



Mass Benchmarks

A JOURNAL OF THE MASSACHUSETTS ECONOMY

Economic Strength Girds Massachusetts
in a World of Economic Uncertainty

Beyond “Workforce Housing”:
The Past, Present and Future Needs of
Metro Boston’s Working Households

Rebuilding Renewal: State Investment
in Gateway Cities and a Work Plan for
Delivering Transformative Development

State and Local Capital Spending in
New England: Why Is It Lower
than in Other Places?

*A publication of the University of Massachusetts in
cooperation with the Federal Reserve Bank of Boston*



MassBenchmarks, published by the University of Massachusetts in cooperation with the Federal Reserve Bank of Boston, provides timely information about the Massachusetts economy, including reports, commentary, and key data about the state's regions and industry sectors that comprise them.

The editors invite queries and articles on current topics involving the Massachusetts economy, regional economic development, and key growth industries from researchers, academic or professional economists, and others. A topical outline and brief biography of the author should be sent to info@donahue.umassp.edu.

A complete list of past issues, latest news, updates, and additional research on the Massachusetts economy can be found at www.massbenchmarks.org.



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FROM THE PRESIDENT



This issue of *MassBenchmarks* arrives in the wake of a historic national election and during a period of considerable economic and political uncertainty both here in Massachusetts, across the nation, and around the world. It reminds us that the Commonwealth has much work to do and is sorely in need of critical investments in our people, our physical infrastructure, and our urban communities.

As always, the issue opens with an assessment of the current conditions in the state economy, this time co-authored by Northeastern University Professor Alan Clayton-Matthews and UMass Amherst Professor Robert Nakosteen. They carefully review current data and make it clear that the overall economic performance of our Commonwealth continues to be relatively strong, while there are some challenges to continued growth.

The issue's first feature article takes an in-depth look at one of the most significant policy challenges facing our state — the need for increased housing production, especially of units that are affordable to working families. Authored by Metropolitan Area Planning Commission (MAPC) analysts Tim Reardon, Meghna Hari, and Jessie Partridge, this eye-opening analysis reminds us of the daunting challenges we face when it comes to producing enough housing and well-paying jobs to support our growing economy during a period of major demographic transition.

The second feature article takes a hard look at critical state investments in the small to mid-size urban communities of Massachusetts, now commonly referred to as Gateway Cities. In this important piece, consultant and UMass Donahue Institute alumnus Dan Hodge and MassInc's Benjamin Forman review the recent history of state capital investments in urban Massachusetts. They argue for a more strategic approach to these investments.

The issue concludes with a sobering assessment of how state capital spending in the New England region lags that of states in other areas of the country. Excerpted from a recent report published by the New England Public Policy Center (NEPPC) at the Federal Reserve Bank of Boston, and authored by Michigan State Professor Ronald Fisher and the NEPPC's Riley Sullivan, it documents that we are not keeping pace with the rest of the nation when it comes to investing in our physical infrastructure and public facilities.

The insights contained in this issue of *MassBenchmarks* provide critical information that should help inform the state's political, business and labor leaders as they work together to craft effective solutions to the many challenges facing our Commonwealth. This will require some difficult decisions. As the *MassBenchmarks* Board of Editors noted in their latest assessment of state economic conditions, doing so will require taking the steps necessary to increase the level of state investment "to meet urgent unmet educational needs." But make no mistake, as they conclude, "Continuing to ensure that Massachusetts has the skilled labor and infrastructure demanded by the contemporary global economy, wise investments in the capacity of our people and institutions represent genuine opportunities to position the Commonwealth for continued success and prosperity for the foreseeable future."

A handwritten signature in black ink that reads "Martin T. Meehan". The signature is written in a cursive, flowing style.

Martin T. Meehan, President
University of Massachusetts

NOTES FROM THE BOARD

The State Economy continues its solid performance. Leading regional economists recommend more state tax revenue and greater investment in education and infrastructure.

The Massachusetts economy continues to perform well. State employment is growing faster than at the national level. The Commonwealth's unemployment rate is at the lowest level seen since the dot-com boom at the turn of the century. Except for an apparently weak "bonus season," state wage and salary withholding tax receipts suggest a steady expansion consistent with the current pace of employment growth. Even areas of the state that historically lag behind the economic progress of metropolitan Boston are exhibiting solid improvement, even as a stubborn gap between their and the state's performance persists. While consumer spending growth has slowed in recent months, that slowdown may be temporary as it appears to reflect a return to normal spending on automobiles after last year's record pace and the weak performance of the stock market last year.

Risks to the Commonwealth's economic outlook continue to include sluggish national and global growth, slowing productivity growth, and the changing demographic structure of the state population, as relatively few young people enter and a large group of older workers leave (or are poised to leave) the workforce. While there is nothing on the horizon to suggest that these factors will slow or stall the Massachusetts economy in the near term, they certainly bear watching as they each weigh heavily on the state's long-run economic growth prospects.

A considerable portion of the Board's meeting was dedicated to a discussion of the long-term challenges faced by the state's public sector, and the inability of the state government's current revenue streams to support the level of public investment required to overcome these challenges. This conversation was in part inspired by House Speaker Robert DeLeo's recent request for the views and recommendations of economists on the question of whether the Commonwealth's current tax revenues are adequate to support a healthy and competitive state economy.¹ In the Board's ensuing dialogue three major areas of concern emerged: the condition of the Bay State's public infrastructure; the adequacy of funding for pre-kindergarten through 12th grade educational offerings; and the level of investment in public higher education.


Every four years the American Society of Civil Engineers releases a report card depicting the condition of the nation's infrastructure. The latest report (released in 2013) details a number of troubling deficiencies in the state's physical infrastructure. For example, while the percentage of structurally deficient bridges in the state is below the national average (9.5 percent vs. 11.1 percent), the report documents 487 structurally deficient bridges in Massachusetts. The report also estimates that the state will need to invest over \$7 billion in drinking water infrastructure over the next 20 years and over \$4 billion dollars in school facilities. And this is in addition to the substantial capital investment that will be required if the MBTA and other transit systems across the state are going to run reliably and on schedule.

In the area of pre-K through 12th grade education funding, late last year the Foundation Budget Review Commission found that the Chapter 70 funding formula used to distribute state school aid to local school districts is failing to provide for rising local costs associated with special education services, health insurance, and the needs of English language learners (ELL) and low-income student populations.²

Additionally, according to MassBudget, funding for pre-K programs has decreased significantly in inflation-adjusted terms since FY 2009. Research shows that students from low-income families who participate in effective early education programs are 40 percent less likely to require special education services during their K-12 years than similar peers who do not participate; they are also 30 percent more likely to graduate from high school and twice as likely to go to college. Failing to fund these programs adequately is shortsighted and represents a sizable lost opportunity for Bay State families at a time when the state economy needs more skilled workers.

At the same time, funding for public higher education has fallen by 9.7 percent in inflation-adjusted terms since just prior to the recession in 2007. In 2012, Massachusetts ranked 28th in appropriations per full-time student, behind such states as Louisiana, Tennessee, and Alabama, and ranked 48th in the percent of state personal income (0.30%) spent on public higher education. Moreover, Massachusetts falls short on some of the college and career readiness policies that have proven effective in other states. Meaningful enhancements to these programs would require more funding for the Commonwealth's community college system.

In the year 2000, voters passed a ballot initiative that was scheduled to lower the state income tax rate from 5.85 percent to 5.0 percent over several years. While some of the reductions were postponed, the personal income tax rate currently stands at 5.1 percent.³ The state income tax provides roughly half of the revenues that support state government expenditures and these rate reductions represent billions of dollars in lost revenue.⁴ It is clear that reductions in the Commonwealth's revenue generating capacity have stymied efforts to meet pressing educational and infrastructure needs that present ongoing threats to the state economy.

Accordingly, the *MassBenchmarks* Board of Editors strongly recommends that the legislature and governor take steps necessary to increase tax revenues available to meet the state's urgent unmet educational and infrastructure needs. By continuing to ensure that Massachusetts has the skilled labor and infrastructure demanded by the contemporary global economy, wise investments in the capacity of our people and institutions represent genuine opportunities to position the Commonwealth for continued success and prosperity for the foreseeable future. 

This summary, prepared by Executive Editor Robert Nakosteen, reflects the discussion of the members of the Editorial Board of MassBenchmarks at its meeting on September 30, 2016.

Endnotes

- 1.) Source for DeLeo request: <http://commonwealthmagazine.org/politics/deleo-to-consult-economists-on-taxes/>
- 2.) Foundation Budget Commission Report: <http://www.mass.gov/legis/journal/desktop/2015/fbrc.pdf>
- 3.) Current state income tax rate: <http://www.mass.gov/dor/all-taxes/income/>
- 4.) Estimate of revenue losses associated with income tax rate reductions to date: http://www.massbudget.org/report_window.php?loc=tax_cuts_factsheet.html

In Memoriam

Karl Edwin “Chip” Case, a member of *MassBenchmark*'s original Editorial Advisory Board, died on July 15 at age 69 following an illness. For 34 years, Dr. Case was professor of economics at Wellesley College, where he held the Coman and Hepburn Chair in Economics. Dr. Case was a senior fellow at the Joint Center of Housing Studies at Harvard University and a founding partner in Fiserv Case Shiller Weiss Inc., the real estate research firm that created the S&P Case Shiller Index of Home Prices. His research, in the areas of real estate, housing, and public finance, yielded numerous articles and studies on boom and bust real estate cycles. The author of five books, he earned his Ph.D. in Economics from Harvard University in 1977 and his B.A. from Miami University in 1968.

THE STATE OF THE STATE ECONOMY
ECONOMIC CURRENTS



Economic Strength Girds Massachusetts in a World of Economic Uncertainty

ALAN CLAYTON-MATTHEWS AND ROBERT NAKOSTEEN

CONTINUED MODERATE, STEADY GROWTH IN MASSACHUSETTS INCLUDES FURTHER GAINS IN BOTH STATE GDP AND EMPLOYMENT, WITH UNEMPLOYMENT REMAINING LOW BY HISTORICAL STANDARDS. AT THE SAME TIME, THE STATE ECONOMY REMAINS EXPOSED TO GLOBAL RISKS, INCLUDING UNCERTAINTY OVER LONG-TERM FINANCIAL CONSEQUENCES OF THE BREXIT, CHINA'S TRANSFORMATION TO A CONSUMER-ORIENTED ECONOMY, AND BROAD-SPECTRUM DECLINING COMMODITY PRICES, WHICH MAY INFLUENCE ARRANGEMENTS WITH EXPORTERS, INCLUDING OUR LARGEST TRADING PARTNER, CANADA.

INTRODUCTION

In the last issue of *MassBenchmarks*, we described a state economy on a durable trajectory of growth. At the same time, we warned of national and global risks that at some point might have a negative impact on the Commonwealth. At the moment, this message still seems relevant, perhaps even more so. The state's economy continues to grow at a moderate but steady pace, employment has grown over the year, and unemployment remains quite low by historical standards. The bad news is that the global economy continues to pose risks that might eventually have an impact on the Bay State.

The June 23rd vote in the United Kingdom to leave the European Union has evoked surprise and considerable uncertainty over economic consequences of the departure. The immediate effects were a sharp decline in both the British Pound and the Euro, as well as financial turmoil. The longer-term effects merit detailed discussion. China continues to struggle as it repositions its economy from export- and investment-driven to one that is more consumer oriented. The decline in commodity prices across a broad spectrum has negatively affected commodity exporters, including Canada, the state's principal export partner. And the U.S. presidential election has created uneasiness that may well affect economic decisions. Still, for the time being the Commonwealth's economy is doing well, with threats that loom outside the state remaining potential rather than active.

STATE OF THE STATE ECONOMY

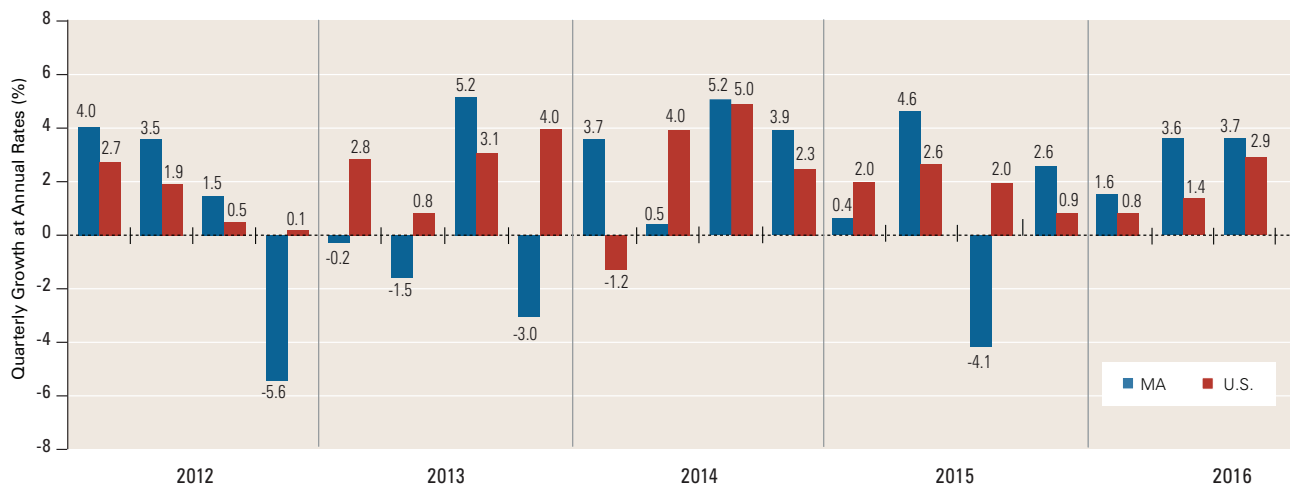
Output, Employment, and Unemployment

As measured by gross domestic product (GDP), the most comprehensive accounting of economic performance, the state continues to grow, with especially strong growth in the most recent quarter. State GDP data are derived from two sources: for quarters up through the first quarter of 2016, from the Bureau of Economic Analysis, which produces state product data for all states; from that point forward, the *MassBenchmarks* Current Economic Index has been our proxy for state product growth. During the third quarter of 2016, the state grew at an annualized rate of 3.7 percent. This compares favorably to annualized national GDP growth of 2.9 percent and continues a pattern of state growth exceeding national growth that has been evident for most (though not all) quarters since 2011.

Employment in the state continues to grow, while the unemployment rate has stabilized at a level not seen since before the recession of 2008. Employment in the state currently exceeds 3.5 million. Employment has grown by over 30,000 since the beginning of the year. Since the end-of-recession turnaround, the state has gained nearly 300,000 jobs.

Perhaps the most dramatic recent positive indicator is the state unemployment rate, which in September fell to 3.6 percent. The last time unemployment was this low historically was in 2001, just at the end of the dot-com heyday. It may be recalled that, at the time, the

**Figure 1. Growth in Real Product
Massachusetts and United States
2012 Q1–2016 Q3**



Source: U.S. data from the U.S. Bureau of Economic Analysis (BEA); Massachusetts data from *MassBenchmarks*; calculations by Alan Clayton-Matthews

state labor market was so tight, and jobs so plentiful, that fast-food restaurants were busing employees from New Hampshire into metropolitan Boston. There are many contrasts between then and now. At this moment in time, the global economy is weak, U.S. economic growth (as measured by GDP) is lackluster, productivity growth has been abysmally slow, and consumer demand has not taken off. Also, labor force growth is constrained by two factors: Women's labor force participation has peaked, and the aging of the labor force is accompanied by more workers aging into low participation-rate age cohorts.

