U.S. Technology Office Outlook

United States | Summer 2016

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RESILIENCE:

Understanding the long game in the fast-paced world of tech

Since 2011, we've followed the movement of the technology industry—from iPhone apps and virtual farms to internet-enabled watches and technology-powered homes. The industry has not only grown and proliferated, it has extended its reach across the United States.

When we first began reporting on tech, we did so with the goal of quelling fears that this was another bubble. Fast-forward six years, and now we're reporting on the dynamics in 45 markets that have been successful in attracting and growing technology companies. Next year we expect that number of markets to be even higher. Oh, the irony.

– Julia and Amber

It wasn't over … it still isn't over

If you thought the technology industry was coming to the end of its reign because of slowing venture capital investment and a dry IPO pipeline, you were, well, wrong. While it's true that economic expansion, in general, is beginning to slow after nearly seven years of growth, the technology sector remains the leading industry for real estate expansion in the United States—driving nearly 25 percent of leasing activity across the country over the past two years.* Because of this, the industry has quickly become an economic driver of choice in local markets, with the view that the greater exposure to the tech industry, the greater the success of a local economy.

**Leasing activity is reflective of leases 20,000 square feet or larger*

Will any old valley do?

Nope. Turns out, technology companies have strong opinions on the topic of location—so much so that they are willing to pay a premium for a location that will help with employee attraction and retention, as well as one in which the strength of the tech ecosystem creates a more resilient marketplace for the future. In the tech industry's premier location, Menlo Park, CA--home to, ahem, Facebook--the average rental rate of $102.16 per square foot is nearly 220 percent above the U.S. average of $32.03 per square foot.

Where's the exit around here?

Though there's promise for renewed activity in the IPO market, technology companies looking for an exit are increasingly looking to acquisition. For acquiring companies, this provides the opportunity to capture much-needed talent as well as technologies that increase their competitive edge. For the real estate market, the benefits could mean the establishment of a new tech anchor, as was the case in Indianapolis when Salesforce acquired Exact Target, or the opportunity for a younger startup to acquire excess, plug-and-play space on the sublease tech market.

Only the strong survive

But guess what? There's a lot of strength out there. From San Francisco and Seattle-Bellevue to South Florida and Charlotte, there's no question that the tech industry is planting roots across the country. Smaller markets are being legitimized by brand-name tech, while established tech hubs remain at the forefront of innovation and expansion. There's no question that today's technology industry is and will continue to be a mainstay of our modern economy, and promises to remain a driver of economic resilience across the country.

D is for diversity

It may sound like a no-brainer, but diversity within organizations leads to greater financial success. Within the technology industry specifically, diversity in talent can lead to greater innovation and ensure a degree of industry resilience if its stability and growth can be supported by a larger talent pool. Who doesn't like that?

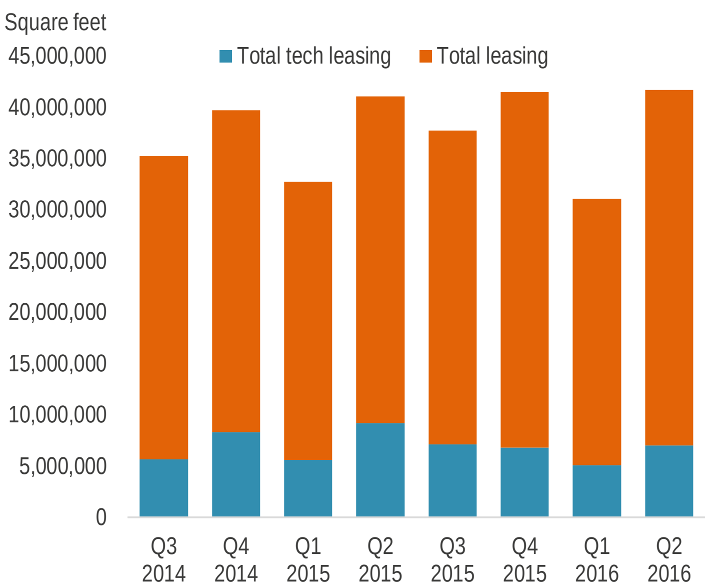
The reason the real estate market is expanding?

TECHNOLOGY

Nothing demonstrates an industry's momentum better than its physical expansion across real estate markets. Over the course of this business cycle, technology companies have come to be viewed as coveted tenants while giving secondary markets and up-and-coming submarkets a geographic stamp of approval. And guess what—they're still expanding. Over the past four quarters, 63.4 percent of technology companies leasing 20,000 square feet or more were in growth mode compared to the overall U.S. rate of 48.9 percent. Additionally, only 4.6 percent of tech companies were shrinking their real estate footprint versus the U.S.' 6.5 percent.

63% *of technology companies leasing 20,000 square feet or more were in growth mode*

Fears of a tech slowdown toward the end of 2015 and into 2016—resulting from lower venture capital investment—placed pressure on tech companies to more carefully consider leasing and expansion. As a result, four-quarter leasing volume ending in the second quarter of 2016 posted a 9.6 percent decline, a direct result of the first-quarter dip.



**Reflects signed leases of 20,000 square feet or more*

Source: JLL Research

Across the country, technology companies have consistently driven the most leasing activity in recent years, averaging 22.3 percent of large-block leasing, followed distantly by banking and finance companies, which have comprised 10.3 percent of leasing activity since the third quarter of 2014.

22% *of large-block leasing in recent years has been driven by technology companies*

Though the San Francisco Bay Area remains the most concentrated technology leasing market, corporate expansion and startup growth into Indianapolis, Nashville and New Jersey (among others) has given legs to a new industry growth driver in each of these markets. Additionally, during the four-quarter period ending in Q2 2016, more than 2.5 million square feet was leased to 50 technology companies opening new locations across the country. This included Autodesk's new, 24,000-square-foot location in Denver's LoDo, Expedia's 23,000-square-foot lease in Miami's Brickell submarket, Google's first location of 55,000 square feet in San Diego's North Cities and OpenTV's 30,000-square-foot lease in Phoenix's Camelback Corridor.

// Top 15 markets for tech leasing: *Q3 2015-Q2 2016 (s.f.)* //

Silicon Valley	3,927,015
Seattle-Bellevue	2,527,798
Boston	1,830,058
Chicago	1,720,975
San Francisco	1,718,598
New York	1,399,726
Austin	1,280,843
Dallas	1,041,552
Denver	992,091
Indianapolis	984,696
San Francisco Peninsula	865,324
Washington, DC	739,684
New Jersey	707,302
Northern Virginia	601,676
Portland	517,417

<Not all submarkets are equal … to tech>

No two submarkets are alike and nowhere is this more apparent than where tech companies choose to locate. Over the course of this cycle (and with more than just tech companies) CBDs and dense, urban neighborhoods have been making headlines as they welcome migrating tenants and millennials, pushing vacancy to pre-recession lows, while rents jump in the hottest locations. Importantly, submarkets most popular among tech companies five years ago remain among the most popular today—highlighting a market's staying power for investors, owners and developers. Where tech-leasing activity has been highest over the past year, market fundamentals are also among the strongest in the country and development activity in the top 15 tech-leased submarkets comprises nearly 18 percent of the total development pipeline—proof of where the demand is focused.

// CBD submarkets with the highest tech-leasing activity also have the largest development pipelines //

Submarket	Market	Total tech leasing (s.f.)	Total vacancy	Direct average asking rent (full service gross)	Total under construction (s.f.)
South Financial District	San Francisco	881,551	6.7%	$74.69	3,274,968
East End	Washington, DC	583,676	13.1%	$59.84	1,307,985
West Loop	Chicago	592,676	11.1%	$28.76	0
Lake Union	Seattle-Bellevue	563,762	7.9%	$45.72	1,598,619
Bellevue CBD	Seattle-Bellevue	560,616	10.9%	$44.77	1,078,693
Seattle CBD	Seattle-Bellevue	503,647	7.7%	$39.47	2,215,316
Times Square	New York	465,366	10.1%	$76.77	0
CBD	Indianapolis	457,489	15.9%	$20.10	25,361
South of Market	San Francisco	333,526	9.6%	$71.65	269,063
Central Loop	Chicago	323,457	10.8%	$36.19	0
Penn Plaza/Garment	New York	300,347	10.1%	$65.42	6,245,077
East Cambridge	Boston	246,539	4.6%	$39.69	251,234
CBD	Portland	235,553	7.9%	$29.88	686,903
Financial District	Boston	233,427	10.3%	$57.32	249,898
CBD	Austin	214,040	9.1%	$50.31	707,836

*Source: JLL Research | *Leasing volumes reflect activity of 20,000 square feet or more from Q3 2015-Q2 2016, and market statistics as of Q2 2016*

Despite CBDs' popularity among tech companies, suburban submarkets remain equally relevant as companies expand their search for large blocks, talent and lower costs (Silicon Valley not included). Over the past four quarters, suburbs captured more than 50 percent of tech-leasing activity thanks to Silicon Valley and Dallas, supported by other popular, secondary tech hubs.

// Suburban submarkets with the highest tech-leasing activity provide either a strong tech hub or room for expansion //

Submarket	Market	Total tech leasing (s.f.)	Total vacancy	Direct average asking rent (full service gross)	Total under construction (s.f.)
Sunnyvale	Silicon Valley	1,257,321	8.9%	$61.32	575,272
North San Jose	Silicon Valley	1,004,792	20.2%	$39.27	0
495/North	Boston	668,856	25.5%	$18.88	0
Northwest	Austin	505,532	10.9%	$33.33	291,000
Santa Clara	Silicon Valley	428,276	15.7%	$51.98	3,274,968
Southeast Suburban	Denver	413,652	11.8%	$21.08	232,444
Richardson/Plano	Dallas	413,079	19.1%	$22.48	608,901
Northwest	Indianapolis	390,563	18.6%	$18.14	115,358
Monmouth	New Jersey	370,000	23.2%	$20.00	0
Palo Alto	Silicon Valley	346,101	3.2%	$100.79	427,275
Far North Dallas	Dallas	346,083	15.8%	$26.52	7,316,368
Northwest	Boston	261,360	19.3%	$27.48	280,000
Prince George's County	Suburban Maryland	252,952	29.0%	$21.67	75,000
Far Northwest	Austin	252,407	10.7%	$33.18	25,347
West Valley	Silicon Valley	234,000	10.3%	$53.76	395,000

*Source: JLL Research | *Leasing volumes reflect activity of 20,000 square feet or more from Q3 2015-Q2 2016, and market statistics as of Q2 2016*

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<Location, location, location>

Locating near the country's major tech hubs has been as important to highly competitive, established companies as it has been to startups hoping to get a competitive edge in the center of all tech. However, locating in the most heavily tech-concentrated areas will cost you. For an early-stage startup leasing 5,000 square feet, the cost of locating in one of the most tech-friendly submarkets will be anywhere from $245,400 to $503,950 in office rent, per year. For large tech companies (occupying 100,000 square feet or more) that cost jumps in range from $4.9 to $100.8 million per year. Compare that to the cost of office space in the country's lowest-cost market, Detroit, in which a startup could occupy 5,000 square feet for $91,600 per year and we're talking about at least a 63 percent premium.

// Direct average asking rent in the country's most expensive tech submarkets //

Market	Submarket	Direct average asking rent (full service gross)
SF Mid Peninsula	Menlo Park	$102.16
Silicon Valley	Palo Alto	$100.79
San Francisco	Mission Bay/China Basin	$84.70
New York	Hudson Square	$83.11
Silicon Valley	Mountain View	$77.77
New York	Greenwich Village	$76.70
New York	SoHo	$75.18
San Francisco	South Financial District	$74.69
New York	Gramercy Park	$74.17
San Francisco	North Financial District	$73.92
San Francisco	South of Market	$71.65
Boston	East Cambridge	$69.39
SF Mid Peninsula	Redwood City	$65.62
San Francisco	Showplace Square	$65.11
San Francisco	Union Square	$65.10
San Francisco	Jackson Square	$62.64
SF Mid Peninsula	Redwood Shores	$62.11
Los Angeles	Santa Monica	$61.78
New York	Chelsea	$61.48
Silicon Valley	Sunnyvale	$61.32
San Francisco	North Waterfront	$61.23
SF Mid Peninsula	Belmont	$59.19
San Francisco	Mid-Market	$58.80
SF Mid Peninsula	Foster City	$58.23
Los Angeles	Playa Vista	$54.93
San Francisco	Van Ness Corridor	$54.75
Silicon Valley	West Valley/Campbell	$53.76
SF Mid Peninsula	San Mateo	$53.22
Silicon Valley	Cupertino	$53.06
Silicon Valley	Santa Clara	$51.98

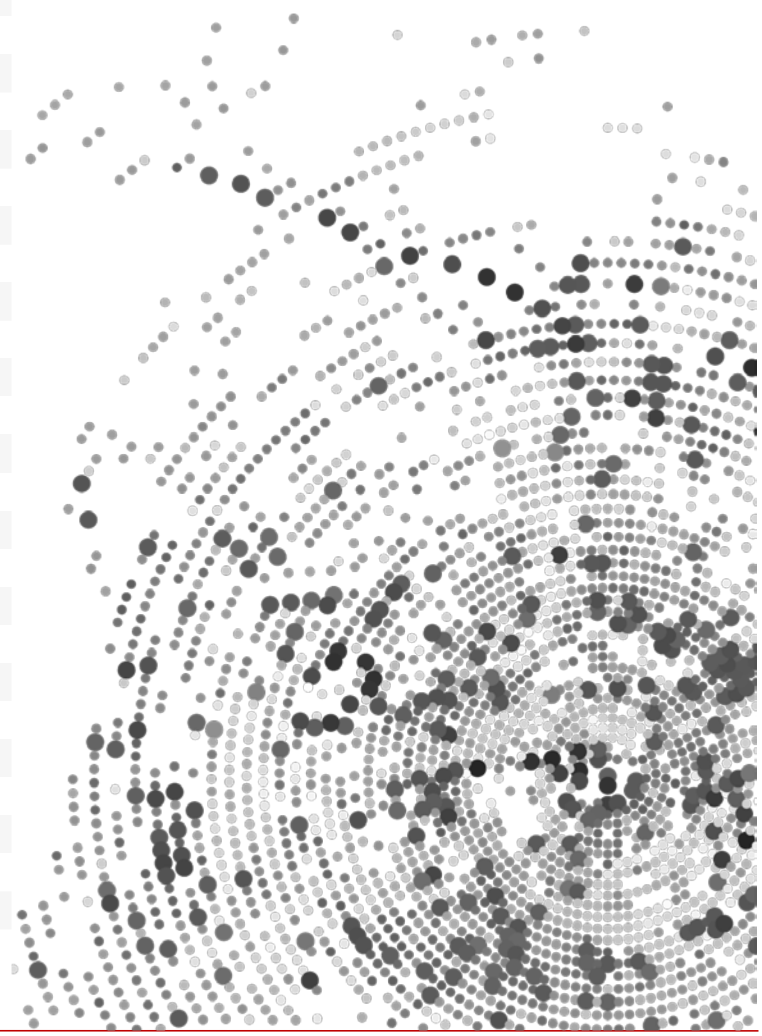
Source: JLL Research as of Q2 2016

100,000 s.f.

=

$100.8 M per year

For an early-stage startup leasing 5,000 square feet, the cost of locating in one of the most tech-friendly submarkets will be anywhere from $245,400 to $503,950 in office rent, per year. For large tech companies (occupying 100,000 square feet or more) that cost jumps in range from $4.9 to $100.8 million per year.

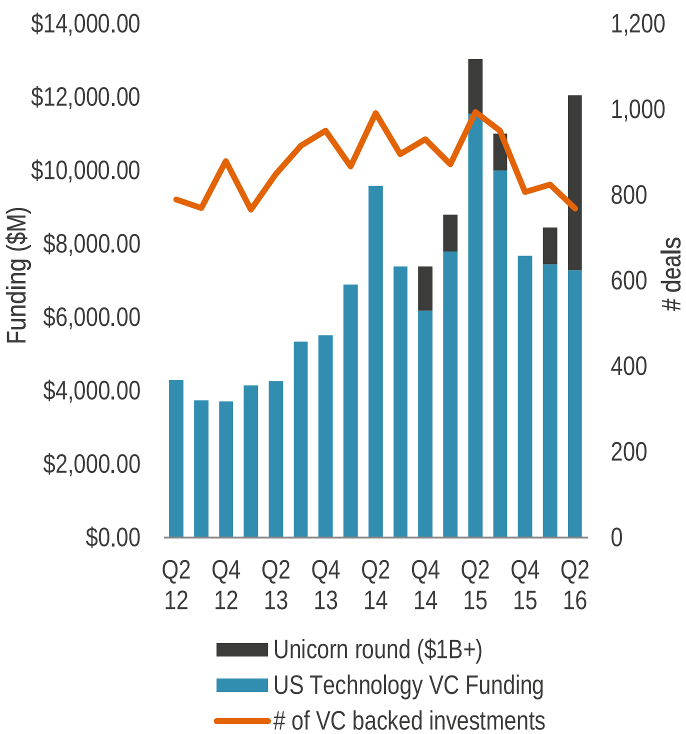


Unicorn companies bring in big $$$ for 2016, but NUMBER OF DEALS TREND DOWN

Major technology hubs continue to attract strong venture capital investment, helping to spur startup growth throughout the United States. The tech sector has been a prime focus for investors, accounting for 71.8 percent of year-to-date venture capital activity. In Q2 2016, one of the largest venture-backed deals landed with San Francisco-based Uber, securing an impressive $3.5 billion in series-G funding, pushing tech investment volume 37.7 percent higher than the previous quarter. Even more impressive is that Uber, along with Lyft and Snapchat, accounted for $5.8 billion in overall year-to-date funding, 30.0 percent of the tech aggregated investment dollars in 2016 alone.

72% *of YTD venture capital activity has been in the tech sector*

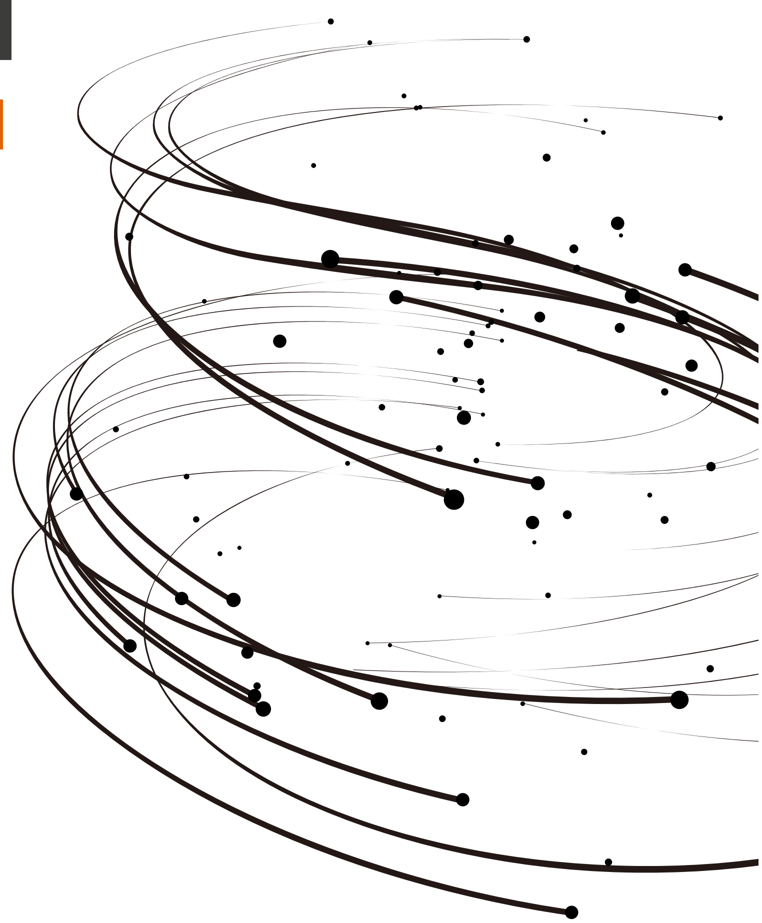
// U.S. historical technology VC funding //



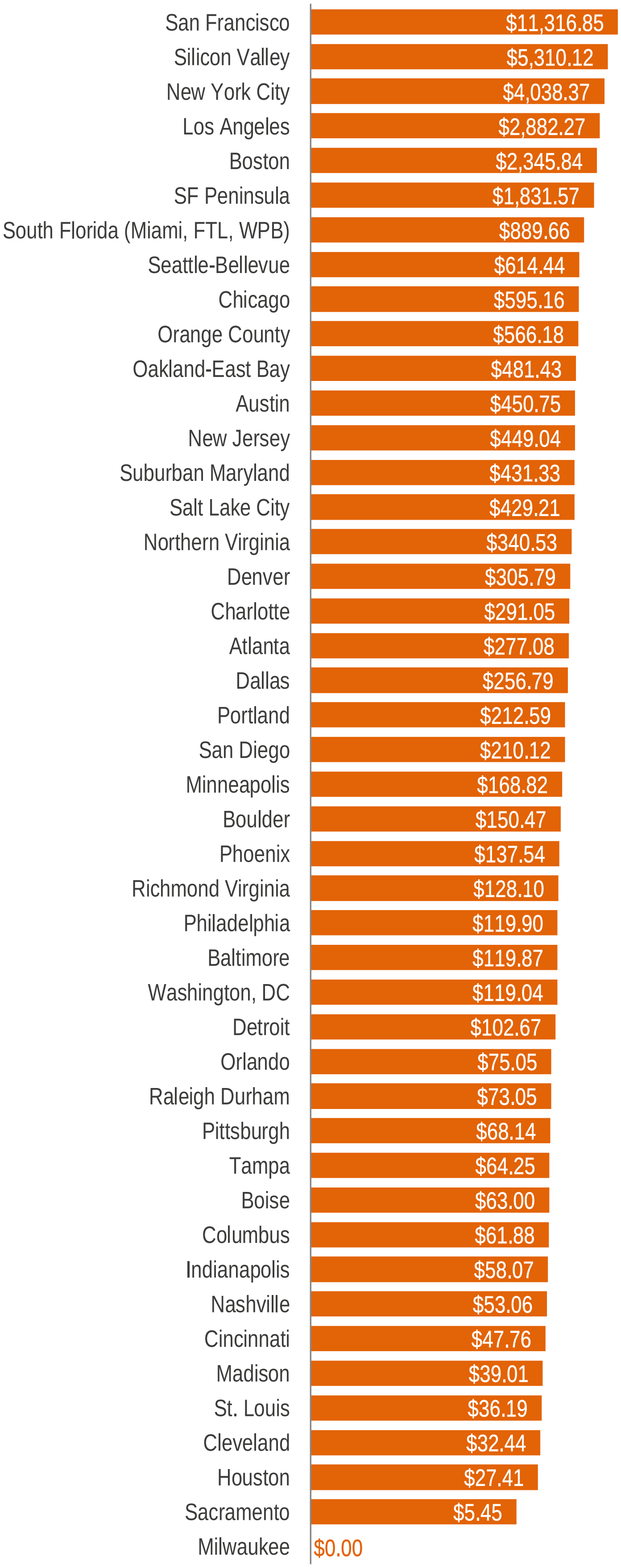
Source: PWC

While on the surface it appears as if funding is on track for another solid year of growth, investment volume on a four-quarter trailing basis was relatively flat, down 0.75 percent from one year ago. Deal activity has also been on a downward slide. Q2 2016 marked the fifth straight quarterly decline in the number of venture-backed deals, reflecting slower deal velocity.

