelphia	39.0%	Cleveland	31.7%
Nashville	38.5%	Tampa	31.6%
Columbus	37.9%	Edmonton	31.1%
Kansas City	37.7%	Waterloo Region	31.0%
Richmond	37.6%	San Antonio	28.8%
		U.S.	**33.1%**

Source: U.S. Census Bureau and Statistics Canada (Metro) 2021.

TABLE 7: TOP 10 MARKETS FOR TECH DEGREE COMPLETIONS

Market	Tech Degree Completions (2019)	Growth (2014-2019)
New York Metro	20,576	69.4%
Los Angeles/Orange Co.	13,923	56.9%
Washington, D.C.	12,623	42.3%
Boston	12,183	80.0%
SF Bay Area	10,965	65.2%
Chicago	8,548	48.3%
Atlanta	8,361	90.5%
Detroit	6,790	45.5%
Dallas/Ft. Worth	6,672	71.5%
Philadelphia	6,277	41.1%

Source: The National Center for Education Statistics (Region), Canadian Universities, July 2021.
Note: Bachelor's Degree or Higher.

TABLE 8: WHERE ARE TECH TALENT WORKERS COMING FROM AND WHERE ARE THEY HEADED?

Market	Tech Degrees (2015-2019)*	Tech Jobs Added (2016-2020)*	Brain Gain or Drain?	Market	Tech Degrees (2015-2019)*	Tech Jobs Added (2016-2020)*	Brain Gain or Drain?
Toronto	26,338	81,200	54,862	Hartford	8,081	2,820	-5,261
Seattle	18,964	48,300	29,336	Cincinnati	9,115	3,420	-5,695
Montreal	22,628	38,400	15,772	Austin	12,962	7,200	-5,762
Vancouver	12,944	24,200	11,256	Raleigh-Durham	18,078	11,260	-6,818
Charlotte	7,291	14,810	7,519	Baltimore	18,276	11,430	-6,846
Edmonton	5,522	12,000	6,478	Cleveland	11,534	4,620	-6,914
SF Bay Area	47,065	52,670	5,605	Virginia Beach	8,038	810	-7,228
Ottawa	8,134	13,600	5,466	Kansas City	12,566	4,120	-8,446
Denver	21,946	27,290	5,344	Milwaukee	7,366	-1,320	-8,686
Nashville	4,323	9,330	5,007	Columbus	11,231	2,310	-8,921
Calgary	3,634	7,100	3,466	Salt Lake City	22,551	12,680	-9,871
Quebec City	2,136	4,500	2,364	Rochester	11,208	-170	-11,378
Tampa	7,976	10,250	2,274	Minneapolis/St. Paul	17,752	4,940	-12,812
Indianapolis	5,524	7,520	1,996	Phoenix	25,519	12,180	-13,339
Jacksonville	2,026	3,700	1,674	Atlanta	34,623	18,960	-15,663
Portland	11,778	13,090	1,312	San Diego	18,875	2,760	-16,115
Richmond	3,544	1,800	-1,744	Philadelphia	28,963	9,630	-19,333
South Florida	12,677	10,280	-2,397	Houston	13,629	-6,030	-19,659
Orlando	12,560	10,000	-2,560	Pittsburgh	23,972	4,150	-19,822
San Antonio	5,580	2,690	-2,890	Los Angeles/Orange Co.	61,261	35,870	-25,391
Madison	9,144	5,940	-3,204	Detroit	30,853	3,870	-26,983
Dallas/Ft. Worth	30,700	26,570	-4,130	Washington, D.C.	55,931	24,080	-31,851
St. Louis	9,527	4,950	-4,577	Chicago	39,737	7,330	-32,407
Waterloo Region	12,894	8,300	-4,594	Boston	48,736	11,360	-37,376
Sacramento	9,117	3,890	-5,227	New York Metro	87,408	21,930	-65,478

Source: CBRE Research, U.S. Bureau of Labor Statistics, Statistics Canada, National Center for Education Statistics (Metro), Canadian Universities, 2021.
*Tech degrees cover the most recent five-year period available (2015-2019) and tech jobs added cover the time period reflecting when most graduates would be counted in employment figures (2016-2020).

TABLE 9: TOP 10 MOST CONCENTRATED MILLENNIAL MARKETS* (2019)

Market	Population Concentration of Millennials
Austin	34.6%
Seattle	33.3%
Denver	32.4%
SF Bay Area	32.0%
San Diego	31.7%
Los Angeles/Orange Co.	31.2%
Portland	30.9%
Salt Lake City	30.6%
Nashville	30.4%
Columbus	30.4%
United States	**22.0%**

Source: U.S. Census Bureau (County), 2021.
*Millennials aged 22-36 years.

TABLE 10: TECH TALENT EMPLOYMENT AND UNIVERSITY DEGREE BY MARKET

Market	Total Number Employed[1]	Top 25 Degree Producing Universites[2] (% of Total Employed)	Share of Top 25 from within Market[2] (Locally Employed and Educated)
San Francisco Bay Area	373,430	41%	37%
New York Metro	348,330	31%	75%
Toronto	270,400	54%	67%
Washington, D.C.	265,370	43%	70%
Los Angeles/Orange Co.	228,720	43%	73%
Dallas/Ft. Worth	189,200	41%	64%
Seattle	184,660	35%	40%
Boston	168,090	48%	73%
Chicago	167,380	47%	80%
Montreal	160,700	66%	93%
10 Largest "Large" Market Aggregate	**2,356,280**	**41%**	**61%**
Columbus	47,940	54%	75%
Calgary	46,700	71%	82%
Orlando	43,340	55%	76%
Pittsburgh	43,080	59%	79%
Sacramento	40,160	42%	70%
5 Largest "Small" Market Average	**221,220**	**57%**	**77%**

Source: (1) U.S. Bureau of Labor Statistics (Metro), April 2021, Statistics Canada (Metro),2021. (2) LinkedIn Talent Insights (LTI) and analysis by CBRE Research, May 2021. Tech Talent figures from LTI were defined by CBRE Research as software engineers, data engineers, cyber security analysts, system engineers, data scientists, information security analysts, infrastructure engineers, and database administrators.

