

# Boston's Economy

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2016



#### THE BOSTON REDEVELOPMENT AUTHORITY RESEARCH DIVISION (BRA)

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 BRA, the City of Boston, and related organizations.

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# Executive Summary

The Boston economy continues to grow. Consistent with national trends, the city is experiencing positive job growth and low levels of unemployment. The market for commercial and residential real estate remains strong, and significant construction is underway to help meet this demand.

**Economic growth:** Revised estimates indicate Boston's economy grew by 5.3 percent between 2013 and 2014 as measured by Gross City Product (GCP). Prior years' estimates for Boston's GCP have been revised downwards due to a change in methods for adjusting state and county growth estimates to Boston, as described in more detail in the following section. Revised estimates suggest a 0.8 percent dip in Boston's GCP in real terms between 2012 and 2013.

**Job and wage growth:** Boston's economy has grown steadily since 2013, outperforming both Massachusetts and the nation with annual job growth of 2.3 percent between 2013 and 2014. Total employment rose in 2014 to the highest level in recent decades. From 2013 to 2014, Boston's job growth was positive across all industries except manufacturing, but was mostly concentrated in professional and technical services and health care and social assistance. The health care and social assistance industry employs the largest number of people in Boston, 18.6 percent of total jobs, while the professional and technical services industry added the most jobs from 2013 to 2014, with 3,770 additional jobs.

**Unemployment:** Boston's unemployment has continued to fall from an annual rate of 6.2 percent in 2013 to 5.3 percent in 2014 and 4.4 percent in 2015. Unemployment fell to its pre-recession level in early 2015. Unemployment has also fallen over the same time period in Massachusetts and the U.S., but Boston's unemployment

remains consistently below state and national levels. The most recent monthly unemployment data for Boston show a rate of 3.9 percent in March 2016.

## Real estate

- **Commercial:** Vacancy rates are down from 10.1 percent in fourth quarter 2014 to 8.9 percent in fourth quarter 2015, with a positive net change in office space of 800,000 square feet during that period.<sup>1</sup>
- **Housing:** Single family housing prices for fourth quarter 2015 were 3.4 percent higher than fourth quarter 2014, while condominium prices increased 23.2 percent over the same period.<sup>2</sup>
- **Construction Activity:** Building permits in 2015 generated \$51.7 million in revenues, an increase of 29 percent over 2014. Total building permit revenues in FY2015, net inflation, exceeded revenues of any one year going back to 1994.<sup>3</sup> FY2015 is a landmark year for permits issued, coinciding with the high level of ongoing construction activity in the city.

**Looking ahead:** Forecasts for Massachusetts anticipate more conservative job growth of around 1.8 percent for 2016.<sup>4</sup> Although the Massachusetts economy has been exhibiting strong growth in wages and jobs, global markets are showing signs of uncertainty that could exert downward pressure.<sup>5</sup> Boston's job growth is currently exceeding projections from the Massachusetts Executive Office of Labor and Workforce Development (EOLWD).



# Economic Growth

Boston's economy grew by 5.3 percent from 2013 to 2014 as measured by real Gross City Product (GCP),<sup>6</sup> surpassing U.S. GDP growth of 2.4 percent and Massachusetts Gross State Product (GSP) growth of 2.5 percent. Boston's estimated GCP of \$103.1 billion (in 2014 dollars) represents 22.6 percent of the total economic activity in Massachusetts for 2014.

The continuation of economic growth follows major shifts in the national economy. U.S. currency became stronger relative to other currencies; the U.S. Dollar index rose 8.3 percent in 2015. National commodity prices remained stable with slow or negative growth due to lower demand and higher inventories for non-energy commodities. Energy prices tapered off from high production in North America, as warmer weather may have reduced overall demand relative to prior years. Lastly, in a major change in US monetary policy, the Federal Reserve Bank announced in December 2015 that it would raise interest rates for the first time in nearly a decade, from a range of 0 percent to 0.25 percent to a range of 0.25 percent to 0.5 percent. In the Boston Metro area, inflation excluding housing costs rose only one percent from January 2015 to January 2016.

The BRA Research Division revised the GCP methodology from last year because calculations for estimating

real estate GCP were creating excessive volatility in the measure. Additionally, the Bureau of Economic Analysis (BEA) revised downwards its estimate for Massachusetts GSP (the key input of the GCP formula) so that the state barely grew between 2012 and 2013 in real terms. The downward revisions concentrated in finance, a major industry in Boston. These changes in data and methodology resulted in a sizable change in the 2013 GCP estimate from \$109.8 billion to \$97.8 billion. With these revisions, aggregate Boston GCP growth between 2012 and 2013 was negative in real terms. The 0.8 percent dip in GCP was largely due to declines in segments of three industry sectors: manufacturing, finance, and real estate, while most of the remaining industries exhibited positive growth. Fortunately, this small decline in GCP 2012 to 2013 was followed by strong positive growth from 2013 to 2014.

# Employment and Wages

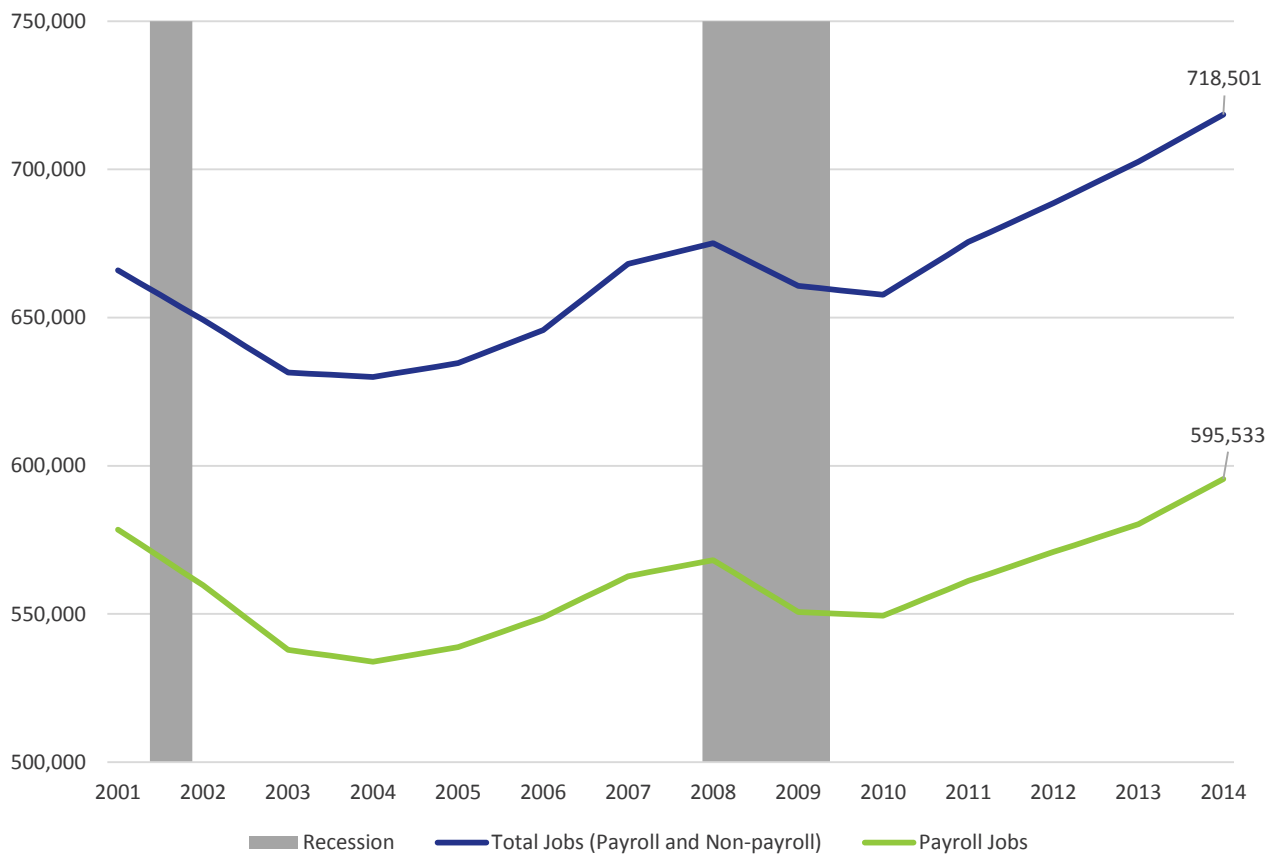
Boston is a major regional employment center and jobs in Boston represent 16 percent of total statewide jobs.

