

NORTH CENTRAL MASSACHUSETTS



An Economic Profile

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Executive Summary

- North Central Massachusetts includes 26 towns and cities and covers parts of three counties – Franklin, Worcester, and Middlesex. The region’s 800 square miles comprise about 10 percent of the land area of Massachusetts.
- North Central Massachusetts has 275,000 inhabitants accounting for about four percent of the state total. Population growth has seen an uptick in recent years in conjunction with an expanding economy and relatively low home prices that help draw people from higher-cost Boston and its inner suburbs. The eastern side of the region, closer to Boston and the 495 beltway are seeing the fastest growth.
- Proximity to the populous Boston, Worcester, and southern New Hampshire markets benefits North Central Massachusetts businesses in terms of labor and market access. Commercial leasing rates that are a fraction of Boston’s and significantly lower than those found in the MetroWest area also boost North Central Massachusetts’ appeal.
- The availability of large parcels of land with high capacity infrastructure in combination with proximity to highways, freight and passenger rail, and airports enhances North Central Massachusetts as a business location for expansions and start-ups.
- Thirty-two percent of North Central Massachusetts adults have a bachelor’s degree or higher and fully 61 percent of adults have some level of college or higher, indicating that the region possesses a varied and skilled workforce.
- At nearly \$35,000, North Central Massachusetts’ per capita income levels are about \$3,000 higher than the national average.
- North Central Massachusetts has added 8,000 jobs since 2010 and has seen stronger growth in recent years. In 2018, the unemployment rate was down to 3.5 percent.
- North Central Massachusetts has a diverse economy with a notable strengths in healthcare and manufacturing (led by plastics products, pharmaceuticals, and electronics). Manufacturing is nearly twice as concentrated in North Central Massachusetts compared to national averages. Since 2010, most major sectors in the region have seen jobs growth.
- Agriculture and food and beverage manufacturing have seen growth in North Central Massachusetts and now employ about 3,500 people. Agriculture is more concentrated in the region than the national average.
- Quality homes in good school districts are a draw for North Central Massachusetts. The average home values in affluent towns like Groton, Harvard, and Princeton are well below those in comparable MetroWest towns like Natick and Sudbury.
- On standardized tests, North Central Massachusetts students score higher than the state in science and English. SAT scores are on par or slightly higher than the state and the region’s dropout rate is lower.

Introduction

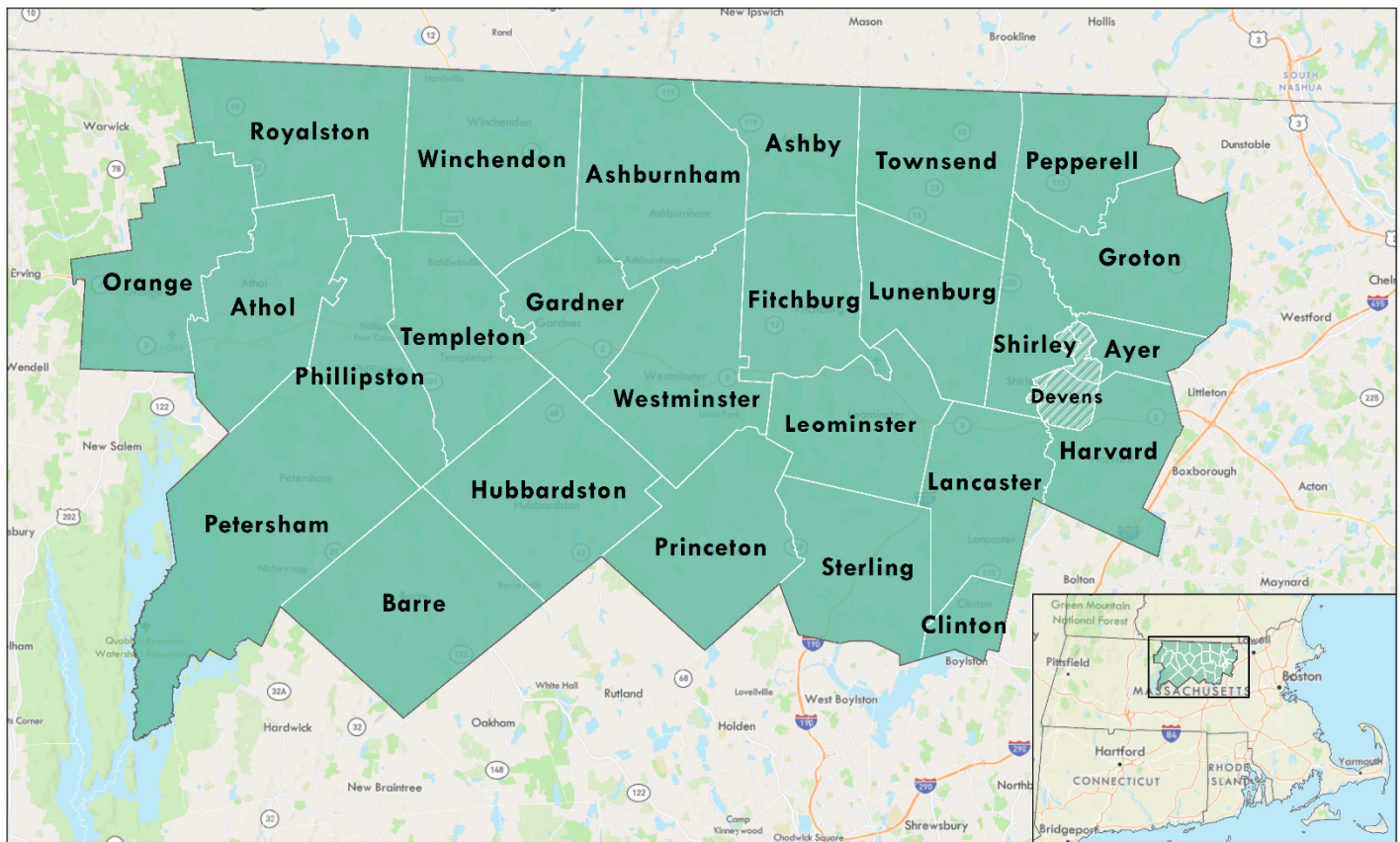
North Central Massachusetts comprises 26 towns and cities stretching about 50 miles in length from Orange in the west to Groton in the east (see **Figure 1** below for a reference map of the region). The region includes parts of three counties—Franklin, Worcester, and Middlesex—and covers about 800 square miles, comprising about 10 percent of the land area of Massachusetts. In terms of population, the region has about 275,000 inhabitants, or about four percent of the state total.

With a location on the periphery of the Boston and Worcester metropolitan statistical areas, much of the region is within commuting distance of the two larger cities. Proximity to Boston and Worcester also benefits North Central Massachusetts businesses in terms of labor and market access. The availability of large parcels of land, for example at Devens, also constitutes an advantage for North Central Massachusetts as large properties that offer both infrastructure and transportation access are becoming increasingly scarce and expensive in and around the fast-growing Boston-Cambridge area.

North Central Massachusetts, as such, has become a magnet for larger enterprises, including Bristol Myers Squibb, that need substantial sites for manufacturing production while still being nearby major population and jobs centers. In effect, North Central Massachusetts can offer sites for companies and manufacturers to scale-up in Massachusetts and continue to capitalize on the state's substantial research and development activities without having to expand or relocate to other parts of the United States or overseas. The region's access to highways and rail (both commuter into Boston and freight rail) also help to foster the movement of goods and people to, from, and within the region. In terms of commercial airport offerings, businesses and residents of North Central Massachusetts can reach flights from Boston Logan International Airport, Manchester-Boston Regional Airport, and Worcester Regional Airport.

With its geographic, labor, and economic attributes, North Central Massachusetts has begun experiencing faster relative growth in recent years, both in terms of population and jobs. This profile, developed by the UMass Donahue Institute, serves to highlight the key trends and unique features of North Central Massachusetts as they relate to its demographics, industry mix, educational outcomes, costs, and quality of life.

Figure 1. North Central Massachusetts Reference Map



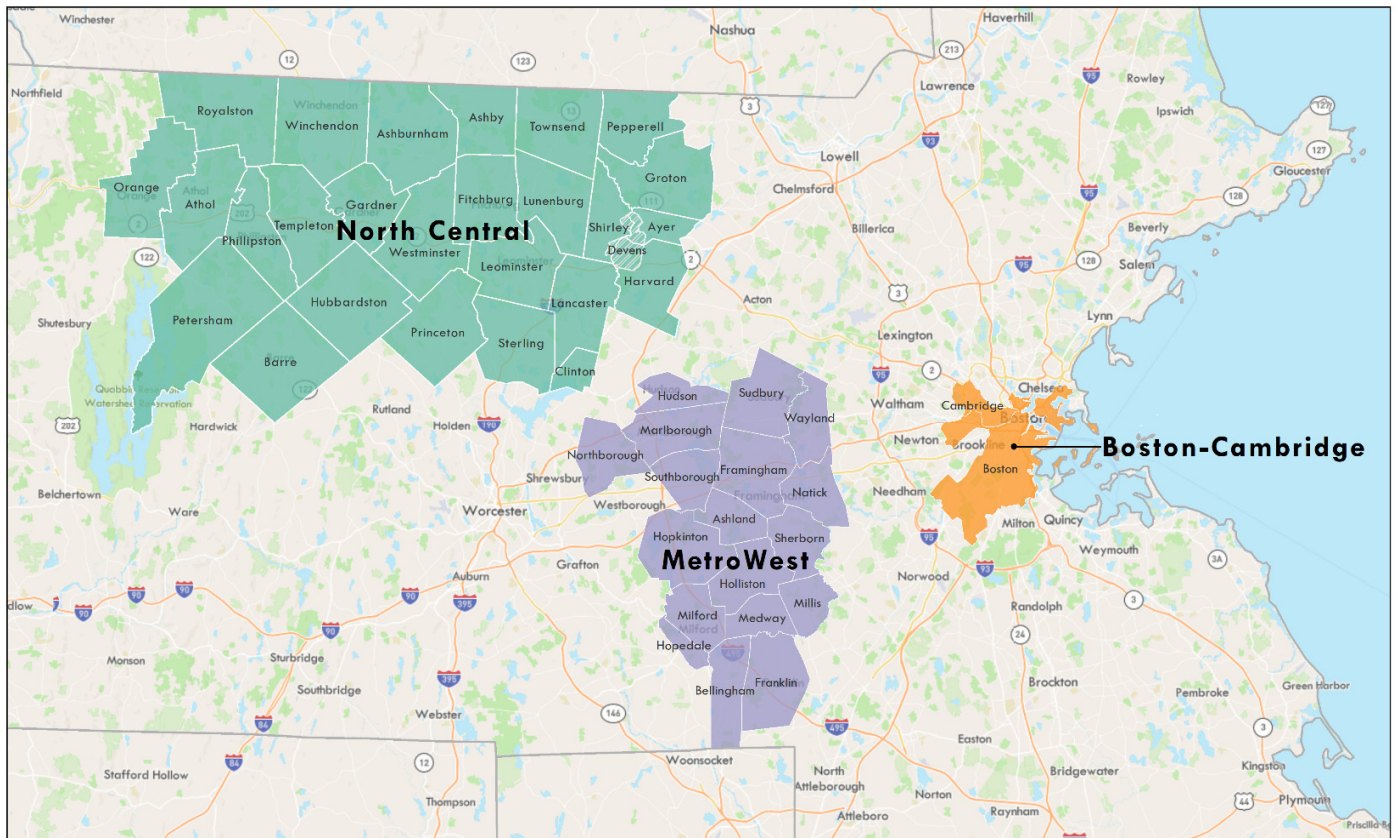
Source: UMDI, Mapbox. *Note: Devens is a census-designated place within the towns of Harvard, Ayer and Shirley