LinkedIn Disclaimer: LinkedIn Talent Insights data is derived by aggregating profile data voluntarily submitted by LinkedIn members. As such, LinkedIn cannot guarantee the accuracy of LinkedIn Talent Insights data.

TABLE 11: MILLENNIAL POPULATION CHANGE BY MARKET* (2015-2019)

Large Tech Talent Markets (>50,000 Labor Pool)

Market	% Change
Seattle	21.5%
Toronto	21.2%
Denver	20.1%
Austin	20.1%
Vancouver	19.8%
Ottawa	19.6%
Portland	18.0%
Charlotte	17.1%
Dallas/Ft. Worth	14.7%
Tampa	14.5%
SF Bay Area	14.4%
Kansas City	12.5%
Phoenix	11.9%
Montreal	11.9%
Salt Lake City	11.6%
Atlanta	11.6%
Raleigh-Durham	11.0%
Houston	10.4%
Minneapolis/St. Paul	9.3%
Washington, D.C.	7.3%
South Florida	5.7%
Detroit	2.3%
New York Metro	2.2%
Boston	2.0%
Philadelphia	1.8%
St. Louis	1.8%
Baltimore	1.3%
Los Angeles/Orange Co.	1.3%
San Diego	0.7%
Chicago	0.0%

Small Tech Talent Markets (<50,000 Labor Pool)

Market	% Change
Waterloo Region	26.3%
Nashville	14.8%
Edmonton	13.8%
Orlando	13.0%
Jacksonville	12.2%
Indianapolis	10.4%
San Antonio	9.4%
Columbus	9.1%
Calgary	8.5%
Richmond	7.6%
Quebec City	7.0%
Sacramento	5.6%
Cincinnati	2.1%
Milwaukee	0.4%
Madison	0.1%
Cleveland	-0.1%
Pittsburgh	-0.2%
Virginia Beach	-3.9%
Hartford	-4.7%
Rochester	-7.5%

Source: U.S. Census Bureau (Metro), Statistics Canada (Metro), 2021.
*Millennials aged 23-38 years.

TABLE 12: U.S. TECH TALENT LABOR CONCENTRATION BY INDUSTRY (2020)

Tech Talent Occupations as a % of All Occupations in Each Industry

Industry	Tech Talent as % of Total Industry Occupations
Core High-Tech*	47.5%
Information (Excluding High-Tech)	11.9%
Professional, Scientific & Technical Services (Excluding High-Tech)	8.4%
Management of Companies & Enterprises	8.3%
FIRE	5.8%
Total U.S. Employment	3.9%
Government	3.3%
Manufacturing (Excluding High-Tech)	2.2%
Transportation, Warehousing & Wholesale	2.1%
Education	2.0%
Other	0.9%
Health Care	0.7%

Source: U.S. Bureau of Labor Statistics (National), April 2021.
*Includes computer software and services and computer product manufacturing.

TABLE 13: U.S. WORKFORECE BY RACE/ETHNICITY FOR SELECTED INDUSTRIES (2019)

2019 U.S. Census Micro Data from IPUMS

Industry	White	Asian	Hispanic	Black	Other	Female
Total Workforce (All Industries and Occupations)	56.5%	7.3%	20.8%	12.7%	2.7%	46.1%
Office-Using Industry Workforce (All Occupations)	64.7%	9.0%	13.7%	10.0%	2.6%	51.3%
Tech Industry Workforce (All Occupations, Tech & Non-Tech)	61.1%	21.1%	8.5%	6.4%	2.9%	33.3%
Tech Talent Workforce (Tech Industry)	54.6%	28.8%	7.7%	5.9%	2.9%	21.5%
Tech Talent Workforce (All Industries)	57.4%	22.5%	8.7%	8.4%	3.0%	27.2%

Source: U.S. Census, IPUMS and CBRE Research, May 2021.

TABLE 14: U.S. WORKFORCE BY SEX FOR SELECTED INDUSTRIES (2019)

% Female of Total Workforce (Male and Female)

Industry	All Races	Other	Black	Hispanic	Asian	White	Under-represented
Total Workforce (All Industries and Occupations)	46%	48%	52%	42%	49%	46%	46%
Office-Using Industry Workforce (All Occupations)	51%	53%	62%	56%	46%	49%	58%
Tech Industry Workforce (All Occupations, Tech & Non-Tech)	33%	36%	42%	33%	32%	33%	37%
Tech Talent Workforce (Tech Industry)	22%	25%	28%	19%	27%	18%	23%
Tech Talent Workforce (All Industries)	27%	28%	38%	26%	30%	25%	32%

Source: U.S. Census, IPUMS and CBRE Research, May 2021.