## Employment Growth

From 2013 to 2014, Boston's total payroll and non-payroll jobs grew by 2.3 percent to 718,501, continuing the trend of strong job growth since 2010.<sup>7</sup> Job growth is particularly strong for payroll jobs. While final 2015 data are not yet available, the latest payroll job data provided by EOLWD show payroll jobs continued to

grow steadily through the first half of 2015,<sup>8</sup> averaging 609,314 jobs in the second quarter of 2015. The growth in non-payroll jobs slowed to 0.6 percent from 2013 to 2014, compared to strong 3.9 percent growth from 2012 to 2013.

**FIGURE 1** BOSTON'S TOTAL EMPLOYMENT  
Number of total jobs located in Boston  
2001 - 2014



Note: Shading signifies recession.

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

## Jobs by Industry

The largest industry in Boston is health care and social assistance with over 133,000 jobs, 18.6 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.<sup>9</sup> Professional and technical services, finance and insurance, and government also employ large numbers of people in Boston.

Professional and technical services, healthcare and social assistance, and accommodation and food services added the most jobs from 2010 to 2014. Wholesale

trade, utilities, manufacturing, and government saw a decline in jobs from 2010 to 2014. High tech jobs grew particularly strongly, increasing by nine percent per year 2010 to 2014. The construction industry has also grown, benefiting from major residential and commercial developments and investment across the city. Additionally, several major firms have decided to move their headquarters to Boston including Converse and General Electric. In March 2016, General Electric announced it will be moving to Boston’s Fort Point Channel, adding up to 800 employees to the 2.5 acre site.

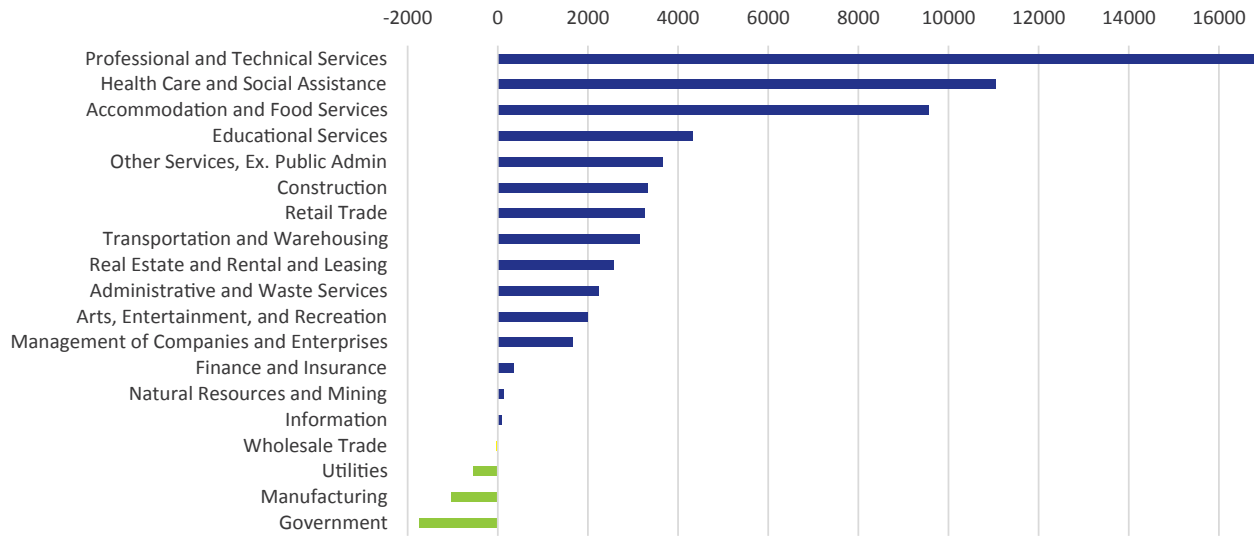
**TABLE 1** BOSTON’S TOTAL PAYROLL AND NON-PAYROLL JOBS BY INDUSTRY  
Number and percent share of Boston industry employment  
2014

INDUSTRY	2014	%
Health Care and Social Assistance	133,658	18.6%
Professional and Technical Services	88,636	12.3%
Finance and Insurance	79,990	11.1%
Government	76,602	10.7%
Accommodation and Food Services	58,887	8.2%
Educational Services	56,357	7.8%
Administrative and Waste Services	35,338	4.9%
Retail Trade	33,087	4.6%
Other Services, excluding Public Administration	32,985	4.6%
Real Estate and Rental and Leasing	24,881	3.5%
Transportation and Warehousing	21,641	3.0%
Construction	17,052	2.4%
Arts, Entertainment, and Recreation	16,253	2.3%
Information	16,051	2.2%
Wholesale Trade	9,240	1.3%
Management of Companies and Enterprises	7,837	1.1%
Manufacturing	7,797	1.1%
Utilities	1,871	0.3%
Natural Resources and Mining	336	0.0%
<b>TOTAL</b>	<b>718,501</b>	<b>100.0%</b>

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

FIGURE 2

### EMPLOYMENT GROWTH BY INDUSTRY Change in total jobs in Boston 2010 - 2014



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





## Wages by Industry

The average annual payroll wage in Boston in 2014 was \$88,504. The highest wages were in finance and insurance (\$207,428) and the lowest wages were in accommodation and food services (\$28,704). 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.<sup>11</sup>

The average annual payroll wage for Boston jobs rose an average of one percent a year in real terms from 2010 to 2014.<sup>12</sup> Wage increases have not kept pace with increases in housing costs as single family housing prices have gone up by 4.4 percent per year in real terms from 2010 to 2014, while condo prices increased by 3.2 percent per year.<sup>13</sup> The highly paid industries of finance and insurance, management, and professional and

technical services saw increases of 2-3 percent a year. Despite job losses, wages for remaining jobs in public administration and manufacturing saw average annual wages increase by 3.6 percent and 2.3 percent in real terms. Real wages in accommodation and food services, the lowest paid industry, were fairly stagnant with real growth of only 0.5 percent per year from 2010 to 2014.

Comparing the first two quarters of 2014 with those of 2015, real wages in the real estate sector grew by nine percent, the most of any industry.<sup>14</sup> Although retail wages remain some of the lowest in the city, they grew by 8.5 percent in real terms from the first half of 2014 to the first half of 2015. Finance and insurance, management, and professional and technical services are poised to remain the highest paid industries as their real wages rose over 5 percent in the same time period.