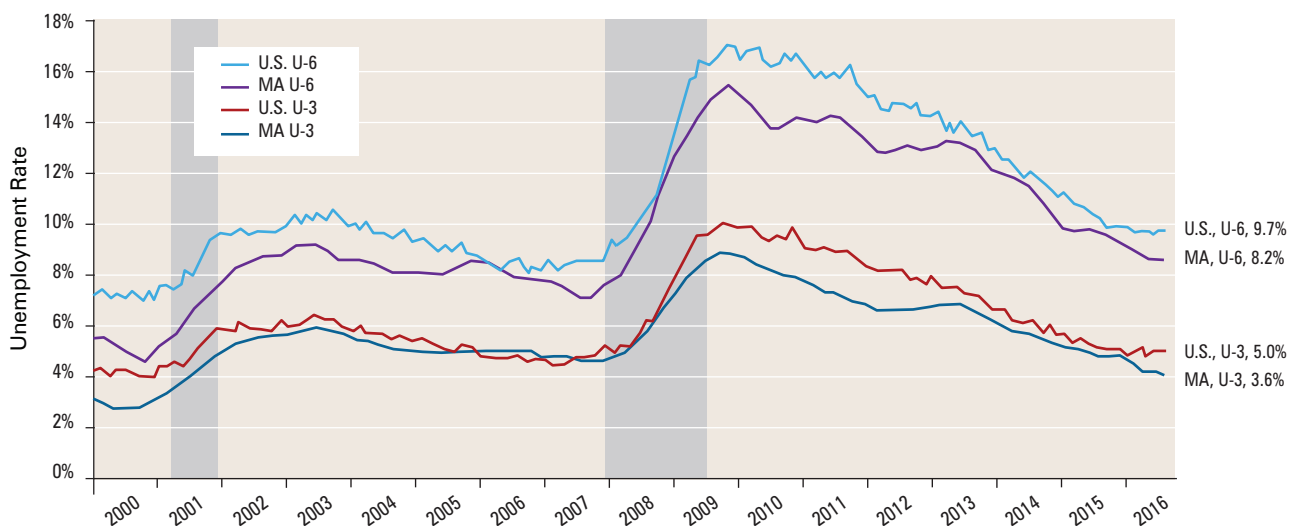
In the "miracle years," we had a booming micro-computer industry with good jobs at good wages, and much stronger labor force growth — and household income growth — because women were entering the labor force at increasing rates. In the dot-com period, we had high productivity, great demand for IT investment by firms, and were not constrained by demographics the way we are now. Baby Boomers at that time were in their peak productivity and earnings years. At the same time, those heydays were followed by busts; but today the risk of recession is relatively low. There is some worry about speculative excesses in commercial real estate and to a

much lesser extent in equities markets. The downside risk today is simply a continuation of slow growth or somewhat slower growth.

Finally, inequality is higher today. Many people feel left out or left behind by the economy. There is increased evidence that economic success has become elusive for many workers. The U-6 unemployment rate, which includes discouraged workers who have left the labor force and part-time workers who would prefer to work full time, has increased since 2001. For example, the U-6 unemployment rate stood at 8.2 percent for the state in September, compared with 9.7 percent for the nation in September, in contrast to a state rate of 6.9 and a U.S. rate of 8.7 in September of 2001.

Another revealing comparison between the present day and the early 2000s is the condition of major cities outside of Boston. While the unemployment rate has dropped in the past few years in the state as a whole, many cities struggle with a lack of jobs and high unemployment. Strikingly, four of the cities we normally report on in this article now have higher unemployment rates than in September 2001: Springfield, Fall River, Pittsfield, and Barnstable.

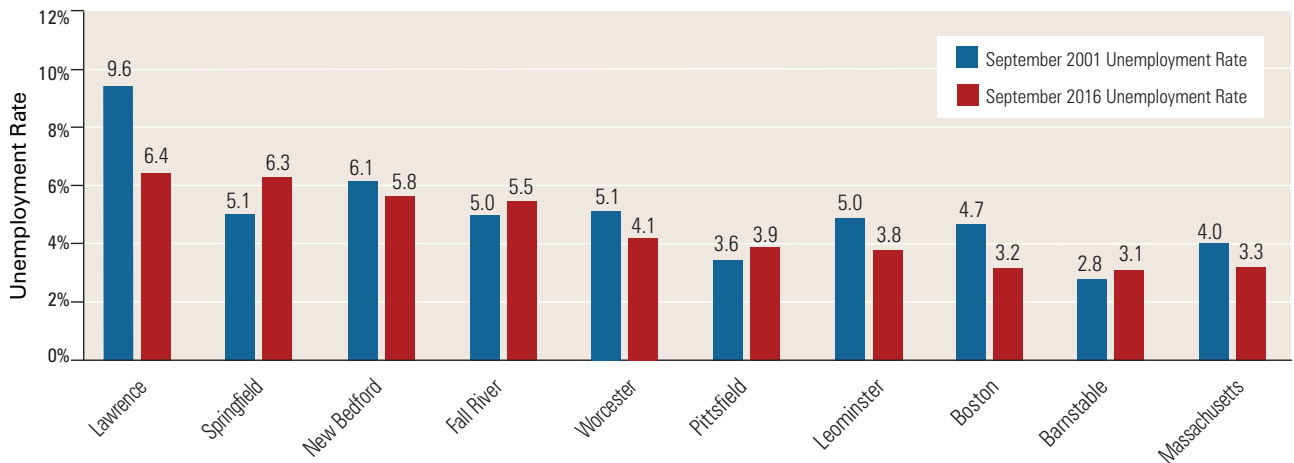
**Figure 2. U-3 and U-6 Unemployment Rates
Massachusetts and the United States
January 2000–September 2016**



Source: The Massachusetts Executive Office of Labor and Workforce Development (EOLWD); Dr. Alan Clayton-Matthews.

Note: Shaded bars indicate periods of recession. Recession dates obtained from the National Bureau of Economic Research (NBER).

Figure 3. Unemployment Rates by City
September 2001 and September 2016
Not seasonally adjusted



Source: Massachusetts Executive Office of Workforce and Labor Development (EOWLD), Labor and Unemployment (LAU) Statistics.

EMPLOYMENT BY SECTOR

Since October of 2009, when state employment turned around from the recession, jobs have grown by 12.2 percent. In percentage terms, Construction led the way, with employment increasing by 40.1 percent through September of 2016. Professional and Business Services, Leisure and Hospitality, and Education and Health Services followed. In terms of the absolute number of jobs, Professional and Business Services, and Education and

Health Services each added nearly 100,000 jobs over the period. Job losses, however, were experienced in the important Information sector as well as in manufacturing, though those losses were relatively small. The tiny Natural Resources and Mining sector (1,100 employees) also lost jobs.

The decline in employment in the Information sector disguises two quite different trends: a plummeting newspaper and periodicals industry, and a booming software

Table 1. Employment in Massachusetts by Industry
Beginning of the Economic Recovery Compared with September 2016
Seasonally adjusted

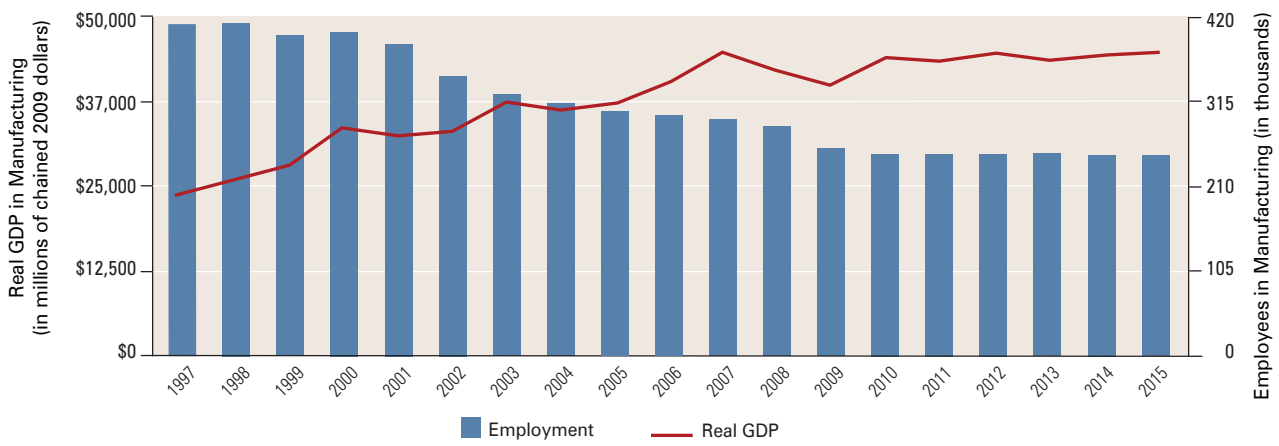
Industry Super Sectors	Employment at Beginning of Recovery (October 2009)	Employment in Most Recent Month (September 2016)	Employment Change	Employment Percentage Change
Natural Resources & Mining	1,300	1,100	-200	-15.4%
Construction	106,700	149,500	42,800	40.1%
Manufacturing	253,300	250,900	-2,400	-0.9%
Trade, Transportation & Utilities	539,300	572,100	32,800	6.1%
Information	86,100	87,000	900	1.0%
Financial Activities	217,200	223,600	6,400	2.9%
Professional & Business Services	452,100	551,900	99,800	22.1%
Education & Health Services	678,900	790,600	111,700	16.5%
Leisure & Hospitality	299,400	363,000	63,600	21.2%
Other Services, Excluding Public Administration	118,500	134,000	15,500	13.1%
Public Administration	437,300	455,500	18,200	4.2%
Total, All Industries	3,190,100	3,579,200	389,100	12.2%

Source: Massachusetts Executive Office of Workforce and Labor Development (EOWLD), Current Employment Statistics (CES-790); Calculations by the authors.

industry. Manufacturing activity is always viewed as a bellwether for state economic performance. The state has long been prominent in high-end manufacturing, and the recent decline in sectoral employment, though small, is a cause for concern. An alternative perspective is the contrast between the time trend for manufacturing employment and the time value of manufacturing output. Figure 4 illustrates the uneven decline in manufacturing

employment over the years accompanied by an uneven increase in manufacturing output. In other words, manufacturing firms in the state are producing more product with fewer people. This trend, by the way, is consistent with national manufacturing data that correlate shrinking employment with growing product. The good news is that manufacturing is becoming ever more efficient. The bad news is that employees lose jobs in the process.

Figure 4. Manufacturing in Massachusetts, Real GDP and Employment 1997–2015



Source: U.S. Bureau of Economic Analysis and U.S. Bureau of Labor Statistics

Migration Update

In the years since the Great Recession, migration to Massachusetts from the rest of the U.S. has declined. Overall net migration to the state, however, has remained positive, thanks to net gains in migrating inflows from outside the U.S. In 2015, the most recent year for which data are available, the state experienced the departure of nearly 22,000 people to other states. This pattern continued a downward trend in net migration to the state that dates from 2010. More than counterbalancing these outflows were net inflows of over 43,000 international immigrants in 2015, continuing an upward trend evident since 2009.

State-to-state total in- and out-migration flows follow two principles: distance and size. The state both sends and receives migrants from states that are close by and/or are large. New York, both large and proximate, sent the largest cohort of migrants to the state from 1999 to the present. Florida received the largest number of Massachusetts out-migrants.

One of the most striking aspects of state migration patterns is the exchange nature of the flows of people. Seven states, out of the state's top ten in- and out-migration partners are among both the most important origin of state migrants and among the most important recipients of state migrants. The inflows and outflows between states largely cancel out in net terms, but not entirely.

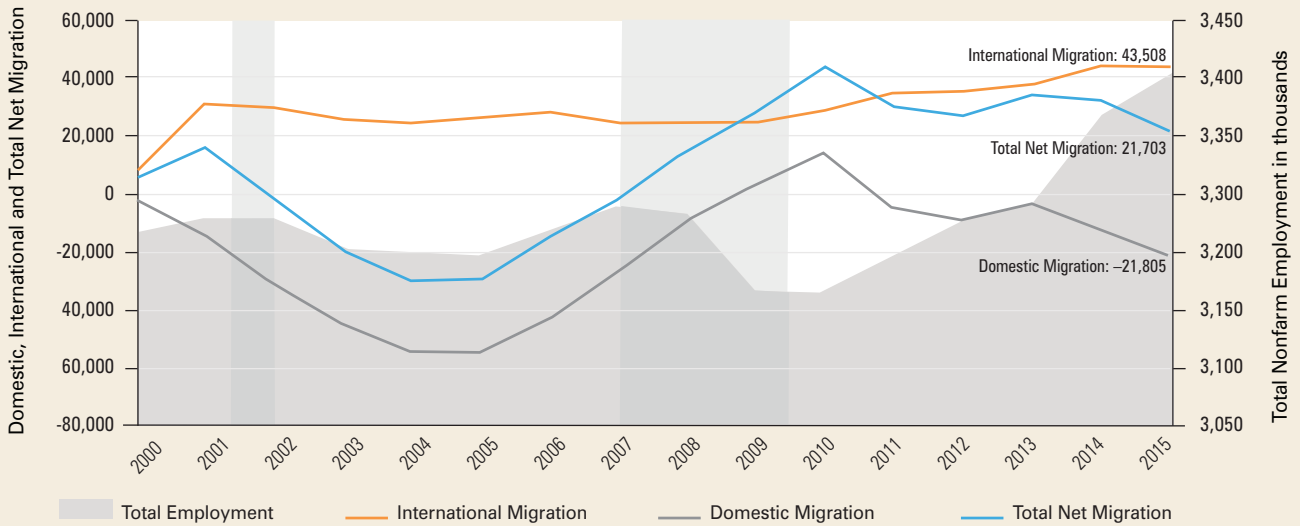
A notable feature of the migration flows by state relates to the age structure of the flows of people moving to and from Florida from Massachusetts. For the 13 years between 2001 and 2015, Florida ranked second in states that sent migrants to Massachusetts, and first in receiving migrants from Massachusetts. The aggregate data conceal the nature of the migration flows to and from Florida.

The bar graph showing outflows reveals the contrasting age structure of migration flows to Florida from Massachusetts and to the U.S. as a whole from Massachusetts. The

age structure of migration from Massachusetts to Florida exhibits a marked trend of older migrants moving to Florida compared with migrants from Massachusetts moving elsewhere. The apparent conclusion supports the obvious intuitive reasoning: Much of the migration to Florida from Massachusetts is not motivated by job seeking, but rather is related to post-retirement flows.

Massachusetts has a slow-growing labor force which may threaten economic growth at some point. This makes migration an important issue for the state. Migrants provide both highly skilled workers for the state's technology sector and are an important source of labor for the hotel, restaurant, and tourism industry in the state, among others.