Silicon Valley and San Francisco alone remain the two powerhouses in the VC funding world; however, the high cost of entry and competition for well-seasoned talent has prompted tech investment and growth in other markets throughout the United States, and in many cases is centered on specific local industry clusters.



// Tech funding volume, Q3 2015 – Q2 2016 ($M) //



Source: JLL Research, PWC

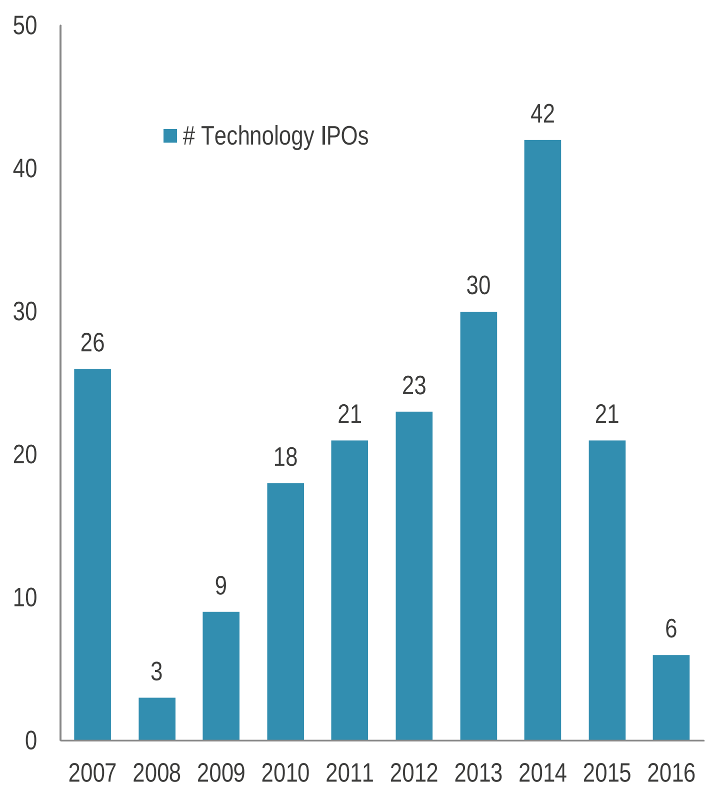
<IPO market pauses, pressuring startups to operate in the black>

The IPO drought that the United States has experienced since the beginning of the year reflects investors' reaction by way of tightening funding conditions and a shift toward late-stage companies. One-third of 2015 IPOs are trading below their initial offering price; these include several ambitious startups whose private valuations far exceeded their value on the public market. As a result, many tech companies have postponed or withdrawn IPO filings while others are lowering their initial offering price to raise the likelihood of a day one "IPO pop."

1/3

of 2015 IPOs are trading below their initial offering price

Twillio's recent debut has restored some confidence in the public market, offering partial assurance that tech unicorns can make a successful exit and meet expectations. This alone is not enough to ease the pressure that investors are placing on their portfolio companies to generate revenue and manage burn rates. The IPO pipeline will likely remain stagnant for the remainder of the year as many privately-held companies will table going public until their business or the market proves more favorable for an exit.



Source: Renaissance Capital

<If you can't beat them, buy them>

In addition to being the fastest growing, the tech sector has also been the most disruptive, effecting the manner in which traditional businesses are operating and forcing them to re-align themselves to current trends. Non-tech-related buyers accounted for approximately 25.0 percent of global M&A transactions in Q1 2016, up significantly from 3.0 percent in Q4 2015. Honeywell, Verizon, General Motors and Walmart have all recently made significant acquisitions, investing in technologies that will expand their businesses organically in order to remain competitive against their disruptive counterparts—a major trend in tech M&A.

// Notable 2016 tech M&A transactions //

Acquirer	Target Company	Target company industry	Price ($B)
Dell	EMC	Cloud/Big Data	$67.0
Microsoft	LinkedIn	Social Media	$26.2
Verizon	Yahoo	Digital Media	$4.8
Symantec	Blue Coat Systems	Software (security)	$4.7
Comcast	DreamWorks Animation	Entertainment/Media	$3.8
Apex Technology /PAG	Lexmark	Hardware	$3.6
Walmart	Jet.com	eCommerce	$3.3
Salesforce	Demandware	Software (eCommerce)	$2.8
IBM	Truven Health Analytics	Cloud/Big Data	$2.6
Cisco	Jasper Technologies	Software (IoT)	$1.4
General Motors	Autonomy	Automotive Tech	$1.0

**Includes deals that have been announced and not withdrawn*

<The impact on real estate: will tech companies continue to expand?>

Well-funded, late-stage startups will likely continue to grow their footprints, but at a less aggressive rate given a tightening funding environment. Seed- and early-stage companies will become more sensitive to the cost of real estate as funding becomes harder to obtain, focusing more on a gradual expansion in their home market versus establishing beachhead locations in major tech centers where high barriers to entry make it difficult to secure both space and talent. Larger companies with multiple locations will likely continue to grow in secondary tech markets that provide the same exposure to talent and capital that is needed as companies ready themselves for a future exit.

On the M&A front, acquiring firms will need to focus on improving the efficiency of their existing space to accommodate new employees while consolidating overlapping business lines and shedding excess space. If this becomes the exit of choice over the next 12 to 18 months, markets could see an increase in tech subleases. However, this will open opportunities for younger tech companies looking for space with flexible terms near innovation hubs.

Best growth locations:

THE JLL LOCATOR MATRIX

// Identifying the next growth opportunity //

The Locator Matrix is a **tool** for growing startups and established tech firms to determine the **best location** for continued company expansion

FOR TECH COMPANIES

Whether you're an established technology firm or a growing startup, which market presents the greatest opportunity for growth? If you're growing an administrative outpost, it may not make sense to expand in San Francisco or New York City when you can source similar talent at a lower cost in places like Indianapolis or Columbus. If you're looking to grow your engineering team, your best choices may be Silicon Valley and Austin, so which market makes more sense for your bottom line?

We looked at several factors to quantify the best prospects for tech firms when considering their next office location:

INDUSTRY OPPORTUNITY FACTORS:
▼ LOW TO HIGH ▲
[HORIZONTAL AXIS, LEFT TO RIGHT]

FACTORS include:

- Tech economic momentum, as measured by employment and wage growth
- Depth of talent, measured by share of millennial workforce and education levels
- Diversity of talent
- Innovation, measured by patent activity
- Access to venture capital

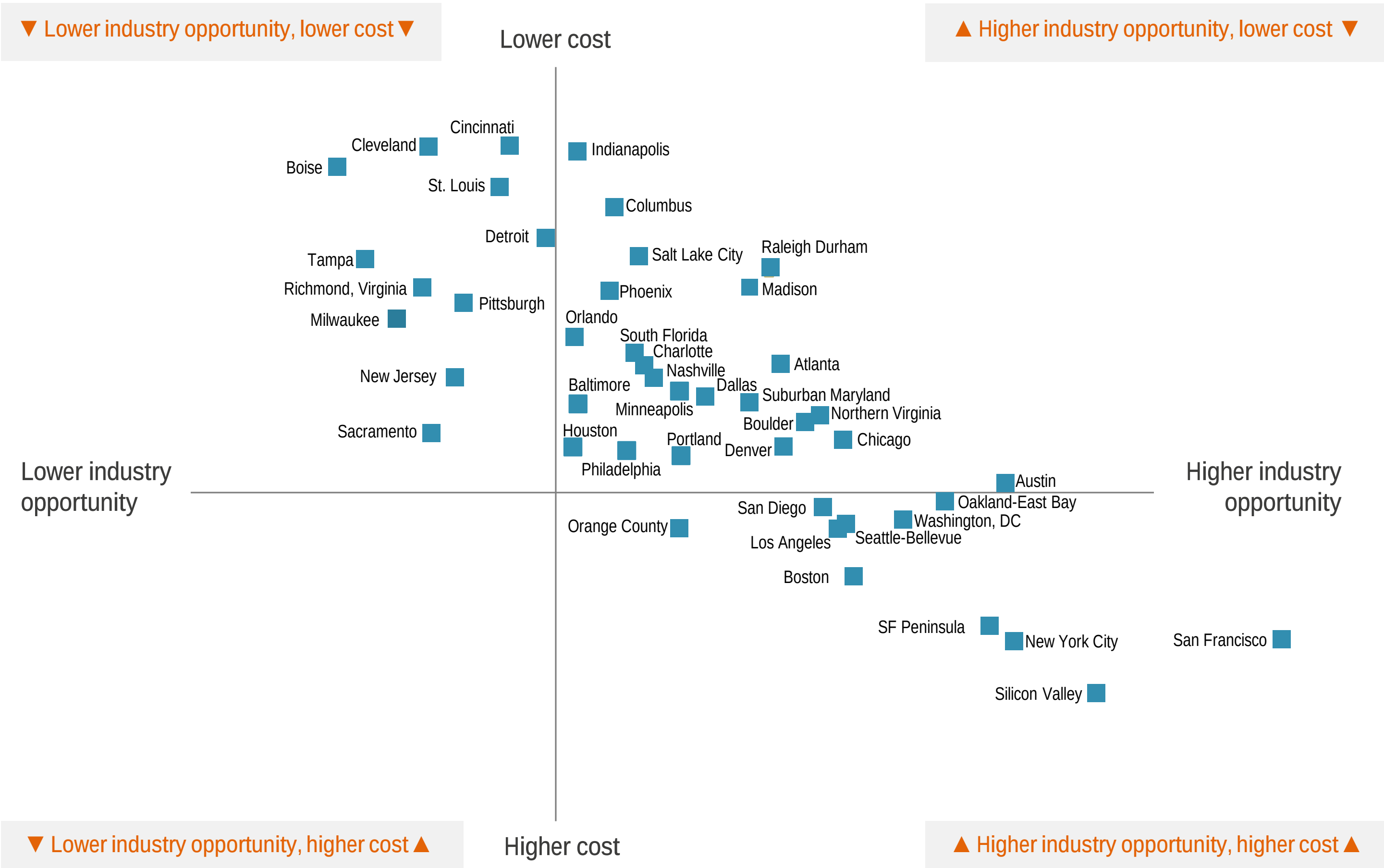
MARKET COST FACTORS:
▼ LOW TO HIGH ▲
[VERTICAL AXIS, TOP TO BOTTOM]

FACTORS include:

- Average cost of office real estate
- Housing affordability, both for-sale and rental housing
- Urban apartment rental premium
- Average tech wage to measure cost of talent

Our model outputs the **45 markets** in this report into four different quadrants, making it clear which markets present the **best places for growth** based on industry opportunity and market costs.

THE JLL LOCATOR MATRIX



TOP LEFT QUADRANT:
LOWER INDUSTRY OPPORTUNITY; LOWER COST

This quadrant includes markets where startup opportunity is less abundant but costs are affordable. Markets like Boise, Tampa and Cleveland are at the extreme in this quadrant, while markets like Detroit, Pittsburgh and St. Louis are near the cusp. These markets are attractive from a cost perspective, but are still growing their industry base.

BOTTOM LEFT QUADRANT:
LOWER INDUSTRY OPPORTUNITY; HIGHER COST

The bottom left quadrant indicates markets where there is less industry opportunity, but also higher costs. None of the markets in our study fell into this quadrant, although markets like Sacramento and Houston are on the edge given their mid-range costs and smaller industry clusters.

TOP RIGHT QUADRANT:
HIGHER INDUSTRY OPPORTUNITY; LOWER COST

This is the sweet spot for growing technology companies, especially those with cost top of mind. Markets in this quadrant that are farther to the right are those with the strongest metrics for tech growth, like access to capital and a deep and highly-educated talent pool, and those higher in the quadrant are those that are also more affordable.

Notable markets include Raleigh-Durham, Atlanta, Northern Virginia and Chicago. These are places where real estate costs and talent are still relatively affordable (but rising), but also have all the elements in place to foster both startup and large technology company growth.

BOTTOM RIGHT QUADRANT:
HIGHER INDUSTRY OPPORTUNITY; HIGHER COST

Markets listed in the bottom right quadrant, like San Francisco, Silicon Valley and New York, have clear advantages for growing technology companies with greater access to capital, higher concentration of innovation, great talent accessibility and an existing industry cluster. However, these markets are also more costly in terms of housing, real estate and wages. For companies with less cost sensitivity, these are the best target markets for growth.

Identifying the most resilient markets for the future:
THE JLL TECH MARKET SCORE

In previous years, our ranking model highlighted markets that had the most growth potential and would be the best targets for investors looking to acquire or reposition assets in high-growth technology markets. This year, we have taken a closer look at the factors that support market resiliency into the future, through the lens of the technology industry.

The Market Score is a tool for real estate investors to quickly identify which markets will be the most resilient through periods of economic contraction. We selected 16 variables in four major categories to rank markets that would better weather periods of economic slowing. A higher score indicates strong market resiliency while a lower score indicates less resiliency.

the market score

The Market Score is a tool for investors to quickly identify which markets will be the most resilient through periods of economic contraction.

// All markets included within this report have been scored based on the following four major categories //

E C O N O M I C   M O M E N T U M includes variables that measure job growth over the last three years on both an absolute and a percent basis, as well as wage growth. This category accounts for 20 percent of the overall score.

T A L E N T   P O O L metrics include total size of the tech labor pool, net migration over the last five years, share of young talent (working-age millennials age 20 to 34), demographic diversity, educational attainment and single-family housing affordability (as an indication of how easily young talent will be able to plant deeper roots in a market). This category accounts for 40 percent of the overall score.

I N N O V A T I O N is measured by patents as a share of total U.S. patents, venture capital funding as a share of total U.S. funding, and average number of employees at each technology firm (where a larger number indicates a more mature industry, and therefore more resilient to market or industry contractions). This category accounts for 22.5 percent of the overall score.

C O S T takes into account the average cost of office space per square foot in each market, labor costs, the average cost of an apartment, and the premium on urban apartment rents. This category accounts for 17.5 percent of the score.

// For investors //

Based on the four main categories above, our ranking model revealed that Silicon Valley will be the most resilient technology market for the foreseeable future. This market may be costlier than others, but the ingredients that make this market the center of the technology universe are also the factors that cement its place as the most resilient technology market for years to come: innovative minds, highly educated population, the largest technology talent pool and a steady stream of venture capital funding.

Other technology market juggernauts round out the top five, including San Francisco, Austin, Seattle-Bellevue and Boston—markets that share many of the same qualities as Silicon Valley today, with highly educated populations, numerous innovations as measured by patent activity and strong net migration as a result of booming economies.

Minneapolis may be a surprising market in the top ten, but the local industry scored high on the size of its talent pool, its highly-educated workforce, and innovation metrics, providing a strong foundation for market resilience through industry ups and downs. Alternatively, Washington, DC may be a surprise market on the low end of the spectrum; it's relatively smaller labor pool, smaller than average size of technology firms and higher than average labor costs all indicate that the industry's roots may not be as deep as other markets, and the market is therefore less resilient to industry volatility as a whole (with a mitigating factor being the necessity for large technology firms to locate lobbying groups within the beltway).

Market rankings should be considered a tool to determine just how resilient a market will be through the technology business cycle. The higher the ranking, the better our analysis reveals that the market will be able to handle technology industry volatility over a long-term period.

Considering that we're measuring markets for long-term technology industry stability, those who lived through the first dot.com boom and bust may question why Silicon Valley and San Francisco are sitting at the top when these markets suffered more than others during that cycle. They roared back with a vengeance, and the industry's roots in these markets are deeper than ever. The factors that make these markets attractive to tech companies today, including a highly innovative, educated, and diverse workforce, outsized access to capital, and the sheer number of companies pumping out truly innovative products underscore why Silicon Valley and San Francisco are at the center of this global industry.

Silicon Valley

will be the most resilient technology market for the foreseeable future

TOTAL WEIGHTED JLL TECH MARKET SCORE

Minneapolis

may be a surprising market in the top ten, but the local industry scored high on the size of its talent pool, its highly-educated workforce, and innovation metrics, providing a strong foundation for market resilience through industry ups and downs.

SILICON VALLEY	95.4
SAN FRANCISCO	87.3
AUSTIN	84.2
SEATTLE-BELLEVUE	82.3
BOSTON	82.2
RALEIGH-DURHAM	80.6
OAKLAND-EAST BAY	79.9
NEW YORK CITY	78.7
SAN FRANCISCO PENINSULA	77.5
MINNEAPOLIS	77.4
NORTHERN VIRGINIA	77.0
DALLAS	76.6
ATLANTA	74.8
MADISON	74.3
PORTLAND	73.6
PHOENIX	73.6
CHICAGO	73.2
LOS ANGELES	73.1
SAN DIEGO	72.8
DETROIT	72.3
SALT LAKE CITY	72.1
INDIANAPOLIS	71.9
DENVER	71.2
NEW JERSEY	71.1
BOULDER	69.9
ORANGE COUNTY	68.8
COLUMBUS	68.3
WASHINGTON, DC	67.9
SUBURBAN MARYLAND	67.7
PHILADELPHIA	67.1
CHARLOTTE	66.1
SOUTH FLORIDA	65.5
ST. LOUIS	65.4
HOUSTON	64.1
CLEVELAND	63.7
PITTSBURGH	63.7
BALTIMORE	62.5
CINCINNATI	62.3
ORLANDO	61.0
BOISE	61.0
MILWAUKEE	60.6
TAMPA	59.7
NASHVILLE	58.1
SACRAMENTO	56.3
RICHMOND VIRGINIA	52.7

Diversity will drive
MARKET RESILIENCE

"Companies with a more diverse workforce perform better financially,"* tend to have a stronger organizational culture, are better able to compete for talent and have more satisfied employees. Despite this evidence, the tech industry has experienced a lack of diversity in its population and leadership, and for this reason many of the largest and most influential tech companies across the country have made it a priority to increase ethnic, gender and racial diversity at their organizations.

// A few examples of these diversity efforts include: //

$300M	$150M	$50M
Intel has committed to spend $300 million on a diversity-in-technology initiative. First announced in 2015, Intel recently released its first report on their progress.	In 2015, Google unveiled a $150 million plan to get more women and minorities into tech through internal programs and donations to outside organizations.	Apple announced plans to partner with nonprofit organizations and fund more than $50 million toward diversity efforts.

Municipalities, economic development organizations, nonprofits and regional public-private partnerships also have embarked on a wide array of initiatives in an effort to help increase the pool of diverse talent in their areas, as well as provide firms with diversity improvement strategies and tools. Inequity hinders economic growth and prosperity, while equity and inclusion fosters stronger and more sustained growth. The question remains what impact these types of efforts will have on the tech ecosystem in a market and how much they will enhance the resilience of those markets.

diverse workforce = better performance

*

"Companies with a more diverse workforce perform better financially"

- Why Diversity Matters, McKinsey & Company, January 2015

One way to commit to a more inclusive culture is a public pledge to do so. Another is a collection of affinity NETWORKS AND SUPPORT GROUPS dedicated to providing resources to assist with diversity efforts. Examples of these can be found in the largest tech markets like Silicon Valley as well as those emerging centers of innovation, including Portland and Minneapolis:

- White House Tech Inclusion Pledge – signed by 30 of the largest tech companies in the world in advance of the Global Entrepreneurship Summit in Silicon Valley.
- National Venture Capital Association Pledge – 45 VC firms pledged to bring greater diversity to their profession.
- Project Include – a nonprofit launched by a group of tech women in Silicon Valley offering resources, recommendations and tools to create a more inclusive work environment.
- Portland Tech Diversity Pledge – the area's most visible tech companies signed this pledge to commit to promote diversity in their workforce.
- Minnesota Technology Diversity Pledge – created by a Minneapolis-based firm asking members to commit to improving diversity in the industry.

Many NONPROFITS focus their efforts on exposing teens and young adults to technology careers in an effort to increase the diversity and depth of the pool of talent that is available in these areas. They sponsor hackathons, offer coding camps, host career days and provide exposure and access to mentors and leaders in the industry. These types of efforts are especially critical to expanding the talent pool, an issue that many tech employers face today, as alternatives to a college degree are exposed as options in the industry. A small sampling of these organizations include:

- Black Girls CODE – introduces programming and technology to girls ages seven to 14; recently moved into a permanent space in Chelsea that was donated by Google. The organization has offered programs in New York, Oakland, Memphis, Los Angeles, Washington, DC, Chicago and Dallas among others.
- iUrban Teen – partners with tech companies such as Google and Microsoft as well as institutions of higher learning to bring STEM + Arts career-focused education to underrepresented teens with active programs in Seattle, Portland, Los Angeles, Northern California, South Florida and Houston.
- Code 2040 – a San Francisco-based organization that focuses on creating access and opportunities for Black and Latino talent to participate in the innovation economy.
- Girls Who Code – whose mission it is to close the gender gap in technology through after school clubs and summer immersion camps, with programs in 42 states.

PUBLIC-PRIVATE PARTNERSHIPS are also a significant force in advancing diversity efforts within markets. Some of them are dedicated to providing access to capital, which supports local economic expansion. A small sampling of these organizations include:

- The Equitable Innovation Economies Initiative (EIE), a multi-year project launched by the Pratt Center for Community Development with PolicyLink and the Urban Manufacturing Alliance to help cities pursue more inclusive growth strategies in innovation. In the first phase of the project, Indianapolis, New York City, Portland and San Jose have been working to identify and address barriers in their individual economic development strategies.
- Next Top Makers was launched by New York Economic Development Corporation (NYCEDC) and is a community-sourced incubator providing advanced manufacturing startups with support.
- Startup PDX Challenge, launched by Portland's economic development agency and the Portland Development Commission (PDC) in partnership with local organizations is an annual competition designed to connect diverse founders to Portland's growing entrepreneurial ecosystem and assist the businesses for one year through their early-stage growth.

Finally, and perhaps most important, tech organizations are establishing VENTURE CAPITAL FUNDS dedicated to supporting diverse entrepreneurs:

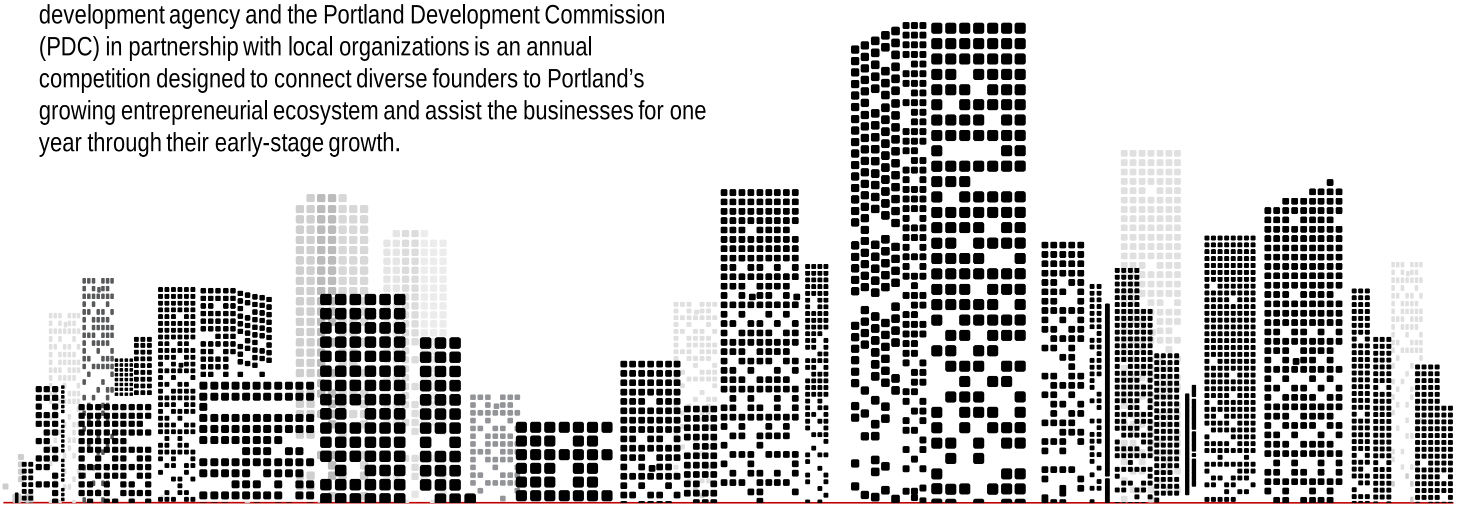
- Intel has established the $125 million Intel Capital Diversity Fund, the largest fund of its kind, dedicated to investment in technology startups run by women and underrepresented minorities.
- San Diego-based Founders First Capital Partners launched a program focused on underrepresented and underfunded demographics.
- Comcast Ventures has established the Catalyst Fund to invest in companies founded by underrepresented ethnic minority entrepreneurs.