Comparison with MetroWest and Boston-Cambridge

Throughout this report as well as a detailed data “Dashboard” housed on the North Central Chamber of Commerce’s website,¹ comparisons are made between the North Central region’s cities and towns with other parts of Massachusetts – specifically with the MetroWest communities and with the urban core, Boston and Cambridge. With the exception of the town of Orange, all of the North Central region as well as MetroWest are part of the Boston Combined Statistical Area (CSA), a U.S. Census Bureau designation larger than metropolitan statistical areas (MSAs), that captures the geographic spread of labor markets. The Boston CSA has been growing quickly since the Great Recession and today is the 6th largest in the nation, with over eight million people. North Central Massachusetts serves an important role within this large urban area, as shown statistically in this report, by providing residents and businesses with both the space to expand and lower costs than the urban core (Boston and Cambridge) and the closer-in suburbs (exemplified by MetroWest). While slower to leave the last recession than Massachusetts, overall, the North Central region is now seeing more robust growth as the U.S. economic expansion continues to move forward.

¹ <https://www.northcentralmass.com/regional-data-center/>

Figure 2. Reference Map of Comparison Regions



Source: UMDI, Mapbox

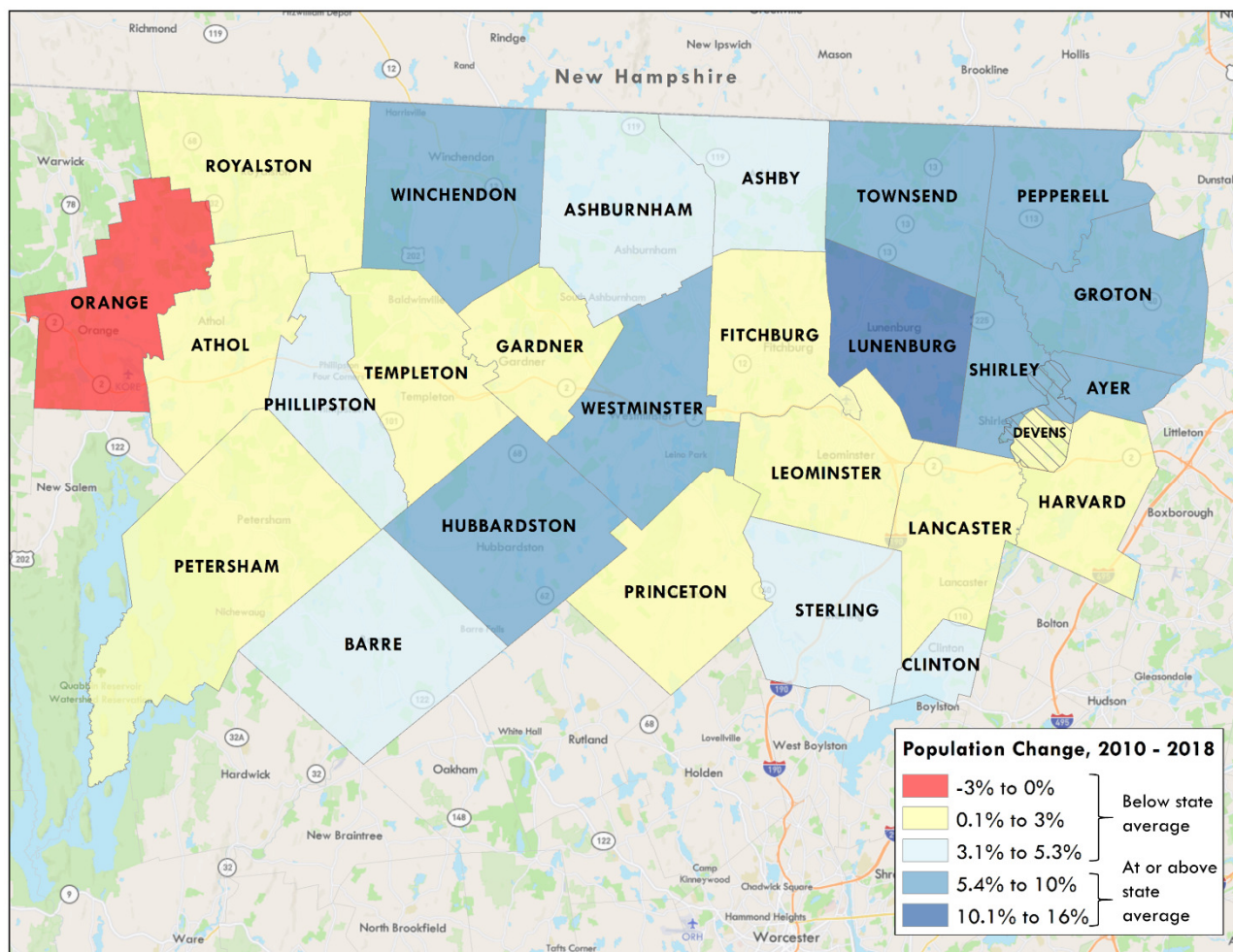
Population

Regional Population Growth

North Central Massachusetts has experienced moderate population growth, 4.0 percent since 2010, although this growth has been uneven across its 26 cities and towns. With 275,077 people in 2018, North Central Massachusetts comprises four percent of the state total. According to the U.S. Census Bureau, Massachusetts' population grew 5.4 percent from 2010 to 2018, making it the fastest growing state in the Northeast but still slightly below the nation's overall growth rate of 6.0 percent.

Figure 3 illustrates the percent change in North Central's resident population by municipality. Towns in red, yellow or light blue show a growth rate below the state average, while darker shades of blue indicate a rate at or above the state average. Nine of the twenty-six towns in the North Central region experienced population growth at or above the state average. Only Orange, at the far western part of the region, saw an actual decrease in population. The fastest growth rates in North Central took place in Lunenburg (15.6 percent) and Ayer (9.9 percent), both on the eastern side of the region. With Massachusetts' growth being led by the Boston metropolitan area, it is not wholly surprising that North Central growth is led by its eastern municipalities that are situated within 30 to 35 miles of the cities of Boston and Cambridge.

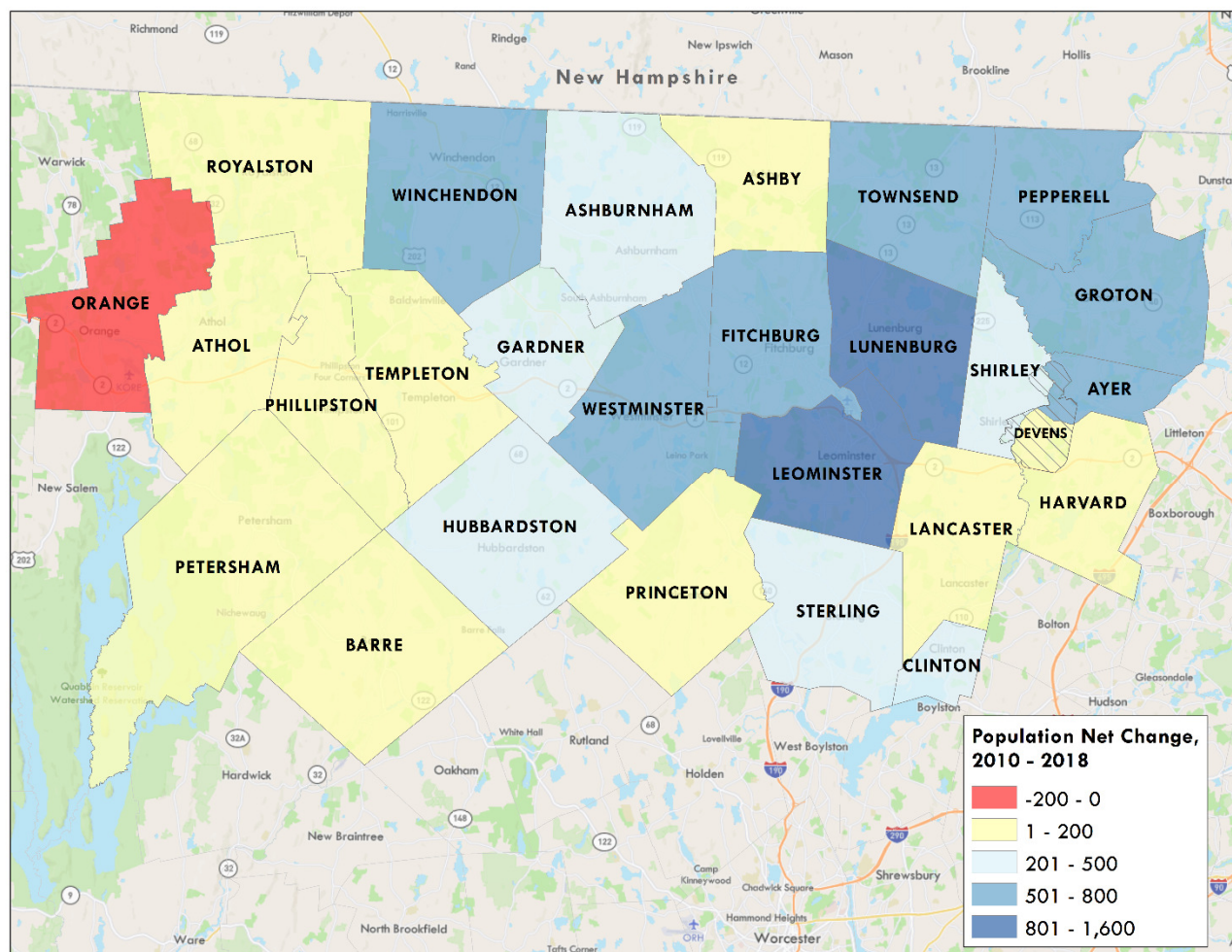
Figure 3. Population Percent Change, 2010-2018