TABLE 15: U.S. TECH TALENT OCCUPATION CATEGORY BY RACE/ETHNICITY & SEX (2019)

Tech Talent Occupation Category	Share of Occupations	RACE/ETHNICITY SHARE OF OCCUPATIONS BY SEX				
		White	Asian	Hispanic	Black	Other
Software Developers, Programmers & Engineers (2.2M Jobs)						
Female	20.5%	43.4%	41.4%	5.7%	6.6%	2.8%
Male	79.5%	57.0%	29.4%	6.6%	4.2%	2.8%
Total (Both Sexes)	100.0%	54.2%	31.9%	6.4%	4.7%	2.8%
Computer Support, Database & Systems (3.2M Jobs)						
Female	32.0%	55.8%	17.1%	9.8%	14.2%	3.1%
Male	68.0%	61.4%	15.1%	10.7%	9.6%	3.1%
Total (Both Sexes)	100.0%	59.6%	15.8%	10.4%	11.1%	3.1%
Total Tech Talent (5.4M Jobs)						
Female	27.2%	51.9%	24.8%	8.5%	11.8%	3.0%
Male	72.8%	59.4%	21.7%	8.8%	7.1%	3.0%
Total (Both Sexes)	100.0%	57.4%	22.5%	8.7%	8.4%	3.0%

Source: U.S. Census, IPUMS and CBRE Research, May 2021.

TABLE 16: UNDERREPRESENTED RACE/ETHNIC GROUPS IN U.S. TECH TALENT WORKFORCE BY MARKET (2019)

Market	Difference*	Tech Talent Share of Underrepresented Groups**	Office-Using Share of Underrepresented Groups**
Most Diverse			
Pittsburgh	3.5%	12.2%	8.7%
Charlotte	0.8%	25.5%	24.7%
Nashville	0.4%	17.1%	16.7%
Atlanta	0.2%	36.1%	35.9%
Rochester	-0.6%	11.9%	12.6%
Least Diverse			
San Antonio	-14.7%	39.8%	54.5%
Los Angeles/Orange Co.	-12.6%	24.3%	36.9%
Austin	-10.5%	18.4%	28.9%
San Francisco Bay Area	-9.6%	10.7%	20.3%
San Diego	-9.1%	20.1%	29.2%

Source: TBD
*Difference calculation: Tech Talent Share minus Office-Using Share Benchmark
**Hispanic, Black, Other Non-White/Non-Asian

TABLE 17: FEMALES IN U.S. TECH TALENT WORKFORCE BY MARKET (2019)

Market	Difference*	Tech Talent Share of Females	Office-Using Share of Females
Most Diverse			
Washington, D.C.	-17.4%	32.3%	49.7%
Sacramento	-17.6%	35.6%	53.3%
Kansas City	-17.9%	33.2%	51.2%
Boston	-18.4%	30.3%	48.6%
Hartford	-19.5%	30.1%	49.6%
Least Diverse			
Cleveland	-29.7%	24.6%	54.2%
South Florida	-29.1%	23.2%	52.3%
Richmond	-28.5%	26.2%	54.6%
Orlando	-28.0%	25.0%	53.0%
St. Louis	-27.8%	24.9%	52.7%

Source: TBD
*Difference calculation: Tech Talent Share minus Office-Using Share Benchmark

TABLE 18: U.S. TECH DEGREE GRADUATE'S RACE/ETHNICITY & SEX (2019)

Year	Total Graduates	Male	Female Share of Tech Graduates	White	Asian	Hispanic	Black	Other
2010	156,333	78.2%	21.8%	73.4%	10.4%	7.8%	10.4%	7.8%
2011	166,344	78.1%	21.9%	70.0%	13.2%	8.3%	13.2%	8.3%
2012	178,283	77.9%	22.1%	69.3%	12.9%	8.9%	12.9%	8.9%
2013	192,191	77.8%	22.2%	67.8%	13.0%	9.3%	13.0%	9.3%
2014	211,353	77.4%	22.6%	66.9%	12.8%	10.1%	12.8%	10.1%
2015	233,970	76.9%	23.1%	65.9%	13.1%	10.4%	13.1%	10.4%
2016	263,364	76.4%	23.6%	64.2%	14.1%	10.9%	14.1%	10.9%
2017	288,446	76.1%	23.9%	62.9%	14.9%	11.4%	14.9%	11.4%
2018	304,692	75.5%	24.5%	61.7%	15.6%	11.6%	15.6%	11.6%
2019	318,659	75.1%	24.9%	60.3%	16.2%	12.1%	16.2%	12.1%

Source: IPEDS
*Total tech degree graduates and sex breakdown includes U.S. resident and foreigners.
**Race/ethnicity breakdown excludes unknown races and foreigners.

