

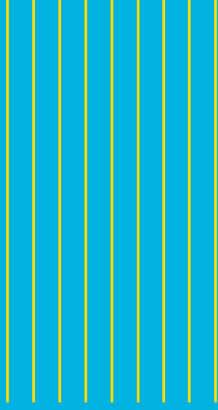
CBRE RESEARCH

2019 SCORING TECH TALENT

Influencing Innovation, Economic & Real Estate Growth
in 50 U.S. & Canadian Markets

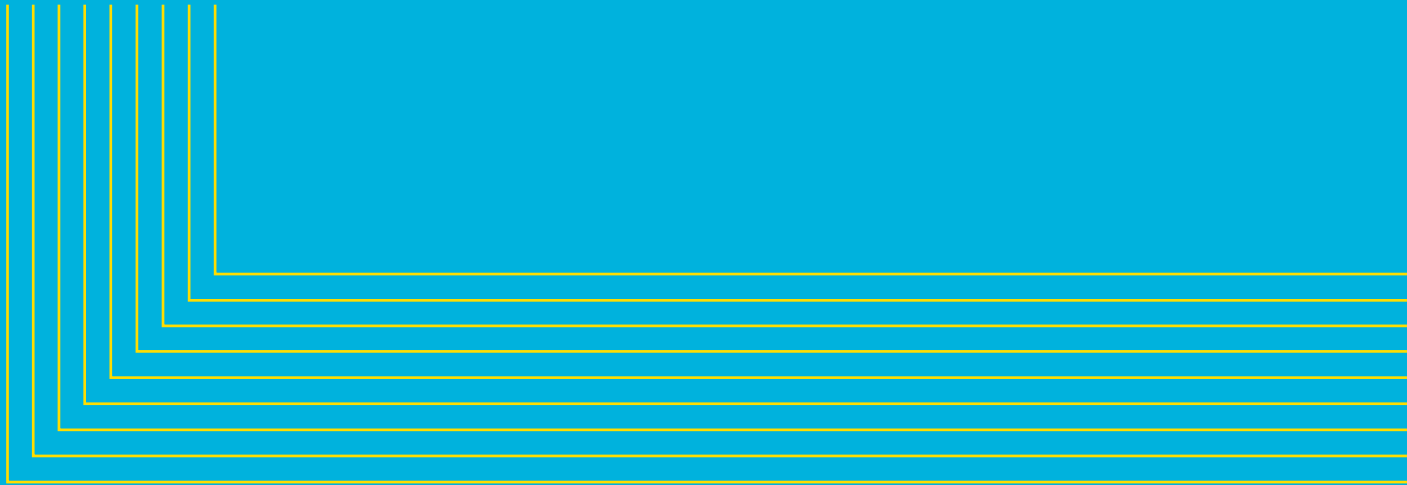


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Scoring Tech Talent is a comprehensive analysis of labor market conditions, cost and quality in the U.S. and Canada for highly skilled tech workers. The top-50 markets were ranked according to their competitive advantages and appeal to both employers and tech talent. The analysis also provides insight into the quality of tech workers, their demographics and how tech talent growth patterns are impacting cities and real estate markets.



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Tech talent is a group of highly skilled workers in more than 20 technology-oriented occupations driving innovation across all industry sectors.

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A scorecard measuring 13 metrics to gauge the competitive advantages of markets and their ability to attract and grow tech talent pools determined the top-ranked tech talent markets.

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KEY TAKEAWAYS

- More than 6 million highly skilled workers across the U.S. and Canada comprise the tech talent that is leading global innovation. Shrinking availability of tech talent in leading markets has spurred a spillover of hiring momentum in smaller and upstart markets in the U.S. and Canada as expanding tech employers seek additional labor pools.
- Overall, big markets have continued to produce the largest volumes of jobs and tech degree graduates over the past five years, but several years of low unemployment rates have dampened the momentum of many leading tech talent markets. Partly as a result, smaller “Next 25” markets have absorbed an increased amount of tech-labor demand.
- The high-tech industry has accounted for about 20% of major office-leasing activity in the U.S. since 2018—the most of any industry. This has left little available office space in many key large markets and pushed up rents to peak levels.

MOMENTUM

Tech talent labor pools have deepened during the past five years, but tighter labor markets have lessened the rapid pace of past growth and led to fewer momentum markets. Tech talent job growth accelerated in 15 of 50 markets, with notable surges in Orlando, San Diego, Chicago and Cleveland.

COMPETITIVENESS

Tech talent job creation has outpaced qualified professionals for years, leading to rising labor costs and increased competition to attract and retain talent. Understanding the level of competition by market helps inform labor strategy. The most competitive markets are the San Francisco Bay Area, Seattle, Denver and Austin.

NEXT 25 – OPPORTUNITY MARKETS

Fostering talent development in lesser-known and under-developed markets could offer additional talent pools to employers seeking to expand their geographical reach and uncover opportunities. These smaller markets show potential and are concentrated in Canada and the U.S. Midwest and South.



#SCORE

Thirteen metrics measure each market's depth, vitality and attractiveness. The top-ranked markets are the San Francisco Bay Area, Seattle and Toronto. Markets registering the greatest rise in the rankings are Vancouver, Madison, Salt Lake City and Portland.

BRAIN GAIN

The number of tech degree graduates were compared with tech talent job creation in each market to determine brain gains or brain drains. Washington, D.C., Boston and Los Angeles produce more graduates than jobs and are the most drained markets, while Toronto, the San Francisco Bay Area, Seattle and Charlotte gained the most tech talent.

\$COST

The typical 500-person tech company needing 75,000 sq. ft. of office space can expect a total annual cost (labor and real estate) to range from \$29 million in Montreal to \$60 million in the San Francisco Bay Area.



WHAT IS TECH TALENT?

Tech talent comprises highly skilled technical workers who create and enable the software and devices that are integrated into nearly everything we do. Computers in the home and at work are commonplace, but new tools (i.e., wearable technology, Wi-Fi-enabled devices and sensors, and voice-activated home assistants) are becoming more universally adopted as expectations for fast deliveries and real-time information updates increase. Technology is the future and companies across all industries are expanding

their innovation capabilities through tech talent to satisfy changing business needs and consumer demands.

More than 6 million highly skilled tech talent workers are leading global innovation that will shape our daily lives and economy for decades to come. These tech talent workers comprise 20 different 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 highly concentrated within the high-tech industry, they are spread across all industry sectors (Figure 1). Therefore, a software developer who works for a logistics or health-care company is included in our data.

The 5.2 million tech talent workers in the U.S. and 833,000 in Canada account for 3.7% and 5.3% of total workers in each country, respectively. This relatively small labor force has an outsized impact on

real estate markets and the economy. The number of tech talent workers has increased by 16% in the past five years, adding 693,000 jobs to the U.S. economy at a pace more than twice the national average. They are fueling innovation and adapting technology within non-traditional tech sectors to increase productivity and strengthen the national economy.

¹Tech 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.





FIGURE 1: TECH TALENT LABOR BY INDUSTRY (2018)*

Tech Talent occupations in each industry as a % of U.S. Tech Talent

37.2% CORE HIGH-TECH*

10.5% PROFESSIONAL, SCIENTIFIC & TECHNICAL SERVICES (EXCLUDING HIGH-TECH)

8.6% OTHER

8.3% FIRE

6.2% MANAGEMENT OF COMPANIES & ENTERPRISES

6.0% GOVERNMENT

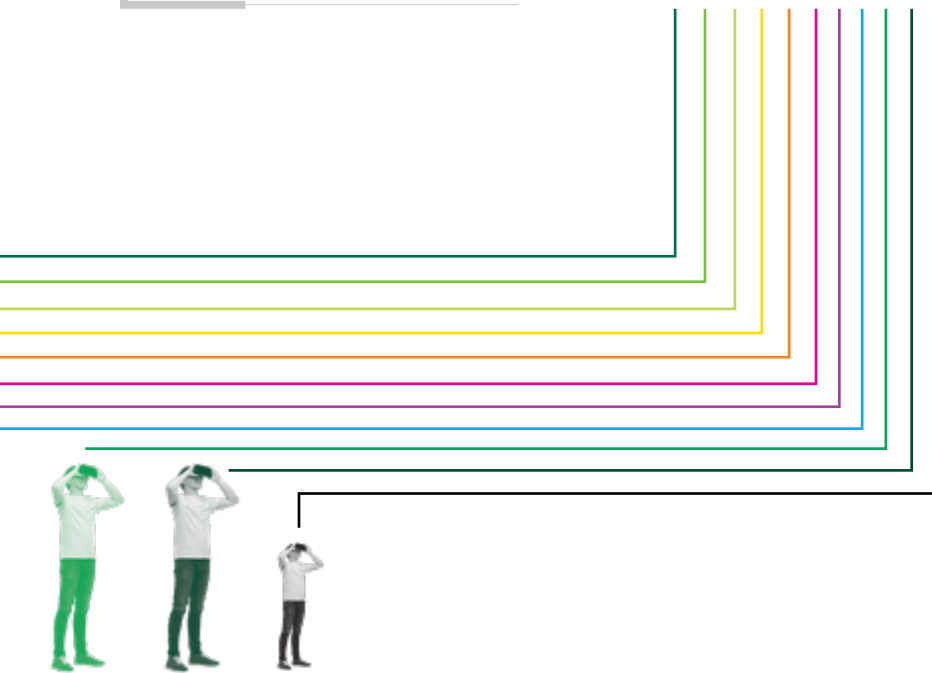
5.8% INFORMATION (EXCLUDING HIGH-TECH)

4.9% TRANSPORTATION, WAREHOUSING & WHOLESALE

4.8% MANUFACTURING (EXCLUDING HIGH-TECH)

4.8% EDUCATION

2.9% HEALTH CARE



Source: U.S. Bureau of Labor Statistics (National), April 2019.
*Includes computer software and services and computer product manufacturing

WHICH ARE THE TOP-RANKED TECH TALENT MARKETS?

The highly competitive and supply-constrained market for tech talent has accelerated the expansion of tech talent pools beyond major hubs and into smaller markets. These previously undersupplied regions are gaining demand for tech talent from start-ups and established companies. Accordingly, demand for commercial real estate to accommodate this growing workforce is on the rise.

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 the 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 top-three markets are the San Francisco Bay Area, Seattle and Toronto. Comparing the 2019 market rankings with the previous year, a few markets shifted positions. Six of the top-10 markets retained the same rankings, with Toronto taking the third position from fourth-ranked Washington, D.C. and Denver taking the eighth position from 10th-ranked Raleigh-Durham.

Supported by strong tech-centric universities, Vancouver and Madison rose the most—by 12 and 10 spots, respectively. Migration and expansion of tech companies also caused Salt Lake City and Portland to rise by seven and five spots, respectively.

Demand for tech talent is high in both large and small markets across all industries as companies expand technology capabilities. Major gateway markets such as New York, Toronto and the San Francisco Bay Area dominate overall tech talent growth because of their size. These markets, along with others with a tech talent labor pool 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 tend to have a deeper pool of talent, small markets typically offer business and cost-of-living savings.

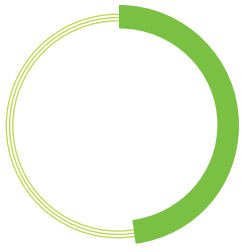
Tech labor concentration—the percentage of total employment—is an influential factor in how “tech” the market is and its growth potential. Tech talent comprises 10.0% of total employment in the San Francisco Bay Area and 9.9% in Ottawa—the highest concentrations of the

top-50 markets and more than three times the national average of tech talent density. Toronto, Seattle and Washington, D.C. round out the top-five most concentrated tech markets, ranging from 7.9% to 8.3% of their total employment. This sizeable concentration of highly skilled workers offers an environment conducive to innovation.



FIGURE 2: TECH TALENT SCORECARD RANKING

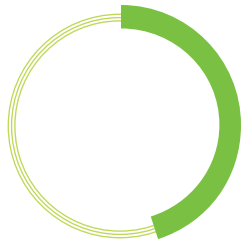




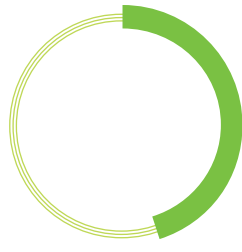
Orange County, CA



Columbus, OH



Newark, NJ



Tampa, FL



Charlotte, NC



Pittsburgh, PA



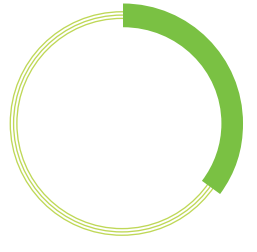
Kansas City, MO



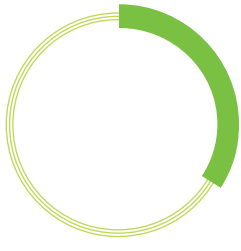
Orlando, FL



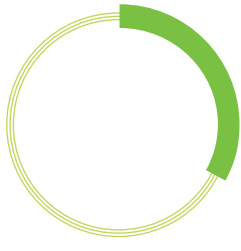
Houston, TX



St. Louis, MO



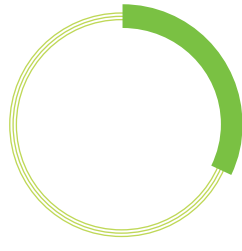
Indianapolis, IN



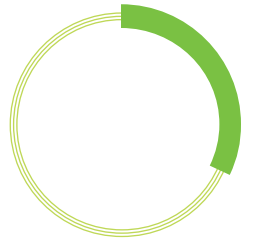
Cleveland, OH



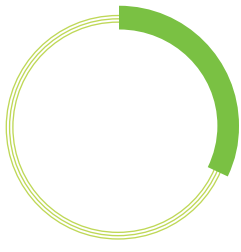
Sacramento, CA



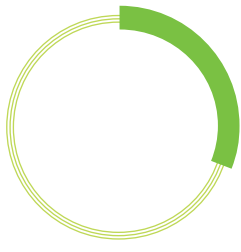
Hartford, CT



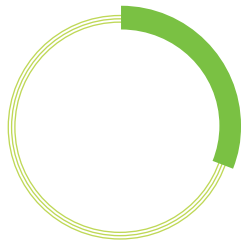
Cincinnati, OH



Rochester, NY



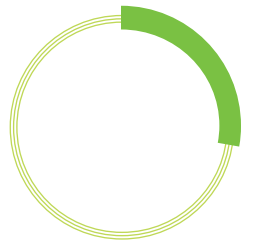
Long Island, NY



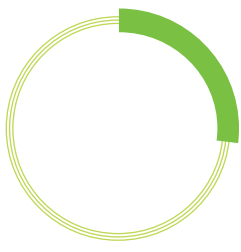
Fort Lauderdale, FL



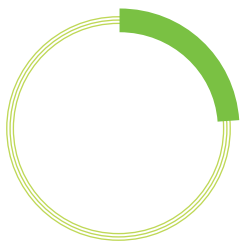
Milwaukee, WI



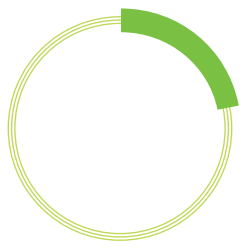
Nashville, TN



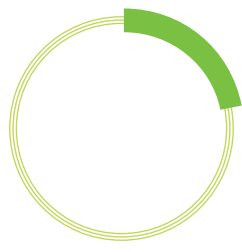
Jacksonville, FL



San Antonio, TX



Miami, FL



Richmond, VA



Norfolk, VA

Source: CBRE Research, CBRE Econometric Advisors, U.S. Bureau of Labor Statistics, Statistics Canada, Moody's Analytics, The National Center of Education Statistics, National Science Foundation, Axiometrics, 2019.





WHAT ARE TECH TALENT MOMENTUM MARKETS?

To evaluate up-and-coming markets and determine their growth momentum, we considered “large” and “small” categories separately. Except for Washington, D.C., which has remained about the same size, the 10 fastest-growing large markets increased their tech labor pools by between 20% and 54% over the past five years (Figure 3). Smaller tech talent markets also grew quickly. The top-10 small tech markets increased by more than 21%. Toronto grew at the fastest pace of all 50 markets, increasing by 54%.

All but two tech talent markets have deepened their labor pool during the past five years, but the rapid pace of growth that was possible then is unattainable now given low unemployment and the deceleration is reflected in the near-term momentum of these markets. Tech talent job growth accelerated in 15 of 50 markets over the past two years (2017 and 2018), compared with the previous two-year period. Notable surges occurred in Orlando, San Diego, Chicago and Cleveland, each growing at least 7% faster during the recent two-year period (Figure 4). Nine markets effectively maintained their momentum with less than 1% change in tech talent job growth during the past two years. Tech talent job growth has a multiplier effect that positively impacts economic growth, which in turn can have an immense impact on commercial real estate.

FIGURE 3: TECH TALENT LABOR POOLS (2018)

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

Market	Tech Talent Total	Percent Change ¹	by Volume ²	Concentration ³
SF Bay Area, CA	353,760	33.4%	88,500	10.0%
New York, NY	264,374	20.5%	44,920	3.9%
Washington, D.C.	253,660	2.2%	5,520	8.1%
Toronto, ON	228,500	54.0%	80,100	8.3%
Dallas/Ft. Worth, TX	169,290	15.7%	22,960	4.7%
Chicago, IL	166,620	10.5%	15,790	3.6%
Boston, MA	160,070	2.4%	3,710	5.8%
Seattle, WA	156,770	24.3%	30,680	7.9%
Atlanta, GA	141,580	29.1%	31,880	5.3%
Los Angeles, CA	139,774	16.4%	19,704	3.1%
Montreal, QC	130,200	14.6%	16,600	6.8%
Philadelphia, PA	109,670	13.9%	13,400	3.8%
Denver, CO	107,170	30.9%	25,290	6.5%
Houston, TX	95,640	3.1%	2,860	3.2%
Minneapolis, MN	92,830	13.2%	10,860	4.7%
Detroit, MI	86,090	18.4%	13,370	4.4%
Phoenix, AZ	85,060	12.3%	9,310	4.1%
Baltimore, MD	75,150	11.9%	7,990	5.5%
Vancouver, BC	74,700	42.6%	22,300	6.4%
San Diego, CA	73,170	15.5%	9,820	5.0%
Orange County, CA	72,699	13.9%	8,889	4.4%
Austin, TX	72,360	12.6%	8,080	7.0%
Ottawa, ON	64,500	-5.3%	-3,600	9.9%
Raleigh-Durham, NC	61,040	11.2%	6,170	6.5%
Portland, OR	59,580	35.3%	15,540	5.0%
Charlotte, NC	55,430	48.4%	18,070	4.6%
St. Louis, MO	54,020	6.5%	3,320	4.0%
Kansas City, MO	53,360	25.6%	10,870	5.0%
Newark, NJ	53,168	9.7%	4,696	4.5%

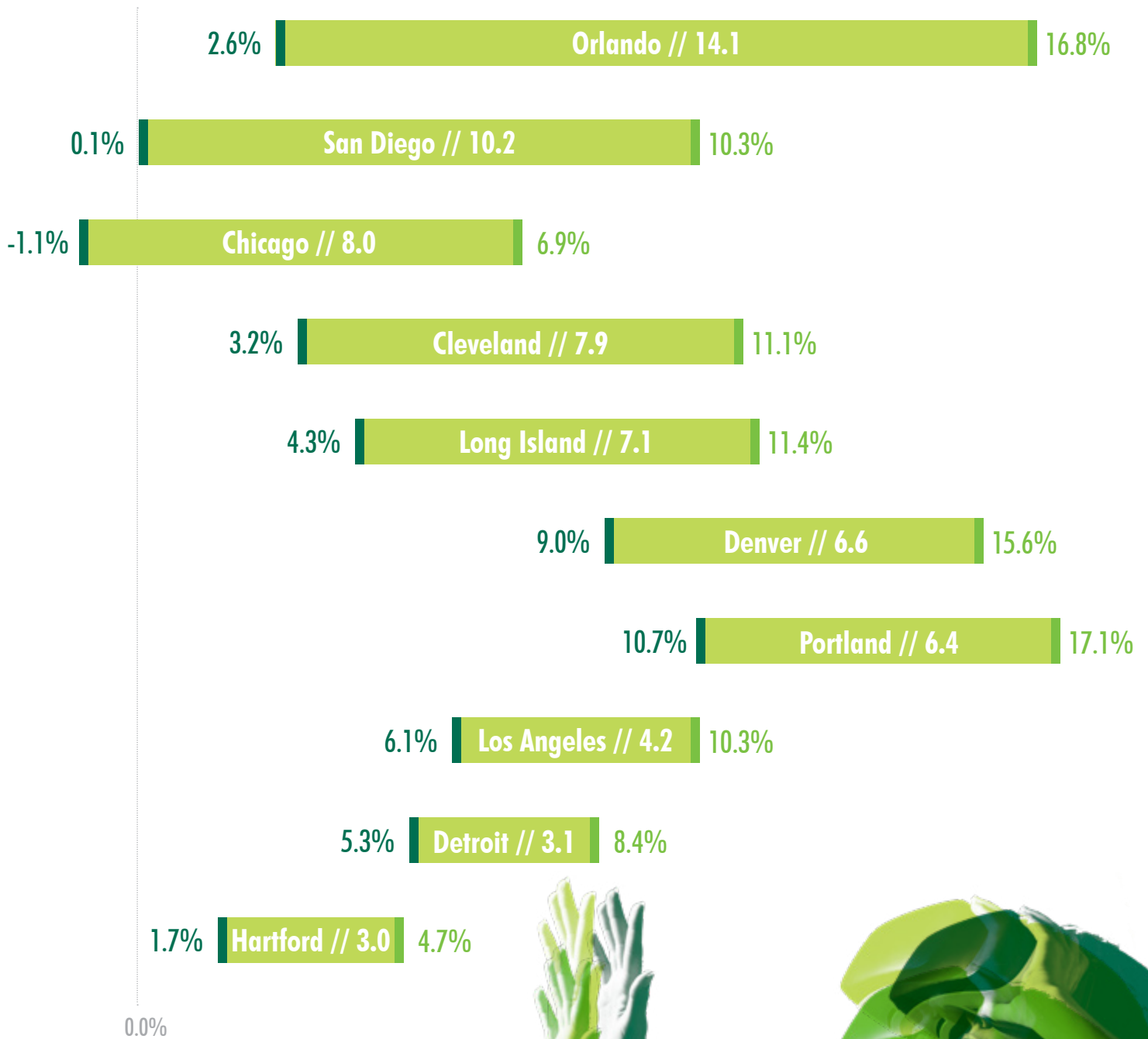
Small Tech Talent Markets (<50,000 Labor Pool)

Market	Tech Talent Total	Percent Change ¹	by Volume ²	Concentration ³
Tampa, FL	49,120	27.6%	10,630	3.7%
Columbus, OH	48,600	8.1%	3,660	4.6%
Salt Lake City, UT	47,760	38.6%	13,290	5.0%
Pittsburgh, PA	45,440	20.7%	7,800	4.0%
Orlando, FL	41,240	34.2%	10,520	3.3%
Sacramento, CA	39,110	12.6%	4,390	4.0%
Cincinnati, OH	37,820	13.2%	4,410	3.5%
Indianapolis, IN	37,650	24.1%	7,310	3.6%
Cleveland, OH	35,700	17.2%	5,230	3.4%
Long Island, NY	33,271	19.9%	5,521	2.5%
Milwaukee, WI	31,620	10.1%	2,910	3.7%
San Antonio, TX	30,170	15.6%	4,070	3.0%
Nashville, TN	29,120	28.0%	6,370	3.0%
Norfolk, VA	26,120	-5.5%	-1,520	3.5%
Ft. Lauderdale, FL	25,838	46.8%	8,238	3.1%
Hartford, CT	25,770	9.4%	2,210	4.4%
Richmond, VA	25,560	11.6%	2,650	4.0%
Miami, FL	25,289	35.4%	6,609	2.2%
Madison, WI	23,470	47.0%	7,500	6.0%
Rochester, NY	22,180	15.0%	2,890	4.3%
Jacksonville, FL	21,490	40.7%	6,220	3.1%

¹ 2013-2018; ² 2013-2018; ³ 2018.
Source: U.S. Bureau of Labor Statistics (Metro) April 2019, Statistics Canada (Metro), 2019.

FIGURE 4: MOMENTUM OF TECH TALENT LABOR POOLS

■ Employment Growth Prior 2 Years (2015-2016) ■ Employment Growth Past 2 Years (2017-2018) ■ Momentum Change in % Points (Past 2 years minus Prior 2 years)



Source: U.S. Bureau of Labor Statistics (Metro), April 2019.



WHAT DEFINES A TECH TALENT MARKET?

Two key aspects that top tech talent markets share are high educational attainment and a preference by tech workers to live in the city proper. Two-thirds of the top-50 tech talent markets have a city-level educational attainment rate above the U.S. average (31.3%). The top-10 cities have 49% or more of residents over 25 years old with a bachelor's degree or higher (Figure 5). Seattle, Washington, D.C. and Madison have rates of 56% or more.

Education, particularly with a focus on technology,² is best analyzed through degrees completed and issued from higher educational institutions. Metro areas that produced the largest number of tech graduates, based on the latest available data, were New York, Washington, D.C., Los Angeles, Boston and the San Francisco Bay Area (Figure 6). 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 of 44% across all markets since 2013. These numbers provide insight into which markets will produce the highest amount of tech talent entering the labor pool each year.

Graduates do not always remain in the labor market where they earn their degrees; they often migrate to locations that offer the best pay or have the most job

opportunities. Analyzing tech-related graduation data and tech-related employment growth (Figure 7) shows the difference between where tech talent workers are employed and where they were educated. Tech degrees cover the most recent five-year period available (2012-2017) and tech talent jobs added cover the period when most graduates would be counted in employment figures (2013-2018). Toronto and the San Francisco Bay Area stand out as strong tech talent job creators, each adding at least 54,000 more tech talent jobs than graduates. On the other end of the spectrum, Washington, D.C., Boston and Los Angeles post the deepest deficits in employing their tech graduates locally.

Reflected in the brain gain/drain calculation, the increase in tech-degree graduates is beginning to better supply the labor market for tech talent. This year, fewer markets posted a brain gain, but there still is a high level of demand and inadequate supply for the most sought-after tech skills.

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





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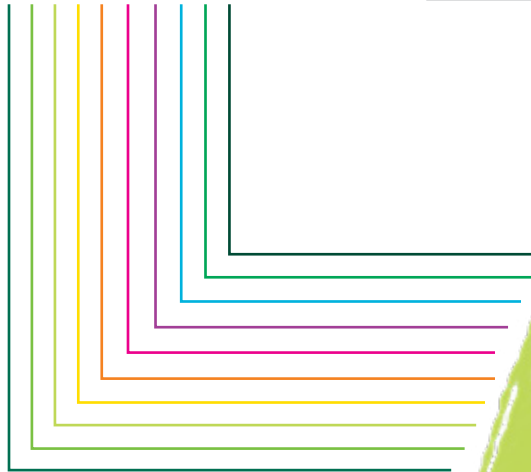
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libris, tristique
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libris, tristique

FIGURE 5: TOP-10 MARKETS FOR EDUCATIONAL ATTAINMENT

25+ Years Old, Bachelor's Degree or Higher
U.S. Average = 31.3%

- #01 SEATTLE, WA // 62.6%
- #02 WASHINGTON, D.C. // 57.3%
- #03 MADISON, WI // 57.0%
- #04 LONG ISLAND, NY // 52.7%
- #05 DENVER, CO // 52.3%
- #06 AUSTIN, TX // 51.0%
- #07 MINNEAPOLIS, MN // 50.8%
- #08 RALEIGH-DURHAM, NC // 50.3%
- #09 PORTLAND, OR // 49.9%
- #10 SF BAY AREA, CA // 49.3%



Source: U.S. Census Bureau (City), 2019.

FIGURE 6: TOP-10 MARKETS FOR TECH DEGREE COMPLETIONS (2017)

Tech Degree Completions (2017) and % Growth (2012-2017)

#01 NEW YORK, NY // 13,337 // 48.0%

#02 WASHINGTON, D.C. // 11,278 // 31.1%

#03 LOS ANGELES, CA // 9,621 // 37.7%

#04 BOSTON, MA // 9,429 // 61.0%

#05 SF BAY AREA, CA // 8,225 // 46.3%

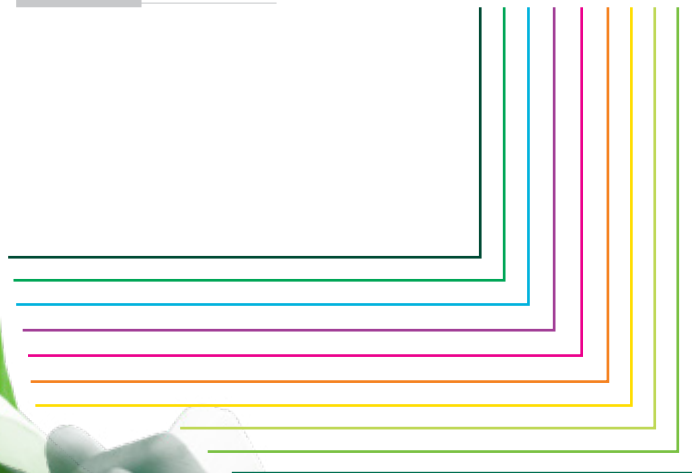
#06 CHICAGO, IL // 7,375 // 36.9%

#07 ATLANTA, GA // 7,050 // 47.5%

#08 DALLAS/FT. WORTH, TX // 6,503 // 98.5%

#09 DETROIT, MI // 5,726 // 32.0%

#10 TORONTO, ON // 5,397 // 37.8%



Source: The National Center for Education Statistics (Region),
Canadian Universities, 2019.
Note: Bachelor's Degree or Higher.

FIGURE 7: WHERE ARE TALENT WORKERS COMING FROM AND WHERE ARE THEY HEADED?

Market	Tech Degrees (2012-2017)*	Tech Jobs Added (2013-2018)*	Brain Gain or Drain?	Market	Tech Degrees (2012-2017)*	Tech Jobs Added (2013-2018)*	Brain Gain or Drain?
Toronto, ON	22,466	80,100	57,634	Cleveland, OH	9,427	5,230	-4,197
SF Bay Area, CA	33,809	88,500	54,691	St. Louis, MO	8,065	3,320	-4,745
Seattle, WA	15,213	30,680	15,467	Montreal, QC	21,403	16,600	-4,803
Charlotte, NC	5,885	18,070	12,185	Minneapolis, MN	16,185	10,860	-5,325
Vancouver, BC	11,140	22,300	11,160	San Diego, CA	15,300	9,820	-5,480
Portland, OR	8,375	15,540	7,165	Long Island, NY	11,493	5,521	-5,972
Denver, CO	18,793	25,290	6,497	Newark, NJ	10,849	4,696	-6,153
Kansas City, MO	6,040	10,870	4,830	Columbus, OH	10,399	3,660	-6,739
Jacksonville, FL	1,851	6,220	4,369	Salt Lake City, UT	20,096	13,290	-6,806
Tampa, FL	6,787	10,630	3,843	Rochester, NY	10,218	2,890	-7,328
Atlanta, GA	28,362	31,880	3,518	Houston, TX	10,759	2,860	-7,899
Indianapolis, IN	3,876	7,310	3,434	Philadelphia, PA	21,305	13,400	-7,905
Ft. Lauderdale, FL	4,844	8,238	3,394	Hartford, CT	10,311	2,210	-8,101
Nashville, TN	3,900	6,370	2,470	Baltimore, MD	16,873	7,990	-8,883
Miami, FL	6,565	6,609	44	Norfolk, VA	7,599	-1,520	-9,119
Madison, WI	7,705	7,500	-205	New York, NY	54,299	44,920	-9,379
Orlando, FL	10,737	10,520	-217	Raleigh-Durham, NC	15,792	6,170	-9,622
Milwaukee, WI	3,546	2,910	-636	Ottawa, ON	6,609	-3,600	-10,209
San Antonio, TX	4,818	4,070	-748	Detroit, MI	24,225	13,370	-10,855
Richmond, VA	3,417	2,650	-767	Pittsburgh, PA	20,360	7,800	-12,560
Dallas/Ft. Worth, TX	23,944	22,960	-984	Chicago, IL	30,471	15,790	-14,681
Cincinnati, OH	7,155	4,410	-2,745	Phoenix, AZ	24,404	9,310	-15,094
Sacramento, CA	7,514	4,390	-3,124	Los Angeles, CA	41,453	19,704	-21,749
Austin, TX	11,381	8,080	-3,301	Boston, MA	37,717	3,710	-34,007
Orange County, CA	12,831	8,889	-3,942	Washington, D.C.	49,060	5,520	-43,540

Source: CBRE Research, U.S. Bureau of Labor Statistics, The National Center for Education Statistics (Metro), Canadian Universities, 2019.