As we explore the tech landscape across the U.S. with a focus on market resilience, it is clear that a diverse employment base is of critical importance to growing technology firms. Companies are committing resources and pledging to adopt more inclusive hiring practices as well as making a commitment to measure their progress toward a workforce that reflects their customer base and the population at large.

But the efforts do not end there; public-private partnerships and nonprofits are getting in the game as municipalities and the business community partner to enhance the pipeline of talent and the diverse tech ecosystem within their markets. These efforts will not only contribute to the long-term viability and resilience of a market's tech environment but will also help to ensure that the pipeline of diverse talent will be deep enough for the increasing need for a tech-savvy labor force.

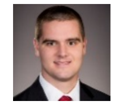
critical importance

it is clear that a diverse employment base is of critical importance to growing technology firms



Craig Van Pelt
Senior Research Manager

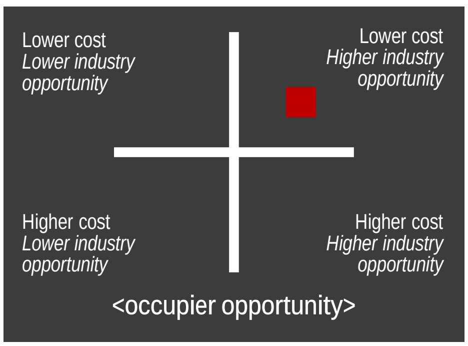
ATLANTA



James Leary
Senior Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **74.8**



Office supply
133,435,430
total inventory (s.f.)

17.1%
total vacancy

Office cost
$23.30
overall direct asking rent

11.5%
12-month rent growth

Employee cost
$104,842
average wage 2015

3.7%
annual wage growth 2015

Total cost per employee
$4,078
annual real estate cost (175 s.f./person)

$108,920
all-in cost (real estate and wages)

Venture capital
$277.1M
total funding Q315-Q216

-36.6%
Y-o-y change in funding

Population
5,710,795
total population

4.6%
unemployment rate

Talent pool
35.8%
% of population with bachelor's or higher (age 25+)

20.6%
share of millennials (work age, 20-34)

Housing
$1,041
average monthly apartment rent

35.9%
urban core premium

TOP LEASE TRANSACTIONS

NCR Corporate Headquarters | Midtown
Tenant: NCR
Size: 485,000 & 200,000 s.f. (two towers)
Build-to-suit

CODA | Midtown
Tenant: Georgia Institute of Technology
Size: 300,000 s.f.
Build-to-suit

3550 Lenox Rd NE | Buckhead
Tenant: Global Payments
Size: 100,000 s.f.
Relocation in market

OPPORTUNITY

Metro Atlanta currently ranks as the lowest cost of doing business of the 31 largest metros. Couple this with a lower cost of living and a high quality of life, and the result is a healthy mix of companies wanting to locate in the metro and a place employees want to live. High tech industries, such as Healthcare IT, are attracted to the region due to the presence of such organizations as the CDC. FinTech also plays a major role in the Metro, with an estimated two-thirds of payment card transactions passing through the global networks of Georgia FinTech organizations.

CHALLENGE

Since the economic recovery, supply has not matched demand. The metro has brought almost no new office inventory to the market, causing Class A rental rates to increase as much as 30 percent in the most sought-after submarkets over the last two years. Tech companies looking to be in a location that attracts talent are finding it more difficult to find affordable spaces. Some relief has been provided by the opening of several new coworking sites around the metro, but these may be short-term solutions.

CHANGE IN TECH EMPLOYMENT

Employment
+7.7%
(y-o-y)

+2.1%
change since 2001

"As Atlanta solidifies itself as the Southeast's technology hub, more of the metro's Fortune 500 companies continue to invest in creating research and development innovation labs and building new, creative collaborative spaces to engage the future tech workforce."

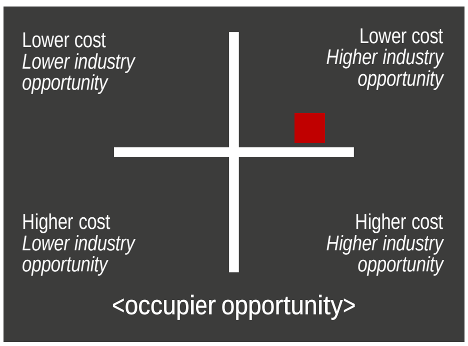
\- James Leary
Senior Research Analyst

AUSTIN

Travis Rogers
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **84.2**



Office supply	Office cost	Employee cost	Total cost per employee
49,895,588 total inventory (s.f.)	$34.30 overall direct asking rent	$106,307 average wage 2015	$6,003 annual real estate cost (175 s.f./person)
12.0% total vacancy	5.3% 12-month rent growth	4.6% annual wage growth 2015	$112,309 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$450.8M total funding Q315-Q216	2,000,860 total population	41.5% % of population with bachelor's or higher (age 25+)	$1,222 average monthly apartment rent
-1.9% y-o-y change in funding	3.3% unemployment rate	24.6% share of millennials (work age, 20-34)	67.9% urban core premium

TOP LEASE TRANSACTIONS

Shoal Creek Walk | CBD
Tenant: Cirrus Logic
Size: ~85,000 s.f.
Expansion in market

Domain 4 | Northwest
Tenant: Accruent
Size: ~105,000 s.f.
Relocation and expansion

Domain 5 | Northwest
Tenant: TrendMicro
Size: ~75,000 s.f.
Relocation and expansion

OPPORTUNITY

Austin is rocking and rolling with 157 new people moving here daily. Companies are moving here too. People are drawn to a fun and relaxed way of life, an active outdoor culture, thriving arts and music scene and reasonable cost of living with no state or personal income tax. Firms move here for a lower cost of doing business and access to an educated workforce. While there has been a severe lack of office space, there is opportunity on the horizon with 500,000 square feet coming to market along the Loop 360 Corridor. This much needed space will give tech tenants options and more leverage in lease negotiations.

CHALLENGE

As tech companies continue to relocate and expand within the Austin market, the bellwether giants such as Google, Facebook and Apple compete for talent by offering top tier perks that include prime office space. Young tech startups burning through cash with pre-profit financials are finding it difficult to "keep up with the Joneses". Not only are they facing issues securing space with more flexible deal terms - but also in constructing an affordable build-out that can compete with established tech giants.

CHANGE IN TECH EMPLOYMENT

Employment

+7.8%
(y-o-y)

+16.3%
change since 2001

"In spite of national anxiety regarding cycle maturity, Austin's job growth continues to be robust – in fact, corporate recruitment in 2016 will surpass 2014 and 2015's. This bodes well for demand into the foreseeable future."

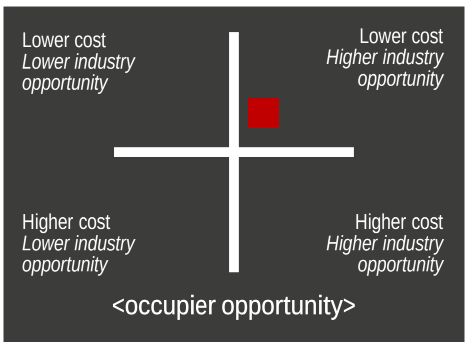
- Travis Rogers
Research Analyst

BALTIMORE

Patrick Latimer
Senior Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **62.5**



Office supply
71,143,569 total inventory (s.f.)
12.8% total vacancy

Office cost
$23.12 overall direct asking rent
3.2% 12-month rent growth

Employee cost
$106,120 average wage 2015
-1.1% annual wage growth 2015

Total cost per employee
$4,046 annual real estate cost (175 s.f./person)
$110,166 all-in cost (real estate and wages)

Venture capital
$119.9M total funding Q315-Q216
73.7% y-o-y change in funding

Population
2,797,407 total population
4.7% unemployment rate

Talent pool
37.7% % of population with bachelor's or higher (age 25+)
21.2% share of millennials (work age, 20-34)

Housing
$1,260 average monthly apartment rent
18.8% urban core premium

TOP LEASE TRANSACTIONS

540 National Business Pkwy | BWI
Tenant: HP Enterprises
Size: 60,000 s.f.
Relocation and expansion

6841 Benjamin Franklin Pkwy | Columbia
Tenant: Tenable
Size: 12,932 s.f.
Sublease

921 E Fort Ave | Baltimore Southeast
Tenant: Citelighter
Size: 6,623 s.f.
New to market

OPPORTUNITY

The Baltimore metro area has maintained a diverse ecosystem of tech firms, ranging from growing cyber security companies clustered around talent developed at the National Security Agency, to an established gaming industry along I-83 where, among others, ZeniMax Media and Firaxis Games have a large presence. In Baltimore City, Under Armour's planned $5.5 billion development at Port Covington, which will comprise 45 city blocks, has the potential to create a new waterfront neighborhood. Already, UA has transformed a 140,000-square-foot garage into an incubator for tech and manufacturing start-ups.

CHALLENGE

Market dynamics have shifted in favor of landlords in select submarkets as asking rental rates across the Baltimore metro area grew 3.2 year-over-year, which is the quickest pace of growth since 2007. For tech tenants seeking adaptive reuse space in Baltimore City, availability is in short supply as projects, such as the expansion of McHenry Row in Locust Point, have quickly leased to a variety of users, including engineering and consulting as well as tech.

CHANGE IN TECH EMPLOYMENT

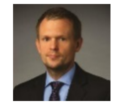
Employment
+1.1% (y-o-y)
+8.5% change since 2001

"Lack of speculative development, either new construction or adaptive reuse, in tech-heavy submarkets of Baltimore City has traditionally created challenging conditions for tenants in the market, but recent activity has begun to open up opportunities."

- Patrick Latimer
Research Manager

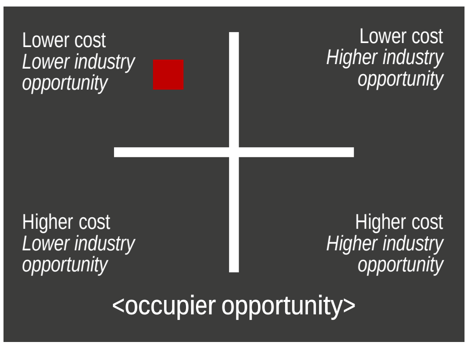
BOISE

TJ Jaroszewski
Senior Research Manager



MARKET SCORE AND MATRIX POSITION

<market score> **61.0**



Office supply
29,131,000
total inventory (s.f.)
7.8%
total vacancy

Office cost
$14.82
overall direct asking rent
2.5%
12-month rent growth

Employee cost
$103,440
average wage 2015
0.5%
annual wage growth 2015

Total cost per employee
$2,594
annual real estate cost (175 s.f./person)
$106,034
all-in cost (real estate and wages)

Venture capital
$63.0M
total funding Q315-Q216
29.8%
y-o-y change in funding

Population
676,909
total population
3.6%
unemployment rate

Talent pool
29.4%
% of population with bachelor's or higher (age 25+)
20.1%
share of millennials (work age, 20-34)

Housing
$854
average monthly apartment rent
0%
urban core premium

TOP LEASE TRANSACTIONS

The Village at Meridian | Meridian
Tenant: MarkMonitor
Size: 41,000 s.f.
Relocation and expansion

3130 S Owyhee St | Central Boise
Tenant: ASML Boise
Size: 11,600 s.f.
Relocation in market

Boise Plaza | Downtown Boise
Tenant: Cradlepoint
Size: 53,000 s.f.
New lease

OPPORTUNITY

Boise remains one of the nation's best communities for tech companies to start, expand or relocate. Repeated appearances near the top of multiple "Best Place to . . . " lists are driven by successfully meeting the elusive mixture of low cost of living and high quality of life. Since JR Simplot initially backed startup Micron Technology in the early 1980s, Idaho's second-largest economic driver has become tech. Boise State University is a conduit for local companies, annually providing some 500 engineering graduates to help fill a growing tech-sector demand.

CHALLENGE

Boise is relatively small—the nation's 83rd most populous metro. It lacks the panache to compete with world-recognized West Coast cities like Seattle and San Francisco. Despite a cost of living measuring 2.0 percent below the U.S. average, the metro faces challenges in attracting and retaining local tech talent. Major companies have historically viewed it a promising locale for a production or research facility, but shy away from considering it a corporate headquarters stalwart. Unless the area can more closely match other metros' wages, college-educated millennials may depart.

CHANGE IN TECH EMPLOYMENT

Employment
+5.7%
(y-o-y)

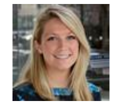
-25.6%
change since 2001

"Boise will remain a business-friendly metro—one possessing key drivers that are especially enticing for tech companies. It certainly stays on the short list for any serious operation considering expansion in the Mountain West region."

- Brian Anderson
Vice President, Utah + Idaho

Lisa Strope
VP, Director of Research

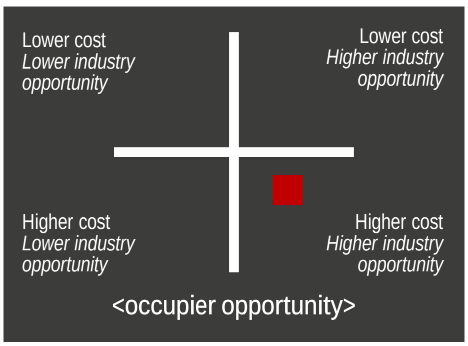
BOSTON



Megan Shields
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **82.2**



Office supply	Office cost	Employee cost	Total cost per employee
165,961,172 total inventory (s.f.)	$33.73 overall direct asking rent	$135,454 average wage 2015	$5,903 annual real estate cost (175 s.f./person)
13.8% total vacancy	4.6% 12-month rent growth	3.1% annual wage growth 2015	$141,357 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$2,345.8M total funding Q315-Q216	4,774,321 total population	45.2% % of population with bachelor's or higher (age 25+)	$2,124 average monthly apartment rent
8.6% y-o-y change in funding	3.8% unemployment rate	21.9% share of millennials (work age, 20-34)	65.4% urban core premium

TOP LEASE TRANSACTIONS

100 Summer Street | Financial District
Tenant: Bullhorn
Size: 77,500 s.f.
Relocation in market

31 Saint James Avenue | Back Bay
Tenant: WeWork
Size: 113,000 s.f.
Expansion in market

25 First Street | East Cambridge
Tenant: Hubspot
Size: 120,000 s.f.
Renewal

OPPORTUNITY

Maintaining its spot with the nation's second largest volume of tech employees, Boston's highly-educated workforce continues to be a major draw for employers. Boston's unique density and diversity of technology sectors, access to talent and entrepreneurial environment attract not only new startups but global tech leaders, exemplified by GE's recent headquarter relocation to the Seaport. The concentration of talent, financial resources and innovation will enable Boston to continue to grow as a top technology destination.

CHALLENGE

As Boston's tech ecosystem grows, the major tech hubs continue to tighten. Tech tenants must be more creative in their search and use of office space as traditional tech hubs, Cambridge and the Seaport, see continued high rents and low vacancy. As demand rises, tenants will need to push the boundaries and explore new markets, as companies like Bullhorn and SAP recently did when relocating to the Financial District. Tenants will need to look outside Boston's traditional tech submarkets if they want access to Boston's innovation resources.

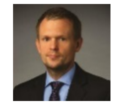
CHANGE IN TECH EMPLOYMENT

Employment
+4.2%
(y-o-y)

-10.5%
change since 2001

"The combination of Boston's quality institutions, industry leadership and innovation ecosystem continues to create new growth opportunities and develop new tech hubs across the region."

\- Megan Shields
Research Analyst

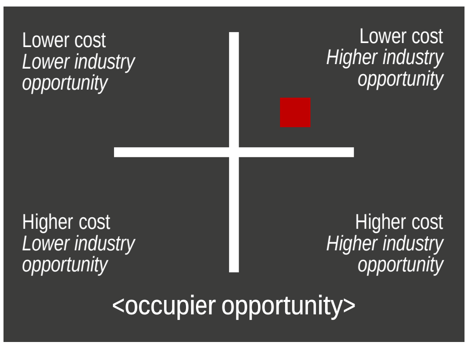

TJ Jaroszewski
Senior Research Manager


Mandy Seyfried
Senior Research Analyst

BOULDER

MARKET SCORE AND MATRIX POSITION

<market score> **69.9**



Office supply
5,772,898
total inventory (s.f.)

6.8%
total vacancy

Office cost
$27.85
overall direct asking rent

6.3%
12-month rent growth

Employee cost
$113,249
average wage 2015

4.9%
annual wage growth 2015

Total cost per employee
$4,874
annual real estate cost (175 s.f./person)

$118,122
all-in cost (real estate and wages)

Venture capital
$150.5M
total funding Q315-Q216

-25.3%
y-o-y change in funding

Population
319,372
total population

3.4%
unemployment rate

Talent pool
58.0%
% of population with bachelor's or higher (age 25+)

24.3%
share of millennials (work age, 20-34)

Housing
$1,471
average monthly apartment rent

7.0%
urban core premium

TOP LEASE TRANSACTIONS

2930 Pearl Street | Central Boulder
Tenant: Google
Size: 220,000 s.f.
Relocation and expansion

The Wencel Building | Downtown Boulder
Tenant: Twitter
Size: 30,000 s.f.
Relocation and expansion

5541 Central Avenue | East Boulder
Tenant: Sovrn
Size: 30,000 s.f.
Relocation and expansion

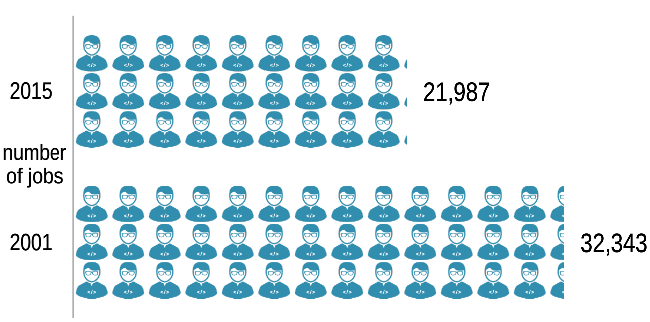
OPPORTUNITY

At historically low levels of vacancy—especially downtown—the recent addition of large sublease availabilities and the delivery of new construction has provided some relief for occupiers. More than 100,000 square feet of furnished tech space is available for sublease, providing opportunity for startups and small companies to settle near similar businesses at a discounted price. Furthermore, several land assemblies remain available for build-to-suit projects and speculative construction in the 40,000- to 100,000-square-foot range, offering another avenue into one of the nation's hottest and tightest tech-driven markets.

CHALLENGE

As Google continues construction on its new 220,000-square-foot campus, concerns over foot and vehicular traffic are growing. Already a congested area, hundreds of new workers will jam traffic further still, and public transit has been unable to keep up with the metro's outsized growth. As more tenants move into Boulder, many flex and industrial users are being forced out of the area due to an increase in office conversions. The permitting process for these renovations and standard tenant improvement build-outs is increasingly protracted, potentially costing companies business.

CHANGE IN TECH EMPLOYMENT



Employment
+0.9%
(y-o-y)

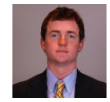
-32.0%
change since 2001

"Smaller firms remain firmly rooted within Boulder, but a trend has now emerged: expanding companies are increasingly considering a move down the U.S. 36 Corridor to save on rent. Or, they're eyeing Denver's CBD to access its labor pool."

- TJ Jaroszewski
Senior Research Manager

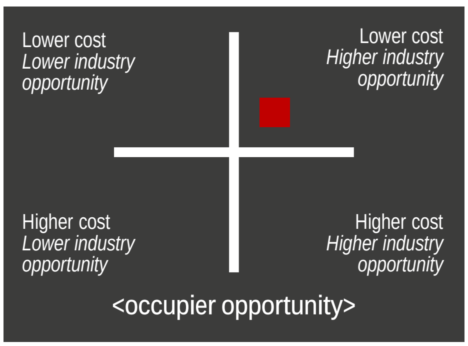
CHARLOTTE

Patrick Byrnes
Research Analyst



MARKET SCORE AND MATRIX POSITION

<market score> **66.1**



Office supply
47,041,311 total inventory (s.f.)
11.7% total vacancy

Office cost
$23.52 overall direct asking rent
2.6% 12-month rent growth

Employee cost
$100,834 average wage 2015
1.2% annual wage growth 2015

Total cost per employee
$4,116 annual real estate cost (175 s.f./person)
$104,950 all-in cost (real estate and wages)

Venture capital
$291.1M total funding Q315-Q216
1427.9% y-o-y change in funding

Population
2,426,363 total population
4.5% unemployment rate

Talent pool
32.9% % of population with bachelor's or higher (age 25+)
20.1% share of millennials (work age, 20-34)

Housing
$1,005 average monthly apartment rent
55.2% urban core premium

TOP LEASE TRANSACTIONS

935 Hamilton Street | Uptown
Tenant: AvidXchange
Size: 200,000 s.f.
Build-to-suit

9300 Harris Corners Parkway | North I-77
Tenant: Avast
Size: 9,744 s.f.
New to market

3701 Arco Corporate Drive | Airport
Tenant: Amdocs
Size: 14,425 s.f.
Renewal

OPPORTUNITY

The Charlotte Metro area population continues to see a significant increase year-over-year with the headcount in the region surpassing 1 million over the last year. A strong number of this population growth is due to a large contingent of millennials moving to the Queen City. Technology groups who want to recruit and retain top workforce talent will look to South End as an office destination due to the area's innovative inventory and parking ratios. The area's thriving retail and multifamily scene will also help spur new development in the office sector.

CHALLENGE

With a renown reputation as the Southeast hub for financial institutions due to the footprint of Bank of America and Wells Fargo, Charlotte has been slowly and steadily breaking that stereotype through business diversification. A major obstacle that technology groups face in the market is a lack of non-traditional office space. The demand for innovative space is high, and although there is a supply of product that meets the demand, ultimately the demand is outpacing the inventory.

CHANGE IN TECH EMPLOYMENT

Employment
+17.0% (y-o-y)
+10.3% change since 2001

"Homegrown tech giant AvidXchange's new 200,000-square-foot headquarters in the Uptown submarket has helped justify the Charlotte market as a tech hub. Moving into the second half of 2016 we expect the technology presence to continue to grow with the city's population."