Trends in Massachusetts Migration and Employment, 2000–2015



Source: U.S. Census Bureau, Population Division Tables ST-2000-7, NST-EST2015-ALLDATA, NST-EST2009-ALLDATA; U.S. Bureau of Labor Statistics, Local Area Unemployment (LAU) Statistics, Annual 2000-2015; calculations by the authors.
 Note: Shaded bars indicate periods of recession. Recession dates obtained from the National Bureau of Economic Research (NBER).

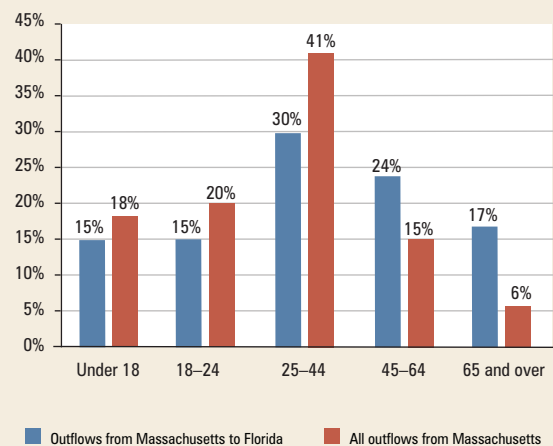
Migration by State, 1999–2015

In-Migrants by Origin 1999–2015		Out-Migrants by Destination 1999–2015	
Origin	Inflows	Destination	Outflows
New York	195,928	Florida	269,005
Florida	151,006	New Hampshire	227,828
New Hampshire	139,424	New York	176,141
California	118,228	California	154,278
Connecticut	115,291	Rhode Island	109,535
Rhode Island	107,937	Connecticut	105,420
Foreign	105,096	Foreign	77,297
New Jersey	69,280	Texas	71,487
Pennsylvania	59,576	North Carolina	67,926
Texas	51,036	Maine	66,603
Rest of U.S.	554,681	Rest of U.S.	671,568
Total	1,667,483	Total	1,997,088

Source: U.S. Internal Revenue Service (IRS) Statistics of Income (SOI) Tax Stats; calculations by the authors.

Note: U.S. Population Migration data represent year-to-year address changes reported on individual income tax returns filed with the IRS. For technical details, please visit <https://www.irs.gov/uac/soi-tax-stats-migration-data>.

All Outflows from Massachusetts and All Outflows to Florida 2001–2014



Source: U.S. Census Bureau, American Community Survey Public Use Microdata Sample 2001-2014; calculations by the authors.

Note: Percentages are based on cumulative totals of out-migrants for the period 2001-2014. Bars do not sum to 100% due to rounding.

STATE MERCHANDISE EXPORTS

State merchandise exports rose modestly in the year ending in August 2016. During that period, exports rose from slightly over \$25 billion to just over \$26 billion (all export values are reported in constant 2015 dollars). This downward trend is not necessarily indicative of a longer-term trend. While the recent peak in merchandise exports reached \$28 billion in the 12 months ending in August 2014, there has been fluctuation around a slightly lower figure since then.

Exports declined with three of the state's top five export partners in the year ending in August 2016. Canada, the state's leading export recipient, imported 9.1 percent less from the state during this period compared with the prior 12-month period. China imported 10.6 percent less over the same period. Our second leading export partner, Mexico, imported 7.8 percent more than in the prior 12-month period.

While the state's export economy holds a prominent place with both policy makers and the media, state merchandise exports are relatively small. In 2015, the value of the state's GDP was \$476.7 billion. Merchandise exports over roughly the same period represented just over five percent of the state's GDP. Some of that value added in the state's exports, in fact, accumulated out of state. Even so, exports remain an important bellwether for the state economy, notably the state's high technology sector.

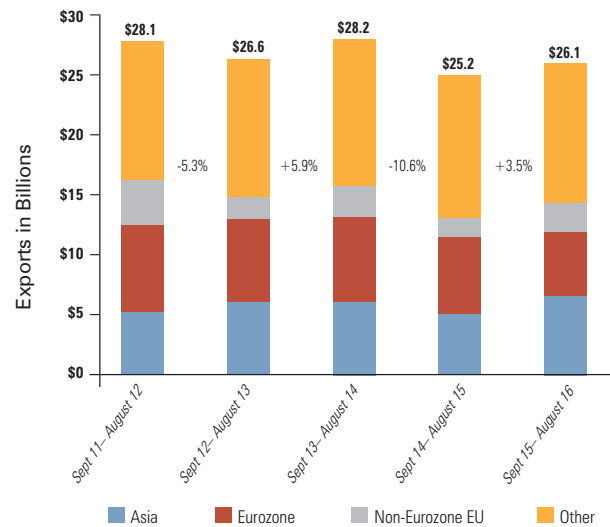
Table 2. Massachusetts Merchandise Exports Change from September 2014–August 2016

Partner Country	Percentage Change
Canada	-9.1%
Mexico	7.8%
Switzerland	376.6%
China	-10.6%
Germany	-7.8%
Japan	-12.2%
Netherlands	-3.1%
United Kingdom	4.1%
Ireland	21.6%
Korea, Republic Of	-8.8%
Total (Top Five)	-0.05%
Total (Top Ten)	3.3%
Total (All Exports)	3.5%

Source: WISERTrade, calculations by the authors. Dollar values have been adjusted for inflation (\$2015).

Note: The increase in exports to Switzerland was driven by increases in Agricultural products, Textile mill products and Scrap metal.

Figure 5. Massachusetts Exports by Trading Partner Region September 2011–August 2016



Source: WISERTrade, calculations by the authors. Dollar values have been adjusted for inflation (\$2015).

BREXIT AND ITS POSSIBLE IMPACT ON THE STATE

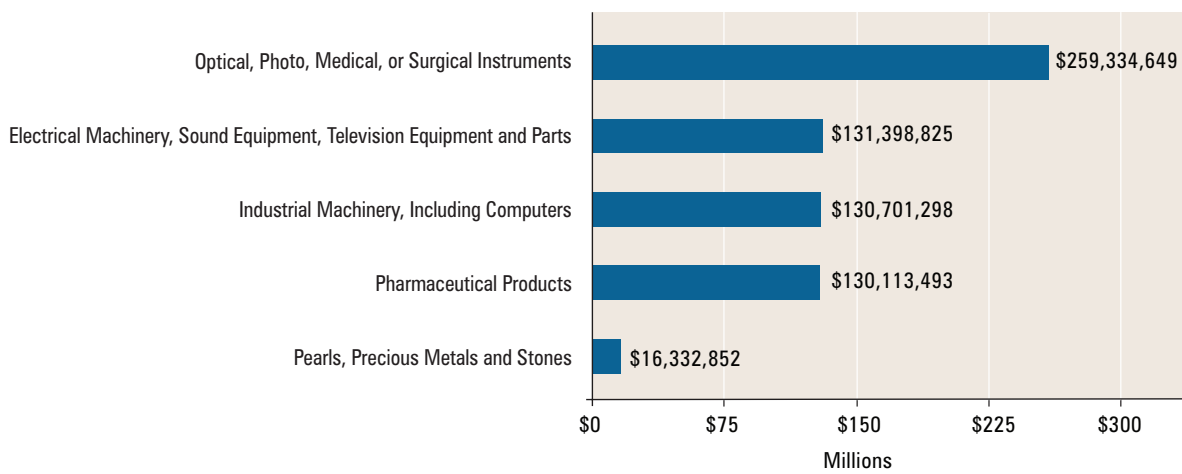
On June 23rd, voters in England, Northern Ireland, Scotland, and Wales elected to leave the European Union (the United Kingdom had never been a member of the Euro currency zone). This Brexit vote has generated considerable economic uncertainty both in the United Kingdom and throughout the global economy. What impact might Brexit have on Massachusetts? There are three possible transmission channels through which its influence might reach us.

First, Brexit's repercussions could trigger wider economic distress or slowing among the state's international export partners, and/or in the United States economy. In those scenarios, it would not be possible for the state to avoid the detrimental effects of these developments. Second, it is widely agreed that, over time, both the UK and the EU will be poorer than they would have been had Brexit not occurred. That is because the diminution of free trade between the parties will likely suppress their economic performance and income. This income effect will depress purchases of exports — both merchandise and services — from Massachusetts. Third, an immediate outcome of Brexit was the fall in value of the British Pound relative to the U.S. dollar. The Pound cost \$1.71, and the Euro cost \$1.35 in July of 2014 before the looming Brexit started to weigh down these currencies. In October, the Pound had fallen to \$1.23 and the Euro to \$1.10. That higher-valued dollar raises the price of Massachusetts exports to British and European buyers, suppressing their purchases.

Putting things in perspective, just over 31 percent of the state's merchandise exports went to countries in the European Union, which represents 1.7 percent of the state economy. In 2015, exports to the UK were 14.6 percent of total exports to the European Union. This figure is volatile, as the percentage has varied between 30 percent to its present low value. In any case, exports to the European Union, and more so to the UK, are a small part of a small part of the state's economy. Even so, industries will be negatively affected by the forces triggered by Brexit. By a large margin, the sector Optical,

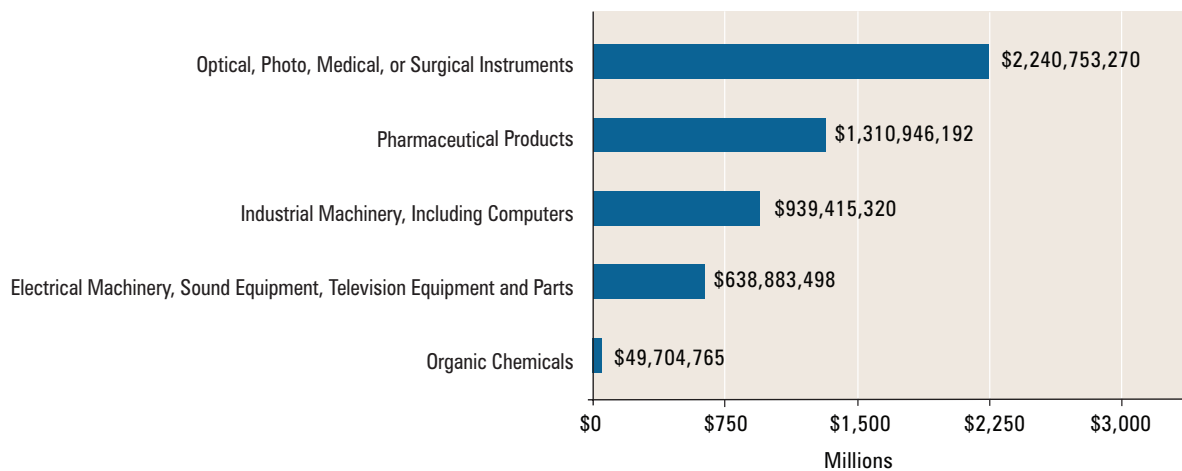
Photo, Medical, and Surgical Instruments is the leading exporter of merchandise to the United Kingdom. Electrical Machinery, Industrial Machinery, including Computers, and Pharmaceutical Products followed in magnitude in 2015. For the European Union minus the UK, the picture is much the same, though the ordering is somewhat different. Slower growth in either the UK or the remaining EU will slow exports from these sectors, as will a stronger dollar relative to either the Pound Sterling or the Euro.

Figure 6. Top Five Commodities Exported to the United Kingdom, 2015



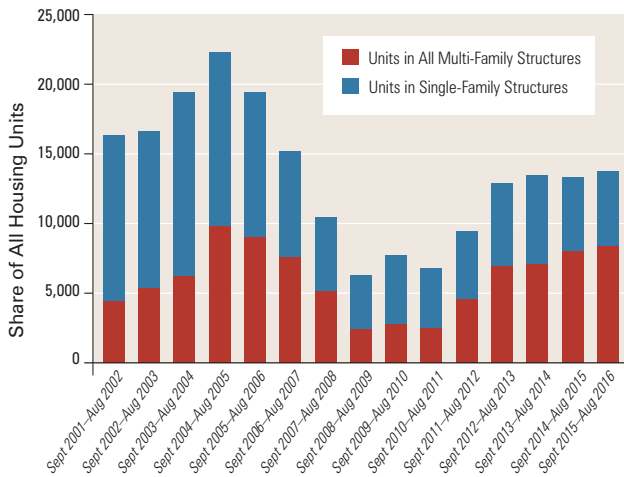
Source: WISERTrade

Figure 7. Top Five Commodities Exported to Non-UK EU, 2015



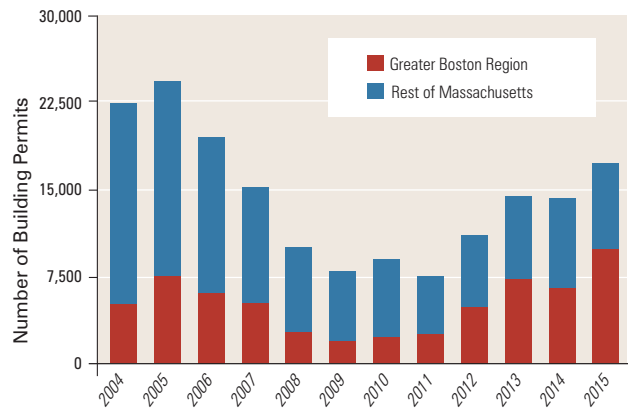
Source: WISERTrade

Figure 8. Housing Permits for Multi-Family and Single-Family Structures Massachusetts, September 2001–August 2016



Source: U.S. Housing & Urban Development, State of the Cities Data System (SOCDS) Building Permits Database; Calculations by the authors. Preliminary data for 2016 are subject to subsequent monthly revisions throughout the remainder of the year.

Figure 9. Housing Construction for the Greater Boston Region and Rest of the State 2004–2015



Source: U.S. Census, Building Permits Survey; calculations by the authors. Data represent reported data plus the data imputed for non-reporters and partial reporters. The Greater Boston Region consists of Suffolk and Middlesex counties.

HOUSING TRENDS

Two patterns continue to characterize the state’s housing construction industry. The first is the growing importance of multi-family units in new housing, as represented by building permits data. This trend emerged just prior to and during the recovery of housing construction. In 2001, nearly 75 percent of new house permits were issued for single-family units. By 2015, this percentage had dropped to just over 38 percent.

In the rise of new multi-family dwellings in the state, the Greater Boston area has proved dominant. In 2004, over 76 percent of housing construction was outside Greater Boston. By 2015, the figure had declined to under 45 percent. Clearly, higher land prices in Greater Boston explain at least some of the shift to multi-family housing units as building has become more concentrated there.

CONCLUSION

The Massachusetts economy continues to prosper in the midst of global uncertainty. Gross product continues to grow apace with the nation. Employment has grown to a historic high, and the unemployment rate is below five percent. Challenges remain in the state, most urgently the uneven economic prospects that give the metropolitan Boston area advantages over many other parts of the state.

The surrounding economic environment remains troublesome. National economic growth and, more

importantly, productivity growth have slowed considerably. A fractious presidential campaign and its aftermath have continued to foster uncertainty — anathema to both consumer spending, especially on big ticket items, and to business investment in buildings and equipment.

Internationally, Europe continues to struggle, with Brexit adding to its difficulties. China is struggling with an epic transformation away from an export- and investment-led economy to a consumer-led economy. The Chinese slowdown has had a negative impact on countries that rely on commodities exports. It is difficult to find a bright spot in the global economy.

