



Boston's Economy Report 2017

The BPDA Research Division's annual economy report describes conditions and trends in Boston's economy, focusing on economic growth, employment and wages, and the real estate market. This 2017 report includes a spotlight on Boston's economic environment in comparison to a set of 25 peer cities.

The Boston Planning & Development Agency

We strive to understand the current environment of the city to produce quality research and targeted information that will inform and benefit the residents and businesses of Boston. Our Division conducts research on Boston's economy, population, and commercial markets for all departments of the BPDA, the City of Boston, and related organizations.

The information provided in this report is the best available at the time of its publication. All or partial use of this report must be cited.

Citation

Please cite this publication as:

Boston Planning & Development Agency Research Division, May 2017

Information

For more information about Boston's demographics or economy, please visit bostonplans.org/research-maps

Questions

Please contact us at research@boston.gov with additional questions

Research Division

Director

Alvaro Lima

Deputy Director

Jonathan Lee

Research Manager

Christina Kim

Senior Researcher/ Economist

Matthew Resseger

Senior Researcher/ Demographer

Phillip Granberry

Research Associate

Kevin Kang

Research Assistants

Kevin Wandrei

Avanti Krovi

Interns

Ian Whitney

Juan Rodriguez

Cyan O'Garro



Visit our website
BostonPlans.org



Follow us on Twitter
twitter.com/BostonPlans

Summary of Recent Trends in Boston's Economy

Boston's economic growth continues, with low unemployment, the arrival of high profile firms, and a real estate market still in the midst of an historic building boom.

Economic growth: Boston's economy grew by 3.6 percent between 2014 and 2015 as measured by Gross City Product (GCP). This builds on 3.8 percent growth the prior year, running a point ahead of the growth rate of the overall U.S. economy.

Job and wage growth: Boston outperformed both Massachusetts and the nation with annual job growth of 2.7 percent between 2014 and 2015. Total employment rose in 2015 to 757,344, the highest level since employment data became available in 1969. The health care and social assistance industry employs the largest number of people in Boston, 18.5 percent of total jobs, while the professional, scientific, and technical services industry added the most jobs from 2014 to 2015, with 5,422 additional jobs. The average weekly payroll wage in Boston in 2015 was \$1,770, an increase of 3.9% in real terms over 2014.

Unemployment: Boston's unemployment has continued to fall from an annual rate of 4.4 percent in 2015 to 3.5 percent in 2016, the lowest since 2000. Boston's unemployment rate for fourth quarter 2016 was below three percent.

Real estate

- *Commercial:* Vacancy rates are down from 8.9 percent in fourth quarter 2015 to 7.5 percent in fourth quarter 2016,¹ reflecting a decline of almost one million square feet of vacant commercial space.
- *Housing:* Single family housing prices for 2016 were eight percent higher than in 2015, while condominium prices increased ten percent.²
- *Construction Activity:* Over 3.2 million construction man hours were worked in 2016 on Article 80 development projects, an increase of 9.6 percent and almost 280,000 man hours over 2015.³ Building permits in 2016 generated \$52.3 million in revenues.

Looking ahead: Although the Massachusetts economy has been exhibiting strong growth in wages and jobs, forecasts suggest a gradual slowing in growth as 2020 approaches.⁴ Forecasts for the state anticipate more conservative job growth of around 1.5 percent for 2017.⁵ Boston's job growth is still exceeding projections from the Massachusetts Executive Office of Labor and Workforce Development (EOLWD).

Economic Growth

Boston's economy grew by 3.6 percent from 2014 to 2015 as measured by Real (Chained) Gross City Product (GCP),⁶ surpassing U.S. GDP growth of 2.6 percent, and in line with the 3.8 percent growth rate for Massachusetts. Boston's estimated GCP of \$109.5 billion (in 2015 dollars) represents 22.6 percent of the total economic activity in Massachusetts for 2015.

Boston's growth in real GCP from 2014 to 2015 builds on the strong 3.8 percent growth of the previous year. From 2010 to 2015, the city averaged 2.2 percent annual growth, matching the pace of the overall U.S. recovery. These numbers reflect revised historical estimates for Boston's GCP. In 2016, the Bureau of Economic Analysis (BEA) revised national income and product accounts for the period 1998 to 2014 to incorporate methodological improvements. These BEA data series are direct inputs to the GCP and jobs estimates for Boston.

Boston's economy will continue to be shaped by the national economic environment. National growth slowed in 2016, with real GDP increasing by 1.6 percent compared to 2.6 percent the previous year.⁷ The U.S. Dollar remains strong against other major currencies. The Federal Reserve Bank continues on a path of slowly raising interest rates, citing improving economic performance and a tightening labor market. The federal funds rate target stands at 0.75 to 1 percent after quarter point increases in December 2016 and March 2017. Inflation remains below the Federal Reserve's two percent target; inflation in personal consumer expenditures excluding food and energy, the Fed's preferred measure, grew at 1.7 percent in the twelve months leading up to January 2017. Prices in the Boston Metro area rose more quickly than nationally: the Boston area⁸ consumer price index excluding housing costs rose 2.6 percent from January 2016 to January 2017, compared to 2.0 percent growth nationally.⁹

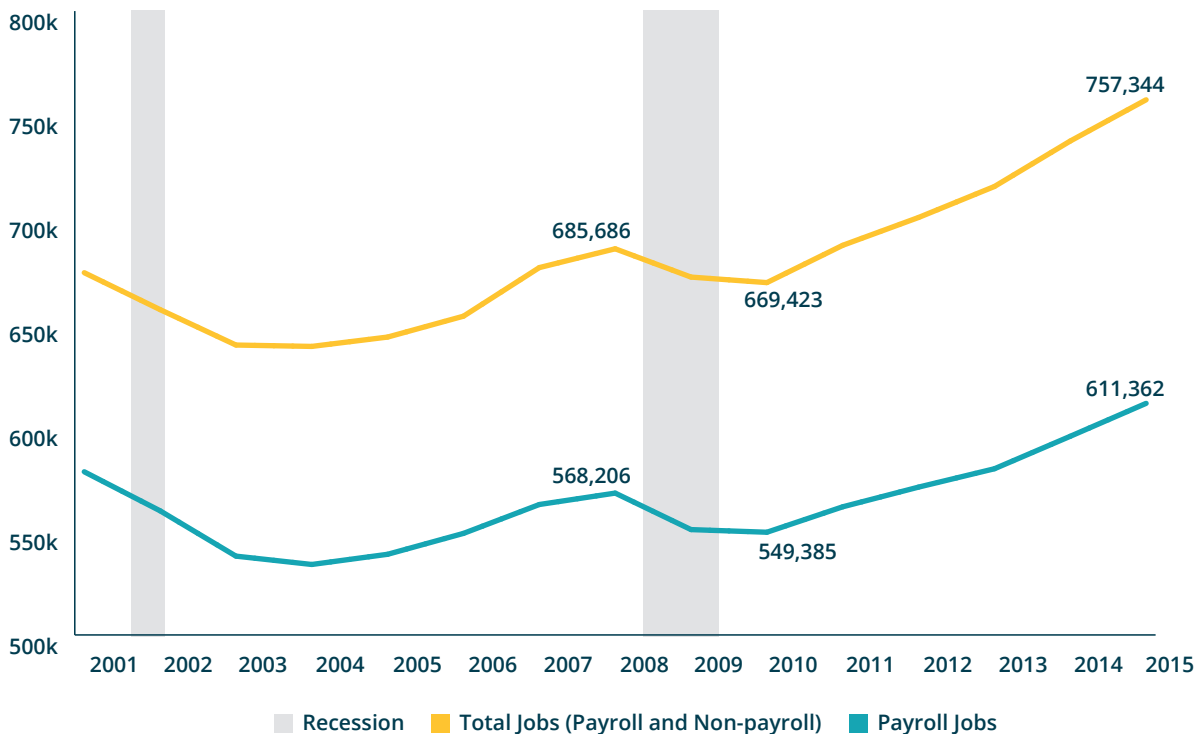
Employment and Wages

Employment Growth - Boston is a major regional employment center, and jobs located in Boston have risen to their highest level since employment data became available in 1969. From 2014 to 2015, Boston's total payroll and non-payroll jobs increased to 757,344, continuing the trend of strong job growth since 2010.¹⁰ Boston outperformed both Massachusetts and the nation with

annual job growth of 2.7 percent between 2014 and 2015.

The latest payroll data provided by EOLWD show payroll jobs for the city reached a total of 611,362 in 2015.¹¹ Non-payroll employment rose by 2.8%, to 145,982. Non-payroll employment made up 23.9% of total jobs in 2015, the highest percentage in recent years.

FIGURE 1 Boston's Total Payroll and Non-Payroll Jobs 2001-2015



Note: Shading signifies recession.

Source: U.S. Bureau of Economic Analysis (BEA), Massachusetts Executive Office of Labor and Workforce Development (EOLWD), BPDA Research Division Analysis.