Source: U.S Census Bureau

Figure 4 illustrates population change for the same cities and towns in North Central Massachusetts, but in terms of net change rather than percent change. This serves to clarify that larger towns like Leominster, despite growing only 2.6 percent, saw an increase of over 1,000 people from 2010 to 2018, actually ranked second in net terms, following Lunenburg (+1,571). Overall, North Central Massachusetts added more than 10,000 people during the 2010 to 2018 period, with the majority of that growth taking place on the eastern side of the region.

Figure 4. Population Net Change, 2010-2018

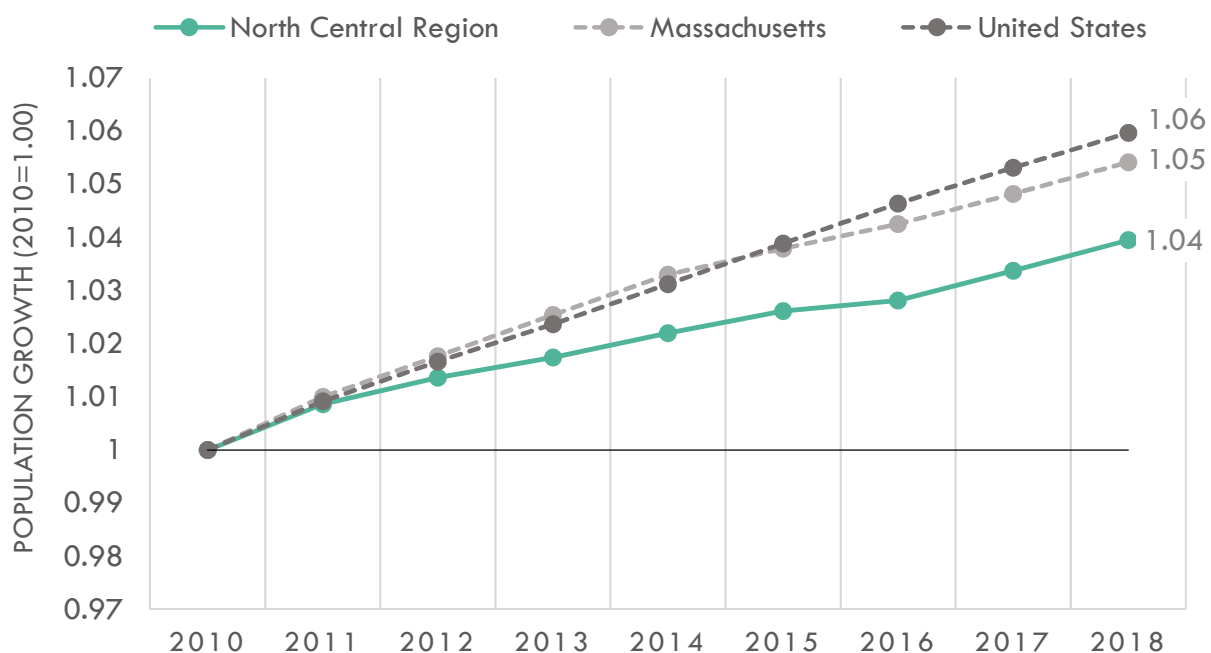


Source: U.S Census Bureau

As a region, North Central Massachusetts has experienced relatively moderate but consistent population growth since the end of the recession in 2010. **Figure 5** illustrates this finding in terms of a population change index. The index expresses each year's population in terms of the population in 2010. An index value above 1.00 indicates growth while a value below 1.00 indicates decline. Overall, the region has seen 4.0 percent population growth since 2010 but with a slight uptick starting in 2016. Interestingly, this uptick has occurred while Massachusetts population growth has concurrently begun to slow relative to the nation's. This demonstrates two forces at play: (1) as metropolitan Boston has become more expensive, people are pushing out further for less costly homes which benefits North Central Massachusetts; and (2) as the period of economic expansion lengthens, Massachusetts residents, including retirees, are better able to sell their homes and migrate to other states, notably to the Southeast.

When we look across the eight-year period from 2010 to the most current year of population data available, we see that the trajectory of North Central Massachusetts' population growth has been consistently positive but flatter compared to that of the state, which has tracked closer to the nation's during the same period.

Figure 5. Population Change Index, 2010-2018 (2010=1.00)



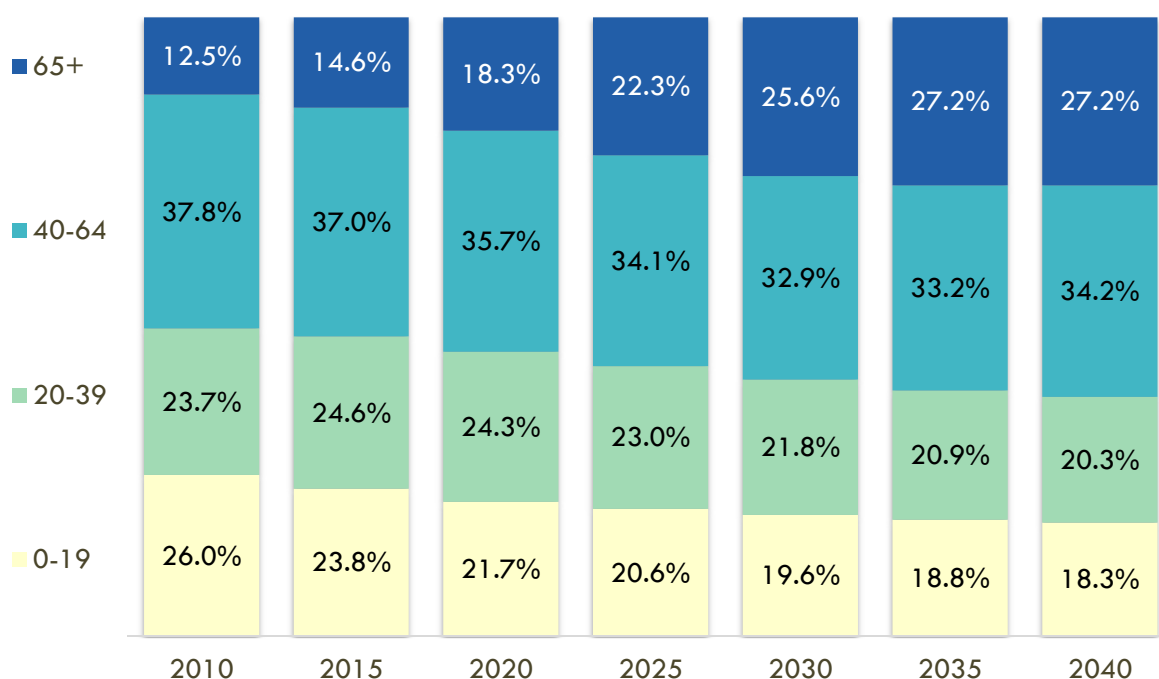
Source: U.S. Census Bureau, UMDI analysis

Projected Population Change

Despite recent strides in population growth at the municipal level and in the aggregate, North Central Massachusetts is expected to face some demographic headwinds in the years ahead, namely due to an aging population—a trend being experienced nationwide but more pronounced in the American Northeast, especially in Northern New England. That said, the region is expected to continue growing over the next 20 years, albeit slowly, adding about 4,000 people.

As shown in **Figure 6** below, North Central’s resident population over retirement age (ages 65 years and over) is expected to grow while its working-age population, births, and youths are all expected to decrease in their share to the total population relative to 2010. The working-age population (depicted here as those aged 20-64) is expected to shrink from 61.5 percent to 54.5 percent of the total population by 2040. The population of those under 40, including births and those who would gradually replace people exiting the working-age population is similarly expected to decline through 2040, from 49.7 percent to 38.6 percent of the total population, respectively. The share of retirement-age residents, in contrast, is the only broad age cohort that is projected to grow, and is estimated to reach over 27 percent of the population by 2030 when the last of post-World War II Baby Boom generation will be over the age of 65. These demographic changes will ultimately impact the regional labor force composition, demand for public services, housing, tax revenues, school enrollment, and other parts of the North Central region’s economy and municipal priorities.