FIGURE 3

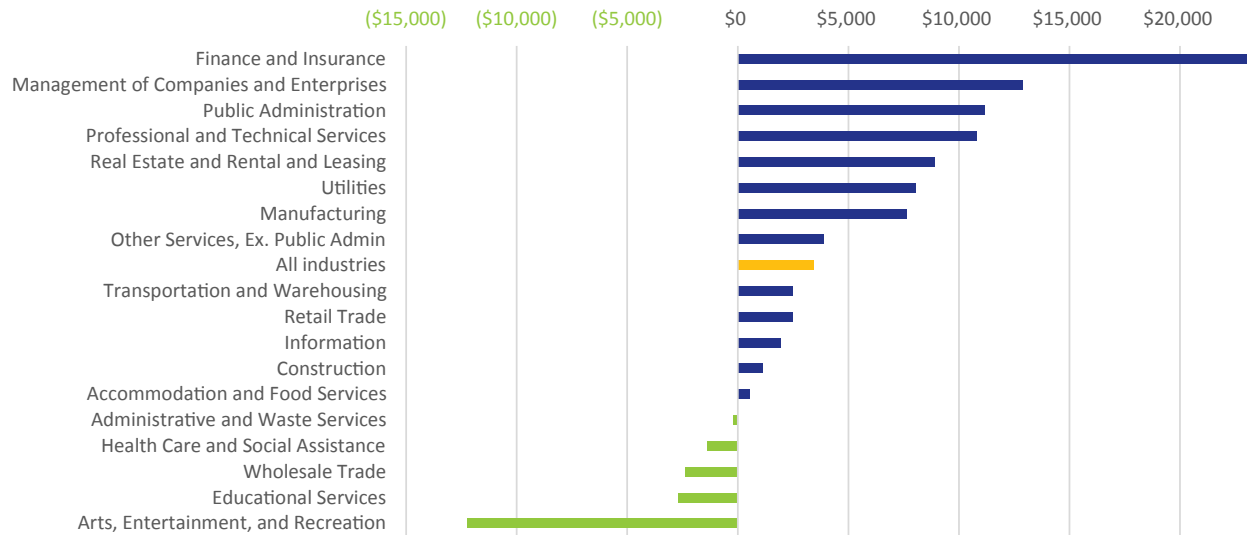
**AVERAGE ANNUAL WAGES BY INDUSTRY**  
Payroll jobs in Boston  
2014



Sources: U.S. Bureau of Labor Statistics (BLS), Massachusetts Executive Office of Labor and Workforce Development (EOLWD), BRA Research Division Analysis

FIGURE 4

**WAGE GROWTH BY INDUSTRY**  
Payroll jobs in Boston  
2010-2014



Sources: U.S. Bureau of Labor Statistics (BLS), Massachusetts Executive Office of Labor and Workforce Development (EOLWD), BRA Research Division Analysis

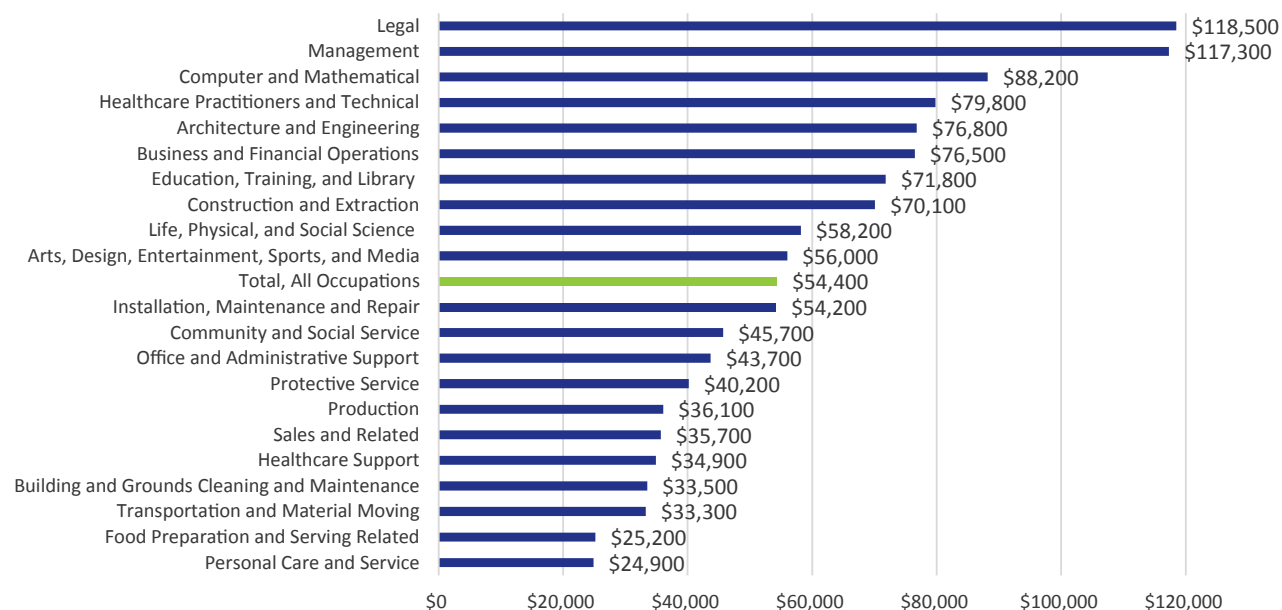
## Occupations

The Occupational Employment and Wage Statistics program of the U.S. Department of Labor, Bureau of Labor Statistics (BLS) collects data on the occupational profiles of payroll jobs located in Boston. In 2014, the largest group of occupations in Boston were office and administrative support occupations, followed by business and financial operations, and healthcare practitioners and technical occupations.<sup>15</sup> Figure 5 shows that the highest paid occupations in 2014 were legal and management occupations, while the lowest paid occupations were in personal care and service. The average annual wage across all occupations in Boston for 2014 was \$54,360.

EOLWD provides projections for annual job openings by occupation for Boston through 2022. Annual openings

are further broken down into “replacement” openings to replace workers who leave and “growth” openings to fill new positions. The occupations with the largest number of total projected annual openings in Boston are office and administrative support and food preparation and serving. The occupations with the largest number of growth openings are business and financial operations, and healthcare practitioners and technical occupations. Over 50 percent of the projected annual openings in computer and mathematical, construction and extraction, and community and social service occupations are growth openings, demonstrating the strong projected growth in demand for workers in these occupations.