TABLE 1

**Boston's Total Payroll and Non-Payroll Jobs by Industry
2015**

INDUSTRY	2015	%
Health Care and Social Assistance	139,911	18.5%
Professional, Scientific, and Technical Services	91,858	12.1%
Finance and Insurance	86,971	11.5%
Government	76,708	10.1%
Accommodation and Food Services	59,910	7.9%
Educational Services	57,534	7.6%
Administrative and Waste Services	37,274	4.9%
Real Estate and Rental and Leasing	34,591	4.6%
Retail Trade	34,142	4.5%
Other Services	32,762	4.3%
Transportation and Warehousing	26,037	3.4%
Construction	17,478	2.3%
Information	16,861	2.2%
Arts, Entertainment, and Recreation	16,805	2.2%
Wholesale Trade	9,862	1.3%
Management of Companies and Enterprises	8,390	1.1%
Manufacturing	7,969	1.1%
Utilities	1,894	0.3%
Natural Resources and Mining	387	0.1%
Total	757,344	100.0%

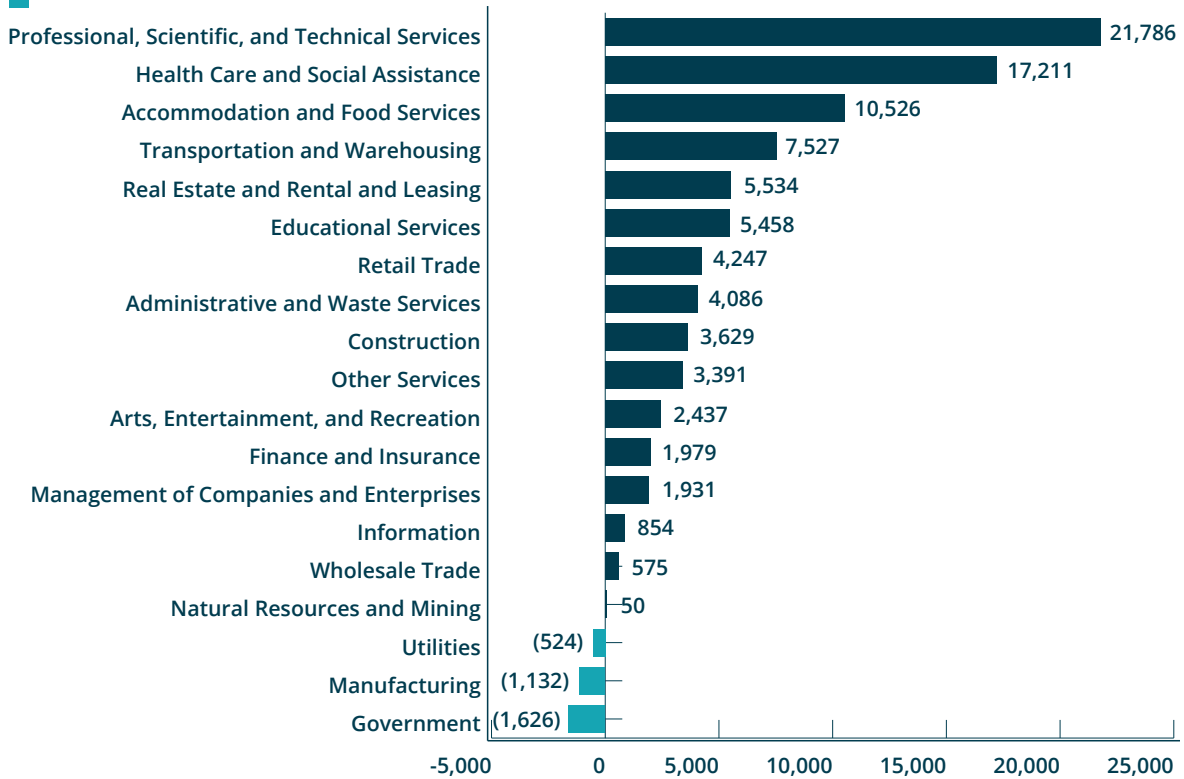
Source: U.S. Bureau of Economic Analysis (BEA), Massachusetts Executive Office of Labor and Workforce Development (EOLWD), BPDA Research Division Analysis.

Jobs by Industry - The largest industry in Boston is health care and social assistance with nearly 140,000 jobs, 18.5 percent of total employment, as shown in Table 1. Five of the ten largest employers in Boston are hospitals: Massachusetts General Hospital, Brigham and Women's Hospital, Children's Hospital, Beth Israel Deaconess Medical Center, and Boston Medical Center.¹² Professional,

scientific, and technical services, which contains a variety of industries including computer systems design, scientific research and development, management consulting, architecture, and law comprises the second largest share of Boston's employment. Finance and insurance and government also continue to employ large numbers of people in Boston.

FIGURE 2

Boston's Total Job Growth by Industry
2010-2015



Source: U.S. Bureau of Economic Analysis (BEA), Massachusetts Executive Office of Labor and Workforce Development (EOLWD), BPDA Research Division Analysis.

From 2014 to 2015, Boston's job growth was positive across all industries except utilities and other services, but was mostly concentrated in professional, scientific and technical services (5,422 jobs) and health care and social assistance (4,882 jobs). For the first time in recent years, manufacturing employment grew slightly between 2014 and 2015, adding 200 jobs.

Professional, scientific, and technical services, healthcare and social assistance and accommodation and food services added the most jobs from 2010 to 2015, as shown in Figure 2. Government, manufacturing, and utilities saw a decline in jobs from 2010 to 2015. High tech industries, here classified as the subset of professional, scientific, and

technical services, information, and manufacturing with a high percentage of their workforce in science, technology, engineering and math (STEM) occupations, averaged ten percent job growth each year between 2010 and 2015.¹³

The construction industry has also grown, benefiting from major residential and commercial developments and investment across the city. Several major firms have moved or announced plans to relocate their corporate headquarters to Boston. GE announced its plan to move to Boston in January 2016 and the BPDA Board approved its new headquarters campus in October 2016. In November 2016, Reebok announced it will move from its suburban location in Canton to Boston, bringing 700 employees. This fol-

lows Converse's recent move to Lovejoy Wharf and New Balance's new headquarters in Brighton, making Boston a center of the footwear industry in the U.S.

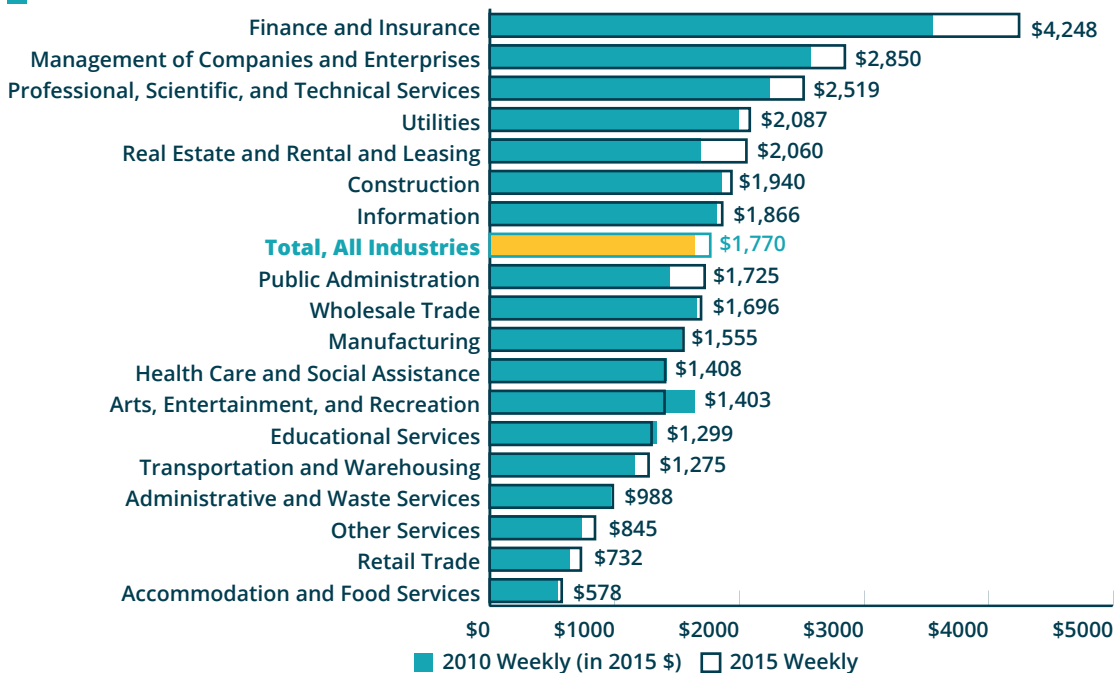
Wages by Industry - The average weekly payroll wage in Boston in 2015 was \$1,770. The highest wages were in finance and insurance (\$4,248/week) and the lowest wages were in accommodation and food services (\$578/week). While the accommodation and food service industry provides a large number of jobs, the low wages may be a concern, as these wages on an hourly basis are less than the living wage as defined by Boston's Living Wage Ordinance.¹⁴ Additionally, workers in seasonal industries such as construction may not work every week of the year.

The average weekly payroll wage for Boston jobs rose an average of 1.5 percent a year in real terms from 2010 to 2015.¹⁵ Wage increases have not kept pace with increases in housing costs as single fam-

ily housing prices have gone up by 4.2 percent per year in real terms from 2010 to 2015, while condo prices increased by 6.9 percent per year.¹⁶ However, from 2014 to 2015 average weekly payroll wages increased 3.9 percent in real terms.

The highly paid industries of finance and insurance, management, real estate and professional, scientific, and technical services saw wage increases of two to four percent a year. Despite job losses, wages for remaining jobs in public administration saw average weekly wages increase by 3.6 percent in real terms. Real wages in accommodation and food services, the lowest paid industry, grew slowly with real growth of only 1.3 percent per year from 2010 to 2015. However, some other lowly paid industries (retail, other services, transportation and warehousing) saw weekly wage increases of two to three percent. Meanwhile, wages in arts, entertainment, and recreation fell by 3.1 percent per year.

FIGURE 3 Average Weekly Wages by Industry in Fixed 2015 Dollars
2010-2015



Source: EOLWD, Employment and Wages Report (ES-202), BPDA Research Division Analysis.