Figure 6. North Central Massachusetts Projected Population Distribution by Age Group, 2010-2040

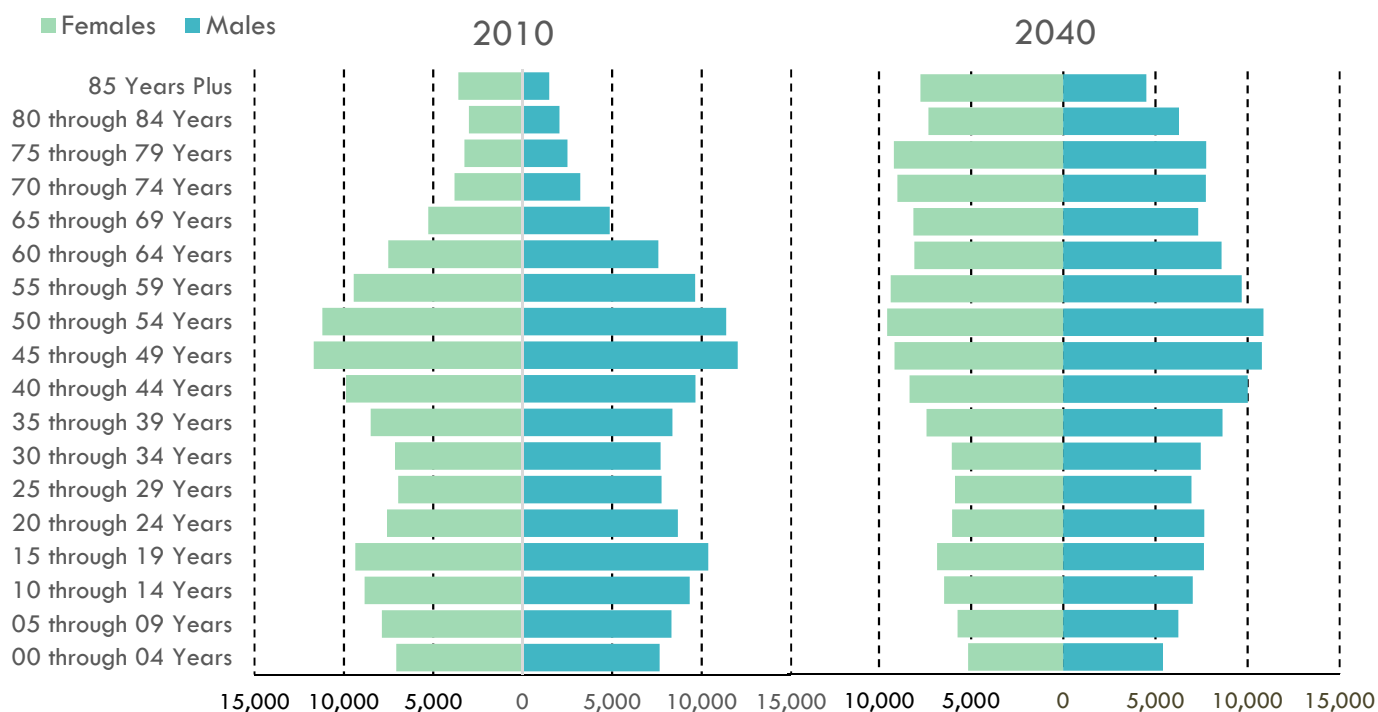


Source: UMass Donahue Institute, Population Estimates Program

These trends are further detailed in **Figure 7**, which shows how the North Central Massachusetts population is estimated to age forward from 2010 to 2040. By breaking down the broader age cohorts into five-year increments, we can identify subsections of the population that are projected to decrease across the time series and elaborate on their economic implications for the region. For example, those residents between the ages of 20 and 30, the ages where we would expect family formation to start, are projected to become scarcer. We can also see fewer projected births, as indicated as a smaller comparative share of people in the age cohort of 0-4 years of age. The same is true for those of high school and college ages, 15-24, which would affect regional spending on education and school enrollment. Those nearing retirement age, as well as all of the cohorts at or above retirement age, would increase in 2040.

It is within this demographic context that North Central Massachusetts will need to work to attract residents and businesses to the region and promote economic development over the next two decades. As demographic shifts contribute to workforce constraints, a central goal will be to strategize how to draw workers and grow communities in light of an aging population.

Figure 7. North Central Massachusetts Projected Population Age Pyramids, 2010-2040



Source: UMass Donahue Institute, Population Estimates Program

Race and Ethnicity

The racial composition of North Central Massachusetts saw some small but notable changes from 2010 to 2017, notably the increase in share of the Hispanic population, from eight percent to 10 percent. Overall, North Central Massachusetts tends to be whiter, with shares of non-white populations not nearly as high as statewide averages in 2017.

Table 1. Race and Ethnicity in North Central (2010-2017), MetroWest and Massachusetts (2017)

Race/Ethnicity	North Central (2010)	North Central (2017)	MetroWest (2017)	Massachusetts (2017)
White alone	86%	83%	80%	73%
Black or African American alone	3%	3%	2%	7%
Asian alone	2%	2%	7%	6%
Two or more races	1%	2%	2%	2%
Other	1%	0.3%	1%	1%
Hispanic or Latino (of any race)	8%	10%	7%	11%

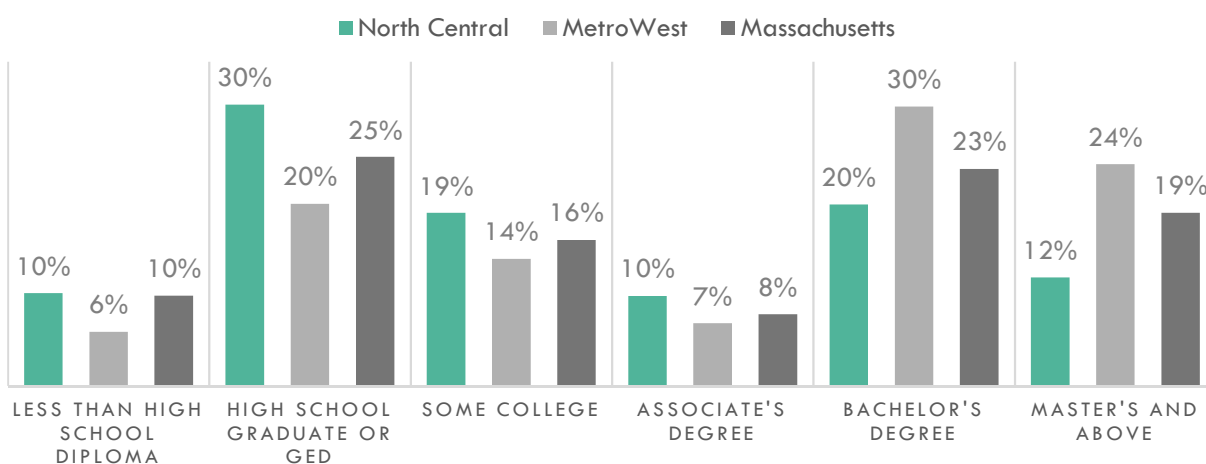
Source: U.S. Census Bureau, American Community Survey

Educational Attainment

Massachusetts is the most educated state in the country, and while slightly below statewide averages as well as MetroWest's, North Central Massachusetts possesses relatively high educational levels.

- Around 32 percent of the population (ages 25+) in North Central Massachusetts has earned a bachelor's degree or higher, almost exactly aligned with national average.
- When accounting for those that have some level of college or higher, that number jumps to 61 percent, indicating that North Central Massachusetts possesses a varied and skilled workforce.
- From 2010 to 2017, North Central bachelor's degree earners increased by 14 percent.

Figure 8. Educational Attainment in North Central, MetroWest and Massachusetts, 2017



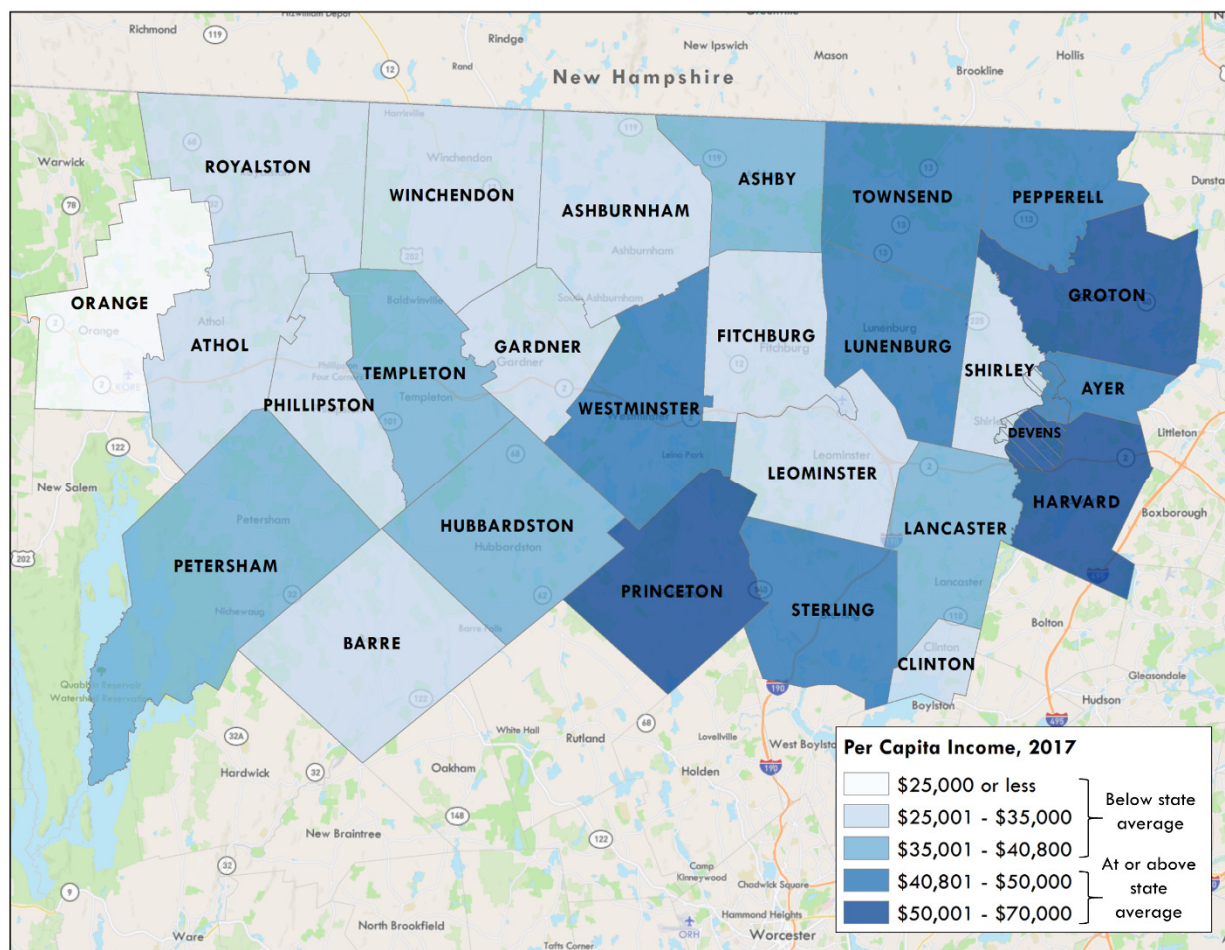
Source: U.S. Census Bureau, 5-Year Estimates, American Community Survey; UMDI analysis

Household and Per Capita Income

At approximately \$34,800, North Central Massachusetts' weighted average per capita income was about \$3,000 higher than the nationwide average in 2017. The relatively high incomes translate into buying power, affecting both retail and housing preferences. Despite the region's higher income levels, they remain \$6,000 lower than the Massachusetts average (one of the wealthiest states in the country), and \$15,000 lower than the MetroWest average (among the most prosperous areas of the state).