* Tech degrees cover the most recent five-year period available (2012-2017) and tech jobs added cover the time period reflecting when most graduates would be counted in employment figures (2013-2018).

+57,600 Toronto, ON

+54,700 SF Bay Area, CA

BRAIN DRAIN OR GAIN?

+4,800 Kansas City, MO
+4,400 Jacksonville, FL
+3,800 Tampa, FL
+3,500 Atlanta, GA
+3,400 Indianapolis, IN
+3,400 Ft. Lauderdale, FL

+15,700 Seattle, WA
+12,200 Charlotte, NC
+11,200 Vancouver, BC

+7,200 Portland, OR
+6,500 Denver, CO

+40 Miami, FL

-640 Milwaukee, WI
-750 San Antonio, TX
-770 Richmond, VA
-980 Dallas/Ft. Worth, TX

-205 Madison, WI
-220 Orlando, FL

-4,000 Orange County, CA
-4,200 Cleveland, OH
-4,700 St. Louis, MO
-4,800 Montreal, QC

-2,700 Cincinnati, OH
-3,100 Sacramento, CA
-3,300 Austin, TX

-6,000 Long Island, NY
-6,200 Newark, NJ
-6,700 Columbus, OH
-6,800 Salt Lake City, UT

-5,300 Minneapolis, MN
-5,500 San Diego, CA

-8,900 Baltimore, MD
-9,100 Norfolk, VA
-9,400 New York, NY
-9,600 Raleigh-Durham, NC

-12,600 Pittsburgh, PA
-14,700 Chicago, IL
-15,100 Phoenix, AZ

-7,300 Rochester, NY
-7,900 Houston, TX
-8,000 Philadelphia, PA
-8,100 Hartford, CT

-10,200 Ottawa, ON
-10,900 Detroit, MI

-21,700 Los Angeles, CA

-34,000 Boston, MA

-43,500 Washington, D.C.

Another notable characteristic of tech talent markets is the presence and growth of twentysomethings³ in the workforce. The younger part of this generation has matured with the internet-connected world and continues to advocate for an integrated and efficient working environment. Generally, this well-educated cohort prefers city living. This has revitalized many downtown neighborhoods and provided a distinct geography to measure the trend—cities.

Twentysomethings' entry into and maturity within the labor pool contributes greatly to the growth of tech talent across all 50 markets (Figure 8). Six large tech markets have increased their twentysomething populations by more than 10% since 2012. Dallas/Ft. Worth grew the fastest at 14.7%. During the same period, three of the smaller tech markets increased their twentysomething populations by more than 10%, with Long Island growing fastest. Aided by the presence of higher educational institutions, Madison, Norfolk, Pittsburgh and Boston rank highest for twentysomethings as a proportion of their total urban population, accounting for 24% or more (Figure 9).

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. Stanford University is an essential catalyst for tech clustering in the San Francisco Bay Area, as is Georgia Institute of Technology in Atlanta and the Massachusetts Institute of Technology in Boston.

Tech clusters can also form around leading companies that draw other, smaller companies to a region, in turn supporting entrepreneurs as they develop their innovations. Examples can be found in Seattle with large tech companies, in Charlotte with large financial services companies and in Atlanta with Fortune 500 companies. 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 are likely to form in markets with a strong concentration of high-tech companies.

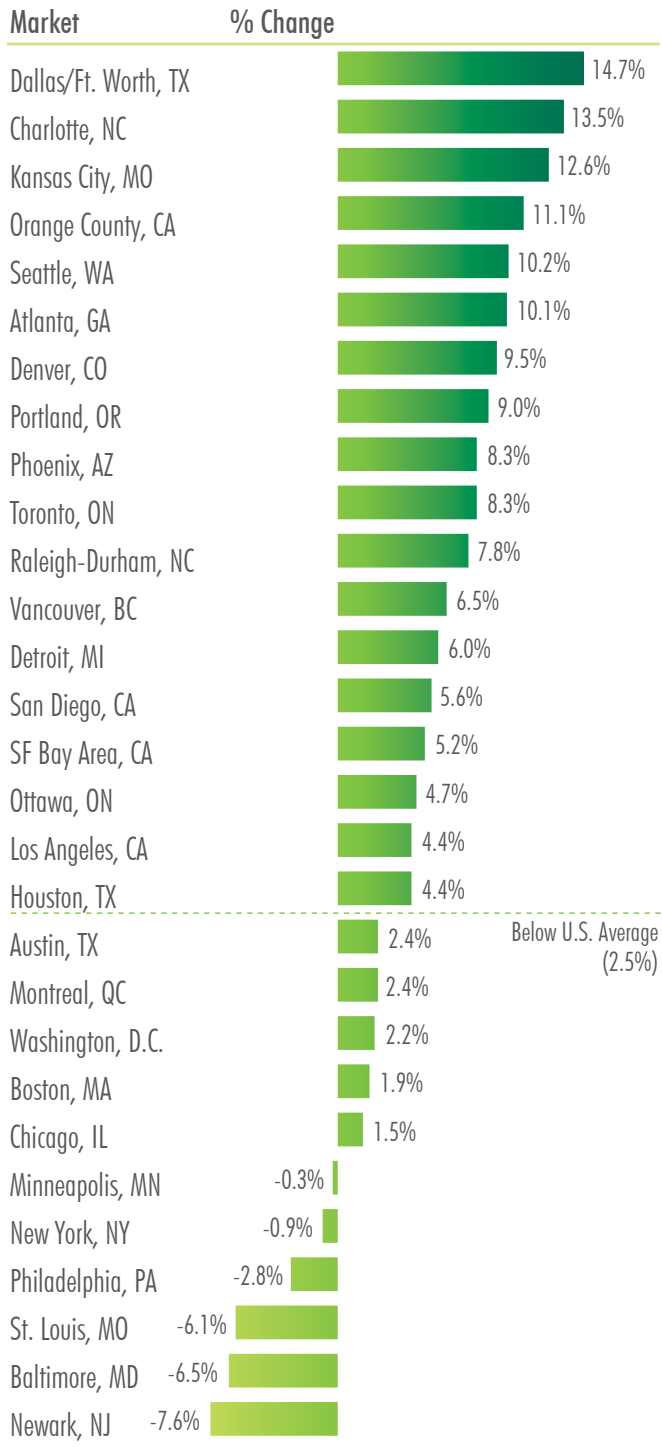
³ Analysis conducted in this report includes individuals aged 20-29 years.



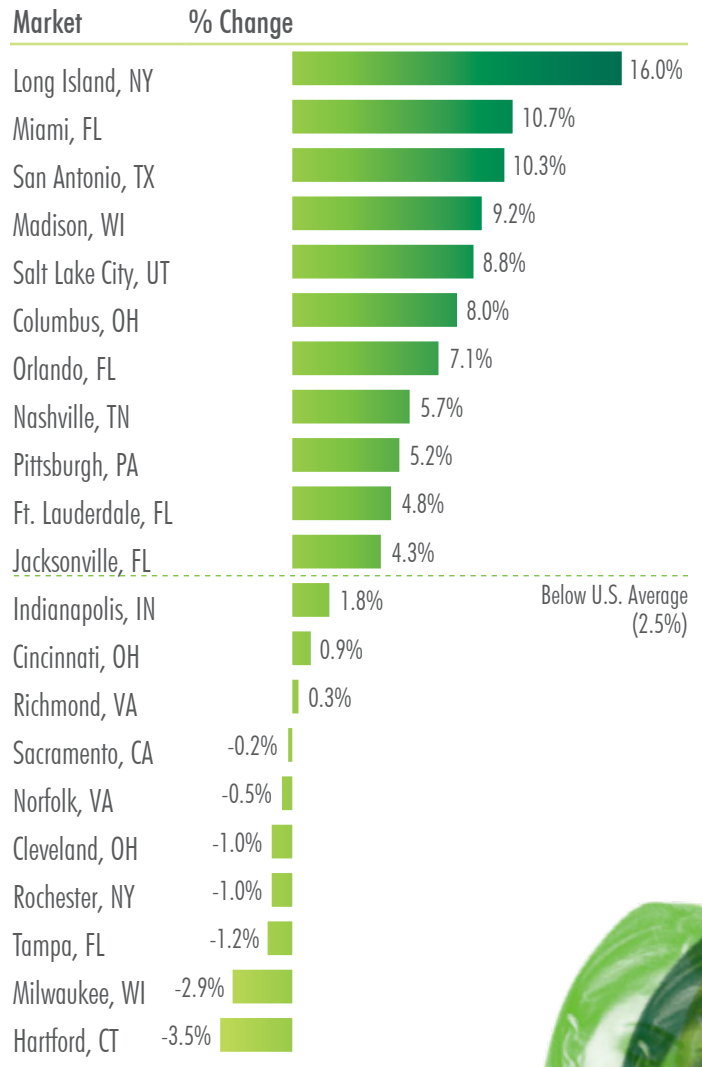


FIGURE 8: TWENTYSOMETHING POPULATION CHANGE BY MARKET* (2012-2017)

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



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



Source: U.S. Census Bureau (City), Statistics Canada (Metro), 2019.
 *Individuals aged 20-29 years living in downtown areas.



FIGURE 9: TOP-10 MOST CONCENTRATED TWENTYSOMETHING MARKETS* (2017)

U.S. Average = 13.8%

#01 MADISON, WI // 26.5%

#02 NORFOLK, VA // 25.3%

#03 PITTSBURGH, PA // 24.5%

#04 BOSTON, MA // 24.2%

#05 SALT LAKE CITY, UT // 22.7%

#06 ATLANTA, GA // 21.3%

#07 MINNEAPOLIS, MN // 21.1%

#08 RICHMOND, VA // 20.6%

#09 ROCHESTER, NY // 20.0%

#10 COLUMBUS, OH // 19.9%

Source: U.S. Census Bureau (City), 2019.
*Individuals aged 20-29 years living in downtown areas.



FIGURE 10: U.S. TECH TALENT LABOR CONCENTRATION BY INDUSTRY (2018)



49.7%
CORE HIGH-TECH*

Tech Talent Occupations as a % of All Occupations in Each Industry
Tech Talent Occupations are 3.6% of U.S. Employment

14.3%
INFORMATION
(EXCLUDING HIGH-TECH)

13.4%
MANAGEMENT OF
COMPANIES & ENTERPRISES

7.7%
PROFESSIONAL,
SCIENTIFIC &
TECHNICAL SERVICES
(EXCLUDING
HIGH-TECH)

5.3%
FIRE

3.2%
GOVERNMENT

2.1%
MANUFACTURING
(EXCLUDING
HIGH-TECH)

2.1%
TRANSPORTATION,
WAREHOUSING &
WHOLESALE

1.9%
EDUCATION

0.8%
OTHER

0.7%
HEALTH
CARE



WHICH ARE THE HIGHEST- AND LOWEST-COST MARKETS TO OPERATE IN?

The greatest cost for companies within tech talent markets is employee wages. These highly skilled and educated workers command a premium that can reach more than double the average non-tech salary. The San Francisco Bay Area ranked the highest for average tech talent worker salary at nearly \$130,000 per year, almost \$12,000 above the next highest market (Seattle). The average tech worker salary in 14 of the 50 top tech talent markets was above the U.S. tech talent worker average.

The second-highest cost for most companies is office rent. Companies continue to pursue the benefits of tech clustering and often place a higher value on specific submarkets and even specific streets where tech talent wants to work. This has led to some competition for office space and caused rental rates in these areas to increase. Average office rents are the highest in Manhattan,

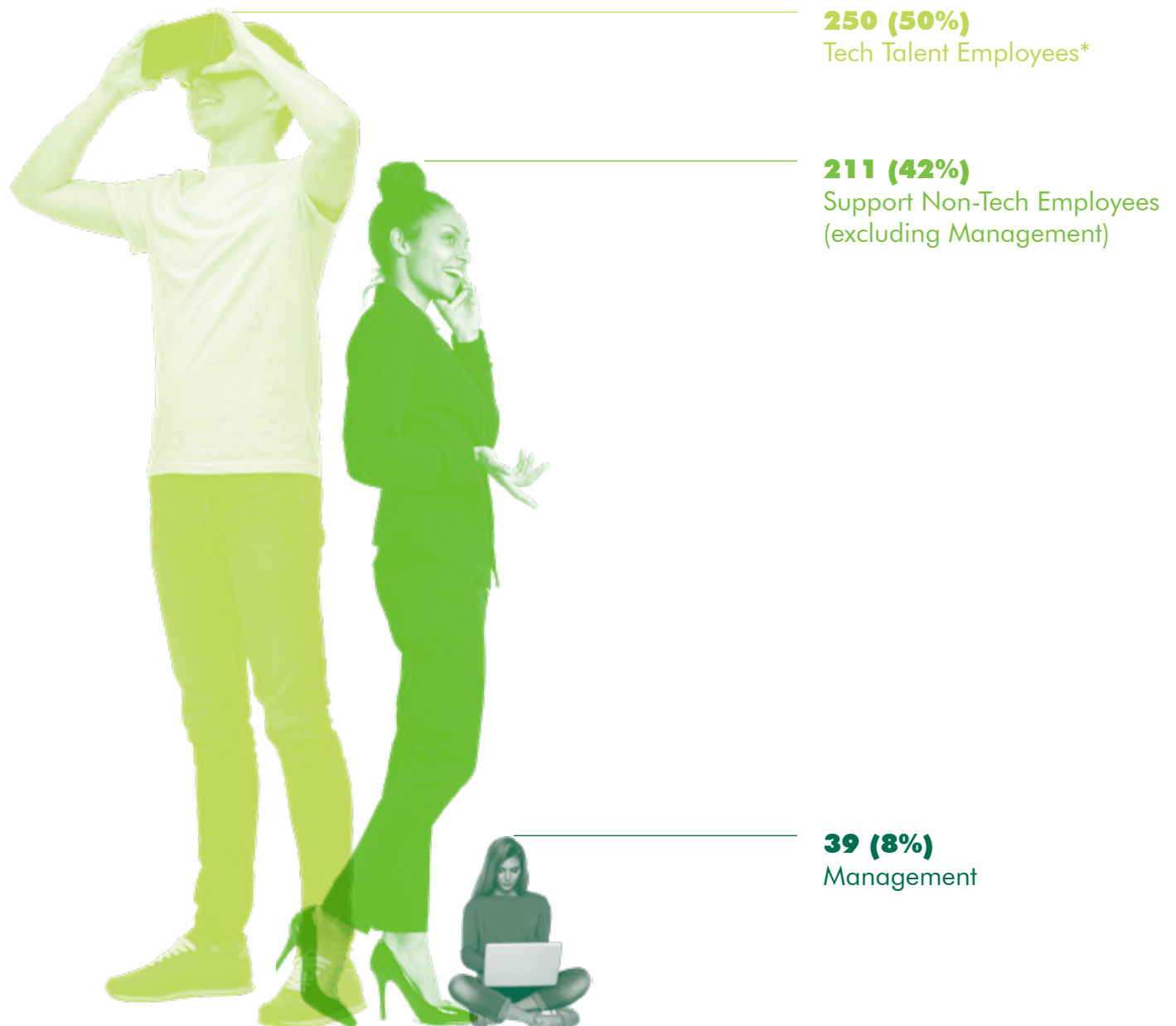
followed by the San Francisco Bay Area, Los Angeles and Washington, D.C. Among the top-10 most expensive office markets, Miami was the only small tech market with an average asking rate above \$35 per sq. ft.

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 needing 75,000 sq. ft. of office space. This breakdown provides interesting insight into each market's relative costs (Figure 12).

Local market wages were applied to the various occupations to determine total annual wage costs by market, and local market rents were used to estimate the annual cost of renting a 75,000-sq.-ft. office to house 500 employees. The San Francisco Bay Area topped the list with the highest estimated annual cost at more than \$59.7 million, followed distantly by the other major tech markets of New York, Washington, D.C. and Seattle. These high-cost markets continue to attract employers seeking to push the boundaries of innovation, as well as the tech talent that makes it possible.

FIGURE 11: AVERAGE U.S. TECH COMPANY OCCUPATION POOLS

Typical 500-Person Tech Company



Source: U.S. Bureau of Labor Statistics (National), April 2019.

* 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

FIGURE 12: ESTIMATED ONE-YEAR COSTS BY MARKET: WAGE AND RENT OBLIGATION FOR SAMPLE 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 250 People)	Support Non-Tech Wages (Avg. Wage x 211 People)	Management Wages (Avg. Wage x 39 People)	Total
SF Bay Area, CA	\$5,166,000	\$32,429,425	\$14,353,705	\$7,771,843	\$59,720,973
New York, NY	\$5,915,250	\$28,375,097	\$13,151,001	\$7,820,415	\$55,261,762
Washington, D.C.	\$3,166,500	\$28,183,721	\$13,575,235	\$6,765,330	\$51,690,786
Seattle, WA	\$2,814,750	\$29,451,440	\$12,230,354	\$6,423,300	\$50,919,844
Newark, NJ	\$1,981,500	\$27,692,887	\$12,058,259	\$7,320,863	\$49,053,509
Boston, MA	\$2,952,000	\$26,658,544	\$12,721,812	\$6,250,140	\$48,582,496
Los Angeles, CA	\$3,096,000	\$26,001,305	\$11,123,758	\$6,649,565	\$46,870,628
Denver, CO	\$2,128,500	\$25,718,124	\$12,489,780	\$6,524,443	\$46,860,847
San Diego, CA	\$2,706,750	\$26,511,866	\$10,820,842	\$6,144,060	\$46,183,518
Orange County, CA	\$2,664,000	\$25,469,089	\$11,651,032	\$6,349,035	\$46,133,156
Baltimore, MD	\$1,699,500	\$26,365,812	\$10,974,470	\$5,993,910	\$45,033,692
Austin, TX	\$2,821,500	\$23,465,113	\$11,241,181	\$6,061,380	\$43,589,174
Philadelphia, PA	\$2,168,250	\$24,176,384	\$10,919,080	\$6,253,260	\$43,516,974
Houston, TX	\$2,196,000	\$23,978,877	\$10,774,997	\$6,239,220	\$43,189,095
Long Island, NY	\$2,051,250	\$23,694,939	\$10,817,932	\$6,555,041	\$43,119,163
Dallas/Ft. Worth, TX	\$1,875,750	\$24,502,184	\$10,469,339	\$6,231,030	\$43,078,303
Hartford, CT	\$1,494,000	\$24,661,210	\$11,217,537	\$5,525,520	\$42,898,267
Minneapolis, MN	\$2,106,000	\$23,625,505	\$11,123,886	\$5,791,110	\$42,646,500
Raleigh-Durham, NC	\$2,117,250	\$23,926,853	\$10,836,431	\$5,744,207	\$42,624,741
Charlotte, NC	\$2,136,750	\$23,987,982	\$10,410,283	\$5,548,530	\$42,083,545
Sacramento, CA	\$1,773,000	\$24,180,240	\$10,185,499	\$5,843,370	\$41,982,110
Atlanta, GA	\$2,079,000	\$24,012,422	\$10,065,403	\$5,738,850	\$41,895,675
Columbus, OH	\$1,476,750	\$24,009,568	\$10,293,328	\$5,833,620	\$41,613,266
Richmond, VA	\$1,503,750	\$23,346,415	\$10,525,609	\$6,062,550	\$41,438,324
Portland, OR	\$2,325,750	\$22,933,740	\$10,630,253	\$5,250,570	\$41,140,313
Chicago, IL	\$2,355,000	\$21,539,813	\$10,646,072	\$5,695,950	\$40,236,835
Ft. Lauderdale, FL	\$2,548,500	\$22,294,629	\$9,618,271	\$5,378,030	\$39,839,429
Miami, FL	\$2,982,000	\$22,029,428	\$9,290,580	\$4,915,757	\$39,217,766
Phoenix, AZ	\$2,001,000	\$22,085,469	\$9,518,653	\$5,463,120	\$39,068,242
St. Louis, MO	\$1,500,000	\$22,041,650	\$9,942,416	\$5,307,900	\$38,791,966
Detroit, MI	\$1,413,000	\$21,715,989	\$10,236,195	\$5,423,730	\$38,788,913
Norfolk, VA	\$1,394,250	\$21,745,834	\$9,258,030	\$5,872,230	\$38,270,343
San Antonio, TX	\$1,692,000	\$21,938,079	\$9,037,643	\$5,588,700	\$38,256,422
Cincinnati, OH	\$1,452,750	\$21,481,175	\$10,085,596	\$5,142,540	\$38,162,061
Tampa, FL	\$1,732,500	\$21,570,709	\$9,145,115	\$5,446,350	\$37,894,675
Indianapolis, IN	\$1,536,750	\$20,957,705	\$10,167,367	\$5,217,030	\$37,878,851
Nashville, TN	\$2,047,500	\$20,796,047	\$10,027,213	\$4,898,790	\$37,769,551
Orlando, FL	\$1,795,500	\$21,428,084	\$9,116,082	\$5,126,940	\$37,466,606
Madison, WI	\$1,578,750	\$21,042,287	\$9,920,662	\$4,917,510	\$37,459,209
Salt Lake City, UT	\$1,758,750	\$21,764,920	\$9,164,490	\$4,764,480	\$37,452,641
Milwaukee, WI	\$1,405,500	\$20,693,718	\$9,972,937	\$4,988,100	\$37,060,256
Cleveland, OH	\$1,422,000	\$20,041,356	\$10,165,270	\$5,260,320	\$36,888,946
Kansas City, MO	\$1,473,000	\$20,486,732	\$9,873,928	\$4,929,600	\$36,763,259
Pittsburgh, PA	\$1,713,000	\$19,954,319	\$9,452,515	\$5,605,080	\$36,724,914
Rochester, NY	\$1,462,500	\$19,952,211	\$9,635,084	\$5,556,330	\$36,606,126
Jacksonville, FL	\$1,497,750	\$20,091,188	\$8,877,118	\$4,930,380	\$35,396,436
Ottawa, ON*	\$1,857,490	\$16,930,015	\$10,163,436	\$3,355,114	\$32,306,055
Toronto, ON*	\$2,086,131	\$15,788,407	\$9,316,772	\$3,371,392	\$30,562,702
Vancouver, BC*	\$2,504,631	\$15,456,045	\$8,960,470	\$2,868,031	\$29,789,176
Montreal, QC*	\$1,822,760	\$14,593,204	\$8,986,815	\$3,188,579	\$28,591,358

*data in US\$: Source: U.S. Bureau of Labor Statistics, April 2019, Statistics Canada, April 2019, CBRE Research (Metro), Q1 2019.

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 labor is the largest expense for most firms seeking tech talent, the quality of that tech talent is becoming one of their most important considerations. Figure 13 plots a quality assessment for software developers 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 the strong U.S. dollar, Toronto, Vancouver, Montreal and Ottawa provide the best value when it comes to cost and quality, followed by Indianapolis, Pittsburgh, Madison and Detroit.

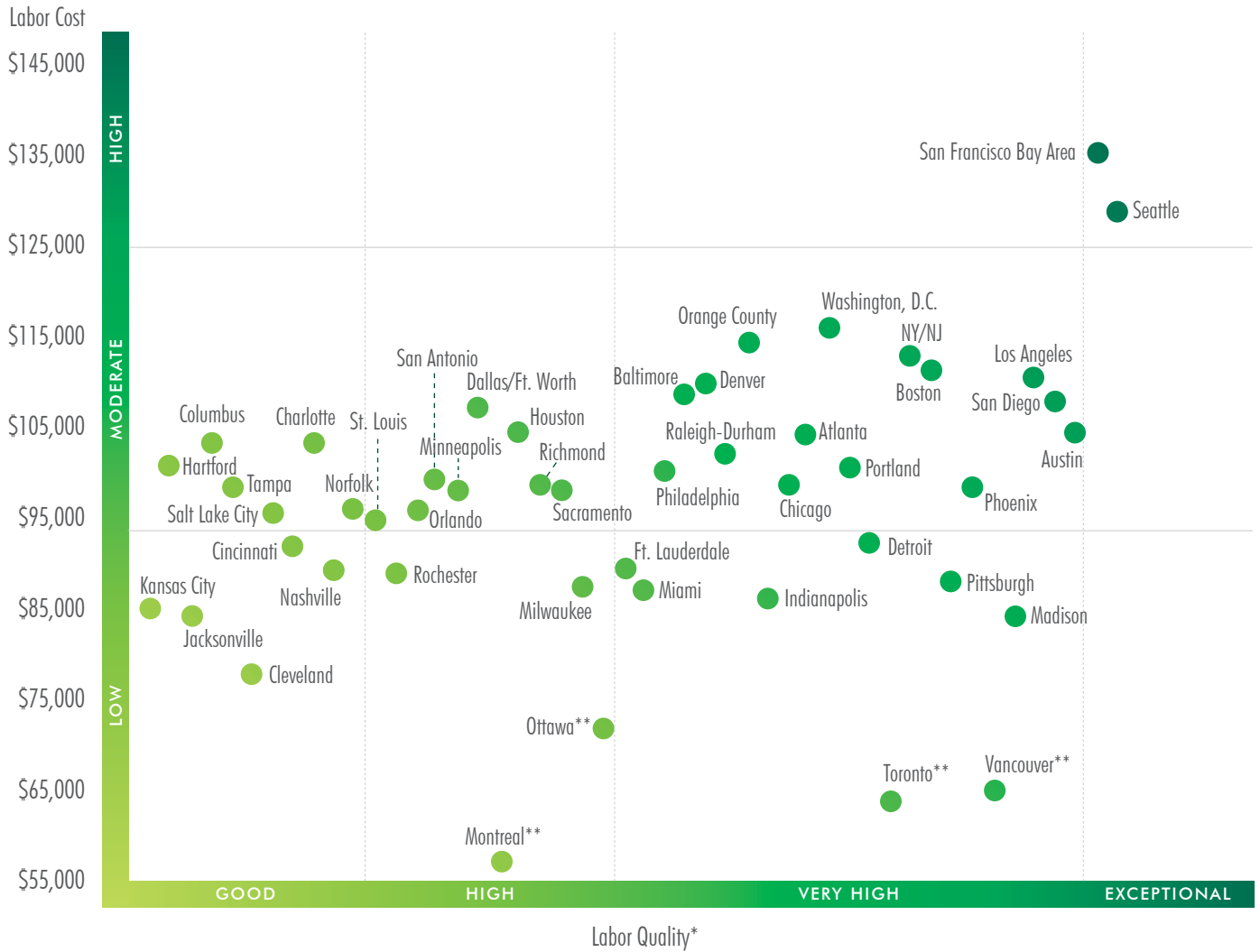
The skills of the available labor pool do not appear to align with available jobs, causing a structural barrier to growth for companies across North America and slowing job creation. Jobs that require specific skills, such as software development and machine learning, remain

in high demand, while the pool of available talent to fill them is limited. Only 37% of all tech talent workers are employed in the high-tech software/services industry (Figure 1), meaning tech companies must compete with other industries that employ the remaining 63% of tech workers. In addition, the unemployment rate for college-educated workers dipped to 1.9% in 2019. This has resulted in growing labor costs and increased competition to attract and retain talent. The most competitive markets are the San Francisco Bay Area, Seattle, Denver and Austin, while more balanced markets can be found in the U.S. Midwest and East and in Canada.



FIGURE 13: TECH TALENT QUALITY VS. COST ANALYSIS

Average Annual Salary for Software Engineer (US\$)

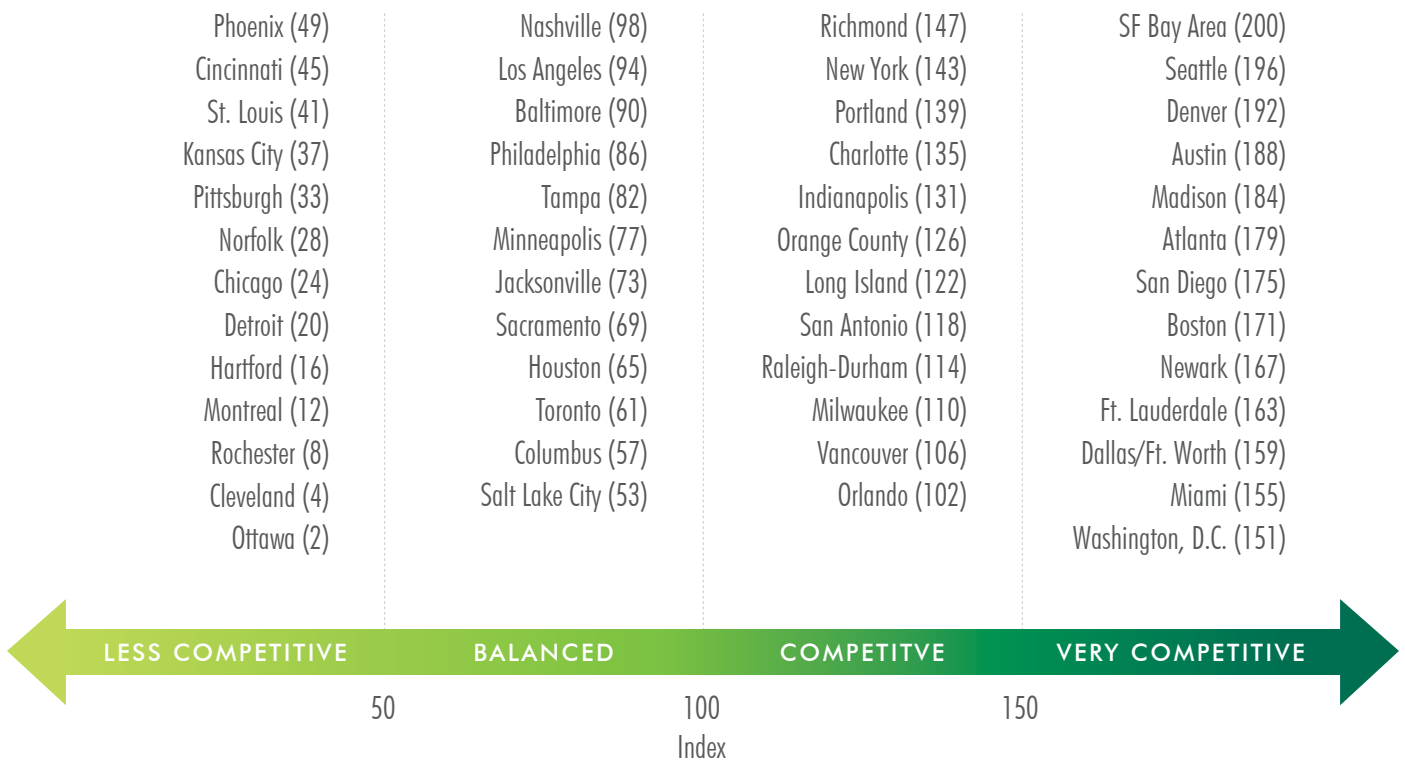


Source: U.S. Bureau of Labor Statistics, April 2019, Statistics Canada, April 2019, U.S. News & World Report, CBRE Labor Analytics, CBRE Research, 2019.

*Concentration of software engineers/developers with 3+ years of experience that have earned degrees from the Top 25 Computer Information Science programs in North America and Top 3 in Canada as rated by U.S. News, 2019.

**Data in US\$.

FIGURE 14: TECH LABOR MARKET COMPETITIVENESS



Source: U.S. Bureau of Labor Statistics, Statistics Canada, IPEDS, CBRE Location Analytics, CBRE Econometric Advisors, CBRE Research, 2019.

HOW DOES TECH TALENT IMPACT COMMERCIAL REAL ESTATE?

Tech talent growth, primarily within the high-tech industry, has totaled 693,000 jobs in the past five years and been the top driver of office leasing activity in the U.S. during that time. The high-tech industry's share of major leasing activity⁴ nationwide increased to 20% in Q1 2019 from 11% in 2011— 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 during the past five years raised rents to their highest levels and pushed down vacancy rates to their lowest levels.

Rent growth is most prominent in the large tech markets, with office rents in Orange County 50% higher than they were five years ago. But the decrease in vacancy rates is present across both large and small tech markets. Vacancy rates in Madison, Vancouver, Charlotte and the San Francisco Bay Area are the lowest of the top-50 tech talent markets, and some larger markets like Toronto, Ottawa and New York are not far behind (Figure 15).

The in-migration of talent to these tech markets also has a sizeable impact on residential real estate. Although Manhattan remains the most-expensive market in which to rent an apartment, 32 of the top-50 tech talent markets



have a cost of living above the U.S. national average, according to Moody's Analytics (Figure 16). Comparing the annual average apartment rent with the annual average tech-worker salary, tech salaries generally can cover the cost of living in even the most-expensive markets (Figure 17), based on the affordability standard of 30% of income to housing.