Spotlight: Boston's Strong Economy Compared to Peer Cities

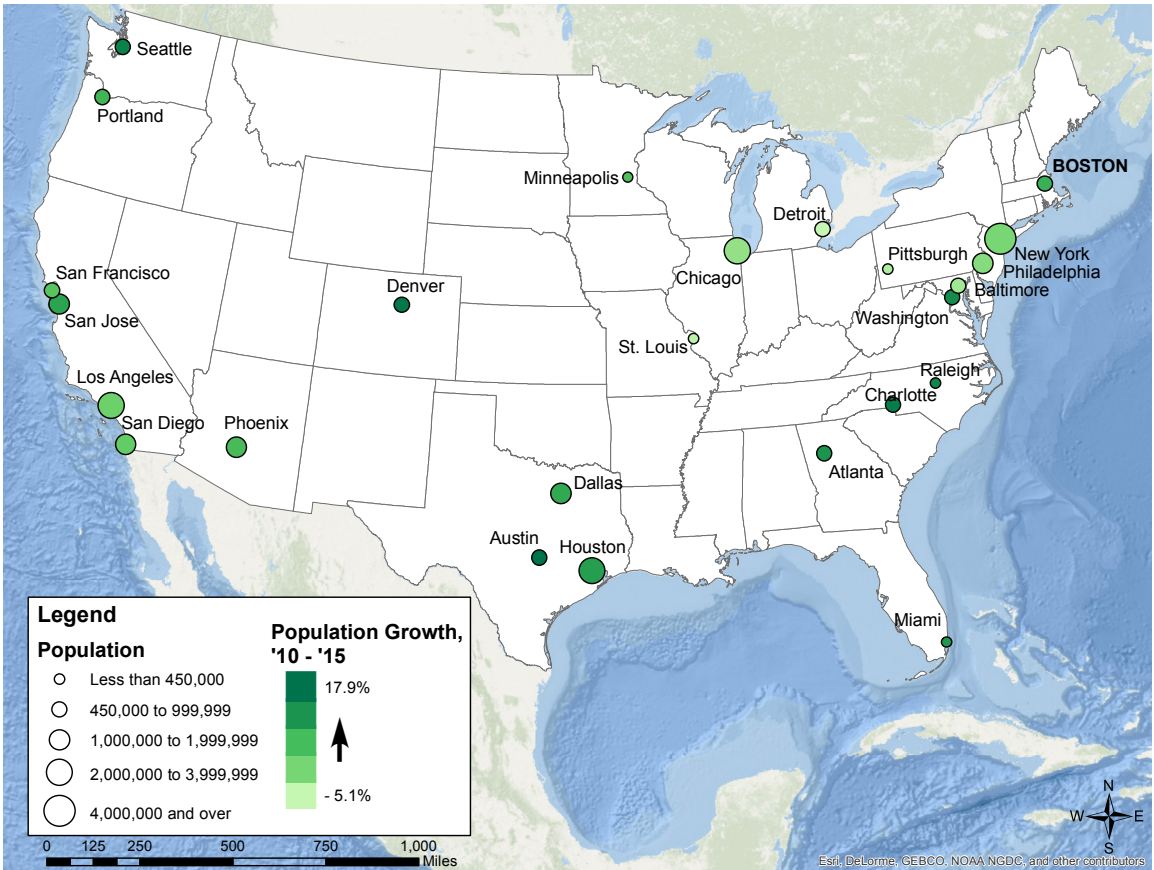
This section compares Boston to a set of 25 cities: the principal cities in the nation's largest metropolitan areas, plus three cities whose highly educated metropolitan area populations make them good comparisons for Boston. The complete data on all 25 cities can be found in the appendix.

some through the development of sparsely developed land. Boston grew 8.4% over this time period, an impressive rate for a historic city that is geographically constrained. Boston grew faster than other cities in the northeastern United States.

Population Growth - Most of the comparison cities have gained population from 2010 to 2015,

Low Unemployment - The strong job growth in Boston in recent years has driven down the resident unemployment rate. Boston's unemploy-

MAP 1 Population Growth Peer Cities 2010-2015

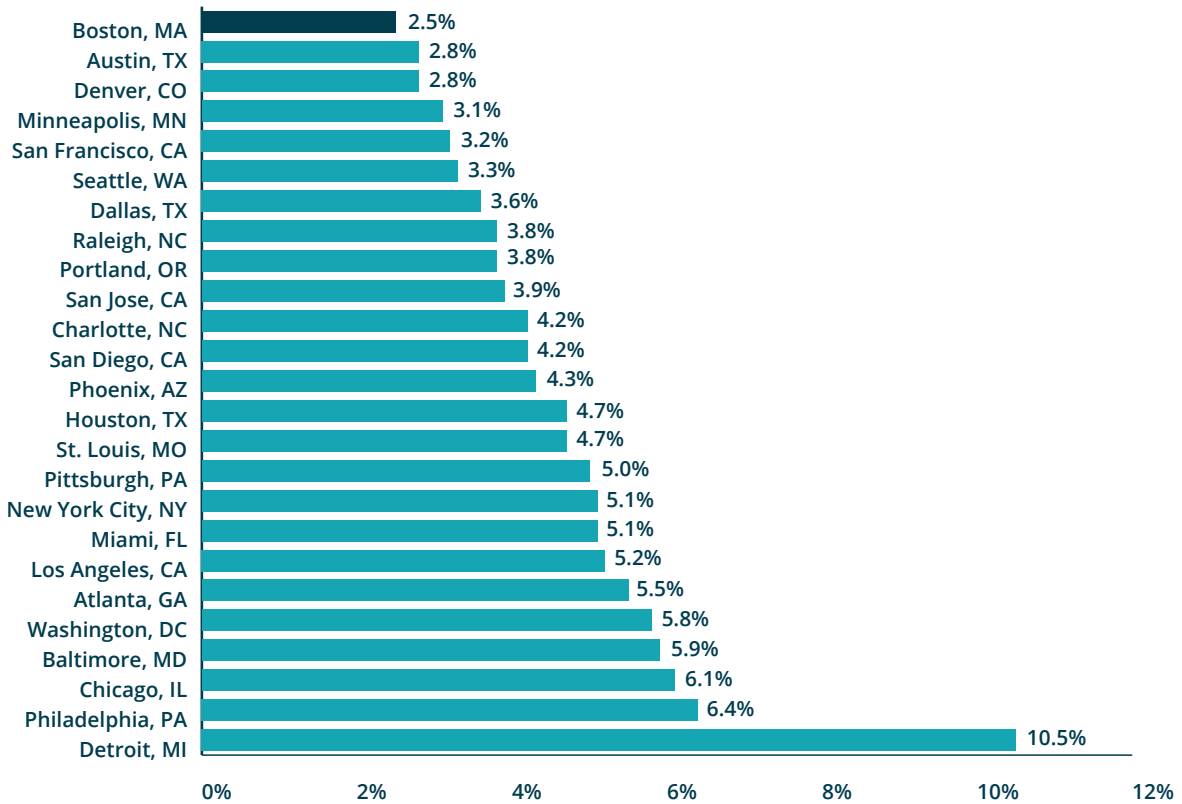


Source: U.S. Census Bureau, 2010 Decennial Census, 2014 & 2015 1-year, & 2011-2015 American Community Survey, BPDA Research Division Analysis.

FIGURE 4

Peer Cities by Unemployment Rates

Fourth Quarter 2016



Source: Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS), BPDA Research Division Analysis.

ment rate has followed a trend similar to that of Massachusetts and the U.S., but remained below the statewide and national rates since 2007. The annual unemployment rate for Boston’s resident labor force in 2016 was 3.5 percent, the lowest annual unemployment rate since 2000.

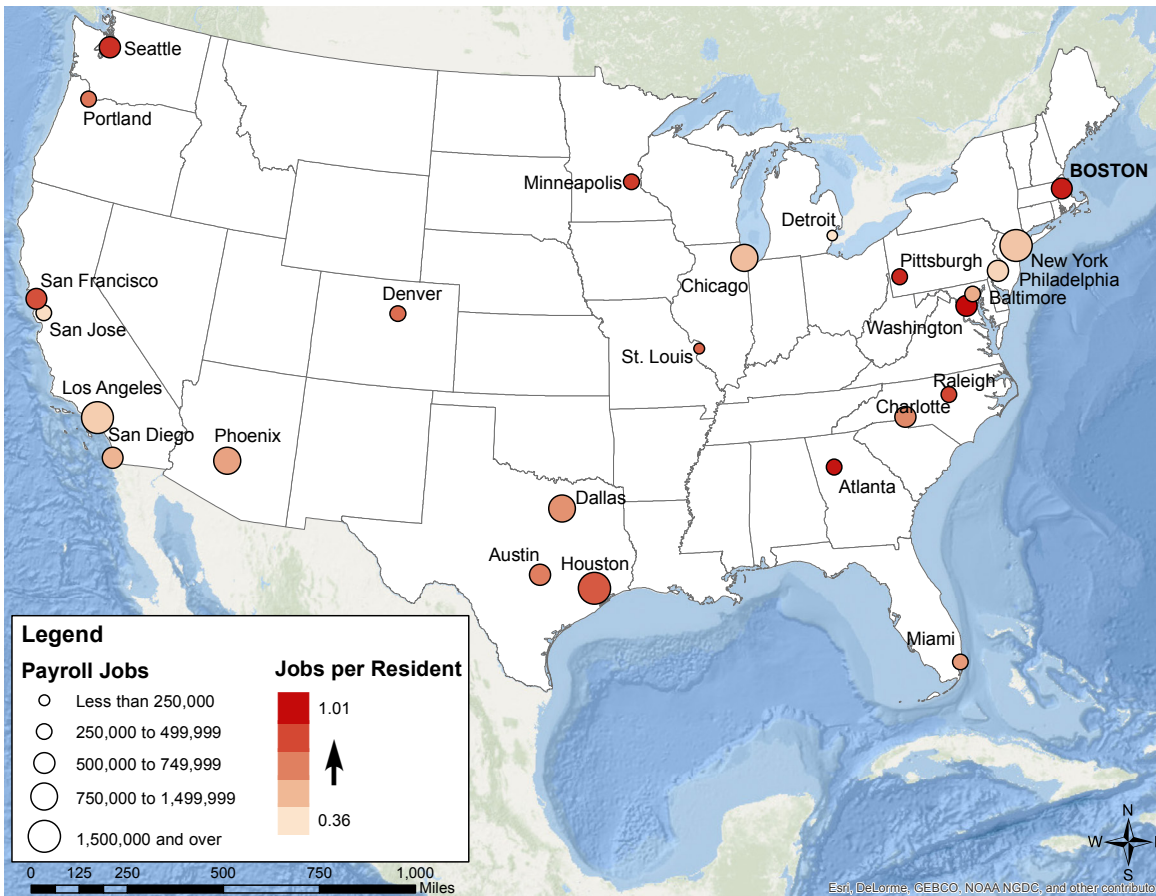
By the end of the year 2016, Boston had the lowest unemployment rate among the 25 peer cities, at 2.5 percent. Ten years ago, in December 2006, Boston ranked 14th out of the 25 cities, with an unemployment rate of five percent. The city’s progress in the past 10 years has moved it from an average city to the lowest unemployment rate in the group.