Figure 9 illustrates the per capita income of North Central Massachusetts towns, the two darkest shades of blue indicating income levels at or above the state average. These higher income towns (in ascending order) include Pepperell, Townsend, Ayer, Lunenburg, Westminster, Sterling, Harvard, Groton and Princeton. Harvard and Groton are often considered among Boston's affluent suburbs while Princeton is a wealthier community on the outskirts of Worcester.

Figure 9. Per Capita Income, 2017



Source: U.S. Census Bureau, 5-Year Estimates, American Community Survey; UMDI analysis

In addition to per capita income, **Table 2** shows the distribution of households by income, as well as an estimated regional median for North Central Massachusetts, MetroWest and the state. According to MIT's living wage calculator, a household with two working adults and two children in Worcester County (which encompasses most North Central towns) needs to make \$35,500, or \$17 an hour to earn a living wage.² The majority of households in North Central Massachusetts earn far more than \$35,500, with a regional median household income of \$69,775.

While North Central's median household income is lower than MetroWest's or Massachusetts', the cost of living is also substantially lower, as is elaborated in a later section (**Quality of Life**) on quality of life indicators.

Table 2. Distribution of Households by Income and Median Household Income by Region, 2017

Source: U.S. Census Bureau, 5-Year Estimates, American Community Survey; UMDI analysis

	North Central	MetroWest	Massachusetts
Less than \$10,000	4%	3%	6%
\$10,000 to \$19,999	10%	5%	9%
\$20,000 to \$29,999	7%	6%	7%
\$30,000 to \$39,999	8%	6%	7%
\$40,000 to \$49,999	8%	5%	6%
\$50,000 to \$74,999	16%	13%	15%
\$75,000 to \$99,999	14%	11%	12%
\$100,000 to \$149,999	19%	20%	17%
\$150,000 or more	14%	30%	20%
Regional Median³	\$69,775	\$99,809	\$74,161

² <https://livingwage.mit.edu/counties/25027>

³ Median household incomes for custom geographic aggregates such as North Central and Metro West were estimated by calculating cumulative totals and percentages for ranges of income, age, and earnings.

Economy

Industry Composition

According to the Quarterly Census of Employment and Wages (QCEW), there were an estimated 93,735 jobs in North Central Massachusetts in 2018, accounting for 2.6 percent of total Massachusetts employment. The QCEW jobs numbers (based on those working at business establishments) increases by around 10,000 jobs when Emsi estimates (Economic Modeling Specialists Inc., a labor market analytics database) for self-employed and non-QCEW workers⁴ are included.

Three industries, government, health care, and manufacturing, account for over half of the total employment in North Central Massachusetts:

- **Government** (NAICS 90), which includes elementary and high schools, local, state and federal government, and state universities.
- **Health Care** (NAICS 62), which includes hospitals, nursing homes, dentists, outpatient care, and childcare.
- **Manufacturing** (NAICS 31-33), which includes plastics, computer and electronics, metals, machinery, chemical, paper, and food manufacturing.

Table 3. Industry Breakdown in North Central Massachusetts by 2-Digit NAICS Code

NAICS	Description	2010 Jobs	2018 Jobs	2010 - 2018 % Change	2018 Location Quotient
90	Government	17,878	18,556	4%	1.19
62	Health Care and Social Assistance	14,965	18,092	21%	1.38
31-33	Manufacturing	14,951	15,859	6%	1.94
44	Retail Trade	11,164	11,519	3%	1.1
71, 72	Leisure and Hospitality	7,713	9,095	18%	0.85
54, 55, 56	Professional and Business Services	7,472	8,563	15%	0.58
23	Construction	4,506	5,432	21%	0.94
42, 48	Transportation and Logistics	4,690	4,954	6%	0.65
81	Other Services (except Public Administration)	4,565	4,271	-6%	0.86
52, 53	Finance and Real Estate	2,635	2,869	9%	0.48
61	Educational Services	1,519	1,954	29%	0.73
11	Agriculture, Forestry, Fishing and Hunting	1,425	1,734	22%	1.42
51	Information	944	756	-20%	0.4
22	Utilities	71	136	92%	0.38
21	Mining, Quarrying, and Oil and Gas Extraction	70	91	30%	0.21
Total		94,567	103,881	10%	-

Source: Emsi. In addition to QCEW, data also include Non-QCEW and Self-Employed Workers

⁴ While the QCEW captures the majority of jobs in a given geography—military, most railroad workers, some non-profit organizations, and some religious institution employees are excluded. Emsi combines data from County & ZIP Business Patterns, the Railroad Retirement Board, and the American Community Survey to fill in Non-QCEW workers. Emsi also combines data from the American Community Survey and Non-Employer Statistics to estimate self-employed workers, another class of worker excluded by the QCEW.

Location quotients (LQs) are a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.⁵ An LQ higher than 1.0 indicates that a region has a higher concentration of a particular industry relative to the nation as a whole. An LQ that is less than 1.0 indicates that a region has a lower concentration of jobs in an industry compared to the nation.

Figure 10 illustrates another way of observing regional industry trends over time in North Central Massachusetts. It shows three dimensions of employment by industry: the LQs of each industry, plotted along the horizontal axis; the change in employment from 2010, along the vertical axis; and the share of each industry in North Central's economy shown by the relative size of each bubble. The graphic is divided into four quadrants, indicative of industry sector relative importance and performance in North Central Massachusetts.

- **Strong and Growing:** Industries that are adding jobs and are concentrated in the North Central region.
- **Weak and Growing:** Industries that are adding jobs but not concentrated in the North Central region.
- **Strong and Declining:** Industries that are losing jobs and are concentrated in the North Central region (note that no major sector is in this category).
- **Weak and Declining:** Industries that are losing jobs and are not concentrated in the region.

By relating each industry to its LQ and employment change over time (2010-2018), industries like Agriculture, while not large in size in terms of total jobs, show rapid growth and strong regional uniqueness and is thus within the "Strong and Growing" category.

Moreover, we can see from the chart that the vast majority of North Central's industries are growing, as indicated by the location of the bubbles above the horizontal axis. Only Information and Other Services (e.g., repair services, personal care services, laundry services, etc.) appear to be weak and declining in that they have LQs lower than 1.0 and employment has not grown compared to 2010.

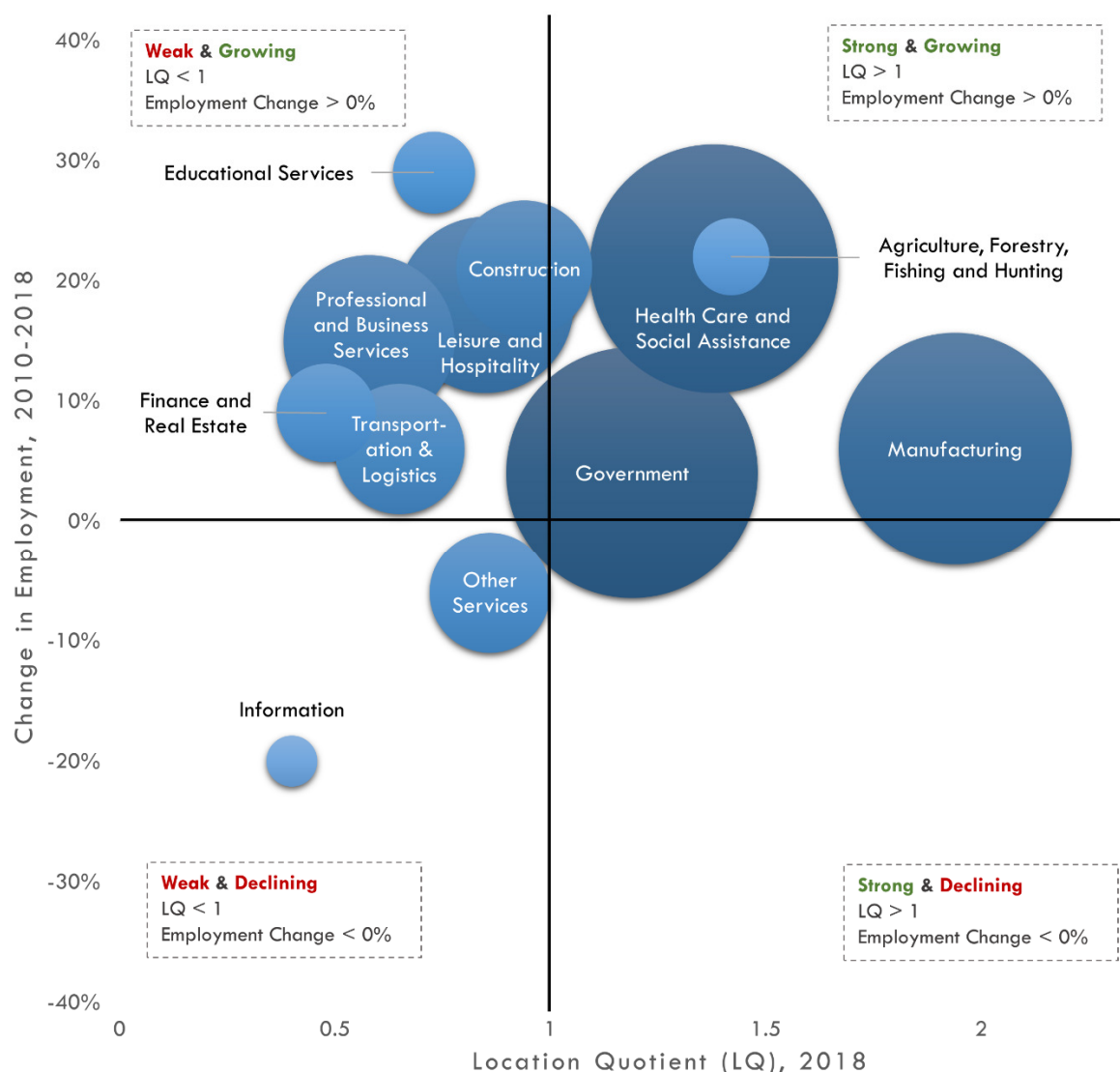
The Information sector includes a mix of industries that have been directly affected by dynamic technological changes, both positively and negatively, in the way that people produce and consume information, such as newspaper, periodical and book publishers, telecommunications, and broadcasting. It also includes the growing software industry. These industries' collective location in this quadrant in North Central is not surprising and the industry, overall, in the U.S. has essentially posted no jobs growth since 2010.