TABLE 19: U.S. TECH DEGREE GRADUATE'S RACE/ETHNICITY & SEX BY MARKET (2019)

Bachelor's Degree or Higher

Market	Total Graduates	RACE/ETHNICITY**					
		White	Asian	Under-represented*	Hispanic	Black	Other
Most Diverse (Highest % Underrepresented Groups*)							
South Florida	2,770	25.8%	6.1%	68.1%	49.9%	15.1%	3.1%
San Antonio	1,328	32.2%	9.9%	57.8%	47.1%	6.5%	4.2%
Houston	3,054	34.2%	25.3%	40.5%	24.6%	14.0%	1.9%
Washington, D.C.	12,623	48.2%	16.8%	35.0%	8.7%	21.5%	4.7%
Tampa	1,868	56.1%	9.1%	34.7%	18.7%	12.8%	3.3%
Least Diverse (Lowest % Underrepresented Groups*)							
Madison	2,214	81.9%	9.5%	8.5%	3.9%	1.5%	3.1%
Cincinnati	2,310	78.7%	11.9%	9.4%	3.1%	3.6%	2.7%
Milwaukee	1,594	81.2%	7.5%	11.2%	5.0%	3.4%	2.8%
Rochester	2,467	76.6%	11.4%	12.0%	6.3%	2.5%	3.3%
Detroit	6,790	71.2%	16.5%	12.3%	4.5%	4.1%	3.7%

Market	Total Graduates	SEX			Market	Total Graduates	SEX	
		Male	Female				Male	Female
Most Diverse (Highest % Female)					**Least Diverse (Highest % Male)**			
Pittsburgh	5,414	69.1%	30.9%		Salt Lake City	5,844	86.8%	13.2%
Seattle	4,847	69.5%	30.5%		Orlando	2,793	83.7%	16.3%
New York Metro	20,576	69.7%	30.3%		Milwaukee	1,594	79.8%	20.2%
Boston	12,183	69.9%	30.1%		South Florida	2,770	79.3%	20.7%
Houston	3,054	70.4%	29.6%		Portland	2,931	77.9%	22.1%

Source: IPEDS and CBRE Research, May 2021.
Total tech degree graduates and sex breakdown includes U.S. resident and foreigners. Race/ethnicity breakdown excludes unknown races and foreigners.

*Aggregate of Hispanic, Black, Other Non-White/Non-Asian **Race/ethnicity breakdown excludes unknown races and foreigners.

Tech talent has unique concentrations across markets

TABLE 20: TECH TALENT BY TYPE: SOFTWARE DEVELOPERS & PROGRAMMERS

Ranked by % of Tech Talent

Market	Software Developers & Programmers	% of Tech Talent	Market	Software Developers & Programmers	% of Tech Talent
Seattle	114,800	62.2%	San Diego	24,140	34.3%
Madison	11,300	46.0%	Philadelphia	37,500	33.3%
Waterloo Region	11,900	45.9%	Portland	19,930	33.0%
SF Bay Area	166,020	44.5%	Phoenix	32,310	32.9%
Raleigh-Durham	27,810	41.5%	Cincinnati	12,850	32.9%
Boston	68,590	40.8%	South Florida	22,090	32.7%
Salt Lake City	19,980	39.9%	St. Louis	17,920	32.5%
Vancouver	36,300	39.8%	Cleveland	11,790	32.5%
New York Metro	136,120	39.1%	Tampa	17,440	32.3%
Austin	30,670	38.7%	Orlando	13,560	31.3%
Denver	44,140	38.4%	Charlotte	19,310	31.1%
Richmond	9,090	37.1%	Jacksonville	6,590	30.2%
Columbus	17,740	37.0%	Baltimore	24,240	29.6%
Kansas City	19,450	37.0%	Pittsburgh	12,750	29.6%
Detroit	33,020	36.8%	Ottawa	21,900	29.6%
Indianapolis	14,420	36.1%	Nashville	10,260	29.2%
Minneapolis/St. Paul	35,080	36.0%	Montreal	46,000	28.6%
Hartford	9,500	35.9%	Quebec City	8,400	28.6%
Chicago	60,030	35.9%	Toronto	75,900	28.1%
Dallas/Ft. Worth	66,910	35.4%	Houston	26,520	27.5%
GLA/OC	80,440	35.2%	Calgary	12,700	27.2%
Rochester	7,290	35.0%	Virginia Beach	7,840	26.6%
Milwaukee	10,390	34.9%	Sacramento	10,270	25.6%
Atlanta	49,900	34.7%	San Antonio	7,870	23.8%
Washington, D.C.	91,690	34.6%	Edmonton	7,400	21.4%

TABLE 21: TECH TALENT BY TYPE: COMPUTER, SUPPORT DATABASE & SYSTEMS

Ranked by % of Tech Talent

Market	Computer, Support Database & Systems	% of Tech Talent	Market	Computer, Support Database & Systems	% of Tech Talent
San Antonio	20,340	61.5%	Milwaukee	14,450	48.5%
Sacramento	22,640	56.4%	Minneapolis/St. Paul	46,660	47.9%
Nashville	19,100	54.3%	Chicago	79,840	47.7%
Baltimore	43,710	53.5%	Salt Lake City	23,690	47.3%
Charlotte	33,190	53.4%	Rochester	9,600	46.1%
Houston	51,320	53.2%	Denver	51,950	45.2%
Tampa	28,640	53.1%	New York Metro	157,230	45.1%
Cleveland	19,180	52.8%	Ottawa	32,500	43.9%
Washington, D.C.	138,270	52.1%	Detroit	39,270	43.8%
Virginia Beach	15,270	51.9%	Madison	10,710	43.6%
South Florida	34,880	51.7%	Raleigh-Durham	28,930	43.1%
Indianapolis	20,510	51.3%	Toronto	114,900	42.5%
St. Louis	28,220	51.2%	GLA/OC	97,100	42.5%
Cincinnati	20,000	51.2%	San Diego	29,260	41.6%
Richmond	12,460	50.8%	Hartford	10,920	41.3%
Kansas City	26,740	50.8%	Quebec City	11,700	39.8%
Orlando	21,990	50.7%	Montreal	63,900	39.8%
Jacksonville	11,040	50.5%	Portland	23,540	39.0%
Pittsburgh	21,710	50.4%	Edmonton	13,400	38.8%
Columbus	24,080	50.2%	Vancouver	35,200	38.6%
Dallas/Ft. Worth	94,990	50.2%	Boston	63,530	37.8%
Philadelphia	55,980	49.7%	SF Bay Area	130,600	35.0%
Atlanta	71,350	49.6%	Calgary	16,300	34.9%
Austin	38,470	48.6%	Waterloo Region	8,400	32.4%
Phoenix	47,640	48.5%	Seattle	47,770	25.9%