The extended structural shift of technological innovation on the economic cycle could cushion markets during a downturn. Considering the underlying fundamentals of these top tech talent markets, we conclude that both occupiers and investors can pursue profitable real estate strategies.

⁴Includes top-25 largest transactions by sq. ft. each quarter for the 54 markets tracked by CBRE Research.

FIGURE 15: OFFICE ASKING RENT BY MARKET (Q1 2019)

Market	Annual Gross Direct Asking Rent Per SF	Vacancy Rate
New York, NY	\$78.87	7.9%
SF Bay Area, CA	\$68.88	6.1%
Washington, D.C.	\$42.22	16.9%
Los Angeles, CA	\$41.28	14.5%
Miami, FL	\$39.76	11.3%
Boston, MA	\$39.36	13.0%
Austin, TX	\$37.62	9.3%
Seattle, WA	\$37.53	9.4%
San Diego, CA	\$36.09	9.9%
Orange County, CA	\$35.52	9.4%
Ft. Lauderdale, FL	\$33.98	9.9%
Vancouver, BC*	\$33.40	4.7%
Chicago, IL	\$31.45	15.1%
Portland, OR	\$31.01	11.6%
Houston, TX	\$29.28	19.0%
Philadelphia, PA	\$28.91	13.8%
Charlotte, NC	\$28.49	5.9%
Denver, CO	\$28.38	13.3%
Raleigh-Durham, NC	\$28.23	12.7%
Minneapolis, MN	\$28.08	18.3%
Toronto, ON*	\$27.82	7.1%
Atlanta, GA	\$27.72	17.1%
Long Island, NY	\$27.35	10.2%
Nashville, TN	\$27.30	10.3%
Phoenix, AZ	\$26.68	15.0%
Newark, NJ	\$26.21	17.1%
Dallas/Ft. Worth, TX	\$25.01	20.7%
Ottawa, ON*	\$24.77	7.5%
Montreal, QC*	\$24.30	12.2%
Orlando, FL	\$23.94	8.8%
Sacramento, CA	\$23.64	10.7%
Salt Lake City, UT	\$23.45	10.9%
Tampa, FL	\$23.10	9.8%
Pittsburgh, PA	\$22.84	14.7%
Baltimore, MD	\$22.66	14.7%
San Antonio, TX	\$22.56	14.0%
Madison, WI	\$21.05	4.6%
Indianapolis, IN	\$20.49	16.8%
Richmond, VA	\$20.05	10.1%
St. Louis, MO	\$20.00	11.4%
Jacksonville, FL	\$19.97	14.8%
Hartford, CT	\$19.92	17.9%
Columbus, OH	\$19.69	15.1%
Kansas City, MO	\$19.64	13.3%
Rochester, NY	\$19.50	15.7%
Cincinnati, OH	\$19.37	18.9%
Cleveland, OH	\$18.96	17.5%
Detroit, MI	\$18.84	14.6%
Milwaukee, WI	\$18.74	14.9%
Norfolk, VA	\$18.59	12.8%

Source: CBRE Research (Office Market), Q1 2019.
*Data in US\$; Note: New York represents Manhattan only.

FIGURE 16: APARTMENT ASKING RENT BY MARKET (Q1 2019)

Market	Average Monthly Apartment Rent	Cost of Living (U.S. = 100%)
New York, NY	\$4,120	120%
SF Bay Area, CA	\$2,856	163%
Long Island, NY	\$2,243	126%
Los Angeles, CA	\$2,239	129%
Boston, MA	\$2,164	120%
Orange County, CA	\$2,082	147%
San Diego, CA	\$1,954	128%
Washington, D.C.	\$1,754	117%
Newark, NJ	\$1,716	118%
Seattle, WA	\$1,694	137%
Miami, FL	\$1,630	114%
Ft. Lauderdale, FL	\$1,587	113%
Chicago, IL	\$1,505	99%
Denver, CO	\$1,489	113%
Sacramento, CA	\$1,429	110%
Philadelphia, PA	\$1,370	96%
Portland, OR	\$1,364	113%
Hartford, CT	\$1,326	105%
Baltimore, MD	\$1,319	106%
Minneapolis, MN	\$1,306	102%
Austin, TX	\$1,257	115%
Orlando, FL	\$1,239	104%
Atlanta, GA	\$1,223	102%
Nashville, TN	\$1,203	108%
Tampa, FL	\$1,192	103%
Madison, WI	\$1,150	101%
Dallas/Ft. Worth, TX	\$1,135	108%
Salt Lake City, UT	\$1,129	109%
Pittsburgh, PA	\$1,127	93%
Raleigh-Durham, NC	\$1,117	100%
Charlotte, NC	\$1,116	98%
Milwaukee, WI	\$1,113	99%
Houston, TX	\$1,105	108%
Phoenix, AZ	\$1,104	107%
Richmond, VA	\$1,073	100%
Toronto, ON*	\$1,069	118%
Norfolk, VA	\$1,064	97%
Vancouver, BC*	\$1,052	109%
Jacksonville, FL	\$1,042	101%
Rochester, NY	\$992	89%
Detroit, MI	\$989	95%
San Antonio, TX	\$985	103%
Cincinnati, OH	\$951	91%
Kansas City, MO	\$950	97%
Columbus, OH	\$949	94%
Ottawa, ON*	\$906	90%
St. Louis, MO	\$899	94%
Cleveland, OH	\$891	88%
Indianapolis, IN	\$884	95%
Montreal, QC*	\$614	83%

Source: CBRE Econometric Advisors (City), Axiometrics, CMHC, Moody's Analytics, Q1 2019.
*Data in US\$; Note: New York represents Manhattan only.

FIGURE 17: TECH WAGE TO APARTMENT RENT RATIO

Market	Annualized Apartment Rent (2019)	Average Annual Tech Wage (2018)	Rent-to-Tech Wage Ratio
New York, NY	\$49,445	\$113,500	43.6%
Long Island, NY	\$26,911	\$94,780	28.4%
SF Bay Area, CA	\$34,272	\$129,718	26.4%
Los Angeles, CA	\$26,871	\$104,005	25.8%
Orange County, CA	\$24,990	\$101,876	24.5%
Boston, MA	\$25,964	\$106,634	24.3%
Miami, FL	\$19,557	\$88,118	22.2%
San Diego, CA	\$23,443	\$106,047	22.1%
Ft. Lauderdale, FL	\$19,039	\$89,179	21.3%
Chicago, IL	\$18,057	\$86,159	21.0%
Vancouver, BC*	\$12,827	\$61,824	20.7%
Toronto, ON*	\$12,623	\$63,154	20.0%
Washington, D.C.	\$21,046	\$112,735	18.7%
Newark, NJ	\$20,597	\$110,772	18.6%
Portland, OR	\$16,372	\$91,735	17.8%
Sacramento, CA	\$17,153	\$96,721	17.7%
Denver, CO	\$17,862	\$102,872	17.4%
Nashville, TN	\$14,437	\$83,184	17.4%
Orlando, FL	\$14,868	\$85,712	17.3%
Seattle, WA	\$20,324	\$117,806	17.3%
Philadelphia, PA	\$16,438	\$96,706	17.0%
Pittsburgh, PA	\$13,522	\$79,817	16.9%
Minneapolis, MN	\$15,667	\$94,502	16.6%
Tampa, FL	\$14,300	\$86,283	16.6%
Madison, WI	\$13,800	\$84,169	16.4%
Milwaukee, WI	\$13,356	\$82,775	16.1%
Hartford, CT	\$15,916	\$98,645	16.1%
Austin, TX	\$15,081	\$93,860	16.1%
Ottawa, ON*	\$10,873	\$67,720	16.1%
Salt Lake City, UT	\$13,554	\$87,060	15.6%
Jacksonville, FL	\$12,509	\$80,365	15.6%
Atlanta, GA	\$14,671	\$96,050	15.3%
Baltimore, MD	\$15,828	\$105,463	15.0%
Phoenix, AZ	\$13,242	\$88,342	15.0%
Rochester, NY	\$11,904	\$79,809	14.9%
Norfolk, VA	\$12,772	\$86,983	14.7%
Raleigh-Durham, NC	\$13,410	\$95,707	14.0%
Charlotte, NC	\$13,398	\$95,952	14.0%
Kansas City, MO	\$11,400	\$81,947	13.9%
Dallas/Ft. Worth, TX	\$13,618	\$98,009	13.9%
Houston, TX	\$13,257	\$95,916	13.8%
Richmond, VA	\$12,876	\$93,386	13.8%
Detroit, MI	\$11,868	\$86,864	13.7%
San Antonio, TX	\$11,816	\$87,752	13.5%
Cleveland, OH	\$10,695	\$80,165	13.3%
Cincinnati, OH	\$11,407	\$85,925	13.3%
Indianapolis, IN	\$10,606	\$83,831	12.7%
Montreal, QC*	\$7,372	\$58,373	12.6%
St. Louis, MO	\$10,791	\$88,167	12.2%
Columbus, OH	\$11,392	\$96,038	11.9%

Source: U.S. Bureau of Labor Statistics, Statistics Canada, CBRE Econometric Advisors, Axiometrics, CMHC, Q1 2019.

*Data in US\$; Note: New York represents Manhattan only.

WHICH ARE THE NEXT 25 UP-AND-COMING TECH TALENT MARKETS?



Fostering talent development in lesser-known and under-developed markets could offer additional talent pools to employers seeking to expand their geographical

reach and uncover opportunities. These smaller markets represent potential and are concentrated in Canada and the U.S. Midwest and South.

FIGURE 18: THE NEXT 25 MARKETS

Market	Total Tech Growth (5 Years)	Total Tech Employment (2018)	Total Tech Wages (2018)	Total Tech Wage Growth (5 Years)
Tucson, AZ	90%	15,700	\$90,528	29%
Hamilton, ON*	52%	18,100	\$63,634	5%
Waterloo Region, ON*	40%	20,500	\$66,123	24%
Las Vegas, NV	35%	18,410	\$83,766	9%
Des Moines, IA	31%	17,280	\$82,423	14%
Louisville, KY	30%	19,050	\$79,530	14%
Columbia, SC	27%	12,040	\$75,427	10%
Inland Empire, CA	26%	19,550	\$87,312	13%
Edmonton, AB*	26%	28,400	\$66,492	10%
Grand Rapids, MI	17%	12,750	\$72,390	2%
Omaha, NE	15%	21,920	\$83,574	9%
Buffalo, NY	14%	16,030	\$80,836	16%
Palm Bay, FL	14%	12,870	\$93,313	14%
Colorado Springs, CO	14%	17,290	\$98,950	15%
Oklahoma City, OK	10%	19,340	\$80,510	15%
Harrisburg, PA	9%	12,800	\$85,229	14%
Dayton, OH	8%	16,420	\$88,807	14%
Providence, RI	8%	18,090	\$94,744	12%
Albany, NY	8%	18,560	\$85,533	11%
Huntsville, AL	6%	20,860	\$97,049	11%
Memphis, TN	4%	12,210	\$75,216	2%
Quebec City, QC*	4%	27,700	\$53,987	6%
Winnipeg, MB*	3%	15,500	\$58,305	17%
Calgary, AB*	-7%	38,500	\$76,060	14%
Birmingham, AL	-7%	15,040	\$84,707	12%

Source: U.S. Bureau of Labor Statistics, Statistics Canada, CBRE Research, 2019.
*Data in US\$.



Edmonton, AB

Calgary, AB

Winnipeg, MB

Quebec City, QC

Grand Rapids, MI

Waterloo Region, ON

Hamilton, ON

Albany, NY

Providence, RI

Buffalo, NY

Harrisburg, PA

Omaha, NE

Des Moines, IA

Dayton, OH

Colorado Springs, CO

Louisville, KY

Las Vegas, NV

Inland Empire, CA

Tucson, AZ

Oklahoma City, OK

Memphis, TN

Huntsville, AL

Columbia, SC

Birmingham, AL

Palm Bay, FL

APPENDIX

APPENDIX A: LOCAL MARKET PROFILES

A2

APPENDIX B: FULL REPORT DATA SUMMARY

B1

What is tech talent?

B2

Which are the top-ranked tech-talent markets?

B3

What are tech-talent momentum markets?

B4

What defines a tech talent market?

B6

Tech talent has unique concentrations across markets

B10

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

B14

How does tech talent impact commercial real estate?

B17



1 SF Bay Area, CA

SCORE
84.79

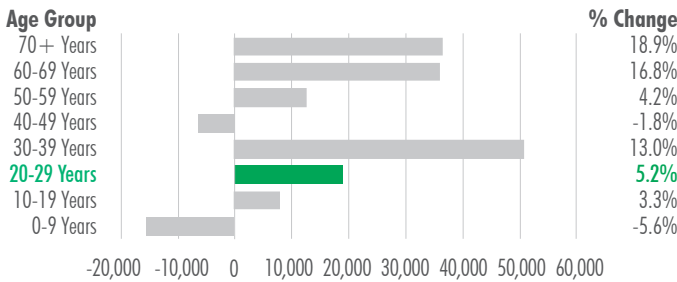
EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	353,760	33.4%	\$129,718	14.2%
Software Developers & Programmers	156,670	36.6%	\$135,390	14.1%
Computer Support, Database & Systems	124,440	43.4%	\$110,024	16.9%
Computer & Information Systems Managers	31,470	52.0%	\$199,278	14.6%
Technology Engineering-Related	41,180	-4.4%	\$114,488	3.6%
TOTAL NON-TECH OCCUPATIONS	436,160	21.7%	\$68,027	9.1%
Sales	64,450	42.7%	\$87,534	-6.5%
Administrative & Office Support	230,660	11.7%	\$47,702	12.6%
Business Operations & Finance	86,350	23.2%	\$95,881	7.6%
Marketing	54,700	49.3%	\$86,781	1.7%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.
Note: Aggregate of San Francisco, Oakland and Silicon Valley Metro Areas.

POPULATION TRENDS

The population of twentysomethings grew by 18,981 (5.2%) since 2012. That's 13.5% of total growth in a population of 2,449,653.



Source: U.S. Census Bureau (Cities of San Francisco, Oakland, San Mateo and San Jose), 2019.

HOUSING & RELATIVE COSTS

AVERAGE APARTMENT RENT:
\$2,856 PER UNIT/MO.
25% FIVE-YEAR GROWTH

163% LIVING COST
134% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.
Note: Weighted Average of San Francisco, Oakland and Silicon Valley Metro Areas

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019. (US = 100%)

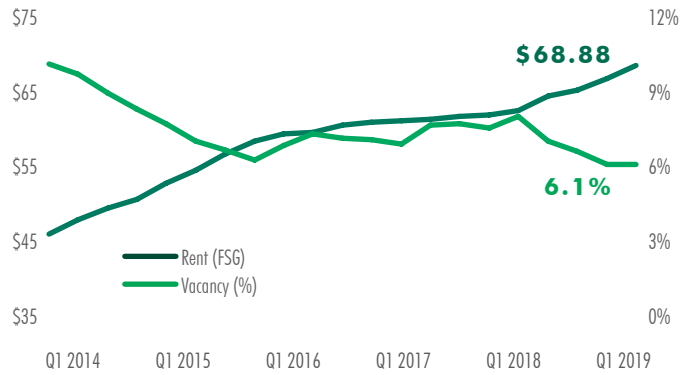
TECH TALENT DIVERSITY

74%
MALE

26%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.
Note: Weighted Average of San Francisco, Oakland and Silicon Valley Metro Areas.

OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	8,225	46.3%
Computer Engineering	5,115	72.2%
Math/Statistics	1,183	24.3%
Other Tech Engineering	1,927	13.5%

EDUCATIONAL ATTAINMENT (2018)

49.3%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019. Aggregate of San Francisco, Oakland and Silicon Valley Metro Areas.

Source: U.S. Census Bureau (Cities of San Francisco, Oakland, San Mateo and San Jose), 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Facebook	250 Howard St (San Francisco)	755,900
Micron	110 Holger Way (Silicon Valley)	603,700
Pinterest	88 Bluxome St (San Francisco)	490,000
Roku	1155-1173 Coleman Ave (Silicon Valley)	472,300
LinkedIn	455 Mary Ave (Silicon Valley)	410,700

Source: CBRE Research (Office Market), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
Stanford University	1,015	28.8
University of California Berkeley	1,012	20.8

VC-Funded Companies Founded by Alumni of Top Regional Universities:

Snapchat, Solyndra, SunRun, DoorDash, Opendoor, Guardant Health

Source: Pitchbook, 2019.

2 Seattle, WA

SCORE
73.82

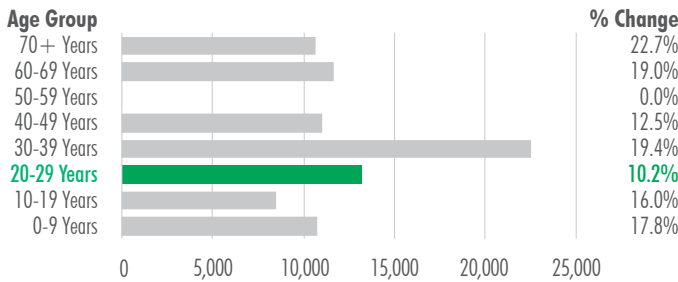
EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	156,770	24.3%	\$117,806	12.6%
Software Developers & Programmers	79,780	5.6%	\$128,879	15.7%
Computer Support, Database & Systems	55,780	47.0%	\$92,951	11.3%
Computer & Infor. Systems Managers	11,700	57.3%	\$164,700	10.6%
Technology Engineering-Related	9,510	83.9%	\$112,997	16.8%
TOTAL NON-TECH OCCUPATIONS	238,200	26.9%	\$57,964	13.0%
Sales	20,690	14.1%	\$79,913	6.3%
Administrative & Office Support	145,440	21.5%	\$43,031	14.4%
Business Operations & Finance	46,900	46.7%	\$81,974	8.2%
Marketing	25,170	40.8%	\$81,468	8.8%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 13,184 (10.2%) since 2012. That's 14.6% of total growth in a population of 724,764.



Source: U.S. Census Bureau (City of Seattle), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,694 PER UNIT/MO.
28% FIVE-YEAR GROWTH

137% LIVING COST
110% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

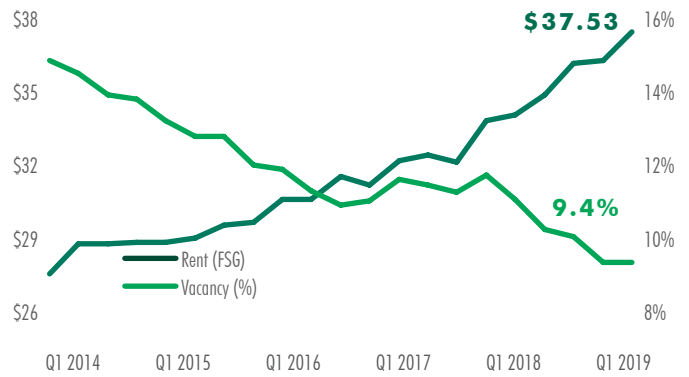
TECH TALENT DIVERSITY

77%
MALE

23%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	3,770	57.7%
Computer Engineering	2,273	66.0%
Math/Statistics	675	34.5%
Other Tech Engineering	822	58.1%

EDUCATIONAL ATTAINMENT (2018)

62.6%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Seattle), 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Amazon	1001 106th Ave NE (Bellevue)	715,000
Apple	333 Dexter Ave N (Seattle)	635,000
DropBox	1201 2nd Ave (Seattle)	120,900
Zipwhip	300 Elliott Ave W (Seattle)	72,000
Highspot	2211 Elliott Ave (Seattle)	55,000

Source: CBRE Research (Office Market), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
University of Washington	337	5.7

VC-Funded Companies Founded by Alumni of Top Regional Universities:

N/A

Source: Pitchbook, 2019.

3 Toronto, ON

SCORE
69.88

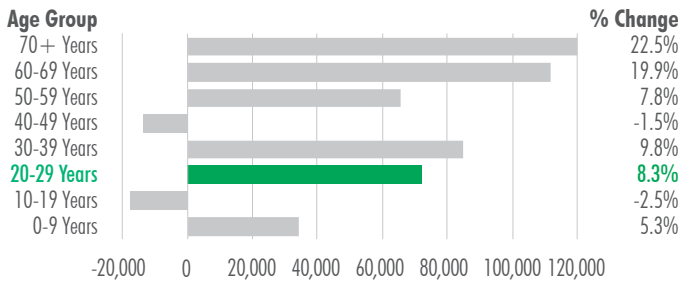
EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage*	Growth 2013-18
TOTAL TECH OCCUPATIONS	228,500	54.0%	\$81,828	9.7%
Software Developers & Programmers	67,000	79.6%	\$82,805	6.1%
Computer Support, Database & Systems	93,100	77.3%	\$74,526	7.7%
Computer & Information Systems Managers	23,600	44.8%	\$112,008	20.7%
Technology Engineering-Related	44,800	5.9%	\$79,643	11.7%
TOTAL NON-TECH OCCUPATIONS	369,000	12.4%	\$57,212	5.9%
Sales	28,600	19.2%	\$46,051	-12.7%
Administrative & Office Support	192,700	7.0%	\$45,282	10.2%
Business Operations & Finance	97,700	20.3%	\$77,002	3.1%
Marketing	50,000	16.0%	\$70,907	1.9%

Source: Statistics Canada (Metro Area), April 2019.
*Data in C\$

POPULATION TRENDS

The population of twentysomethings grew by 72,040 (8.3%) since 2012. That's 15.7% of total growth in a population of 6,419,713.



Source: Environics Analytics (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,363 PER UNIT/MO.
21% FIVE-YEAR GROWTH

118% LIVING COST
86% BUSINESS COST

Source: Apt. rent data from CMHC (Metro Area), Q1 2019.
*Data in C\$

Source: Relative Costs from Numbeo and KPMG (Metro Area), Q1 2019.

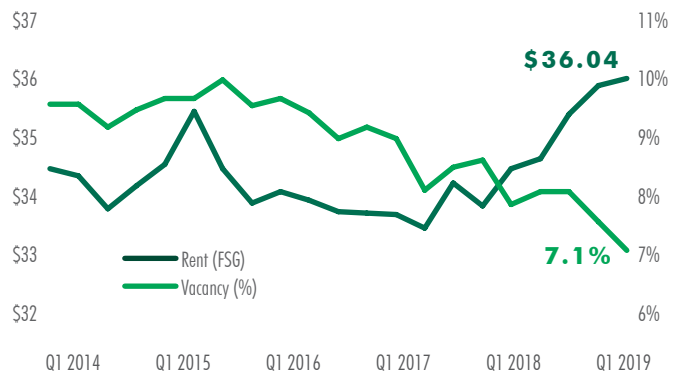
TECH TALENT DIVERSITY

76%
MALE

24%
FEMALE

Source: Statistics Canada (Metro Area), April 2019.

OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.
*Data in C\$

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	5,397	37.8%
Computer Engineering	1,516	46.9%
Math/Statistics	933	64.0%
Other Tech Engineering	2,948	27.3%

Source: Ontario Ministry of Training, Colleges and Universities (Metro Area), June 2019.

EDUCATIONAL ATTAINMENT (2018)

36.7%
BACHELOR'S DEGREE OR HIGHER

Source: Environics Analytics (Metro Area), 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Shopify	8 Spadina Ave	434,000
Index Exchange	8 Spadina Ave	200,000
Ubisoft Toronto	224 Wallace Ave	144,600
Microsoft	81 Bay St	132,000
OpenText	38 Leek Cres	101,500

Source: CBRE Research (Office Market), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)*
University of Waterloo	314	7.4
University of Toronto	285	6.6

VC-Funded Companies Founded by Alumni of Top Regional Universities:

Wish, Instacart, Kuaidi, Dache, Databricks, Netskope

Source: Pitchbook, 2019.
*Data in US\$

4 Washington, D.C.

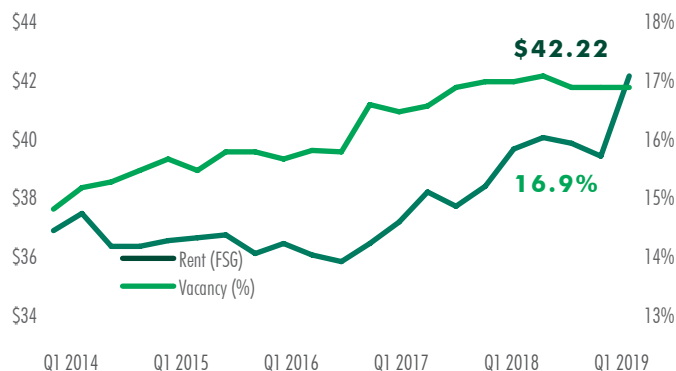
SCORE
69.83

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	253,660	2.2%	\$112,735	9.4%
Software Developers & Programmers	75,850	-8.0%	\$116,004	10.0%
Computer Support, Database & Systems	142,550	10.5%	\$103,446	8.6%
Computer & Information Systems Managers	18,220	0.9%	\$173,470	15.8%
Technology Engineering-Related	17,040	-8.8%	\$110,948	10.4%
TOTAL NON-TECH OCCUPATIONS	399,220	7.8%	\$64,338	10.0%
Sales	41,920	35.4%	\$86,118	6.5%
Administrative & Office Support	213,990	3.0%	\$42,719	10.1%
Business Operations & Finance	93,320	3.0%	\$90,841	6.7%
Marketing	49,990	22.4%	\$89,139	8.0%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

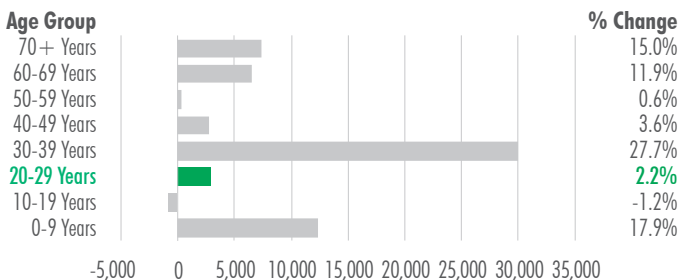
OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

POPULATION TRENDS

The population of twentysomethings grew by 2,913 (2.2%) since 2012. That's 4.7% of total growth in a population of 693,972.



Source: U.S. Census Bureau (District of Columbia), 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

		Growth 2012-17
TOTAL TECH DEGREES	11,278	31.1%
Computer Engineering	9,061	42.2%
Math/Statistics	765	25.0%
Other Tech Engineering	1,452	-10.3%

EDUCATIONAL ATTAINMENT (2018)

57.3%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (District of Columbia), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,754 PER UNIT/MO.
8% FIVE-YEAR GROWTH

117% LIVING COST
116% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
CACI	1099 14th St NW	77,300
Facebook	575 7th St NW	73,800
EverFi	2300 N St NW	58,000
Diligent	1111 19th St NW	34,900
Apple	700 K St NW	29,000

Source: CBRE Research (Office Market), 2019.

TECH TALENT DIVERSITY

69%
MALE

31%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2017.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
University of Maryland	301	3.8
University of Virginia	316	4.9
Georgetown University	253	4.3

VC-Funded Companies Founded by Alumni of Top Regional Universities:

N/A

Source: Pitchbook, 2019.

5 New York, NY

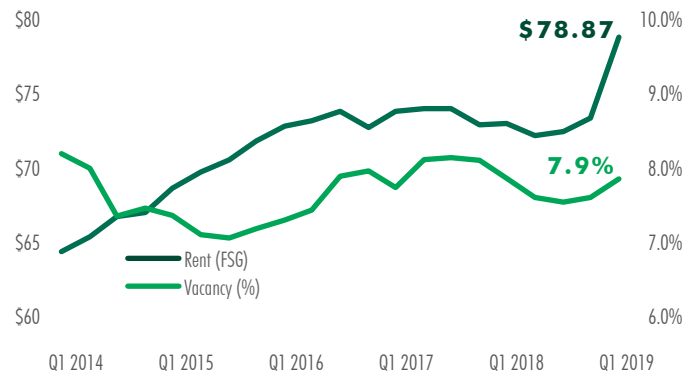
SCORE
65.12

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	264,374	20.5%	\$113,500	15.1%
Software Developers & Programmers	99,384	18.0%	\$112,892	15.0%
Computer Support, Database & Systems	123,286	21.9%	\$99,089	15.3%
Computer & Information Systems Managers	24,722	8.6%	\$200,523	24.2%
Technology Engineering-Related	16,982	49.9%	\$95,002	8.1%
TOTAL NON-TECH OCCUPATIONS	955,033	8.9%	\$62,327	18.6%
Sales	87,654	21.5%	\$87,815	18.1%
Administrative & Office Support	569,070	-1.4%	\$40,538	10.8%
Business Operations & Finance	203,051	27.9%	\$105,091	14.0%
Marketing	95,258	38.2%	\$77,886	9.0%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

POPULATION TRENDS

The population of twentysomethings declined by 12,156 (-0.9%) since 2012. That's -4.3% of total growth in a population of 8,622,698.



Source: U.S. Census Bureau (City of New York), 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	13,337	48.0%
Computer Engineering	8,811	70.4%
Math/Statistics	2,515	21.7%
Other Tech Engineering	2,011	13.2%

EDUCATIONAL ATTAINMENT (2018)

37.3%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of New York), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$4,120 PER UNIT/MO.
7% FIVE-YEAR GROWTH

120% LIVING COST
162% BUSINESS COST

Source: Apt. rent data from CBRE EA (Manhattan), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Google	450 W 15th St (Purchase)	316,500
Peloton Interactive	441 Ninth Ave	312,200
Google	315 Hudson St	280,000
Twitter	245-249 W 17th St	214,700
Google	345 Hudson St	180,000

Source: CBRE Research (Office Market), 2019.
Note: Deals are from 7/1/2018 to 6/1/2019.

TECH TALENT DIVERSITY

72%
MALE

28%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
Princeton University	454	10.8
Columbia University	424	8.5
New York University	351	4.8
State University of New York (SUNY)	248	3.4

VC-Funded Companies Founded by Alumni of Top Regional Universities:

Lyft, Moderna Therapeutics, Compass, Adaptive Biotechnologies, Scopely

Source: Pitchbook, 2019.

6 Austin, TX

SCORE
62.10

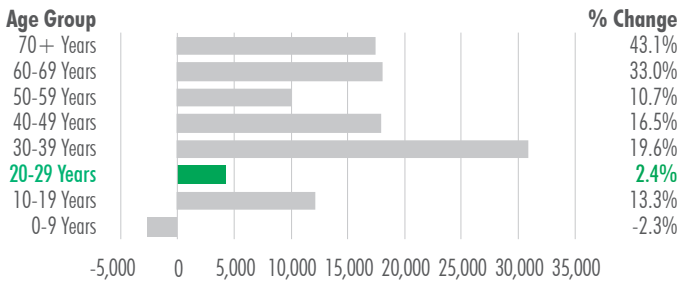
EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	72,360	12.6%	\$93,860	10.7%
Software Developers & Programmers	25,990	26.5%	\$104,642	11.4%
Computer Support, Database & Systems	33,660	18.3%	\$77,240	6.6%
Computer & Information Systems Managers	3,330	33.2%	\$155,420	9.6%
Technology Engineering-Related	9,380	-26.5%	\$101,775	17.6%
TOTAL NON-TECH OCCUPATIONS	154,810	30.5%	\$53,276	20.3%
Sales	24,810	199.6%	\$86,214	8.7%
Administrative & Office Support	95,180	16.1%	\$37,591	15.3%
Business Operations & Finance	23,540	14.8%	\$73,184	8.5%
Marketing	11,280	43.7%	\$71,628	4.4%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 4,239 (2.4%) since 2012. That's 3.9% of total growth in a population of 950,714.