Even so, the Bay State economy seems poised for continuing growth. Our industry mix, emphasizing high-end services, health care sectors, and education, fits well into domestic and global demand patterns. Happily, there is no sign that this will change in the foreseeable future.

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Beyond “Workforce Housing”: The Past, Present and Future Needs of Metro Boston’s Working Households

TIM REARDON
MEGHNA HARI
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AN ACCELERATING HOUSING CRISIS IN GREATER BOSTON, COMPOUNDED BY GROWING WAGE POLARIZATION, IS PROVING BURDENSOME FOR MANY WORKING FAMILIES. RISING COST BURDEN AMONG A SHRINKING MIDDLE CLASS IS MAKING RECRUITMENT AND RETENTION OF WORKERS MORE DIFFICULT FOR EMPLOYERS. EXACERBATING THE CHALLENGE IS THE LOOMING RETIREMENT OF 700,000 METRO BOSTON BABY BOOMERS, WHO MUST BE REPLACED BY SIMILAR NUMBERS OF NEW WORKERS. PROJECTIONS INDICATE THAT THE REGION WILL NEED 200,000 ADDITIONAL UNITS BY 2030 TO HOUSE NEW WORKING HOUSEHOLDS.

INTRODUCTION

Greater Boston needs more housing to attract and retain the workforce that a growing economy demands. It is well known that the region's housing prices are among the highest in the nation — a situation decades in the making. A variety of physical, political, and regulatory barriers have restricted dense development across much of the region. In turn, homebuyers and renters have bid up the prices of the limited available housing. The high price of housing has become burdensome for many working families, which makes recruitment and retention of workers more difficult for employers. There is growing concern among economists and public policy makers that high housing costs may present a significant impediment to long-term economic growth.

The housing cost crisis will be compounded by a looming demographic transition, as 700,000 Metro Boston Baby Boomers retire over the next 15 years, necessitating similar numbers of new workers just to maintain the current employment base. If many retirees remain in their homes, or even in the region, net growth of housing will be essential to accommodate young workers who take their place in the labor force. This concept, that housing production is an economic imperative, has been incorporated into *Opportunities for All*,¹ the Baker-Polito Administration's economic development strategy, which adopts increased supply as a strategic goal essential to economic development. That plan cites the Metropolitan Area Planning Council's (MAPC) estimate that 500,000 new housing units will be needed in Massachusetts to accommodate population growth and changing housing needs.

To address this issue effectively, we need to know more than the scale of the problem, and we need to move past the rhetoric that equates workforce housing with housing for teachers and firefighters. Development of successful housing policies specifically targeted toward labor force attraction and retention requires a deeper understanding of what industries and occupations will see the greatest demand for new workers over the coming decades, how much those workers might earn, how many households they are likely to form, and what kind of housing they may want. Despite the growing acceptance of housing production to economic competitiveness, there is insufficient research to help state and regional agencies, as well as local communities, target policies to promote the type of housing production most essential to labor force attraction and retention. A better understanding of workforce housing needs is also of great interest to many members of the real estate development industry who are eager to expand production of moderately priced units in the market if the financials work for them and their investors.

To help shed light on this topic, MAPC was recently engaged by the Urban Land Institute Boston/New England District Council to build a better understanding of current and future housing options for middle income workers in the region. MAPC studied the income and housing conditions of working households in the region back to 1990; and has projected the number and income level of new working households likely to form between 2015 and 2030. Using individual worker- and household-level census records, we examined the occupations, income distribution, and housing cost burden of households with at least one employed, non-student wage earner (termed working households). The study area covers most of Eastern Massachusetts, including Essex, Middlesex, Suffolk, Plymouth, and Norfolk counties. (See Figure 4 for a map showing the extent of the study area.) Household income classifications are based on HUD's 2014 Area Median Income (AMI)² categories and combined income from all earners and sources for each household. We define low-income working households as having total income of less than 80 percent of AMI (a common threshold for housing subsidy programs), and middle-income working households as having total income between 80 percent and 120 percent of AMI. We then combined MAPC's population and labor force projections with occupational vacancy forecasts produced by the state to estimate the housing needs of new workers. The objective is to build a better understanding of how the characteristics and housing needs of working households have changed over the past 25 years and how many housing units might be needed to serve a growing workforce through 2030.

We draw three main conclusions from this work: First, the problem of workforce housing is increasingly a problem of low-income housing, as income polarization has contributed to a staggering 40 percent increase in the number of low-income working households since 1990. One quarter of working households now earn less than 80 percent of AMI and are therefore eligible for housing subsidies. Meanwhile, the number of middle-income working households in Metro Boston has actually declined since 1990. While it may be more politically palatable to focus on the middle class, workforce housing programs must now pay as much attention to the working poor as they do to middle-income working households.

Second, it is undeniable that the cost burden for middle-income households has become much worse over the past 25 years, though pockets of affordability remain available in the region. Only 22 percent of single-family homes sold in 2014 and 2015 would be considered affordable to a typical middle-income household. Most of this naturally affordable middle-income housing is in

Gateway Cities, which are also the focus of many new middle-income housing production subsidy programs. Our findings suggest that cost may not be the biggest obstacle to the growth of the middle class in those communities. Rather than subsidizing housing production alongside existing naturally affordable units, state agencies might consider additional investments in education, safety, and quality of life improvements that will make those cities communities of choice for the middle class; preserve affordable housing so that low-income households can remain as property values rise; or build middle-class housing in communities that currently provide no such opportunities.

Finally, our projections indicate that Metro Boston will need over 200,000 new units of housing to accommodate new working households between now and 2030, after accounting for units that will come back on the market due to outmigration and mortality of Baby Boomers and their predecessors. While units will be needed at all price points, the biggest gap will be in units affordable to low-income working households: at least 108,000 low-income units will be needed, based on current sale prices and rents. This continued rapid growth in the number of low-income working households suggests that changes in more than housing policy are needed to resolve the region's housing crisis. Continued income polarization threatens to create a perpetually growing class of low-income working households for which there are few, if any, sustainable housing solutions. If, on the other hand, economic policies can slow or reverse wage deflation in low-skill service and retail occupations, the region might start to see a rebound in the number of middle class households with at least some hope of affordable market rents. So while rapid production is essential to solving the housing *supply* problem that may stifle economic growth, it is also becoming clear that our *affordability* problem cannot be solved without economic policies to raise wages and move more working households into the middle class.

25 YEARS OF INCOME POLARIZATION

Our analysis of this topic began with an examination of the economic conditions of working households since 1990. As described above, we define working households as those with at least one employed, non-student wage earner. Income categories were based on HUD's Area Median Income, with our classification accounting for both total income and household size. Based on an Area Median Income of \$94,100 in 2014, the low-income threshold ranges from \$47,450 for a single-person household to \$73,200 for a five-person household. The upper end of the middle-income band ranges from \$79,000 for a single person household to \$122,000 for a five-person

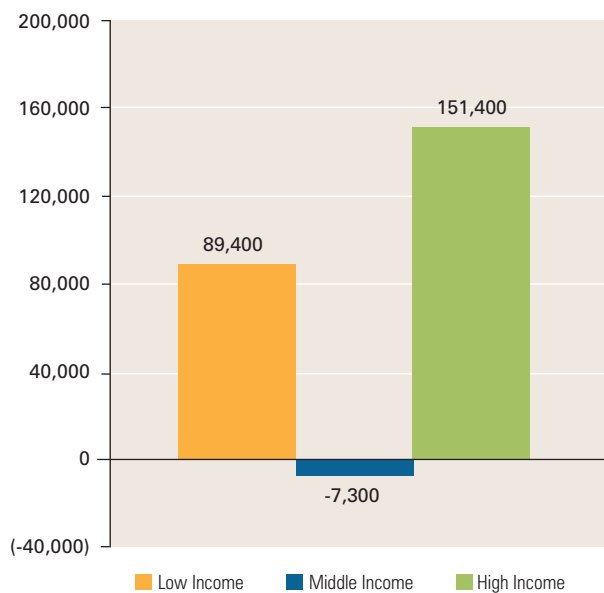
household. High-income households exceed that threshold. For the 1990 Census records, we inflation-adjusted the reported 1989 income to 2014 dollars and used the same income breaks to ensure a consistent definition.

In 1990 there were 1,018,000 working households in Metro Boston. Among them, 45 percent were high-income, 33 percent were middle-income, and 22 percent were low-income. Between 1990 and 2014, the number of working households in the region grew 23 percent to 1,251,000 million. Over that same period, the number of low-income working households grew by 40 percent from 223,000 to 312,000. By 2014, low-income working households comprised 25 percent of all working households. Meanwhile, the number of middle-income working households in the region fell 2.2 percent from 333,000 to 325,000, and their share of working households declined from 33 percent to 26 percent. The number of high-income working households rose 33 percent from 462,000 to 614,000, and their share increased from 45 percent to 49 percent. Almost half the increase in low-income working households came from growth in extremely low-income working households earning less than \$30,000 per year.

To understand what contributed to these shifts in household income, we examined the changes by occupation, characterizing each household by the occupation

Figure 1. Change in Working Households by Income Category; Metro Boston, 1990–2014

Between 1990 and 2010–14, the number of middle-income working households shrank while low- and high-income households grew.



Source: U.S. Census Public Use Microdata Sample (PUMS) 1990 and PUMS 2010-14.

of its principal earner (the member with the highest reported wage earnings). We identified four main patterns in headship and income by occupation over the past 25 years, which collectively contribute to the observed household income polarization.

First, the region saw a decline in several core middle-income occupations — those most likely to be filled by someone heading a middle-income household. Among workers in all occupations, those in installation, maintenance, and repair jobs have the highest likelihood of being the principal wage earner of a middle-income household. Unfortunately, these occupations also saw the largest 25-year decline in the number of principal earners, resulting in the net loss of more than 30,000 middle-income households. Second, other occupations have seen losses of middle-income jobs coupled with growth in low-income jobs. Troublingly, two of the region's largest occupations — office and administrative support, and sales — follow this trend.

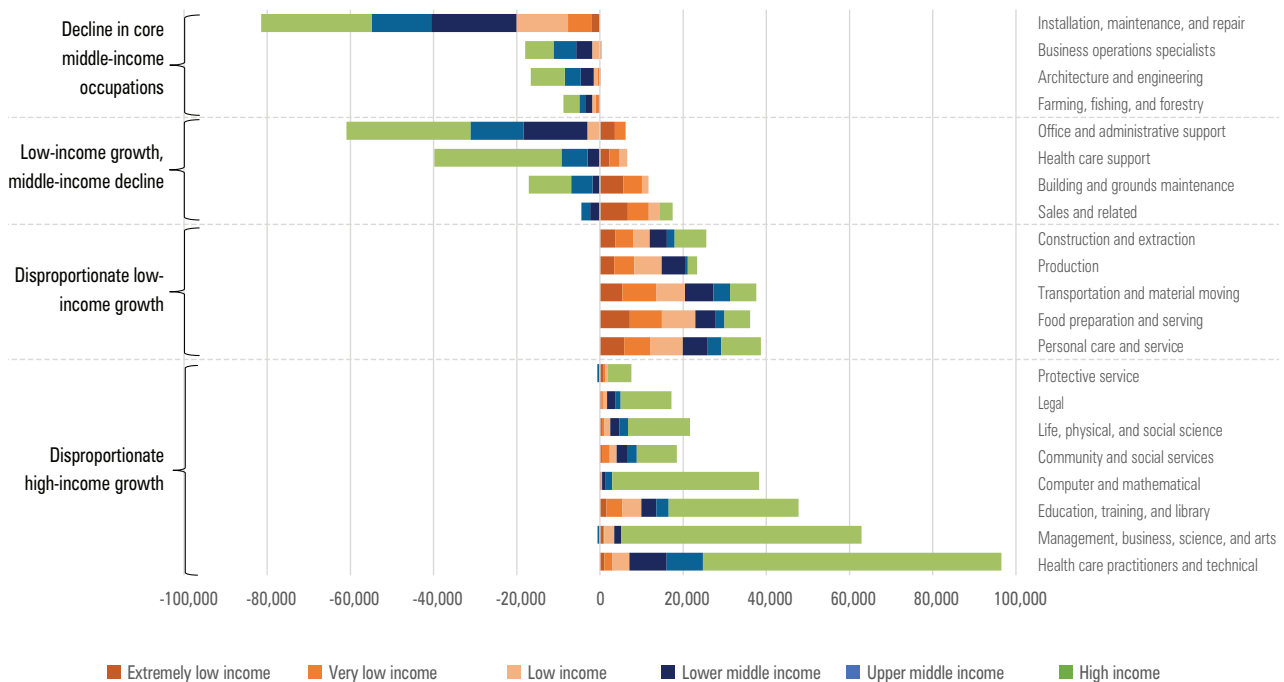
Among growing occupations, there are two patterns: occupations that have seen a disproportionately large growth in low-income jobs, and those that have seen a disproportionately large growth in high-income jobs. Food preparation and serving, one of the fastest-growing occupations in the region, falls in the first group; health

care practitioners and technical occupations, which have added the highest number of principal earners in the region since 1990, fall in the latter.

The impact of these shifts has not been evenly distributed across racial and ethnic groups. More than 45 percent of non-Latino White, multiracial, and Asian working households are high income, compared with only 22 percent of African American and 15 percent of Latino working households. This disparity in working household incomes across racial categories has become more significant over time. The share of middle-income working households among all racial and ethnic categories declined between 1990 and 2014, but with different outcomes: Asian and White non-Latinos were much more likely to lead high-income households, while African American and Latino principal earners were more likely to lead low-income households.

Over the same period, the number of middle-income working families with children declined 11 percent region-wide. Some of these shifts can be explained by demographic trends. In 1990, Baby Boomers were between the ages of 25 and 45 — prime child-rearing years. Today, they are over 50 years old, and many are now empty nesters while still participating in the labor force. Meanwhile, few Millennials have reached those

**Figure 2. Occupational Group Change by Household Income Category
Metro Boston, 1990–2014**



Source: PUMS 1990, PUMS 2010-14, Bureau of Labor Statistics.

Note: Occupational changes since 1990 show four patterns that have contributed to wage polarization.

prime years. As a result of this demographic lull between two generations, there are fewer working family households with children and relatively more married-couple households without children (including retirees), workers living alone, seniors living alone, and nonfamily households. When residents throughout the region express concerns that middle-income families with children have left their community, it may be because there are simply fewer of those households to go around.

THE MIDDLE-INCOME COST BURDEN IS WORSENING, BUT POCKETS OF AFFORDABILITY PERSIST

Recent concerns about workforce housing have been precipitated by a rising cost burden among middle-income households, and it is undeniable that the problem has gotten worse since 1990. Thirty-six percent of all middle-income working households are considered cost burdened — they spend more than 30 percent of their income on housing costs. Renter cost burden is more prevalent in Boston and the surrounding municipalities than in the rest of the region. Region-wide, cost burden is more common among lower middle-income households (those between 80 percent and 100 percent of AMI), at 42 percent of households, than upper middle-income households (between 100 percent and 120 percent of AMI), at 27 percent.