Jobs per Resident Population - Boston has the third highest ratio of payroll jobs to residents, after

Washington, DC and Atlanta. This allows Boston to have a low resident unemployment rate while serving as a regional employment center. On the other end of the spectrum, Detroit has only 0.36 jobs per resident, contributing to its 10% unemployment rate. Map 2 shows the population and ratio of jobs per resident for the 25 cities.

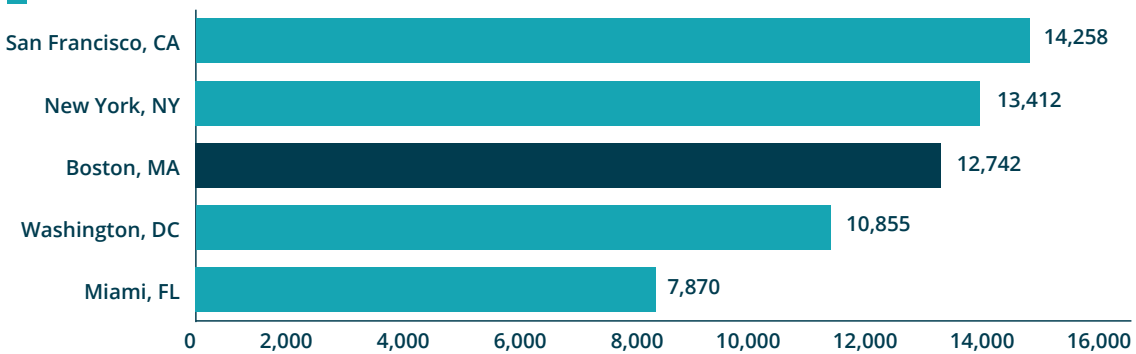
Jobs per Square Mile - Boston is a compact city with a strong commercial sector. Boston has the third highest job density (jobs per square mile), after San Francisco and New York City, with 12,742 payroll jobs per square mile. In contrast, sprawling Phoenix has only 1,669 jobs per square mile.

MAP 2 Jobs per Resident Ratio for 25 Peer Cities
2014



Sources: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2014); and U.S. Census Bureau, 2014 American Community Survey 1-year, BPDA Research Division Analysis.

FIGURE 5 Peer Cities with Most Payroll Jobs per Square Mile
Second Quarter 2014



U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter 2014).

Knowledge Industries - Boston excels in knowledge industries that rely on a skilled and educated workforce. Boston's largest industries (health care and social assistance, professional, scientific, and technical services, and finance and insurance) have large shares of highly-skilled knowledge workers.

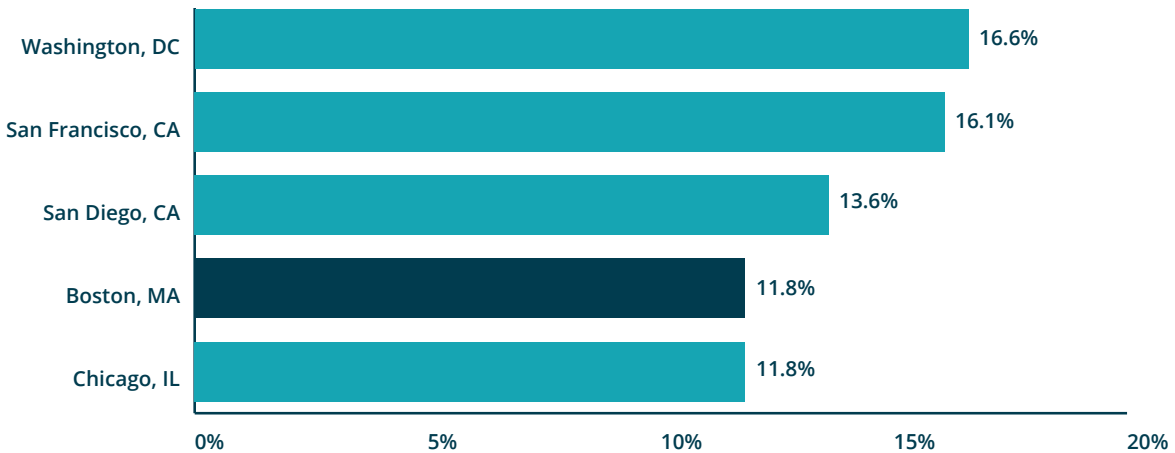
Professional, Scientific, and Technical Services

Professional, scientific, and technical services has a particularly large share of knowledge workers. Among peer cities, Boston has the fourth highest share of employment in professional, scientific, and technical services at 11.8% of payroll jobs. The figure below shows the cities with the highest shares of jobs in the professional, scientific and technical services industry. In comparison, only 6.5% of jobs in the United States are in professional, scientific, and technical services.

Life Sciences - Within the professional, scientific, and technical services industry, Boston has particularly large and productive workforce in medical and life science research. For the 22nd year in a row, Boston led the nation in total dollars of National Institute of Health (NIH) funding. In FY2016, Boston received a total of \$1.85 billion, with its nearest competitor being New York City, which received \$1.63 billion.

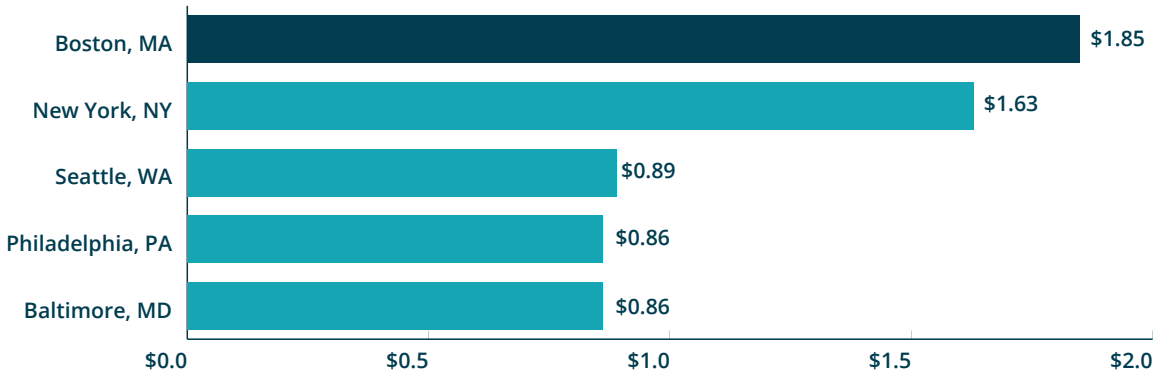
An Educated Workforce - Boston ranks tenth among cities with the highest share of residents with a Bachelor's Degree, and is home to 30 colleges and universities with almost 150,000 students enrolled.¹⁷ Residents of Greater Boston rank fourth among U.S. metropolitan areas in the percentage of the population with at least a Bachelor's degree at 43.4 percent. This critical aspect

FIGURE 6 Peer Cities with the Highest Shares of Payroll Employment in Professional, Scientific, and Technical Services
Second Quarter 2014



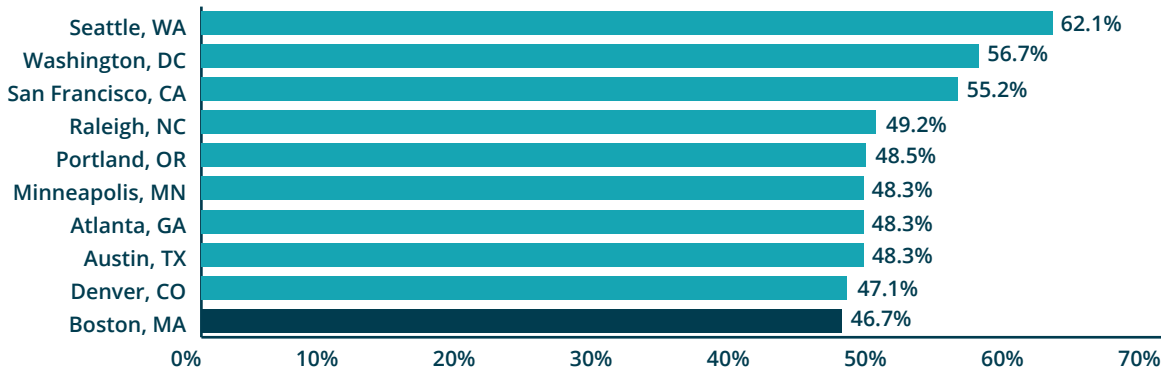
U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter 2014).

FIGURE 7 Peer Cities with Most NIH Funding in Billions of Dollars
FY2016



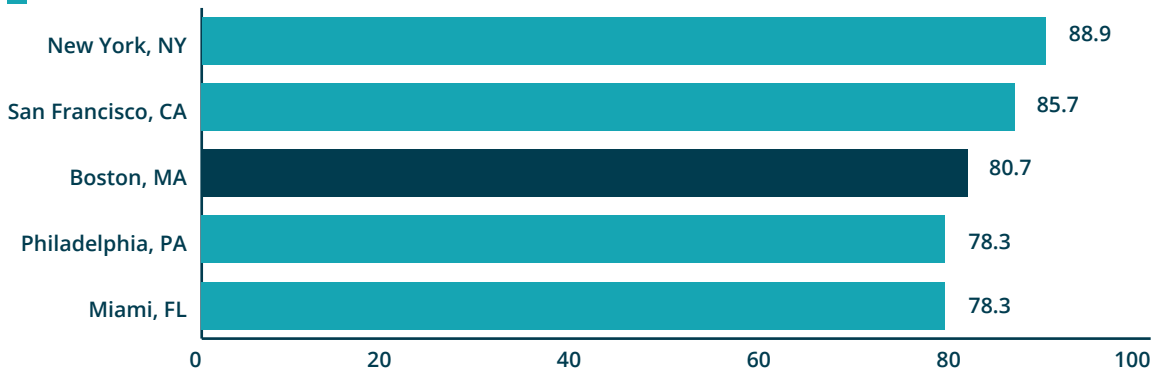
Source: National Institutes of Health, "NIH Funding by Location and Organization," FY2016, BPDA Research Analysis.