Source: U.S. Census Bureau (City of Austin), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,257 PER UNIT/MO.
15% FIVE-YEAR GROWTH

115% LIVING COST
104% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

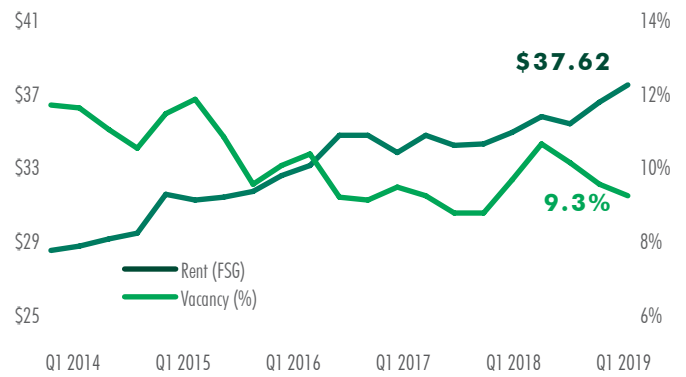
TECH TALENT DIVERSITY

78%
MALE

22%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT (2018)
TOTAL TECH DEGREES	2,634	39.7%
Computer Engineering	1,457	67.5%
Math/Statistics	477	15.5%
Other Tech Engineering	700	16.1%

51.0% BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Austin), 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Google	601 W 2nd St	723,000
Indeed	2900 Esperanza Crossing	183,900
Google	901 E 5th St	150,000
Amazon	11815 Alterra Pkwy	145,000
opCity	901 E 6th St	29,000

Source: CBRE Research (Office Market), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
University of Texas	582	7.7

VC-Funded Companies Founded by Alumni of Top Regional Universities:

Zalora, Freshworks, Casper (Home Furnishings), Niantic, Apollo Endosurgery

Source: Pitchbook, 2019.

7 Boston, MA

SCORE
60.26

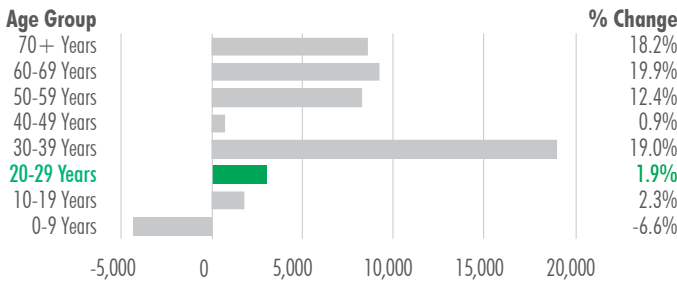
EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	160,070	2.4%	\$106,634	11.3%
Software Developers & Programmers	61,670	-2.7%	\$111,358	7.6%
Computer Support, Database & Systems	63,670	11.7%	\$89,441	16.9%
Computer & Information Systems Managers	16,530	16.7%	\$160,260	12.1%
Technology Engineering-Related	18,200	-16.6%	\$102,073	9.7%
TOTAL NON-TECH OCCUPATIONS	334,230	12.4%	\$60,293	13.5%
Sales	40,830	18.8%	\$87,001	0.3%
Administrative & Office Support	197,950	4.3%	\$44,300	12.2%
Business Operations & Finance	66,610	33.8%	\$85,949	14.0%
Marketing	28,840	23.4%	\$72,998	9.3%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 3,018 (1.9%) since 2012. That's 6.6% of total growth in a population of 683,015.



Source: U.S. Census Bureau (City of Boston), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$2,164 PER UNIT/MO.
18% FIVE-YEAR GROWTH

120% LIVING COST
130% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

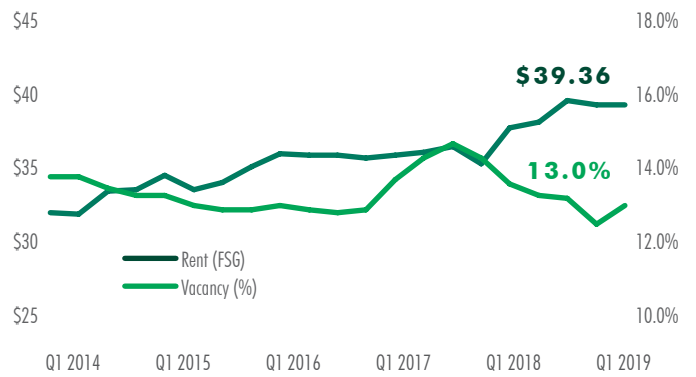
TECH TALENT DIVERSITY

70%
MALE

30%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

* Note includes Cambridge.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	9,429	61.0%
Computer Engineering	6,081	77.9%
Math/Statistics	1,510	66.5%
Other Tech Engineering	1,838	20.0%

EDUCATIONAL ATTAINMENT (2018)

48.2%
BACHELOR'S DEGREE
OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Boston), 2019.

TOP TECH OFFICE SPACE DEALS (2018)

Tenant	Address	Sq. Ft.
Amazon	Seaport Square Block L4 (Boston)	444,000
Wayfair	222 Berkeley/500 Boylston St (Boston)	395,000
Wayfair	10 Saint James Ave (Boston)	305,000
Boston Dynamics	200 Smith St (Waltham)	176,300
Charles River Systems	7 New England Executive Pk (Burlington)	123,700

Source: CBRE Research (Office Market), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
Massachusetts Institute of Technology (MIT)	819	21.2
Harvard University	799	25.4
Boston University	303	7.5
University of Massachusetts	239	3.8
Tufts University	230	3.8

VC-Funded Companies Founded by Alumni of Top Regional Universities:

Oscar, Dropbox, Human Longevity, Ginkgo Bioworks, Allogene Therapeutics

Source: Pitchbook, 2019.

8 Denver, CO

SCORE
59.43

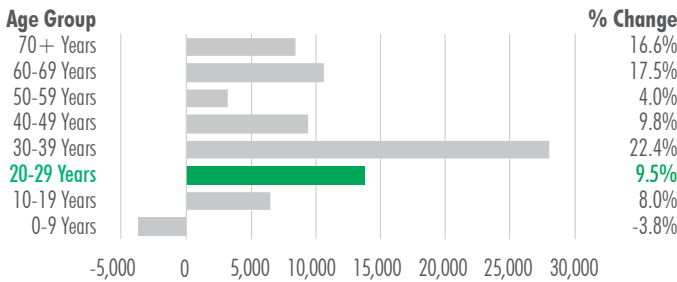
EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	107,170	30.9%	\$102,872	13.9%
Software Developers & Programmers	37,490	21.8%	\$109,889	15.5%
Computer Support, Database & Systems	51,740	38.6%	\$90,583	13.3%
Computer & Information Systems Managers	6,320	31.1%	\$167,293	16.2%
Technology Engineering-Related	11,620	29.8%	\$99,918	13.7%
TOTAL NON-TECH OCCUPATIONS	215,900	8.0%	\$59,193	18.7%
Sales	31,480	46.4%	\$82,354	8.6%
Administrative & Office Support	116,410	-6.9%	\$40,989	13.5%
Business Operations & Finance	46,000	18.7%	\$83,280	13.8%
Marketing	22,010	49.5%	\$72,011	7.0%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 13,723 (9.5%) since 2012. That's 18.1% of total growth in a population of 811,749.



Source: U.S. Census Bureau (Cities of Denver and Boulder), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,489 PER UNIT/MO.
27% FIVE-YEAR GROWTH

113% LIVING COST
104% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

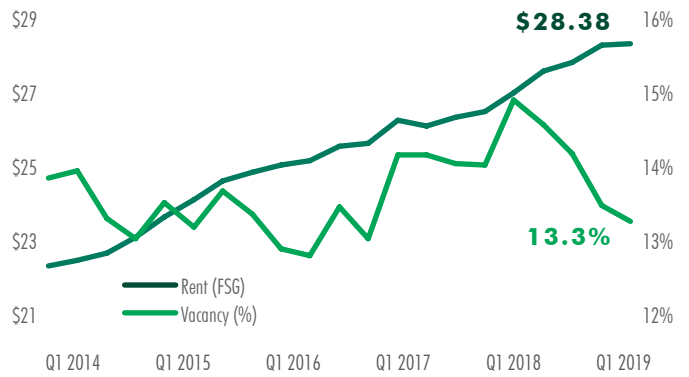
TECH TALENT DIVERSITY

75%
MALE

25%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT (2018)
TOTAL TECH DEGREES	4,249	30.9%
Computer Engineering	2,778	64.1%
Math/Statistics	446	5.2%
Other Tech Engineering	1,025	-9.1%

52.3% BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (Cities of Denver and Boulder), 2019.

TOP TECH OFFICE SPACE DEALS (2018)

Tenant	Address	Sq. Ft.
Gusto	1515 Arapahoe St. 1200 17th St	97,900
Amazon	1515 Wynkoop St	98,000
Vmware	380 Interlocken Crescent	95,800
Slack Technologies	2001 16th St	79,600
HomeAdvisor	3601 Walnut St	74,000

Source: CBRE Research (Office Market), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
University of Colorado	323	5.2

VC-Funded Companies Founded by Alumni of Top Regional Universities:

Groupon, Vir Biotechnology, 23andMe, Wheels Up, Uptake

Source: Pitchbook, 2019.

9 Atlanta, GA

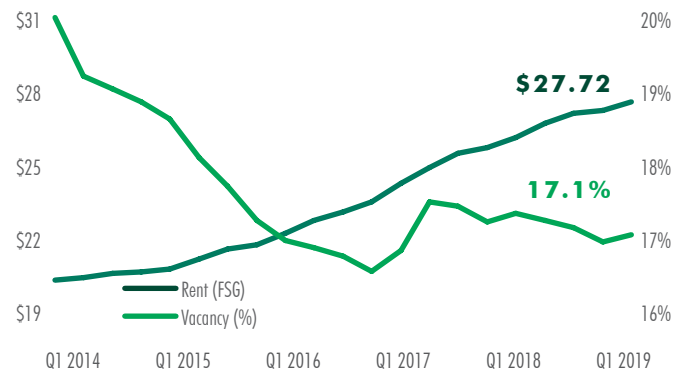
SCORE
58.08

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	141,580	29.1%	\$96,050	14.0%
Software Developers & Programmers	44,720	26.6%	\$104,117	13.0%
Computer Support, Database & Systems	74,750	35.7%	\$84,214	15.3%
Computer & Information Systems Managers	12,010	36.2%	\$147,150	13.1%
Technology Engineering-Related	10,100	-3.4%	\$87,162	11.5%
TOTAL NON-TECH OCCUPATIONS	312,460	1.6%	\$47,703	5.2%
Sales	13,600	-57.2%	\$77,416	11.6%
Administrative & Office Support	213,620	4.1%	\$36,342	8.7%
Business Operations & Finance	59,540	14.3%	\$73,667	2.4%
Marketing	25,700	40.4%	\$66,267	8.4%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

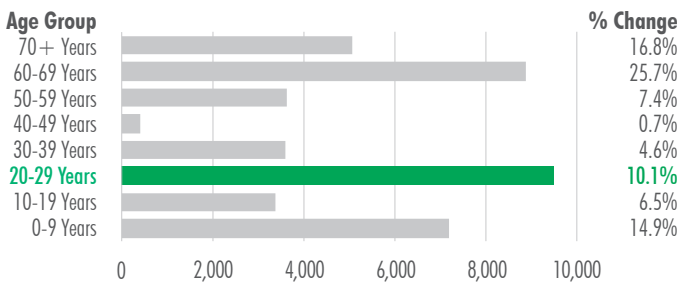
OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

POPULATION TRENDS

The population of twentysomethings grew by 9,489 (10.1%) since 2012. That's 22.3% of total growth in a population of 486,299.



Source: U.S. Census Bureau (City of Atlanta), 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	7,050	47.5%
Computer Engineering	4,975	57.9%
Math/Statistics	731	29.8%
Other Tech Engineering	1,344	26.0%

EDUCATIONAL ATTAINMENT (2018)

49.2%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Atlanta), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,223 PER UNIT/MO.
30% FIVE-YEAR GROWTH

102% LIVING COST
93% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Salesforce	950 E Paces Ferry Rd NE	158,200
Yardi Systems	500 Colonial Center Pkwy	91,700
Veeam	2550 Northwinds Pkwy	90,000
OneTrust	600 Northpark	72,900
Brightree	Bureau 125 Tech Park	60,500

Source: CBRE Research (Office Market), 2019.

TECH TALENT DIVERSITY

76%
MALE

24%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
Georgia Institute of Technology	265	4.5

VC-Funded Companies Founded by Alumni of Top Regional Universities:

N/A

Source: Pitchbook, 2019.

10 Raleigh-Durham, NC

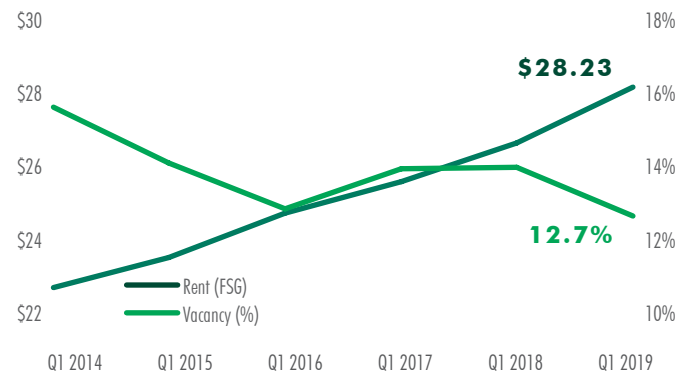
SCORE
57.68

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	61,040	11.2%	\$95,707	8.9%
Software Developers & Programmers	23,710	17.3%	\$102,052	8.8%
Computer Support, Database & Systems	29,790	22.7%	\$83,183	9.5%
Computer & Information Systems Managers	4,750	0.6%	\$147,287	12.0%
Technology Engineering-Related	2,790	-50.6%	\$87,705	7.4%
TOTAL NON-TECH OCCUPATIONS	124,230	19.6%	\$51,357	14.6%
Sales	16,580	61.8%	\$81,990	7.3%
Administrative & Office Support	77,360	10.4%	\$36,712	10.6%
Business Operations & Finance	20,070	28.2%	\$73,327	8.2%
Marketing	10,220	30.0%	\$69,374	12.7%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

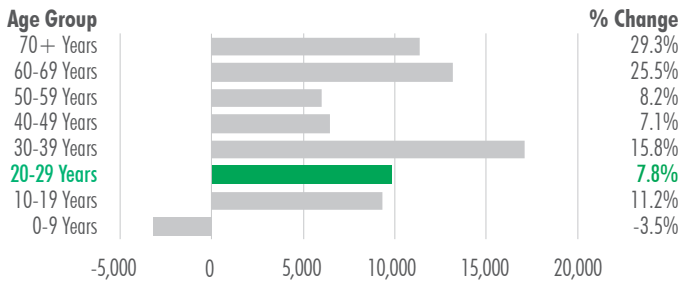
OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

POPULATION TRENDS

The population of twentysomethings grew by 9,865 (7.8%) since 2012. That's 14.1% of total growth in a population of 732,904.



Source: U.S. Census Bureau (Cities of Raleigh and Durham), 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

		Growth 2012-17
TOTAL TECH DEGREES	3,685	33.2%
Computer Engineering	2,169	29.6%
Math/Statistics	708	36.7%
Other Tech Engineering	808	40.3%

EDUCATIONAL ATTAINMENT (2018)

50.3%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (Cities of Raleigh and Durham), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,117 PER UNIT/MO.
20% FIVE-YEAR GROWTH

100% LIVING COST
87% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Pendo	301 Hillsborough St	125,000
Prometheus	4601 Six Forks Rd	35,665
Bandwidth	900 Main Campus Dr	30,100
Align Technology	3030 Slater Rd	29,773
Marvell	3015 Carrington Mill Blvd	20,300

Source: CBRE Research (Office Market), 2019.

TECH TALENT DIVERSITY

72%
MALE

28%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
Duke University	394	8.5
University of North Carolina	246	3.8

VC-Funded Companies Founded by Alumni of Top Regional Universities:

DraftKings, Radiology Partners, Harry's (Personal Products), Scopely, Zalora

Source: Pitchbook, 2019.

11 Dallas/Ft. Worth, TX

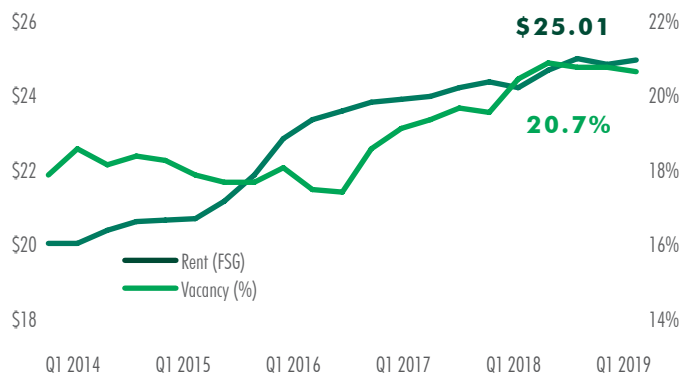
SCORE
57.63

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	169,290	15.7%	\$98,009	16.5%
Software Developers & Programmers	58,340	23.1%	\$107,255	18.3%
Computer Support, Database & Systems	86,620	19.3%	\$85,381	15.0%
Computer & Information Systems Managers	9,010	25.7%	\$159,770	18.4%
Technology Engineering-Related	15,320	-20.1%	\$97,871	13.7%
TOTAL NON-TECH OCCUPATIONS	494,360	20.0%	\$49,618	11.9%
Sales	53,480	27.0%	\$73,089	9.4%
Administrative & Office Support	336,480	17.0%	\$37,472	12.3%
Business Operations & Finance	77,700	21.9%	\$79,784	8.6%
Marketing	26,700	44.3%	\$67,888	7.2%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

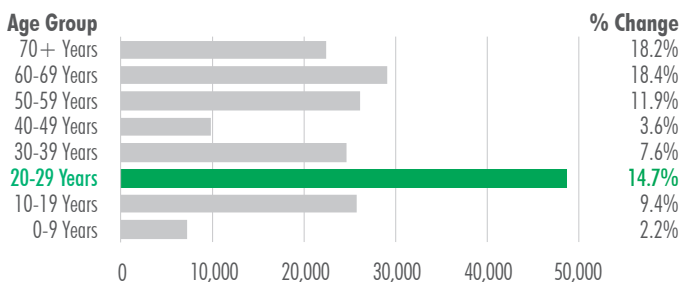
OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

POPULATION TRENDS

The population of twentysomethings grew by 48,796 (14.7%) since 2012. That's 25.1% of total growth in a population of 2,217,163.



Source: U.S. Census Bureau (Cities of Dallas and Ft. Worth), 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	6,503	98.5%
Computer Engineering	4,787	140.4%
Math/Statistics	471	12.7%
Other Tech Engineering	1,245	43.6%

EDUCATIONAL ATTAINMENT (2018)

31.2%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (Cities of Dallas and Ft. Worth), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,135 PER UNIT/MO.
22% FIVE-YEAR GROWTH

108% LIVING COST
95% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Nokia	3100 & 3201 Olympus Blvd	357,100
Samsung	6550 Chase Oaks Blvd	216,000
Blucora (HD Vest)	3200 Olympus Blvd	150,000
Hewlett Packard Enterprise	6080 Tennyson Parkway	106,300
Salesforce	2300 N Field St	104,900

Source: CBRE Research (Office Market), 2019.

TECH TALENT DIVERSITY

76%
MALE

24%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
University of Texas	582	7.7

VC-Funded Companies Founded by Alumni of Top Regional Universities:

Casper, Zalora, Apollo Endosurgery, Jounce Therapeutics, HotelTonight

Source: Pitchbook, 2019.

12 Vancouver, BC

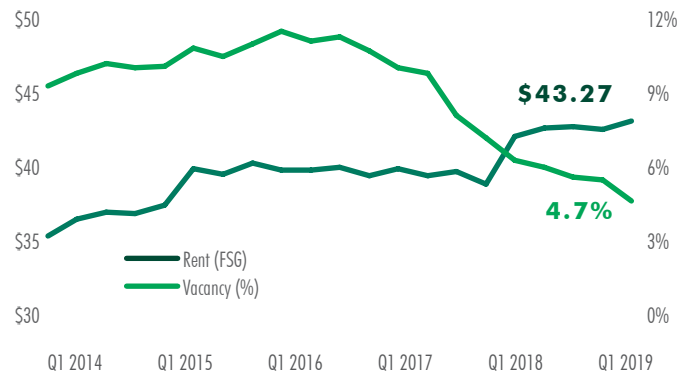
SCORE
56.25

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	74,700	42.6%	\$80,106	9.7%
Software Developers & Programmers	25,200	40.8%	\$84,261	10.3%
Computer Support, Database & Systems	25,600	69.5%	\$74,734	17.4%
Computer & Information Systems Managers	4,900	-9.3%	\$95,285	6.2%
Technology Engineering-Related	19,000	35.7%	\$77,917	7.7%
TOTAL NON-TECH OCCUPATIONS	124,300	14.9%	\$55,024	7.8%
Sales	11,500	7.5%	\$47,278	-12.4%
Administrative & Office Support	63,500	3.3%	\$47,133	13.1%
Business Operations & Finance	30,900	24.6%	\$68,827	-1.6%
Marketing	18,400	64.3%	\$63,918	10.4%

Source: Statistics Canada (Metro Area), April 2019.
*Data in CS

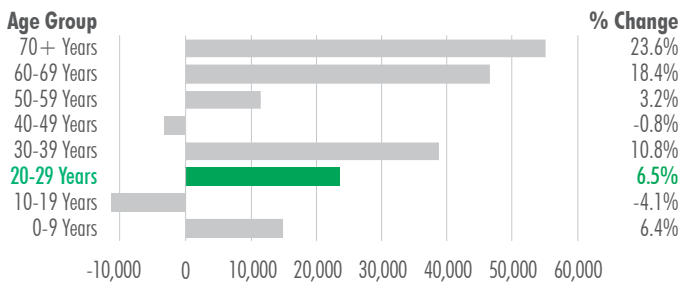
OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.
*Data in CS

POPULATION TRENDS

The population of twentysomethings grew by 23,565 (6.5%) since 2012. That's 13.4% of total growth in a population of 2,621,830.



Source: Environics Analytics (Metro Area), 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	2,518	29.5%
Computer Engineering	1,085	54.6%
Math/Statistics	269	1.1%
Other Tech Engineering	1,164	19.1%

Source: BC HEADset (Metro Area), June 2019.

EDUCATIONAL ATTAINMENT (2018)

34.8%
BACHELOR'S DEGREE OR HIGHER

Source: Environics Analytics (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,385 PER UNIT/MO.
30% FIVE-YEAR GROWTH

109% LIVING COST
86% BUSINESS COST

Source: Apt. rent data from CMHC (Metro Area), Q1 2019.
*Data in CS

Source: Relative Costs from Numbeo and KPMG (Metro Area), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Amazon	349 West Georgia St	416,000
Kabam	753 Seymour St	105,000
Arista Networks	9100 Glenlyon Pkwy	61,800
Greenlight Financial Technology	8339 Eastlake Dr	48,000
Sage Canada	13888 Wireless Way	40,900

Source: CBRE Research (Office Market), 2019.

TECH TALENT DIVERSITY

82%
MALE

18%
FEMALE

Source: Statistics Canada (Metro Area), April 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
University of British Columbia	186	1.7

VC-Funded Companies Founded by Alumni of Top Regional Universities:

N/A

Source: Pitchbook, 2019.
*Data in US\$

13 Montreal, QC

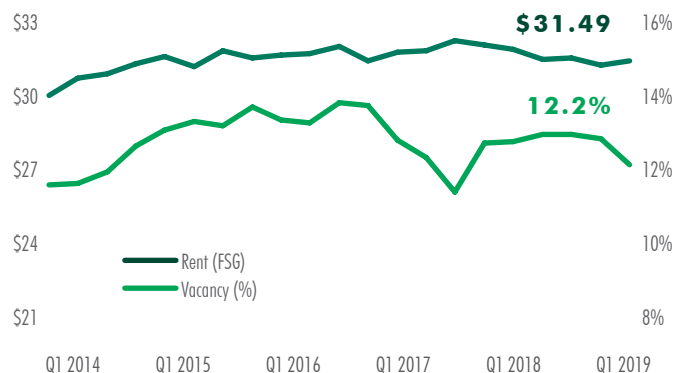
SCORE
55.54

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	130,200	14.6%	\$75,634	11.4%
Software Developers & Programmers	34,100	40.9%	\$74,194	15.8%
Computer Support, Database & Systems	47,300	7.7%	\$73,507	18.9%
Computer & Information Systems Managers	10,100	16.1%	\$105,934	10.1%
Technology Engineering-Related	38,700	5.2%	\$71,594	1.0%
TOTAL NON-TECH OCCUPATIONS	238,000	9.9%	\$55,186	12.0%
Sales	22,400	-2.2%	\$51,334	3.1%
Administrative & Office Support	131,000	11.1%	\$44,075	12.6%
Business Operations & Finance	55,000	11.6%	\$78,395	18.7%
Marketing	29,600	12.1%	\$64,147	2.1%

Source: Statistics Canada (Metro Area), April 2019.
*Data in C\$

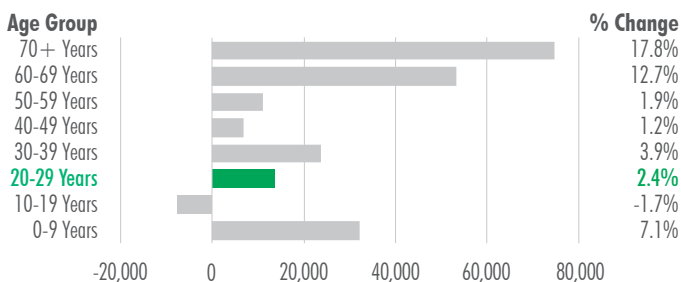
OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.
*Data in C\$

POPULATION TRENDS

The population of twentysomethings grew by 13,576 (2.4%) since 2012. That's 6.5% of total growth in a population of 4,302,332.



Source: Environics Analytics (Metro Area), 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	4,749	26.9%
Computer Engineering	1,195	17.9%
Math/Statistics	346	11.6%
Other Tech Engineering	3,208	32.7%

Source: Quebec Ministry of Education and Higher Education (Metro Area), June 2019.

EDUCATIONAL ATTAINMENT (2018)

29.3%
BACHELOR'S DEGREE OR HIGHER

Source: Environics Analytics (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$796 PER UNIT/MO.
12% FIVE-YEAR GROWTH

83% LIVING COST
85% BUSINESS COST

Source: Apt. rent data from CMHC (Metro Area), Q1 2019.
*Data in C\$

Source: Relative Costs from Numbeo and KPMG (Metro Area), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Google	425 Viger St W	100,000
GSoft	1751 Richardson St	81,000
ITF Technologies	350 Montpellier St	79,600
MILA	6666 St-Urbain St	63,600
Intelerad Medical Systems	800 DeMaisonneuve Blvd E	56,500

Source: CBRE Research (Office Market), 2019.

TECH TALENT DIVERSITY

79%
MALE

21%
FEMALE

Source: Statistics Canada (Metro Area), April 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
McGill University	304	7.1

VC-Funded Companies Founded by Alumni of Top Regional Universities:

Cloudflare, VarageSale, Jumia House, Laurel & Wolf, P2Binvestor

Source: Pitchbook, 2019.
*Data in US\$

14 Baltimore, MD

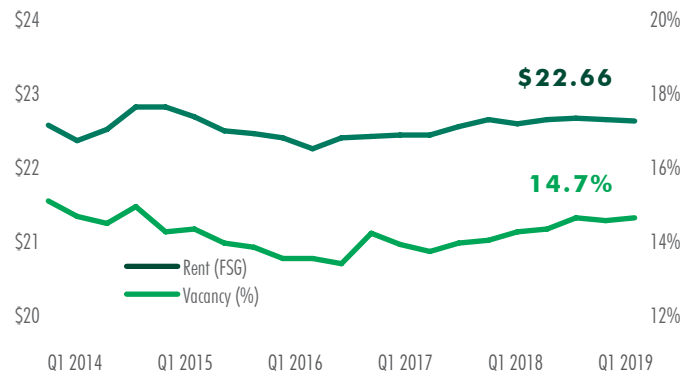
SCORE
55.28

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	75,150	11.9%	\$105,463	9.7%
Software Developers & Programmers	20,290	10.1%	\$108,852	-1.3%
Computer Support, Database & Systems	41,710	20.4%	\$98,004	16.5%
Computer & Information Systems Managers	5,130	6.7%	\$153,690	16.1%
Technology Engineering-Related	8,020	-13.6%	\$104,836	11.1%
TOTAL NON-TECH OCCUPATIONS	165,730	0.9%	\$52,012	11.2%
Sales	18,910	52.3%	\$80,260	4.9%
Administrative & Office Support	108,580	-5.8%	\$38,811	8.9%
Business Operations & Finance	29,420	2.2%	\$79,057	7.4%
Marketing	8,820	12.6%	\$63,744	-0.7%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

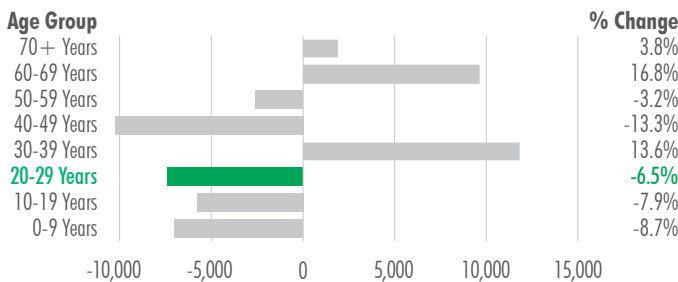
OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

POPULATION TRENDS

The population of twentysomethings declined by 7,412 (-6.5%) since 2012. That's 76.5% of total decline in a population of 611,648.



LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	3,514	16.7%
Computer Engineering	2,325	27.2%
Math/Statistics	450	9.2%
Other Tech Engineering	739	-4.3%

EDUCATIONAL ATTAINMENT (2018)

30.6%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Baltimore), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,319 PER UNIT/MO.
10% FIVE-YEAR GROWTH

106% LIVING COST
111% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
PayPal	9690 Deereco Rd	73,100
Focal Point Data Risk	8890 McGraw Rd	27,800
Freedom Consulting Group	7061 Columbia Gateway Dr	25,000
Dreamport	7000 Columbia Gateway Dr	20,000
Alion Science and Technology	7880 Milestone Pkwy	18,200

Source: CBRE Research (Office Market), 2019.

TECH TALENT DIVERSITY

70%
MALE

30%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
University of Maryland	301	3.8
Georgetown University	253	4.3

VC-Funded Companies Founded by Alumni of Top Regional Universities:

N/A

Source: Pitchbook, 2019.

15 Salt Lake City, UT

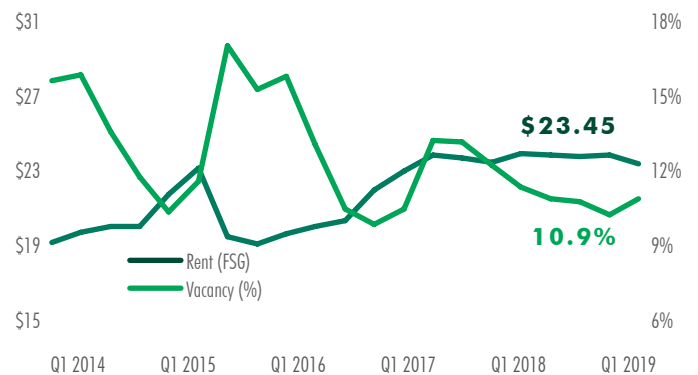
SCORE
52.99

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	47,760	38.6%	\$87,060	15.0%
Software Developers & Programmers	18,110	26.3%	\$98,326	20.2%
Computer Support, Database & Systems	22,070	55.6%	\$71,374	13.2%
Computer & Information Systems Managers	4,680	106.2%	\$122,166	4.0%
Technology Engineering-Related	2,900	-21.2%	\$79,421	6.2%
TOTAL NON-TECH OCCUPATIONS	142,390	17.1%	\$43,434	8.6%
Sales	13,500	6.6%	\$68,424	6.9%
Administrative & Office Support	99,750	13.6%	\$34,715	12.1%
Business Operations & Finance	18,620	31.5%	\$66,386	0.5%
Marketing	10,520	50.5%	\$53,406	-6.2%

Source: U.S. Bureau of Labor Statistics (Salt Lake City and Provo Metro Areas), April 2019.

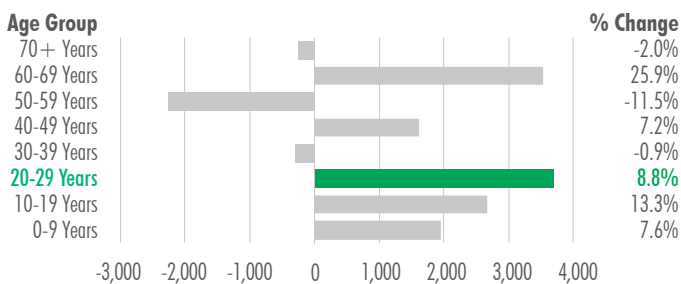
OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

POPULATION TRENDS

The population of twentysomethings grew by 3,695 (8.8%) since 2012. That's 32.9% of total growth in a population of 200,538.



LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

		Growth 2012-17
TOTAL TECH DEGREES	4,836	57.7%
Computer Engineering	4,090	64.1%
Math/Statistics	387	42.8%
Other Tech Engineering	359	18.5%

EDUCATIONAL ATTAINMENT (2018)

46.8%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Salt Lake City), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,129 PER UNIT/MO.
25% FIVE-YEAR GROWTH

109% LIVING COST
94% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Ivanti	10400 S South Jordan Gateway	160,900
Podium	3400 N Frontage Rd	130,000
DealerTrack	13705 S 200 West	112,900
LendingClub	2701 N Thanksgiving Way	70,900
Owlet Care	2500 W Executive Pkwy	56,400

Source: CBRE Research (Office Market), 2019.

TECH TALENT DIVERSITY

75%
MALE

25%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
Brigham Young University	300	6.3

VC-Funded Companies Founded by Alumni of Top Regional Universities:

Qualtrics, Elevance Renewable Science, Lendio, InsideSales.com, Okta

Source: Pitchbook, 2019.

16 Portland, OR

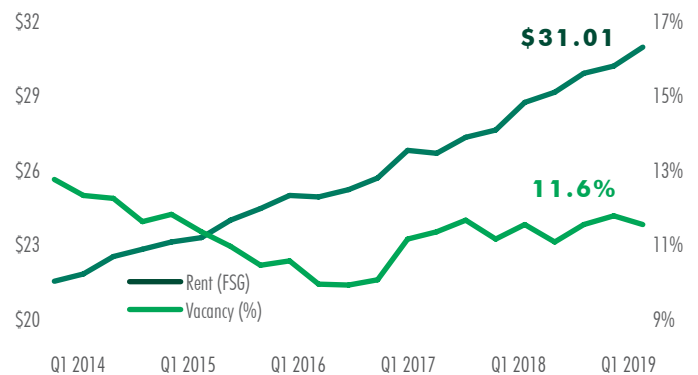
SCORE
52.65

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	59,580	35.3%	\$91,735	12.2%
Software Developers & Programmers	19,350	41.3%	\$100,524	15.0%
Computer Support, Database & Systems	22,780	13.0%	\$79,570	8.0%
Computer & Information Systems Managers	4,570	38.5%	\$134,630	16.8%
Technology Engineering-Related	12,880	86.9%	\$84,827	8.3%
TOTAL NON-TECH OCCUPATIONS	133,780	15.4%	\$50,380	11.0%
Sales	11,290	0.4%	\$73,118	-0.3%
Administrative & Office Support	90,510	11.4%	\$40,014	11.8%
Business Operations & Finance	20,220	21.8%	\$72,879	6.9%
Marketing	11,760	71.9%	\$69,650	19.7%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

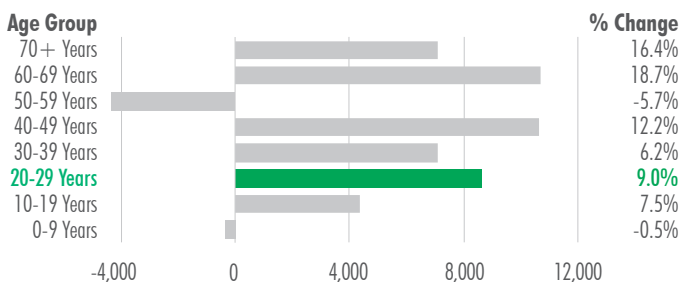
OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

POPULATION TRENDS

The population of twentysomethings grew by 8,622 (9.0%) since 2012. That's 19.4% of total growth in a population of 648,121.



Source: U.S. Census Bureau (City of Portland), 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

		Growth 2012-17
TOTAL TECH DEGREES	2,199	73.8%
Computer Engineering	1,374	91.4%
Math/Statistics	340	58.9%
Other Tech Engineering	485	45.6%

EDUCATIONAL ATTAINMENT (2018)

49.9%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Portland), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,364 PER UNIT/MO.
28% FIVE-YEAR GROWTH

113% LIVING COST
100% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Financial Tech Company	920 SW Sixth Ave	32,400
Finastra USA Corporation	621 SW 5th Ave	27,200
nLight Corp	5408 NE 88th St	26,400
Confidential Tech Company	111 SW 5th Ave	20,000
Trimech Solutions	4461 Cox Rd	15,000

Source: CBRE Research (Office Market), 2019.

TECH TALENT DIVERSITY

74%
MALE

26%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
N/A		

VC-Funded Companies Founded by Alumni of Top Regional Universities:

N/A

Source: Pitchbook, 2019.

17 Minneapolis, MN

SCORE
52.05

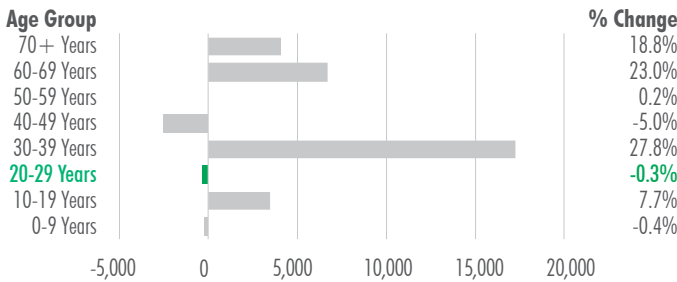
EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	92,830	13.2%	\$94,502	12.3%
Software Developers & Programmers	29,040	28.6%	\$98,174	9.9%
Computer Support, Database & Systems	49,070	11.3%	\$83,906	11.3%
Computer & Information Systems Managers	8,110	6.2%	\$148,490	20.3%
Technology Engineering-Related	6,610	-13.5%	\$90,791	13.3%
TOTAL NON-TECH OCCUPATIONS	235,640	5.1%	\$52,720	12.8%
Sales	24,730	4.6%	\$72,237	2.5%
Administrative & Office Support	148,280	1.9%	\$40,905	13.5%
Business Operations & Finance	40,650	9.1%	\$74,767	13.5%
Marketing	21,980	23.3%	\$69,693	11.1%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings declined by 290 (-0.3%) since 2012. That's -1.0% of total growth in a population of 422,326.



Source: U.S. Census Bureau (City of Minneapolis), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,306 PER UNIT/MO.
18% FIVE-YEAR GROWTH

102% LIVING COST
102% BUSINESS COST

Source: Apt. rent data from CBRE EA (City), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

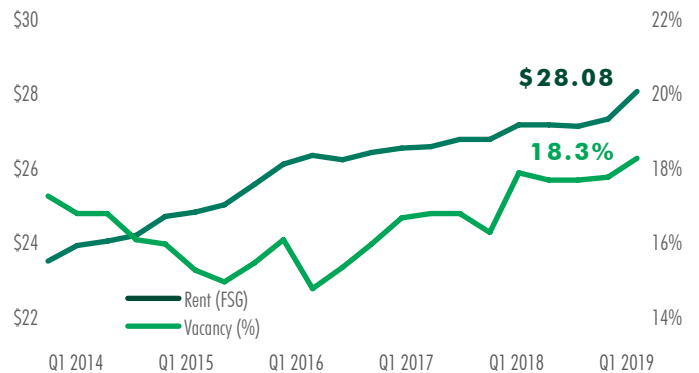
TECH TALENT DIVERSITY

75%
MALE

25%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT (2018)
TOTAL TECH DEGREES	3,685	24.6%
Computer Engineering	2,526	29.5%
Math/Statistics	625	29.4%
Other Tech Engineering	534	1.9%

50.8% BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Minneapolis), 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
JAMF Software	100 S Washington Ave	77,500
Broadcom	1230 Northland Dr	61,500
Digi International	9350 Excelsior Blvd	59,500
Data Services International	119 14th St NW	55,000
Anaplan	300 N 1st Ave	50,300

Source: CBRE Research (Office Market), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
University of Minnesota	213	3.7

VC-Funded Companies Founded by Alumni of Top Regional Universities:

N/A

Source: Pitchbook, 2019.

18 San Diego, CA

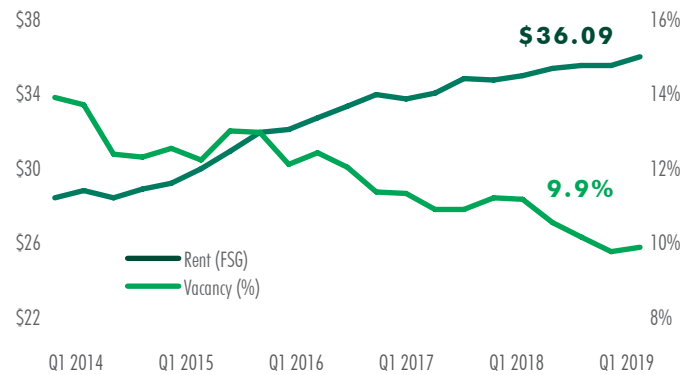
SCORE
51.33

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	73,170	15.5%	\$106,047	15.3%
Software Developers & Programmers	25,240	28.2%	\$107,785	9.1%
Computer Support, Database & Systems	26,620	8.7%	\$92,049	18.4%
Computer & Information Systems Managers	5,310	34.1%	\$157,540	6.7%
Technology Engineering-Related	16,000	5.3%	\$109,507	19.7%
TOTAL NON-TECH OCCUPATIONS	153,660	1.8%	\$51,284	8.3%
Sales	17,880	3.6%	\$65,545	-7.4%
Administrative & Office Support	99,940	-1.5%	\$40,286	12.8%
Business Operations & Finance	23,290	5.4%	\$79,869	7.3%
Marketing	12,550	23.8%	\$65,492	1.0%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

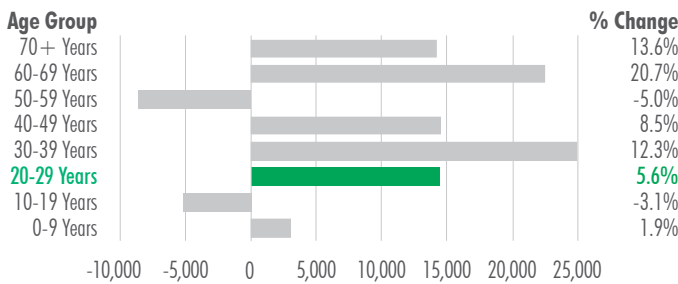
OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

POPULATION TRENDS

The population of twentysomethings grew by 14,406 (5.6%) since 2012. That's 17.8% of total growth in a population of 1,419,488.



Source: U.S. Census Bureau (City of San Diego), 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

		Growth 2012-17
TOTAL TECH DEGREES	4,080	57.5%
Computer Engineering	2,401	47.9%
Math/Statistics	692	85.0%
Other Tech Engineering	987	66.4%

EDUCATIONAL ATTAINMENT (2018)

45.6%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of San Diego), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,954 PER UNIT/MO.
27% FIVE-YEAR GROWTH

128% LIVING COST
135% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Sony	9645 Scranton Rd	119,000
Apple	9779 Towne Centre Dr	96,500
FICO	3661 Valley Centre Dr	80,500
Seismic Software	12390 El Camino Real	72,900
Brain Corp	10182 Telesis Ct	59,300

Source: CBRE Research (Office Market), 2019.

TECH TALENT DIVERSITY

76%
MALE

24%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
University of California, San Diego	330	5.7
University of California, Los Angeles (UCLA)	458	10.2
University of Southern California (USC)	393	8.2

VC-Funded Companies Founded by Alumni of Top Regional Universities:

N/A

Source: Pitchbook, 2019.

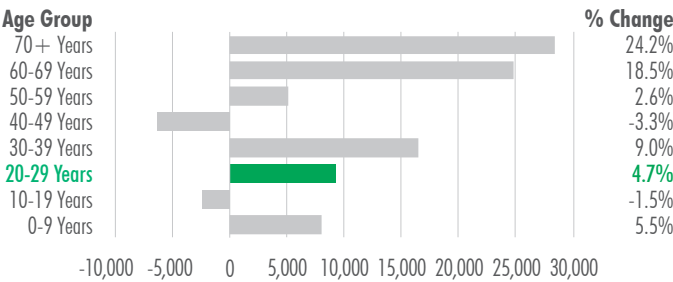
EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	64,500	-5.3%	\$87,745	6.5%
Software Developers & Programmers	15,600	-40.0%	\$92,768	11.6%
Computer Support, Database & Systems	25,800	23.4%	\$78,728	3.7%
Computer & Information Systems Managers	7,300	1.4%	\$111,467	13.1%
Technology Engineering-Related	15,800	12.9%	\$86,549	5.1%
TOTAL NON-TECH OCCUPATIONS	76,100	-5.0%	\$62,411	5.4%
Sales	5,400	5.9%	\$49,067	-14.5%
Administrative & Office Support	35,100	-7.4%	\$47,299	8.4%
Business Operations & Finance	25,000	-9.7%	\$81,224	6.4%
Marketing	10,600	12.8%	\$74,880	3.2%

Source: Statistics Canada (Metro Area), April 2019.
*Data in C\$

POPULATION TRENDS

The population of twentysomethings grew by 9,240 (4.7%) since 2012. That's 11.1% of total growth in a population of 1,404,891.



Source: Environics Analytics (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,174 PER UNIT/MO.
16% FIVE-YEAR GROWTH

90% LIVING COST
85% BUSINESS COST

Source: Apt. rent data from CMHC (Metro Area), Q1 2019.
*Data in C\$

Source: Relative Costs from Numbeo and KPMG (Metro Area), Q1 2019.

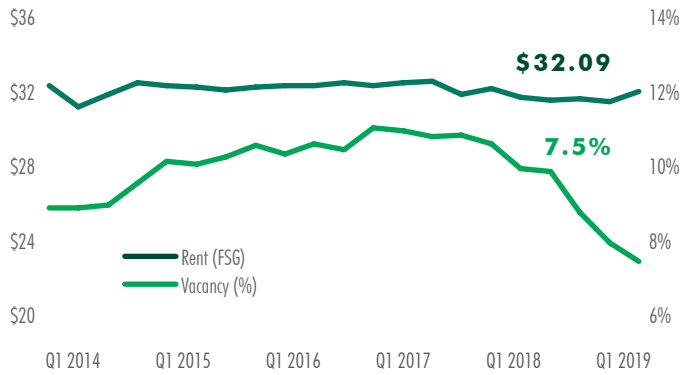
TECH TALENT DIVERSITY

78%
MALE

22%
FEMALE

Source: Statistics Canada (Metro Area), April 2019.

OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.
*Data in C\$

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	1,592	61.0%
Computer Engineering	460	48.4%
Math/Statistics	109	45.3%
Other Tech Engineering	1,023	69.4%

Source: Ontario Ministry of Training, Colleges and Universities (Metro Area), June 2019.

EDUCATIONAL ATTAINMENT (2018)

41.1%
BACHELOR'S DEGREE OR HIGHER

Source: Environics Analytics (Metro Area), 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Skyworks Solutions	1135 Innovation Dr	50,000
SurveyMonkey	200 Laurier Ave	47,600
Innovapost	425 Legget Dr	45,000
Mercury Filmworks	2932 Baseline Rd	33,000
Oracle	99 Bank St	13,000

Source: CBRE Research (Office Market), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
N/A		

VC-Funded Companies Founded by Alumni of Top Regional Universities:

N/A

Source: Pitchbook, 2019.
*Data in US\$

20 Phoenix, AZ

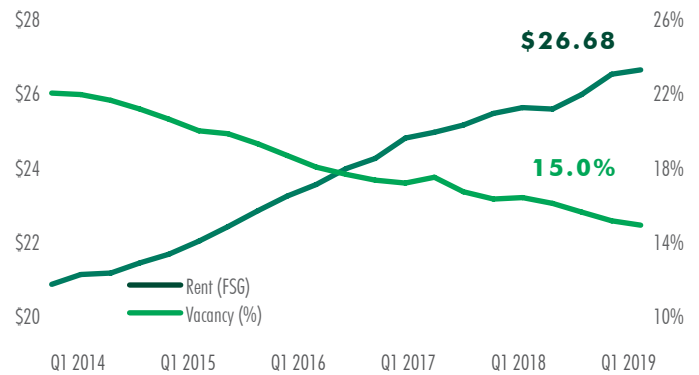
SCORE
50.57

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	85,060	12.3%	\$88,342	7.7%
Software Developers & Programmers	24,980	19.0%	\$98,270	12.2%
Computer Support, Database & Systems	46,530	27.0%	\$76,573	4.9%
Computer & Information Systems Managers	5,980	19.1%	\$140,080	11.0%
Technology Engineering-Related	7,570	-42.2%	\$87,047	7.0%
TOTAL NON-TECH OCCUPATIONS	285,650	23.0%	\$45,112	6.9%
Sales	27,320	6.3%	\$65,340	-1.9%
Administrative & Office Support	204,270	24.7%	\$36,910	10.5%
Business Operations & Finance	38,020	22.3%	\$67,295	6.4%
Marketing	16,040	39.4%	\$62,530	11.7%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

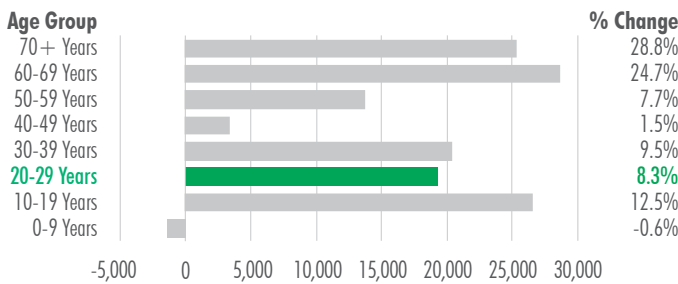
OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

POPULATION TRENDS

The population of twentysomethings grew by 19,304 (8.3%) since 2012. That's 14.1% of total growth in a population of 1,626,085.



Source: U.S. Census Bureau (City of Phoenix), 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	4,832	-6.1%
Computer Engineering	3,767	-13.4%
Math/Statistics	198	13.1%
Other Tech Engineering	867	39.2%

EDUCATIONAL ATTAINMENT (2018)

28.4%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Phoenix), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,104 PER UNIT/MO.
34% FIVE-YEAR GROWTH

107% LIVING COST
103% BUSINESS COST

Source: Apt. rent data from CBRE EA (City), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Nextiva	Riverwalk BTS	100,000
Carvana	4301 N Scottsdale Rd	39,200
Synchronoss Technologies	4020 E Indian School Rd	38,000
Limelight	1465 N Scottsdale Rd	37,800
Zillow	4343 N Scottsdale Rd	25,700

Source: CBRE Research (Office Market), 2019.

TECH TALENT DIVERSITY

79%
MALE

21%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
N/A		

VC-Funded Companies Founded by Alumni of Top Regional Universities:

N/A

Source: Pitchbook, 2019.

21 Chicago, IL

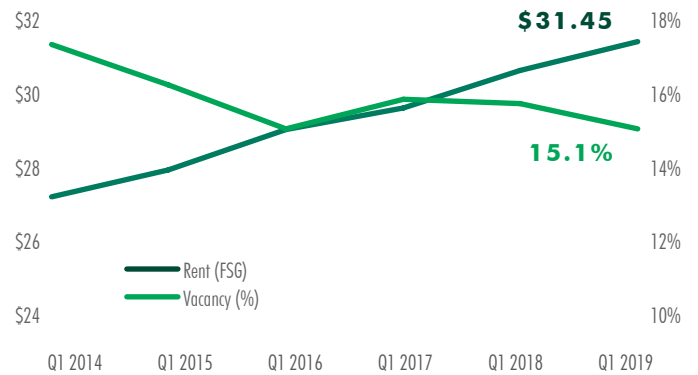
SCORE
48.87

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	166,620	10.5%	\$86,159	5.2%
Software Developers & Programmers	55,430	-5.0%	\$98,626	18.5%
Computer Support, Database & Systems	85,630	22.9%	\$67,219	-10.9%
Computer & Information Systems Managers	15,320	37.0%	\$146,050	22.5%
Technology Engineering-Related	10,240	-11.9%	\$87,455	11.5%
TOTAL NON-TECH OCCUPATIONS	567,400	11.6%	\$50,455	11.7%
Sales	63,370	13.5%	\$69,952	-0.9%
Administrative & Office Support	370,880	3.3%	\$39,112	11.6%
Business Operations & Finance	90,350	36.8%	\$77,815	8.4%
Marketing	42,800	55.4%	\$62,132	1.5%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

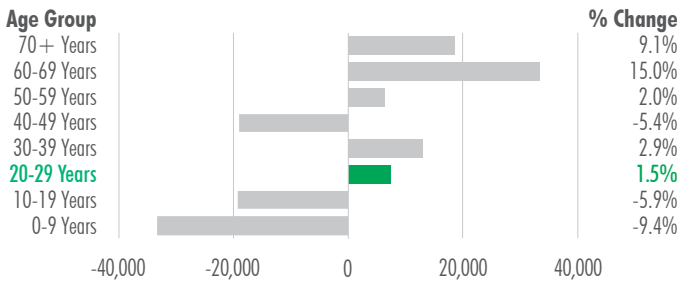
OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

POPULATION TRENDS

The population of twentysomethings grew by 7,346 (1.5%) since 2012. That's 454.0% of total growth in a population of 2,716,462.



Source: U.S. Census Bureau (City of Chicago), 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	7,375	36.9%
Computer Engineering	5,277	36.9%
Math/Statistics	1,202	27.9%
Other Tech Engineering	896	50.6%

EDUCATIONAL ATTAINMENT (2018)

38.8%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Chicago), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,505 PER UNIT/MO.
12% FIVE-YEAR GROWTH

99% LIVING COST
102% BUSINESS COST

Source: Apt. rent data from CBRE EA (City), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Salesforce	326 N Orleans St	505,700
CDW	625 W Adams St	300,000
Facebook	151 N Franklin St	263,000
Evolent Health	300 S Riverside Plz	133,700
Google	201 N Carpenter St	132,000

Source: CBRE Research (Office Market), 2019.

TECH TALENT DIVERSITY

75%
MALE

25%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
University of Illinois	484	9.9
Northwestern University	302	6.5

VC-Funded Companies Founded by Alumni of Top Regional Universities:

Grab, Avant, Affirm, Desktop Metal, Pinterest

Source: Pitchbook, 2019.

22 Philadelphia, PA

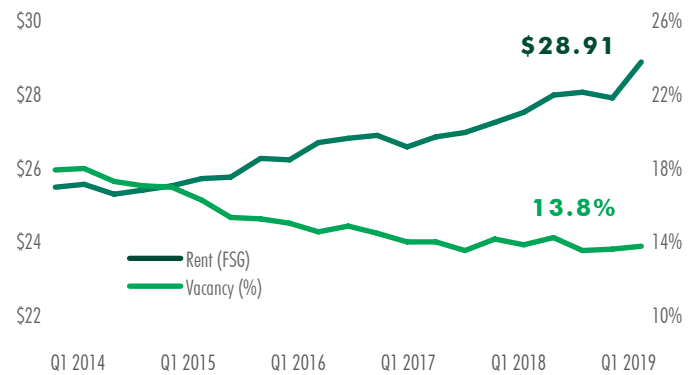
SCORE
48.86

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	109,670	13.9%	\$96,706	11.0%
Software Developers & Programmers	35,470	7.1%	\$100,367	10.7%
Computer Support, Database & Systems	56,890	19.1%	\$85,757	11.7%
Computer & Information Systems Managers	8,200	26.5%	\$160,340	8.7%
Technology Engineering-Related	9,110	2.1%	\$93,544	9.8%
TOTAL NON-TECH OCCUPATIONS	378,540	7.8%	\$51,749	8.2%
Sales	34,880	22.8%	\$75,202	-5.5%
Administrative & Office Support	255,640	5.3%	\$39,284	9.9%
Business Operations & Finance	62,050	9.5%	\$81,839	7.8%
Marketing	25,970	11.4%	\$71,057	6.0%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

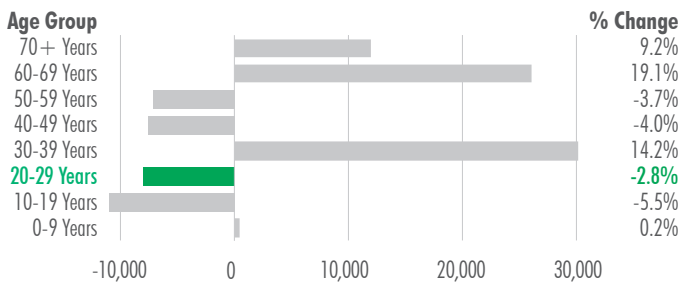
OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

POPULATION TRENDS

The population of twentysomethings declined by 8,009 (-2.8%) since 2012. That's -24.1% of total growth in a population of 1,580,863.



Source: U.S. Census Bureau (City of Philadelphia), 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

		Growth 2012-17
TOTAL TECH DEGREES	4,837	31.5%
Computer Engineering	3,295	39.8%
Math/Statistics	775	23.8%
Other Tech Engineering	767	10.2%

EDUCATIONAL ATTAINMENT (2018)

28.3%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Philadelphia), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,370 PER UNIT/MO.
14% FIVE-YEAR GROWTH

96% LIVING COST
102% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Comcast	400 Commerce Dr	148,100
Sungard Availability Services	1500 Spring Garden St	135,100
Bracket	785 Arbor Way	105,600
YPrime	9 Great Valley Pky	62,200
OSIsoft	1700 Market St	60,100

Source: CBRE Research (Office Market), 2019.

TECH TALENT DIVERSITY

72%
MALE

28%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
University of Pennsylvania	757	15.8
Pennsylvania State University (Penn State)	290	4.44

VC-Funded Companies Founded by Alumni of Top Regional Universities:

Snapdeal, Zynga, Fuze, Flatiron, Wheels Up

Source: Pitchbook, 2019.

23 Los Angeles, CA

SCORE
48.82

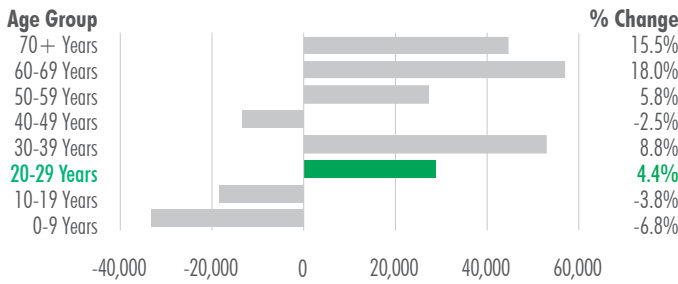
EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	139,774	16.4%	\$104,005	12.0%
Software Developers & Programmers	45,293	9.2%	\$110,491	10.3%
Computer Support, Database & Systems	65,028	25.0%	\$84,957	9.5%
Computer & Information Systems Managers	12,032	28.4%	\$170,502	15.7%
Technology Engineering-Related	17,420	1.3%	\$112,316	22.5%
TOTAL NON-TECH OCCUPATIONS	515,970	2.9%	\$52,719	11.3%
Sales	48,669	-0.8%	\$71,320	2.0%
Administrative & Office Support	341,230	0.0%	\$40,612	14.4%
Business Operations & Finance	82,230	9.0%	\$84,136	9.3%
Marketing	43,840	22.2%	\$67,377	0.1%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 28,748 (4.4%) since 2012. That's 20.3% of total growth in a population of 3,999,742.



Source: U.S. Census Bureau (City of Los Angeles), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$2,239 PER UNIT/MO.
25% FIVE-YEAR GROWTH

129% LIVING COST
113% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

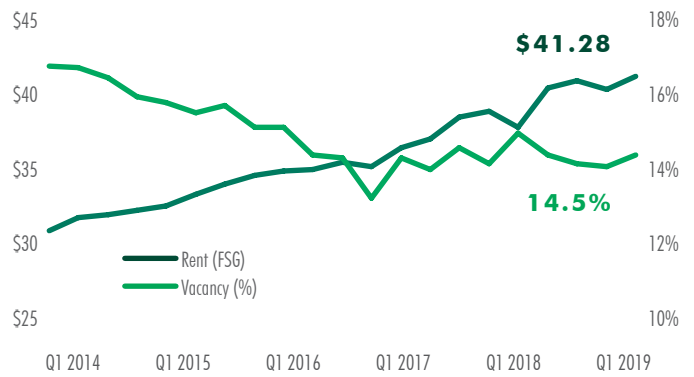
TECH TALENT DIVERSITY

75%
MALE

25%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	9,621	37.7%
Computer Engineering	5,317	53.1%
Math/Statistics	1,602	40.6%
Other Tech Engineering	2,702	13.8%

EDUCATIONAL ATTAINMENT (2018)

34.4%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Los Angeles), 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Google	10730-10900 W Pico Blvd	584,000
Facebook	12105 W Waterfront Dr	260,000
Honey Science Corp	963 E 4th St	130,400
Bytedance	5800 Bristol Pkwy	119,000
Weedmaps	500 S Santa Fe	97,900

Source: CBRE Research (Office Market), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
University of California, Los Angeles (UCLA)	458	10.2
University of Southern California (USC)	393	8.21

VC-Funded Companies Founded by Alumni of Top Regional Universities:

BrightSource Energy, Vir Biotechnology, BabyTree, Scopely, Leaf Group

Source: Pitchbook, 2019.

24 Detroit, MI

SCORE
48.04

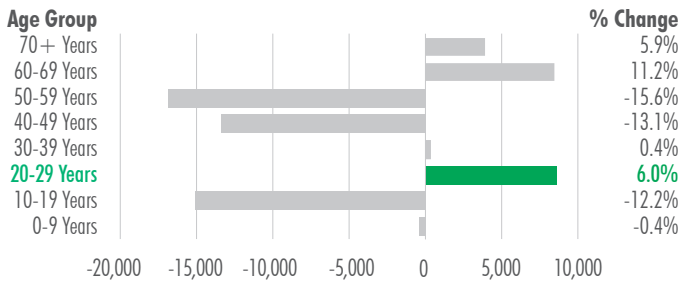
EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	86,090	18.4%	\$86,864	13.0%
Software Developers & Programmers	32,110	50.0%	\$92,055	13.1%
Computer Support, Database & Systems	37,310	1.3%	\$76,688	10.2%
Computer & Information Systems Managers	5,510	28.7%	\$139,070	22.2%
Technology Engineering-Related	11,160	9.2%	\$80,174	2.8%
TOTAL NON-TECH OCCUPATIONS	224,720	7.6%	\$48,513	14.1%
Sales	22,200	19.5%	\$70,717	2.0%
Administrative & Office Support	152,130	-0.4%	\$37,119	10.6%
Business Operations & Finance	34,530	27.3%	\$75,778	12.5%
Marketing	15,860	52.6%	\$67,360	8.9%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 8,642 (6.0%) since 2012. That's -37.4% of total decline in a population of 794,564.



Source: U.S. Census Bureau (Cities of Detroit and Ann Arbor), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$989 PER UNIT/MO.
19% FIVE-YEAR GROWTH

95% LIVING COST
98% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

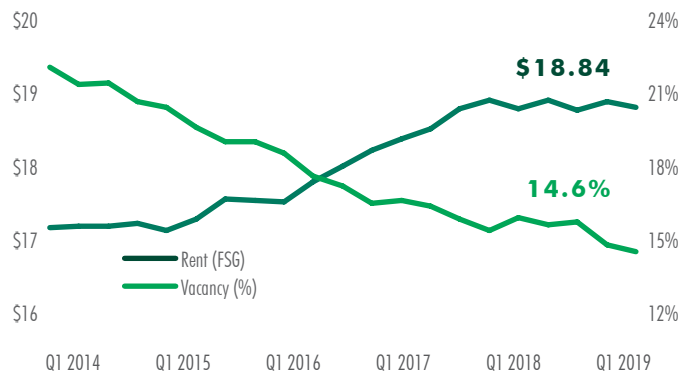
TECH TALENT DIVERSITY

76%
MALE

24%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	5,726	32.0%
Computer Engineering	3,812	55.5%
Math/Statistics	567	-6.4%
Other Tech Engineering	1,347	5.2%

EDUCATIONAL ATTAINMENT (2018)

22.7%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Detroit), 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
LinkedIn	1523 Woodward Ave	74,500
One10	2800 Livernois	51,200
Verint ForeSee	2373 Oak Valley Dr	31,700
Clinic	200 S First St	21,400
IBM	500 Woodward Ave	10,000

Source: CBRE Research (Office Market), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
University of Michigan	638	12.1

VC-Funded Companies Founded by Alumni of Top Regional Universities:

Groupon, Medallia, Twilio, 23andMe, AltioStar

Source: Pitchbook, 2019.