Housing cost burden for both low- and middle-income homeowners increased dramatically from 1990 to 2014 — from 27 percent of households to 43 percent, representing an increase of more than 35,000

cost-burdened homeowners. The increase was most dramatic for homeowners in Boston and the surrounding municipalities, where cost-burden rates increased by 27 percentage points since 1990, versus an increase of only 14 percentage points in the rest of the region.

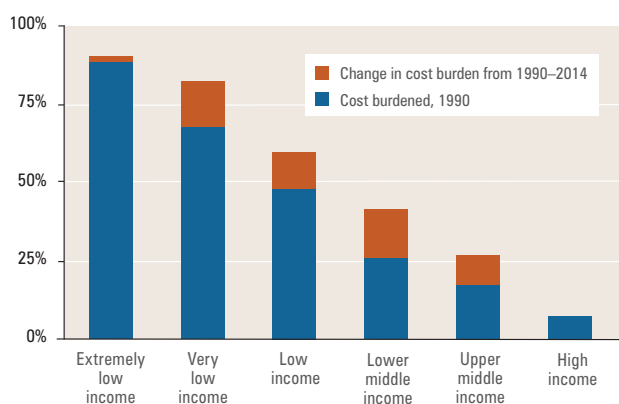
Increases in housing cost burden can be explained by the fact that there simply are not enough housing units in the region affordable by middle-income households. According to property sales data for 2014 and 2015 provided by the Warren Group, 22 percent of single-family homes and 39 percent of condos sold in the region are affordable for a hypothetical lower-middle-income household with two workers and two children and a household annual income of \$75,000. (This analysis accounts for purchase price, financing, property taxes, and estimated transportation costs, and defines affordable as combined housing and estimated transportation costs not exceeding 45 percent of income.)

Figure 4 depicts affordable transactions as a percentage of all condominium and single-family home sales for each municipality in the study area in 2014 and 2015. The percentages vary widely, from fewer than 10 percent of transactions in nearly 40 municipalities (almost all suburbs); to more than 80 percent of transactions in Lawrence, Brockton, Lowell, and Chelsea. When looked at through the lens of MAPC’s four Community Types³ (Figure 5), we see that Regional Urban Centers such as Lawrence, Brockton, Lowell, Lynn, Framingham, and Salem provide almost half the region’s supply of affordable single-family homes, and more than half of the region’s supply of affordable condos, with combined affordable condo and single-family home sales of nearly 11,000 over two years.

Meanwhile, Maturing Suburbs (moderate density, largely built out suburbs along Route 128 and along the North and South Shores) saw the most sales overall, but less than 20 percent were affordable by middle-income households, and relatively few sales at any price were of condos. In one third of the Maturing or Developing Suburbs, fewer than 10 percent of transactions were affordable. Furthermore, suburban communities in general have a smaller supply of condos to begin with, in part because land use regulations discourage production of multifamily housing, even as condos become more popular among both older and younger householders.

On the rental market, conditions are even worse. Analysis of 111,000 rental listings from late 2015 to early 2016 indicate that within the Metropolitan Area Planning Council (MAPC) region⁴ (smaller than the area used for other analyses in this report), only 12 percent of available rentals with two or more bedrooms are affordable by the hypothetical four-person household. Affordable rentals appear to be scarcer than affordable for-sale

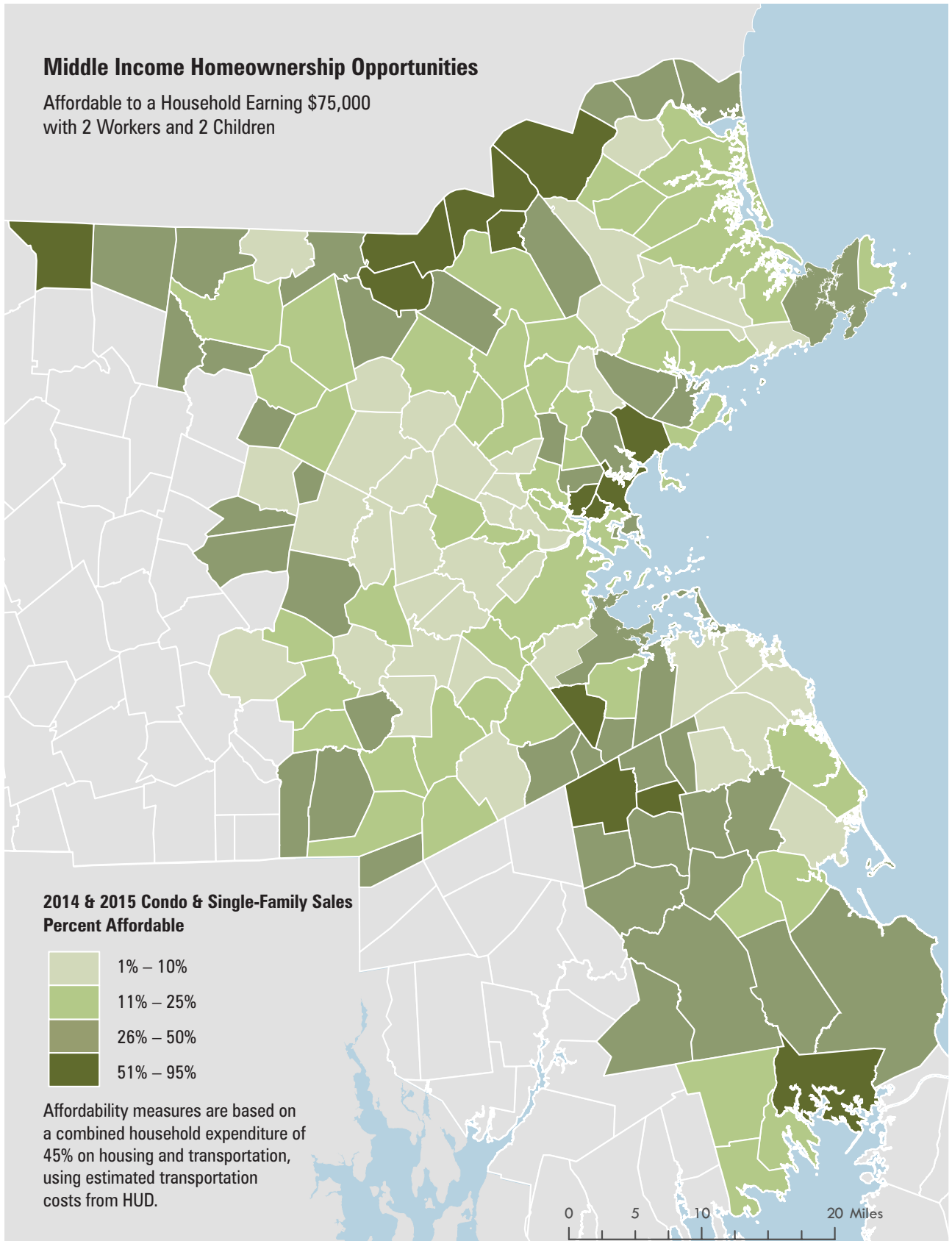
Figure 3. Change in Housing Cost Burden by Income Group Metro Boston, 1990–2014



Note: Housing cost burden increased across all low- and middle-income working households since 1990

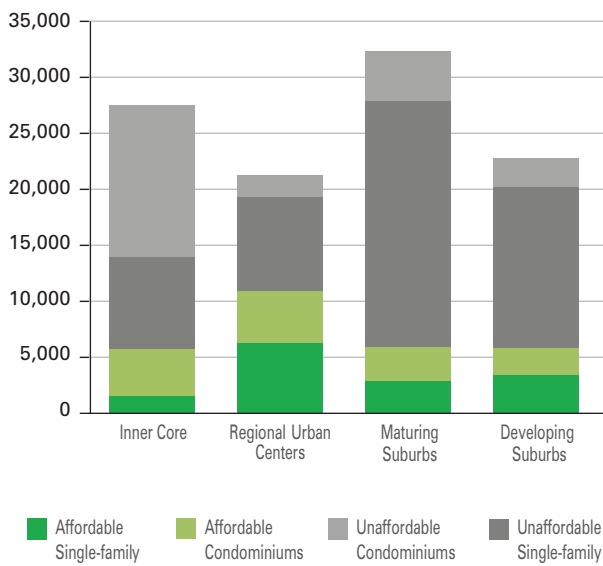
Source: PUMS 1990 and PUMS 2010-2014

Figure 4. Condominium and Single-Family Home Affordability for Middle-Income Households



Source: The Warren Group, U.S. Department of Housing and Urban Development, MAPC Analysis

Figure 5. Property Transactions by Unit Type, Affordability, and Location, 2014–2015



Note: Regional Urban Centers have the largest number and share of condo and single-family sales that would be affordable to a four-person household with an income of \$75,000.

Source: The Warren Group, U.S. Department of Housing and Urban Development, MAPC Community Types, MAPC Analysis.

units, though student debt and down payment requirements may present other barriers to homeownership.

Our analysis confirms that the housing situation for middle-income households has worsened considerably over the last 25 years, and limited opportunities are available across wide swaths of the region. Yet some communities still offer a large supply of naturally affordable for-sale housing. Ironically, these are in many cases the same Gateway Cities that are the focus of recent middle-income production stimulus programs, such as the Mass Housing Workforce Housing Initiative, which offers up to \$100,000 of subsidy for units restricted to households between 61 percent and 120 percent of AMI. Our findings suggest that it may not be the absolute lack of affordable units that is discouraging middle-income households from settling in Gateway Cities. That should prompt a reexamination of programs designed to subsidize the production of middle-income units in those communities.

SUBSTANTIAL NEW PRODUCTION IS NEEDED TO HOUSE THE FUTURE WORKFORCE

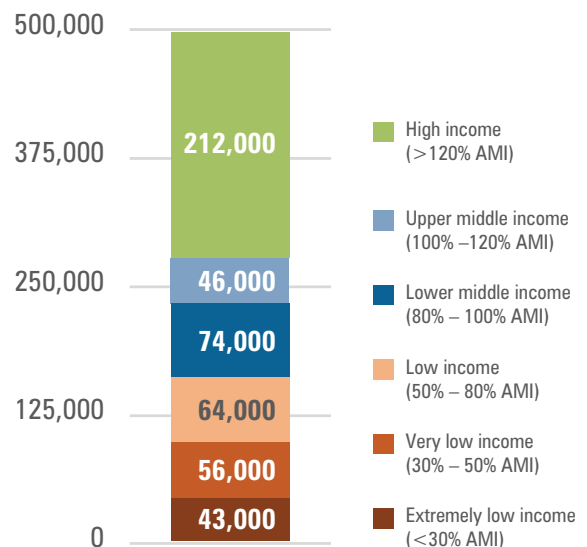
As troubling as the current state of workforce housing is in Metro Boston, indications are that the challenge may become even greater in the years ahead. The region is now undergoing the early stages of a wave of Baby Boomer retirement, which will affect nearly half the region’s workforce in the next 15 years. Current MAPC

projections indicate that 717,000 workers born before 1970 will leave the region’s labor force between 2015 and 2030 due to retirement, migration, or mortality. As a result, the region will need 826,000 new entrants to the labor force by 2030 to fill vacant positions and support even modest growth (4 percent) in jobs.

Using occupational vacancy projections published by the Massachusetts Executive Office of Labor and Workforce Development, it can be estimated that after accounting for both replacement of retiring workers and growth in the overall economy, the largest number of openings will likely be in office and administrative services, food preparation, and sales — three occupations that have seen a declining proportion of middle-income jobs and a growing proportion of low-income jobs. The next four categories — business operations specialists, health care practitioners and technical occupations, management, and computer and mathematical occupations — have seen disproportionate increases in high-income households. This pattern of vacancies, compounded by continued within-occupation wage shifts, is likely to drive continued wage polarization in the region.

Based on the forecasted vacancies and occupation-specific headship rates and income distribution, MAPC projects that new workers will form approximately 493,000 new households by 2030. Assuming continuation of the within-occupation wage polarization trends seen since 1990, we estimate that one-third of all new

Figure 6. Projected New Worker Households Metro Boston, 2015–2030



Note: Projected new working households by income group if wage polarization continues.

Source: PUMS 1990, PUMS 2010-14, The Dukakis Center at Northeastern University, MAPC Analysis.

working households — more than 160,000 by 2030 — will be low-income (less than 80 percent of AMI). About 24 percent of new working households (120,000) would be middle-income; and 43 percent high-income (211,000 households.)


Based on current occupancy patterns, new working households are projected to demand 279,000 units of multifamily housing (rental or ownership) and 214,000 single-family homes. Some of this demand will be met by existing units: mortality, migration, and downsizing may return about 155,000 single-family homes and 136,000 multifamily units to the market before 2030. If the current distribution of rent and sales prices holds constant, about 147,000 of those units would be affordable only by high-income households, an additional 108,000 units may be affordable by middle-income households, and only 36,000 would be affordable by low-income households.

In other words, if continued rapid escalation of housing prices can be averted (and if location within the region is not an issue), existing units might serve 22 percent of future low-income housing demand, 90 percent of lower middle-income housing demand, 90 percent of upper middle-income demand, and about 69 percent of high-income demand.

After accounting for housing returning to the market, the region will need 200,000 *additional* units of housing by 2030 — at a variety of price points — to accommodate new working households and to prevent increases in the housing cost burden for the region's residents. In the absence of rapid price increases or declines, the gap will be 126,000 units for low-income households, about 12,000 new units for middle-income households, and 65,000 for high-income households. Underproduction at the higher-income levels relative to demand may put upward pressure on the prices of less-expensive units, thereby reducing affordability down the line. Conversely, it is possible that robust production at higher price points may have a filtering effect by reducing the pressure on less-desirable units.

The rapid growth in the number of low-income working households suggests that changes in more than housing policy are needed to fully resolve the region's housing crisis. Continued wage polarization, with its disparate negative impacts on the income status of African American and Latino working households, threatens to create a perpetually growing low-income workforce for which there are few sustainable housing solutions, whether those solutions involve production, subsidies, or filtering. On the other hand, if wage deflation in service and low-skilled jobs is slowed or reversed, it would increase the number of middle-income households with at least some hope of affordable market rents.

CONCLUSION

There is now widespread recognition that addressing the housing supply and affordability crisis in Metro Boston is essential to our economic vitality. Our research demonstrates that the problem of workforce housing extends far beyond the middle class. Income polarization has led to a challenge in which low-income working households comprise a larger and larger share of the region, and more and more jobs are employing workers heading households that are eligible for housing subsidies. It is clear that the region's economy cannot grow without production of additional units; yet it is also becoming clear that the economy is producing vast numbers of working households that will be unable to get by without a housing subsidy. So just as we need to look to housing policy to unlock the constraints on labor force growth, we must look to economic policy to ensure the wages and incomes necessary for self-sufficiency in the housing market. 