**FIGURE 5** AVERAGE ANNUAL WAGE BY OCCUPATION  
Payroll jobs in Boston  
2014



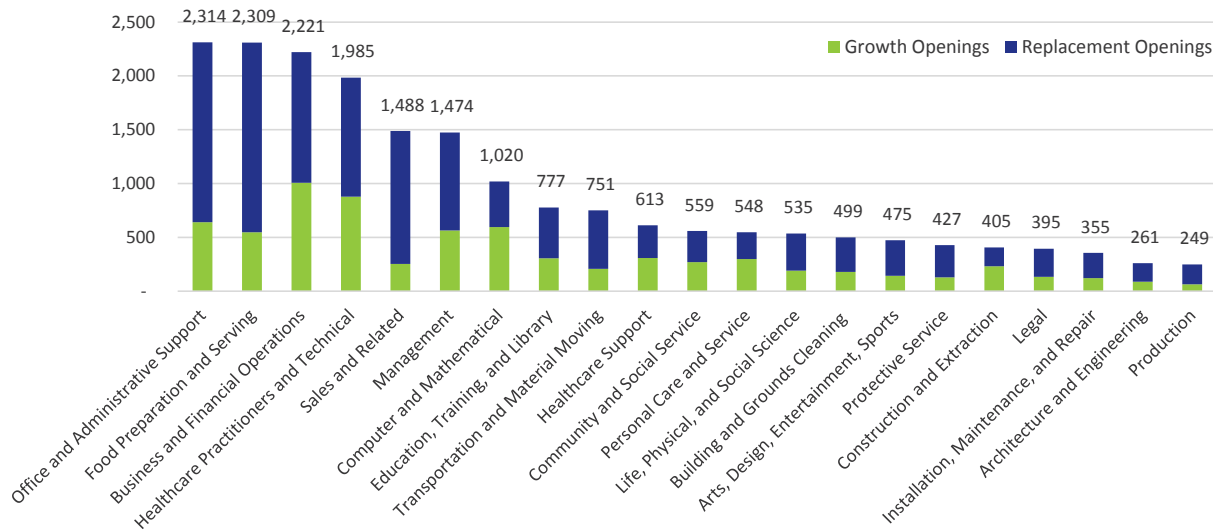
Sources: U.S. Bureau of Labor Statistics (BLS), Massachusetts Executive Office of Labor and Workforce Development (EOLWD), BRA Research Division Analysis

These data show that the occupations that pay well and have significant projected openings, especially growth openings, are in business and financial operations, healthcare practitioners and technical occupations,

management, and computer and mathematical occupations. However, these occupations often require a high degree of education and/or experience, and may be difficult for some Boston and area residents to access.

FIGURE 6

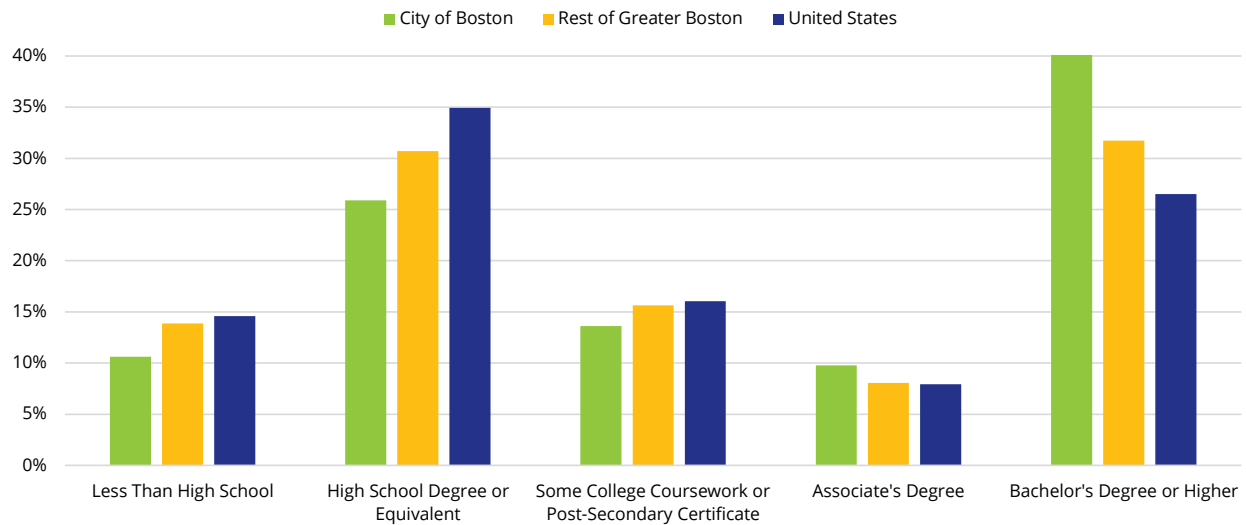
**PROJECTED ANNUAL OPENINGS**  
Occupational openings in Boston  
2012-2022



Sources: U.S. Bureau of Labor Statistics (BLS), Massachusetts Executive Office of Labor and Workforce Development (EOLWD), BRA Research Division Analysis

FIGURE 7

**EDUCATIONAL REQUIREMENTS FOR PROJECTED JOB OPENINGS**  
Requirements in City of Boston, Greater Boston, and US  
2012-2022



Sources: U.S. Bureau of Labor Statistics (BLS), Massachusetts Executive Office of Labor and Workforce Development (EOLWD), Occupation and Employment Statistics, O\*NET Database, BRA Research Division Analysis

FIGURE 7 shows the share of projected openings through the year 2022 by education required, compared to the current educational attainment of the Boston resident labor force and that of the workers who hold jobs in Boston. Job openings in the Boston area, and particularly those in the city itself, are more likely

to require a Bachelor's degree. A Bachelor's degree is a prerequisite for 40.1 percent of jobs locally, compared to 26.5 percent nationally. Only 36.5 percent of jobs locally might be available to someone with a high school degree or less, compared to 49.5 percent nationally.



# Spotlight: Boston's Resident Labor Force

Boston's resident labor force is made up of those residents age 16 or over who are either working or looking for work - approximately 380,000 people. Approximately 37 percent of Boston jobs are held by Boston residents and the remaining jobs are held by commuters from surrounding communities.

Boston resident workers tend to have lower incomes than non-resident commuters - the median annual income for residents who work in the city is \$36,000, whereas the median non-resident makes \$56,000.<sup>16</sup> Some of this difference can be explained by lower average levels of educational attainment. Boston resident workers are also more likely to be Black or Hispanic, female, younger, foreign born, lacking English proficiency or working part-time. In all these cases, the larger groups in the Boston resident population also have lower earnings on average both locally and nationally.

However, not all Boston resident workers work in Boston - a substantial number commute to jobs in surrounding communities. The map in Figure 8 shows where Boston residents work.