25 Madison, WI

SCORE
47.96

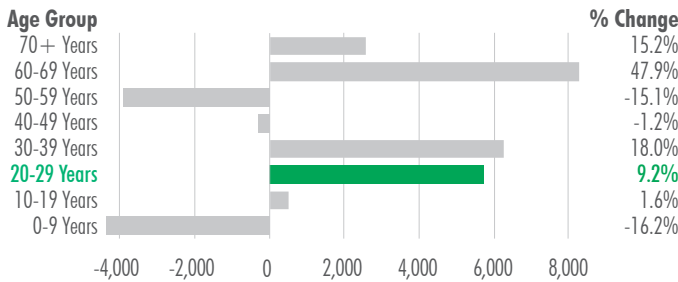
EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	23,470	47.0%	\$84,169	15.0%
Software Developers & Programmers	9,620	148.6%	\$84,250	1.7%
Computer Support, Database & Systems	11,780	25.5%	\$79,405	21.2%
Computer & Information Systems Managers	1,330	-7.0%	\$126,090	22.0%
Technology Engineering-Related	740	-42.2%	\$83,620	25.4%
TOTAL NON-TECH OCCUPATIONS	52,590	13.7%	\$47,017	7.6%
Sales	3,450	-3.4%	\$64,202	-6.5%
Administrative & Office Support	34,930	9.2%	\$38,002	9.5%
Business Operations & Finance	9,140	28.6%	\$66,718	3.6%
Marketing	5,070	42.0%	\$61,916	7.0%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 5,734 (9.2%) since 2012. That's 38.4% of total growth in a population of 255,239.



Source: U.S. Census Bureau (City of Madison), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$1,150 PER UNIT/MO.
12% FIVE-YEAR GROWTH

101% LIVING COST
99% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

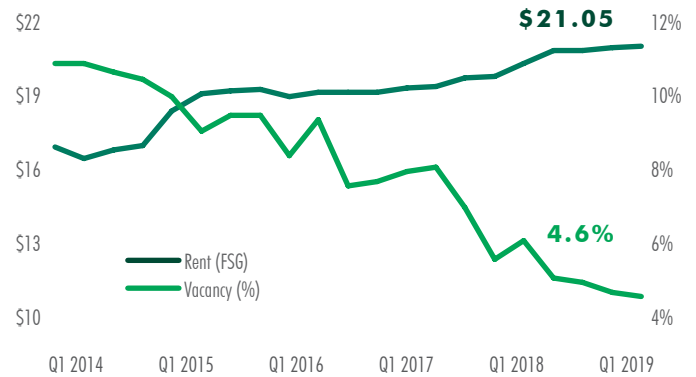
TECH TALENT DIVERSITY

75%
MALE

25%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

	2017	Growth 2012-17
TOTAL TECH DEGREES	1,790	42.6%
Computer Engineering	1,045	48.0%
Math/Statistics	341	35.3%
Other Tech Engineering	404	36.0%

EDUCATIONAL ATTAINMENT (2018)

57.0%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Madison), 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Infosec	316 W Washington Ave	12,000
IPSWITCH	1111 Deming Way	7,500
CC3 Solutions LLC	1600 Aspen Commons	4,100
Activision	8496 Greenway Blvd	3,600
Stratus Silver Lining LLC	1600 Aspen Commons	2,300

Source: CBRE Research (Office Market), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
N/A		

VC-Funded Companies Founded by Alumni of Top Regional Universities:

N/A

Source: Pitchbook, 2019.

26 Orange County, CA

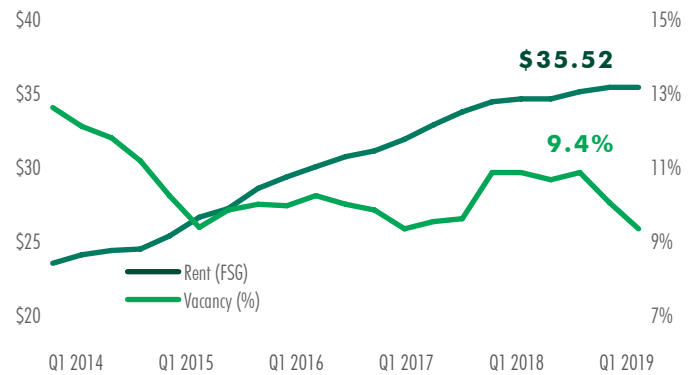
SCORE
47.70

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	72,699	13.9%	\$101,876	9.0%
Software Developers & Programmers	24,377	4.5%	\$114,293	16.9%
Computer Support, Database & Systems	31,083	32.5%	\$83,917	6.1%
Computer & Information Systems Managers	5,970	29.2%	\$162,796	12.2%
Technology Engineering-Related	11,270	-9.1%	\$92,283	-1.4%
TOTAL NON-TECH OCCUPATIONS	194,595	-0.9%	\$55,218	12.3%
Sales	25,141	5.2%	\$77,712	4.5%
Administrative & Office Support	121,384	-7.2%	\$41,856	12.9%
Business Operations & Finance	32,810	12.9%	\$80,783	7.4%
Marketing	15,260	21.6%	\$69,480	4.2%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

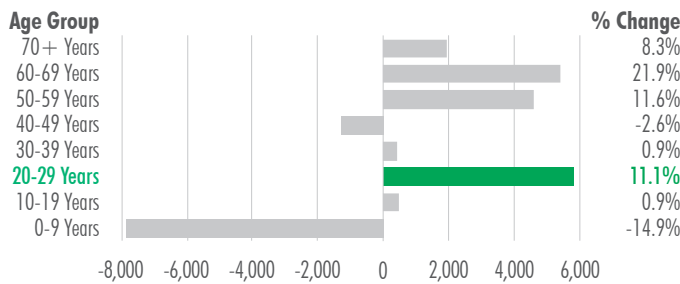
OFFICE RENT & VACANCY TRENDS



Source: CBRE Research (Metro Area), Q1 2019.

POPULATION TRENDS

The population of twentysomethings grew by 5,832 (11.1%) since 2012. That's 63.3% of total growth in a population of 352,456.



Source: U.S. Census Bureau (City of Anaheim), 2019.

LABOR FORCE PIPELINE AND EDUCATION

TECH DEGREE COMPLETIONS 2017

		Growth 2012-17
TOTAL TECH DEGREES	3,338	78.1%
Computer Engineering	2,495	87.7%
Math/Statistics	346	44.8%
Other Tech Engineering	497	62.4%

EDUCATIONAL ATTAINMENT (2018)

25.7%
BACHELOR'S DEGREE OR HIGHER

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Anaheim), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT:
\$2,082 PER UNIT/MO.
21% FIVE-YEAR GROWTH

147% LIVING COST
114% BUSINESS COST

Source: Apt. rent data from CBRE EA (Metro), Q1 2019.

Source: Relative Costs from Moody's Analytics (Metro Area), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Anduril	2722 Michelson	155,000
Epson America	3131 Katella Ave	150,200
Skyworks Solutions	5260 California Ave	90,900
Panasonic	26250 Enterprise	64,400
Tenant Name Confidential	19520 Jamboree	43,700

Source: CBRE Research (Office Market), 2019.

TECH TALENT DIVERSITY

75%
MALE

25%
FEMALE

Source: U.S. Census Bureau (Metro Area), 2019.

START-UP PIPELINE

Top Regional Universities	Company Count	Capital Raised (\$ Billions)
University of California, Los Angeles (UCLA)	458	10.2
University of Southern California (USC)	393	8.2

VC-Funded Companies Founded by Alumni of Top Regional Universities:

BrightSource Energy, Vir Biotechnology, BabyTree, Scopely, Leaf Group

Source: Pitchbook, 2019.

27 Columbus, OH

SCORE
44.92

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	48,600	8.1%	\$96,038	19.8%
Software Developers & Programmers	15,880	22.2%	\$103,512	23.3%
Computer Support, Database & Systems	26,390	4.0%	\$86,028	18.3%
Computer & Infor. Systems Managers	3,730	1.1%	\$149,580	17.8%
Technology Engineering-Related	2,600	-9.7%	\$75,183	8.5%
TOTAL NON-TECH OCCUPATIONS	132,370	12.3%	\$48,784	12.6%
Sales	12,750	27.6%	\$67,677	8.7%
Administrative & Office Support	85,720	5.0%	\$37,598	10.7%
Business Operations & Finance	23,990	35.7%	\$71,059	6.0%
Marketing	9,910	15.5%	\$67,301	9.8%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 13,028 (8.0%) since 2012. That's 18.1% of total growth in a population of 881,901.

Source: U.S. Census Bureau (City of Columbus), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$19.69 PSF (up 10.7%); Vacancy: 15.1% (down -30 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
CovermyMeds	2 Miranova Pl	85,400
Root Insurance	80 E State St	65,000
Veeva Systems	5555 Parkcenter Cir	30,200

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	2,260	28.2%	35.1%
Computer Engineering	1,203	19.2%	75% 25% BACHELOR'S DEGREE OR HIGHER MALE FEMALE
Math/Statistics	302	33.6%	
Other Tech Engineering	755	43.0%	

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Columbus), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$949 PER UNIT/MO.	94% LIVING COST	98% BUSINESS COST
18% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

28 Newark, NJ

SCORE
44.82

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	53,168	9.7%	\$110,772	9.5%
Software Developers & Programmers	18,332	9.9%	\$109,695	-1.1%
Computer Support, Database & Systems	24,317	9.6%	\$99,479	18.9%
Computer & Infor. Systems Managers	5,113	0.6%	\$187,714	20.5%
Technology Engineering-Related	5,406	19.4%	\$92,446	2.9%
TOTAL NON-TECH OCCUPATIONS	142,877	1.6%	\$57,148	14.2%
Sales	15,300	6.8%	\$84,668	-13.4%
Administrative & Office Support	94,439	-4.1%	\$40,765	9.9%
Business Operations & Finance	22,718	7.7%	\$92,190	30.0%
Marketing	10,420	56.8%	\$88,821	22.5%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings declined by 3,542 (-7.6%) since 2012. That's -47.6% of total growth in a population of 285,156.

Source: U.S. Census Bureau (City of Newark), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$26.21 PSF (up 6.5%); Vacancy: 17.1% (down -870 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
First Data Corporation	101 Hudson St (Jersey City)	80,200
Ricoh	2 Gatehall Dr (Parsippany)	55,900
Wal-Mart Digital	121 River St (Hoboken)	42,300

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	2,755	57.3%	15.5%
Computer Engineering	1,937	85.2%	72% 28% BACHELOR'S DEGREE OR HIGHER MALE FEMALE
Math/Statistics	428	18.6%	
Other Tech Engineering	390	13.4%	

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Newark), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$1,716 PER UNIT/MO.	118% LIVING COST	108% BUSINESS COST
14% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

29 Tampa, FL

SCORE
44.70

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	49,120	27.6%	\$86,283	11.6%
Software Developers & Programmers	15,290	28.7%	\$95,483	19.2%
Computer Support, Database & Systems	27,510	29.8%	\$75,163	6.9%
Computer & Infor. Systems Managers	3,430	84.4%	\$139,650	-3.7%
Technology Engineering-Related	2,890	-18.8%	\$80,118	7.9%
TOTAL NON-TECH OCCUPATIONS	200,410	20.2%	\$43,342	12.8%
Sales	19,480	10.4%	\$63,600	8.1%
Administrative & Office Support	143,110	18.0%	\$34,702	14.6%
Business Operations & Finance	27,160	27.7%	\$66,859	5.5%
Marketing	10,660	61.5%	\$62,394	18.6%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings declined by 767 (-1.2%) since 2012. That's -2.0% of total growth in a population of 385,423.

Source: U.S. Census Bureau (City of Tampa), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$23.10 PSF (up 16.3%); Vacancy: 9.8% (down -530 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
L3 Technologies	490 1st Ave S	60,600
NexTech	4221 W Boy Scout Blvd	30,000
Datalink Software	14055 Riveredge Dr	26,100

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	1,655	37.3%	75% 25%
Computer Engineering	1,243	32.2%	BACHELOR'S DEGREE OR HIGHER
Math/Statistics	133	29.1%	MALE FEMALE
Other Tech Engineering	279	76.6%	

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Tampa), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$1,192 PER UNIT/MO.	103% LIVING COST	100% BUSINESS COST
25% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

30 Charlotte, NC

SCORE
44.51

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	55,430	48.4%	\$95,952	9.2%
Software Developers & Programmers	16,030	35.2%	\$103,221	14.0%
Computer Support, Database & Systems	30,500	67.4%	\$84,919	9.7%
Computer & Infor. Systems Managers	5,440	40.2%	\$142,270	4.3%
Technology Engineering-Related	3,460	1.8%	\$86,709	9.1%
TOTAL NON-TECH OCCUPATIONS	151,610	33.6%	\$49,338	10.8%
Sales	17,510	63.3%	\$68,532	-2.9%
Administrative & Office Support	98,910	26.0%	\$36,561	9.9%
Business Operations & Finance	25,900	42.5%	\$79,615	10.3%
Marketing	9,290	51.3%	\$64,783	5.8%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 17,146 (13.5%) since 2012. That's 20.4% of total growth in a population of 859,052.

Source: U.S. Census Bureau (City of Charlotte), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$28.49 PSF (up 39.9%); Vacancy: 5.9% (down -740 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Honeywell	700 S Mint St	280,000
LendingTree	South End Project	175,000
GPN Data	3540 Toringdon Way	77,100

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	1,390	45.0%	75% 25%
Computer Engineering	947	64.4%	BACHELOR'S DEGREE OR HIGHER
Math/Statistics	224	9.8%	MALE FEMALE
Other Tech Engineering	219	104.7%	

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Charlotte), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$1,116 PER UNIT/MO.	98% LIVING COST	88% BUSINESS COST
21% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

31 Pittsburgh, PA

SCORE
43.98

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	45,440	20.7%	\$79,817	7.9%
Software Developers & Programmers	13,890	22.1%	\$88,292	11.7%
Computer Support, Database & Systems	23,150	18.8%	\$65,333	-0.1%
Computer & Infor. Systems Managers	3,250	46.4%	\$143,720	16.0%
Technology Engineering-Related	5,150	12.9%	\$81,743	11.3%
TOTAL NON-TECH OCCUPATIONS	145,960	-1.1%	\$44,799	9.0%
Sales	10,540	1.9%	\$67,741	-5.6%
Administrative & Office Support	105,170	-1.5%	\$35,548	11.7%
Business Operations & Finance	21,290	-4.4%	\$71,872	10.0%
Marketing	8,960	10.8%	\$62,067	7.0%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 3,697 (5.2%) since 2012. That's -97.3% of total decline in a population of 302,414.

Source: U.S. Census Bureau (City of Pittsburgh), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$22.84 PSF (up 13.7%); Vacancy: 14.7% (up 480 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Facebook	15th & Smallman St	105,000
Bombardier	1251 Waterfront Pl	90,000
Aurora Innovation	103 47th St	40,000

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	4,526 36.1%	44.1%	75% 25%
Computer Engineering	2,989 38.6%	BACHELOR'S DEGREE OR HIGHER	MALE FEMALE
Math/Statistics	510 15.9%		
Other Tech Engineering	1,027 40.9%		

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Pittsburgh), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$1,127 PER UNIT/MO.	93% LIVING COST	100% BUSINESS COST
6% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

32 Kansas City, MO

SCORE
42.44

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	53,360	25.6%	\$81,947	6.0%
Software Developers & Programmers	16,760	33.0%	\$85,030	2.2%
Computer Support, Database & Systems	27,960	26.8%	\$74,246	6.4%
Computer & Infor. Systems Managers	3,380	22.5%	\$126,400	12.8%
Technology Engineering-Related	5,260	3.5%	\$84,493	10.6%
TOTAL NON-TECH OCCUPATIONS	137,630	4.2%	\$46,796	9.1%
Sales	13,150	9.4%	\$70,485	0.1%
Administrative & Office Support	92,570	-0.7%	\$36,419	8.4%
Business Operations & Finance	22,130	11.9%	\$69,007	7.1%
Marketing	9,780	38.7%	\$62,904	7.8%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 9,073 (12.6%) since 2012. That's 37.1% of total growth in a population of 488,825.

Source: U.S. Census Bureau (City of Kansas City), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$19.64 PSF (up 19.0%); Vacancy: 13.3% (down -330 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Netsmart Technologies	11100 Nall Ave	156,000
Hyland	18103 W 106th St	63,800
Home Advisor	16850 W 119th St	30,000

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	1,392 46.8%	34.3%	75% 25%
Computer Engineering	920 44.9%	BACHELOR'S DEGREE OR HIGHER	MALE FEMALE
Math/Statistics	127 -3.8%		
Other Tech Engineering	345 90.6%		

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Kansas City), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$950 PER UNIT/MO.	97% LIVING COST	95% BUSINESS COST
14% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

33 Orlando, FL

SCORE
40.34

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	41,240	34.2%	\$85,712	17.7%
Software Developers & Programmers	13,860	64.8%	\$95,848	27.6%
Computer Support, Database & Systems	20,850	22.3%	\$72,384	7.1%
Computer & Infor. Systems Managers	3,070	124.1%	\$131,460	5.2%
Technology Engineering-Related	3,460	-11.1%	\$84,839	17.0%
TOTAL NON-TECH OCCUPATIONS	165,780	22.8%	\$43,204	14.7%
Sales	20,460	29.9%	\$58,780	3.0%
Administrative & Office Support	110,400	13.6%	\$33,360	12.6%
Business Operations & Finance	22,460	37.6%	\$66,907	8.1%
Marketing	12,460	115.6%	\$62,121	20.6%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 3,600 (7.1%) since 2012. That's 11.7% of total growth in a population of 280,258.

Source: U.S. Census Bureau (City of Orlando), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$23.94 PSF (up 20.8%); Vacancy: 8.7% (down -1050 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Kronos	2600 Lake Lucien Dr	37,900
Skyworks Solutions	1135 Innovation Dr	50,000
SurveyMonkey	200 Laurier Ave	47,600

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	2,723 59.1%	35.2%	75% 25%
Computer Engineering	1,799 44.2%	BACHELOR'S DEGREE OR HIGHER	MALE FEMALE
Math/Statistics	123 30.9%		
Other Tech Engineering	801 117.1%		

Source: The National Center for Education Statistics (Region), 2019. Source: U.S. Census Bureau (City of Orlando), 2019. Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$1,239 PER UNIT/MO.	104% LIVING COST	112% BUSINESS COST
29% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

34 Houston, TX

SCORE
39.51

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	95,640	3.1%	\$95,916	6.4%
Software Developers & Programmers	26,590	1.3%	\$104,413	12.2%
Computer Support, Database & Systems	50,970	6.7%	\$90,430	8.6%
Computer & Infor. Systems Managers	6,130	17.0%	\$159,980	9.5%
Technology Engineering-Related	11,950	-11.7%	\$67,540	-22.7%
TOTAL NON-TECH OCCUPATIONS	373,390	8.9%	\$51,066	11.6%
Sales	42,450	13.4%	\$73,889	-1.6%
Administrative & Office Support	251,090	4.5%	\$37,803	12.9%
Business Operations & Finance	63,520	22.6%	\$83,497	7.0%
Marketing	16,330	22.7%	\$69,533	18.6%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 16,376 (4.4%) since 2012. That's 10.8% of total growth in a population of 2,313,230.

Source: U.S. Census Bureau (City of Houston), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$29.28 PSF (up 17.0%); Vacancy: 19.0% (up 700 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Hewlett Packard Enterprise	Springwoods Village	568,000
PROS Holdings	3200 Kirby Dr	118,000
Welocalize	785 Greens Pkwy	47,000

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	2,698 71.3%	32.7%	77% 23%
Computer Engineering	1,877 91.9%	BACHELOR'S DEGREE OR HIGHER	MALE FEMALE
Math/Statistics	408 21.4%		
Other Tech Engineering	413 58.2%		

Source: The National Center for Education Statistics (Region), 2019. Source: U.S. Census Bureau (City of Houston), 2019. Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$1,105 PER UNIT/MO.	108% LIVING COST	103% BUSINESS COST
8% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

35 St. Louis, MO

SCORE
35.34

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	54,020	6.5%	\$88,167	9.7%
Software Developers & Programmers	16,120	8.0%	\$94,835	10.8%
Computer Support, Database & Systems	30,470	11.8%	\$78,566	8.7%
Computer & Infor. Systems Managers	3,130	-4.3%	\$136,100	14.9%
Technology Engineering-Related	4,300	-17.9%	\$96,309	15.0%
TOTAL NON-TECH OCCUPATIONS	166,320	6.7%	\$47,120	10.4%
Sales	16,300	23.8%	\$64,965	2.5%
Administrative & Office Support	114,260	2.7%	\$36,628	10.1%
Business Operations & Finance	26,050	11.7%	\$74,799	7.4%
Marketing	9,710	19.6%	\$66,379	8.6%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings declined by 3,570 (-6.1%) since 2012. That's 37.4% of total decline in a population of 308,626.

Source: U.S. Census Bureau (City of St. Louis), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$20.00 PSF (up 8.9%); Vacancy: 11.4% (down -390 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Benson Hill	N Warson Rd	160,000
Mastercard	5555 Winghaven	74,000
Lumeris	3251 Riverport Ln	66,000

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	2,034	62.2%	37.1%
Computer Engineering	1,311	68.5%	74% 26% BACHELOR'S DEGREE OR HIGHER MALE FEMALE
Math/Statistics	280	17.6%	
Other Tech Engineering	443	86.1%	

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of St. Louis), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$899 PER UNIT/MO.	94% LIVING COST	92% BUSINESS COST
10% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

36 Indianapolis, IN

SCORE
34.46

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	37,650	24.1%	\$83,831	10.5%
Software Developers & Programmers	12,280	26.1%	\$86,282	7.9%
Computer Support, Database & Systems	20,040	28.3%	\$75,688	11.7%
Computer & Infor. Systems Managers	2,870	11.2%	\$133,770	22.0%
Technology Engineering-Related	2,460	2.5%	\$79,669	5.6%
TOTAL NON-TECH OCCUPATIONS	123,580	17.7%	\$48,187	10.0%
Sales	13,930	20.1%	\$82,580	17.0%
Administrative & Office Support	82,650	18.1%	\$36,641	11.2%
Business Operations & Finance	18,810	9.7%	\$69,664	6.1%
Marketing	8,190	29.8%	\$56,876	2.6%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 2,450 (1.8%) since 2012. That's 11.4% of total growth in a population of 857,386.

Source: U.S. Census Bureau (City of Indianapolis), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$20.49 PSF (up 19.6%); Vacancy: 16.8% (down -140 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Infosys	1 American Sq	53,100
Kronos	101 W Washington St	42,600
Baker Hill Solutions	1320 City Center Dr	26,400

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	917	36.3%	32.1%
Computer Engineering	619	28.7%	77% 23% BACHELOR'S DEGREE OR HIGHER MALE FEMALE
Math/Statistics	98	-5.8%	
Other Tech Engineering	200	127.3%	

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Indianapolis), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$884 PER UNIT/MO.	95% LIVING COST	91% BUSINESS COST
14% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

37 Cleveland, OH

SCORE
32.84

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	35,700	17.2%	\$80,165	10.4%
Software Developers & Programmers	10,130	16.8%	\$78,016	9.0%
Computer Support, Database & Systems	20,140	18.3%	\$74,026	10.9%
Computer & Infor. Systems Managers	2,610	9.7%	\$134,880	15.3%
Technology Engineering-Related	2,820	18.0%	\$81,092	9.2%
TOTAL NON-TECH OCCUPATIONS	124,410	11.0%	\$48,177	8.8%
Sales	11,840	-7.9%	\$74,616	2.1%
Administrative & Office Support	83,440	9.4%	\$37,041	10.6%
Business Operations & Finance	20,830	28.6%	\$71,891	7.3%
Marketing	8,300	22.4%	\$62,897	11.5%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings declined by 598 (-1.0%) since 2012. That's 11.1% of total decline in a population of 385,552.

Source: U.S. Census Bureau (City of Cleveland), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$18.96 PSF (up 9.2%); Vacancy: 17.5% (down -140 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
BrightEdge Technologies	1500 W 3rd St	16,800
All File Recovery	5755 Granger Rd	5,100
North Coast Media	1360 E 9th St	4,100

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	2,744	17.0%	77% 23%
Computer Engineering	1,946	140.0%	BACHELOR'S DEGREE OR HIGHER
Math/Statistics	320	48.8%	MALE FEMALE
Other Tech Engineering	478	77.7%	

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Cleveland), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$891 PER UNIT/MO.	88% LIVING COST	97% BUSINESS COST
12% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

38 Sacramento, CA

SCORE
32.52

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	39,110	12.6%	\$96,721	11.6%
Software Developers & Programmers	13,110	22.0%	\$98,199	13.2%
Computer Support, Database & Systems	17,810	1.9%	\$86,006	7.9%
Computer & Infor. Systems Managers	2,790	12.0%	\$149,830	28.1%
Technology Engineering-Related	5,400	34.7%	\$101,034	3.3%
TOTAL NON-TECH OCCUPATIONS	115,430	10.7%	\$48,273	6.4%
Sales	8,760	1.2%	\$70,027	4.2%
Administrative & Office Support	80,500	9.1%	\$39,099	9.1%
Business Operations & Finance	20,050	20.6%	\$75,663	11.0%
Marketing	6,120	17.5%	\$48,060	-32.0%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings declined by 128 (-0.2%) since 2012. That's -0.5% of total growth in a population of 501,890.

Source: U.S. Census Bureau (City of Sacramento), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$23.64 PSF (up 18.7%); Vacancy: 10.7% (down -890 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Penumbra	8040 Foothills Blvd	157,500
Micron Technology	2235 Iron Point Rd	96,000
Toshiba Memory America	35 Iron Point Cir	28,100

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	1,965	32.8%	68% 32%
Computer Engineering	1,117	69.2%	BACHELOR'S DEGREE OR HIGHER
Math/Statistics	405	81.6%	MALE FEMALE
Other Tech Engineering	443	48.7%	

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Sacramento), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$1,429 PER UNIT/MO.	110% LIVING COST	119% BUSINESS COST
44% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

39 Hartford, CT

SCORE
32.42

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	25,770	9.4%	\$98,645	11.5%
Software Developers & Programmers	8,300	34.5%	\$100,871	16.2%
Computer Support, Database & Systems	11,940	-3.7%	\$85,363	5.6%
Computer & Infor. Systems Managers	3,590	13.2%	\$141,680	11.0%
Technology Engineering-Related	1,940	6.6%	\$91,229	17.3%
TOTAL NON-TECH OCCUPATIONS	67,670	-2.0%	\$53,164	9.3%
Sales	4,750	-16.5%	\$74,592	-6.6%
Administrative & Office Support	46,350	-5.6%	\$42,729	10.8%
Business Operations & Finance	12,640	16.0%	\$77,942	6.7%
Marketing	3,930	17.3%	\$70,633	10.6%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings declined by 826 (-3.5%) since 2012. That's 56.3% of total decline in a population of 123,420.

Source: U.S. Census Bureau (City of Hartford), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$19.92 PSF (down -0.2%); Vacancy: 17.9% (up 100 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Infosys	225 Asylum St (Hartford)	56,000
COCC	500 Enterprise Dr (Rocky Hill)	23,100
VeraCore Software Solutions	76 Batterson Park Rd (Farmington)	10,700

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	2,524	56.6%	16.6%
Computer Engineering	1,321	58.0%	74% 26% BACHELOR'S DEGREE OR HIGHER MALE FEMALE
Math/Statistics	673	51.2%	
Other Tech Engineering	530	60.1%	

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Hartford), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$1,326 PER UNIT/MO.	105% LIVING COST	115% BUSINESS COST
11% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

40 Cincinnati, OH

SCORE
31.93

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	37,820	13.2%	\$85,925	10.4%
Software Developers & Programmers	10,870	5.3%	\$91,810	17.8%
Computer Support, Database & Systems	20,920	18.8%	\$76,634	5.4%
Computer & Infor. Systems Managers	3,200	19.9%	\$131,860	15.1%
Technology Engineering-Related	2,830	0.7%	\$80,059	6.5%
TOTAL NON-TECH OCCUPATIONS	126,670	16.2%	\$47,799	10.4%
Sales	13,760	-1.4%	\$74,161	5.0%
Administrative & Office Support	83,710	13.6%	\$36,484	11.0%
Business Operations & Finance	20,290	49.6%	\$70,136	9.2%
Marketing	8,910	14.5%	\$62,526	10.3%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 518 (0.9%) since 2012. That's 10.9% of total growth in a population of 301,305.

Source: U.S. Census Bureau (City of Cincinnati), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$19.37 PSF (up 3.0%); Vacancy: 18.9% (down -260 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
L3 Technologies	5412 Courseview Dr	17,200
Jenzabar	10300 Alliance Rd	13,000
Epicor Software Corp	4700 Duke Dr	4,200

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	1,751	54.3%	35.8%
Computer Engineering	1,229	73.3%	76% 24% BACHELOR'S DEGREE OR HIGHER MALE FEMALE
Math/Statistics	235	33.5%	
Other Tech Engineering	287	14.8%	

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Cincinnati), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$951 PER UNIT/MO.	91% LIVING COST	93% BUSINESS COST
16% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

41 Rochester, NY

SCORE
31.87

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	22,180	15.0%	\$79,809	9.8%
Software Developers & Programmers	6,530	11.4%	\$88,903	16.3%
Computer Support, Database & Systems	11,360	33.3%	\$67,195	7.6%
Computer & Infor. Systems Managers	1,280	-7.2%	\$142,470	23.8%
Technology Engineering-Related	3,010	-14.7%	\$81,038	8.8%
TOTAL NON-TECH OCCUPATIONS	65,200	-2.1%	\$45,664	9.5%
Sales	5,510	24.4%	\$73,830	6.9%
Administrative & Office Support	46,130	-6.4%	\$36,230	11.1%
Business Operations & Finance	9,480	0.3%	\$69,490	0.8%
Marketing	4,080	19.3%	\$58,925	-5.5%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings declined by 420 (-1.0%) since 2012. That's 17.0% of total decline in a population of 208,049.

Source: U.S. Census Bureau (City of Rochester), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$19.50 PSF (down 0.0%); Vacancy: 15.7% (down -50 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Alstom Signaling	Riverwood Tech Campus	105,000
IDEX Health & Science	John Street	100,000
Datto	The Metropolitan	84,000

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	2,337 34.0%	25.7%	76% 24%
Computer Engineering	1,599 36.3%	BACHELOR'S DEGREE OR HIGHER	MALE FEMALE
Math/Statistics	360 5.0%		
Other Tech Engineering	378 65.8%		

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Rochester), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$992 PER UNIT/MO.	89% LIVING COST	92% BUSINESS COST
17% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

42 Long Island, NY

SCORE
31.47

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	33,271	19.9%	\$94,780	7.3%
Software Developers & Programmers	9,375	10.3%	\$100,513	6.4%
Computer Support, Database & Systems	16,519	28.3%	\$81,864	7.9%
Computer & Infor. Systems Managers	2,541	12.4%	\$168,078	15.9%
Technology Engineering-Related	4,836	17.7%	\$89,264	6.9%
TOTAL NON-TECH OCCUPATIONS	174,155	2.6%	\$51,270	14.7%
Sales	15,280	47.6%	\$81,457	3.6%
Administrative & Office Support	127,912	-4.8%	\$41,017	12.8%
Business Operations & Finance	23,041	25.8%	\$83,693	5.0%
Marketing	7,922	18.2%	\$64,283	0.5%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 1,280 (16.0%) since 2012. That's 168.7% of total growth in a population of 61,033.

Source: U.S. Census Bureau (Cities of Glen Cove and Long Beach), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$27.35 PSF (up 3.8%); Vacancy: 10.2% (down -460 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
CA Technologies (Broadcom)	100 Baylis Rd	44,000
Crown Cstle	201 Old Country Rd	15,000
Didit.com	2 Huntington Quadrangle	12,000

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	2,786 56.5%	52.7%	72% 28%
Computer Engineering	1,543 71.8%	BACHELOR'S DEGREE OR HIGHER	MALE FEMALE
Math/Statistics	569 9.6%		
Other Tech Engineering	674 85.7%		

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (Cities of Glen Cove and Long Beach), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$2,243 PER UNIT/MO.	126% LIVING COST	93% BUSINESS COST
18% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

43 Ft. Lauderdale, FL

SCORE
30.97

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	25,838	46.8%	\$89,179	23.7%
Software Developers & Programmers	7,968	34.1%	\$89,327	14.9%
Computer Support, Database & Systems	14,299	52.0%	\$82,295	33.1%
Computer & Infor. Systems Managers	1,847	74.3%	\$137,898	6.7%
Technology Engineering-Related	1,725	44.9%	\$93,380	25.5%
TOTAL NON-TECH OCCUPATIONS	125,869	16.4%	\$45,584	11.9%
Sales	15,232	16.8%	\$65,420	-4.0%
Administrative & Office Support	86,754	11.3%	\$36,069	16.9%
Business Operations & Finance	16,712	25.6%	\$70,141	4.0%
Marketing	7,172	85.8%	\$61,336	9.7%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 1,107 (4.8%) since 2012. That's 11.9% of total growth in a population of 180,071.