\- Patrick Byrnes
Research Analyst

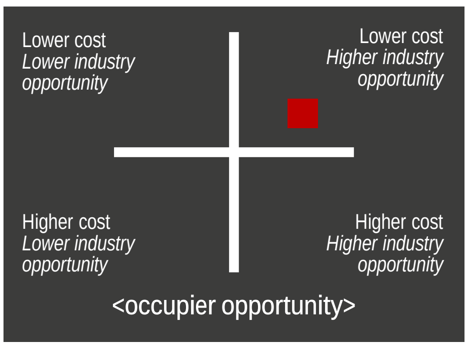
CHICAGO

Christian Beaudoin
SVP, Director of Research

Hailey Harrington
Senior Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **73.2**



Office supply	Office cost	Employee cost	Total cost per employee
234,519,455 total inventory (s.f.)	$29.76 overall direct asking rent	$89,294 average wage 2015	$5,208 annual real estate cost (175 s.f./person)
14.2% total vacancy	2.2% 12-month rent growth	5.9% annual wage growth 2015	$94,502 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$595.2M total funding Q315-Q216	7,340,454 total population	36.1% % of population with bachelor's or higher (age 25+)	$1,300 average monthly apartment rent
44.4% y-o-y change in funding	6.2% unemployment rate	21.8% share of millennials (work age, 20-34)	70.7% urban core premium

TOP LEASE TRANSACTIONS

600 W Chicago | River North
Tenant: Echo Global Logistics
Size: 225,000 s.f.
Renewal with expansion

Fulton West | Fulton Market
Tenant: Glassdoor
Size: 52,000 s.f.
New to Market

200 W Monroe | Central Loop
Tenant: Civis Analytics
Size: 29,000 s.f.
Relocation and expansion

OPPORTUNITY

With Chicago's world-class universities in addition to its draw of graduates from the surrounding Midwest and Great Lakes universities, the city is rich with a highly educated, diverse workforce and a large millennial population. The area's healthy industry mix of companies along with over 40 corporate headquarters, provides start-ups new market opportunities. Compared to New York or San Francisco, Chicago offers the 24-hour city lifestyle at a discount and with a higher livability ranking, in addition to boasting the highest investor returns in the country.

CHALLENGE

One of Chicago's biggest challenges has been competing with the coastal cities for venture capital funding. Investors place a stronger emphasis on business fundamentals and startups have to stretch their resources further. The increasing office rents in tech-favorable submarkets driven by the industry's appetite for creative office space means tech firms in Chicago must be more efficient with the investment capital.

CHANGE IN TECH EMPLOYMENT

Employment

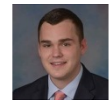
+6.1%
(y-o-y)

-5.2%
change since 2001

"Acquisitions, IPOs and mergers of Chicago's companies in 2016 signaled the strength of the tech scene. Investors also get a higher return here than any other city, as tech companies solve problems that help customers – none of that flashy stuff."

- Hailey Harrington
Senior Research Analyst

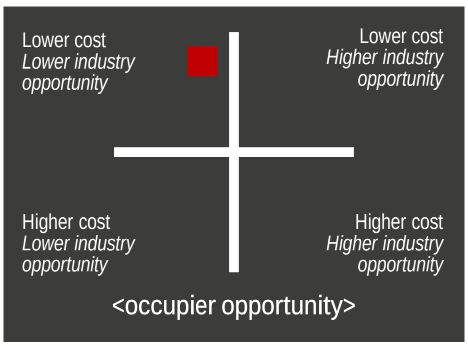
CINCINNATI



Ross Bratcher
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **62.3**



Office supply	Office cost	Employee cost	Total cost per employee
39,505,739 total inventory (s.f.)	**$19.08** overall direct asking rent	**$83,326** average wage 2015	**$3,339** annual real estate cost (175 s.f./person)
16.0% total vacancy	**-0.4%** 12-month rent growth	**1.3%** annual wage growth 2015	**$86,665** all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$47.8M total funding Q315-Q216	**2,157,719** total population	**31.4%** % of population with bachelor's or higher (age 25+)	**$804** average monthly apartment rent
46.8% y-o-y change in funding	**4.4%** unemployment rate	**19.9%** share of millennials (work age, 20-34)	**11.9%** urban core premium

TOP LEASE TRANSACTIONS

5905 E Galbraith Road | Kenwood
Tenant: Quotient Technology
Size: 32,000 s.f.
Relocation in market

5905 E Galbraith Road | Kenwood
Tenant: PatientPoint
Size: 26,200 s.f.
Relocation in market

4555 Lake Forest Drive | Blue Ash
Tenant: Morphick, Inc.
Size: 14,000 s.f.
Relocation in market

OPPORTUNITY

With a large corporate presence and a close proximity to a number of universities, the Cincinnati market has become a destination for tech companies looking to locate to secondary markets. In addition to a deep talent pool that large corporations allow startups to draw from, Cincinnati's major companies are investing time and money in the startup ecosystem. With the continued development in Over-The-Rhine and the addition of the streetcar, Cincinnati's urban core is expected to become an even more attractive hub for tech investment.

CHALLENGE

One of the persistent difficulties for tech startups in Cincinnati is obtaining downtown office space that allows for expansion due to rapid growth. The market for creative space in the CBD remains tight, which has led to many startups looking toward suburban submarkets such as Midtown and Blue Ash. However, locating in a downtown environment remains a priority for many firms to attract and retain talent. Fortunately, there are a number of office developments and redevelopments that are proposed in response to this growing demand.

CHANGE IN TECH EMPLOYMENT

Employment
+20.1%
(y-o-y)

+0.6%
change since 2001

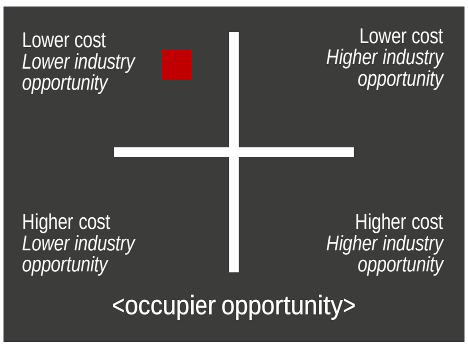
"The tech industry in Cincinnati has blossomed over the last few years due to the city's large corporate base and access to local universities. The emergence of Over-The-Rhine as a hub for startup activity should further accelerate Cincinnati's tech momentum."
- Ross Bratcher
Research Analyst

CLEVELAND

Andrew Batson
VP, Director of Research

MARKET SCORE AND MATRIX POSITION

<market score> **63.7**



Office supply	Office cost	Employee cost	Total cost per employee
27,793,251 total inventory (s.f.)	$18.75 overall direct asking rent	$78,110 average wage 2015	$3,281 annual real estate cost (175 s.f./person)
20.4% total vacancy	0.6% 12-month rent growth	3.8% annual wage growth 2015	$81,391 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$32.4M total funding Q315-Q216	2,060,810 total population	29.5% % of population with bachelor's or higher (age 25+)	$819 average monthly apartment rent
90.2% y-o-y change in funding	5.3% unemployment rate	18.7% share of millennials (work age, 20-34)	13.3% urban core premium

TOP LEASE TRANSACTIONS

1111 Superior Avenue | CBD
Tenant: Explorys (an IBM subsidiary)
Size: 43,000 s.f.
New lease

1111 Superior Avenue | CBD
Tenant: Asurint
Size: 38,000 s.f.
New lease

1621 Euclid Avenue | CBD
Tenant: OnShift
Size: 33,000 s.f.
Renewal

OPPORTUNITY

Cleveland has a very attractive cost picture. The cost of living in the metro is among the lowest in the country: office and industrial real estate costs are very low, and the cost of labor is competitive, especially when compared to the coastal markets. The city has a bourgeoning downtown, full of new businesses and residents. A number of development projects are underway and the city recently unveiled a new public square in the city center. Cleveland's driving industries are healthcare and advanced manufacturing. These industries are primed for disruption and tech firms have ample opportunity here.

CHALLENGE

Losing promising startups to Silicon Valley is a major challenge for Cleveland. Some startups move because they are acquired, while others move for access to funding, talent and customers. Capital is another critical challenge for Cleveland. According to a report by VentureOhio, an organization whose mission is to advance and support entrepreneurship, the region is still $263 million short in financing the ongoing needs of the tech industry. Human capital is another challenge, with the region needing to improve its ability to attract, develop and retain the talent needed to foster a tech community.

CHANGE IN TECH EMPLOYMENT

Employment

+8.4%
(y-o-y)

+26.3%
change since 2001

"Cleveland is an attractive location for tech companies to grow and prosper given its low-cost environment, high quality of life, and minimal barriers to entry."

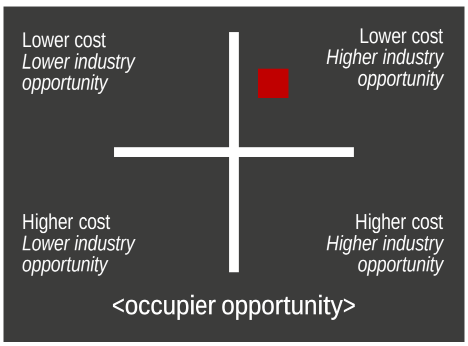
- Andrew Batson
VP, Director of Research

COLUMBUS

Peter McStravick
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **68.3**



Office supply	Office cost	Employee cost	Total cost per employee
28,438,511 total inventory (s.f.)	$18.96 overall direct asking rent	$76,161 average wage 2015	$3,318 annual real estate cost (175 s.f./person)
12.1% total vacancy	3.5% 12-month rent growth	2.7% annual wage growth 2015	$79,479 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$61.9M total funding Q315-Q216	2,021,632 total population	34.7% % of population with bachelor's or higher (age 25+)	$848 average monthly apartment rent
-25.3% y-o-y change in funding	4.2% unemployment rate	22.1% share of millennials (work age, 20-34)	39.7% urban core premium

TOP LEASE TRANSACTIONS

2900 Easton Square Dr | Easton
Tenant: Alliance Data
Size: 565,000 s.f.
Build-to-suit

800 Tech Center Rd | Gahanna
Tenant: Zulily
Size: 54,000 s.f.
New lease

5455 Rings Rd | Dublin
Tenant: Netsmart Technologies
Size: 18,000 s.f.
New lease

OPPORTUNITY

With an affordable cost of living, a pipeline of talent and a burgeoning population, Columbus offers an appealing ecosystem for new tech firms to grow their companies. In fact, the Capitol City is ranked first in the country in scaling startups, according to the Kauffman Index. Columbus was also recently selected as the winner of the $40 million Smart Cities grant from the U.S. Department of Transportation. This achievement is expected to bring in further investment from major tech players.

CHALLENGE

One of the persistent difficulties for tech startups in Columbus is attaining downtown office space. The market for quality space in the CBD remains tight, which has led to many startups looking toward surrounding submarkets like Grandview or Dublin. However, the desire to grow startups in a downtown environment remains a priority for many firms to attract and retain talent. Fortunately, there are a number of downtown office developments and redevelopments that are proposed or planned in response to this growing demand.

CHANGE IN TECH EMPLOYMENT

Employment

-0.9%
(y-o-y)

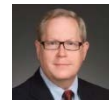
-23.0%
change since 2001

"With a number of positive economic factors, the tech industry in Columbus is ripe with opportunity and strategically positioned for further growth."

\- Peter McStravick
Research Analyst

DALLAS

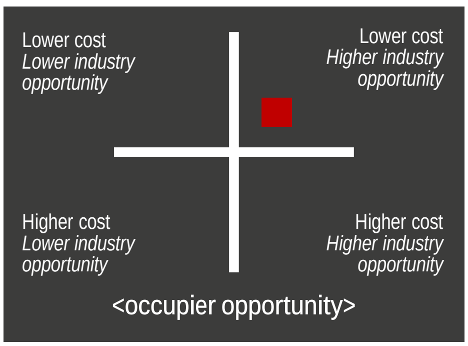
Walter Bialas
VP, Director of Research



Steve Triolet
Research Manager

MARKET SCORE AND MATRIX POSITION

<market score> **76.6**



Office supply

163,694,286
total inventory (s.f.)

19.2%
total vacancy

Office cost

$25.24
overall direct asking rent

7.6%
12-month rent growth

Employee cost

$112,244
average wage 2015

1.2%
annual wage growth 2015

Total cost per employee

$4,417
annual real estate cost (175 s.f./person)

$116,661
all-in cost (real estate and wages)

Venture capital

$256.8M
total funding Q315-Q216

145.1%
y-o-y change in funding

Population

7,102,796
total population - DFW

4.0%
unemployment rate

Talent pool

32.4%
% of population with bachelor's or higher (age 25+)

21.4%
share of millennials (work age, 20-34)

Housing

$1,026
average monthly apartment rent

40.6%
urban core premium

TOP LEASE TRANSACTIONS

Cypress Waters | Las Colinas
Tenant: Core Logic HQ
Size: 327,000 s.f.
Build-to-suit

Connection Park I | Las Colinas
Tenant: Atos SE
Size: 100,500 s.f.
New lease

Granite Tower | West LBJ Freeway
Tenant: Fiserv, Inc,
Size: 49,400 s.f.
Renewal

OPPORTUNITY

With historic roots in semiconductors, telecom, defense and IT, technology is a diverse economic driver. Our region's consistent growth in traditional sectors, like financial services and health care, are fueled, in part, due to their integration with these technology companies. While DFW does not see huge venture capital investment, the mature local companies drive a consistent top-ten ranking in U.S. technology patents. In addition, the 2015 opening of Dallas' U.S. Patent and Trademark Office will enhance this position and catalyze future growth for technology companies locally and across the southern U.S.

CHALLENGE

Even though it has significant tech employment across sectors, DFW is not a big VC generator. Because of this it tends to get overlooked as a national technology center. In the last year, DFW created "Dallas Innovates," a broad platform to enhance recognition of the region as an innovation hub across all disciplines, but the region needs to reinforce its tech education base. While Texas has many tech-savvy schools, an available pool of labor will benefit DFW over time as demands continue to grow from expanding and relocating companies.

CHANGE IN TECH EMPLOYMENT

Employment

+6.8%
(y-o-y)

-6.0%
change since 2001

"Because of DFW's deep and established technology roots, the region continues to be a top-ten U.S. market for technology patent generation in the areas of computers, IT, telecom and biotech."

- Walter Bialas
Director of Research

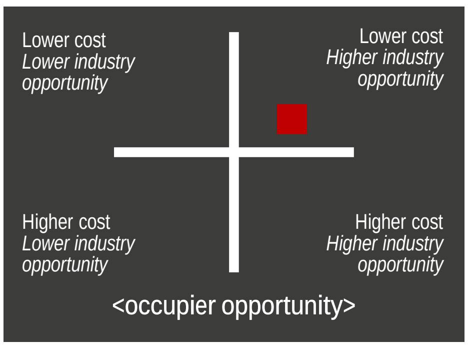
TJ Jaroszewski
Senior Research Manager

Mandy Seyfried
Senior Research Analyst

DENVER

MARKET SCORE AND MATRIX POSITION

<market score> **71.2**



Office supply
101,934,541 total inventory (s.f.)
14.0% total vacancy

Office cost
$26.28 overall direct asking rent
7.8% 12-month rent growth

Employee cost
$105,830 average wage 2015
1.1% annual wage growth 2015

Total cost per employee
$4,599 annual real estate cost (175 s.f./person)
$110,429 all-in cost (real estate and wages)

Venture capital
$305.8M total funding Q315-Q216
-42.3% y-o-y change in funding

Population
2,814,330 total population
3.8% unemployment rate

Talent pool
40.8% % of population with bachelor's or higher (age 25+)
22.3% share of millennials (work age, 20-34)

Housing
$1,305 average monthly apartment rent
18.9% urban core premium

TOP LEASE TRANSACTIONS

1801 California Street | Midtown CBD
Tenant: Ibotta
Size: 37,710 s.f.
New

HUB | Midtown (RiNo)
Tenant: HomeAdvisor
Size: 58,696 s.f.
Expansion from West Suburbs

Triangle Building | Lodo
Tenant: AutoDesk
Size: 23,884 s.f.
New

OPPORTUNITY

Denver's highly-educated workforce is a magnet that serves the seemingly insatiable appetite for skilled tech workers. Historically, Boulder was home to a majority of tech firms, but companies now increasingly look to LoDo, RiNo, Platte Valley and LoHi for more talent, amenities and transportation options. This "millennial effect" has attracted more people to the core; in turn, the fortunes of retail and multi-family have risen. LoDo and RiNo ask some of Denver's highest rates, but value plays remain in Midtown CBD and Uptown high rises—especially in the form of available oil-and-gas sublease options.

CHALLENGE

To the chagrin of landlords, a glut of available sublease space in Downtown has helped shift leverage nearer the tenant's side. Still, tech occupiers face their own obstacles. Rising property taxes have cut into net operating income for owners, but users have largely borne these costs via tax pass-thru's. Build-outs transforming cube farm into the preferred open layout are increasingly costly. Finding affordable parking is proving more challenging. Perhaps of most concern is affordability: though still lower than many top-tier markets, a rising cost of living proves burdensome for both new and long-established residents alike.

CHANGE IN TECH EMPLOYMENT

Employment
+6.6% (y-o-y)
+12.1% change since 2001

"Within nearly all sectors—but particularly so with tech—we've seen two years' worth of companies flooding the downtown core. Doing so allows them to take advantage of the city center's ever-increasing concentration of young and talented labor."

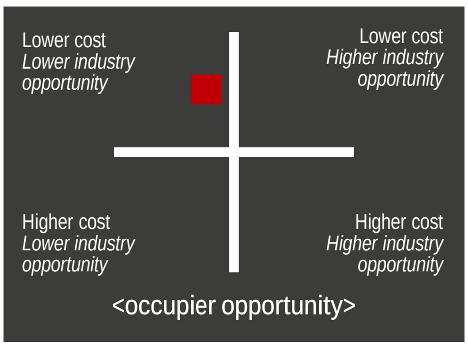
- Mandy Seyfried
Senior Research Analyst

DETROIT

Aaron Moore
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **72.3**



Office supply	Office cost	Employee cost	Total cost per employee
61,470,949 total inventory (s.f.)	$18.32 overall direct asking rent	$89,798 average wage 2015	$3,206 annual real estate cost (175 s.f./person)
19.6% total vacancy	4.9% 12-month rent growth	6.4% annual wage growth 2015	$93,004 all-in cost (real estate and wages)
Venture capital	**Population**	**Talent pool**	**Housing**
$102.7M total funding Q315-Q216	4,302,043 total population	29.4% % of population with bachelor's or higher (age 25+)	$886 average monthly apartment rent
-0.7% y-o-y change in funding	4.5% unemployment rate	19.0% share of millennials (work age, 20-34)	22.9% urban core premium

TOP LEASE TRANSACTIONS

401 E. Liberty | Ann Arbor
Tenant: LLamasoft
Size: 60,000 s.f.
New lease

46555 Magellan Drive | Northern I-275
Tenant: Google
Size: 53,000 s.f.
New lease

130 S. First Street | Ann Arbor
Tenant: Duo Security
Size: ~30,000 s.f.
Relocation within market

OPPORTUNITY

Technology companies are eager to disrupt the age-old automotive industry by improving self-driving car research and mobility. Metro Detroit is home to the University of Michigan, which focuses on software and technology development. Companies such as Google and Ford are opening self-driving car research centers and Amazon, which is seeking to become the largest freight operator in the world, recently opened a tech center in downtown Detroit. The clustering of technology in Metro Detroit is creating an ecosystem that will benefit the region for years to come.

CHALLENGE

Metro Detroit is heavily reliant on the automotive industry to spur innovation in manufacturing and technology. However, as the industry makes a push toward autonomous vehicles, the Metro Detroit region is competing with Silicon Valley to attract highly skilled labor who can write code, create algorithms and push the limits of mobility. Detroit's technology ecosystem is relatively infant in size when compared to the offerings of Silicon Valley and the big three are taking notice – quickly moving software development operations to the west coast.

CHANGE IN TECH EMPLOYMENT

Employment

+7.9% (y-o-y)

-10.9% change since 2001

"Metro Detroit will undeniably serve as a hub for vehicle automation and technology, thus attracting a highly skilled, transient workforce."

\- Aaron Moore
Research Analyst

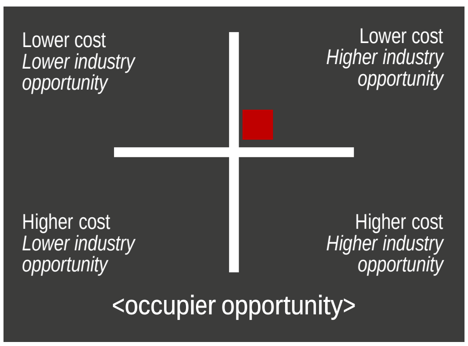
HOUSTON

Rachel Alexander
Research Manager

Reid Watler
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **64.1**



Office supply	Office cost	Employee cost	Total cost per employee
162,835,428 total inventory (s.f.)	$30.46 overall direct asking rent	$97,796 average wage 2015	$5,331 annual real estate cost (175 s.f./person)
18.5% total vacancy	-0.4% 12-month rent growth	2.0% annual wage growth 2015	$103,127 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$27.4M total funding Q315-Q216	6,656,947 total population	31.0% % of population with bachelor's or higher (age 25+)	$1,031 average monthly apartment rent
6.6% y-o-y change in funding	5.5% unemployment rate	22.1% share of millennials (work age, 20-34)	129.6% urban core premium

TOP LEASE TRANSACTIONS

2103 CityWest Blvd | Westchase
Tenant: BMC Software
Size: 197,000 s.f.
Renewal

12140 Wickchester Ln | Katy Fwy W
Tenant: T-Systems
Size: 18,000 s.f.
Sublease

1250 Woodbranch Park Dr | Katy Fwy W
Tenant: Audimation Services
Size: 18,000 s.f.
Sublease

OPPORTUNITY

As market conditions continue to turn in tenants' favor, tech companies are seeing increased opportunities to enter new construction buildings with large, open-floor plates at a steep discount. The declining energy sector has left a large segment of highly-skilled, technical talent out of work, which may provide a fresh labor pool for the tech industry. While medical and life sciences technology have historically been Houston's bedrock, the metro is still in its formative years in segments such as nanotechnology with plenty of room to run.

CHALLENGE

While venture capital funding has grown year-over-year, Houston is still working to establish itself as a nascent tech market. Major funding vehicles will be critical to future growth to provide startups with easier access to capital. This is essential to drawing a larger, more diverse set of tech businesses to Houston. In addition, today's office environment may prove difficult for early-stage companies without credit history to lease space from landlords stung by energy tenant bankruptcies or restructuring.

CHANGE IN TECH EMPLOYMENT

Employment

-2.4%
(y-o-y)

-1.7%
change since 2001

"As prominent higher education institutions, like the University of Houston and the University of Texas, further develop high- technology framework, Houston looks to drive tech demand in emerging industries."