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Endnotes

- 1.) *Opportunities for All: The Baker-Polito Strategy and Plan for Making Massachusetts Great Everywhere*; Executive Office of Housing and Economic Development; December 2015. <http://www.mass.gov/hed/docs/cohed/edplan2015.pdf>
- 2.) <https://www.huduser.gov/portal/datasets/il/il16/>
- 3.) To support planning, analysis, and policy development, the Metropolitan Area Planning Council has created a classification system of municipalities in Massachusetts. MAPC has identified five basic community types across the state. The criteria used to define Community Types include land use and housing patterns, recent growth trends, and projected development patterns. The Community Type system can be used to understand how demographic, economic, land use, energy, and transportation trends affect the Commonwealth's diverse communities. http://www.mapc.org/sites/default/files/Massachusetts_Community_Types_-_July_2008.pdf
- 4.) The MAPC region includes 101 cities and towns, including a range of urban and suburban municipalities covering most of the area inside Route 495. For a map of the MAPC region, see http://www.mapc.org/sites/default/files/MAPC_Subregions_2016_letter_2.pdf



Rebuilding Renewal: An Analysis of State Investment in Gateway Cities and a Work Plan for Delivering Transformative Development

DAN HODGE AND BENJAMIN FORMAN

TO ACHIEVE MEASUREABLE, BENEFICIAL IMPACT IN MASSACHUSETTS' GATEWAY CITIES, THE STATE MUST INCREASE AND COORDINATE ITS INVESTMENT TO PRODUCE *TRANSFORMATIVE DEVELOPMENT* THROUGH PROJECTS THAT CATALYZE SIGNIFICANT FOLLOW-ON PRIVATE INVESTMENT, ULTIMATELY LEADING TO THE RENEWAL OF ENTIRE DOWNTOWNS AND URBAN NEIGHBORHOODS. THAT WOULD INCLUDE GREATER STRATEGIC INVESTMENT IN ECONOMIC DEVELOPMENT AND HOUSING, WHICH ALTHOUGH MOST CLEARLY RELATED TO GROWTH AND REVITALIZATION, REPRESENTS JUST 14 PERCENT OF THE STATE'S INVESTMENT IN GATEWAY CITIES.

INTRODUCTION

The loss of jobs in the manufacturing industry over the past few decades has led to serious long-term economic contractions and distress in many U.S. cities (small and large), including the Gateway Cities of Massachusetts. Most commonly associated with Rust Belt cities like Detroit, Cleveland, and Buffalo, their declining economic fortunes can be quickly summarized by the drastic reduction in population that these cities have experienced. For example, Cleveland's population has fallen from approximately 900,000 in 1950 to less than 400,000 today. As described in a recent article in *The Economist*, the success of economic clusters and their cities can be fragile and challenging to turn around:

Cleveland is a reminder that decline can be as self-sustaining as success...The city's story is also a warning that rebuilding clusters is fiendishly hard...And reversing decline is harder than capitalizing on success.¹

Cleveland, Detroit, Buffalo, and other larger cities tend to grab the headlines of current efforts to revitalize U.S. cities and help them transition to a more prosperous economic future. For example, the Buffalo Billion is a fairly recent initiative in New York to provide a large, catalytic stimulus of investment to overcome decades of disinvestment. This major commitment is focused on

Figure 1. Massachusetts Gateway Cities



According to M.G.L Chapter 23A, put in place in 2009 and amended in 2010, a Gateway City is a community with a population greater than 35,000 and less than 250,000; a median household income below the Commonwealth's average; and a rate of bachelor's degree holders below the Commonwealth's average. The Massachusetts Gateway Cities include Attleboro, Barnstable, Brockton, Chelsea, Chicopee, Everett, Fall River, Fitchburg, Haverhill, Holyoke, Lawrence, Leominster, Lowell, Lynn, Malden, Methuen, New Bedford, Peabody, Pittsfield, Quincy, Revere, Salem, Springfield, Taunton, Westfield, and Worcester.

Source: Adapted from http://Massdevelopment.com/assets/pdfs/annual-reports/TDI_report_022016.pdf

rising above more incremental approaches that have been tried in the past, and has already led to a corresponding Upstate Revitalization Initiative in New York’s small-to-midsized cities. Here in Massachusetts, while our largest city (Boston) is well-positioned as a dynamic, knowledge-based economic engine that is experiencing measurable growth, we have many smaller regional cities with a tradition of manufacturing that are still struggling to successfully participate in today’s economy.

Over the last decade, Massachusetts has fundamentally shifted its understanding of the needs and opportunities of small-to-midsized cities anchoring the Commonwealth’s regional economies. The state now places considerable priority on efforts to make these so-called Gateway Cities stronger drivers of growth. But, despite this focus, economic conditions in Gateway Cities remain fundamentally weak.

As recent efforts have not moved the needle on key measures related to income, real estate values, and socioeconomic conditions, we must ask what it will take to help Gateway Cities resume their key function as drivers of regional growth and economic mobility. To help answer that question, this article² presents new information and analysis regarding:

- 1) state investment in Gateway Cities
- 2) real estate development trends
- 3) recent policy change and the fiscal context for future state investment in Gateway Cities.

This analysis demonstrates that, if there is to be measurable beneficial impact in Gateway Cities, the state must invest more and coordinate this investment to actually produce **transformative development** — projects that catalyze significant follow-on private investment, leading over time to the renewal of an entire downtown or urban neighborhood.

STATE CAPITAL INVESTMENT IN GATEWAY CITIES

We compiled estimates of state capital investment in Gateway Cities over the five-year period spanning FY 2009 through FY 2013. Capital investment is broadly defined as public spending on long-lived physical assets such as transportation infrastructure, housing development, or new public school facilities. In some cases, this spending is supported by general obligation bonds; in others, the investment flows through state tax credits.

Enacted in 2009, the official legislative recognition of Gateway Cities in Massachusetts has allowed the state to prioritize certain cities for investment purposes. For example, the MassWorks program, which consolidated a number of individual infrastructure investment

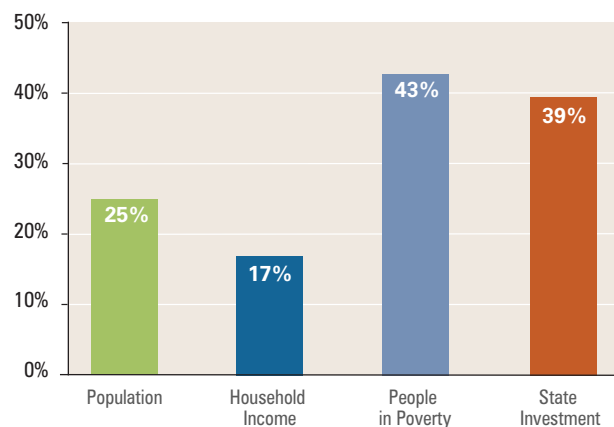
programs into a “one-stop shop,” now requires that at least 50 percent of investment goes to Gateway Cities.³ While many of these funding priorities were developed under the Patrick administration, the Baker administration has increased the emphasis on state support for local economic development.⁴

Despite this focus, there has been no systematic accounting of the state’s investment in Gateway Cities. This analysis compiles, for the first time, estimates of state capital investment in 24 of the 26 communities designated by statute as Gateway Cities. (Attleboro and Peabody are excluded because they were designated Gateway Cities too recently to supply data for analysis.)

This analysis yields revealing findings:

- **Massachusetts invests disproportionately in Gateway Cities.** Gateway Cities received approximately \$3.3 billion in state investment between FY 2009 and FY 2013—just under 40 percent of the \$8.5 billion total capital spent statewide. As shown in Table 1, Gateway Cities absorbed about one-third of the state’s education and economic development investments, over half of the energy and environment investments, and more than two-thirds of miscellaneous investments. On a per capita basis, Massachusetts appears to be prioritizing investment in Gateway Cities, as they account for just 25 percent of the state’s population (see Figure 2). However, much of this spending involves maintaining existing regional state assets (e.g., courthouses) or constructing new ones (e.g., mental health facilities). The proportion of state capital investment in Gateway Cities is also directly in line with their level of economic distress (e.g., they are home to 43 percent of Massachusetts residents living in poverty).

Figure 2. Gateway Cities’ Share of State Totals 2009–2013



Source: MassINC research, American Community Survey 2014 5-Year Estimates, Hodge Economic Consulting

Table 1. State Capital Investment in Physical Infrastructure by Spending Category for Gateway Cities and Statewide (FY 2009–2013, millions of dollars)

Spending Category	State Investment in Gateway Cities	Share of Investment in Gateway Cities	Total State Investment	Gateway Cities Share of State Total
Education	\$1,697	50.9%	\$5,305	32.0%
Housing	\$262	7.9%	\$619	42.4%
Economic Development	\$210	6.3%	\$608	34.5%
Energy and Environment	\$157	4.7%	\$302	51.9%
Transportation	\$240	7.2%	\$538	44.6%
Miscellaneous Investment	\$766	23.0%	\$1,081	70.9%
Courts	\$282	8.5%	\$364	77.4%
Health & Human Services	\$315	9.5%	\$366	86.1%
Total	\$3,331	100%	\$8,452	39.4%

Source: MassINC research and Hodge Economic Consulting

- **The state’s capital investment in Gateway Cities is dominated by education spending.** Between FY 2009 and FY 2013, Massachusetts placed \$1.7 billion in Gateway City educational facilities (over 50 percent of its total investment in Gateway Cities), approximately \$1.3 billion in primary and secondary schools, and \$379 million in higher education. While these educational facilities can play a role in building Gateway City economies and revitalizing Gateway City neighborhoods, there is no process to align these major state investments with broader Gateway City economic development or neighborhood revitalization strategies.
- **The state’s investments in economic development and housing are the categories most clearly related to growth and revitalization, yet they represent just 14 percent of its investment in Gateway Cities.** Moreover, these investments tend to be fairly diffuse, with many cities receiving relatively small grants. The state is making few large-scale investments that would logically be connected to generating transformative development.
- **The state is unable to track its Gateway Cities investments and evaluate their impact.** While it may sound simple in theory, a comprehensive accounting of actual state investments in physical infrastructure in Gateway Cities is extremely difficult to produce. This limited analysis presents the best information to date on how the state actually invests in Gateway Cities. The Commonwealth must do a better job in tracking its spending to enable rigorous impact evaluation

demonstrating the extent to which public investment has spurred transformative development.

REAL ESTATE DEVELOPMENT TRENDS

Real estate trends are a key metric for Gateway City renewal. Property values indicate the extent to which private investment flows to these communities. When market values are extremely low, it is difficult to finance new development and improvements to the existing building stock.

The initiation of a focused state effort to spur reinvestment in Gateway Cities coincided with the start of the Great Recession, a financial crisis that led to an unprecedented loss in property value throughout the U.S. While the Boston area generally recovered quickly, Gateway City markets have not fared as well.

These challenges are not unique to Gateway Cities. Low-income communities all over the country have been slow to regain their value. While more research is needed to disentangle all of the factors at play, it appears that the concentration of foreclosed properties in their neighborhoods, flat-to-negative wage growth for low-skilled workers, and the struggles of low-income households making down payments and meeting other underwriting requirements all contribute to the problem.

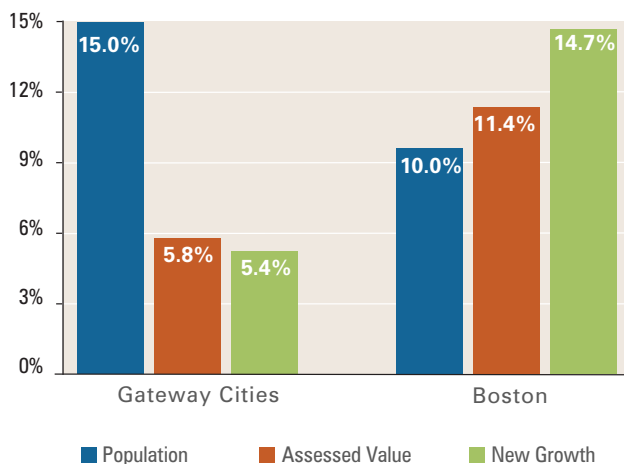
At the same time, demand for walkable urban neighborhoods is rising. This has accelerated the housing market recovery in large cities and fueled gentrification. In many smaller cities, growing concentrations of poverty have become an ever-larger barrier to meeting demand for urban living.⁵

The data findings* reflect the strength of these divergent trends between Boston and the Gateway Cities:

- **A large gulf exists between the market for urban real estate in Boston and the market for urban real estate in the Gateway Cities.** On average, residential property sold for \$114 per square foot in Gateway Cities in 2014. In comparison, the median home in Boston sold for \$444 per square foot. This disparity might make development outside the city appear attractive, as properties are cheaper there. But that development has not been realized. Rather, high values in Boston have enabled the construction of enormously expensive development, and low values in Gateway Cities make building financially unfeasible.

Figure 3 powerfully demonstrates the gulf between Gateway City markets and Boston by comparing their shares of the statewide population, assessed value, and new growth (a dollar-based measure of value added to municipal tax rolls through new construction and property improvements). The 11 original Gateway Cities account for approximately 15 percent of Massachusetts's population but less than 6 percent of the state's total assessed value. In 2015 they underperformed even that share in new development, with just 5.4 percent of new growth added statewide. In sharp contrast,

Figure 3. Share of State Total for Original Gateway Cities and Boston, 2015



Source: Massachusetts Department of Revenue and American Community Survey

Boston's share of assessed value is significantly higher than its share of the state population (10 percent), and the city outperformed its impressive lead in total valuation, capturing nearly 15 percent of new growth in the Commonwealth last year.

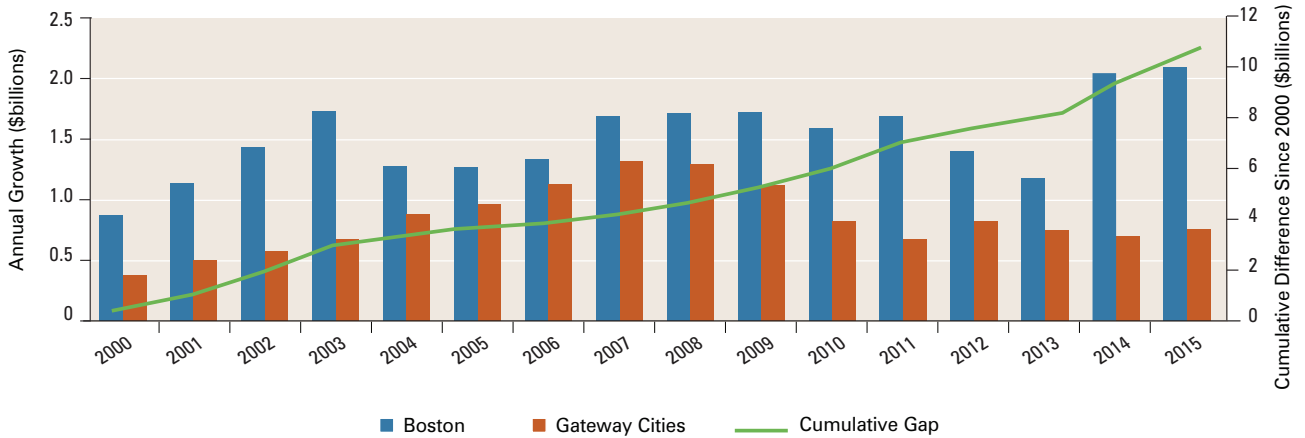
- **The Great Recession has widened the gap between real estate values in Boston and the Gateway Cities.** From 2000 until the Great Recession, assessed values in the Gateway Cities were rising at nearly the same pace as Boston's. In the recovery, Gateway Cities and Boston have followed opposite trajectories. Between 2011 and 2015, Boston saw total assessed value grow by 28 percent, while total assessed value fell by 2 percent in the Gateway Cities. The same post-recession trend is evident in sales data: adjusted for inflation, home prices per square foot are now higher in Boston than at their previous peak, while, on average, Gateway City median sales are still at just two-thirds of their 2005 peak.