Source: U.S. Census Bureau (City of Ft. Lauderdale), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$33.98 PSF (up 28.7%); Vacancy: 9.9% (down -650 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Motorola	401 E Las Olas Blvd	24,400
Synechron	1300 Sawgrass Corp Pky	20,000
Arris Solutions	2100 W Cypress Creek Rd	16,800

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	945 -1.6%	35.1%	73% 27%
Computer Engineering	824 -1.9%	BACHELOR'S DEGREE OR HIGHER	MALE FEMALE
Math/Statistics	62 -10.1%		
Other Tech Engineering	59 15.7%		

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Ft. Lauderdale), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$1,587 PER UNIT/MO.	113% LIVING COST	102% BUSINESS COST
19% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

44 Milwaukee, WI

SCORE
29.26

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	31,620	10.1%	\$82,775	7.5%
Software Developers & Programmers	9,400	12.7%	\$87,397	13.9%
Computer Support, Database & Systems	16,870	20.8%	\$74,483	2.4%
Computer & Infor. Systems Managers	2,530	5.0%	\$127,900	12.7%
Technology Engineering-Related	2,820	-29.3%	\$76,490	8.7%
TOTAL NON-TECH OCCUPATIONS	104,830	7.2%	\$47,265	8.6%
Sales	9,790	17.2%	\$65,029	-4.0%
Administrative & Office Support	70,350	1.4%	\$38,208	10.1%
Business Operations & Finance	17,220	24.9%	\$69,643	2.9%
Marketing	7,470	18.4%	\$57,691	3.7%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings declined by 3,202 (-2.9%) since 2012. That's 90.1% of total decline in a population of 595,365.

Source: U.S. Census Bureau (City of Milwaukee), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$18.74 PSF (up 9.7%); Vacancy: 14.9% (down -40 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Lytix	13400 Bishops Ln	12,200
Crescendo Collective	1134 N 9th St	8,700
Applied Technologies	13400 Bishops Ln	6,800

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	800 26.8%	23.6%	76% 24%
Computer Engineering	600 35.1%	BACHELOR'S DEGREE OR HIGHER	MALE FEMALE
Math/Statistics	50 -12.3%		
Other Tech Engineering	150 15.4%		

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Milwaukee), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$1,113 PER UNIT/MO.	99% LIVING COST	103% BUSINESS COST
5% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

45 Nashville, TN

SCORE
27.74

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	29,120	28.0%	\$83,184	14.1%
Software Developers & Programmers	7,970	32.2%	\$89,425	12.6%
Computer Support, Database & Systems	16,250	29.3%	\$74,056	16.7%
Computer & Infor. Systems Managers	2,460	7.9%	\$125,610	14.7%
Technology Engineering-Related	2,440	30.5%	\$80,820	13.6%
TOTAL NON-TECH OCCUPATIONS	123,760	20.8%	\$47,522	13.3%
Sales	12,920	26.0%	\$72,621	15.0%
Administrative & Office Support	83,100	16.2%	\$37,405	14.4%
Business Operations & Finance	21,140	29.9%	\$67,370	1.8%
Marketing	6,600	48.0%	\$62,208	16.7%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 6,542 (5.7%) since 2012. That's 15.3% of total growth in a population of 665,967.

Source: U.S. Census Bureau (City of Nashville), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$27.30 PSF (up 41.3%); Vacancy: 10.3% (down -40 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Amazon	401 Commerce St	100,000
Maximus	2 Dell Pkwy	78,000
Apple Music	510 Houston Street	30,000

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	965 33.5%	41.2%	70% 30%
Computer Engineering	576 36.5%	BACHELOR'S DEGREE OR HIGHER	MALE FEMALE
Math/Statistics	253 27.1%		
Other Tech Engineering	136 33.3%		

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Nashville), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$1,203 PER UNIT/MO.	108% LIVING COST	98% BUSINESS COST
19% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

46 Jacksonville, FL

SCORE
26.85

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	21,490	40.7%	\$80,365	8.1%
Software Developers & Programmers	6,700	64.2%	\$84,399	8.4%
Computer Support, Database & Systems	11,930	41.0%	\$72,566	8.0%
Computer & Infor. Systems Managers	1,460	60.4%	\$126,420	-2.9%
Technology Engineering-Related	1,400	-23.1%	\$79,485	10.6%
TOTAL NON-TECH OCCUPATIONS	93,200	17.1%	\$42,072	10.3%
Sales	8,010	2.7%	\$64,080	11.9%
Administrative & Office Support	68,780	14.5%	\$34,674	13.6%
Business Operations & Finance	12,220	34.6%	\$64,371	-4.1%
Marketing	4,190	55.8%	\$56,397	2.4%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 5,778 (4.3%) since 2012. That's 10.4% of total growth in a population of 892,064.

Source: U.S. Census Bureau (City of Jacksonville), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$19.97 PSF (up 15.4%); Vacancy: 14.8% (down -550 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
SS&C Technologies	9000 Southside Blvd	107,000
LoanLogics	10401 Deerwood Park Blvd	16,300
Andromeda System	330 Corporate Way	6,300

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	385 16.0%	28.1%	75% 25%
Computer Engineering	299 14.1%	BACHELOR'S DEGREE OR HIGHER	MALE FEMALE
Math/Statistics	58 56.8%		
Other Tech Engineering	28 -15.2%		

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Jacksonville), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$1,042 PER UNIT/MO.	101% LIVING COST	95% BUSINESS COST
23% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

47 San Antonio, TX

SCORE
24.49

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	30,170	15.6%	\$87,752	14.0%
Software Developers & Programmers	6,910	7.0%	\$99,491	8.6%
Computer Support, Database & Systems	18,930	14.9%	\$79,733	16.9%
Computer & Infor. Systems Managers	1,330	9.0%	\$143,300	20.0%
Technology Engineering-Related	3,000	53.8%	\$86,687	14.2%
TOTAL NON-TECH OCCUPATIONS	131,360	14.8%	\$42,832	10.7%
Sales	10,520	32.0%	\$55,744	2.3%
Administrative & Office Support	96,250	10.9%	\$34,413	11.9%
Business Operations & Finance	18,910	19.2%	\$72,441	4.5%
Marketing	5,680	49.5%	\$63,010	7.1%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 23,229 (10.3%) since 2012. That's 18.0% of total growth in a population of 1,511,913.

Source: U.S. Census Bureau (City of San Antonio), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$22.56 PSF (up 13.5%); Vacancy: 14.0% (down -360 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
SRC Inc	4801 NW Loop 410	18,000
Conceptual MindWorks	13409 NW Military Hwy.	10,000

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	1,154 35.6%	26.5%	74% 26%
Computer Engineering	732 55.1%	BACHELOR'S DEGREE OR HIGHER	MALE FEMALE
Math/Statistics	168 10.5%		
Other Tech Engineering	254 11.9%		

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of San Antonio), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$985 PER UNIT/MO.	103% LIVING COST	89% BUSINESS COST
13% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

48 Miami, FL

SCORE
22.16

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	25,289	35.4%	\$88,118	12.6%
Software Developers & Programmers	6,809	30.4%	\$87,038	7.6%
Computer Support, Database & Systems	14,783	38.8%	\$82,794	18.3%
Computer & Infor. Systems Managers	1,869	71.5%	\$126,045	-10.9%
Technology Engineering-Related	1,828	6.3%	\$96,413	18.5%
TOTAL NON-TECH OCCUPATIONS	157,162	10.3%	\$44,031	11.0%
Sales	14,726	-9.2%	\$61,215	0.8%
Administrative & Office Support	112,961	11.7%	\$35,189	17.1%
Business Operations & Finance	20,630	6.2%	\$72,171	8.8%
Marketing	8,845	53.6%	\$62,710	5.6%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 6,728 (10.7%) since 2012. That's 13.6% of total growth in a population of 463,354.

Source: U.S. Census Bureau (City of Miami), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$39.76 PSF (up 29.4%); Vacancy: 11.3% (down -530 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
CareCloud	5200 Blue Lagoon Dr	30,000
Cable & Wireless Communications	7600 Corporate Center Dr	26,300
Farelogix	760 NW 107th Ave	25,300

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	1,541 47.2%	30.1%	73% 27%
Computer Engineering	1,217 57.6%	BACHELOR'S DEGREE OR HIGHER	MALE FEMALE
Math/Statistics	94 38.2%		
Other Tech Engineering	230 11.1%		

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Miami), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$1,630 PER UNIT/MO.	114% LIVING COST	115% BUSINESS COST
15% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

49 Richmond, VA

SCORE
21.93

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	25,560	11.6%	\$93,386	11.4%
Software Developers & Programmers	8,330	21.4%	\$98,657	13.4%
Computer Support, Database & Systems	14,110	11.9%	\$83,898	11.4%
Computer & Infor. Systems Managers	1,510	-16.6%	\$155,450	14.2%
Technology Engineering-Related	1,610	-1.2%	\$91,049	16.7%
TOTAL NON-TECH OCCUPATIONS	80,660	2.3%	\$49,884	11.8%
Sales	6,030	-19.2%	\$76,119	0.4%
Administrative & Office Support	53,670	-0.5%	\$37,199	13.2%
Business Operations & Finance	15,240	14.9%	\$77,505	12.7%
Marketing	5,720	35.2%	\$67,666	6.4%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings grew by 117 (0.3%) since 2012. That's 0.7% of total growth in a population of 227,032.

Source: U.S. Census Bureau (City of Richmond), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$20.05 PSF (up 6.2%); Vacancy: 10.1% (down -500 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
Trimech Solutions	4461 Cox Rd	15,000
Iron Bow Technologies	1001-1063 Technology Park Dr	13,700
RTS	4951 Lake Brook Drive, Suite 225	11,200

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	767	27.6%	38.6%
Computer Engineering	554	27.4%	70% 30% BACHELOR'S DEGREE OR HIGHER MALE FEMALE
Math/Statistics	135	58.8%	
Other Tech Engineering	78	-3.7%	

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Richmond), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$1,073 PER UNIT/MO.	100% LIVING COST	92% BUSINESS COST
18% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

50 Norfolk, VA

SCORE
21.33

EMPLOYMENT BREAKDOWN

	Employed 2018	Growth 2013-18	Average Wage	Growth 2013-18
TOTAL TECH OCCUPATIONS	26,120	-5.5%	\$86,983	10.4%
Software Developers & Programmers	5,790	-13.5%	\$96,147	13.8%
Computer Support, Database & Systems	13,990	-0.7%	\$79,694	11.3%
Computer & Infor. Systems Managers	1,190	-29.2%	\$150,570	14.9%
Technology Engineering-Related	5,150	-0.6%	\$81,790	10.6%
TOTAL NON-TECH OCCUPATIONS	84,460	2.7%	\$43,877	13.1%
Sales	5,850	17.7%	\$66,956	8.1%
Administrative & Office Support	61,390	-0.3%	\$34,220	11.7%
Business Operations & Finance	13,490	11.6%	\$72,687	11.2%
Marketing	3,730	2.5%	\$62,425	9.9%

Source: U.S. Bureau of Labor Statistics (Metro Area), April 2019.

POPULATION TRENDS

The population of twentysomethings declined by 323 (-0.5%) since 2012. That's 29.9% of total decline in a population of 244,703.

Source: U.S. Census Bureau (City of Norfolk), 2019.

OFFICE RENT & VACANCY TRENDS

Asking Rent: \$18.59 PSF (up 4.9%); Vacancy: 12.8% (down -270 bps) (Q1 2019 data with change since Q1 2014)

Source: CBRE Research (Office Market), Q1 2019.

TOP TECH OFFICE SPACE DEALS (2019)

Tenant	Address	Sq. Ft.
General Dynamics	1545 Crossways Rd	161,100
Doma Technologies	841 Seahawk Cir	30,000
Leidos	724 Thimble Shoals Blvd	20,000

Source: CBRE Research (Office Market), 2019.

LABOR POOL

TECH DEGREE COMPLETIONS 2017	Growth 2012-17	EDUCATIONAL ATTAINMENT 2018	TECH DIVERSITY
TOTAL TECH DEGREES	1,588	5.1%	29.2%
Computer Engineering	1,084	7.4%	75% 25% BACHELOR'S DEGREE OR HIGHER MALE FEMALE
Math/Statistics	140	21.7%	
Other Tech Engineering	364	-5.9%	

Source: The National Center for Education Statistics (Region), 2019.

Source: U.S. Census Bureau (City of Norfolk), 2019.

Source: U.S. Census Bureau (Metro Area), 2019.

HOUSING & RELATIVE COSTS* (US = 100%)

AVERAGE APARTMENT RENT: \$1,064 PER UNIT/MO.	97% LIVING COST	89% BUSINESS COST
8% FIVE-YEAR GROWTH		

Source: Relative Costs from Moody's Analytics (Metro), Q1 2019; Apt. rent data from CBRE EA (Metro), Q1 2019.

FULL REPORT DATA SUMMARY





WHAT IS TECH TALENT?

TABLE 1: TECH TALENT LABOR BY INDUSTRY (2018)*

Tech Talent occupations in each industry as a % of U.S. Tech Talent

<u>Industry</u>	<u>% of Total Tech Talent Labor</u>
Core High-Tech*	37.2%
Professional, Scientific & Technical Services (Excluding High-Tech)	10.5%
Other	8.6%
FIRE	8.3%
Management of Companies & Enterprises	6.2%
Government	6.0%
Information (Excluding High-Tech)	5.8%
Transportation, Warehousing & Wholesale	4.9%
Manufacturing (Excluding High-Tech)	4.8%
Education	4.8%
Health Care	2.9%

Source: U.S. Bureau of Labor Statistics (National), April 2019.

*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, CA	84.79	26	Orange County, CA	47.70
2	Seattle, WA	73.82	27	Columbus, OH	44.92
3	Toronto, ON	69.88	28	Newark, NJ	44.82
4	Washington, D.C.	69.83	29	Tampa, FL	44.70
5	New York, NY	65.12	30	Charlotte, NC	44.51
6	Austin, TX	62.10	31	Pittsburgh, PA	43.98
7	Boston, MA	60.26	32	Kansas City, MO	42.44
8	Denver, CO	59.43	33	Orlando, FL	40.34
9	Atlanta, GA	58.08	34	Houston, TX	39.51
10	Raleigh-Durham, NC	57.68	35	St. Louis, MO	35.34
11	Dallas/Ft. Worth, TX	57.63	36	Indianapolis, IN	34.46
12	Vancouver, BC	56.25	37	Cleveland, OH	32.84
13	Montreal, QC	55.54	38	Sacramento, CA	32.52
14	Baltimore, MD	55.28	39	Hartford, CT	32.42
15	Salt Lake City, UT	52.99	40	Cincinnati, OH	31.93
16	Portland, OR	52.65	41	Rochester, NY	31.87
17	Minneapolis, MN	52.05	42	Long Island, NY	31.47
18	San Diego, CA	51.33	43	Fort Lauderdale, FL	30.97
19	Ottawa, ON	51.10	44	Milwaukee, WI	29.26
20	Phoenix, AZ	50.57	45	Nashville, TN	27.74
21	Chicago, IL	48.87	46	Jacksonville, FL	26.85
22	Philadelphia, PA	48.86	47	San Antonio, TX	24.49
23	Los Angeles, CA	48.82	48	Miami, FL	22.16
24	Detroit, MI	48.04	49	Richmond, VA	21.93
25	Madison, WI	47.96	50	Norfolk, VA	21.33

Source: CBRE Research; CBRE Econometric Advisors; U.S. Bureau of Labor Statistics; Statistics Canada; CMHC; Moody's Analytics; The National Center of Education Statistics; National Science Foundation; Axiometrics, 2019.

WHAT ARE TECH TALENT MOMENTUM MARKETS?

TABLE 3: TECH TALENT LABOR CONCENTRATION (2018)

Market	Tech Talent Jobs as % of Total Jobs	Market	Tech Talent Jobs as % of Total Jobs
SF Bay Area, CA	10.0%	Detroit, MI	4.4%
Ottawa, ON	9.9%	Rochester, NY	4.3%
Toronto, ON	8.3%	Phoenix, AZ	4.1%
Washington, D.C.	8.1%	Sacramento, CA	4.0%
Seattle, WA	7.9%	Pittsburgh, PA	4.0%
Austin, TX	7.0%	St. Louis, MO	4.0%
Montreal, QC	6.8%	Richmond, VA	4.0%
Raleigh-Durham, NC	6.5%	New York, NY	3.9%
Denver, CO	6.5%	Philadelphia, PA	3.8%
Vancouver, BC	6.4%	Tampa, FL	3.7%
Madison, WI	6.0%	Milwaukee, WI	3.7%
Boston, MA	5.8%	Indianapolis, IN	3.6%
Baltimore, MD	5.5%	Chicago, IL	3.6%
Atlanta, GA	5.3%	Cincinnati, OH	3.5%
Kansas City, MO	5.0%	Norfolk, VA	3.5%
Portland, OR	5.0%	Cleveland, OH	3.4%
San Diego, CA	5.0%	Orlando, FL	3.3%
Salt Lake City, UT	5.0%	Houston, TX	3.2%
Minneapolis, MN	4.7%	Jacksonville, FL	3.1%
Dallas/Ft. Worth, TX	4.7%	Ft. Lauderdale, FL	3.1%
Columbus, OH	4.6%	Los Angeles, CA	3.1%
Charlotte, NC	4.6%	Nashville, TN	3.0%
Newark, NJ	4.5%	San Antonio, TX	3.0%
Orange County, CA	4.4%	Long Island, NY	2.5%
Hartford, CT	4.4%	Miami, FL	2.2%

Source: U.S. Bureau of Labor Statistics (Metro) April 2019, Statistics Canada (Metro), 2019.

TABLE 4: TECH TALENT LABOR POOLS BY MARKET (2018)

Labor Pool Size	Market	Tech Talent Total
Large Tech Talent Markets (>50,000 Labor Pool)	SF Bay Area, CA	353,760
	New York, NY	264,374
	Washington, D.C.	253,660
	Toronto, ON	228,500
	Dallas/Ft. Worth, TX	169,290
	Chicago, IL	166,620
	Boston, MA	160,070
	Seattle, WA	156,770
	Atlanta, GA	141,580
	Los Angeles, CA	139,774
	Montreal, QC	130,200
	Philadelphia, PA	109,670
	Denver, CO	107,170
	Houston, TX	95,640
	Minneapolis, MN	92,830
	Detroit, MI	86,090
	Phoenix, AZ	85,060
	Baltimore, MD	75,150
	Vancouver, BC	74,700
	San Diego, CA	73,170
	Orange County, CA	72,699
	Austin, TX	72,360
	Ottawa, ON	64,500
	Raleigh-Durham, NC	61,040
	Portland, OR	59,580
	Charlotte, NC	55,430
	St. Louis, MO	54,020
	Kansas City, MO	53,360
	Newark, NJ	53,168
	Small Tech Talent Markets (<50,000 Labor Pool)	Tampa, FL
Columbus, OH		48,600
Salt Lake City, UT		47,760
Pittsburgh, PA		45,440
Orlando, FL		41,240
Sacramento, CA		39,110
Cincinnati, OH		37,820
Indianapolis, IN		37,650
Cleveland, OH		35,700
Long Island, NY		33,271
Milwaukee, WI		31,620
San Antonio, TX		30,170
Nashville, TN		29,120
Norfolk, VA		26,120
Ft. Lauderdale, FL		25,838
Hartford, CT		25,770
Richmond, VA		25,560
Miami, FL		25,289
Madison, WI		23,470
Rochester, NY		22,180
Jacksonville, FL	21,490	

TABLE 5: TECH LABOR POOL GROWTH RATES (2013-2018)

Labor Pool Size	Market	% Change	By Volume
Large Tech Talent Markets (>50,000 Labor Pool)	Toronto, ON	54.0%	80,100
	Charlotte, NC	48.4%	18,070
	Vancouver, BC	42.6%	22,300
	Portland, OR	35.3%	15,540
	SF Bay Area, CA	33.4%	88,500
	Denver, CO	30.9%	25,290
	Atlanta, GA	29.1%	31,880
	Kansas City, MO	25.6%	10,870
	Seattle, WA	24.3%	30,680
	New York, NY	20.5%	44,920
	Detroit, MI	18.4%	13,370
	Los Angeles, CA	16.4%	19,704
	Dallas/Ft. Worth, TX	15.7%	22,960
	San Diego, CA	15.5%	9,820
	Montreal, QC	14.6%	16,600
	Orange County, CA	13.9%	8,889
	Philadelphia, PA	13.9%	13,400
	Minneapolis, MN	13.2%	10,860
	Austin, TX	12.6%	8,080
	Phoenix, AZ	12.3%	9,310
Baltimore, MD	11.9%	7,990	
Raleigh-Durham, NC	11.2%	6,170	
Chicago, IL	10.5%	15,790	
Newark, NJ	9.7%	4,696	
St. Louis, MO	6.5%	3,320	
Houston, TX	3.1%	2,860	
Boston, MA	2.4%	3,710	
Washington, D.C.	2.2%	5,520	
Ottawa, ON	-5.3%	-3,600	
Small Tech Talent Markets (<50,000 Labor Pool)	Madison, WI	47.0%	7,500
	Ft. Lauderdale, FL	46.8%	8,238
	Jacksonville, FL	40.7%	6,220
	Salt Lake City, UT	38.6%	13,290
	Miami, FL	35.4%	6,609
	Orlando, FL	34.2%	10,520
	Nashville, TN	28.0%	6,370
	Tampa, FL	27.6%	10,630
	Indianapolis, IN	24.1%	7,310
	Pittsburgh, PA	20.7%	7,800
	Long Island, NY	19.9%	5,521
	Cleveland, OH	17.2%	5,230
	San Antonio, TX	15.6%	4,070
	Rochester, NY	15.0%	2,890
	Cincinnati, OH	13.2%	4,410
	Sacramento, CA	12.6%	4,390
	Richmond, VA	11.6%	2,650
Milwaukee, WI	10.1%	2,910	
Hartford, CT	9.4%	2,210	
Columbus, OH	8.1%	3,660	
Norfolk, VA	-5.5%	-1,520	

Source: U.S. Bureau of Labor Statistics (Metro) April 2019, Statistics Canada (Metro), 2019.

Source: U.S. Bureau of Labor Statistics (Metro) April 2019, Statistics Canada (Metro), 2019.

WHAT DEFINES A TECH TALENT MARKET?

TABLE 6: TOP-10 MARKETS FOR EDUCATIONAL ATTAINMENT

25+ Years Old, Bachelor’s Degree or Higher

Market	Educational Attainment Rate
Seattle, WA	62.6%
Washington, D.C.	57.3%
Madison, WI	57.0%
Long Island, NY	52.7%
Denver, CO	52.3%
Austin, TX	51.0%
Minneapolis, MN	50.8%
Raleigh-Durham, NC	50.3%
Portland, OR	49.9%
SF Bay Area, CA	49.3%

Source: U.S. Census Bureau (City), 2019.

TABLE 7: TOP-10 MARKETS FOR TECH DEGREE COMPLETIONS (2017)

Market	Tech Degree Completions (2017)	Growth (2012-2017)
New York, NY	13,337	48.0%
Washington, D.C.	11,278	31.1%
Los Angeles, CA	9,621	37.7%
Boston, MA	9,429	61.0%
SF Bay Area, CA	8,225	46.3%
Chicago, IL	7,375	36.9%
Atlanta, GA	7,050	47.5%
Dallas/Ft. Worth, TX	6,503	98.5%
Detroit, MI	5,726	32.0%
Toronto, ON	5,397	37.8%

Source: The National Center for Education Statistics (Region), Canadian Universities, July 2019.
Note: Bachelor’s Degree or Higher.

TABLE 8: WHERE ARE TECH TALENT WORKERS COMING FROM AND WHERE ARE THEY HEADED?

Market	Tech Degrees (2012-2017)*	Tech Jobs Added (2013-2018)*	Brain Gain/Drain
Toronto, ON	22,466	80,100	57,634
SF Bay Area, CA	33,809	88,500	54,691
Seattle, WA	15,213	30,680	15,467
Charlotte, NC	5,885	18,070	12,185
Vancouver, BC	11,140	22,300	11,160
Portland, OR	8,375	15,540	7,165
Denver, CO	18,793	25,290	6,497
Kansas City, MO	6,040	10,870	4,830
Jacksonville, FL	1,851	6,220	4,369
Tampa, FL	6,787	10,630	3,843
Atlanta, GA	28,362	31,880	3,518
Indianapolis, IN	3,876	7,310	3,434
Ft. Lauderdale, FL	4,844	8,238	3,394
Nashville, TN	3,900	6,370	2,470
Miami, FL	6,565	6,609	44
Madison, WI	7,705	7,500	-205
Orlando, FL	10,737	10,520	-217
Milwaukee, WI	3,546	2,910	-636
San Antonio, TX	4,818	4,070	-748
Richmond, VA	3,417	2,650	-767
Dallas/Ft. Worth, TX	23,944	22,960	-984
Cincinnati, OH	7,155	4,410	-2,745
Sacramento, CA	7,514	4,390	-3,124
Austin, TX	11,381	8,080	-3,301
Orange County, CA	12,831	8,889	-3,942
Cleveland, OH	9,427	5,230	-4,197
St. Louis, MO	8,065	3,320	-4,745
Montreal, QC	21,403	16,600	-4,803
Minneapolis, MN	16,185	10,860	-5,325
San Diego, CA	15,300	9,820	-5,480
Long Island, NY	11,493	5,521	-5,972
Newark, NJ	10,849	4,696	-6,153
Columbus, OH	10,399	3,660	-6,739
Salt Lake City, UT	20,096	13,290	-6,806
Rochester, NY	10,218	2,890	-7,328
Houston, TX	10,759	2,860	-7,899
Philadelphia, PA	21,305	13,400	-7,905
Hartford, CT	10,311	2,210	-8,101
Baltimore, MD	16,873	7,990	-8,883
Norfolk, VA	7,599	-1,520	-9,119
New York, NY	54,299	44,920	-9,379
Raleigh-Durham, NC	15,792	6,170	-9,622
Ottawa, ON	6,609	-3,600	-10,209
Detroit, MI	24,225	13,370	-10,855
Pittsburgh, PA	20,360	7,800	-12,560
Chicago, IL	30,471	15,790	-14,681
Phoenix, AZ	24,404	9,310	-15,094
Los Angeles, CA	41,453	19,704	-21,749
Boston, MA	37,717	3,710	-34,007
Washington, D.C.	49,060	5,520	-43,540

Source: CBRE Research, U.S. Bureau of Labor Statistics, The National Center for Education Statistics (Metro), Canadian Universities, 2019.

*Tech degrees cover the most recent five-year period available (2012-2017) and tech jobs added cover the time period reflecting when most graduates would be counted in employment figures (2013-2018).

TABLE 9: TOP-10 MOST CONCENTRATED TWENTYSOMETHING MARKETS* (2017)

Market	Population Concentration of Twentysomethings
UNITED STATES	13.8%
Madison, WI	26.5%
Norfolk, VA	25.3%
Pittsburgh, PA	24.5%
Boston, MA	24.2%
Salt Lake City, UT	22.7%
Atlanta, GA	21.3%
Minneapolis, MN	21.1%
Richmond, VA	20.6%
Rochester, NY	20.0%
Columbus, OH	19.9%

Source: U.S. Census Bureau (City), 2019.
*Individuals aged 20-29 years living in downtown areas.

TABLE 11: TOP- & BOTTOM-10 MARKETS BY GENDER DIVERSITY IN TECH OCCUPATIONS (2017)

Market		% Male	% Female
Long Island, NY	▼ TOP 10 (most diverse)	71.7	28.3
New York, NY		71.7	28.3
Newark, NJ		71.7	28.3
Philadelphia, PA		71.5	28.5
Boston, MA		70.3	29.7
Richmond, VA		70.2	29.8
Nashville, TN		69.8	30.2
Baltimore, MD		69.7	30.3
Washington, D.C.		69.0	31.0
Sacramento, CA		68.3	31.7
Vancouver, BC	▼ BOTTOM 10 (least diverse)	81.7	18.3
Montreal, QC		78.7	21.3
Phoenix, AZ		78.6	21.4
Austin, TX		77.9	22.1
Ottawa, ON		77.7	22.3
Cleveland, OH		77.3	22.7
Indianapolis, IN		77.3	22.7
Seattle, WA		76.8	23.2
Cincinnati, OH		76.5	23.5
Houston, TX		76.5	23.5

Source: U.S. Census Bureau (City), Statistics Canada, 2019.

TABLE 10: TWENTYSOMETHING POPULATION CHANGE BY MARKET* (2012-2017)

U.S. Average = 2.5%

Labor Pool Size	Market	% Change
Large Tech Talent Markets (>50,000 Labor Pool)	Dallas/Ft. Worth, TX	14.7%
	Charlotte, NC	13.5%
	Kansas City, MO	12.6%
	Orange County, CA	11.1%
	Seattle, WA	10.2%
	Atlanta, GA	10.1%
	Denver, CO	9.5%
	Portland, OR	9.0%
	Phoenix, AZ	8.3%
	Toronto, ON	8.3%
	Raleigh-Durham, NC	7.8%
	Vancouver, BC	6.5%
	Detroit, MI	6.0%
	San Diego, CA	5.6%
	SF Bay Area, CA	5.2%
	Ottawa, ON	4.7%
	Los Angeles, CA	4.4%
	Houston, TX	4.4%
	Austin, TX	2.4%
	Montreal, QC	2.4%
Washington, D.C.	2.2%	
Boston, MA	1.9%	
Chicago, IL	1.5%	
Minneapolis, MN	-0.3%	
New York, NY	-0.9%	
Philadelphia, PA	-2.8%	
St. Louis, MO	-6.1%	
Baltimore, MD	-6.5%	
Newark, NJ	-7.6%	
Small Tech Talent Markets (<50,000 Labor Pool)	Long Island, NY	16.0%
	Miami, FL	10.7%
	San Antonio, TX	10.3%
	Madison, WI	9.2%
	Salt Lake City, UT	8.8%
	Columbus, OH	8.0%
	Orlando, FL	7.1%
	Nashville, TN	5.7%
	Pittsburgh, PA	5.2%
	Ft. Lauderdale, FL	4.8%
	Jacksonville, FL	4.3%
	Indianapolis, IN	1.8%
	Cincinnati, OH	0.9%
	Richmond, VA	0.3%
	Sacramento, CA	-0.2%
	Norfolk, VA	-0.5%
	Cleveland, OH	-1.0%
	Rochester, NY	-1.0%
Tampa, FL	-1.2%	
Milwaukee, WI	-2.9%	
Hartford, CT	-3.5%	

Source: U.S. Census Bureau (City), Statistics Canada (Metro), 2019.
*Individuals aged 20-29 years living in downtown areas.

TABLE 12: U.S. TECH TALENT LABOR CONCENTRATION BY INDUSTRY (2018)

Tech Talent Occupations as a % of All Occupations in Each Industry

Tech Talent Occupations are 3.6% of U.S. Employment

Industry	% of Total Tech Talent Labor
Core High-Tech*	49.7%
Information (Excluding High-Tech)	14.3%
Management of Companies & Enterprises	13.4%
Professional, Scientific & Technical Services (Excluding High-Tech)	7.7%
FIRE	5.3%
Government	3.2%
Manufacturing (Excluding High-Tech)	2.1%
Transportation, Warehousing & Wholesale	2.1%
Education	1.9%
Other	0.8%
Health Care	0.7%

Source: U.S. Bureau of Labor Statistics (National), April 2019.