## Boston's Resident Labor Force: Commute Profile

Places of work for Boston residents:<sup>17</sup>

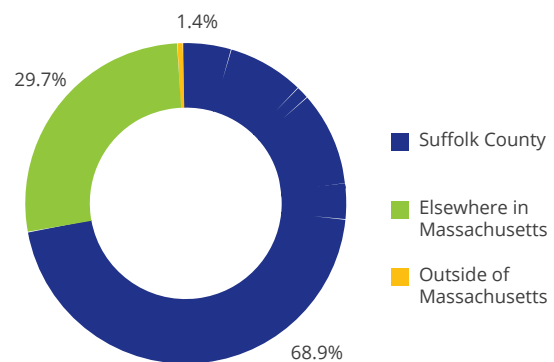
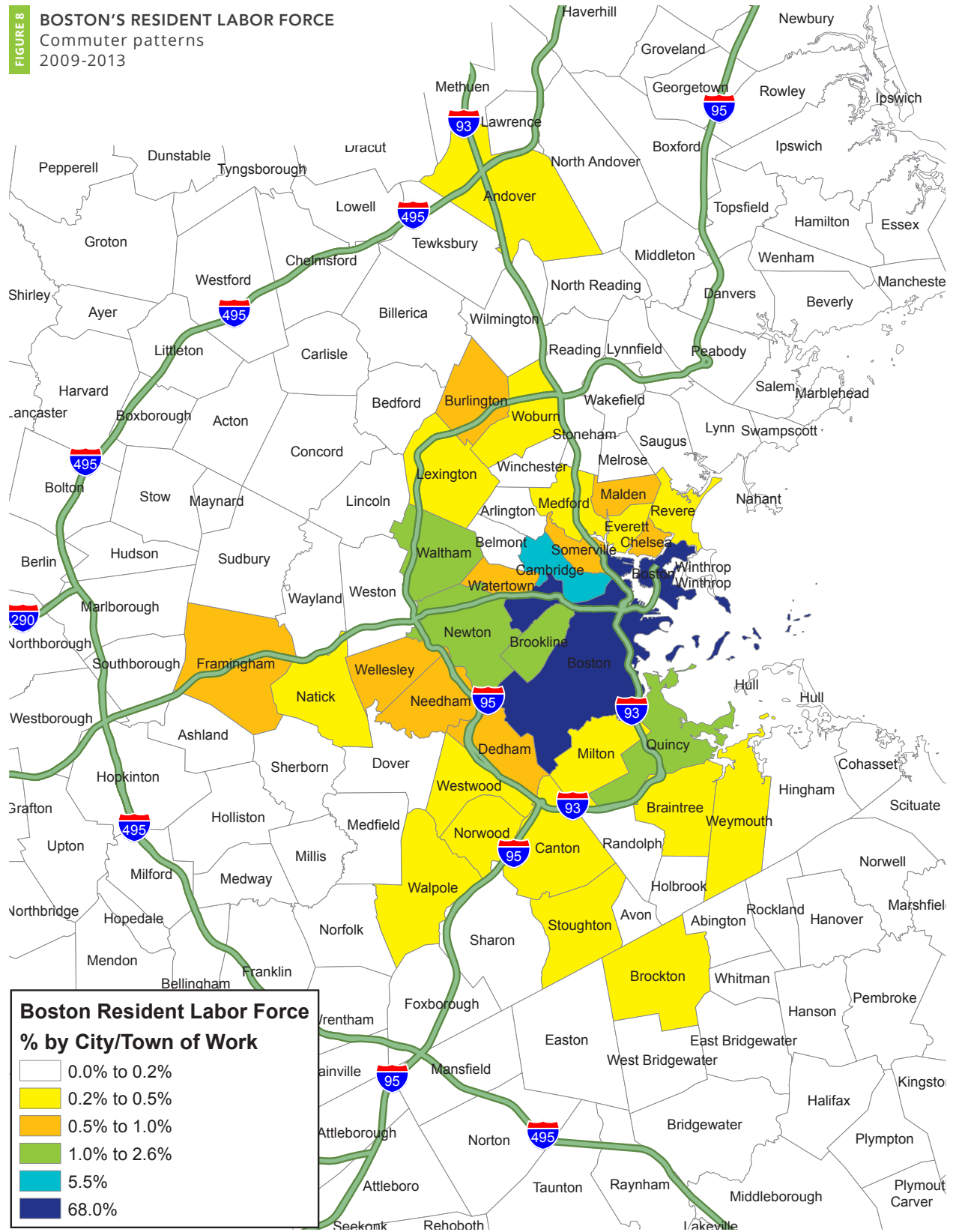


FIGURE 8

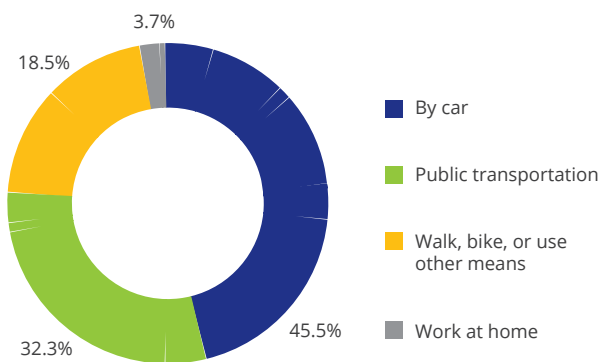
### BOSTON'S RESIDENT LABOR FORCE Commuter patterns 2009-2013



Sources: U.S. Census Bureau, 2009-2013 American Community Survey Commuting Flows, BRA Research Division Analysis



Commuter modes for Boston residents:



Commuter times for Boston residents:<sup>18</sup>

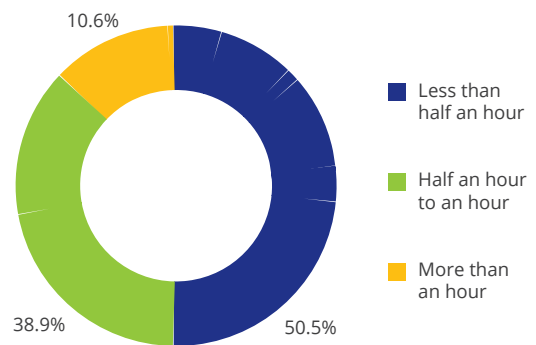
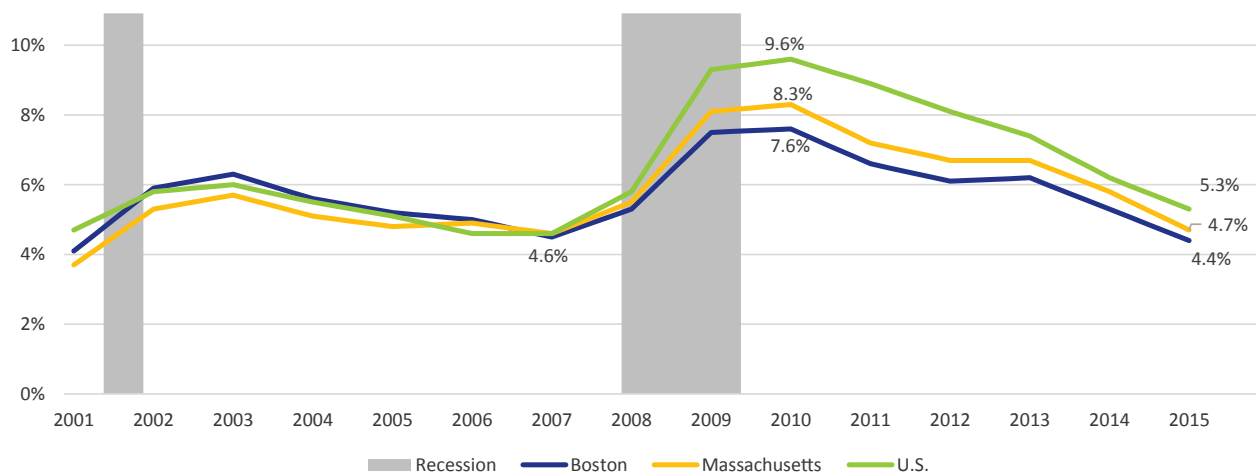


FIGURE 9

**ANNUAL UNEMPLOYMENT RATES**  
Percent of civilian labor force that is unemployed  
2001 - 2015



Sources: U.S. Bureau of Labor Statistics (BLS), Local Area Unemployment Statistics (LAUS), BRA Research Division Analysis

## Boston’s Resident Labor Force: Education

Boston has a highly educated resident labor force - 48.7 percent have a Bachelor’s degree or higher and 20.3 percent have an advanced degree.<sup>19</sup> However, educational credentials are not universally accessible: of the resident labor force that holds a Bachelor’s degree or higher, 81 percent are native born and 74 percent are non-Hispanic Whites.<sup>20</sup> Additionally, 9.3 percent of the resident labor force lacks a high school education.<sup>21</sup>

## Boston’s Resident Labor Force: Age

Boston has a large working age population - approximately 75 percent of Boston’s population is between the ages of 16 and 64, compared to 67 percent of the Massachusetts population<sup>22</sup> and 65 percent of the national population.<sup>23</sup> Of Boston residents aged 16 to 64 who are not enrolled in school, the labor force participation rate is 81 percent.<sup>24</sup> Labor force participation among Boston residents is highest between the ages of 26 and 40, with labor force participation rates of 85-90 percent. Labor force participation among 66 to 70 year olds is 32.4 percent and for those age 71 and older, it is only 7.4 percent. The first Baby Boomers will reach 70 in 2016, raising na-

tional questions about the impact on the labor force and society as this large demographic cohort retires. However, this is less of an issue in Boston than at the national level. Baby Boomers (born 1946-1964) make up 18.4 percent of Boston’s population and 20 percent of the city’s resident labor force,<sup>25</sup> while they make up 24.8 percent of the Massachusetts population and 31.4 percent of the state labor force, and 23.6 percent of the U.S. population and 29.6 percent of the national labor force.<sup>26</sup>