\- Rachel Alexander
Research Manager

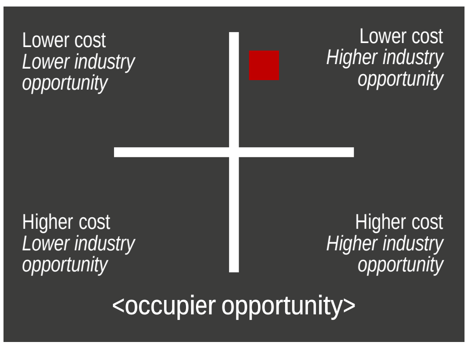
INDIANAPOLIS


Mike Cagna
Senior Research Analyst


Brianna Marshall
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **71.9**



Office supply	Office cost	Employee cost	Total cost per employee
31,569,882 total inventory (s.f.)	$19.30 overall direct asking rent	$58,321 average wage 2015	$3,3,78 annual real estate cost (175 s.f./person)
14.8% total vacancy	2.5% 12-month rent growth	4.2% annual wage growth 2015	$61,699 all-in cost (real estate and wages)
Venture capital	**Population**	**Talent pool**	**Housing**
$58.1M total funding Q315-Q216	1,988,817 total population	31.6% % of population with bachelor's or higher (age 25+)	$787 average monthly apartment rent
-19.6% y-o-y change in funding	4.2% unemployment rate	20.6% share of millennials (work age, 20-34)	42.6% urban core premium

TOP LEASE TRANSACTIONS

Salesforce Tower | CBD
Tenant: Salesforce
Size: 227,781 s.f.
New lease

11939 N Meridian St | N. Meridian/Carmel
Tenant: Blue Horseshoe Solutions, Inc.
Size: 26,668 s.f.
New lease

Lacy Building | CBD
Tenant: Octiv, Inc.
Size: 13,000 s.f.
Renewal with expansion

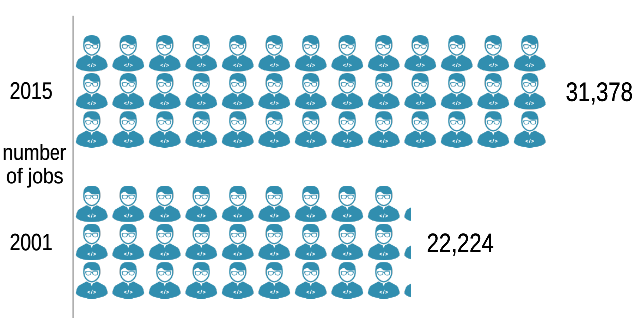
OPPORTUNITY

With major employers like Salesforce, Angie's List and Interactive Intelligence, Indianapolis continues to attract college graduate and middle-age tech talent moving from larger cities to settle there. The cost of doing business and living is well below the national average, making the city an appealing place for young professionals (ranked as the top downtown city by Livability.com). Building owners have recently taken notice to the tech demand and are starting to construct more unique and collaborative spaces to attract these users.

CHALLENGE

Indianapolis lacks a healthy supply of co-working and incubator space, making it challenging for tech startups to find relevant and appealing space to attract talent in the early-growth stages. While downtown has recently increased its supply of tech-desirable space, the suburban markets continue to offer mostly standard, second-generation office space.

CHANGE IN TECH EMPLOYMENT



Employment

+6.9%
(y-o-y)

+41.2%
change since 2001

"Tech firms have been a major driver for office user demand over the past 18 months, a trend we expect to continue due to Indianapolis' affordability and tech-savvy talent pool being churned out by area universities."

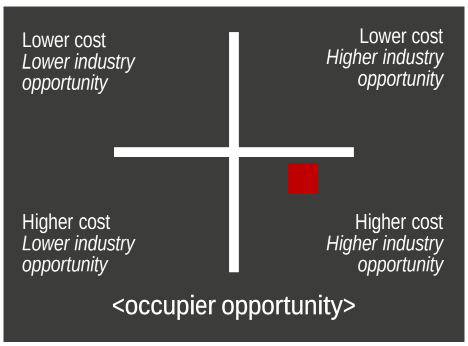
- Mike Cagna
Senior Research Analyst

LOS ANGELES

Devon Parry
Senior Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **73.1**



Office supply	Office cost	Employee cost	Total cost per employee
189,015,125 total inventory (s.f.)	$37.79 overall direct asking rent	$114,540 average wage 2015	$6,613 annual real estate cost (175 s.f./person)
15.0% total vacancy	9.7% 12-month rent growth	13.2% annual wage growth 2015	$121,153 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$2,882.3M total funding Q315-Q216	10,170,292 total population	32.2% % of population with bachelor's or higher (age 25+)	$1,771 average monthly apartment rent
12.5% y-o-y change in funding	5.5% unemployment rate	23.2% share of millennials (work age, 20-34)	25.5% urban core premium

TOP LEASE TRANSACTIONS

5865 S. Campus Center Dr | Westside
Tenant: Google
Size: ~319,000 s.f.
Expansion in market

5800 W. Sunset Blvd | Mid-Wilshire
Tenant: Netflix
Size: 323,103 s.f.
Relocation and expansion

2701 Olympic Blvd | Westside
Tenant: AwesomenessTV
Size: ~90,000 s.f.
Relocation and expansion

OPPORTUNITY

The Los Angeles technology sector has seen extensive growth in recent years, and continues to be the catalyst for economic expansion. While the market is still seeing the southward migration of Silicon Valley giants, home-grown technology startups have flourished and are contributing to the industry's local expansion. As media and technology further intertwine, the preexisting film and television talent and infrastructure in Los Angeles are playing key roles in the success of new media via content creation. The skilled local labor force and storied history of creativity bode well for future growth of L.A.'s tech sector.

CHALLENGE

Recruitment and retention remain a top priority within the Los Angeles technology community. As tech salaries rise, employees' expectations have also increased. Creative office build-outs and company provided amenities have become commonplace, forcing employers to push the envelope in search of unique incentives. Space requirements have also become a challenge as tech industry-preferred micro-markets are filling up, pushing some to look outside of what would be considered the boundaries of "Silicon Beach." Construction starts have accelerated and should help to relieve pent up demand.

CHANGE IN TECH EMPLOYMENT

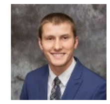
Employment
+5.8% (y-o-y)

-16.7% change since 2001

"The unique alignment of media and technology in Los Angeles allows for local talent to thrive, setting it apart from other major markets around the country."

\- Devon Parry
Senior Research Analyst

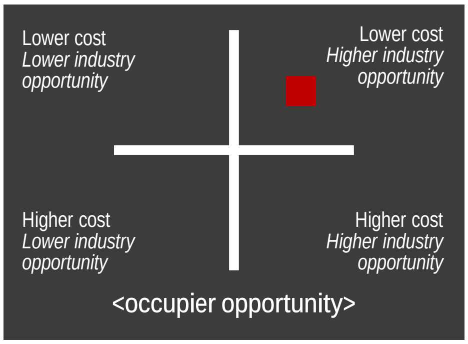
MADISON



Kyle Koller
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **74.3**



Office supply	Office cost	Employee cost	Total cost per employee
15,696,366 total inventory (s.f.)	**$18.38** overall direct asking rent	**$94,412** average wage 2015	**$3,217** annual real estate cost (175 s.f./person)
9.3% total vacancy	**2.8%** 12-month rent growth	**4.6%** annual wage growth 2015	**$97,628** all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$39.0M total funding Q315-Q216	**641,385** total population	**32.2%** % of population with bachelor's or higher (age 25+)	**$1,045** average monthly apartment rent
131.6% y-o-y change in funding	**3.4%** unemployment rate	**24.2%** share of millennials (work age, 20-34)	**3.3%** urban core premium

TOP LEASE TRANSACTIONS

1200 John Q Hammons Drive, Madison
Tenant: Forte Research Systems
Size: 31,565 s.f.
Renewal with expansion

5520 Nobel Drive, Fitchburg
Tenant: Philips
Size: 20,398 s.f.
Renewal

525 Junction Road, Madison
Tenant: ABB Group
Size: 14,604 s.f.
New lease

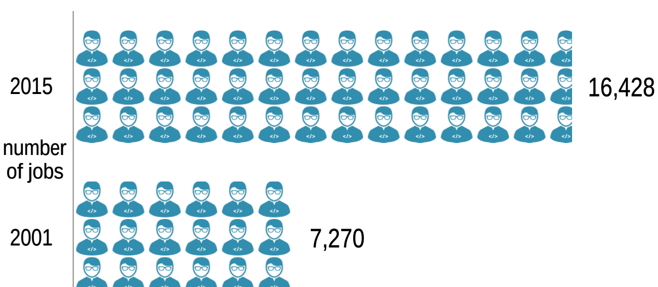
OPPORTUNITY

The University of Wisconsin-Madison, renown for its hand in technological research and advancement, anchors a market that harbors a broad technological community. This environment has been particularly lucrative for technology startups that are able to draw from the deep talent pool and form collaborations with both private and public sector entities - all while enjoying an edgy work-and-play life. The staggering outflow of talent makes Madison a viable option for any tech firm.

CHALLENGE

As Madison continues to draw tech and other industry firms alike, the competition for class A space has continued to tighten. Most submarkets contain a class B inventory that overshadows class A in sheer size, and the vacancy rates for class A office in those areas continue to decline. In fact, vacancy rates is some submarkets have fallen as low as 3.0-4.0 percent for this type of product. Medium-large sized tech firms looking for large blocks of space may be looking at limited options.

CHANGE IN TECH EMPLOYMENT



Employment

+12.3%
(y-o-y)

+126.0%
change since 2001

"With UW Madison as a technology incubator, fresh young minds have the opportunity to apply their knowledge beyond the classroom, and are hitting the ground running by the time they enter the workforce."

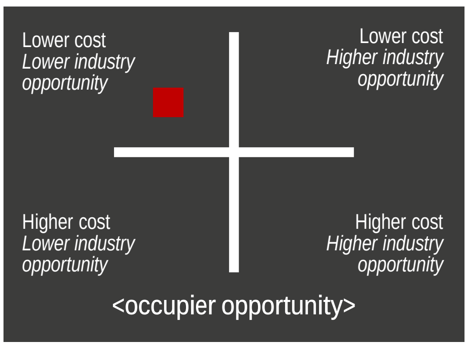
-Kyle Koller
Research Analyst

MILWAUKEE

Kyle Koller
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **60.6**



Office supply

27,543,967
total inventory (s.f.)

17.8%
total vacancy

Office cost

$19.30
overall direct asking rent

5.9%
12-month rent growth

Employee cost

$92,049
average wage 2015

2.8%
annual wage growth 2015

Total cost per employee

$3,378
annual real estate cost (175 s.f./person)

$95,426
all-in cost (real estate and wages)

Venture capital

$0.0M
total funding Q315-Q216

0.0%
y-o-y change in funding

Population

1,575,747
total population

4.4%
unemployment rate

Talent pool

33.7%
% of population with bachelor's or higher (age 25+)

20.5%
share of millennials (work age, 20-34)

Housing

$971
average monthly apartment rent

26.8%
urban core premium

TOP LEASE TRANSACTIONS

400 S. Executive Drive, Brookfield
Tenant: AT&T
Size: 45,323 s.f.
New lease

20700 Swenson Drive, Waukesha
Tenant: JDA
Size: 44,438 s.f.
Renewal with contraction

River Center, Milwaukee
Tenant: VCPI
Size: 20,344 s.f.
New lease

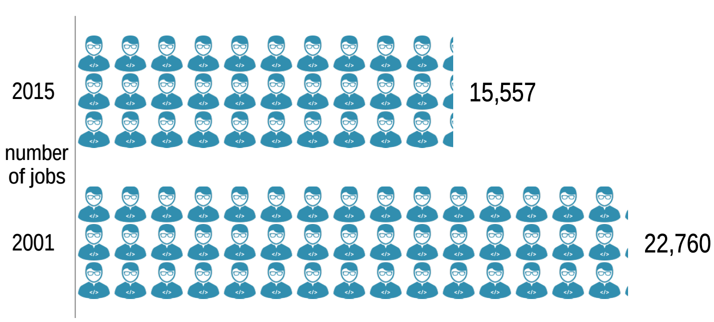
OPPORTUNITY

As an industry, technology firms have played a large role in driving leasing activity and office demand across Milwaukee submarkets. What surfaces is a clear desire for class A space, with most firms looking to the suburbs to find it. With space much more readily available than downtown (and at a significant savings), tech firms have many options to choose from, including technology parks such as the Milwaukee Country Research Park or Reed Street Yards that are tailored specifically to the tech industry.

CHALLENGE

In the same sense that Milwaukee offers multiple real estate options for tech firms, startups have the challenge of balancing the attraction of hip new space and the costs associated with getting there. Creative build outs can run tenants $40-$50 per square foot or more, a hard thing to justify for a startup that may be testing the feasibility of their business. With a typical desire for relatively small footprints and shorter terms, tech startups are often met with little to no improvement allowances from landlords.

CHANGE IN TECH EMPLOYMENT



Employment

+1.2%
(y-o-y)

-31.6%
change since 2001

"Milwaukee offers instances of micro sharing economies—where tech firms can locate near one another in technology-tailored research parks or buildings and collaborate."

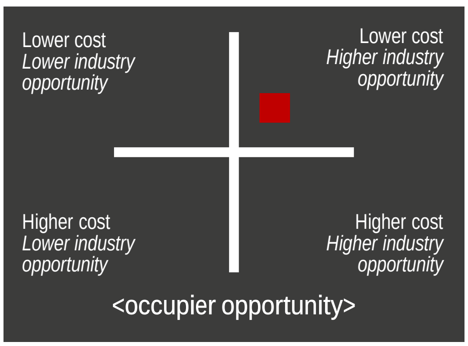
-Kyle Koller
Research Analyst

MINNEAPOLIS

Carolyn Bates
Senior Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **76.9**



Office supply
68,980,029
total inventory (s.f.)

14.7%
total vacancy

Office cost
$25.76
overall direct asking rent

3.0%
12-month rent growth

Employee cost
$103,653
average wage 2015

3.3%
annual wage growth 2015

Total cost per employee
$4,508
annual real estate cost (175 s.f./person)

$108,161
all-in cost (real estate and wages)

Venture capital
$168.8M
total funding Q315-Q216

55.2%
y-o-y change in funding

Population
3,524,583
total population

3.7%
unemployment rate

Talent pool
40.0%
% of population with bachelor's or higher (age 25+)

20.9%
share of millennials (work age, 20-34)

Housing
$1,078
average monthly apartment rent

34.0%
urban core premium

TOP LEASE TRANSACTIONS

Offices @ MOA | Southeast
Tenant: Cray
Size: 87,500 s.f.
Relocation within market

Washington Square | Minneapolis CBD
Tenant: Code42
Size: 65,000 s.f.
Relocation within market

Wyman-Partridge | Minneapolis CBD
Tenant: Four51
Size: 15,000 s.f.
Relocation within market

OPPORTUNITY

The Minneapolis-St. Paul metro has a unique mix of technological innovation across very diverse industries, including life sciences, retail, and food. Meanwhile, national VC firms have been branching outside of medical devices (MSP's traditionally strongest tech cluster) when seeking investment opportunities, including local solar panel manufacturers and "Internet of Things" apps. As awareness of MSP's highly-productive tech economy grows, new occupiers (particularly from more costly real estate markets) will continue to enter the market either via acquisitions or strategic expansion into the Midwest.

CHALLENGE

Minneapolis-St. Paul consistently has one of the lowest unemployment rates in the nation—great news for workers but an increasing concern for employers seeking tech talent. Fortune 500 corporations like UnitedHealth Group are responsible for the largest share of IT job postings, and growth is not expected to slow anytime soon. In reaction to the tightening labor supply, some of the largest tech service firms are opening subsidiary offices in California, Denver, and Austin. Local HQ employment remains strong and steady, but there is heightened awareness to prevent future leakage of CRE investment.

CHANGE IN TECH EMPLOYMENT

Employment
+2.7%
(y-o-y)

-2.5%
change since 2001

"Tech tenants continue to eschew Class A Trophy space for modern, open floorplans in close proximity to trendier amenities. Firms are migrating toward renovated historic buildings on the peripherals of downtown, as well as newly-developed lifestyle centers in first-ring suburbs."

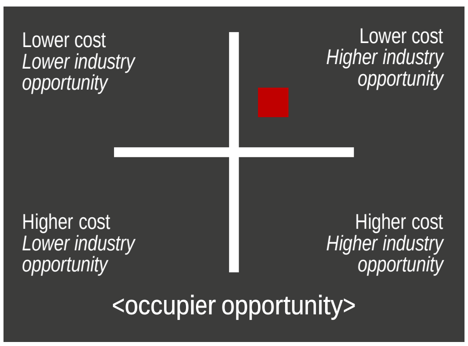
- Carolyn Bates
Senior Research Analyst

NASHVILLE

Hensley Loeb
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **58.1**



Office supply
33,470,801
total inventory (s.f.)

5.1%
total vacancy

Office cost
$22.58
overall direct asking rent

6.3%
12-month rent growth

Employee cost
$85,483
average wage 2015

-0.1%
annual wage growth 2015

Total cost per employee
$3,952
annual real estate cost (175 s.f./person)

$89,435
all-in cost (real estate and wages)

Venture capital
$53.1M
total funding Q315-Q216

15.8%
y-o-y change in funding

Population
1,830,345
total population

3.0%
unemployment rate

Talent pool
32.1%
% of population with bachelor's or higher (age 25+)

21.9%
share of millennials (work age, 20-34)

Housing
$1,057
average monthly apartment rent

49.8%
urban core premium

TOP LEASE TRANSACTIONS

150-152 2nd Ave N | Downtown
Tenant: Lyft
Size: 54,483 s.f.
Expansion in building

315 Deaderick St | Downtown
Tenant: Qualifacts
Size: 25,0000 s.f.
Renewal with expansion

4100 Charlotte Ave | West
Tenant: NovaCopy
Size: 20,0000 s.f.
Expansion in market

OPPORTUNITY

The automotive and health care industries are two that stand to bolster Nashville's tech growth. The automotive manufacturing industry is currently the biggest driver for tech job growth. As top manufacturers continue to expand and as new manufacturers enter the market, the tech auto sector will continue to fuel growth by necessity. Nashville stands to grow further in the tech industry by capitalizing on other strong industries. Health Care Information Technology (HIT) is a rising global industry that is estimated to create 40,000 jobs. Nashville's health care industry impacts the global economy by over $70 billion. As such, the city is strategically positioned to capitalize on HIT's projected global economic impact.

CHALLENGE

The tech sector's greatest challenges are twofold: space and talent. The first is a common concern of most industry sectors in the market. Nashville's office vacancy, currently 5.1 percent, is the lowest in the country. However, supply is expected to grow by more than 10 percent of the current inventory by the end of 2017. The second challenge for the industry is talent. There is a greater demand for talent than the market currently supplies: more than 1,000 jobs are open. Recognizing the need, the city chambers and the education system has responded by developing programs to accommodate the rapidly growing industry.

CHANGE IN TECH EMPLOYMENT

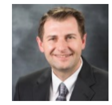
Employment
+6.5%
(y-o-y)

+44.4%
change since 2001

"No city beats Nashville's advanced industry growth between 2013 and 2015. Between the current foothold for growth in tech auto jobs and the opportunity in the healthcare industry, Nashville is bolstered for continued growth in the tech sector."

- Hensley Loeb
Research Analyst

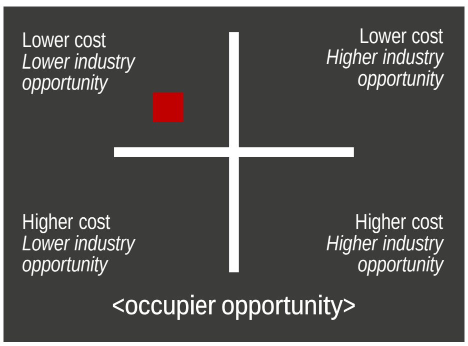
NORTHERN NEW JERSEY



Stephen Jenco
VP, Director of Research

MARKET SCORE AND MATRIX POSITION

<market score> **71.1**



Office supply	Office cost	Employee cost	Total cost per employee
158,729,176 total inventory (s.f.)	$25.49 overall direct asking rent	$106,183 average wage 2015	$4,461 annual real estate cost (175 s.f./person)
24.4% total vacancy	1.3% 12-month rent growth	-0.9% annual wage growth 2015	$110,644 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$449.0M total funding Q315-Q216	2,511,493 total population	37.9% % of population with bachelor's or higher (age 25+)	$1,342 average monthly apartment rent
158.3% y-o-y change in funding	5.2% unemployment rate	18.2% share of millennials (work age, 20-34)	0% urban core premium

TOP LEASE TRANSACTIONS

Bell Works | Monmouth
Tenant: iCIMS
Size: 350,000 s.f.
New lease

Waterfront Corporate Center III | Hudson Waterfront
Tenant: NICE Systems
Size: 60,000 s.f.
New lease

Gateway Center 2 | Newark
Tenant: HelloFresh
Size: 27,000 s.f.
New lease

OPPORTUNITY

Proximity to Manhattan and a highly skilled workforce replenished by graduates from the state's universities will keep New Jersey on the radar screen of tech companies. Along Amtrak's Northeast corridor, the Newark, New Brunswick, Metropark and Princeton submarkets will remain active as tenants seek space in areas offering mass transit options for their workforces and clients. Furthermore, aggressive economic incentive programs are creating opportunities for companies to remain within the state or relocate their operations here.

CHALLENGE

Limited large block availabilities and the absence of new construction in the Hudson Waterfront will challenge tech companies in this strategically located submarket. The lack of supply in many mass transit-accessible markets may prompt companies to pursue amenity-rich Class A buildings in suburban markets. However, tenants will be challenged by constrained parking ratios and aging building systems associated with some of this product. Tech companies will also continue to pursue lower cost alternatives outside the state to reduce expenses.

CHANGE IN TECH EMPLOYMENT

Employment

+2.2%
(y-o-y)

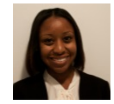
-5.4%
change since 2001

"Demand for office space is being driven by a healthy mix of new tech companies entering the market as well as existing tenants expanding their local footprints."

- Stephen Jenco
VP, Director of Research

NEW YORK CITY

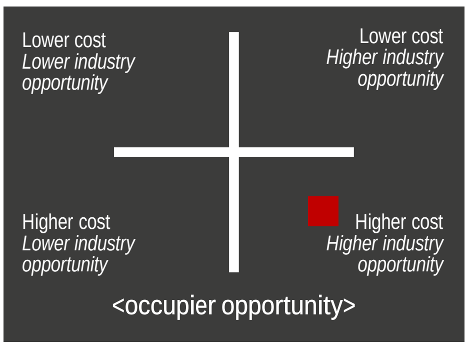
Tristan Ashby
VP, Director of Research



Tiffany Ramsay
Senior Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **78.7**



Office supply
459,872,906 total inventory (s.f.)
9.9% total vacancy

Office cost
$72.63 overall direct asking rent
3.7% 12-month rent growth

Employee cost
$142,846 average wage 2015
5.5% annual wage growth 2015

Total cost per employee
$12,710 annual real estate cost (175 s.f./person)
$155,556 all-in cost (real estate and wages)

Venture capital
$4,038.4M total funding Q315-Q216
-23.8% y-o-y change in funding

Population
14,413,079 total population
4.7% unemployment rate

Talent pool
37.9% % of population with bachelor's or higher (age 25+)
22.7% share of millennials (work age, 20-34)

Housing
$2,776 average monthly apartment rent
21.5% urban core premium

TOP LEASE TRANSACTIONS

919 Third Ave | Plaza District
Tenant: Bloomberg LP
Size: 204,442 s.f.
Expansion

1095 Ave of the Americas | Times Square
Tenant: Salesforce
Size: 202,678 s.f.
Sublease

225-233 Park Ave South | Gramercy Park
Tenant: Facebook
Size: 200,668 s.f.
New lease

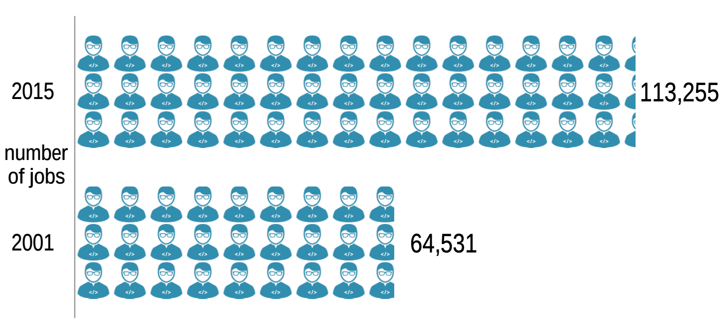
OPPORTUNITY

Ample possibilities for innovation exist at the intersection between tech and New York City's more traditional industries of finance, media, advertising, and retail. Tech continues to disrupt and transform operations in these industries, spurring growth, leasing activity and, ultimately, a more diverse and dynamic local economy. In terms of location, Brooklyn and Long Island City are lower-priced office alternatives to Manhattan. The outer boroughs are prime areas for tech startups establishing an office footprint, boasting emerging creative communities and direct access to a young and educated talent base.