*Includes computer software and services and computer product manufacturing

TECH TALENT HAS UNIQUE CONCENTRATIONS ACROSS MARKETS

TABLE 13: 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, WA	79,780	50.9%	Atlanta, GA	44,720	31.6%
SF Bay Area, CA	156,670	44.3%	Kansas City, MO	16,760	31.4%
Madison, WI	9,620	41.0%	Minneapolis, MN	29,040	31.3%
Raleigh-Durham, NC	23,710	38.8%	Jacksonville, FL	6,700	31.2%
Boston, MA	61,670	38.5%	Tampa, FL	15,290	31.1%
Salt Lake City, UT	18,110	37.9%	Ft. Lauderdale, FL	7,968	30.8%
New York, NY	99,384	37.6%	Pittsburgh, PA	13,890	30.6%
Detroit, MI	32,110	37.3%	Washington, D.C.	75,850	29.9%
Austin, TX	25,990	35.9%	St. Louis, MO	16,120	29.8%
Denver, CO	37,490	35.0%	Milwaukee, WI	9,400	29.7%
San Diego, CA	25,240	34.5%	Rochester, NY	6,530	29.4%
Newark, NJ	18,332	34.5%	Phoenix, AZ	24,980	29.4%
Dallas/Ft. Worth, TX	58,340	34.5%	Toronto, ON	67,000	29.3%
Vancouver, BC	25,200	33.7%	Charlotte, NC	16,030	28.9%
Orlando, FL	13,860	33.6%	Cincinnati, OH	10,870	28.7%
Orange County, CA	24,377	33.5%	Cleveland, OH	10,130	28.4%
Sacramento, CA	13,110	33.5%	Long Island, NY	9,375	28.2%
Chicago, IL	55,430	33.3%	Houston, TX	26,590	27.8%
Columbus, OH	15,880	32.7%	Nashville, TN	7,970	27.4%
Indianapolis, IN	12,280	32.6%	Baltimore, MD	20,290	27.0%
Richmond, VA	8,330	32.6%	Miami, FL	6,809	26.9%
Portland, OR	19,350	32.5%	Montreal, QC	34,100	26.2%
Los Angeles, CA	45,293	32.4%	Ottawa, ON	15,600	24.2%
Philadelphia, PA	35,470	32.3%	San Antonio, TX	6,910	22.9%
Hartford, CT	8,300	32.2%	Norfolk, VA	5,790	22.2%

Source: U.S. Bureau of Labor Statistics, Statistics Canada, April 2019.

Note: Software Developers & Programmers include: computer programmers; software application developers, software systems software developers, and web developers

TABLE 14: 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, TX	18,930	62.7%	Dallas/Ft. Worth, TX	86,620	51.2%
Miami, FL	14,783	58.5%	Pittsburgh, PA	23,150	50.9%
Cleveland, OH	20,140	56.4%	Orlando, FL	20,850	50.6%
St. Louis, MO	30,470	56.4%	Madison, WI	11,780	50.2%
Washington, D.C.	142,550	56.2%	Long Island, NY	16,519	49.6%
Tampa, FL	27,510	56.0%	Raleigh-Durham, NC	29,790	48.8%
Nashville, TN	16,250	55.8%	Denver, CO	51,740	48.3%
Jacksonville, FL	11,930	55.5%	New York, NY	123,286	46.6%
Baltimore, MD	41,710	55.5%	Los Angeles, CA	65,028	46.5%
Ft. Lauderdale, FL	14,299	55.3%	Austin, TX	33,660	46.5%
Cincinnati, OH	20,920	55.3%	Hartford, CT	11,940	46.3%
Richmond, VA	14,110	55.2%	Salt Lake City, UT	22,070	46.2%
Charlotte, NC	30,500	55.0%	Newark, NJ	24,317	45.7%
Phoenix, AZ	46,530	54.7%	Sacramento, CA	17,810	45.5%
Columbus, OH	26,390	54.3%	Detroit, MI	37,310	43.3%
Norfolk, VA	13,990	53.6%	Orange County, CA	31,083	42.8%
Milwaukee, WI	16,870	53.4%	Toronto, ON	93,100	40.7%
Houston, TX	50,970	53.3%	Ottawa, ON	25,800	40.0%
Indianapolis, IN	20,040	53.2%	Boston, MA	63,670	39.8%
Minneapolis, MN	49,070	52.9%	Portland, OR	22,780	38.2%
Atlanta, GA	74,750	52.8%	San Diego, CA	26,620	36.4%
Kansas City, MO	27,960	52.4%	Montreal, QC	47,300	36.3%
Philadelphia, PA	56,890	51.9%	Seattle, WA	55,780	35.6%
Chicago, IL	85,630	51.4%	SF Bay Area, CA	124,440	35.2%
Rochester, NY	11,360	51.2%	Vancouver, BC	25,600	34.3%

Source: U.S. Bureau of Labor Statistics, Statistics Canada, April 2019.

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 15: TECH TALENT BY TYPE: COMPUTER & INFORMATION SYSTEMS MANAGERS

Ranked by % of tech talent

Market	Computer & Information Systems Managers	% of Tech Talent	Market	Computer & Information Systems Managers	% of Tech Talent
Hartford, CT	3,590	13.9%	Orlando, FL	3,070	7.4%
Ottawa, ON	7,300	11.3%	Miami, FL	1,869	7.4%
Toronto, ON	23,600	10.3%	Cleveland, OH	2,610	7.3%
Boston, MA	16,530	10.3%	San Diego, CA	5,310	7.3%
Charlotte, NC	5,440	9.8%	Washington, D.C.	18,220	7.2%
Salt Lake City, UT	4,680	9.8%	Pittsburgh, PA	3,250	7.2%
Newark, NJ	5,113	9.6%	Ft. Lauderdale, FL	1,847	7.1%
New York, NY	24,722	9.4%	Sacramento, CA	2,790	7.1%
Chicago, IL	15,320	9.2%	Phoenix, AZ	5,980	7.0%
SF Bay Area, CA	31,470	8.9%	Tampa, FL	3,430	7.0%
Minneapolis, MN	8,110	8.7%	Baltimore, MD	5,130	6.8%
Los Angeles, CA	12,032	8.6%	Jacksonville, FL	1,460	6.8%
Atlanta, GA	12,010	8.5%	Vancouver, BC	4,900	6.6%
Cincinnati, OH	3,200	8.5%	Houston, TX	6,130	6.4%
Nashville, TN	2,460	8.4%	Detroit, MI	5,510	6.4%
Orange County, CA	5,970	8.2%	Kansas City, MO	3,380	6.3%
Milwaukee, WI	2,530	8.0%	Richmond, VA	1,510	5.9%
Raleigh-Durham, NC	4,750	7.8%	Denver, CO	6,320	5.9%
Montreal, QC	10,100	7.8%	St. Louis, MO	3,130	5.8%
Columbus, OH	3,730	7.7%	Rochester, NY	1,280	5.8%
Portland, OR	4,570	7.7%	Madison, WI	1,330	5.7%
Long Island, NY	2,541	7.6%	Dallas/Ft. Worth, TX	9,010	5.3%
Indianapolis, IN	2,870	7.6%	Austin, TX	3,330	4.6%
Philadelphia, PA	8,200	7.5%	Norfolk, VA	1,190	4.6%
Seattle, WA	11,700	7.5%	San Antonio, TX	1,330	4.4%

Source: U.S. Bureau of Labor Statistics, Statistics Canada, April 2019.

TABLE 16: 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
Montreal, QC	38,700	30%	Phoenix, AZ	7,570	9%
Vancouver, BC	19,000	25%	Orlando, FL	3,460	8%
Ottawa, ON	15,800	24%	Nashville, TN	2,440	8%
San Diego, CA	16,000	22%	Philadelphia, PA	9,110	8%
Portland, OR	12,880	22%	St. Louis, MO	4,300	8%
Norfolk, VA	5,150	20%	Cleveland, OH	2,820	8%
Toronto, ON	44,800	20%	Hartford, CT	1,940	8%
Orange County, CA	11,270	16%	Cincinnati, OH	2,830	7%
Long Island, NY	4,836	15%	Miami, FL	1,828	7%
Sacramento, CA	5,400	14%	Atlanta, GA	10,100	7%
Rochester, NY	3,010	14%	Minneapolis, MN	6,610	7%
Detroit, MI	11,160	13%	Washington, D.C.	17,040	7%
Austin, TX	9,380	13%	Ft. Lauderdale, FL	1,725	7%
Houston, TX	11,950	12%	Indianapolis, IN	2,460	7%
Los Angeles, CA	17,420	12%	Jacksonville, FL	1,400	7%
SF Bay Area, CA	41,180	12%	New York, NY	16,982	6%
Boston, MA	18,200	11%	Richmond, VA	1,610	6%
Pittsburgh, PA	5,150	11%	Charlotte, NC	3,460	6%
Denver, CO	11,620	11%	Chicago, IL	10,240	6%
Baltimore, MD	8,020	11%	Salt Lake City, UT	2,900	6%
Newark, NJ	5,406	10%	Seattle, WA	9,510	6%
San Antonio, TX	3,000	10%	Tampa, FL	2,890	6%
Kansas City, MO	5,260	10%	Columbus, OH	2,600	5%
Dallas/Ft. Worth, TX	15,320	9%	Raleigh-Durham, NC	2,790	5%
Milwaukee, WI	2,820	9%	Madison, WI	740	3%

Source: U.S. Bureau of Labor Statistics, Statistics Canada, April 2019.

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.

WHICH ARE THE HIGHEST- AND LOWEST-COST MARKETS TO OPERATE IN?

TABLE 17: TECH TALENT WAGES BY MARKET (2018)

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, CA	\$129,718	135%	14%	Ft. Lauderdale, FL	\$89,179	93%	24%
Seattle, WA	\$117,806	122%	13%	Phoenix, AZ	\$88,342	92%	8%
New York, NY	\$113,500	118%	14%	St. Louis, MO	\$88,167	91%	10%
Washington, D.C.	\$112,735	117%	9%	Miami, FL	\$88,118	91%	13%
Newark, NJ	\$110,772	115%	9%	San Antonio, TX	\$87,752	91%	14%
Boston, MA	\$106,634	111%	11%	Salt Lake City, UT	\$87,060	90%	15%
San Diego, CA	\$106,047	110%	15%	Norfolk, VA	\$86,983	90%	#N/A
Baltimore, MD	\$105,463	109%	10%	Detroit, MI	\$86,864	90%	13%
Los Angeles, CA	\$104,005	108%	12%	Tampa, FL	\$86,283	90%	12%
Denver, CO	\$102,872	107%	14%	Chicago, IL	\$86,159	89%	5%
Orange County, CA	\$101,876	106%	9%	Cincinnati, OH	\$85,925	89%	10%
Hartford, CT	\$98,645	102%	12%	Orlando, FL	\$85,712	89%	18%
Dallas/Ft. Worth, TX	\$98,009	102%	17%	Madison, WI	\$84,169	87%	15%
Sacramento, CA	\$96,721	100%	12%	Indianapolis, IN	\$83,831	87%	11%
Philadelphia, PA	\$96,706	100%	11%	Nashville, TN	\$83,184	86%	14%
Atlanta, GA	\$96,050	100%	14%	Milwaukee, WI	\$82,775	86%	8%
Columbus, OH	\$96,038	100%	20%	Kansas City, MO	\$81,947	85%	6%
Charlotte, NC	\$95,952	100%	9%	Jacksonville, FL	\$80,365	83%	8%
Houston, TX	\$95,916	100%	6%	Cleveland, OH	\$80,165	83%	10%
Raleigh-Durham, NC	\$95,707	99%	9%	Pittsburgh, PA	\$79,817	83%	8%
Long Island, NY	\$94,780	98%	7%	Rochester, NY	\$79,809	83%	10%
Minneapolis, MN	\$94,502	98%	12%	Ottawa, ON*	\$67,720	70%	7%
Austin, TX	\$93,860	97%	11%	Toronto, ON*	\$63,154	66%	10%
Richmond, VA	\$93,386	97%	11%	Vancouver, BC*	\$61,824	64%	10%
Portland, OR	\$91,735	95%	12%	Montreal, QC*	\$58,373	61%	11%

Source: U.S. Bureau of Labor Statistics (Metro), Statistics Canada (Metro), April 2019.
*Data in US\$

TABLE 18: AVERAGE U.S. TECH COMPANY OCCUPATION POOLS
500 Employees

Occupation Pools	Employees	% of Total Labor
Tech Talent Employees*	250	50%
Support Non-Tech Employees (excluding Management)	211	42%
Management	39	8%

Source: U.S. Bureau of Labor Statistics (National), April 2019.

*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 19: ESTIMATED ONE-YEAR COSTS BY MARKET: WAGE AND RENT OBLIGATION FOR SAMPLE 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 250 People)	Support Non-Tech Wages (Avg. Wage x 211 People)	Management Wages (Avg. Wage x 39 People)	Total
SF Bay Area, CA	\$5,166,000	\$32,429,425	\$14,353,705	\$7,771,843	\$59,720,973
New York, NY	\$5,915,250	\$28,375,097	\$13,151,001	\$7,820,415	\$55,261,762
Washington, D.C.	\$3,166,500	\$28,183,721	\$13,575,235	\$6,765,330	\$51,690,786
Seattle, WA	\$2,814,750	\$29,451,440	\$12,230,354	\$6,423,300	\$50,919,844
Newark, NJ	\$1,981,500	\$27,692,887	\$12,058,259	\$7,320,863	\$49,053,509
Boston, MA	\$2,952,000	\$26,658,544	\$12,721,812	\$6,250,140	\$48,582,496
Los Angeles, CA	\$3,096,000	\$26,001,305	\$11,123,758	\$6,649,565	\$46,870,628
Denver, CO	\$2,128,500	\$25,718,124	\$12,489,780	\$6,524,443	\$46,860,847
San Diego, CA	\$2,706,750	\$26,511,866	\$10,820,842	\$6,144,060	\$46,183,518
Orange County, CA	\$2,664,000	\$25,469,089	\$11,651,032	\$6,349,035	\$46,133,156
Baltimore, MD	\$1,699,500	\$26,365,812	\$10,974,470	\$5,993,910	\$45,033,692
Austin, TX	\$2,821,500	\$23,465,113	\$11,241,181	\$6,061,380	\$43,589,174
Philadelphia, PA	\$2,168,250	\$24,176,384	\$10,919,080	\$6,253,260	\$43,516,974
Houston, TX	\$2,196,000	\$23,978,877	\$10,774,997	\$6,239,220	\$43,189,095
Long Island, NY	\$2,051,250	\$23,694,939	\$10,817,932	\$6,555,041	\$43,119,163
Dallas/Ft. Worth, TX	\$1,875,750	\$24,502,184	\$10,469,339	\$6,231,030	\$43,078,303
Hartford, CT	\$1,494,000	\$24,661,210	\$11,217,537	\$5,525,520	\$42,898,267
Minneapolis, MN	\$2,106,000	\$23,625,505	\$11,123,886	\$5,791,110	\$42,646,500
Raleigh-Durham, NC	\$2,117,250	\$23,926,853	\$10,836,431	\$5,744,207	\$42,624,741
Charlotte, NC	\$2,136,750	\$23,987,982	\$10,410,283	\$5,548,530	\$42,083,545
Sacramento, CA	\$1,773,000	\$24,180,240	\$10,185,499	\$5,843,370	\$41,982,110
Atlanta, GA	\$2,079,000	\$24,012,422	\$10,065,403	\$5,738,850	\$41,895,675
Columbus, OH	\$1,476,750	\$24,009,568	\$10,293,328	\$5,833,620	\$41,613,266
Richmond, VA	\$1,503,750	\$23,346,415	\$10,525,609	\$6,062,550	\$41,438,324
Portland, OR	\$2,325,750	\$22,933,740	\$10,630,253	\$5,250,570	\$41,140,313
Chicago, IL	\$2,355,000	\$21,539,813	\$10,646,072	\$5,695,950	\$40,236,835
Ft. Lauderdale, FL	\$2,548,500	\$22,294,629	\$9,618,271	\$5,378,030	\$39,839,429
Miami, FL	\$2,982,000	\$22,029,428	\$9,290,580	\$4,915,757	\$39,217,766
Phoenix, AZ	\$2,001,000	\$22,085,469	\$9,518,653	\$5,463,120	\$39,068,242
St. Louis, MO	\$1,500,000	\$22,041,650	\$9,942,416	\$5,307,900	\$38,791,966
Detroit, MI	\$1,413,000	\$21,715,989	\$10,236,195	\$5,423,730	\$38,788,913
Norfolk, VA	\$1,394,250	\$21,745,834	\$9,258,030	\$5,872,230	\$38,270,343
San Antonio, TX	\$1,692,000	\$21,938,079	\$9,037,643	\$5,588,700	\$38,256,422
Cincinnati, OH	\$1,452,750	\$21,481,175	\$10,085,596	\$5,142,540	\$38,162,061
Tampa, FL	\$1,732,500	\$21,570,709	\$9,145,115	\$5,446,350	\$37,894,675
Indianapolis, IN	\$1,536,750	\$20,957,705	\$10,167,367	\$5,217,030	\$37,878,851
Nashville, TN	\$2,047,500	\$20,796,047	\$10,027,213	\$4,898,790	\$37,769,551
Orlando, FL	\$1,795,500	\$21,428,084	\$9,116,082	\$5,126,940	\$37,466,606
Madison, WI	\$1,578,750	\$21,042,287	\$9,920,662	\$4,917,510	\$37,459,209
Salt Lake City, UT	\$1,758,750	\$21,764,920	\$9,164,490	\$4,764,480	\$37,452,641
Milwaukee, WI	\$1,405,500	\$20,693,718	\$9,972,937	\$4,988,100	\$37,060,256
Cleveland, OH	\$1,422,000	\$20,041,356	\$10,165,270	\$5,260,320	\$36,888,946
Kansas City, MO	\$1,473,000	\$20,486,732	\$9,873,928	\$4,929,600	\$36,763,259
Pittsburgh, PA	\$1,713,000	\$19,954,319	\$9,452,515	\$5,605,080	\$36,724,914
Rochester, NY	\$1,462,500	\$19,952,211	\$9,635,084	\$5,556,330	\$36,606,126
Jacksonville, FL	\$1,497,750	\$20,091,188	\$8,877,118	\$4,930,380	\$35,396,436
Ottawa, ON*	\$1,857,490	\$16,930,015	\$10,163,436	\$3,355,114	\$32,306,055
Toronto, ON*	\$2,086,131	\$15,788,407	\$9,316,772	\$3,371,392	\$30,562,702
Vancouver, BC*	\$2,504,631	\$15,456,045	\$8,960,470	\$2,868,031	\$29,789,176
Montreal, QC*	\$1,822,760	\$14,593,204	\$8,986,815	\$3,188,579	\$28,591,358

*Data in US\$: Source: U.S. Bureau of Labor Statistics, April 2019, Statistics Canada, April 2019, CBRE Research (Metro), Q1 2019.

HOW DOES TECH TALENT IMPACT COMMERCIAL REAL ESTATE?

TABLE 20: OFFICE ASKING RENT BY MARKET (Q1 2019)

Market	Annual Gross Direct Asking Rent	Office Rent 5 Year Growth	Market	Annual Gross Direct Asking Rent	Office Rent 5 Year Growth
New York, NY	\$78.87	20%	Newark, NJ	\$26.21	7%
SF Bay Area, CA	\$68.88	40%	Dallas/Ft. Worth, TX	\$25.01	25%
Washington, D.C.	\$42.22	14%	Ottawa, ON*	\$24.77	-2%
Los Angeles, CA	\$41.28	38%	Montreal, QC*	\$24.30	5%
Miami, FL	\$39.76	29%	Orlando, FL	\$23.94	21%
Boston, MA	\$39.36	23%	Sacramento, CA	\$23.64	19%
Austin, TX	\$37.62	32%	Salt Lake City, UT	\$23.45	22%
Seattle, WA	\$37.53	36%	Tampa, FL	\$23.10	16%
San Diego, CA	\$36.09	27%	Pittsburgh, PA	\$22.84	14%
Orange County, CA	\$35.52	50%	Baltimore, MD	\$22.66	0%
Ft. Lauderdale, FL	\$33.98	29%	San Antonio, TX	\$22.56	13%
Vancouver, BC*	\$33.40	22%	Madison, WI	\$21.05	24%
Chicago, IL	\$31.45	15%	Indianapolis, IN	\$20.49	20%
Portland, OR	\$31.01	44%	Richmond, VA	\$20.05	6%
Houston, TX	\$29.28	17%	St. Louis, MO	\$20.00	9%
Philadelphia, PA	\$28.91	13%	Jacksonville, FL	\$19.97	15%
Charlotte, NC	\$28.49	40%	Hartford, CT	\$19.92	0%
Denver, CO	\$28.38	27%	Columbus, OH	\$19.69	11%
Raleigh-Durham, NC	\$28.23	24%	Kansas City, MO	\$19.64	19%
Minneapolis, MN	\$28.08	19%	Rochester, NY	\$19.50	0%
Toronto, ON*	\$27.82	4%	Cincinnati, OH	\$19.37	3%
Atlanta, GA	\$27.72	36%	Cleveland, OH	\$18.96	9%
Long Island, NY	\$27.35	4%	Detroit, MI	\$18.84	10%
Nashville, TN	\$27.30	41%	Milwaukee, WI	\$18.74	10%
Phoenix, AZ	\$26.68	28%	Norfolk, VA	\$18.59	5%

Source: CBRE Research (Office Market), Q1 2019.
Note: New York represents Manhattan only. *Data in US\$

TABLE 21: OFFICE VACANCY RATE BY MARKET (Q1 2019)

Market	Vacancy Rate	5 Years Ago (Q1 2014)	Market	Vacancy Rate	5 Years Ago (Q1 2014)
Madison, WI	4.6%	10.9%	Boston, MA	13.0%	13.8%
Vancouver, BC	4.7%	9.4%	Kansas City, MO	13.3%	16.6%
Charlotte, NC	5.9%	13.3%	Denver, CO	13.3%	13.9%
SF Bay Area, CA	6.9%	10.2%	Philadelphia, PA	13.8%	17.9%
Toronto, ON	7.1%	9.6%	San Antonio, TX	14.0%	17.6%
Ottawa, ON	7.5%	8.9%	Los Angeles, CA	14.5%	16.8%
New York, NY	7.9%	8.2%	Detroit, MI	14.6%	22.2%
Orlando, FL	8.7%	19.2%	Pittsburgh, PA	14.7%	9.9%
Austin, TX	9.3%	11.7%	Baltimore, MD	14.7%	15.1%
Orange County, CA	9.4%	12.7%	Jacksonville, FL	14.8%	20.3%
Seattle, WA	9.4%	14.9%	Milwaukee, WI	14.9%	15.3%
Tampa, FL	9.8%	15.1%	Phoenix, AZ	15.0%	22.1%
San Diego, CA	9.9%	13.9%	Columbus, OH	15.1%	15.4%
Ft. Lauderdale, FL	9.9%	16.4%	Chicago, IL	15.5%	16.5%
Richmond, VA	10.1%	15.1%	Rochester, NY	15.7%	16.2%
Long Island, NY	10.2%	14.8%	Indianapolis, IN	16.8%	18.2%
Nashville, TN	10.3%	10.7%	Washington, D.C.	16.9%	14.8%
Sacramento, CA	10.7%	19.6%	Atlanta, GA	17.1%	20.1%
Salt Lake City, UT	10.9%	15.7%	Newark, NJ	17.1%	25.8%
Miami, FL	11.3%	16.6%	Cleveland, OH	17.5%	18.9%
St. Louis, MO	11.4%	15.3%	Hartford, CT	17.9%	16.9%
Portland, OR	11.6%	12.8%	Minneapolis, MN	18.3%	17.3%
Montreal, QC	12.2%	11.7%	Cincinnati, OH	18.9%	21.5%
Raleigh-Durham, NC	12.7%	15.7%	Houston, TX	19.0%	11.9%
Norfolk, VA	12.8%	15.5%	Dallas/Ft. Worth, TX	20.7%	17.9%

Source: CBRE Research (Office Market), Q1 2019.

Note: New York represents Manhattan only.

TABLE 22: APARTMENT ASKING RENT BY MARKET (Q1 2019)

Market	Average Monthly Apartment Rent	Apartment Rent 5 Year Growth	Market	Average Monthly Apartment Rent	Apartment Rent 5 Year Growth
New York, NY	\$4,120	7%	Madison, WI	\$1,150	12%
SF Bay Area, CA	\$2,856	25%	Dallas/Ft. Worth, TX	\$1,135	22%
Long Island, NY	\$2,243	18%	Salt Lake City, UT	\$1,129	25%
Los Angeles, CA	\$2,239	25%	Pittsburgh, PA	\$1,127	6%
Boston, MA	\$2,164	18%	Raleigh-Durham, NC	\$1,117	20%
Orange County, CA	\$2,082	21%	Charlotte, NC	\$1,116	21%
San Diego, CA	\$1,954	27%	Milwaukee, WI	\$1,113	5%
Washington, D.C.	\$1,754	8%	Houston, TX	\$1,105	8%
Newark, NJ	\$1,716	14%	Phoenix, AZ	\$1,104	34%
Seattle, WA	\$1,694	28%	Richmond, VA	\$1,073	18%
Miami, FL	\$1,630	15%	Vancouver, BC*	\$1,069	30%
Ft. Lauderdale, FL	\$1,587	19%	Norfolk, VA	\$1,064	8%
Chicago, IL	\$1,505	12%	Toronto, ON*	\$1,052	21%
Denver, CO	\$1,489	27%	Jacksonville, FL	\$1,042	23%
Sacramento, CA	\$1,429	44%	Rochester, NY	\$992	17%
Philadelphia, PA	\$1,370	14%	Detroit, MI	\$989	19%
Portland, OR	\$1,364	28%	San Antonio, TX	\$985	13%
Hartford, CT	\$1,326	11%	Cincinnati, OH	\$951	16%
Baltimore, MD	\$1,319	10%	Kansas City, MO	\$950	14%
Minneapolis, MN	\$1,306	18%	Columbus, OH	\$949	18%
Austin, TX	\$1,257	15%	Ottawa, ON*	\$906	16%
Orlando, FL	\$1,239	29%	St. Louis, MO	\$899	10%
Atlanta, GA	\$1,223	30%	Cleveland, OH	\$891	12%
Nashville, TN	\$1,203	19%	Indianapolis, IN	\$884	14%
Tampa, FL	\$1,192	25%	Montreal, QC*	\$614	12%

Source: CBRE Econometric Advisors (City), Axiometrics, CMHC, Q1 2019.

Note: New York represents Manhattan only. *Data in US\$

TABLE 23: COST OF LIVING RELATIVE TO U.S. AVERAGE

U.S. Average = 100%

<u>Market</u>	<u>Cost of Living</u>	<u>Market</u>	<u>Cost of Living</u>	<u>Market</u>	<u>Cost of Living</u>
SF Bay Area, CA	163%	Salt Lake City, UT	109%	Chicago, IL	99%
Orange County, CA	147%	Vancouver, BC	109%	Milwaukee, WI	99%
Seattle, WA	137%	Nashville, TN	108%	Charlotte, NC	98%
Los Angeles, CA	129%	Houston, TX	108%	Norfolk, VA	97%
San Diego, CA	128%	Dallas/Ft. Worth, TX	108%	Kansas City, MO	97%
Long Island, NY	126%	Phoenix, AZ	107%	Philadelphia, PA	96%
New York, NY	120%	Baltimore, MD	106%	Detroit, MI	95%
Boston, MA	120%	Hartford, CT	105%	Indianapolis, IN	95%
Toronto, ON	118%	Orlando, FL	104%	Columbus, OH	94%
Newark, NJ	118%	Tampa, FL	103%	St. Louis, MO	94%
Washington, D.C.	117%	San Antonio, TX	103%	Pittsburgh, PA	93%
Austin, TX	115%	Minneapolis, MN	102%	Cincinnati, OH	91%
Miami, FL	114%	Atlanta, GA	102%	Ottawa, ON	90%
Ft. Lauderdale, FL	113%	Madison, WI	101%	Rochester, NY	89%
Denver, CO	113%	Jacksonville, FL	101%	Cleveland, OH	88%
Portland, OR	113%	Richmond, VA	100%	Montreal, QC	83%
Sacramento, CA	110%	Raleigh-Durham, NC	100%		

Source: Moody's Analytics, Numbeo, Q1 2019.

TABLE 24: TECH WAGE TO APARTMENT RENT RATIO

Market	2019 Annualized Apartment Rent	2018 Average Annual Tech Wage	Rent-to-Tech Wage Ratio
New York, NY	\$49,445	\$113,500	43.6%
Long Island, NY	\$26,911	\$94,780	28.4%
SF Bay Area, CA	\$34,272	\$129,718	26.4%
Los Angeles, CA	\$26,871	\$104,005	25.8%
Orange County, CA	\$24,990	\$101,876	24.5%
Boston, MA	\$25,964	\$106,634	24.3%
Miami, FL	\$19,557	\$88,118	22.2%
San Diego, CA	\$23,443	\$106,047	22.1%
Ft. Lauderdale, FL	\$19,039	\$89,179	21.3%
Chicago, IL	\$18,057	\$86,159	21.0%
Vancouver, BC*	\$12,827	\$61,824	20.7%
Toronto, ON*	\$12,623	\$63,154	20.0%
Washington, D.C.	\$21,046	\$112,735	18.7%
Newark, NJ	\$20,597	\$110,772	18.6%
Portland, OR	\$16,372	\$91,735	17.8%
Sacramento, CA	\$17,153	\$96,721	17.7%
Denver, CO	\$17,862	\$102,872	17.4%
Nashville, TN	\$14,437	\$83,184	17.4%
Orlando, FL	\$14,868	\$85,712	17.3%
Seattle, WA	\$20,324	\$117,806	17.3%
Philadelphia, PA	\$16,438	\$96,706	17.0%
Pittsburgh, PA	\$13,522	\$79,817	16.9%
Minneapolis, MN	\$15,667	\$94,502	16.6%
Tampa, FL	\$14,300	\$86,283	16.6%
Madison, WI	\$13,800	\$84,169	16.4%
Milwaukee, WI	\$13,356	\$82,775	16.1%
Hartford, CT	\$15,916	\$98,645	16.1%
Austin, TX	\$15,081	\$93,860	16.1%
Ottawa, ON*	\$10,873	\$67,720	16.1%
Salt Lake City, UT	\$13,554	\$87,060	15.6%
Jacksonville, FL	\$12,509	\$80,365	15.6%
Atlanta, GA	\$14,671	\$96,050	15.3%
Baltimore, MD	\$15,828	\$105,463	15.0%
Phoenix, AZ	\$13,242	\$88,342	15.0%
Rochester, NY	\$11,904	\$79,809	14.9%
Norfolk, VA	\$12,772	\$86,983	14.7%
Raleigh-Durham, NC	\$13,410	\$95,707	14.0%
Charlotte, NC	\$13,398	\$95,952	14.0%
Kansas City, MO	\$11,400	\$81,947	13.9%
Dallas/Ft. Worth, TX	\$13,618	\$98,009	13.9%
Houston, TX	\$13,257	\$95,916	13.8%
Richmond, VA	\$12,876	\$93,386	13.8%
Detroit, MI	\$11,868	\$86,864	13.7%
San Antonio, TX	\$11,816	\$87,752	13.5%
Cleveland, OH	\$10,695	\$80,165	13.3%
Cincinnati, OH	\$11,407	\$85,925	13.3%
Indianapolis, IN	\$10,606	\$83,831	12.7%
Montreal, QC*	\$7,372	\$58,373	12.6%
St. Louis, MO	\$10,791	\$88,167	12.2%
Columbus, OH	\$11,392	\$96,038	11.9%

Source: U.S. Bureau of Labor Statistics, April 2019, Statistics Canada, May 2019, CBRE Econometric Advisors, Axiometrics, CMHC, Q1 2019.

Note: New York represents Manhattan only. *Data in US\$

CONTACTS

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FOR MORE INFORMATION ABOUT OCCUPIER SERVICES, PLEASE CONTACT:

Whitley Collins
Global President
Advisory & Transaction Services | Occupier
+1 310 363 4842
whitley.collins@cbre.com

Todd Husak
Managing Director
Technology & Media Practice
+1 650 494 5182
todd.husak@cbre.com

FOR MORE INFORMATION ABOUT LABOR ANALYTICS, PLEASE CONTACT:

Mark Seeley
Senior Vice President
+1 602 735 5230
mark.seeley@cbre.com

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FOR MORE INFORMATION ABOUT CBRE RESEARCH, PLEASE CONTACT:

Richard Barkham, Ph.D., MRICS
Global Chief Economist
& Head of Americas Research
+1 617 912 5215
richard.barkham@cbre.com

Spencer G. Levy
Chairman Americas Research
& Senior Economic Advisor
+1 617 912 5236
spencer.levy@cbre.com

FOR MORE INFORMATION REGARDING SCORING TECH TALENT, PLEASE CONTACT:

Colin Yasukochi
Director, West Region Research
+1 415 772 0190
colin.yasukochi@cbre.com

Lexi Russell
Associate Director, West Region Research
+1 415 772 0272
lexi.russell@cbre.com



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