## Boston’s Resident Labor Force: Unemployment

The strong job growth in Boston in recent years has driven down the resident unemployment rate.<sup>27</sup> The unemployment rate has continued to fall as the economy recovers from the recent recession. The annual unemployment rate for Boston’s resident labor force in 2015 was 4.4 percent, the lowest annual unemployment rate since 2001.<sup>28</sup> The most recent monthly unemployment data showed an unemployment rate of 3.9 percent for March 2016.<sup>29</sup> Figure 9 shows that Boston’s unemployment rate has followed a trend similar to that of Massachusetts and the U.S., but remained below the statewide and national rates since 2007.





# Real Estate Market

The real estate market in Boston continues to show signs of positive growth. Building permits in FY2015 generated \$51.7 million in revenues, an increase of 29 percent over 2014. Total building permit revenues in FY2015, net inflation, exceeded revenues of any one year going back to 1994.

FY2015 is a landmark year for permits issued, coinciding with the high level of ongoing construction activity in the city. Building permits in FY2015 represented total construction activity of an estimated \$6.1 billion, compared with an estimate of \$4.7 billion for FY2014.<sup>30</sup> According to the Boston Resident Job Policy database, there were over 733,600 construction man hours worked in the first quarter of 2016 on large development projects, an increase of 20,000 over first quarter 2015 and 154,600 over first quarter 2014. 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.

## Commercial Real Estate Market

Boston's commercial real estate market is continuing to show strong growth. Factors influencing commercial development include growth in high tech sectors, high

rents, low interest rates, low unemployment rates, and population growth. In the last year, commercial vacancies declined from 11 percent to 8.9 percent at the end of 2015, corresponding with a rise in rental rates and despite an increase in office space.<sup>31</sup> Boston absorbed 2.1 million square feet of commercial space in 2015.<sup>32</sup> With large firms such as Converse and GE moving to Boston, real estate analysts at CBRE suggest that "an ever-tightening market"<sup>33</sup> may be the limiting factor in the commercial real estate market if supply cannot keep pace with growing demand.

Boston's commercial office space grew by 1.3 percent since 2014, reaching 63.9 million square feet at the end of 2015.<sup>34</sup> The largest supply of commercial office space is in the Financial District (33.8 million square feet), but the Fenway/Kenmore area has the fastest growing supply of commercial office space, increasing 13.1 percent from 2014 to 2015. Citywide, the median quoted rent was \$53.23 per square foot. The neigh-

borhood with the highest office quoted rate in the fourth quarter of 2015 was Back Bay at \$60.26 per square foot.

**Major commercial completions in 2015:**

- The new 214,000 square foot Converse world headquarters on Boston’s Lovejoy Wharf is located at 160 North Washington Street.
- In October 2015, PricewaterhouseCoopers (“PwC”) moved from the Financial District in Boston into its new location at 101 Seaport Boulevard in the South Boston Waterfront’s Innovation District. Construction on the 17-story 440,000 square foot office building in Seaport Square began in 2013.
- A 17-story mixed use office building is under construction in the Back Bay at 888 Boylston Street. 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 will be the fourth office building in the Prudential complex.
- The oval-shaped 121 Seaport Boulevard tower design will maximize views of Boston Harbor. Ground-

floor retail will complement office spaces in the remainder of the building.

The industrial and retail markets also grew in 2015. By year end Boston had a total of 17.2 million square feet of industrial space with a vacancy rate of 6 percent. The average asking rent for industrial space was \$11.11 per square foot, up 15 percent in 2015.<sup>35</sup> The average asking rent for flex space was \$17.44 per square foot, up 22 percent in 2015. In 2015 fourth quarter, Boston had 21.5 million square feet of retail space with a vacancy rate of 2.6 percent.<sup>36</sup> Retail rents were strong, particularly in the Downtown core and immediate surrounding areas. Quoted retail rental rates were \$24.20 per square foot for 2015. Major retail developments in 2015 centered on grocery stores. The Boston Public Market, which features over 38 vendors and locally sourced food, opened in 2015 on Hanover Street. Three supermarkets also opened in 2015 including the Whole Foods Market in the South End, the expanded Tropical Foods market in Roxbury, and the Roche Brothers in Downtown Crossing.

**TABLE 2 BOSTON OFFICE MARKET**  
Inventory and rents  
FOURTH QUARTER 2015

MARKET	INVENTORY SQUARE FOOT	ANNUAL ABSORPTION	VACANCY	AVERAGE ASKING RENT*
Back Bay	12,893,940	22,787	11.0%	\$60.26
Charlestown	2,843,898	175,229	5.8%	\$37.01
Financial District	33,817,226	1,324,457	8.8%	\$56.02
North Station	2,065,004	183,045	4.3%	\$42.54
Seaport District	8,033,191	382,490	7.3%	\$49.83
South Station	1,184,017	-6,870	7.4%	\$41.02
Crosstown	1,025,000	-9,150	5.2%	*
Fenway/Kenmore	2,064,826	40,471	14.5%	*
<b>TOTAL</b>	<b>63,927,102</b>	<b>2,112,459</b>	<b>8.9%</b>	<b>\$53.23</b>

\*Average asking rent per square foot was reported by Jones Lang LaSalle and did not include Crosstown or Fenway/Kenmore data.  
Sources: Colliers International Market Snapshot Fourth Quarter 2015

Hotel room supply for the city increased in 2015 to 19,065 units from 18,658 in 2014. In 2015, three hotels broke ground, including the Four Seasons at One Dalton Street near the Christian Science Plaza and the two D Street hotels in South Boston. The two D Street hotels, the Aloft and Element, opened in February 2016, adding approximately 500 rooms across from the Boston Convention and Exhibition Center. The Envoy and the Four Seasons hotels opened in 2015, and the Godfrey hotel on Washington Street in Downtown Crossing opened in February 2016.

In 2015, the BRA approved 11 projects that include new office space, for a total of over 1.1 million new square feet of office space. The approved office developments will be mixed-use, with six including residential space. The new office developments will be located across the city: three in South Boston, two in Downtown, two in Jamaica Plain, and one each in Back Bay, Chinatown, Dorchester and the South End. In addition, 179,000 square feet of institutional development was approved citywide, most of which were educational developments or expansion.

## Residential Real Estate Market

The residential market is strong with increasing sales volume and prices and increasing rents for many tenants. The rise in prices corresponds with a decline in vacancy rates to 2.6 percent for rental units and 0.8 percent for owned units<sup>37</sup> despite new residential construction.

The American Community Survey shows the median gross monthly rent (for existing renters rather than advertised rents) was \$1,352 in 2014, up from \$1,263 in 2013.<sup>38</sup> 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 2015 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 \$2,395 per month between the third quarter of 2014 and the second quarter of 2015.<sup>39</sup> The citywide median advertised

rents in this sample fell slightly, but the lower priced neighborhoods of Roxbury, Hyde Park, and Dorchester saw large percentage increases.