The large disparity between new development in Boston and the Gateway Cities is a defining feature of the recovery. Figure 4 shows how this trend emerges and accelerates over time, as well as its cumulative effect. Since 2000, the value of new development in Boston has been growing each year, with the exception of slight dips before and after the recession. For Gateway Cities, the post-recession trend is generally downward. In 2015, the \$770 million in new growth in Gateway Cities was only slightly more than half (58 percent) of the \$1.3 billion added to Gateway City tax rolls during the new development peak. The cumulative gap in new-growth development between Boston and the Gateway Cities has grown to almost \$11 billion since 2000. In 2015, new growth in Boston exceeded the prerecession peak by more than 20 percent, while last year the value of real estate development added to Gateway Cities rolls was only slightly more than half of prerecession levels.

- **As a leading indicator of new growth, permit issuances suggest that Gateway Cities will likely miss out on capturing the momentum of the Boston real estate market in the current market cycle.** Building permits activity dropped significantly in both Boston and Gateway Cities in the years leading up to the Recession (2006–2008) and through its trough. (see Figure 5) However, in 2011 the

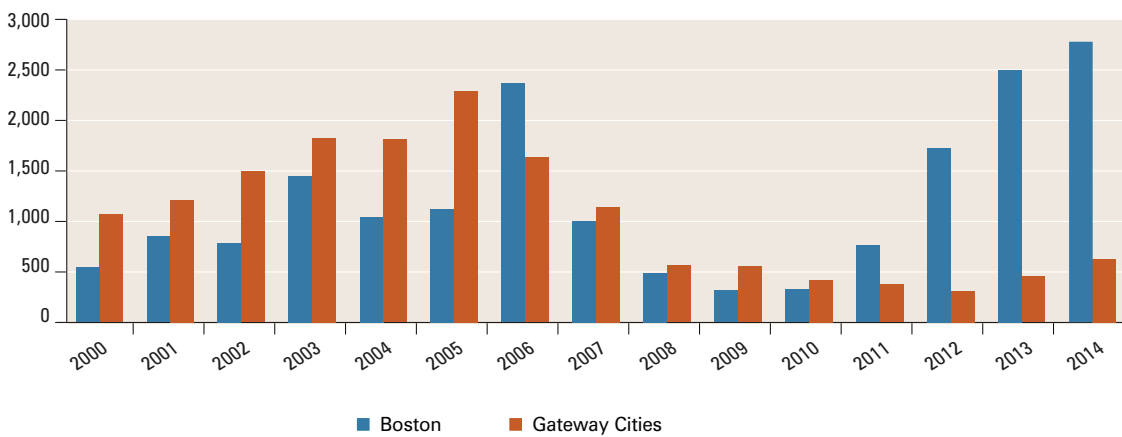
* Because these data are not readily available for all 26 Gateway Cities, the statistics presented in this section cover the original 11 Gateway Cities identified in MassINC's 2007 report: Brockton, Fall River, Fitchburg, Haverhill, Holyoke, Lawrence, Lowell, New Bedford, Pittsfield, Springfield, and Worcester.

Figure 4. Annual and Cumulative New-Growth Development 2000–2015



Source: Massachusetts Department of Revenue and American Community Survey

Figure 5. Building Permits Issued in Boston and Gateway Cities 2000–2014



Source: U.S. Census Bureau

trends started to diverge sharply. Between 2011 and 2012, the number of permits issued in Boston more than doubled, while Gateway City permit levels fell another 20 percent. Building permit issuances for Gateway Cities did not bottom out until 2012, and the data through 2014 show only a modest uptick.

This trend is particularly disconcerting because, in the past, Gateway Cities had quite a bit of permitting, albeit for lower-value development. In fact, the number of building permits issued in Gateway Cities exceeded the number in Boston in every year from 2000 to 2011, except 2006. In the most recent year of data, more than five times as many building permits were issued in Boston than throughout all 11 original Gateway Cities combined.

- **Low real estate values continue to produce a large market gap.** In 2013, MassINC research demonstrated that low rents and sales value in Gateway Cities make it difficult to cover the costs of property acquisition, improvement, and construction.⁶ Using data on recent sales and construction cost estimates from RS Means, a leading provider of regional building cost estimates, MassINC estimated that the market gap in 2012 was one-third of the cost of construction for units produced for sale and nearly three-quarters of the cost of construction for rental units.

Based on updated analysis using data on 2014 sales and construction cost estimates, the gap is now one-quarter of the cost of construction for for-sale units and 70 percent of the construction cost

for rental property. While these gaps range substantially across cities — with Brockton, Lowell, and Haverhill at the smaller end, and Springfield, Fitchburg, and Fall River at the larger end — a significant gap exists in all Gateway City markets.

While the average capital gap for Gateway Cities has decreased slightly since the 2013 analysis, this is driven entirely by lower estimated construction costs rather than by improving market conditions in the form of higher rents and sales prices. Thus, lethargy in Gateway City markets remains a huge challenge. It is worth emphasizing that Gateway Cities are not underperforming the U.S. market or even the overall Massachusetts market, which remain far off their inflation-adjusted peaks. However, because values in these cities are substantially lower, the recession pushed them well below levels that allow for healthy construction activity.

Actual spending and investments in Gateway Cities are unlikely to expand in the near future, thus not providing the jolt of stimulus needed in these long-distressed markets.

POLICY CHANGE AND THE FISCAL CONTEXT FOR FUTURE STATE INVESTMENT

The difficulties of Gateway Cities in recovering from the recession should not discourage policy leaders from spearheading efforts to stimulate renewal. The state has a coherent strategy for facilitating transformative development, efforts are underway to build capacity at both the state and local level to execute this strategy, and several of the tools required to implement it have been fashioned. The most challenging obstacle will be to identify the funds to resource this effort at full scale, given fiscal pressures.

- **A number of simultaneous efforts to promote Gateway City renewal have fused into a coherent strategy for transformative development.** The Transformative Development Initiative (TDI) at MassDevelopment, a quasi-public economic development agency, is the core of this new approach. TDI tactically layers activities to build engagement and draw attention to districts targeted for revitalization in the short-term; generate momentum by making modest real

estate investments in strategic locations in the medium-term; and facilitate a stream of coordinated development projects, leading to private investment and higher property valuation in the long term. A range of efforts to increase the capacity of both state agencies and Gateway Cities to engage in these activities has blossomed and tools have been developed alongside TDI to facilitate the kinds of public investment needed to produce transformative development.⁷

- **The 2016 economic development bill helps solidify and continue investment in Gateway Cities but actual capital investment commitments remain modest.** The economic development bill passed during the summer of 2016 and signed by the Baker administration does place continued emphasis on investment in Gateway Cities. In particular, that bill includes funding levels of \$500 million for MassWorks infrastructure investments (with 50% or more allocated to Gateway Cities), \$45 million for the Transformative Development Fund (the TDI program), and \$45 million for the Brownfield Redevelopment Fund. Plus, there is a new funding program of \$15 million for site assembly, site assessment, permitting, and other predevelopment activities for new or established industrial parks, and downtown revitalization efforts.

While that sounds promising, many of those funds represent an upper limit wish list from bond proceeds rather than actual investment commitments. For example, the 2017 Executive Office's Administration & Finance (ANF) Capital Investment Plan only includes \$2 million (out of \$45 million) for transformative development spending. Similarly, only \$2.5 million is planned for brownfield redevelopment (out of \$45 million), and \$1.25 million (out of \$15 million) for site assembly. This demonstrates two critical issues: Actual spending and investments in Gateway Cities are unlikely to expand in the near future, thus not providing the jolt of stimulus needed in these long-distressed markets. Secondly, this represents another example where greater transparency is needed to track and communicate the actual commitments of investment in Gateway Cities.

- **With mounting structural pressures in the state budget, funding Gateway City revitalization at levels sufficient to produce transformative development will be difficult.** Fiscal pressures are straining capital spending with the state pushing up against a debt ceiling established in 1989 for the first time and Standard & Poor's revising its outlook on the state's general obligation bonds to negative. Medicaid and pension obligations will consume a growing share of state revenue over the next decade. Pushing debt higher

as a percentage of revenues will be difficult, especially with a low reserve fund balance and local aid payments still well below prerecession levels. With these fiscal pressures, making room for additional capital investment in Gateway Cities will require constraining state capital spending in other areas and/or identifying new revenues to underwrite these economic development investments.

DELIVERING TRANSFORMATIVE DEVELOPMENT

A comprehensive transformative redevelopment policy would leverage current state investment in Gateway Cities and secure significantly more resources for stimulating private economic activity in their weak markets. Attuned to the state's fiscal realities, we think that a work plan for achieving such a policy boils down to three tasks:

1. Identify revenues to increase the level of investment in transformative development.

Changing the weak market conditions that make it impossible for the private sector to unlock the very real untapped potential in the Commonwealth's Gateway Cities will require a stream of well-placed public investment at a significantly higher magnitude than is currently available. As demonstrated by the Upstate New York Revitalization Initiative, other states are making larger commitments to encourage economic renewal in long-distressed markets. Unfortunately, given Massachusetts' fiscal realities, making a similar commitment to Gateway Cities will be difficult.

One option is to generate own-source revenues to service debt. For example, the legislature has enabled higher real estate tax rates to support land preservation on the Cape and Islands. Changes could be made to capitalize a fund with the proceeds going to transformative development where this is a priority. For example, a city or region could adopt an additional increment on the real estate tax styled on the Vermont approach, which captures capital gains on land sales based on length of ownership.

Another possibility is allowing transportation-related revenues to finance transit-oriented development projects. In the near future, finding new revenue sources to support transportation infrastructure will be critical to improving the state's transportation system and overcoming structural challenges in the capital budget. Using some of these additional revenues to support complementary place making investments around transportation nodes could promote highest and best-use development, significantly increasing the efficiency of transportation infrastructure.

The bulk of funding administered for transformative development directly should be awarded through a competitive process to ensure that the best projects are selected without feeling the political need to spread resources too thinly.

2. Better align investments with targeted redevelopment strategies.

On top of additional spending, concerted effort will be needed to ensure that the state's investment in Gateway Cities generates revitalization. With over \$3.3 billion flowing to Gateway Cities over five years, this stream of state resources must be channeled to realize economic development and revitalization objectives. To be sure, these state investments are generally made for other reasons, but to the greatest extent possible, they should receive priority when they also align with a well-conceived renewal strategy.

Project selection criteria are needed for each new investment. These criteria should include whether the location of the investment is in a designated district for transformative development and how it will help attract follow-on private sector investment. And additional effort will be needed to help state agencies innovate. Leaders should examine models for programming state investment for revitalization with particular emphasis on developing new designs for educational facilities. The Baker Administration recently formed a taskforce to examine future investments in higher education. This working group is well positioned to articulate the need to prioritize projects that show true synergy with regional economic development strategy.


3. Increase transparency and accountability.

To ensure that funds targeted to Gateway City revitalization produce returns for taxpayers, there must be greater transparency and accountability. This begins with how funds are awarded and extends to how funds are actually expended and their impact in stimulating private investment.

The bulk of funding administered for transformative development directly should be awarded through a competitive process to ensure that the best projects

are selected without feeling the political need to spread resources too thinly. Improving systems to track where and when public resources are placed in communities will also be central to ensuring that state expenditures produce transformative development.

To be more specific: Massachusetts needs a stronger system to track where and when state resources are placed in communities. Data for the large sums expended through Brownfields Tax Credit and state investment allocated through the capital plan exemplify a lack of transparency.

MassDevelopment has already provided considerable leadership in impact evaluation, commissioning a baseline assessment of Gateway City economic conditions and developing metrics to measure subtle increases in district-level activities with the potential for higher levels of private investment. With leadership from ANF to help agencies better track spending, MassDevelopment can play a central role in analyzing and evaluating the impact of the Commonwealth's capital investment in these markets. 

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The authors wish to thank IAN JAKUS and MATTHEW O'BRIEN for their research assistance and contributions to this article.

Endnotes

- 1.) "Silicon Valley 1.0: Cleveland can teach valuable lessons about the rise and fall of economic clusters," *The Economist*, July 23, 2016.
- 2.) This article is derived from a full research report which can be downloaded at: <http://massinc.org/research/rebuilding-renewal/>
- 3.) A 2013 reference guide highlights state resources for Gateway Cities, some of which are designated specifically for these cities: <http://www.mass.gov/hed/docs/dhcd/cd/gateway/statere-sourcessupportingrevitalizationofgatewaycities.pdf>
- 4.) <http://www.mass.gov/hed/community/funding/urban-agenda-grant-program.html>
- 5.) This observation may oversimplify slightly, as major cities have been enjoying the agglomeration effect of the transition to a knowledge economy and commensurate job growth, but even suburban developers are trying to meet demand for more walkable communities, which suggests that a significant consumer niche should exist for small-to-midsized cities with historic urban fabric, especially when these cities lie within a strong major metropolitan economy.
- 6.) Alan Mallach and others. "Transformative Redevelopment: Strategic State Policy for Gateway City Growth and Renewal" (Boston, MA: MassINC, 2013).
- 7.) These efforts include the Working Cities Challenge, led by the Federal Reserve Bank of Boston, now in its second round of funded grants for Massachusetts cities, and profiled in an earlier *MassBenchmarks* article: <http://www.massbenchmarks.org/publications/issues/vol1711/5.pdf>

ENDNOTES



State and Local Capital Spending in the New England States: Why Is It Lower than in Other Places?

RONALD FISHER AND RILEY SULLIVAN

ACCORDING TO 2000–2012 U.S. CENSUS DATA, STATE AND LOCAL GOVERNMENTS IN NEW ENGLAND HAVE BEEN SPENDING LESS ON CAPITAL INVESTMENTS THAN THEIR COUNTERPARTS ACROSS THE NATION. NO SINGLE FACTOR EXPLAINS WHY, ALTHOUGH POLITICAL CONSIDERATIONS SEEM TO BEAR IMPORTANCE. THERE IS SOME EVIDENCE, FOR EXAMPLE, THAT POLICY CONCERNS OVER LEVELS OF STATE GOVERNMENT DEBT IN MANY OF THE SIX STATES HAVE CONTRIBUTED TO REDUCED PUBLIC CAPITAL INVESTMENT.

This article is excerpted from a larger New England Public Policy Center (NEPPC) report of the same name. The full report and the other work of the NEPPC can be found at their website: <https://www.bostonfed.org/neppc>

INTRODUCTION

Census data show that state and local capital spending since 2000 has been well below the national average in all six New England states, whether measured on a per capita basis, as a share of personal income, or as a share of state and local government spending. Moreover, the census data reveal substantial differences among the New England states in both the per capita level and the composition of capital investment. This report explores several hypotheses as to why state and local governments in New England have been spending less on capital investment than the nation as a whole on a normalized basis.