FIGURE 8 Peer Cities with Highest Share of Residents with Bachelor's Degrees
2015



Source: U.S. Census Bureau, 2015 American Community Survey 1-year, BPDA Research Division Analysis.

FIGURE 9 Peer Cities with Top Walk Scores
2016



Source: WalkScore.com, BPDA Research Division Analysis.

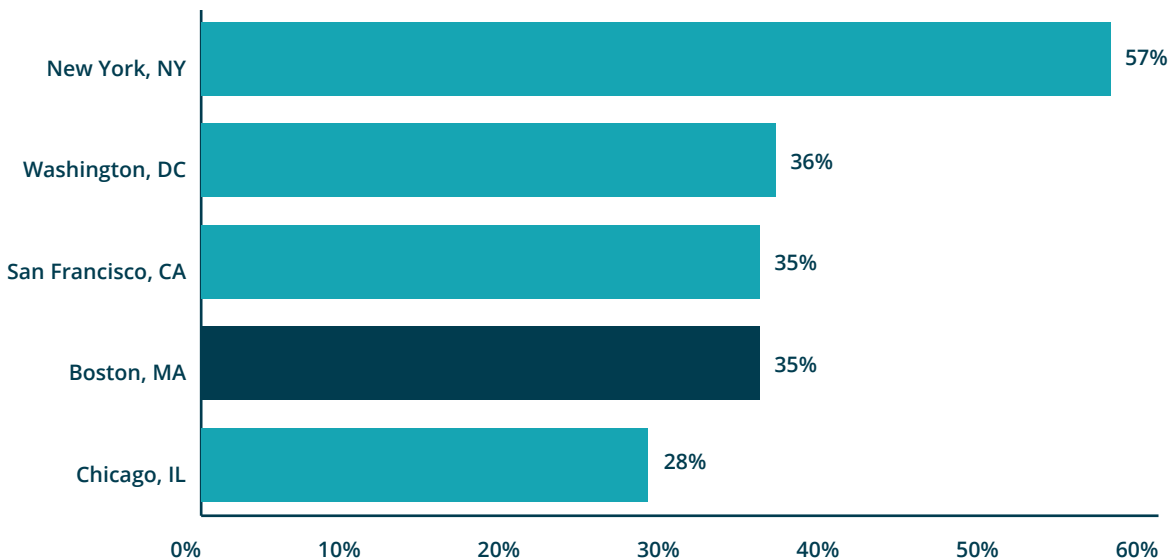
of the regional labor force is a draw for firms requiring educated and skilled labor. At the city level, Boston ranks 10th out of the 25 peer cities. The City continues to prioritize raising the educational attainment of its residents. In 2016, Mayor Walsh announced a plan to offer tuition free community college for Boston Public Schools graduates. The program, paid for by the BPDA's Neighborhood Jobs Trust, kicked off by enrolling 41 students in September 2016.

Sustainable Transportation Options - Among the 25 comparable cities, the American Community Survey shows that Boston has the largest percentage of people who walk to work, 17 percent, in contrast to Raleigh, Phoenix, Charlotte, and Dallas where less than 2 percent of workers walk to work.¹⁸ Boston's position as a walkable city is also consistent with its Walk Score. Out of a score of 100 points, Boston earned 80.7, making it possi-

ble the third most walkable city among 25 comparable cities. Walk Score calculates scores using a patented system. For a city, Walk Score measures the length of a walk to a variety of amenities. Shorter walks earn more points, and a walk over 30 minutes earns no points. Pedestrian friendliness is also measured by looking at block length and intersection density.

Boston also boasts a large share of people who use public transportation. Among city residents age 16 and older, Boston has the fourth highest share of people who use public transportation to get to work, among a list of 25 comparable cities. Boston is fourth after New York City, Washington DC, and San Francisco. More than one in three resident workers in Boston use public transportation. Raleigh, North Carolina has the lowest rate of commuting by public transportation at less than two percent.

FIGURE 10 Peer Cities with Highest Share of Resident Workers Taking Public Transportation to Work 2015



Source: U.S. Census Bureau, 2015 American Community Survey 1-Year, BPDA Research Division Analysis.

Low Crime - Compared to its peers, Boston is a safe city. Among 25 peer cities, Boston has the fifth lowest crime rate, at 3,023 “part 1” crimes per 100,000 residents. Part 1 crimes include murder, rape, robbery, assault, burglary, larceny, car theft, and arson. Low crime makes Boston a place where businesses, employees and residents can flourish without fear. St. Louis has the highest crime rate of the comparison cities, at 8,133 part 1 crimes per 100,000 residents.

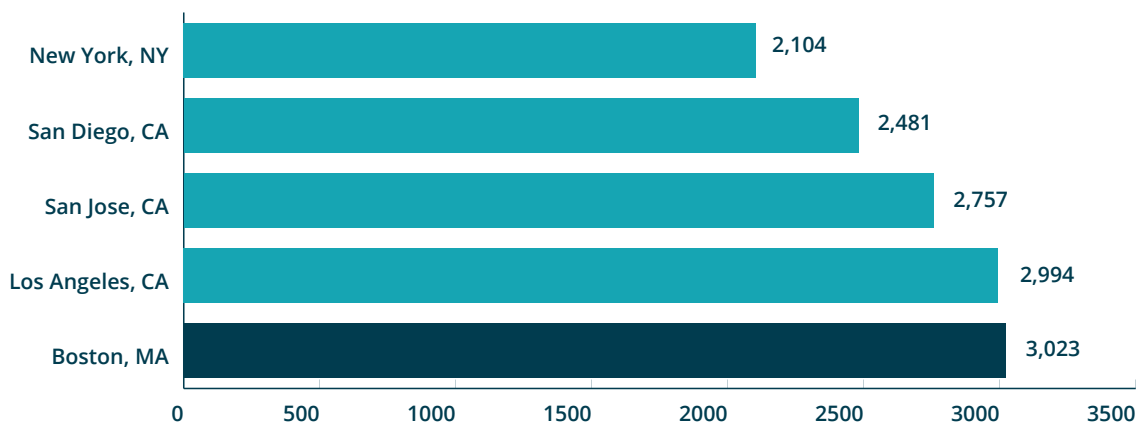
Young Adult Population - Boston has the highest share of young adults among peer cities, at 34.5 percent. The large young adult population highlights Boston’s preeminence as a center of higher education, but it also suggests that the city is an attractive place for young adults who are deciding where to settle and begin their careers. In contrast, only 20.7 percent of the U.S. population is between the ages 20 and 34. Programs like Spark Boston bring Boston’s young adults together through innovative civic engagement to strengthen personal and professional networks, and foster connections with civic leaders and social entrepreneurs.

But Cost of Living is High – Particularly in Housing

Boston’s desirability as a city – its low unemployment, walkability, public transportation, low crime, and young population – also make it an expensive place to live. Many people are eager to move to Boston, and this places pressure on the housing market. Among our set of 25 comparable cities, Boston’s median rent is the fourth highest, at \$1,423. It is cheaper than only three California cities: San Jose, San Francisco, and San Diego. Of the 25 comparison cities, 11 have median gross rents over \$1,000 per month.

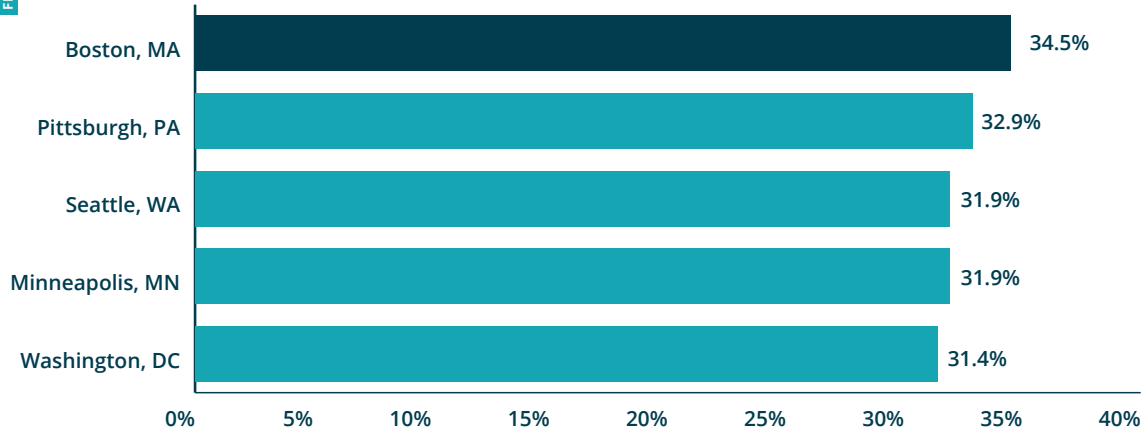
Boston’s high rents are driven by high demand, exceeding current housing stock. Among the 25 comparison cities, Boston has the lowest rental vacancy rate, at only 2.2 percent. As of 2015, this means that only 2.2 percent of Boston’s rental housing stock was available for rent. Increasing the overall housing supply to help push down the vacancy rate, and expanding the stock of affordable units are both important measures to help mitigate the high costs of housing for Boston residents.

FIGURE 11 Peer Cities with the Lowest Crime Rates
2015



Note: Part 1 Crimes per 100,000 population.
Source: FBI Uniform Crime Reporting, 2015, BPDA Research Division Analysis.