Source: U.S. Bureau of Labor Statistics, Statistics Canada, April 2021.
Note: Computer Support, Database & Systems include: computer and information research scientists, computer systems analysts, information security analysts, database administrators, network and computer systems administrators, computer network architects, computer user support specialists, computer network support specialists and all other computer occupations.

TABLE 22: TECH TALENT BY TYPE: COMPUTER & INFORMATION SYSTEMS MANAGERS

Ranked by % of Tech Talent

Market	Compute & Information Systems Managers	% of Tech Talent	Market	Compute & Information Systems Managers	% of Tech Talent
Hartford	4,540	17.2%	Orlando	3,370	7.8%
Toronto	32,000	11.8%	Cleveland	2,800	7.7%
Boston	19,320	11.5%	Milwaukee	2,280	7.6%
Nashville	3,870	11.0%	Jacksonville	1,660	7.6%
SF Bay Area	40,360	10.8%	Cincinnati	2,940	7.5%
Chicago	17,820	10.6%	Baltimore	6,120	7.5%
New York Metro	37,080	10.6%	St. Louis	4,070	7.4%
GLA/OC	22,790	10.0%	Tampa	3,970	7.4%
Charlotte	6,080	9.8%	Washington, D.C.	19,130	7.2%
Minneapolis/St. Paul	9,520	9.8%	Quebec City	2,100	7.1%
San Diego	6,720	9.6%	Indianapolis	2,830	7.1%
Philadelphia	10,370	9.2%	Rochester	1,430	6.9%
South Florida	6,180	9.2%	Houston	6,410	6.6%
Pittsburgh	3,820	8.9%	Dallas/Ft. Worth	12,440	6.6%
Sacramento	3,540	8.8%	San Antonio	2,170	6.6%
Atlanta	12,560	8.7%	Richmond	1,580	6.4%
Phoenix	8,440	8.6%	Kansas City	3,380	6.4%
Portland	5,180	8.6%	Columbus	3,030	6.3%
Raleigh-Durham	5,500	8.2%	Virginia Beach	1,720	5.8%
Edmonton	2,800	8.1%	Denver	6,690	5.8%
Ottawa	6,000	8.1%	Seattle	10,560	5.7%
Detroit	7,200	8.0%	Madison	1,250	5.1%
Vancouver	7,300	8.0%	Montreal	7,500	4.7%
Salt Lake City	4,000	8.0%	Austin	3,330	4.2%
Calgary	3,700	7.9%	Waterloo Region	800	3.1%

Source: U.S. Bureau of Labor Statistics, Statistics Canada, April 2021.

TABLE 23: TECH TALENT BY TYPE: TECHNOLOGY ENGINEERING-RELATED

Ranked by % of Tech Talent

Market	Technology Engineering-Related	% of Tech Talent	Market	Technology Engineering-Related	% of Tech Talent
Edmonton	10,900	32%	St. Louis	4,870	9%
Calgary	14,000	30%	Austin	6,760	9%
Montreal	43,300	27%	Cincinnati	3,290	8%
Quebec City	7,200	24%	San Antonio	2,700	8%
Portland	11,680	19%	Philadelphia	8,890	8%
Waterloo Region	4,800	19%	Dallas/Ft. Worth	14,860	8%
Ottawa	13,600	18%	Tampa	3,910	7%
Toronto	47,500	18%	Raleigh-Durham	4,810	7%
Virginia Beach	4,590	16%	Cleveland	2,550	7%
San Diego	10,230	15%	Atlanta	9,970	7%
Vancouver	12,400	14%	Columbus	3,090	6%
Houston	12,170	13%	South Florida	4,350	6%
GLA/OC	28,390	12%	Minneapolis/St. Paul	6,210	6%
Rochester	2,520	12%	Seattle	11,530	6%
Jacksonville	2,550	12%	Washington, D.C.	16,280	6%
Detroit	10,190	11%	Kansas City	3,060	6%
Pittsburgh	4,800	11%	Chicago	9,690	6%
Denver	12,120	11%	Charlotte	3,530	6%
Orlando	4,420	10%	Richmond	1,390	6%
Phoenix	9,830	10%	Hartford	1,480	6%
Boston	16,650	10%	Indianapolis	2,230	6%
SF Bay Area	36,450	10%	Nashville	1,960	6%
Baltimore	7,700	9%	Madison	1,320	5%
Sacramento	3,710	9%	New York Metro	17,900	5%
Milwaukee	2,690	9%	Salt Lake City	2,400	5%

Source: U.S. Bureau of Labor Statistics, Statistics Canada, April 2021.
Note: Technology Engineering-Related includes: computer programmers; computer hardware engineers, electrical engineers, electronics engineers except computer, electrical and electronics drafters, electrical and electronics engineering technicians and electro-mechanical technicians.