CHALLENGE

The massive influx of venture capital funding witnessed in previous years has begun to taper. While total funding remains elevated, the rate of growth is cooling amid growing political and economic uncertainty. Investors have become more discerning, favoring established firms with proven track records over burgeoning startups. Investor selectivity will likely affect future job gains and leasing in the office sector, especially among early-stage companies priced out of Midtown South's expensive tech clusters. As a result, the market will increase its reliance on later-stage tech companies to fuel job growth and activity in the near-term.

CHANGE IN TECH EMPLOYMENT



Employment
+11.3% (y-o-y)
+75.5% change since 2001

"With venture capital funding tightening, the city will look to its larger, more established tech occupiers to fuel growth in the near-term."

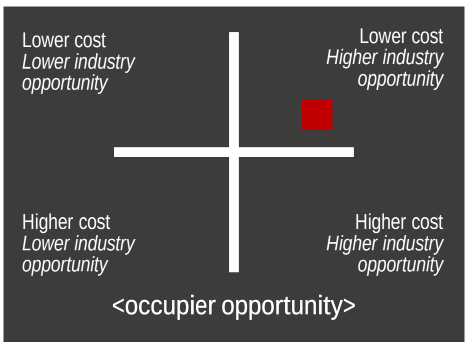
- Tiffany Ramsay
Senior Research Analyst

NORTHERN VIRGINIA

Robert Sapunor
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **77.0**



Office supply

148,009,166
total inventory (s.f.)

20.4%
total vacancy

Office cost

$33.20
overall direct asking rent

0.3%
12-month rent growth

Employee cost

$123,465
average wage 2015

3.0%
annual wage growth 2015

Total cost per employee

$5,810
annual real estate cost (175 s.f./person)

$129,275
all-in cost (real estate and wages)

Venture capital

$340.5M
total funding Q315-Q216

1.7%
y-o-y change in funding

Population

4,812,246
total population

3.1%
unemployment rate

Talent pool

49.3%
% of population with bachelor's or higher (age 25+)

22.6%
share of millennials (work age, 20-34)

Housing

$1,702
average monthly apartment rent

0%
urban core premium

TOP LEASE TRANSACTIONS

4250 N Fairfax Drive | Ballston
Tenant: Applied Predictive Technologies
Size: 98,786 s.f.
Relocation with expansion

2003 Edmund Halley| Reston
Tenant: Ellucian
Size: 97,488 s.f.
Relocation within market

2311 Wilson Boulevard | Courthouse
Tenant: Opower
Size: 45,000 s.f.
Relocation within market

OPPORTUNITY

Tech companies have an opportunity to pivot from working in the private sector to winning government contracts by opening offices in Northern Virginia near federal agencies. Small tech companies now have the opportunity to go into numerous incubator and coworking spaces. Eastern Foundry has opened two incubator locations in Arlington in the last two years to help startups work with the federal government. Other incubators are also growing in Northern Virginia, including 1776, which just opened a location in Crystal City, and Mach 37, which is a Virginia-funded cybersecurity accelerator that has been in operation since 2013.

CHALLENGE

Many of the traditional landlords in Northern Virginia are used to government agency leases with terms of 10 years or longer. This has made them reluctant to sign leases with tech companies with terms under five years. However, this is becoming less of a challenge recently as some landlords have begun building spec suites aimed at attracting tech tenants. The minimum term in spec suites is still normally between three and five years though.

CHANGE IN TECH EMPLOYMENT

Employment

+6.6%
(y-o-y)

+15.2%
change since 2001

"Northern Virginia is becoming a more hospitable market for tech companies due to increases in incubators, co-working spaces and spec suites."

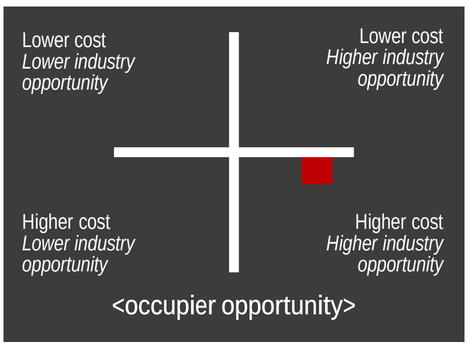
- Robert Sapunor
Research Analyst

OAKLAND-EAST BAY

Katherine Billingsley
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **79.9**



Office supply
52,944,276
total inventory (s.f.)

11.2%
total vacancy

Office cost
$33.58
overall direct asking rent

18.5%
12-month rent growth

Employee cost
$124,481
average wage 2015

2.8%
annual wage growth 2015

Total cost per employee
$5,877
annual real estate cost (175 s.f./person)

$130,357
all-in cost (real estate and wages)

Venture capital
$481.4M
total funding Q315-Q216

26.9%
y-o-y change in funding

Population
2,764,960
total population

4.8%
unemployment rate

Talent pool
45.9%
% of population with bachelor's or higher (age 25+)

21.1%
share of millennials (work age, 20-34)

Housing
$2,083
average monthly apartment rent

1.5%
urban core premium

TOP LEASE TRANSACTIONS

Uptown Station | Uptown Oakland
Tenant: Uber Technologies
Size: ~330,000 s.f.
Owner-user investment

Rosewood Commons | Pleasanton
Tenant: Zeltiq Aesthetics
Size: ~110,000 s.f.
Relocation within market

300 Frank H Ogawa Plaza | Oakland CBD
Tenant: Everyday Health, Inc.
Size: 5,710 s.f.
New to market

OPPORTUNITY

In the last five years, the East Bay has recorded more than 1.7 million square feet of tenant migrations or expansions, and 26.0 percent of this volume is attributable to tech tenants. Firms are able to tap into the same talent pool that's fueling industry growth in San Francisco and Silicon Valley. Some landlords are funding capital improvements that cater to tech tenants, such as open and collaborative space, and building amenities such as showers and gyms. Despite increasing prices, the East Bay still has affordable space downtown relative to San Francisco as well as large blocks of space near transit nodes in the suburbs.

CHALLENGE

In the last 24 months, more than $1.4 billion of office transactions occurred in the East Bay. Investors are hungry for a piece of the Bay Area, and the East Bay has offered better yields, but the turnover in ownership could fuel further rents increases, impacting tenants. Meanwhile, competition for space remains fierce, especially in popular tech hubs like downtown Oakland, Jack London Square, and suburban hubs along BART. This could drive tenants toward renewals or short-term deals until market pricing begins to taper.

CHANGE IN TECH EMPLOYMENT

Employment
+11.8%
(y-o-y)

-3.6%
change since 2001

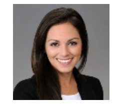
"Since 2010, the technology sector represents 26.0 percent of tenant migration or expansion activity from San Francisco."

\- Katherine Billingsley
Research Analyst

Jared Dienstag
Senior Research Analyst

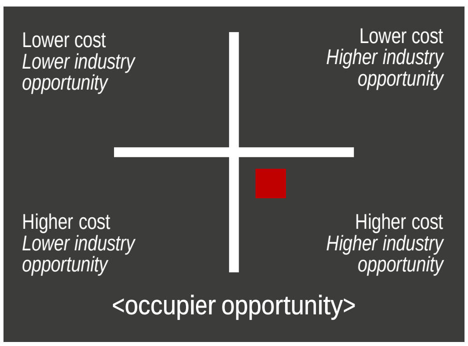
ORANGE COUNTY

Diana Johnson-O'Brien
Research Analyst



MARKET SCORE AND MATRIX POSITION

<market score> **68.8**



Office supply
95,769,930
total inventory (s.f.)

11.7%
total vacancy

Office cost
$31.40
overall direct asking rent

9.6%
12-month rent growth

Employee cost
$104,061
average wage 2015

1.7%
annual wage growth 2015

Total cost per employee
$5,495
annual real estate cost (175 s.f./person)

$109,556
all-in cost (real estate and wages)

Venture capital
$566.2M
total funding Q315-Q216

13.0%
y-o-y change in funding

Population
3,145,515
total population

4.4%
unemployment rate

Talent pool
32.2%
% of population with bachelor's or higher (age 25+)

21.5%
share of millennials (work age, 20-34)

Housing
$1,872
average monthly apartment rent

24.4%
urban core premium

TOP LEASE TRANSACTIONS

65 Enterprise | South County
Tenant: Gaikai
Size: 22,656 s.f.
Renewal

200 Spectrum Center Drive | South County
Tenant: Curse Gaming
Size: 22,150 s.f.
New lease

96 Corporate Park | Airport Area
Tenant: SpaceX
Size: 8,000 s.f.
New lease

OPPORTUNITY

Orange County's economy is rapidly growing, fueled by the expanding local technology sector. Startup and mature companies are drawn to the market's highly educated labor pool (including a rise in graduates holding STEM degrees) and desirable lifestyle. The increasing number of local high-tech firms is adding new dynamics to the Orange County office market, including the growing inventory of creative space. With less competition than other west coast markets, companies have a great opportunity to attract and retain employees.

CHALLENGE

New office developments and creative space renovations are pushing up rental rates, limiting the number of space options for some startup companies. Although venture capital funding remains high, investment firms are allocating more time toward due diligence periods, stretching out the time for investment rounds to close. The limited number of available large blocks of space in the most sought-after locations in the market creates a challenge for expanding companies, however, new office deliveries will help to lower the competition for space.

CHANGE IN TECH EMPLOYMENT

Employment
+3.5%
(y-o-y)

-18.3%
change since 2001

"Technology firms are attracted to Orange County for the highly educated and talented workforce, in addition to the lower real estate and operational costs compared to other West Coast markets."

\- Jared Dienstag
Senior Research Analyst

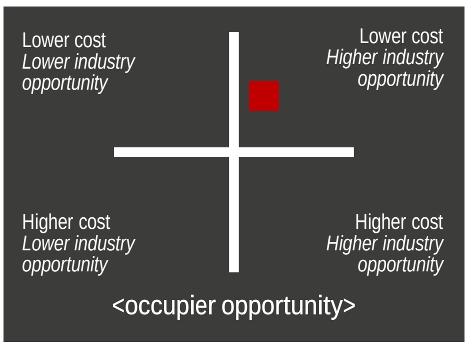
Marc L. Miller
Research Manager

ORLANDO

Will Harding
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **61.0**



Office supply	Office cost	Employee cost	Total cost per employee
29,161,308 total inventory (s.f.)	$21.12 overall direct asking rent	$79,217 average wage 2015	$3,696 annual real estate cost (175 s.f./person)
13.7% total vacancy	2.2% 12-month rent growth	5.0% annual wage growth 2015	$82,977 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$75.1M total funding Q315-Q216	2,387,138 total population	28.7% % of population with bachelor's or higher (age 25+)	$1092 average monthly apartment rent
928.3% y-o-y change in funding	4.5% unemployment rate	22.4% share of millennials (work age, 20-34)	17.6% urban core premium

TOP LEASE TRANSACTIONS

600 Colonial Center Pkwy | Lake Mary
Tenant: FISERV Solutions, Inc.
Size: 136,000 s.f.
Renewal with contraction

12501 Research Pkwy | University Area
Tenant: Metters Industries, Inc.
Size: 30,000 s.f.
New lease

11301 Corporate Blvd | University Park
Tenant: DiSTI Corporation
Size: ~21,000 s.f.
Renewal

OPPORTUNITY

The Orlando market is one of the fastest growing markets in the country by population and home to an educated workforce in STEM fields, providing a strong workforce pool for technology companies. Additionally, Orlando's millennial population grew by over 27.0 percent from 2008 to 2013. As such, numerous industries are migrating to this area, including technology-related companies. This interest is acting as a catalyst for the Creative Village development downtown, which is targeting the technology industry in an effort to create a central technology hub, similar to how Lake Nona created a medical cluster.

CHALLENGE

The limited availability of large blocks of space restricts the ability of major company to quickly enter the marketplace, particularly in areas attractive to technology companies. As vacancy declines and rental rates rise, this may lead companies toward build-to-suit options, which can result in delays. With stiff competition among metro areas in Florida (and the Southeast in general), viable real estate options for technology companies is more important than ever – particularly in submarkets attractive to young, highly-skilled professionals in technology fields.

CHANGE IN TECH EMPLOYMENT

Employment
+0.7%
(y-o-y)

+9.9%
change since 2001

"Orlando is a leader in economic development and job growth among major metros in the United States, which presents a prime foundation for expansion or relocation opportunities for technology companies seeking a low-cost, high-potential location."

- Will Harding
Research Analyst

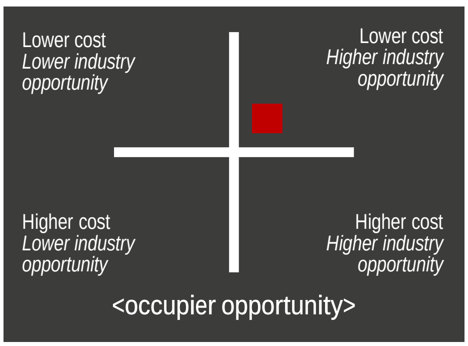
Lauren Gilchrist
VP, Director of Research

PHILADELPHIA

Clint Randall
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **67.1**



Office supply	Office cost	Employee cost	Total cost per employee
131,742,375 total inventory (s.f.)	$24.43 overall direct asking rent	$102,798 average wage 2015	$4,275 annual real estate cost (175 s.f./person)
12.6% total vacancy	2.1% 12-month rent growth	4.9% annual wage growth 2015	$107,074 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$119.9M total funding Q315-Q216	6,069,875 total population	35.3% % of population with bachelor's or higher (age 25+)	$1,248 average monthly apartment rent
-41.0% y-o-y change in funding	5.2% unemployment rate	20.8% share of millennials (work age, 20-34)	58.3% urban core premium

TOP LEASE TRANSACTIONS

Two Logan Square | Market West
Tenant: Comcast
Size: ~40,000 s.f.
Expansion in building

351 Rouse Boulevard | Navy Yard
Tenant: AdaptImmune
Size: 47,000 s.f.
New lease

3711 Market Street | University City
Tenant: Microsoft Innovation Center
Size: 3,800 s.f.
New lease

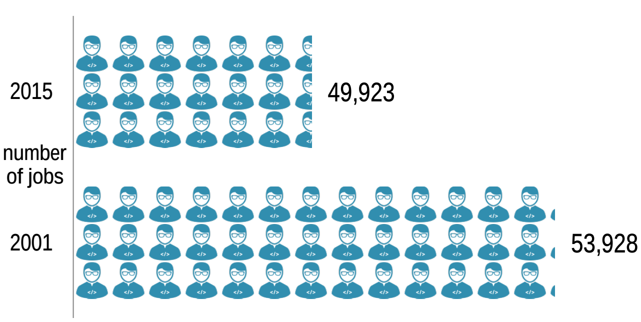
OPPORTUNITY

Comcast's ongoing expansion and diversification in the tech space will fuel growth in the CBD, particularly as its 1.3 million square-foot Innovation & Technology Center prepares for a late 2017 opening. International tech staffing firm Frank Recruitment is hiring 250 for its new Philadelphia office and is perhaps an early example of the hoped for "Comcast effect" that landlords will experience in the coming years. While tech talent may continue to be an ongoing issue for firms looking to grow here, low occupancy costs compared to major tech markets, and quality of life in the CBD, make Philadelphia more viable than ever.

CHALLENGE

While healthcare IT, medical and life sciences, and media technology sectors all seemed poised to experience robust growth in the coming years, competition in these fields is fierce nationally and Greater Philadelphia's identity as a hub for any of them is neither cemented today nor guaranteed for tomorrow. With no one industry as a primary driver of office demand and leasing activity regionally, gains within the technology sphere can be difficult to measure. The region's tech startup scene is maturing, but a local answer to Google remains elusive with no major exits by firms on the consumer tech side.

CHANGE IN TECH EMPLOYMENT



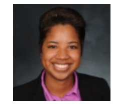
Employment
+1.0%
(y-o-y)

-7.4%
change since 2001

"Philadelphia's anchor institutions are working with major developers to build innovation districts to attract and retain tech tenants. Between this and the explosive growth of Comcast, Philly could be on the verge of significant tech growth."

\- Clint Randall
Research Analyst

Kiana Cox
Senior Research Analyst

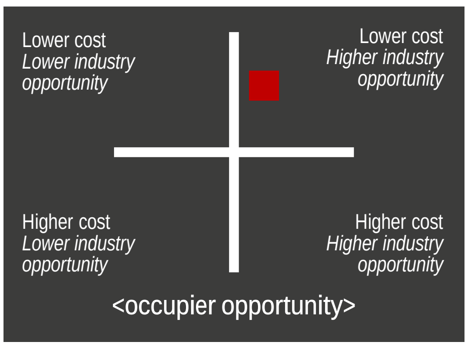


Keeley Byer
Research Analyst

PHOENIX

MARKET SCORE AND MATRIX POSITION

<market score> **73.6**



Office supply	Office cost	Employee cost	Total cost per employee
83,171,164 total inventory (s.f.)	$23.94 overall direct asking rent	$91,794 average wage 2015	$4,190 annual real estate cost (175 s.f./person)
20.1% total vacancy	6.1% 12-month rent growth	0.5% annual wage growth 2015	$95,983 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$137.5M total funding Q315-Q216	4,574,531 total population	29.0% % of population with bachelor's or higher (age 25+)	$886 average monthly apartment rent
23.2% y-o-y change in funding	5.3% unemployment rate	20.9% share of millennials (work age, 20-34)	22.1% urban core premium

TOP LEASE TRANSACTIONS

The Circuit | Tempe
Tenant: Oscar Health
Size: 93,317 s.f.
New to market

515 E Grant Street | Downtown
Tenant: Galvanize
Size: 62,220 s.f.
New to market

515 E Grant Street | Downtown
Tenant: WebPT
Size: 60,000 s.f.
Expansion in market

OPPORTUNITY

For the last few years, the neighboring Tempe and South Scottsdale submarkets have been the go-to location for tech companies in the Phoenix market. As those submarkets tighten and rental rates continue to surpass the market average, tech companies will find more affordable alternatives in the new Warehouse District just south of Downtown Phoenix. The Warehouse District is poised for strong growth and is quickly becoming a popular tech destination, despite being slightly disconnected from the live-work-play area in the core of downtown Phoenix.

CHALLENGE

Tempe and South Scottsdale boast the live-work-play environments that attract millennials and skilled tech talent, as well as the tech companies that hire them. As the two markets tighten with record low vacancies and market-high rental rates, tenants are put in the position of competing for Class A space. Some tenants, especially smaller tech tenants with limited financial means and little leverage over landlords, have been forced into more affordable Class B properties or emerging submarkets that appeal to the growing tech market.

CHANGE IN TECH EMPLOYMENT

Employment
+7.6%
(y-o-y)

+9.6%
change since 2001

"The Downtown submarket, including the Warehouse District, is emerging as a challenger to Tempe and South Scottsdale as the preeminent tech destination in the Valley."

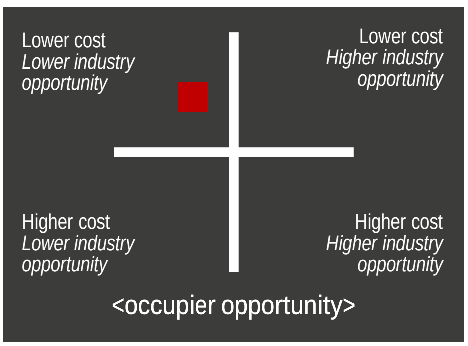
- Kiana Cox
Senior Research Analyst

PITTSBURGH

Tobiah Bilski
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **63.5**



Office supply
50,355,528
total inventory (s.f.)

15.9%
total vacancy

Office cost
$23.22
overall direct asking rent

4.2%
12-month rent growth

Employee cost
$84,298
average wage 2015

2.1%
annual wage growth 2015

Total cost per employee
$4,064
annual real estate cost (175 s.f./person)

$88,362
all-in cost (real estate and wages)

Venture capital
$68.1M
total funding Q315-Q216

-57.1%
y-o-y change in funding

Population
2,353,045
total population

5.8%
unemployment rate

Talent pool
31.7%
% of population with bachelor's or higher (age 25+)

19.2%
share of millennials (work age, 20-34)

Housing
$994
average monthly apartment rent

36.6%
urban core premium

TOP LEASE TRANSACTIONS

1 Allegheny Square | Fringe
Tenant: Confluence
Size: 40,000 s.f.
Relocation within market

4420 Bayard Street | Oakland
Tenant: Oculus
Size: 20,000 s.f.
New to market

2555 Smallman Street | Fringe
Tenant: Bosch
Size: 52,000 s.f.
Relocation in market

OPPORTUNITY

Pittsburgh has become a desirable destination for tech companies because of high-caliber universities like Carnegie Mellon University and University of Pittsburgh providing top young talent to the labor force. New developments and redevelopments currently in the pipeline are aimed toward accommodating modern tech companies, while the city shifts toward a more live-work-play-friendly environment with plenty of amenities to offer.

CHALLENGE

As more companies realize the advantages Pittsburgh offers, demand is driving rents up and as a result, the most desirable tech location in the city, Oakland/East End, is seeing the highest asking rate and the lowest vacancy. Because of this and limited supply, tenants are increasingly looking to the neighboring Strip in the Fringe submarket. While 1.5 million square feet of new office space is being constructed, the amount of space available for lease is less than half, as more than 750,000 square feet of the new construction is already preleased.

CHANGE IN TECH EMPLOYMENT

Employment
+8.1%
(y-o-y)

-2.9%
change since 2001

"Leasing activity of tech companies totaled more than 400,000 square feet in Pittsburgh in 2015. As tech tenant demand remains high, the city continues to grow into an area rich in innovation."

- Tobiah Bilski
Research Analyst

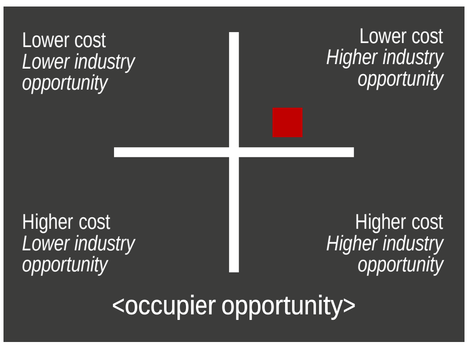
Patricia Raicht
SVP, Director of Research

PORTLAND

Tim Harrison
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **73.6**



Office supply
59,215,940
total inventory (s.f.)
8.8%
total vacancy

Office cost
$25.70
overall direct asking rent
10.4%
12-month rent growth

Employee cost
$115,504
average wage 2015
3.0%
annual wage growth 2015

Total cost per employee
$4,498
annual real estate cost (175 s.f./person)
$120,001
all-in cost (real estate and wages)

Venture capital
$212.6M
total funding Q315-Q216
43.9%
y-o-y change in funding

Population
2,389,228
total population
5.3%
unemployment rate

Talent pool
35.7%
% of population with bachelor's or higher (age 25+)
21.2%
share of millennials (work age, 20-34)

Housing
$1,197
average monthly apartment rent
24.6%
urban core premium

TOP LEASE TRANSACTIONS

1320 SW Broadway | CBD
Tenant: Elemental
Size: 101,400 s.f.
Relocation and expansion

1115 SE 164th Ave, Vancouver | Cascade Park/Camas
Tenant: Hewlett Packard
Size: 58,000 s.f.
Expansion in market

8405 SW Nimbus Ave | 217 Corridor/Beaverton
Tenant: DAT Solutions
Size: 53,793 s.f.
Relocation in market

OPPORTUNITY

A number of larger Portland area tech tenants have leased expansion space; some of this space is now on the market for sublease, this is pending an opportunity for other tenants to get into space with more flexibility and can also serve as an incubator for smaller tech tenants. Additionally, new developments in the close-in submarkets offer companies a greater variety of options, allowing them to choose to locate in an area that fits their specific culture. Depending on the timing at which tenants get involved, they may have an opportunity to potentially influence design and put their stamp on a building.