Industries that are growing but weak (in terms of their concentration compared to the U.S.) include Construction, Professional and Business Services, Leisure and Hospitality, Finance and Real Estate, and Transportation and Logistics. These are industries in which demonstrate growth and could be considered as opportunities for North Central Massachusetts.

⁵ "Labor Market Analytics." *Emsi*, www.economicmodeling.com/. $LQ = (e_i/e) / (E_i/E)$ where e_i = regional employment in sector i ; e = total regional employment; E_i = national employment in industry i ; and E = total national employment

North Central Massachusetts' strong and growing sectors are those industries where LQs are over 1.0 *and* employment has grown since the recession: Government, Health Care and Social Assistance, Agriculture, Forestry, Fishing, and Hunting, and Manufacturing. The growth in manufacturing jobs is a particular standout in the North Central region as the sector's employment in Massachusetts has declined even as manufacturing production (as measured by gross domestic product) has increased markedly in the state. North Central Massachusetts is a hub for manufacturing jobs as well as jobs in Health Care, Social Assistance, and Government.

Figure 10. Relative Performance of North Central Massachusetts Industry Sectors



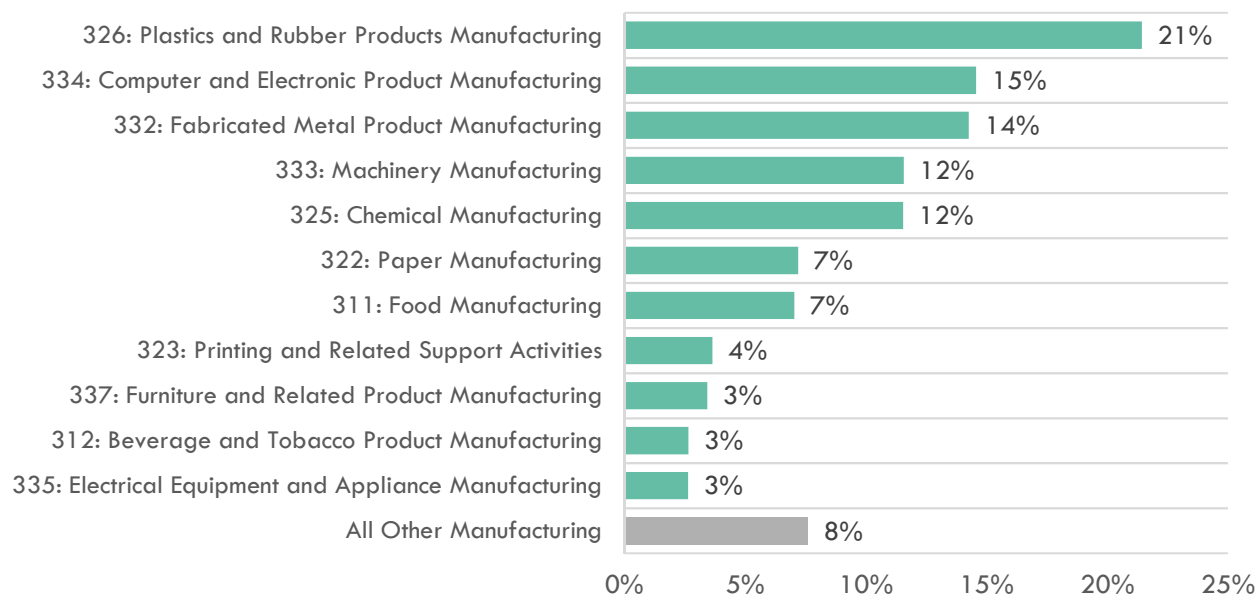
Source: Emsi. In addition to QCEW, data also include Non-QCEW and Self-Employed Workers

Manufacturing Snapshot (NAICS 31-33)

As North Central Massachusetts' third largest industry, Manufacturing accounts for 15 percent of the region's total employment. It is also the most regionally unique – with a location quotient of 1.94, the highest of any industry in the region, manufacturing is nearly twice as concentrated in the region as it is nationwide.

- Aggregate earnings⁶ in the North Central region totaled \$1.5 billion in 2018, comprising 5 percent of total Massachusetts manufacturing earnings.
- Manufacturing in the region is largely dominated by plastics and rubber manufacturing, comprising 21 percent of the sector with 3,137 total jobs in 2018.
- At 10 percent, this subsector has grown substantially since 2010, alongside fabricated metals, chemical, and food manufacturers.
- The largest manufacturing employers in North Central include Bristol Myers Squibb in Devens, L.S. Starrett Company in Athol, Nypro, Inc. in Clinton, and Quad/Graphics, Inc. and Plasticscan, Inc., which are both located in Leominster.⁷

Figure 11. Manufacturing Subsectors (3 digit NAICS) as a Percent of Total 2018 Manufacturing Jobs



Source: Emsi, the Quarterly Census of Employment and Wages (QCEW), Bureau of Labor Statistics (BLS)

⁶ Earnings include wages, salaries, supplements, and proprietor income for a region.

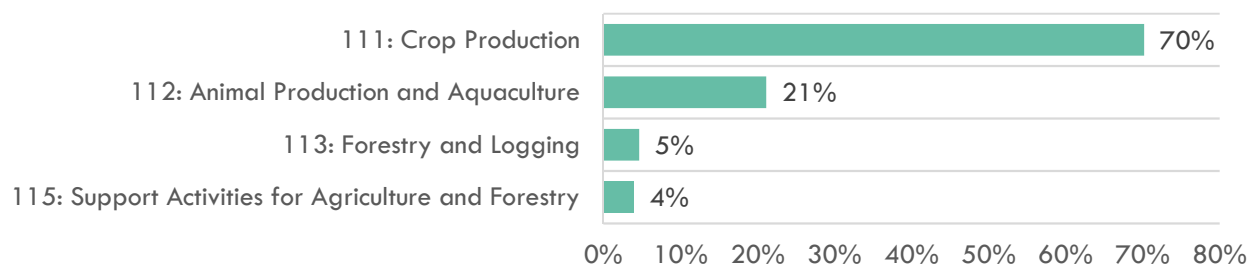
⁷ Dun & Bradstreet, accessed via Mergent Intellect, <http://www.mergentintellect.com.silk.library.umass.edu/index.php>. L.S. Starrett Company (NAICS 332216, Saw Blade and Hand Tool Manufacturing), Nypro, Inc. (NAICS 326199, All Other Plastic Product Manufacturing), Quad/Graphics, Inc. (NAICS 323111, Commercial Printing except Screen and Books Printing), and Plasticscan, Inc. (NAICS 326199, All Other Plastic Product Manufacturing).

Agriculture Snapshot (NAICS 11)

Despite its smaller share (2 percent) of the region's total employment, Agriculture has been growing quickly. In 2001, agricultural employment stood at 1,100, growing to 1,425 in 2010 and 1,734 in 2018. With a location quotient of 1.42, Agriculture is North Central Massachusetts' second most concentrated industry, about 50 percent more concentrated than the national average.

- Aggregate earnings in the region totaled \$93.2 million in 2018, constituting 7 percent of total statewide agricultural earnings.
- Jobs and earnings in agriculture are largely represented by Crop Production (111), followed by Animal Production (112) and Logging (113).
- The largest agricultural employers with operations in North Central include Meadowbrook Orchards in Sterling, Fairview Orchards in Ayer, and Quality Plant Growers in Leominster.⁸
- If looked at as a cluster by including food and beverage manufacturing, "food and agriculture" employ about 3,500 people in the North Central region.

Figure 12. Agricultural Subsectors (3 digit NAICS) as a Percent of Total 2018 Agriculture Jobs



Source: Emsi, the Bureau of Economic Analysis (BEA), the Quarterly Census of Employment and Wages (QCEW), Bureau of Labor Statistics (BLS)

⁸ Dun & Bradstreet, accessed via Mergent Intellect, <http://www.mergentintellect.com.silk.library.umass.edu/index.php>. L.S. Starrett Company (NAICS 332216, Saw Blade and Hand Tool Manufacturing), Nypro, Inc. (NAICS 326199, All Other Plastic Product Manufacturing), Quad/Graphics, Inc. (NAICS 323111, Commercial Printing except Screen and Books Printing), and Plastican, Inc. (NAICS 326199, All Other Plastic Product Manufacturing).