TABLE 24: AVERAGE U.S. TECH COMPANY OCCUPATION POOLS

500 Employees

Occupation Pools	Employees	% of Tech Talent Labor
Tech Talent Employees*	238	47%
Support Non-Tech Employees (excluding Management)	202	40%
Management	60	12%

Source: U.S. Bureau of Labor Statistics (National), April 2021.
*Tech Talent includes the following occupation categories: software developers and programmers; computer support, database and systems; technology and engineering related; and computer information system managers.

TABLE 25: ESTIMATED ONE-YEAR COSTS BY MARKET: WAGE AND RENT OBLIGATION FOR TYPICAL TECH FIRM

Sample Tech Firm Estimates: 500 Employees, 75,000 Sq. Ft.

Market	Rent Cost (avg rent x 75,000 sf)	Tech Talent Wages (avg wage x 237 people)	Support Non-Tech Wages (avg wage x 202 people)	Management Wages (avg wage x 60 people)	Total
SF Bay Area	$5,253,336	$34,360,103	$15,694,420	$13,303,186	$68,611,046
New York Metro	$5,793,750	$28,119,799	$13,218,948	$12,079,200	$59,211,697
Seattle	$3,001,500	$30,161,857	$13,299,959	$10,273,800	$56,737,116
Washington, D.C.	$3,084,750	$27,900,741	$14,129,507	$10,670,400	$55,785,397
Boston	$3,148,500	$27,154,520	$13,221,127	$10,050,000	$53,574,148
Los Angeles/Orange Co.	$3,388,831	$26,180,345	$11,448,430	$11,050,200	$52,067,806
Denver	$2,183,250	$25,580,375	$12,952,469	$10,716,304	$51,432,398
San Diego	$2,866,500	$26,176,882	$11,542,894	$10,174,200	$50,760,476
Baltimore	$1,770,000	$26,252,880	$11,251,684	$9,516,600	$48,791,163
Philadelphia	$2,132,250	$24,389,860	$11,273,558	$9,677,400	$47,473,068
Minneapolis/St. Paul	$1,960,500	$24,369,018	$11,571,166	$9,358,200	$47,258,884
Sacramento	$1,890,000	$24,369,838	$10,857,432	$9,600,000	$46,717,270
Chicago	$2,426,250	$23,931,175	$10,807,378	$9,417,600	$46,582,403
Houston	$2,224,500	$24,220,443	$10,428,254	$9,690,000	$46,563,197
Dallas/Ft. Worth	$1,931,250	$24,371,839	$10,363,358	$9,730,800	$46,397,248
Charlotte	$2,312,250	$23,790,169	$10,901,353	$9,175,200	$46,178,972
Raleigh-Durham	$2,229,750	$23,953,048	$11,259,793	$8,705,915	$46,148,506
Atlanta	$2,215,500	$23,737,874	$10,617,225	$9,123,600	$45,694,199
Portland	$2,341,500	$23,653,419	$11,133,274	$8,557,800	$45,685,993
Austin	$2,954,250	$23,022,375	$10,350,230	$9,325,200	$45,652,055
Richmond	$1,593,750	$23,484,266	$10,825,808	$9,583,200	$45,487,023
Hartford	$1,466,250	$23,902,569	$11,323,251	$8,704,200	$45,396,270
South Florida	$3,047,299	$21,918,770	$9,677,489	$9,507,000	$44,150,558
Phoenix	$2,108,250	$22,289,794	$10,052,516	$8,789,400	$43,239,960
Columbus	$1,479,750	$22,058,820	$10,310,880	$8,644,800	$42,494,249
Detroit	$1,452,000	$21,806,161	$10,662,772	$8,535,876	$42,456,808
St. Louis	$1,578,293	$21,872,253	$10,177,794	$8,622,600	$42,250,940
Madison	$1,559,250	$21,982,411	$10,395,305	$8,118,600	$42,055,566
Tampa	$2,063,989	$21,544,833	$9,413,474	$9,009,000	$42,031,296
Cincinnati	$1,459,500	$21,799,883	$10,201,132	$8,527,200	$41,987,715
Cleveland	$1,402,500	$21,913,476	$10,190,782	$8,240,400	$41,747,158
San Antonio	$1,629,750	$21,797,565	$9,051,310	$9,022,800	$41,501,424
Virginia Beach	$1,520,250	$21,577,743	$9,313,768	$9,067,800	$41,479,561
Milwaukee	$1,512,750	$21,185,787	$10,319,091	$8,355,600	$41,373,228
Orlando	$1,857,000	$21,224,752	$9,145,449	$8,854,800	$41,082,002
Salt Lake City	$1,870,500	$21,225,684	$9,588,092	$8,359,260	$41,043,536
Pittsburgh	$1,730,250	$21,106,981	$9,466,876	$8,556,600	$40,860,707
Rochester	$1,462,500	$20,290,958	$10,146,031	$8,813,400	$40,712,889
Indianapolis	$1,605,750	$20,553,891	$10,302,026	$7,854,000	$40,315,666
Kansas City	$1,594,500	$20,651,272	$10,314,941	$7,584,000	$40,144,713
Nashville	$2,130,000	$20,138,320	$9,974,898	$7,691,400	$39,934,617
Jacksonville	$1,600,500	$19,991,529	$9,129,482	$8,182,800	$38,904,311
Calgary	$2,251,500	$17,000,811	$11,161,282	$5,454,342	$35,867,935
Ottawa	$1,885,762	$16,262,772	$10,537,009	$5,308,312	$33,993,855
Edmonton	$1,858,927	$16,458,281	$10,374,124	$5,166,888	$33,858,219
Toronto	$1,985,837	$15,904,751	$9,743,196	$5,135,266	$32,769,051
Vancouver	$2,683,563	$15,823,496	$9,330,227	$4,858,949	$32,696,235
Quebec City	$1,440,179	$15,096,634	$9,228,907	$6,730,734	$32,496,454
Montreal	$1,918,748	$14,945,300	$9,159,593	$5,571,569	$31,595,210
Waterloo Region	$1,475,401	$15,598,536	$9,177,296	$5,112,009	$31,363,242

Source: U.S. Bureau of Labor Statistics, April 2021, Canada Statistics 2021, CBRE Research (Metro), Q4 2020.
*in US$

How does tech talent impact commercial real estate?