FIGURE 12 Peer Cities with Highest Share of Young Adults, Ages 20 to 34
2015



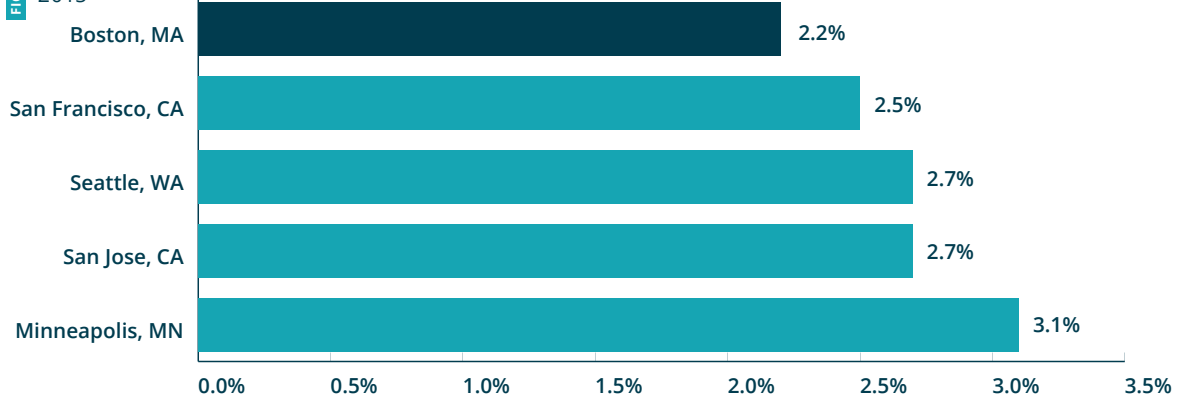
Source: U.S. Census Bureau, 2015 American Community Survey 1-Year, BPDA Research Division Analysis.

FIGURE 13 Peer Cities with the Highest Median Gross Rent
2015



Source: U.S. Census Bureau, 2015 American Community Survey 1-Year, BPDA Research Division Analysis.

FIGURE 14 Peer Cities with the Lowest Rental Vacancy Rates
2015



Source: U.S. Census Bureau, 2015 American Community Survey 1-Year, BPDA Research Division Analysis.

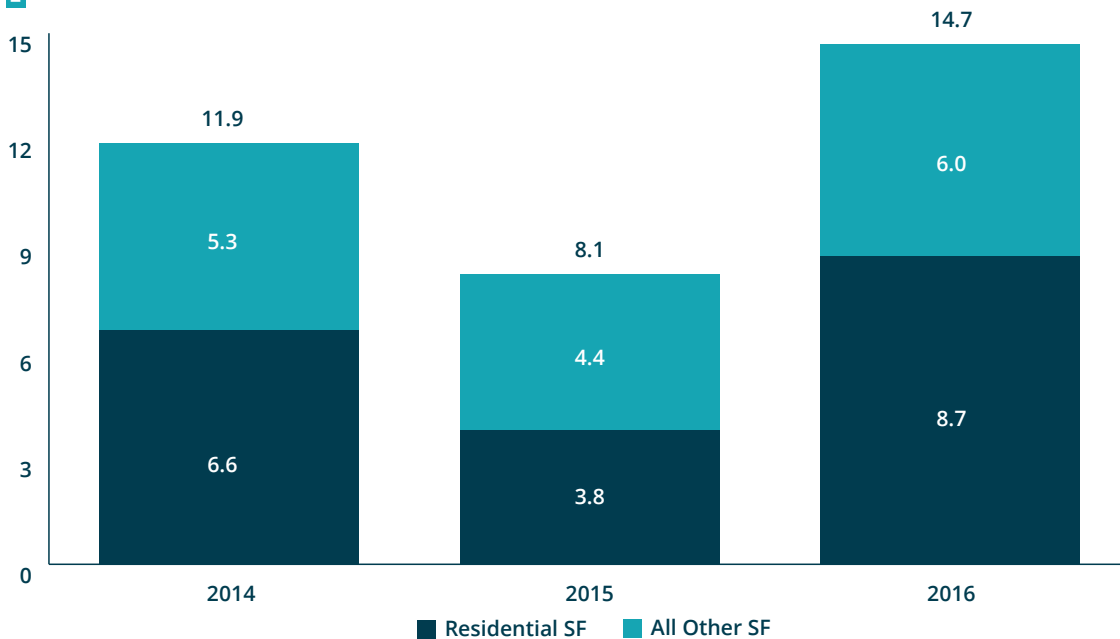
Real Estate Market

Boston's real estate market remains hot, with the volume of construction at historic levels and robust price growth. Building permits in FY2016 generated \$52.3 million in revenues, topping FY2015's record-breaking year. Between 2015 and 2016, building permit revenue remained mostly flat in fixed terms, but grew slightly in nominal terms. Building permits in FY2016 represented total construction activity of an estimated \$6.2 billion.¹⁹ According to the Boston Resident Job Policy database, there were over 3.2 million construction man hours worked in 2016 on Article 80 development projects, an increase of 9.6 percent and almost 280,000 man hours over 2015. Construction job data for Boston suggest the level of construction

activity is quite strong, as construction employment is approaching levels close to the Big Dig era of the early 2000s. An indicator of future real estate growth is the volume of projects approved by the BPDA Board. In 2016, the BPDA Board Approved 14.7 million square feet of development, which included 6 million square feet of residential space.

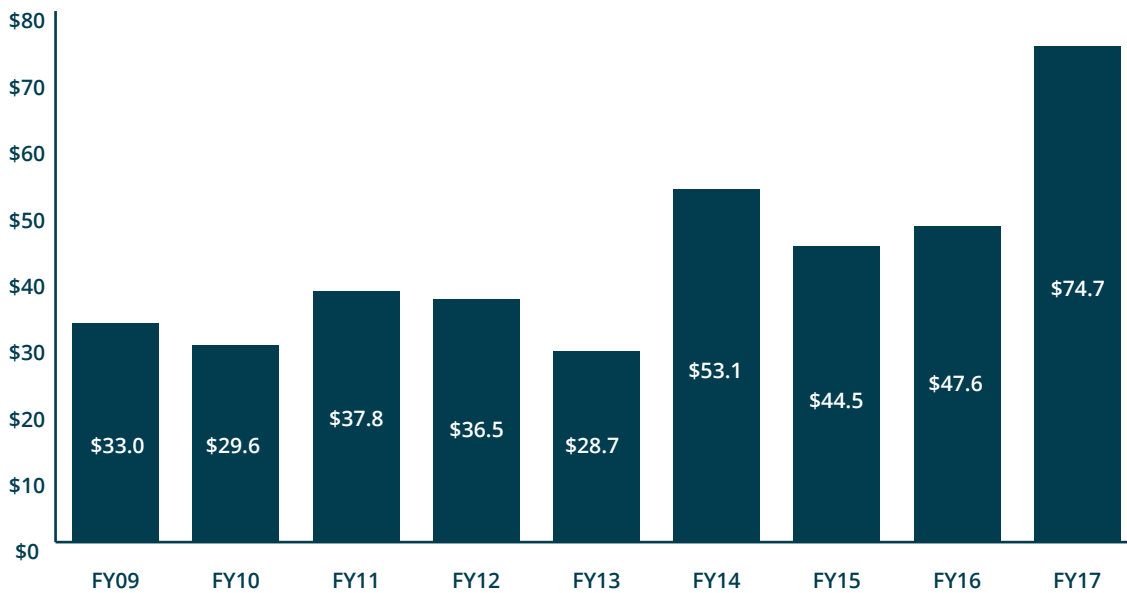
Figure 16 shows the property tax levy growth due to new construction and other properties being added to the tax base, along with any amended growth from the prior year.²⁰ New levy growth remained strong following FY2013, and grew 57 percent from FY16 to FY17 due to major commercial developments.

FIGURE 15 Millions of Article 80 Square Feet Approved by the BPDA Board 2014-2016



Source: BPDA Pipeline Database.

FIGURE 16 New Property Tax Levy Growth
FY2009-2017



Source: City of Boston Assessing Department, "Property Tax Facts and Figures: Fiscal Years 2009 to 2017".

TABLE 2 Boston Office Market
Fourth Quarter 2016

MARKET	INVENTORY SQUARE FOOT	ANNUAL ABSORPTION	VACANCY	AVERAGE ASKING RENT
Back Bay	12,743,643	624,492	7.0%	\$61.79
Charlestown	1,917,261	151,146	3.7%	\$39.38
Fenway	2,196,257	186,848	2.6%	\$49.00
Financial District	34,855,352	-232,178	8.8%	\$56.09
North Station	2,793,972	-70,674	4.3%	\$46.83
Seaport District	9,514,175	583,013	7.3%	\$52.38
South Station	2,349,929	-2,038	2.7%	\$47.70
Boston	66,370,589	1,240,609	7.5%	\$56.02

Source: Office Statistics: Boston Q4 2016, Jones Lang LaSalle IP, Inc.

Commercial Real Estate Market - Boston's commercial real estate market is continuing to show strong growth. Factors influencing commercial development include growth in the high tech sector, high rents, low interest rates, low unemployment rates, and population growth. In the fourth quarter of 2016, Boston's direct commercial vacancy rate was 7.5 percent, according to the research firm Jones Lang LaSalle (JLL).²¹ Boston absorbed 1.2 million square feet of commercial space in 2016.²²

Boston's commercial office space grew by almost a million square feet from the prior year, totaling 66.4 million square feet at the end of 2016.²³ The largest supply of commercial office space is in the Financial District (34.9 million square feet), but the South Boston Waterfront and Back Bay Neighborhoods had the largest inventory growth of commercial office space, adding 960,000 square feet in 2016.²⁴ Citywide, the median quoted rent was \$56.02 per square foot. The neighborhood with the highest office quoted rate in the fourth quarter of 2016 was Back Bay at \$61.79 per square foot.

Major Recent Commercial and Institutional Completions -

- A 17-story mixed use office building in the Back Bay at 888 Boylston Street was completed in September 2016. The project includes approximately 422,000 square feet, of which 362,000 square feet is allocated to office and another 60,000 square feet for retail. This new building is the fourth office building in the Prudential complex.
- Major retail developments in 2016 centered on the completed Millennium Tower, where ground-floor retail space began renting. Old Navy has leased 29,000 square feet of retail space in the building. The developer of the Millennium Tower was also awarded the development rights to the parcel currently occupied by the Winthrop

Square Garage, which will add additional ground-floor retail space to Downtown once complete.