Capital spending by state and local governments has wide-ranging benefits for a region's economy. These benefits include the direct utility of public capital facilities, avoidance of the negative effects on public safety and the environment of deteriorating public infrastructure that underlies transportation, water, and sanitation services, and the positive effects of enhancements to such public infrastructure. There may also be a beneficial relationship between public capital and long-run economic growth, although research results regarding this last issue have been ambiguous.¹ Still, for all these reasons, the issue of public infrastructure remains of keen interest to both public officials and the general public.

Public infrastructure can have positive effects on surrounding states. The positive spillover effects of state capital investment may be most obvious in the case of transportation, but these effects can also be important in such areas as education and environmental protection — especially in New England, where states are relatively

small and engage in substantial interstate economic activity. For example, capital spending by states and localities raises the value of capital investment in surrounding states (Cohen 2004).

In addition to the direct evidence from census data, this analysis of capital investment by state and local governments in New England since 2000 was also prompted by a study of the determinants of states' capital spending behavior in the years between 2000 and 2012 (Fisher and Wassmer 2015a), which concluded that state-specific factors lead the majority of New England states to spend less than predicted on capital maintenance and investment. To explore why this is so, this report focuses on a number of key policy questions: Why has capital expenditure been relatively low among the New England states? How has capital spending been changing over time, and what has been the impact of the recessions of the past decade? Why do some New England states concentrate capital spending in certain functional areas (such as transportation), whereas others emphasize capital investment in entirely different areas (such as education)? Is there evidence that states with severely depreciated public capital assets spend relatively more on capital investment? Or is there evidence that the quality of the public capital stock has improved in states that have spent relatively more on public capital?

The role of state governments, use of capital budgets, political decisions, and quality of existing capital stock all vary across U.S. states and could theoretically explain differences in capital spending among the New England states and between them and the rest of the nation.

Table 1. Average Annual Real Per Capita State & Local Capital Expenditure
New England States and U.S., 2000–2012

	U.S.	CT	ME	MA	NH	RI	VT
Capital Expenditure, total	\$1,098	\$913	\$651	\$1,006	\$682	\$648	\$723
Capital Expenditure, general	\$957	\$844	\$625	\$858	\$673	\$587	\$675
Higher Education	\$90	\$84	\$55	\$83	\$74	\$35	\$119
Elementary & Secondary Education	\$209	\$196	\$112	\$143	\$141	\$50	\$109
Hospitals	\$25	\$4	\$2	\$9	\$0	\$1	\$0
Highways	\$280	\$183	\$235	\$279	\$190	\$188	\$275
Corrections	\$12	\$3	\$5	\$6	\$9	\$9	\$1
Natural Resources	\$19	\$7	\$10	\$11	\$6	\$5	\$5
Parks & Recreation	\$34	\$16	\$7	\$12	\$8	\$6	\$7
Sewerage	\$60	\$41	\$31	\$86	\$11	\$21	\$26
Solid Waste Management	\$7	\$4	\$5	\$4	\$4	\$15	\$3
Utility	\$141	\$69	\$26	\$148	\$13	\$66	\$53
Other	\$222	\$306	\$162	\$225	\$225	\$252	\$124

Source: U.S. Census Bureau

Key findings of this report include the following:

- Economic, social, and political characteristics used in previous research are insufficient to fully explain the observed normalized levels of state and local capital spending in the New England states relative to their rates in the national average of all U.S. states.
- Combined state and local capital expenditure per capita during the period considered was well below the national average in each of the six New England states, and especially so in Maine, New Hampshire, Rhode Island, and Vermont.
- The available evidence does not appear to support the view that additional capital spending by state and local governments in New England in 2000–2012 would have been unnecessary because the quantity or quality of existing public capital was unusually high.
- Per capita capital spending in the New England states in recent years remains below the average for all U.S. states even if capital spending for utilities is excluded.
- State governments in New England have a more important role in engaging in capital spending and issuing debt than state governments do nationally; as a result, comparisons of per capita debt and capital spending by New England state governments alone with these rates for other U.S. states are deceptive.
- Political choices aimed at lowering state government debt may have contributed to the New England states' relatively low investment in public capital compared with other states' capital investment.

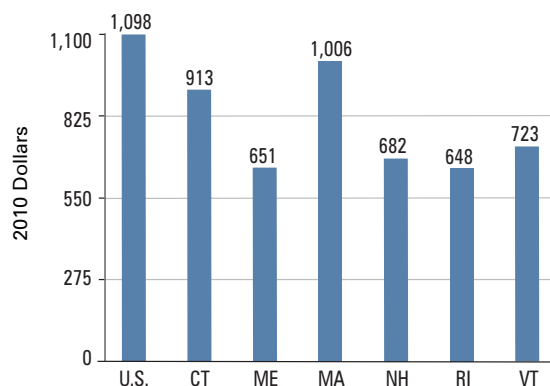
COMPARING THE NEW ENGLAND STATES TO ALL STATES

The New England states stand out in both the normalized level and the composition of capital spending.² As Table 1 and Panel A, Figure 1 show, state and local capital expenditure per capita during this period was well below the national average in each of the six New England states, although by less in Connecticut and Massachusetts. Nationally, in real terms, state and local governments averaged almost \$1,100 of capital spending per person per year, whereas the equivalent average among the New England states was less than \$800. The level of capital spending per person was relatively low in the New England states in 2000–2012, not just in aggregate, but in all the identified subcategories as well.

Capital spending relative to personal income was also substantially lower in the New England states than the national average, as shown by Panel B of Figure 1. In contrast with the national average of 2.7 percent, state and local capital spending as a percentage of personal

Figure 1.
State & Local Government Capital Spending
New England States and the U.S. Average,
2000–2012

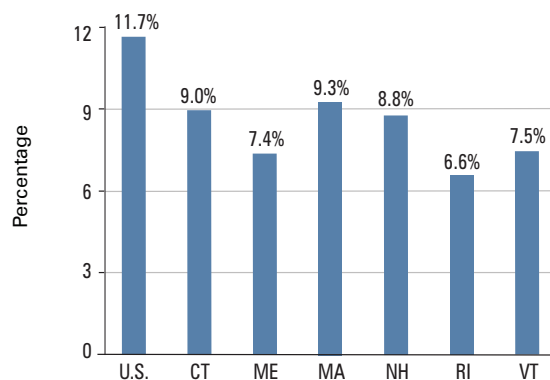
Panel A. Per Capita



Panel B. Relative to Personal Income



Panel C. Relative to Total State & Local Spending



Source: U.S. Census Bureau

income was less than 2 percent in every state in New England. Indeed, the region's states were six of the nation's lowest-ranking eight states in terms of capital spending relative to income.

Similarly, capital spending relative to total state and local expenditure was also substantially lower in the New England states than nationally, as Panel C of Figure 1 shows. As noted above, capital spending represented nearly 12 percent of total state and local government spending nationally over the 2000–2012 period, while it was below 10 percent in every New England state and even lower — below 8 percent — in Maine, Rhode Island, and Vermont.

Tables 1 and 2 show the mix of state and local government capital spending by state over the 2000–2012 period. There are striking differences in the mix of capital spending both between the New England states and the national average and among the New England states. Capital spending on elementary and secondary education in Rhode Island was less than half such spending in every other New England state, and large variation is also evident in capital spending on highways. Capital spending on higher education was more important in Vermont than in the other New England states; capital spending on highways was high in Massachusetts and Vermont — near the national average (see also Figure 2); and capital spending on public utilities was less important in the New England states than in the nation as a whole (except in Massachusetts, where it was actually slightly higher). As the figures and tables show, normalized capital spending by state and local governments among the New

England states averaged over the 2000–2012 period was lower than the national average across the board.

The national pattern of capital spending in the New England states during and after the Great Recession also differed significantly from the national pattern. Nationally, per capita state and local capital spending increased in 2008 and 2009, perhaps in a partial reflection of state and local governments' responses to federal aid, and then declined in 2010 and subsequent years. In New England, in contrast with the national trend, per capita capital spending did not increase during 2008 and 2009 in three of the New England states, increased in 2011 in all the New England states, and continued to rise in 2012 in both Connecticut and Massachusetts (with relatively large increases in 2011 and 2012), before falling back in 2012 in the other four New England states, as shown in Figure 3.

OBSERVATIONS

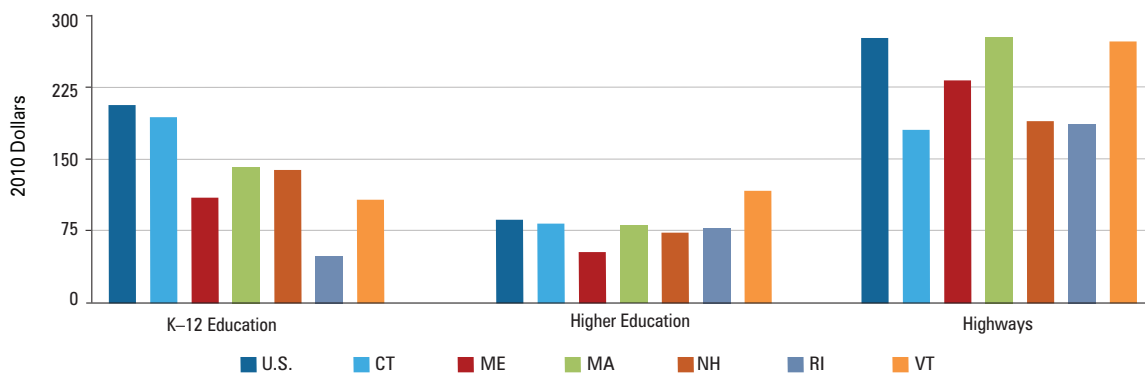
The relatively low levels of state and local government capital expenditure for the New England states shown by U.S. Census data for 2000–2012 do not seem to be explained by any single factor, although political considerations seem to be important. There is some evidence that capital investment policy in many of the six states has been dominated by concern about the level of state government debt. To the extent that attaining low debt levels has been the focus of policy attention and debt and capital investment are considered jointly, attempts to lower state government debt may have contributed to a lessened degree of investment in public capital.

Table 2. Share of State and Local Capital Expenditure by Category, 2000–2012
New England States and U.S., Percentages

	U.S.	CT	ME	MA	NH	RI	VT
Higher Education	8.2	9.2	8.5	8.3	10.9	5.3	16.5
Elementary & Secondary Education	19.1	21.5	17.1	14.2	20.8	7.7	15.1
Hospitals	2.3	0.4	0.3	0.9	0.0	0.1	0.0
Highways	25.5	20.0	36.2	27.7	27.8	28.9	38.1
Corrections	1.1	0.4	0.8	0.6	1.3	1.4	0.2
Natural Resources	1.7	0.8	1.6	1.1	0.9	0.8	0.6
Parks & Recreation	3.1	1.7	1.1	1.1	1.2	0.9	1.0
Sewerage	5.4	4.5	4.7	8.5	1.5	3.3	3.6
Solid Waste Management	0.7	0.5	0.8	0.4	0.6	2.4	0.4
Utility	12.8	7.5	4.0	14.7	1.9	10.1	7.3
Other	20.2	33.5	24.9	22.4	33.0	38.9	17.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

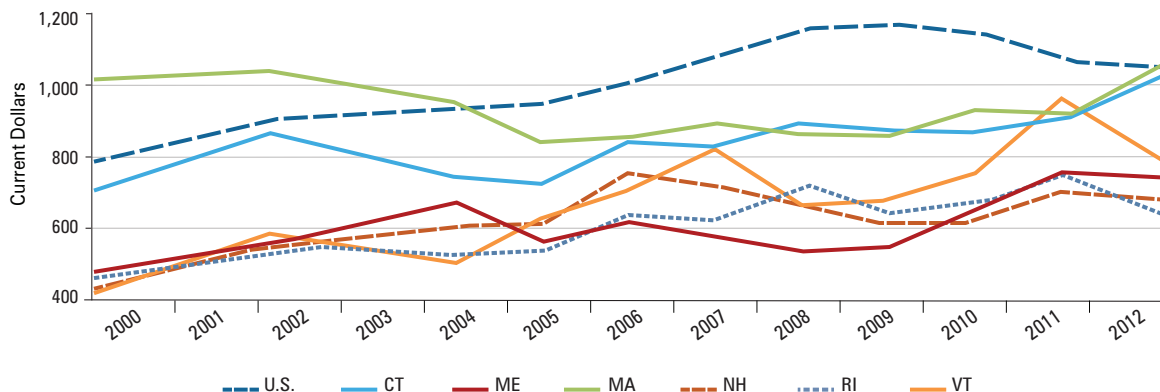
Source: U.S. Census Bureau

Figure 2. Real Average Per Capita Capital Spending by Type
New England States and U.S., 2000–2012



Source: U.S. Census Bureau

Figure 3. State and Local Per Capita Capital Expenditure
New England States and U.S., 2000–2012



Source: U.S. Census Bureau

Note: Census data for state and local capital expenditures are not available for 2001 and 2003.

The relatively low level of capital spending among the New England states generally is confirmed even once population growth rates and other social and economic characteristics expected to influence the level of capital spending are considered.


The relatively low level of capital spending also does not seem to be the result of a different organization of higher education or public utilities in the New England states than nationally. Nor is there evidence that the existing public capital stock in the New England states is of sufficient quantity or quality that additions to the stock are not warranted.

State governments in New England are relatively more important in making capital expenditures and issuing debt than is the case nationally. The greater role

for state governments in making capital expenditures may have the effect of reducing the overall level of such spending.

One should not characterize all of the New England states as being equal in their spending and borrowing characteristics, even on a normalized basis. The raw data show that capital spending per capita has been relatively low in Maine, New Hampshire, Rhode Island, and Vermont compared with such spending in the other two states in the region; relatively low compared with state income in Connecticut, New Hampshire, and Rhode Island; and relatively low compared with total state and local spending in Maine, Rhode Island, and Vermont. According to the econometric analysis reported by Fisher and Wassmer (2015a), capital spending after

adjustment for economic and political differences among the states is notably low in Rhode Island, Connecticut, Massachusetts, and New Hampshire. Taking all of the evidence into account, the single outlier state is Rhode Island, which is shown to have had relatively low state and local government capital expenditure by every measure. Recent behavior concerning capital spending also differs among the region's states. In 2012, Connecticut and Massachusetts acted to increase state and local government capital spending substantially, whereas the other four New England states decreased capital spending that year. For Maine and Vermont, the decrease in 2012 broke a three-year trend of rising per capita capital spending.

Although the behavior of the New England states varies, capital expenditures in each state impact the economy of the region as a whole. The spillover effects of infrastructure and other capital investments are strengthened when neighboring states also invest in capital. For these reasons, capital spending around New England is a regional concern. 

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Endnotes

- 1.) Differences vary based on the type of analysis performed, the period examined, and the method of measuring the public capital stock. Munnell (1992), Gramlich (1994), Fisher (1997), and Bivens (2012) provide reviews of this literature.
- 2.) Capital spending levels are normalized to population, income, and total state and local government spending.
- 3.) Per capita state and local government capital spending in the New England states also was below the U.S. average in 1992 and 1997, and the difference from the national average was larger in the later period in every New England state except Vermont.

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