TABLE 26: OFFICE ASKING RENT BY MARKET (Q4 2020)

Market	Annual Gross Direct Asking Rent	Office Rent 5 Yr. Growth	Market	Annual Gross Direct Asking Rent	Office Rent 5 Yr. Growth
Manhattan	$77.25	8%	Montreal*	$25.58	12%
SF Bay Area	$70.04	19%	Sacramento	$25.20	21%
Los Angeles	$45.18	30%	Ottawa*	$25.14	8%
Boston	$41.98	19%	Salt Lake City	$24.94	30%
Washington, D.C.	$41.13	14%	Edmonton*	$24.79	2%
South Florida	$40.63	29%	Orlando	$24.76	22%
Seattle	$40.02	34%	Baltimore	$23.60	5%
Austin	$39.39	24%	Pittsburgh	$23.07	8%
San Diego	$38.22	19%	San Antonio	$21.73	3%
Vancouver*	$35.78	23%	Indianapolis	$21.41	19%
Chicago	$32.35	12%	Jacksonville	$21.34	16%
Portland	$31.22	27%	Kansas City	$21.26	21%
Charlotte	$30.83	38%	Richmond	$21.25	8%
Calgary*	$30.02	-21%	St. Louis	$21.04	13%
Raleigh-Durham	$29.73	26%	Madison	$20.79	8%
Houston	$29.66	3%	Virginia Beach	$20.27	12%
Atlanta	$29.54	35%	Milwaukee	$20.17	13%
Denver	$29.11	17%	Columbus	$19.73	8%
Philadelphia	$28.43	8%	Waterloo Region*	$19.67	25%
Nashville	$28.40	35%	Hartford	$19.55	-2%
Phoenix	$28.11	23%	Rochester	$19.50	5%
Tampa	$27.52	30%	Cincinnati	$19.46	4%
Toronto*	$26.48	8%	Detroit	$19.36	10%
Minneapolis/St. Paul	$26.14	2%	Quebec City*	$19.20	14%
Dallas/Ft. Worth	$25.75	18%	Cleveland	$18.70	6%

Source: CBRE Research (Office Market), Q4 2020.
*data in US$

TABLE 27: OFFICE VACANCY RATE BY MARKET (Q4 2020)

Market	Vacancy Rate	5 Yrs. Ago (Q1 2015)	Market	Vacancy Rate	5 Yrs. Ago (Q1 2015)
Vancouver	6.2%	11.0%	South Florida	15.5%	13.5%
Madison	6.6%	9.5%	Nashville	15.5%	7.4%
Quebec City	7.3%	7.7%	Denver	15.6%	13.4%
Waterloo Region	7.7%	12.0%	Salt Lake City	15.6%	15.3%
Ottawa	8.7%	10.6%	Baltimore	15.7%	13.9%
Richmond	10.0%	12.0%	Jacksonville	15.9%	17.7%
Virginia Beach	10.0%	15.6%	Milwaukee	16.0%	15.2%
Toronto	11.0%	9.6%	Philadelphia	16.2%	15.3%
Sacramento	11.2%	16.3%	Los Angeles	16.3%	15.2%
Manhattan	11.3%	7.2%	Pittsburgh	16.3%	11.8%
Raleigh-Durham	11.3%	13.4%	Cleveland	16.4%	18.5%
Orlando	11.7%	15.2%	Austin	16.7%	9.6%
SF Bay Area	12.2%	6.4%	Phoenix	17.4%	19.4%
Montreal	12.3%	13.8%	Washington	17.7%	15.8%
Seattle	12.3%	12.1%	Cincinnati	18.4%	20.6%
Charlotte	12.3%	8.7%	Minneapolis/St. Paul	18.6%	15.5%
Rochester	12.8%	15.8%	Atlanta	19.1%	17.3%
St. Louis	12.9%	13.8%	Columbus	19.4%	13.7%
Boston	13.2%	12.9%	Indianapolis	19.6%	16.5%
Tampa	13.9%	13.1%	Hartford	20.1%	16.7%
San Diego	14.0%	13.0%	Chicago	20.4%	14.6%
Portland	14.4%	10.5%	Edmonton	20.6%	12.1%
Detroit	14.6%	19.1%	Houston	22.3%	14.2%
Kansas City	14.6%	14.7%	Dallas/Ft. Worth	23.4%	17.7%
San Antonio	15.2%	15.9%	Calgary	27.0%	18.2%

Source: CBRE Research (Office Market), Q4 2020.

Which are the highest- and lowest-cost markets to operate in?