The fourth quarter 2015 median sales price, adjusted for inflation, for a single-family home in Boston increased by 3.4 percent from the fourth quarter of 2014. For the same period, median condominium prices climbed 23 percent to \$584,500.<sup>40</sup> The total number of residential sales from 2014 to 2015 increased by 17 percent (from 7,231 to 8,463). This reflected strong sales volume across all property types. The sales volume of single-family homes increased 17.6 percent. Sales of condominiums increased 17.1 percent, and sales of multi-family non-condominium properties increased 16.3 percent between 2014 and 2015.<sup>41</sup>

According to DND's "Housing a Changing City 2030, Year One Report" Boston issued 262 residential permits in 2015 for 3,807 new or converted residential units.<sup>42</sup> This represents a 26 percent increase over units permitted in 2014. In 2015, the BRA Board approved 3.1 million square feet of new housing, for a total of 3,380 potential new housing units across the city. Of these units, 804 will be affordable units. Many of the largest projects by number of units were approved for East Boston, including East Pier Buildings 5 and 6 (557 units), 6-26 New Street (259 units), and Clippership Wharf (492 units).

## Construction Material Prices

Both global and national material prices demonstrate recent price fluctuations, but it is hard to draw clear conclusions for Boston. Material costs are only a portion of total development costs and a more robust analysis would need to incorporate these material cost trend data with labor costs, land prices, and other elements of total project cost. Although it is difficult to determine the precise impact, construction material prices will influence overall construction costs in Boston, and thus shape future development of the city.

According to the World Bank, overall global commodity prices declined in 2015 due to abundant supplies, weaker economic growth, and strong U.S. currency.<sup>43</sup>



Global energy prices declined including crude oil, which saw average imported prices dropping by 48.3 percent between 2014 and 2015.<sup>44</sup> Crude prices in January 2016 reached an 11-year low when prices dipped below \$30 per barrel, and the U.S. average for industrial electricity prices for 2015 declined by 2.8 percent.<sup>45</sup> Commodities with high energy requirements, like iron and steel, saw declines in pricing due to lower energy costs and a decline in global demand.

#### **Iron and Steel:**

- In 2015, the iron and steel price index decreased 15.8 percent and hit its lowest point in the past five years.<sup>46</sup>
- According to United States Steel Corporation, 2014 prices ranged between \$722 and \$1,538 a ton depending upon the type of steel product.<sup>47</sup>
- Global iron ore prices are expected to grow between 1.1 percent and 1.5 percent per year according to the World Bank.<sup>48</sup>

#### **Cement:**

- The cement price index for 2015 increased by 6.7 percent in 2015, and has seen annual growth at or

above three percent per year since 2012.<sup>49</sup>

- MassDOT's March 2016 price adjustment table shows the base value for Portland cement as \$116 per ton. (+/- 5 percent)
- Roughly 10 percent of concrete production costs are energy; however, concrete indices are moving in the opposite direction of energy costs.

#### **Wood:**

- The lumber and wood price index fluctuated throughout the 2000s, and grew at an average annual rate of 2.9 percent since 2010, but declined by one percent in 2015.<sup>50</sup>
- Prices hovered in the mid four dollar range per sheet of plywood, but increased in the first quarter of 2016, with prices ending at \$4.84 per sheet in March 2016 (World Bank).<sup>51</sup>
- Global timber prices are expected to grow between 2.5 percent and 3.6 percent per year according to the World Bank.<sup>52</sup>



# Forecast: Looking Forward

The global outlook suggests positive growth and continued recovery in 2016 with growth between 3.2 percent<sup>53</sup> and 3.4 percent.<sup>54</sup> However, in recent months these forecasts have been revised slightly downward based on economic conditions and uncertainty.

Analysts attribute this uncertainty to a gradual tightening in monetary policy in the United States and several other major advanced economies.<sup>55</sup> Oil prices fell by 47 percent in 2015 and are expected to decline, on an annual average, by another 27 percent in 2016.<sup>56</sup> In addition, all main commodity price indices are expected to fall in 2016 due to persistently large supplies and slowing demand in emerging market economies.<sup>57</sup>

Nationally, real GDP for 2015 grew at an annual rate of 2.4 percent,<sup>58</sup> and unemployment dropped from 6.2 percent in 2014 to 5.3 percent in 2015. In March 2016, the Federal Reserve's Federal Open Market Committee (FOMC) announced it will maintain the current target range of one quarter to one half percent for the federal funds rate. Looking ahead, analysis from the Congressional Budget Office (CBO) suggests that 2016 and 2017 will

have stronger economic growth than in 2015, followed by a more moderate growth of two percent in the following years. The CBO expects 2.7 percent growth in 2016 and 2.5 percent in 2017, citing consumer spending and new home growth as major contributing factors, despite the December 2015 increase in interest rates.<sup>59</sup> Regardless of positive economic growth, the CBO expects the 2016 federal deficit will increase by 2.9 percent of GDP, the first increase since 2009.<sup>60</sup> On the labor side, the CBO predicts that labor force participation will increase, but is doubtful that economic conditions will improve to the point that labor participation will increase to full operating potential.<sup>61</sup>

For Massachusetts, the New England Economic Partnership (NEEP) expects job growth around 1.8 percent in 2016, but by 2018 positive job growth will slow to 0.7 per-

cent.<sup>62</sup> The April 2016 edition of the MassBenchmarks Bulletin cautions that the low unemployment rate in Massachusetts could be a sign that the labor market is tightening to the point where employers are having difficulty filling positions and holding onto their current workers.<sup>63</sup> Lastly, the NEEP forecast suggests that statewide housing prices will appreciate by three percent per year.<sup>64</sup>

The Massachusetts Executive Office of Labor and Workforce Development (EOLWD) projects that Boston's payroll employment will reach 643,779 jobs by 2022. This represents 1.2 percent annual job growth over their projection period, which began in 2012. Starting from that year, they foresaw continued growth in Boston's core sectors of health care and social assistance (1.7 percent annual growth) and professional and technical services (1.5 percent), a robust recovery in construction (2.4 percent), and steep increases in service sectors such as arts, entertainment and recreation (1.9 percent) and other services (2.1 percent).

With two years of data already recorded, Boston is running ahead of schedule. Between 2012 and 2014, the city added close to 10,000 payroll jobs in excess of the 1.2 percent projected trend growth. Boston's building and high tech booms have pushed construction and professional and technical services employment growth far above projected trend growth, with arts, entertainment and recreation and other services also growing in excess of five percent per year.

While the EOLWD projections focus on payroll employment, non-payroll employment is likely to grow even more rapidly. Since 2001, the non-payroll share of employment has trended upwards, rising from 13.1 percent to 17.1 percent of total jobs in Boston in 2014. Contingent working arrangements, such as temp work, freelancing and working through online intermediaries such as Uber, have been on the rise nationally.<sup>65</sup> If Boston meets EOLWD's payroll projections and the ratio of

non-payroll employment continues to grow at the same rate as it has over the last decade, Boston could see as many as 150,000 non-payroll workers by 2022, pushing total employment close to 800,000.

The cyclical nature of the economy suggests that the extraordinary growth rates of the past two years will not persist all the way into the next decade. Nonetheless, Boston is well-positioned to continue its strong job growth. A highly educated workforce continues to be one of the strongest correlates of metropolitan growth,<sup>66</sup> and the Boston area ranks fourth in the share of the population with a bachelor's degree among large metropolitan areas. Additionally, recent job growth nationwide has been occurring in dense urban core areas rather than more suburban areas.<sup>67</sup>

A potential drag on employment growth in the medium term could be the aging of the labor force. Available projections<sup>68</sup> suggest that Boston is poised to experience strong population growth over the next decade, but the retirement of the baby boom cohort will mean that a smaller share of the population, both in the city and the metro area, is active in the labor force. Achieving these projected job growth totals will require Boston to accommodate increased commuter inflows, and to employ a greater share of city residents within the city's borders.