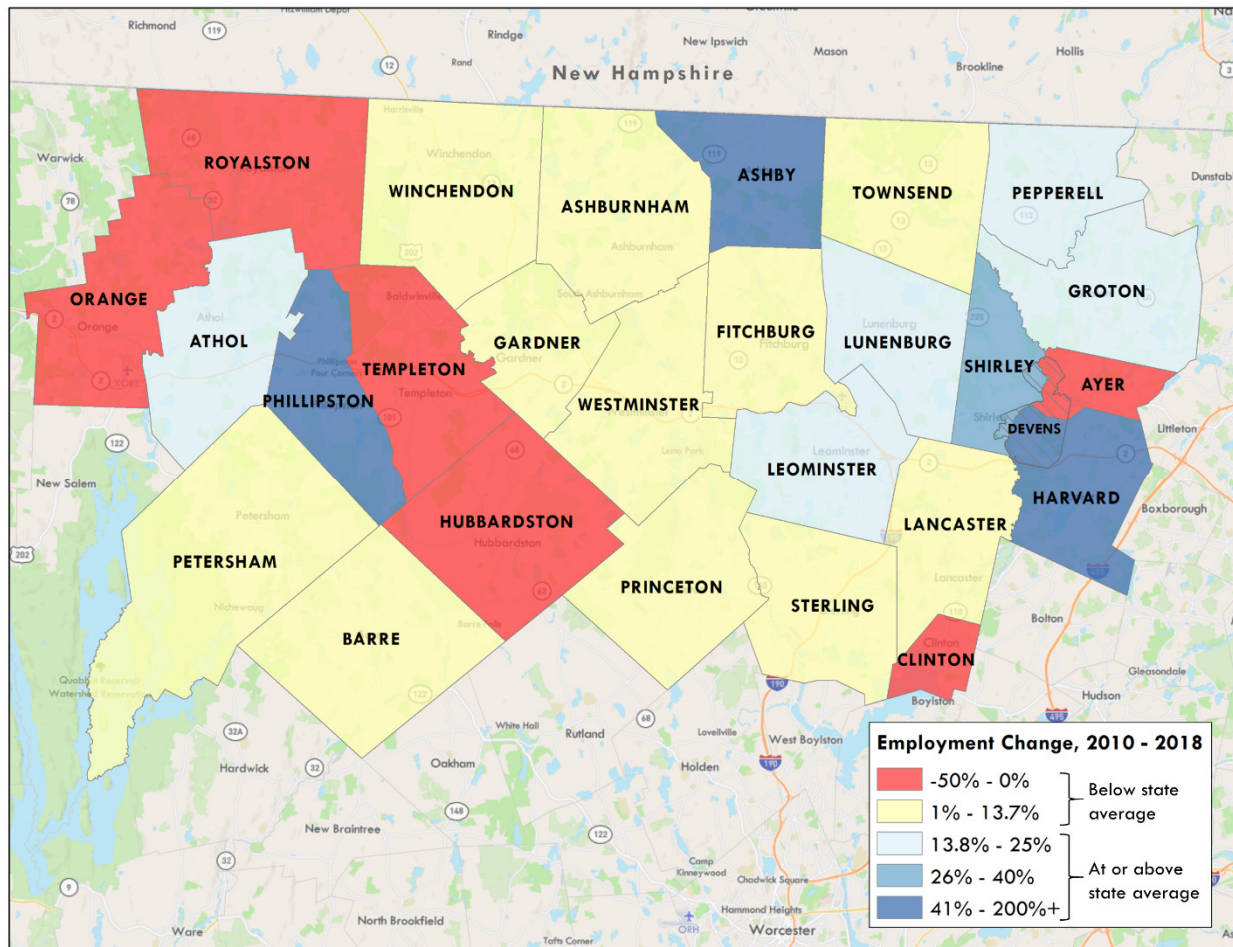
Employment and Wage Trends

While Emsi data offer comprehensive employment counts by detailed industry for the North Central region and thus provide a means for analyzing the region's jobs mix and industry performance, the overall employment performance for the region and by town shown in this section are based on QCEW (Quarterly Census of Employment and Wages) data from the Massachusetts Executive Office of Labor and Workforce Development. The QCEW data is establishment-based and is a standard for analyzing job growth performance.

Employment Change

From 2010 to 2018, regional employment grew a modest 10 percent (+8,000 jobs) compared to the statewide rate of 14 percent. Led by metropolitan Boston, Massachusetts ranked as one of the fastest growing states in terms of jobs growth between 2010 and 2018. While some towns in North Central Massachusetts grew slower than the state, others matched or exceeded the statewide rate, including Harvard, Ashby, Phillipston, Shirley, Leominster, Lunenburg, Groton, Pepperell, and Athol. The large decrease in Ayer and increase in Harvard can be attributed to geographic location code switching for Devens Business Park in 2013. While actual addresses did not change and the same employers remained in Devens, a handful of businesses that had been coded as Ayer employers were re-coded to Harvard.

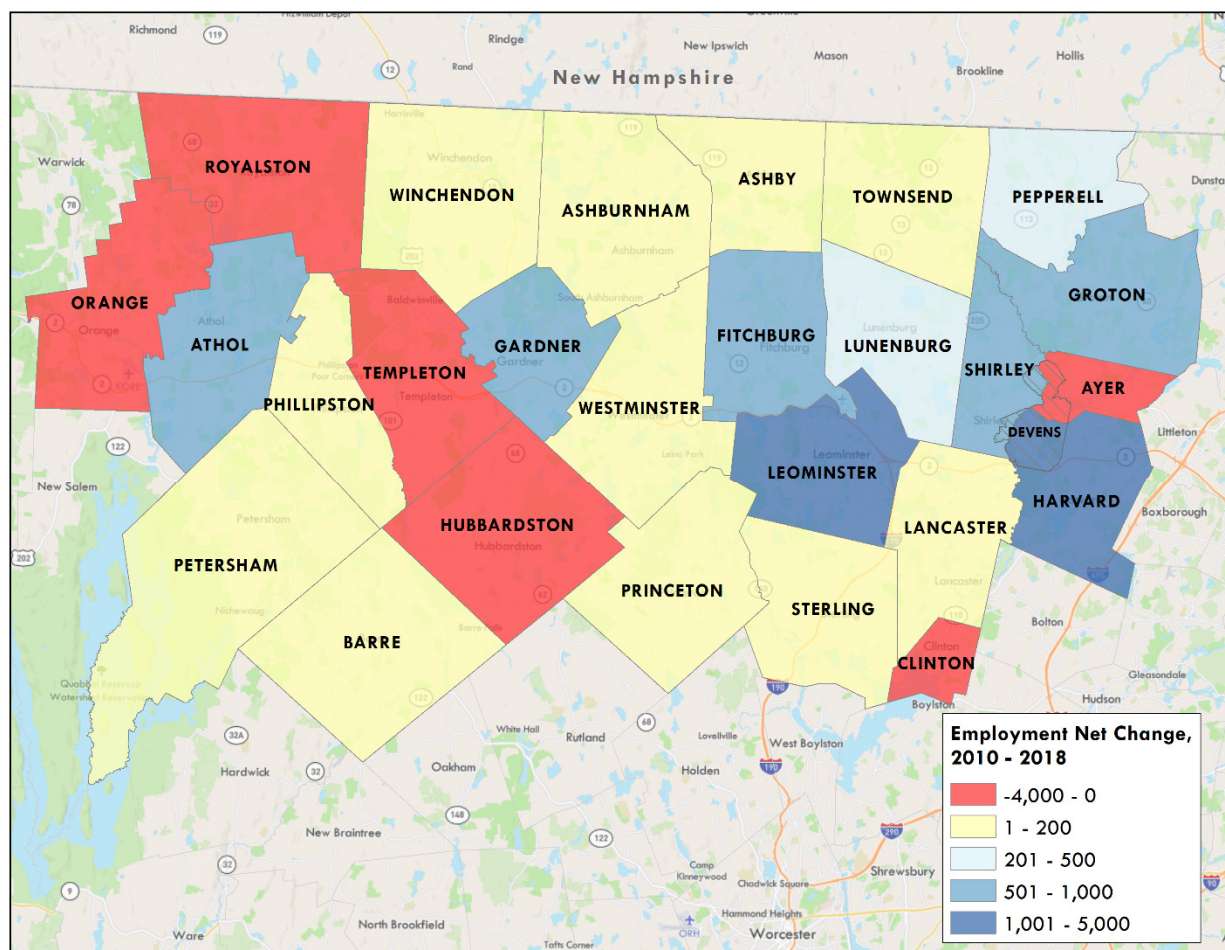
Figure 13. Employment Percent Change, 2010-2018



Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202; UMDI analysis

Figure 14 follows a similar pattern to **Figure 13**, but with more pronounced growth towards the eastern end of the North Central region. Leominster led growth with some 3,150 jobs added during the 2010 to 2018 period. Harvard, Shirley, and Ayer (noting that town's decline is administrative), the location of the Devens Business Park, combined to add over 1,000 jobs during the eight-year period.

Figure 14. Employment Net Change, 2010-2018



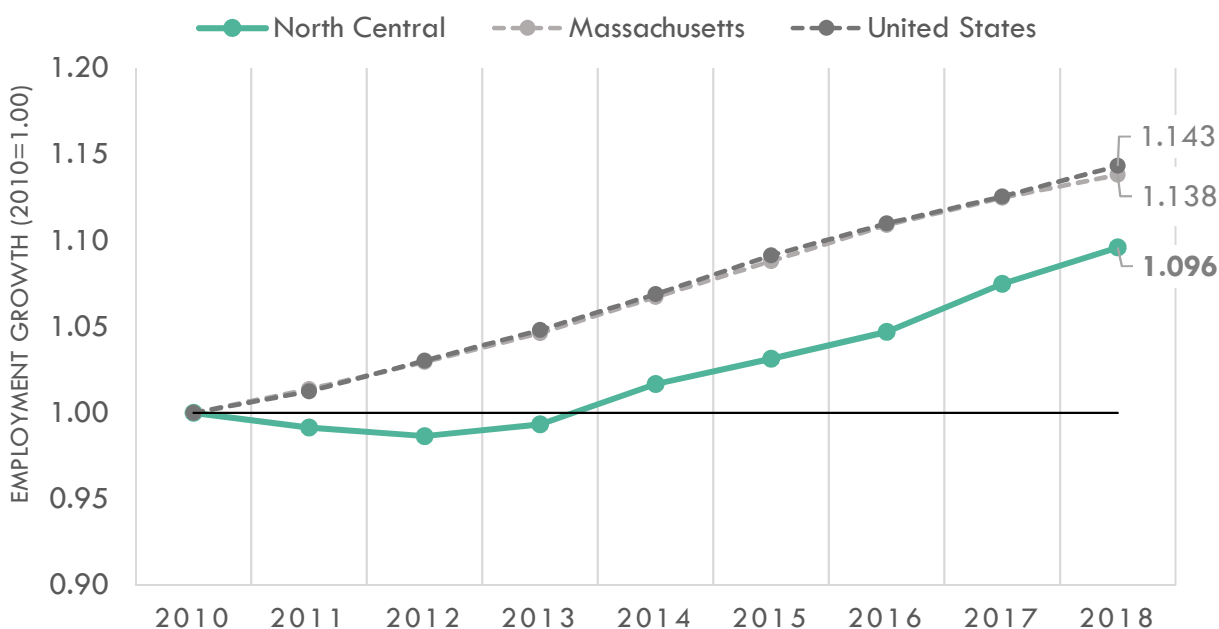
Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202; UMDI analysis

Employment Growth Index

Employment growth can also be measured in terms of the number of jobs in 2010, after the recession ended and economic recovery began. **Figure 15** shows a job change index, which expresses each year's job levels relative to 2010. Similar to the population change index above, any job change index value greater than 1.00 indicates job growth relative to 2010 while a value of less than 1.00 indicates a job decline. In 2018, total job numbers in North Central Massachusetts were 9.6 percent higher than in 2010 (hence, the index value of 1.096).