TABLE 28: TECH TALENT WAGES BY MARKET (2020)

U.S. Average = 100%

Market	Average Tech Talent Wage	Wage Relative to U.S. Average	Talent Wage 5 Yr. Growth	Market	Average Tech Talent Wage	Wage Relative to U.S. Average	Talent Wage 5 Yr. Growth
SF Bay Area	$144,370	141%	17%	South Florida	$92,096	90%	18%
Seattle	$126,730	124%	15%	Cleveland	$92,073	90%	17%
New York Metro	$118,150	115%	13%	St. Louis	$91,900	90%	7%
Washington, D.C.	$117,230	114%	11%	Detroit	$91,623	89%	12%
Boston	$114,095	111%	11%	Cincinnati	$91,596	89%	12%
Baltimore	$110,306	108%	11%	San Antonio	$91,586	89%	17%
Los Angeles/Orange Co.	$110,001	107%	14%	Virginia Beach	$90,663	89%	10%
San Diego	$109,987	107%	11%	Tampa	$90,525	88%	17%
Denver	$107,481	105%	11%	Salt Lake City	$89,184	87%	14%
Philadelphia	$102,478	100%	12%	Orlando	$89,180	87%	14%
Dallas/Ft. Worth	$102,403	100%	14%	Milwaukee	$89,016	87%	12%
Sacramento	$102,394	100%	16%	Pittsburgh	$88,685	87%	15%
Minneapolis/St. Paul	$102,391	100%	15%	Kansas City	$86,770	85%	6%
Houston	$101,767	99%	9%	Indianapolis	$86,361	84%	13%
Raleigh-Durham	$100,643	98%	10%	Rochester	$85,256	83%	11%
Chicago	$100,551	98%	15%	Nashville	$84,615	83%	10%
Hartford	$100,431	98%	8%	Jacksonville	$83,998	82%	5%
Charlotte	$99,959	98%	9%	Calgary	$71,432	70%	6%
Atlanta	$99,739	97%	14%	Edmonton	$69,152	68%	27%
Portland	$99,384	97%	12%	Ottawa	$68,331	67%	11%
Richmond	$98,673	96%	13%	Toronto	$66,827	65%	13%
Austin	$96,733	94%	8%	Vancouver	$66,485	65%	18%
Phoenix	$93,655	91%	8%	Waterloo Region	$65,540	64%	31%
Columbus	$92,684	90%	11%	Quebec City	$63,431	62%	36%
Madison	$92,363	90%	24%	Montreal	$62,795	61%	18%

Source: U.S. Bureau of Labor Statistics (Metro), Statistics Canada (Metro), April 2021.
*data in US$

TABLE 29: APARTMENT RENT TO TECH WAGE RATIO

Market	Annualized Apartment Rent (2020)	Average Annual Tech Wage (2020)	Rent-to-Tech Wage Ratio	Market	Annualized Apartment Rent (2020)	Average Annual Tech Wage (2020)	Rent-to-Tech Wage Ratio
New York Metro	$31,070	$118,150	26.3%	Phoenix	$14,995	$93,655	16.0%
Los Angeles/Orange Co.	$26,669	$110,001	24.2%	Pittsburgh	$14,190	$88,685	16.0%
San Diego	$24,869	$109,987	22.6%	Madison	$14,640	$92,363	15.9%
South Florida	$20,544	$92,096	22.3%	Minneapolis/St. Paul	$16,075	$102,391	15.7%
Boston	$25,444	$114,095	22.3%	Rochester	$13,368	$85,256	15.7%
SF Bay Area	$30,049	$144,370	20.8%	Atlanta	$15,627	$99,739	15.7%
Toronto*	$13,668	$66,827	20.5%	Austin	$15,111	$96,733	15.6%
Vancouver*	$13,489	$66,485	20.3%	Baltimore	$16,688	$110,306	15.1%
Sacramento	$19,221	$102,394	18.8%	Calgary*	$10,690	$71,432	15.0%
Ottawa*	$12,148	$68,331	17.8%	Edmonton*	$10,314	$69,152	14.9%
Washington, D.C.	$20,825	$117,230	17.8%	Charlotte	$14,397	$99,959	14.4%
Nashville	$14,929	$84,615	17.6%	Richmond	$14,184	$98,673	14.4%
Chicago	$17,670	$100,551	17.6%	Dallas/Ft. Worth	$14,521	$102,403	14.2%
Virginia Beach	$15,768	$90,663	17.4%	Raleigh-Durham	$14,176	$100,643	14.1%
Portland	$17,148	$99,384	17.3%	Detroit	$12,845	$91,623	14.0%
Tampa	$15,508	$90,525	17.1%	Kansas City	$12,043	$86,770	13.9%
Philadelphia	$17,497	$102,478	17.1%	Cincinnati	$12,391	$91,596	13.5%
Denver	$18,217	$107,481	16.9%	Columbus	$12,338	$92,684	13.3%
Hartford	$16,960	$100,431	16.9%	San Antonio	$12,120	$91,586	13.2%
Orlando	$15,033	$89,180	16.9%	Indianapolis	$11,407	$86,361	13.2%
Waterloo Region*	$10,922	$65,540	16.7%	St. Louis	$11,905	$91,900	13.0%
Seattle	$20,923	$126,730	16.5%	Houston	$13,107	$101,767	12.9%
Milwaukee	$14,544	$89,016	16.3%	Montreal*	$7,970	$62,795	12.7%
Jacksonville	$13,710	$83,998	16.3%	Cleveland	$11,677	$92,073	12.7%
Salt Lake City	$14,452	$89,184	16.2%	Quebec City*	$7,818	$63,431	12.3%

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