- Boston College recently completed three major construction projects. At 2000 Commonwealth Avenue, the college renovated an existing apartment tower into a dormitory for 540 students. Nearby, at 2150 Commonwealth Ave, Boston College opened a new residence hall that will house 490 students, in a mixture of 2-bed, 4-bed and 6-bed apartments.
- Boston University recently completed its 610 Commonwealth Avenue building, which is the new Center for Integrated Life Sciences and Engineering.
- In 2016, Harvard opened the 90,000 square feet Ruth Mulan Chu Chao Center as a new Executive Education Center on its Allston Campus.

The industrial and retail markets remained strong in 2016. By year end the Boston/Suffolk sub-market had a total of 26.3 million square feet of industrial space and 6.67 million square feet of flex space, with a vacancy rate of five percent for industrial and 5.6 percent for flex, according to CoStar. The average asking rent for industrial space was \$12.25 per square foot NNN ("Net-Net-Net", or net property tax, insurance and maintenance), and \$22.14 per square foot NNN for flex. In 2016 fourth quarter, Boston/Suffolk County had 21.5 million square feet of retail space with a vacancy rate of 2.4 percent according to CoStar.²⁵ Retail rents were strong, particularly in the Downtown core and immediate surrounding areas. Quoted retail rental rates were \$32.56 per square foot for 2016. There are currently 54 supermarkets in Boston. Bfresh opened in Brighton in August of 2016, and several more new grocery store projects are underway.

Hotel room supply for the city increased in 2016 to 19,817 units from 19,056 in 2015. The two D Street hotels, the Aloft and Element, opened in Febru-

ary 2016, adding approximately 500 rooms across from the BCEC. The Godfrey hotel on Washington Street in Downtown Crossing opened in February 2016. As of December 2016, Boston had 82 hotels,²⁶ with 70 percent rated as upper midscale or above, and an average daily rate of \$255 a night.

In 2016, the projects approved by the BPDA skewed towards the residential sector, but 13 projects included new office space, totaling 1.9 million new square feet. The approved office developments will be mixed-use, with six including residential space. The new office developments will be located across the city: four in South Boston Waterfront, two each in South Boston and Roxbury, and one each in Brighton, Chinatown, Dorchester, Downtown, and the South End. In addition, 1.4 million square feet of institutional development was approved citywide, mostly educational developments or expansion.

Residential Real Estate Market - The residential market is hot with strong citywide price growth, along with rising rents for many tenants. The rise in prices corresponds with a decline in vacancy rates to 2.2 percent for rental units and a slight increase to 1.2 percent for owned units.²⁷

American Community Surveys show the median gross monthly rent (for existing renters rather than advertised rents) was \$1,423 in 2015, up from \$1,352 in 2014. ²⁸ Gross rents are tenants' out-of-pocket costs in both market rate and subsidized housing units and are typically lower than advertised market rents for newly available units. Preliminary data for 2016 real estate trends provided by the City's Department of Neighborhood Development (DND) show that the median rent for an apartment in Boston as advertised by the Multiple Listing Service ("MLS") was \$2,430 per month between the fourth quarter of 2015 and

the third quarter of 2016.²⁹ The citywide median advertised rents in this sample remained unchanged from the prior four-quarter period, but Mattapan, Roslindale, and Dorchester saw large percentage increases.

Housing prices reached new highs in 2016, with particularly strong price growth in the condominium market. The median condominium sales price in 2016 was \$585,000, an increase of 10 percent in real terms over the 2015 level. The real median price of single-family homes in Boston increased by 8 to \$497,500.³⁰ The total number of residential sales declined by 4.5 percent (from 8,463 to 8,080) from 2015 to 2016. The sales volume of single-family homes decreased by 5 percent. Sales of condominiums declined 3.3 percent, and sales of multi-family non-condominium properties declined 9.4 percent between 2015 and 2016.³¹

According to DND's "Housing a Changing City 2030, 3rd Quarter 2016 Report" Boston issued permits in the third quarter 2016 for 1,565 new or converted residential units.³² This represents a 44 percent increase over units permitted in the third quarter of 2015, when 1,090 units were permitted. In 2016, the BPDA Board approved 7.9 million square feet of new housing, for a total of 7,868 potential new housing units across the city. Of these units, 1,661 will be affordable units. The largest projects by number of units include M Block in Seaport Square (735 units), Washington Village in South Boston (656 units), and the Government Center Garage residential project (486 units).

Forecast: Looking Forward

Boston's economic future will be tied to trends in the global, national, and regional economies. The outlook for the global economy remains strong going forward. According to forecasts from Scotia Bank and the International Monetary Fund (IMF), global output will continue to grow in 2017 at a rate between 3.4 percent³³ and 3.6 percent.³⁴ Future shifts in exchange rates may impact economic growth. In 2016 the US dollar appreciated in real terms, while the Euro, Japanese Yen, and Mexican Peso all weakened.³⁵ Continued currency appreciation in the United States impacts US exports and contributes to the US trade deficit, which year over year grew by 11.8% since January 2016.³⁶ Changes in commodity prices may also influence the global economic outlook. The World Bank and IMF both believe that, following a 15 percent drop in oil prices in 2016, the price of oil will rise by 26 percent in 2017 to \$60 a barrel by 2018. Another area of concern is unequal growth among emerging and advanced economies.³⁷ However, the most prominent theme across forecasts is uncertainty surrounding the new US presidential administration's executive orders, proposed changes to the federal budget, and health care policy.

At the national level, the US economy rebounded in the second half of 2016 after a slow start, for annual growth in 2016 of 1.6 percent. The Congressional Budget Office (CBO) estimates that, in real terms, US GDP will expand at an average annual pace of 2.1 percent from the fourth quarter of 2016 to the fourth quarter of 2018. The IMF World Economic Outlook forecasts slightly more aggressive growth of 2.3 percent in 2017 and 2.5 percent in 2018. Growth in the

coming years will be driven by consumer spending, business investment, and residential construction. Inflation is expected to remain close to the Fed's target of two percent, coinciding with expectations of a stronger US dollar against most major currencies.³⁸ With national economic conditions continuing to show positive growth and low unemployment (4.7 percent for February 2017), the Federal Reserve Open Market Committee is expected to continue incrementally raising the target for the federal funds rate, which stands at 0.75 to one percent after a quarter point increase in March 2017.

Nationally, constraints to long-term growth include the federal deficit, labor supply, and wage growth among low wage occupations. Federal debt is expected to increase relative to economic output, and grow at an increasing rate. The CBO cites increases in retirement and health care spending for the growing aging population as explanations for the projected growth in the deficit. The aging population will also constrain the future labor supply. Wage and employment growth in the U.S. has been concentrated in higher wage, higher skill sectors, raising concerns about adequate growth in low-wage occupations.

In line with national trends, the New England Economic Partnership (NEEP) predicts Massachusetts' nonfarm employment, personal income, gross state product and wages to steadily increase in 2017 continuing through 2019. The NEEP forecast suggests Massachusetts growth will continue at 1.5 percent in 2017, with positive growth through 2020. The five year annual average forecast for Massachusetts growth is 1.1%, but shows a gradual slowing

of positive growth as it approaches 2020. In terms of sectors, the NEEP forecast sees construction as the leading growth sector followed by professional and business services, leisure and hospitality, education, and finance. In the short-term, the Boston Federal Reserve's Beige Book found firms responding had a positive outlook, expecting end-of-year growth rates to continue in 2017.³⁹ Echoing broader national and regional trends, firms in New England cited difficulties in finding employees to hire; worker shortages were noted in the restaurant and manufacturing industries.⁴⁰

Following that consistent theme, Massbenchmark's February 2016 issue states "labor supply constraints will almost certainly become more of a drag on growth as time goes on and the retirements of baby boomers increase".⁴¹ The Massachusetts unemployment rate is the lowest since the turn of the century — yet the U-6 unemployment rate (which includes discouraged workers and part-time workers who would prefer to work full-time) has increased since 2000 — this may be attributed to higher inequality and many workers feeling left out or left behind by the economy.⁴²

The outlook for Boston is strong following low unemployment rates in 2016, strong growth in professional, scientific, and technical services and health care sectors, and continued expansion in construction. Payroll and non-payroll jobs grew at 2.7 percent in 2015. The employment forecasts for Boston's citywide plan, *Imagine Boston 2030*, suggests average annual growth of 1.3% for the next five years. Recent job data suggest that job growth for the city is ahead of these short-term projections. In March 2017, Moody's announced that the city retained its AAA bond rating for General Obligation Bonds. The recent wave of corporate headquarters relocations to Boston, including GE, Reebok, Converse, and New Balance signal a bright future for Boston's economy.

The city is ahead of schedule for its 2030 housing goals with 18,786 units permitted or complete and another 21,720 in the development pipeline.⁴³ In 2016, the BPDA Board approved 7.9 million square feet of new housing, for a total of 7,868 new housing units across the city, of which 1,661 units are affordable. Housing affordability continues to be a primary concern in the city: rents saw smaller increases than in years past, but the condo market saw prices increase by ten percent between 2015 and 2016. On the commercial side, Boston's Office market was strong in 2016, the Federal Reserve Beige Book also noted the Boston area office rents increased and sales prices for commercial properties were stable. CBRE expects almost 700,000 square feet of positive absorption in Q1 2017.⁴⁴

Areas of uncertainty for Boston include aging of the labor force, immigration policy, and federal funding. The aging of the labor force, while not unique to Boston,⁴⁵ will present challenges as a smaller share of the population will be participating in the labor market. The BPDA projects that the share of Boston's population 65 and older will increase from 11 to 14 percent of the population between 2015 and 2030. Immigration policy is a major concern, as Boston's population growth relies heavily on foreign born migration to the city and region. The foreign born represent 31.2 percent of the city's labor force.⁴⁶ Lastly, federal funding is also a significant concern as Boston and the region are large recipients of federal research and development funding, particularly National Institutes of Health grants. Significant changes to funding levels would directly impact local hospitals, universities, and companies whose work relies on cutting edge research, and would spread throughout the Boston economy through impacts on local supply chains and reduced local consumer spending. Apart from any such major policy or funding changes, economic and demographic projections for the city suggest continued growth in population and jobs, particularly in high knowledge industries.