## End Notes

- <sup>1</sup> Colliers International Market Snapshot Fourth Quarter 2015
- <sup>2</sup> City of Boston, Department of Neighborhood Development (DND) using Banker & Tradesman data, January 2016
- <sup>3</sup> City of Boston, Auditing Department and City of Boston Annual Reports, BRA Research Division Analysis
- <sup>4</sup> New England Economic Partnership, “New England Economic Outlook, Fall 2015”, October 2015
- <sup>5</sup> UMASS Donahue Institute, “MassBenchmarks”, April 2016
- <sup>6</sup> Gross City Product (GCP) is an aggregate measure of economic activity, analogous to national gross domestic product (GDP).
- <sup>7</sup> BEA, EOLWD, BRA Research Division Analysis
- <sup>8</sup> The BRA 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 BRA 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.
- <sup>9</sup> City of Boston Comprehensive Annual Fiscal Report, FY2015
- <sup>10</sup> High Tech jobs represent jobs in industries with a high proportion of their workforce in science, technology, engineering and math (STEM) occupations, following a classification developed by the BLS. See BRA Research Division “High Tech Industries in Boston” 2015.
- <sup>11</sup> Boston’s Living Wage Ordinance requires most firms receiving city contracts or loans to pay a Living Wage of \$14.11 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 \$14.11 is in effect through June 30, 2016.
- <sup>12</sup> EOLWD, ES-202, BRA Research Division Analysis
- <sup>13</sup> City of Boston, Department of Neighborhood Development using Banker & Tradesman data, January 2016
- <sup>14</sup> EOLWD, ES-202, BRA Research Division Analysis
- <sup>15</sup> EOLWD, Occupational Employment and Wage Statistics, 2014
- <sup>16</sup> U.S. Census Bureau, 2009-2013 American Community Survey
- <sup>17</sup> Workers Age 16 and Over Who Live in Boston, U.S. Census Bureau, 2010-2014 American Community Survey, BRA Research Division Analysis
- <sup>18</sup> Workers Age 16 and Over Who Live in Boston and Do Not Work At Home, U.S. Census Bureau, 2010-2014 American Community Survey
- <sup>19</sup> U.S. Census Bureau, 2014 American Community Survey, Public Use Microdata Sample
- <sup>20</sup> U.S. Census Bureau, 2009-2013 American Community Survey
- <sup>21</sup> U.S. Census Bureau, 2014 American Community Survey, Public Use Microdata Sample
- <sup>22</sup> U.S. Census Bureau, 2014 American Community Survey, Public Use Microdata Sample
- <sup>23</sup> U.S. Census Bureau, 2014 American Community Survey
- <sup>24</sup> U.S. Census Bureau, 2014 American Community Survey, Public Use Microdata Sample
- <sup>25</sup> U.S. Census Bureau, 2014 American Community Survey, Public Use Microdata Sample
- <sup>26</sup> U.S. Census Bureau, 2014 American Community Survey, IPUMUnemployment rates are always in reference to the resident population, and exclude any commuter segments of the labor force.
- <sup>27</sup> BLS, LAUS
- <sup>28</sup> EOLWD
- <sup>29</sup> 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.
- <sup>30</sup> Colliers International, “Research and Forecast Report Greater Boston Market Viewpoint”, Q4 2015
- <sup>31</sup> Colliers International, “Market Snapshot Fourth Quarter 2015”. Absorption is the net change in the occupied square footage.
- <sup>32</sup> CBRE, “New England 2016 Market Outlook”, 2016
- <sup>33</sup> Colliers International, “Market Snapshot”, 2015
- <sup>34</sup> “Net-Net-Net”, or net property tax, insurance, and maintenance
- <sup>35</sup> CoStar Property, “Total Market Statistics”, 4th Quarter 2015



- <sup>36</sup> Department of Neighborhood Development
- <sup>37</sup> U.S. Census Bureau, 2013 and 2014 American Community Surveys
- <sup>38</sup> City of Boston, DND, using Multiple Listing Service (MLS), January 2016
- <sup>39</sup> City of Boston, DND using Banker & Tradesman data, 2016
- <sup>40</sup> City of Boston, DND using Banker & Tradesman data, 2016
- <sup>41</sup> DND, "Housing a Changing City Boston 2030: One Year Report 2015" December 2015
- <sup>42</sup> World Bank, "Commodity Markets Outlook January 2016" World Bank Group
- <sup>43</sup> U.S. Energy Information Administration "Short-Term Energy Outlook", 2016
- <sup>44</sup> U.S. Energy Information Administration, "Short-term Energy Outlook", 2016
- <sup>45</sup> BLS PPI, "Metals and metal products semifinished steel mill products" WPU101702
- <sup>46</sup> United States Steel Corporation "Historical Segment Financial and Operational Data" March 2015
- <sup>47</sup> World Bank, "Commodity Markets Outlook January 2016" World Bank Group
- <sup>48</sup> BLS PPI, "Nonmetallic mineral products cement" WPU1322
- <sup>49</sup> BLS PPI, "Lumber and Wood Products" WPU08
- <sup>50</sup> Plywood (Africa and Southeast Asia). Lauan, 3-ply, extra, 91 cm x 182 cm x 4 mm, wholesale price, spot Tokyo.
- <sup>51</sup> World Bank, "Commodity Markets Outlook January 2016" World Bank Group
- <sup>52</sup> Scotia Bank, "Global Forecast Update" March 2016
- <sup>53</sup> International Monetary Fund, "World Economic Outlook" January 2016
- <sup>54</sup> Scotia Bank, "Global Forecast Update" March 2016
- <sup>55</sup> World Bank, Commodity Markets Outlook," January 2016
- <sup>56</sup> World Bank, Commodity Markets Outlook," January 2016
- <sup>57</sup> BEA, News Release: Gross Domestic Product: Fourth Quarter 2015 Second Estimate, February 26, 2016
- <sup>58</sup> CBO, "The Budget and Economic Outlook 2016 to 2026", 2016
- <sup>59</sup> CBO, "The Budget and Economic Outlook 2016 to 2026", 2016
- <sup>60</sup> Congressional Budget Office, "Summary of The Budget and Economic Outlook: 2016 to 2026" January, 2016
- <sup>61</sup> New England Economic Partnership, "New England Economic Outlook, Fall 2015" October 2015
- <sup>62</sup> UMASS Donahue Institute, "MassBenchmarks", April 2016
- <sup>63</sup> New England Economic Partnership, "New England Economic Outlook, Fall 2015", October 2015
- <sup>64</sup> Lawrence Katz and Alan Krueger, "The Rise and Nature of Alternative Work Arrangements in the United States, 1995-2015." March 2016.
- <sup>65</sup> Giles Duranton and Diego Puga, "The growth of cities". In Steven N. Durlauf and Philippe Aghion, (eds.) Handbook of Economic Growth, Vol. 2A, 2014. Amsterdam: North-Holland, 781-853.
- <sup>66</sup> Joe Cortright, "Surging City Center Jobs." Published by City Observatory, February 2015
- <sup>67</sup> See projections from the Metropolitan Area Planning Council (MAPC): <http://www.mapc.org/projections> and the UMass Donahue Institute: <http://pep.donahue-institute.org>