CHALLENGE

Portland's office vacancy is at historic low levels; competition for creative space in the CBD is fierce, pushing rents to record highs. Companies seeking large, contiguous blocks of space are finding that they have to start planning further in advance and make commitments to space earlier. Additionally, increased construction activity has pushed costs up considerably and companies will be challenged to get space built out to their unique cultural specifications within budget and on time.

CHANGE IN TECH EMPLOYMENT

Employment
+4.6%
(y-o-y)
-3.4%
change since 2001

"When employees visit from out of town, they don't want to leave. Portland has a unique vibe that lures and retains people from high-cost, high-stress cities"

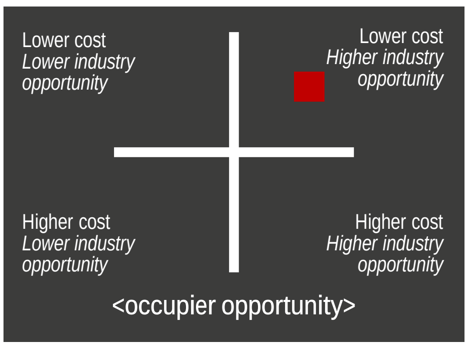
- Patricia Raicht
SVP, Director of Research

RALEIGH-DURHAM

Ashley Lewis
Senior Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **80.6**



Office supply	Office cost	Employee cost	Total cost per employee
44,195,223 total inventory (s.f.)	$21.36 overall direct asking rent	$107,774 average wage 2015	$3,738 annual real estate cost (175 s.f./person)
11.5% total vacancy	3.5% 12-month rent growth	1.6% annual wage growth 2015	$111,512 all-in cost (real estate and wages)
Venture capital	**Population**	**Talent pool**	**Housing**
$73.1M total funding Q315-Q216	1,826,061 total population	44.1% % of population with bachelor's or higher (age 25+)	$995 average monthly apartment rent
-48.4% y-o-y change in funding	4.7% unemployment rate	21.3% share of millennials (work age, 20-34)	0% urban core premium

TOP LEASE TRANSACTIONS

Perimeter Park IV | RTP / RDU
Tenant: ChannelAdvisor
Size:136,538 s.f.
Relocation and expansion

Perimeter Park | RTP / RDU
Tenant: TrialCard
Size: 73,014 s.f.
New lease

Meridian Business Campus I South Durham
Tenant: Avaya
Size: 43,500 s.f.
Relocation and contraction

OPPORTUNITY

Raleigh-Durham talent is among the best in the country due to the pool of graduates coming out of the Triangle's top three universities. Along with an educated population, the cost of doing business and cost of living are the primary drivers to the market's tech industry. California-based firms such as Distil Networks, UserVoice and CloudGenix have recently expanded operations in downtown Raleigh. CloudGenix specifically cited talent potential and the low cost of living as contributing factors. Downtown Raleigh's emerging Warehouse District attracts technology firms to the submarket particularly for its redevelopment of warehouse buildings into creative work spaces with cheaper rents.

CHALLENGE

Despite past challenges of sufficient venture capital support, recent growth in funding has alleviated the concern of losing talent to the Bay Area. Raleigh-Durham suburban properties, although cheaper, are becoming less attractive for densely occupied tech firms due to predetermined parking ratios. Parking becomes a limiting factor as tech firms in the market continue to grow at a faster rate than other industries. The rapid growth rate also comes into play negotiating the terms of the lease and flexibility for expansion. Raleigh-Durham's landlord-favorable market has minimal vacancies in tech-heavy submarkets.

CHANGE IN TECH EMPLOYMENT

Employment

+4.5%
(y-o-y)

-4.9%
change since 2001

"The emergence of smaller tech startups in both CBD districts, along with cheaper but well-educated talent, has led Raleigh-Durham to be one of the most desirable tech markets in the country."

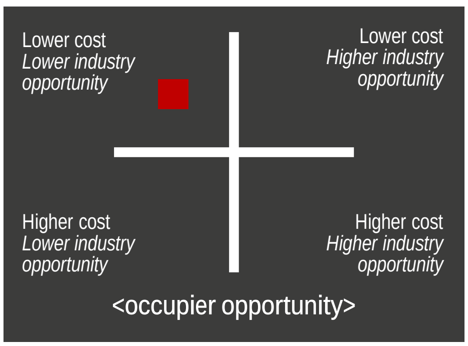
-Ashley Lewis
Senior Research Analyst

RICHMOND

Geoff Thomas
Research Manager

MARKET SCORE AND MATRIX POSITION

<market score> **52.7**



Office supply
- 24,998,313 total inventory (s.f.)
- 13.4% total vacancy

Office cost
- $18.78 overall direct asking rent
- 7.5% 12-month rent growth

Employee cost
- $87,950 average wage 2015
- 4.5% annual wage growth 2015

Total cost per employee
- $3,287 annual real estate cost (175 s.f./person)
- $91,237 all-in cost (real estate and wages)

Venture capital
- $128.1M total funding Q315-Q216
- -41.9% y-o-y change in funding

Population
- 1,271,334 total population
- 4.0% unemployment rate

Talent pool
- 33.8% % of population with bachelor's or higher (age 25+)
- 21.0% share of millennials (work age, 20-34)

Housing
- $969 average monthly apartment rent
- 21.2% urban core premium

TOP LEASE TRANSACTIONS

140 Virginia Street, Lady Byrd Hat | CBD
Tenant: CarMax
Size: 32,000 s.f.
Expansion in market

951 E Byrd Street, Riverfront Plaza | CBD
Tenant: AvePoint
Size: 11,937 s.f.
Expansion in market

3400 W Leigh Street | Scotts Addition
Tenant: CloudBees
Size: 10,000 s.f.
Expansion in market

OPPORTUNITY

Richmond's historic backdrop and low business costs offer an ideal location for tech startups seeking offices outside high-cost markets in the Mid-Atlantic region. Downtown market dynamics transitioned to tenant favorable conditions over the past three years, leaving landlords offering aggressive TI packages to lure in new tenants. These concessions have lowered build-out costs for tech firms that typically adopt higher-cost finishes and unique space layouts.

CHALLENGE

Creative office space in urban submarkets is limited and most of this product type is relatively new construction, which carries a premium over traditional, second-generation office space. Suburban market fundamentals, specifically Class A buildings, are peaking due to the scarcity of suburban office construction and expansionary leasing. In short, finding the right type of space in the right location poses the greatest challenge to tech firms when venturing outside the CBD.

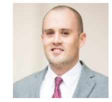
CHANGE IN TECH EMPLOYMENT

Employment
- -0.5% (y-o-y)
- -13.9% change since 2001

"Increased funding from local VC firms has driven leasing velocity for startups in both the urban and suburban submarkets, but the largest tech firms headquartered in Richmond commanded the lion's share of capital streams, which have been used to expand operations outside the metro ."

Geoff Thomas
Research manager

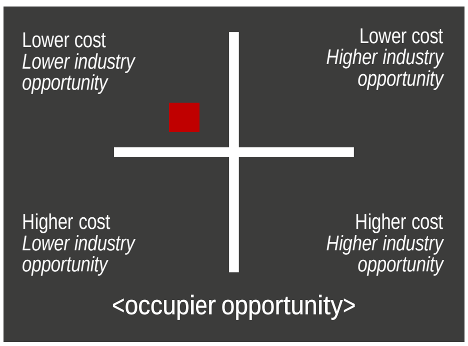
SACRAMENTO



John Sheaffer
Senior Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **56.3**



Office supply	Office cost	Employee cost	Total cost per employee
43,712,331 total inventory (s.f.)	$23.38 overall direct asking rent	$114,487 average wage 2015	$4,092 annual real estate cost (175 s.f./person)
15.0% total vacancy	3.5% 12-month rent growth	-1.3% annual wage growth 2015	$118,579 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$5.5M total funding Q315-Q216	2,274,194 total population	31.3% % of population with bachelor's or higher (age 25+)	$1,127 average monthly apartment rent
-81.8% y-o-y change in funding	5.6% unemployment rate	21.3% share of millennials (work age, 20-34)	20.6% urban core premium

TOP LEASE TRANSACTIONS

255 Parkshore Dr | Folsom
Tenant: Voxpro
Size: 40,000 s.f.
New lease

2868 Prospect Park Dr | Hwy 50 Corridor
Tenant: Cisco
Size: 28,351 s.f.
New lease

11000 Olson Dr | Hwy 50 Corridor
Tenant: INFOR, Inc.
Size: 6,212 s.f.
New lease

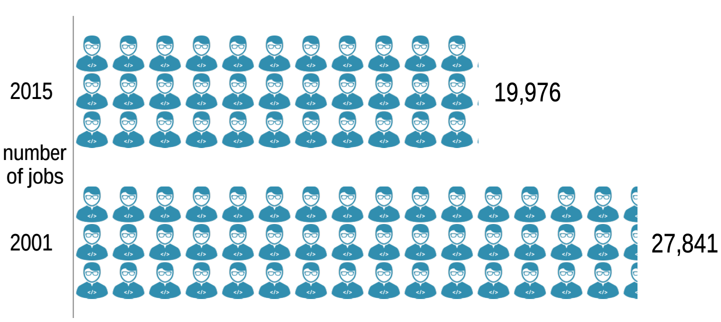
OPPORTUNITY

Sacramento's tech employment base has continued to expand over the past several years as tech companies increasingly look to the region as a cost-effective alternative to Bay Area markets, with an underutilized talent pool. Established companies such as Voxpro and Toshiba recently relocated offices to Folsom, a submarket already home to tech giants Intel and Micron. Historically, the industry has had a larger presence in the suburbs, but the development of the Golden1 Arena downtown, along with new multifamily housing could entice more tenant interest in the CBD and midtown.

CHALLENGE

The venture capital pool in Sacramento is growing, but pales in comparison to established, coastal tech markets. Startups also face a competitive office market where creative space in amenity rich submarkets like Midtown and the CBD is limited and commands some of the highest rates in the market. However, compared to neighboring markets Silicon Valley and Oakland, rental rates remain a bargain, as does the cost of living for employees.

CHANGE IN TECH EMPLOYMENT



Employment
+7.5%
(y-o-y)

-28.2%
change since 2001

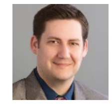
"Sacramento's tech market continues to grow in stronghold submarkets such as Folsom and has begun to venture into the CBD, riding the urban core's revitalization wave."

- John Sheaffer
Senior Research Analyst

SALT LAKE CITY

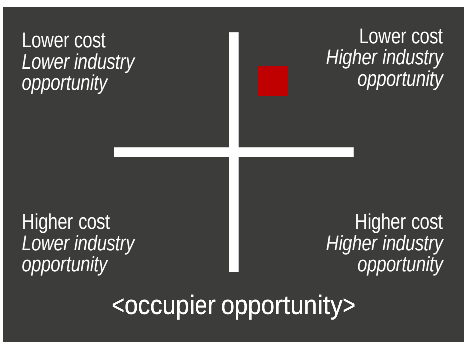
TJ Jaroszewski
Senior Research Manager

Sean Eaton
Senior Research Analyst



MARKET SCORE AND MATRIX POSITION

<market score> **72.1**



Office supply

46,835,070
total inventory (s.f.)

8.0%
total vacancy

Office cost

$21.27
overall direct asking rent

4.4%
12-month rent growth

Employee cost

$81,153
average wage 2015

4.1%
annual wage growth 2015

Total cost per employee

$3,722
annual real estate cost (175 s.f./person)

$84,875
all-in cost (real estate and wages)

Venture capital

$429.2M
total funding Q315-Q216

-50.8%
y-o-y change in funding

Population

1,170,266
total population

3.9%
unemployment rate

Talent pool

31.3%
% of population with bachelor's or higher (age 25+)

23.4%
share of millennials (work age, 20-34)

Housing

$997
average monthly apartment rent

5.4%
urban core premium

TOP LEASE TRANSACTIONS

Traverse Heights | Lehi
Tenant: Entrata
Size: 120,000 s.f.
Relocation and expansion

SoJo Station | Southwest Valley
Tenant: InMoment, Inc.
Size: 62,706 s.f.
Relocation and expansion

Canyon Park | Orem
Tenant: Banyan
Size: 30,000 s.f.
Relocation and expansion

OPPORTUNITY

Salt Lake City (SLC) continues to attract a large number of technology companies of both the startup and well-established varieties alike. This vibrant tech presence coupled with its destination ski resorts has dubbed the southern metro as the "Silicon Slopes." Additionally, SLC maintains the lowest all-in cost for real estate and wages in the western United States, a highly skilled and educated work force, robust venture capital investment and available, developable land, all of which provide a stable foundation for continued growth in the technology industry.

CHALLENGE

Its below-the-radar nature may be SLC's greatest challenge. The metro has worked tirelessly to avoid being overlooked by tech users who may balk at its smaller market size compared to other major metros. Instead, SLC must continue to convince tech-sector decision makers that its vibrant economy with exceptionally low unemployment and office vacancy rates, continued rent growth and consistent absorption of newly delivered construction all counter the perception that it is "just a small market."

CHANGE IN TECH EMPLOYMENT

Employment

+5.5%
(y-o-y)

+45.6%
change since 2001

"With the lowest all-in cost for real estate and wages in the western United States—along with market conditions that remain ripe for future development—Salt Lake City's tech market will continue its robust expansion as an industry hotspot."

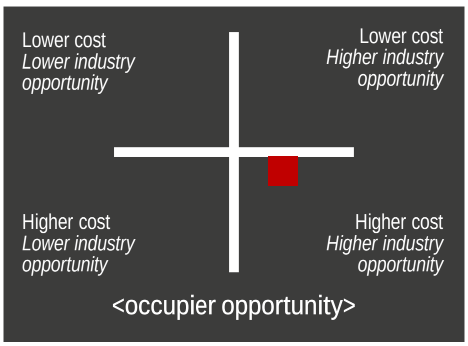
\- Sean Eaton
Senior Research Analyst

SAN DIEGO

Josh Brant
Senior Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **72.8**



Office supply	Office cost	Employee cost	Total cost per employee
78,793,456 total inventory (s.f.)	$30.12 overall direct asking rent	$108,169 average wage 2015	$5,271 annual real estate cost (175 s.f./person)
14.3% total vacancy	5.0% 12-month rent growth	1.2% annual wage growth 2015	$113,440 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$210.1M total funding Q315-Q216	3,299,521 total population	37.1% % of population with bachelor's or higher	$1,627 average monthly apartment rent
-24.7% y-o-y change in funding	5.3% unemployment rate	24.4% share of millennials (work age, 20-34)	26.2% urban core premium

TOP LEASE TRANSACTIONS

6420 Sequence Drive | Sorrento Mesa
Tenant: Google
Size: 55,000+/- s.f.
New to market

The Heights at Del Mar| Del Mar Heights
Tenant: Seismic Software
Size: 24,000 s.f.
Relocation within market

Diamondview Tower| Downtown
Tenant: Classy.org
Size: 18,000 s.f.
Relocation within market

OPPORTUNITY

San Diego has seen it's position among tech markets continue to strengthen, with high profile companies such as Google, Fitbit and GoPro expanding into the market. Beyond the big name brands, the tech sector growth is widespread, and continues to be an integral component in the local economy. Even large local firms that are not currently in a growth mode have contributed indirectly towards activity in the market, such as PTC's recent acquisition of Qualcomm's augmented reality business, and Daybreak Game Company splitting off from Sony.

CHALLENGE

The local technology sector lacks a strong centralized core. Sorrento Mesa, which is anchored by Qualcomm, is known as the most tech-centric submarket. But, tech firms are spread from Downtown, to North County, and the I-15 Corridor. This decentralized composition lowers the profile of the San Diego tech scene, to a degree. Additionally, San Diego's average office rental rates compares favorably to San Francisco, Silicon Valley and Los Angeles, but local office rates are higher than most other western and secondary office markets.

CHANGE IN TECH EMPLOYMENT

Employment
+2.4% (y-o-y)

-2.4% change since 2001

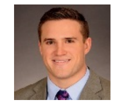
"Tech firms continue to be first movers on new developments in San Diego; whether it's GoPro and Verve at MAKE, Neustar and Webroot at One La Jolla, or now Seismic Software at The Heights. If you have a new office project, there's a very good chance that your first tenant will be a tech firm."

- Joshua Brant
Senior Research Analyst

Amber Schiada
VP, Director of Research

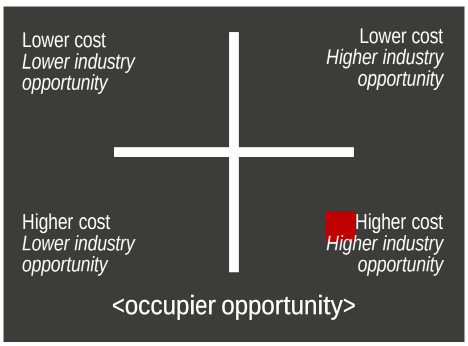
SAN FRANCISCO

Jack Nelson
Research Analyst



MARKET SCORE AND MATRIX POSITION

<market score> **87.3**



Office supply
75,805,957 total inventory (s.f.)
8.0% total vacancy

Office cost
$73.05 overall direct asking rent
10.5% 12-month rent growth

Employee cost
$175,196 average wage 2015
-0.2% annual wage growth 2015

Total cost per employee
$12,784 annual real estate cost (175 s.f./person)
$187,979 all-in cost (real estate and wages)

Venture capital
$11,316.9M total funding Q315-Q216
-10.3% y-o-y change in funding

Population
1,629,951 total population
3.5% unemployment rate

Talent pool
45.9% % of population with bachelor's or higher (age 25+)
24.7% share of millennials (work age, 20-34)

Housing
$3,297 average monthly apartment rent
0% urban core premium

TOP LEASE TRANSACTIONS

215 Fremont | South Financial District
Tenant: FitBit
Size: ~305,000 s.f.
Sublease

185 Berry | Mission Bay/China Basin
Tenant: Lyft
Size: 204,000 s.f.
Expansion in market

350 Bush | North Financial District
Tenant: Twitch.tv
Size: 180,000 s.f.
Expansion in market

OPPORTUNITY

San Francisco remains a preeminent market in the world for technology companies. Access to talent, funding and valued amenities provide the base for sustained growth. New developments, catering building design to tech users, provide large availabilities for companies that continue to capture substantial funding from VC firms focused on later-stage investment. An increase in sublease availability has served as an attractive option for tech tenants looking for flexible lease terms in plug-and-play opportunities that mitigate capital expenditures.

CHALLENGE

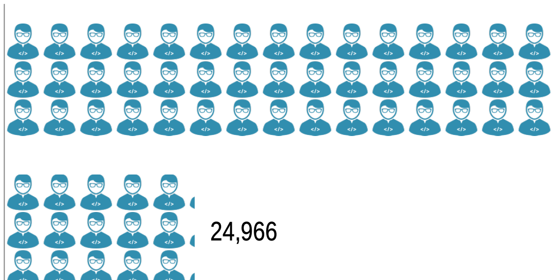
Discrepancy between public and private valuations, poor IPO performance and general market volatility has resulted in VC firms exercising greater caution, thus slowing deal flow. Aggressive expansion inherent with the growth recorded in previous years will be muted as boards take a closer look at real estate costs, slowing leasing velocity. Competition in certain segments will result in retrenchment from cash-limited companies, further increasing sublease supply. Securitization continues to be paramount for companies with short operating histories, requiring significant security deposits.

CHANGE IN TECH EMPLOYMENT

number of jobs

2015 — 72,205

2001 — 24,966



Employment
+21.1% (y-o-y)
+189.2% change since 2001

"A more cautious venture capital investment environment is a positive trend for the long-term sustainability of San Francisco's tech industry. Only the best survive, and any minor correction in the trajectory along the way will provide a hedge against a major correction in the future.

- Jack Nelson
Research Analyst

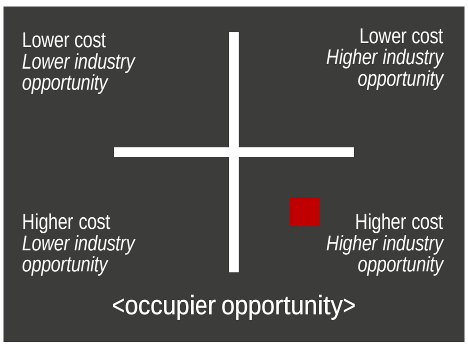
SAN FRANCISCO PENINSULA


Christan Basconcillo
Research Manager


Eduardo Romero
Senior Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **77.5**



Office supply	Office cost	Employee cost	Total cost per employee
27,079,928 total inventory (s.f.)	$57.50 overall direct asking rent	$224,000 average wage 2015	$10,063 annual real estate cost (175 s.f./person)
12.4% total vacancy	13.3% 12-month rent growth	-3.5% annual wage growth 2015	$234,063 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$1,831.6M total funding Q315-Q216	1,629,951 total population	45.9% % of population with bachelor's or higher (age 25+)	$2,865 average monthly apartment rent
-12.1% y-o-y change in funding	3.4% unemployment rate	24.7% share of millennials (work age, 20-34)	0% urban core premium

TOP LEASE TRANSACTIONS

450 Concar Drive | San Mateo
Tenant: Medallia
Size: ~210,000 s.f.
New lease

3025 Clearview Way | San Mateo
Tenant: GoPro
Size: ~107,000 s.f.
New lease

1400 Seaport Boulevard | Redwood City
Tenant: Guidespark
Size: 98,667 s.f.
Sublease

OPPORTUNITY

The San Francisco Peninsula lies in between the two greatest tech hubs in the world: San Francisco and Silicon Valley. With a demographic profile ranking high for educational attainment and a vibrant combination of urban environment and rail transit, the region has been targeted by growing tech tenants seeking a better value proposition than Silicon Valley and San Francisco in terms of rents and space quality. The various projects in the development pipeline are an attractive proposition to secure large, high-quality tech space at a discount.

CHALLENGE

In a similar fashion than other markets in the Bay Area, the San Francisco Peninsula faces an acute shortage of housing availability. Rental rates for residential space have skyrocketed over the past 22 quarters despite a surge in residential development projects. Despite boasting some of the highest salaries in the world, the high cost of living in the Peninsula significantly shrinks the disposable incomes of tech workers, prompting a few tech companies to be proactive in securing living spaces for their employees.

CHANGE IN TECH EMPLOYMENT

Employment
+5.0%
(y-o-y)

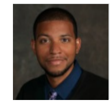
-1.3%
change since 2001

"Since 2014, Silicon Valley tech giants have aggressively expanded their footprint in the Peninsula, forcing smaller tenants to re-think their real estate strategies."