Appendix A: Spotlight: Boston's Strong Economy Compared to Peers
Complete Lists of All 25 Cities

CITY	POPULATION GROWTH 2010-2015	% RESIDENTS 20-34	% RESIDENTS WITH BA+	Q4 2016 UNEMPLOYMENT RATE	JOBS PER SQUARE MILE	JOBS PER RESIDENT	PROFESSIONAL, SCIENTIFIC, & TECHNICAL SERVICES SHARE	WALKSCORE	% COMMUTING BY PUBLIC TRANSPORTATION	CRIME RATE	MEDIAN GROSS RENT	VACANCY RATES	NIH GRANTS (MILLIONS OF \$)
Atlanta, GA	10.4%	30.7%	48.3%	5.5%	3,372	0.98	11.1%	48.4	10.1%	6,619	\$981	6.6%	\$414
Austin, TX	17.9%	30.9%	48.3%	2.8%	2,074	0.68	11.4%	39.2	4.0%	4,143	\$1,139	6.5%	\$76
Baltimore, MD	0.1%	26.6%	29.9%	5.9%	4,255	0.55	6.4%	68.7	19.6%	6,516	\$981	6.4%	\$862
Boston, MA	8.4%	34.5%	46.7%	2.5%	12,742	0.94	11.8%	80.7	34.5%	3,023	\$1,423	2.2%	\$1,851
Charlotte, NC	13.1%	24.9%	41.8%	4.2%	1,839	0.68	8.0%	25.5	4.1%	4,445	\$978	6.0%	\$7
Chicago, IL	0.9%	27.4%	36.6%	6.1%	5,772	0.48	11.8%	77.5	28.3%	3,850	\$985	5.6%	\$654
Dallas, TX	8.5%	26.0%	31.8%	3.6%	2,495	0.66	9.6%	45.4	4.2%	4,134	\$903	6.8%	\$187
Denver, CO	13.7%	28.8%	47.1%	2.8%	3,093	0.71	10.1%	59.9	6.1%	4,204	\$1,094	4.2%	\$39
Detroit, MI	-5.1%	22.3%	14.2%	10.5%	1,776	0.36	7.2%	55.1	6.8%	5,853	\$747	5.0%	\$85
Houston, TX	9.5%	26.1%	30.8%	4.7%	2,908	0.78	8.9%	47.8	4.0%	5,364	\$923	7.7%	\$528
Los Angeles, CA	4.7%	25.9%	32.7%	5.2%	3,712	0.44	7.6%	66.3	9.5%	2,994	\$1,271	3.3%	\$690
Miami, FL	10.4%	23.0%	25.7%	5.1%	7,870	0.66	7.6%	78.3	10.8%	5,389	\$1,020	6.4%	\$24
Minneapolis, MN	7.4%	31.9%	48.3%	3.1%	6,069	0.80	11.7%	68.2	13.4%	5,257	\$912	3.1%	\$281
New York, NY	4.6%	25.0%	36.9%	5.1%	13,412	0.48	9.2%	88.9	57.0%	2,104	\$1,317	3.4%	\$1,626
Philadelphia, PA	2.7%	26.5%	27.4%	6.4%	4,949	0.43	7.7%	78.3	25.2%	4,176	\$952	7.2%	\$863
Phoenix, AZ	8.1%	23.1%	26.7%	4.3%	1,669	0.56	5.8%	40.3	3.5%	4,085	\$922	7.5%	\$11
Pittsburgh, PA	-0.4%	32.9%	41.3%	5.0%	5,038	0.91	8.3%	61	17.3%	3,931	\$858	4.0%	\$548
Portland, OR	8.3%	26.3%	48.5%	3.8%	3,165	0.68	8.4%	63.9	13.4%	NA	\$1,047	3.3%	\$207
Raleigh, NC	11.9%	27.6%	49.2%	3.8%	2,424	0.79	8.2%	29.9	1.9%	NA	\$970	5.4%	\$20
San Diego, CA	6.7%	27.8%	44.3%	4.2%	2,293	0.54	13.6%	49.9	4.5%	2,481	\$1,444	3.3%	\$838
San Francisco, CA	7.4%	29.1%	55.2%	3.2%	14,258	0.78	16.1%	85.7	34.7%	6,915	\$1,659	2.5%	\$676
San Jose, CA	8.6%	22.4%	40.8%	3.9%	2,245	0.39	9.8%	49.8	4.1%	2,757	\$1,757	2.7%	\$2
Seattle, WA	12.5%	31.9%	62.1%	3.3%	6,484	0.81	11.2%	72.9	21.0%	6,121	\$1,356	2.7%	\$894
St. Louis, MO	-1.1%	27.5%	34.7%	4.7%	3,769	0.74	8.3%	63.9	9.7%	8,133	\$767	7.0%	\$1
Washington, DC	11.7%	31.4%	56.7%	5.8%	10,855	1.01	16.6%	77	35.8%	5,719	\$1,417	5.1%	\$214

Citations

1. Jones Lang LaSalle (JLL), "Office Statistics Boston Q4 2016", 2016
2. City of Boston, Department of Neighborhood Development (DND) using Banker & Tradesman data, January 2017
3. City of Boston, "Boston Resident Job Policy Compliance Reports Database", 2017
4. MassBenchmark "The Current and Leading Indices", February 2016
5. New England Economic Partnership, "NEEP Economic Forecast", January 2017
6. Gross City Product (GCP) is an aggregate measure of economic activity, analogous to national Gross Domestic Product (GDP).
7. We are able to report 2016 U.S. GDP growth, but not Gross City Product growth, because national data is available well in advance of state and local information. The Local Area Personal Income data required for our calculation is only released by the BEA in November of the following year.
8. Boston-Brockton-Nashua, MA-NH-ME-CT
9. U.S. Bureau of Labor Statistics (BLS), "Consumer Price Index – All Urban Consumers", CUURA103S-AOL2, 2017
10. U.S. Bureau of Economic Analysis (BEA), Massachusetts Executive Office of Labor and Workforce Development (EOLWD), BPDA Research Division Analysis. Note: The State has revised prior job estimates for Boston upwards since the BPDA's 2016 Economy Report.
11. The BPDA Research Division uses the BEA definition of total employment, which includes both payroll and non-payroll jobs. The BEA releases county-level estimates by industry. The BPDA Research Division apportions Suffolk County non-payroll employment to Boston based on the city's fraction of county payroll employment as estimated using unemployment insurance data (ES-202) made available at the city and county level by the Massachusetts EOLWD.
12. City of Boston, "Comprehensive Annual Fiscal Report", FY2015
13. The BPDA uses a definition of high tech industries originally developed by the Bureau of Labor Statistics (BLS). See BPDA Research Division "High Tech Industries in Boston" 2015. High tech employment growth was estimated using ES-202 payroll employment data from the Massachusetts EOLWD.
14. Boston's Living Wage Ordinance requires most firms receiving city contracts or loans to pay a Living Wage of \$14.23 an hour to all employees. This amount, updated annually is based on the federal poverty guidelines for a family of four. The Living Wage of \$14.23 is in effect through June 30, 2017, and will increase to \$14.41 effective July 1st, 2017.
15. EOLWD, ES-202, BPDA Research Division Analysis
16. City of Boston, Department of Neighborhood Development using Banker & Tradesman data, January 2016
17. City of Boston Department of Neighborhood Development, "Student Housing Trends 2016-2017 Academic Year" 2017

18. U.S. Census Bureau, 2015 American Community Survey 1-year, BPDA Research Division Analysis
19. Potential construction activity estimated by dividing permit revenues by 0.85 percent, which is the midpoint between permit fees calculated at 0.7 percent of the first \$100,000 estimated value of development cost, and one percent for the remainder of development cost.
20. City of Boston Assessing Department, "Property Tax Facts & Figures: Fiscal Year 2016", 2016
21. Jones Lang LaSalle (JLL), "Office Statistics: Boston Q4 2016", 2016
22. Jones Lang LaSalle (JLL), 2016
23. Jones Lang LaSalle (JLL), 2016
24. Jones Lang LaSalle (JLL), 2016
25. CoStar Property, "Total Market Statistics", 4th Quarter 2015
26. The Hotel stock is based on 2017 City of Boston Licensing Board data. In 2016, three hotels opened and two properties initially categorized as lodging houses or bed & breakfast were reclassified as hotels, resulting in a total count of 82 hotels.
27. U.S. Census Bureau, 2015 American Community Survey 1-year
28. U.S. Census Bureau, 2013 and 2014 American Community Surveys
29. City of Boston, DND, using Multiple Listing Service (MLS), January 2016
30. City of Boston, DND using Banker & Tradesman data, 2016
31. City of Boston, DND using Banker & Tradesman data, 2016
32. DND, "Housing a Changing City Boston 2030: One Year Report 2015" December 2015
33. Scotia Bank, "Scotia Bank's Global Outlook", January 2017
34. International Monetary Fund, "World Economic Outlook", January 2017
35. International Monetary Fund, "World Economic Outlook", January 2017
36. Bureau of Economic Analysis, "US International Trade in Goods and Services", January 2017
37. World Bank, "Commodity Markets Outlook: Investment Weakness in Commodity Exporters", January 2017
38. Scotia Bank, "Scotia Bank's Global Outlook", January 2017
39. Federal Reserve District, "The Beige Book: Summary of Commentary on Current Economic Conditions", January 2017
40. Federal Reserve District, "The Beige Book: Summary of Commentary on Current Economic Conditions", January 2017
41. MassBenchmark "The Current and Leading Indices", February 2016
42. MassBechmarks, "Volume 18, Issue 2" 2016
43. City of Boston Department of Neighborhood Development, "Boston 2030 Third Quarter Report" November 2016
44. CBRE, "2017 New England Market Outlook" 2017
45. Note: While the aging population is not unique to Boston, it is lesser of a concern as the city's population is younger than the national average, with one-third between the ages of 20 and 34
46. U.S. Census Bureau, 2015 American Community Survey, Public Use Microdata Sample (PUMS), BPDA Research Division Analysis