- Eduardo Romero
Senior Research Analyst

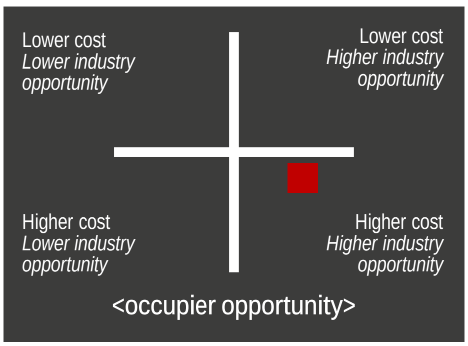
SEATTLE-BELLEVUE

Alex Muir
Research Manager



MARKET SCORE AND MATRIX POSITION

<market score> **82.3**



Office supply	Office cost	Employee cost	Total cost per employee
92,866,684 total inventory (s.f.)	$34.86 overall direct asking rent	$149,018 average wage 2015	$6,101 annual real estate cost (175 s.f./person)
8.8% total vacancy	8.8% 12-month rent growth	-0.7% annual wage growth 2015	$155,118 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$614.4M total funding Q315-Q216	3,733,580 total population	39.4% % of population with bachelor's or higher (age 25+)	$1,445 average monthly apartment rent
-35.1% y-o-y change in funding	4.4% unemployment rate	22.8% share of millennials (work age, 20-34)	45.3% urban core premium

TOP LEASE TRANSACTIONS

Lakefront Blocks | Lake Union
Tenant: Google
Size: 600,000+/- s.f.
New development

Expedia Building | Bellevue CBD
Tenant: Expedia
Size: 355,540 s.f.
Extension

400 Lincoln Square | Bellevue CBD
Tenant: Valve
Size: 225,000+/- s.f.
New development

OPPORTUNITY

As one of the best markets in the country for STEM grads, Seattle's thriving job market, unique natural environment and restaurant scene make the Seattle-Bellevue area a top destination for millennials. When factoring in cost of living, Seattle tech salaries are among the highest in the nation. For the third consecutive year, Seattle is among the top-five big cities for population growth in the United States, largely due to the rapidly growing tech industry, as companies continue migrating to the area. Pinterest, Okta, GrabTaxi, Huawei and Mixpanel are just a handful of the companies that have opened engineering offices in the area in the last 12 months.

CHALLENGE

Washington ranks second in the nation for concentration of STEM jobs, but it's estimated that 45,000 will still be unfilled by 2017. Seattle tech companies have to compete fiercely for top talent, as there's only one qualified in-state graduate for every seven software engineering jobs. Additionally, capital and available large blocks of space can be tough to find in an increasingly tight market. With local interest in the industry hitting unprecedented levels, coding schools and co-working facilities are popping up all over the area to try and satiate the demand for talent and office space, but the lack of capital for startups remains an issue.

CHANGE IN TECH EMPLOYMENT

Employment
+6.5%
(y-o-y)

+77.7%
change since 2001

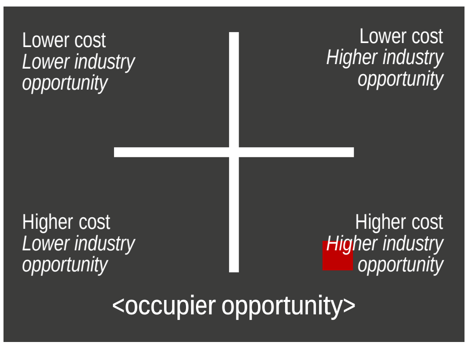
"Seattle has become a necessary business location for the tech elite, as the talent pool and high quality of living are simply too good to pass up. Already identified as the cloud capital of the world, it is quickly becoming a prominent location for VR and space startups."
- Alex Muir
Research Manager

SILICON VALLEY

Christan Basconcillo
Research Manager

MARKET SCORE AND MATRIX POSITION

<market score> **95.4**



Office supply
69,533,923 total inventory (s.f.)
12.1% total vacancy

Office cost
$49.98 overall direct asking rent
19.5% 12-month rent growth

Employee cost
$226,236 average wage 2015
6.8% annual wage growth 2015

Total cost per employee
$8,747 annual real estate cost (175 s.f./person)
$234,983 all-in cost (real estate and wages)

Venture capital
$5,310.1M total funding Q315-Q216
-2.4% y-o-y change in funding

Population
1,976,836 total population
4.3% unemployment rate

Talent pool
47.5% % of population with bachelor's or higher (age 25+)
21.6% share of millennials (work age, 20-34)

Housing
$2,718 average monthly apartment rent
31.7% urban core premium

TOP LEASE TRANSACTIONS

2485 Augustine | Santa Clara
Tenant: Advanced Micro Devices
Size: ~217,000 s.f.
Relocation within market

900 Arastradero | Palo Alto
Tenant: Uber Technologies
Size: 150,000 s.f.
Expansion within market

55 W Trimble/2601 Orchard | N San Jose
Tenant: Toshiba
Size: 218,000 s.f.
Relocation within market

OPPORTUNITY

Startups still have the ability to raise funds provided they have viable business plans and a solid consumer base, but the VC's are beginning to focus more on profitability and burn rates. With rents for Class A space rising, cost-sensitive tenants can look to renovated assets that offer newer finishes at a lower cost. The demand for new office development has yet to slow, providing more established tech tenants looking to land new generation space to use as a recruiting tool.

CHALLENGE

The rising cost of living is one of the greatest challenges to the Valley. Despite the boom in residential and multi-family construction, the cost of inbound talent will rise as salaries adjust to accommodate for high living costs. This will impede the ability of some companies trying to recruit and retain employees, potentially slowing the future growth of Silicon Valley and forcing smaller tech tenants to migrate to lower-cost markets.

CHANGE IN TECH EMPLOYMENT

number of jobs

2015

245,805

2001

253,467

Employment
+7.2% (y-o-y)
-3.0% change since 2001

"Technology aims to evolve by rapidly bringing upon the obsolescence of older technology and traditional services through disruption and assimilation. It makes the impossible a reality."

- Christan Basconcillo
Research Manager

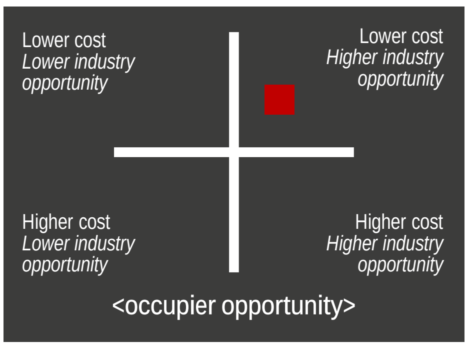
SOUTH FLORIDA


Marc L. Miller
Research Manager


Tim Powers
Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **65.5**



Office supply	Office cost	Employee cost	Total cost per employee
80,352,500 total inventory (s.f.)	$32.11 overall direct asking rent	$75,975 average wage 2015	$5,619 annual real estate cost (175 s.f./person)
14.8% total vacancy	4.8% 12-month rent growth	7.2% annual wage growth 2015	$81,594 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$889.7M total funding Q315-Q216	6,012,331 total population	29.4% % of population with bachelor's or higher (age 25+)	$1,498 average monthly apartment rent
24.8% y-o-y change in funding	5.0% unemployment rate	19.6% share of millennials (work age, 20-34)	0% urban core premium

TOP LEASE TRANSACTIONS

800 W. Sunrise Blvd | S.W. Broward
Tenant: Magic Leap
Size: 260,000 s.f.
New lease

2250 N Commerce Pkwy | S.W. Broward
Tenant: Ultimate Software
Size: 97,000 s.f.
Expansion in market

29 NW 24th St | Wynwood
Tenant: GoPro
Size: 5,000 s.f.
New lease

OPPORTUNITY

South Florida's tech sector is rapidly growing toward establishing itself as a legitimate second-tier U.S. tech hub. Once a non-starter for both high-tech job seekers and high tech employers, the region is rapidly transforming into an attractive location for both parties. The region is now home to more than 600 startups developing a wide range of products employing a diverse set of programming languages. Early establishment of real estate relationships and reputational capital will pay significant dividends as the local tech sector matures and expands.

CHALLENGE

Most often described by local software and web developers as "small, but enthusiastic", South Florida's tech sector has yet to produce a true home-grown software development success story of a scale to entice a sizeable population of experienced talent to relocate from other markets. While the startup scene provides a fantastic proving-ground for newly-minted local junior developers, the dearth of purebred development shops shipping product on par with the sector's heavy-hitters hampers the pace at which South Florida's tech sector can responsibly expand.

CHANGE IN TECH EMPLOYMENT

Employment

+4.2%
(y-o-y)

-8.3%
change since 2001

"The burgeoning tech scene in South Florida is gaining momentum, and may soon meet the hype surrounding the local industry in the near future; therefore, South Florida should be on the radar of those in the industry."

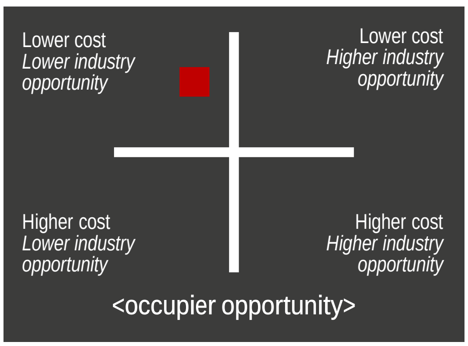
\- Marc L. Miller
Research Manager, Florida

ST. LOUIS

Blaise Tomazic
Research Manager

MARKET SCORE AND MATRIX POSITION

<market score> **65.4**



Office supply
42,154,174
total inventory (s.f.)

13.5%
total vacancy

Office cost
$19.45
overall direct asking rent

2.0%
12-month rent growth

Employee cost
$98,671
average wage 2015

3.7%
annual wage growth 2015

Total cost per employee
$3,404
annual real estate cost (175 s.f./person)

$102,075
all-in cost (real estate and wages)

Venture capital
$36.2M
total funding Q315-Q216

-23.6%
y-o-y change in funding

Population
2,811,588
total population

4.9%
unemployment rate

Talent pool
32.3%
% of population with bachelor's or higher (age 25+)

20.0%
share of millennials (work age, 20-34)

Housing
$824
average monthly apartment rent

13.3%
urban core premium

TOP LEASE TRANSACTIONS

1 Solutions Pkwy | West County
Tenant: CenturyLink
Size: 156,000 s.f.
Renewal

1390 Timberlake Manor Pkwy | West County
Tenant: Amdocs
Size: 70,000 s.f.
Renewal

4240 Duncan | St. Louis City
Tenant: Square
Size: 20,000 s.f.
New to market

OPPORTUNITY

The St. Louis technology scene continues to grow. With the region's low cost of living and strong incubator scene, startup activity is lively. Companies are starting to notice. Since late 2015, Square has added 200 jobs in Cortex, the region's growing innovation hub. T-Rex, one of our largest tech incubators has reached capacity and is looking to expand by two additional floors at its building on Washington Avenue. As the industry keeps evolving, expect more companies to exit incubator space and expand across the office market in the CBD and Cortex.

CHALLENGE

Outside of the CBD, large blocks of space remain in short supply. With a lack of development over the past ten years, the market has become increasingly tight for tenants looking for modern and creative space. The labor market is also very tight and employers are having a hard time filling positions. Competing with more mature tech markets on the coasts to retain talent and recent graduates is a priority. Local employers, school districts and Washington University have even created an organization to improve STEM education in elementary school.

CHANGE IN TECH EMPLOYMENT

Employment
+3.6%
(y-o-y)

-3.9%
change since 2001

"The Cortex District in Midtown will continue to be a popular destination for both young and mature tech companies."

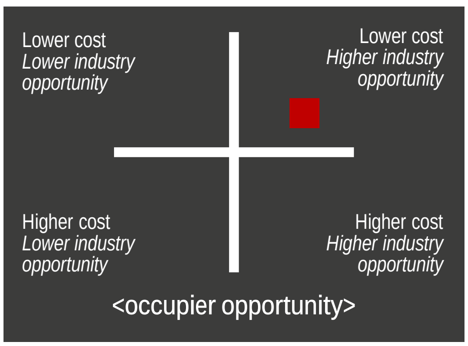
- Blaise Tomazic
Research Manager

SUBURBAN MARYLAND

Sara Hines
Senior Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **67.7**



Office supply
65,570,652
total inventory (s.f.)

19.2%
total vacancy

Office cost
$26.88
overall direct asking rent

0.5%
12-month rent growth

Employee cost
$112,063
average wage 2015

3.0%
annual wage growth 2015

Total cost per employee
$4,704
annual real estate cost (175 s.f./person)

$116,767
all-in cost (real estate and wages)

Venture capital
$431.3M
total funding Q315-Q216

236.2%
y-o-y change in funding

Population
4,812,246
total population

3.9%
unemployment rate

Talent pool
49.3%
% of population with bachelor's or higher (age 25+)

22.6%
share of millennials (work age, 20-34)

Housing
$1,702
average monthly apartment rent

0%
urban core premium

TOP LEASE TRANSACTIONS

7900 Harkins Road | Prince George's Co.
Tenant: 2U
Size: 252,950 s.f.
Relocation within market

7515 Mission Drive | Prince George's Co.
Tenant: SGT
Size: 27,696 s.f.
Renewal

8757 Georgia Avenue | Silver Spring
Tenant: Conflulytics
Size: 22,255 s.f.
Relocation within market

OPPORTUNITY

Suburban Maryland contains a critical mass of private sector companies, universities and federal agencies, including the National Institute of Standards and Technology (NIST). Four innovation incubators located within Montgomery County create real estate opportunities for growing tenants and current market conditions are tenant favorable, which offers tech companies high tenant improvement packages to fund build-outs. In addition, tech tenants can generally find more affordable space in Suburban Maryland when compared with neighboring areas.

CHALLENGE

A lack of creative office space in Suburban Maryland and a growing preference among millennials to live and work in more dense, urban communities poses a threat to Suburban Maryland's tech market. Additionally, highly aggressive economic development campaigns from neighboring jurisdictions – including Arlington County, VA and the District of Columbia – are complicating site selection processes and increasing the risk of Maryland-based tech companies migrating to more business-friendly locations.
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CHANGE IN TECH EMPLOYMENT

Employment
-1.4%
(y-o-y)

-20.8%
change since 2001

"While tech tenants can generally find more affordable office space in Suburban Maryland, Northern Virginia and the District of Columbia pose competitive threats due to millennials' growing preference to live and work in more dense, urban environments."

- Sara Hines
Senior Research Analyst

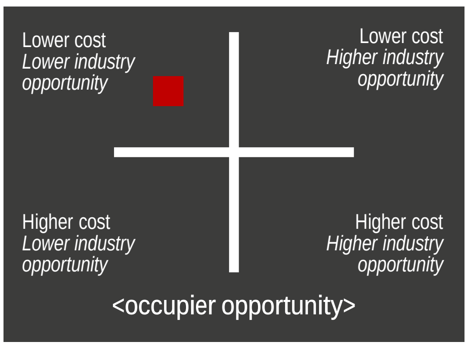
Marc Miller
Research Manager, Florida

TAMPA BAY

Drew Gilligan
Senior Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **59.7**



Office supply
34,340,221 total inventory (s.f.)
13.3% total vacancy

Office cost
$23.28 overall direct asking rent
2.1% 12-month rent growth

Employee cost
$85,817 average wage 2015
27.5% annual wage growth 2015

Total cost per employee
$4,074 annual real estate cost (175 s.f./person)
$89,891 all-in cost (real estate and wages)

Venture capital
$64.3M total funding Q315-Q216
249.9% y-o-y change in funding

Population
2,975,225 total population
4.6% unemployment rate

Talent pool
27.5% % of population with bachelor's or higher (age 25+)
18.8% share of millennials (work age, 20-34)

Housing
$1,028 average monthly apartment rent
0% urban core premium

TOP LEASE TRANSACTIONS

Highwoods Preserve I | I-75/I-4 Corridor
Tenant: Syniverse Technologies
Size: 200,000+/- s.f.
Relocation in market

Highland Oaks V | I-75/I-4 Corridor
Tenant: Cognizant
Size: 83,400 s.f.
Relocation in market

One Harbour Place | Tampa CBD
Tenant: ReliaQuest
Size: 23,600 s.f.
Relocation in market

OPPORTUNITY

The Tampa Bay region continues to have the most available positions posted in STEM-related fields in all of Florida, which has helped drive rapid in-migration. Companies are taking advantage of a growing workforce, especially among the millennial generation. Florida, and Tampa Bay specifically, offers favorable market and business conditions to technology firms making the region popular for back-office locations. The lower rents and lower cost labor help attract technology firms to the region.

CHALLENGE

Large available blocks of space and a lack of qualified candidates for open positions represent two of the major challenges for technology companies in Tampa Bay. Local universities continue to produce strong candidates for numerous companies in the region, but schools have yet to make technology-focused majors a priority, inhibiting local technology companies from hiring recent college graduates. Due to high leasing activity in the past few years, there are very few large-block availabilities in the market, making it difficult for new companies to move into the region.

CHANGE IN TECH EMPLOYMENT

Employment
+6.7% (y-o-y)
-9.8% change since 2001

"Tampa Bay's pro-business environment, combined with an emerging younger workforce, will help grow the technology footprint in this market. We expect the current momentum of tech job creation to increase in the foreseeable future."

- Drew Gilligan
Senior Research Analyst

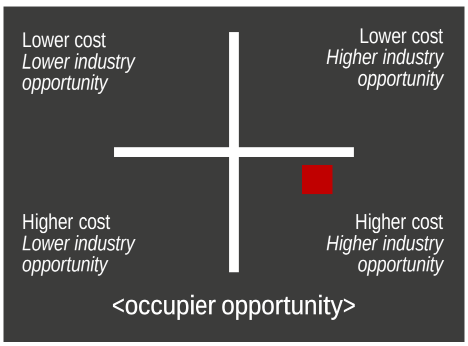
Scott Homa
SVP, Director of Research

WASHINGTON, DC

Carl Caputo
Senior Research Analyst

MARKET SCORE AND MATRIX POSITION

<market score> **67.9**



Office supply	Office cost	Employee cost	Total cost per employee
115,376,362 total inventory (s.f.)	$53.49 overall direct asking rent	$106,275 average wage 2015	$9,361 annual real estate cost (175 s.f./person)
12.3% total vacancy	4.2% 12-month rent growth	0.4% annual wage growth 2015	$115,636 all-in cost (real estate and wages)

Venture capital	Population	Talent pool	Housing
$119.0M total funding Q315-Q216	4,812,246 total population	49.3% % of population with bachelor's or higher (age 25+)	$1,702 average monthly apartment rent
-43.1% y-o-y change in funding	5.9% unemployment rate	22.6% share of millennials (work age, 20-34)	47.7% urban core premium

TOP LEASE TRANSACTIONS

1001 G Street, NW | East End
Tenant: Optoro
Size: 26,500 s.f.
Relocation in market

1 Thomas Circle, NW | East End
Tenant: FiscalNote
Size: 20,878 s.f.
Relocation in market

601 New Jersey Avenue, NW | Capitol Hill
Tenant: AT&T Innovation Center
Size: 15,500 s.f.
Relocation in market

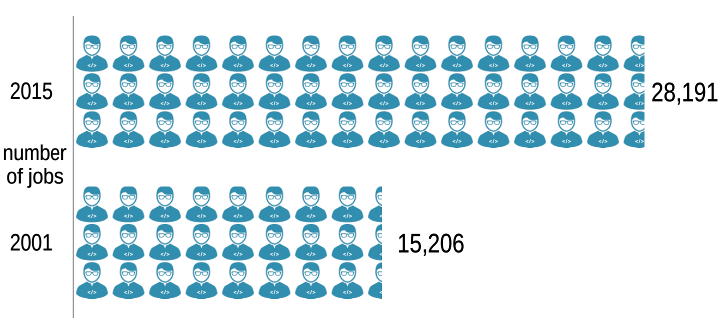
OPPORTUNITY

DC proper has strong workforce demographics with millennials comprising 30.6 percent, in comparison to the U.S. average of 20.5. Growing residential neighborhoods proximate to the traditional office core are creating vibrant mixed-use pockets where tech companies often look to locate. To further foster the growth of the tech sector, over 1.2 million square feet of shared office and coworking providers exist, offering ideal environments for start-up growth. Leverage in the market remains in the tenant's favor, with concession packages at record levels, making it easier for growing companies to build out space.

CHALLENGE

It is typically difficult for tech companies to obtain incentives from the local government to invest capital in office build-outs or subsidize property taxes, relocation expenses and new hires. Similarly, it is difficult for many companies to find funding given the lack of venture capital and financial firms in the city. Tech growth in DC is also limited due to a lack of computer science programs at universities in area. A tech company that is looking to grow in the city also faces a limited number of space options above 10,000 square feet with open floor plans, exposed ceilings and other unique and creative attributes.

CHANGE IN TECH EMPLOYMENT



Employment
+9.4% (y-o-y)

+85.4% change since 2001

"While the city has a handful of growing tech companies, the lack of cool, creative space options and the willingness of neighboring jurisdictions to offer significantly greater incentives relative to the city continues to hinder DC's ability to truly become a tech hot spot."
- Carl Caputo
Senior Research Analyst

// APPENDIX //

// Resiliency model scores | *Total weighted score for each major category //*

Weighted score	Market score for resiliency	Economic momentum	Talent pool	Innovation	Cost
Atlanta	74.8	15.2	32.1	13.4	14.1
Austin	84.2	18.5	35.8	18.0	12.0
Baltimore	62.5	9.8	27.7	11.3	13.6
Boise	61.0	10.5	16.9	14.6	18.9
Boston	82.2	15.8	36.5	19.5	10.4
Boulder	69.9	10.8	32.5	13.3	13.3
Charlotte	66.1	15.9	23.2	12.8	14.2
Chicago	73.2	16.1	30.5	13.6	12.9
Cincinnati	62.3	14.3	18.0	11.3	18.7
Cleveland	63.7	14.0	17.4	13.5	18.9
Columbus	68.3	14.2	24.5	11.6	18.0
Dallas	76.6	14.7	30.9	17.5	13.5
Denver	71.2	15.3	32.1	10.7	13.0
Detroit	72.3	15.6	22.7	16.6	17.3
Houston	64.1	10.5	28.1	12.8	12.7
Indianapolis	71.9	15.8	22.6	14.2	19.3
Los Angeles	73.1	14.7	29.1	17.8	11.5
Madison	73.8	15.9	26.8	14.2	17.0
Milwaukee	60.6	8.9	20.4	15.0	16.3
Minneapolis	77.4	13.4	31.8	18.8	13.4
Nashville	58.1	14.1	20.2	8.8	15.0
New York City	78.7	19.7	33.0	18.1	8.0
New Jersey	71.1	13.1	30.3	13.7	14.1
Northern Virginia	77.0	10.6	38.6	14.9	12.9
Oakland-East Bay	79.9	16.2	33.4	18.0	12.3
Orange County	68.8	12.6	26.8	17.5	11.9
Orlando	61.0	14.2	20.4	10.5	16.0
Philadelphia	67.1	10.9	28.6	14.7	12.8
Phoenix	73.6	16.3	25.1	16.4	15.9
Pittsburgh	63.7	14.4	19.5	14.3	15.5
Portland	73.6	14.1	29.5	17.2	12.8
Raleigh Durham	80.6	14.4	33.9	16.1	16.2
Richmond Virginia	52.7	7.2	21.2	7.5	16.8
Sacramento	56.3	10.0	20.3	12.6	13.5
Salt Lake City	72.1	15.5	25.8	13.5	17.2
San Diego	72.8	11.7	31.1	17.9	12.2
San Francisco	87.3	21.9	35.0	22.4	7.9
Seattle-Bellevue	82.3	17.6	35.0	18.6	11.1
SF Peninsula	77.5	14.2	33.3	21.7	8.2
Silicon Valley	95.4	19.9	41.4	26.8	7.4
South Florida	65.5	14.9	24.0	11.4	15.1
St. Louis	65.4	13.9	21.2	12.7	17.5
Suburban Maryland	67.7	6.6	33.1	14.5	13.5
Tampa	59.7	13.0	18.5	11.7	16.6
Washington, DC	67.9	13.7	31.5	12.1	10.6

Source: JLL Research

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