As can be seen in the figure, jobs in North Central Massachusetts were initially slower to recover from the recession than the state or the nation. However, since 2013, jobs growth has recovered and has been gaining momentum in the North Central region. In fact, annual jobs growth in North Central Massachusetts has outpaced both the United States and Massachusetts since 2016.

Figure 15. Job Change Index, 2010-2018 (2010=1.00)

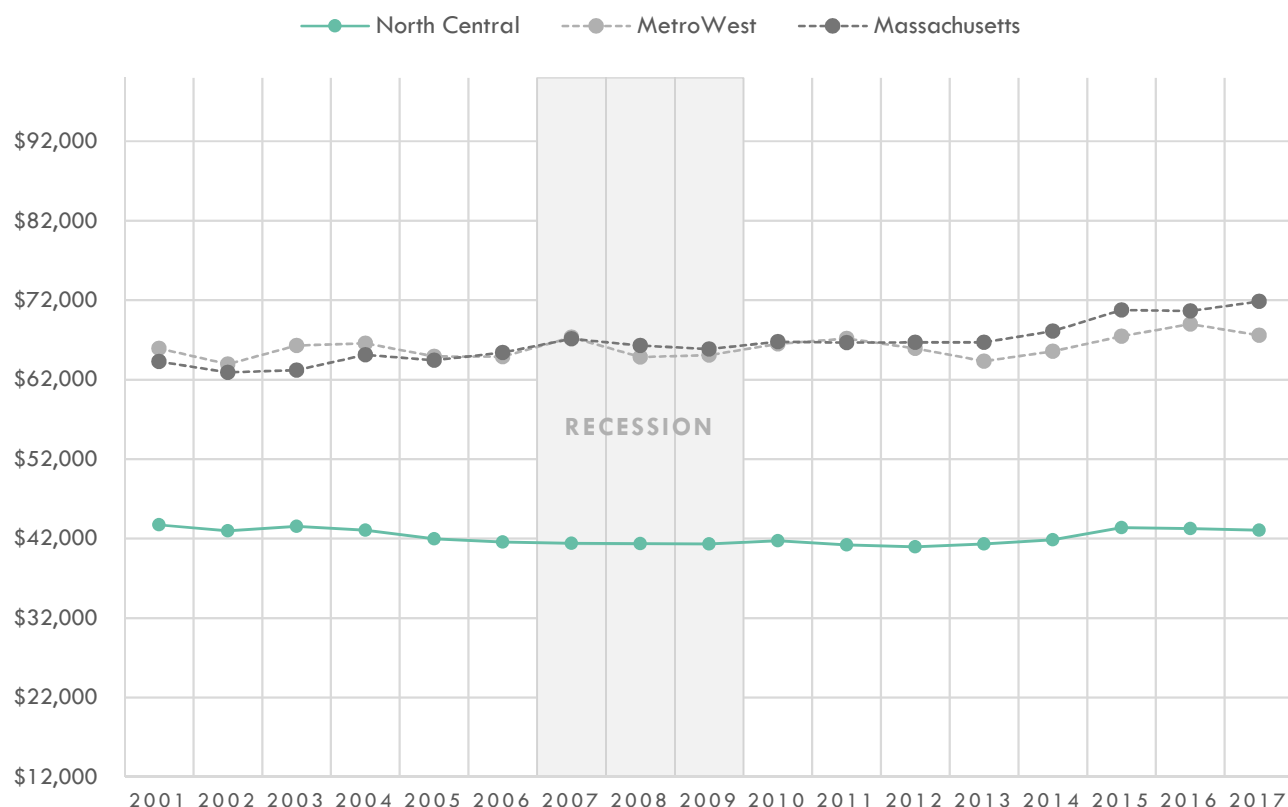


Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202; UMDI analysis

Average Wages

Average employer wages in North Central Massachusetts are consistently about \$25,000 lower than average wages in MetroWest and Massachusetts. In inflation adjusted terms (all annual values converted to 2018 dollars), average wage levels in the region have remained remarkably constant at just over \$42,000 per job.

Figure 17. Average Wages in North Central, MetroWest, Massachusetts 2001 – 2017 (\$2018)



Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202; UMDI analysis

Consistent with relatively lower wage levels, North Central's cost of living is also substantially less than in Massachusetts and MetroWest. The next chapter on **Quality of Life** will dive deeper into what makes the region an affordable option for homeowners and renters alike.

Quality of Life

Residential Property Values and Tax Rates

Median Home Values

North Central Massachusetts is a value for homebuyers, especially compared to Boston, Cambridge, or a typical town in MetroWest. The town with the highest median home value, Groton, is still well behind the leaders in home value in the MetroWest Area. Sherborn, Wayland, and Sudbury, all within the MetroWest area, all have median home values north of \$700,000, whereas Groton's, which is head and shoulders above the rest of North Central in terms of median home value, has a median home value of \$460,800.

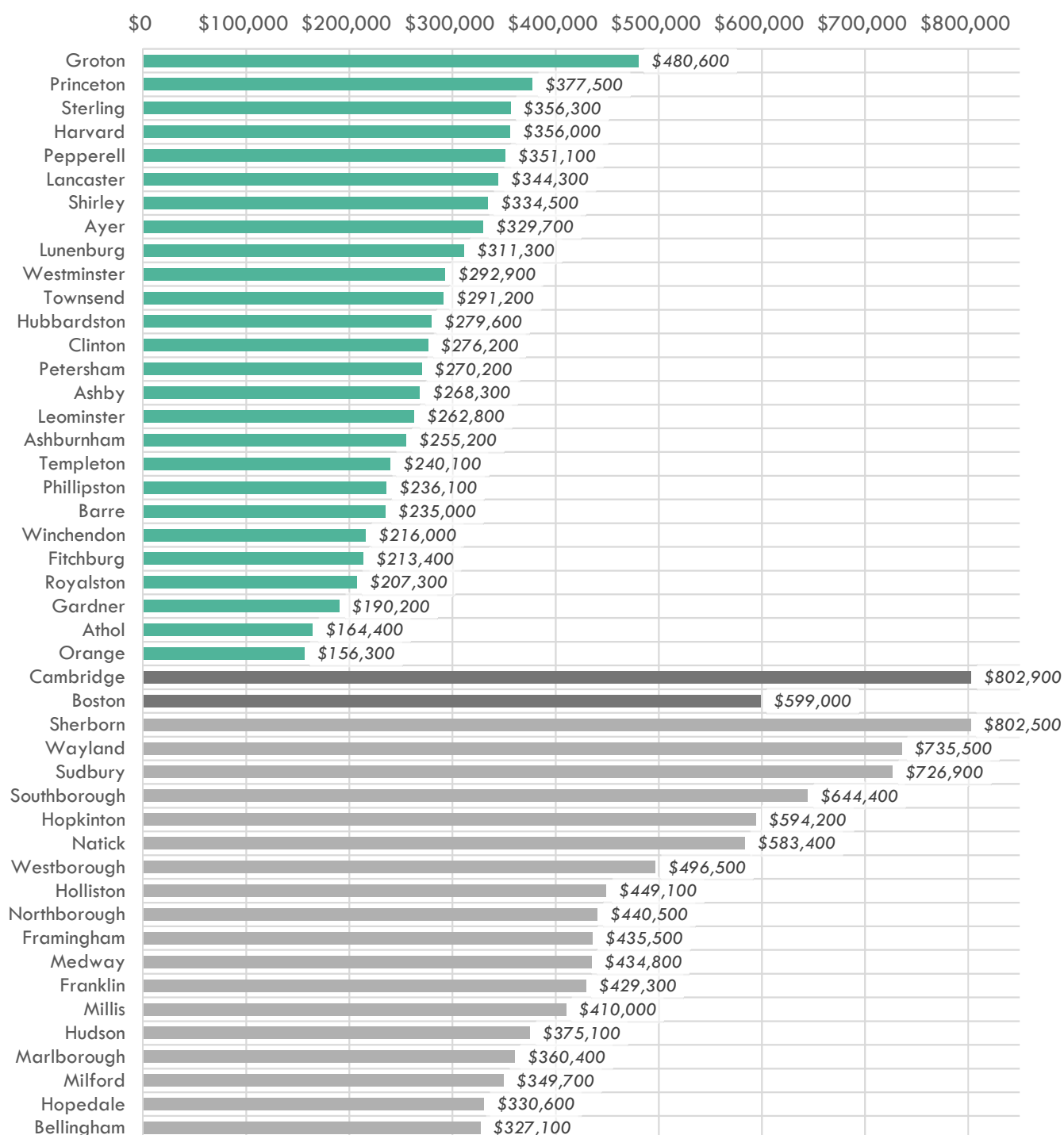
As **Figure 18** shows, many of the most expensive communities in North Central are very comparable to the least expensive in MetroWest. This could be a potential source for attracting prospective homebuyers, especially those unable to afford the higher costs in MetroWest. This also, as mentioned in the population section of the report, may be contributing to North Central Massachusetts' recent population gains.

While regional aggregates cannot be calculated using already existing median values by town⁹, patterns are straightforward to observe between median home values for municipalities in North Central Massachusetts, MetroWest and Boston-Cambridge.

- In April 2019, 69 percent (or eighteen) of the twenty-six total towns in North Central were more affordable than Bellingham, MetroWest's most affordable town given its median home value.
- Groton, North Central's most expensive town given its median home value of \$480,600, is still \$120,000 cheaper than a typical home in Boston, and \$320,000 cheaper than a typical home in Cambridge.
- Most homes in North Central Massachusetts are *half* the value of a typical home in Boston.

⁹ The data source (Zillow Research Center) does not offer the underlying home value data, making it impossible to properly weight a regional average or calculate a custom median.

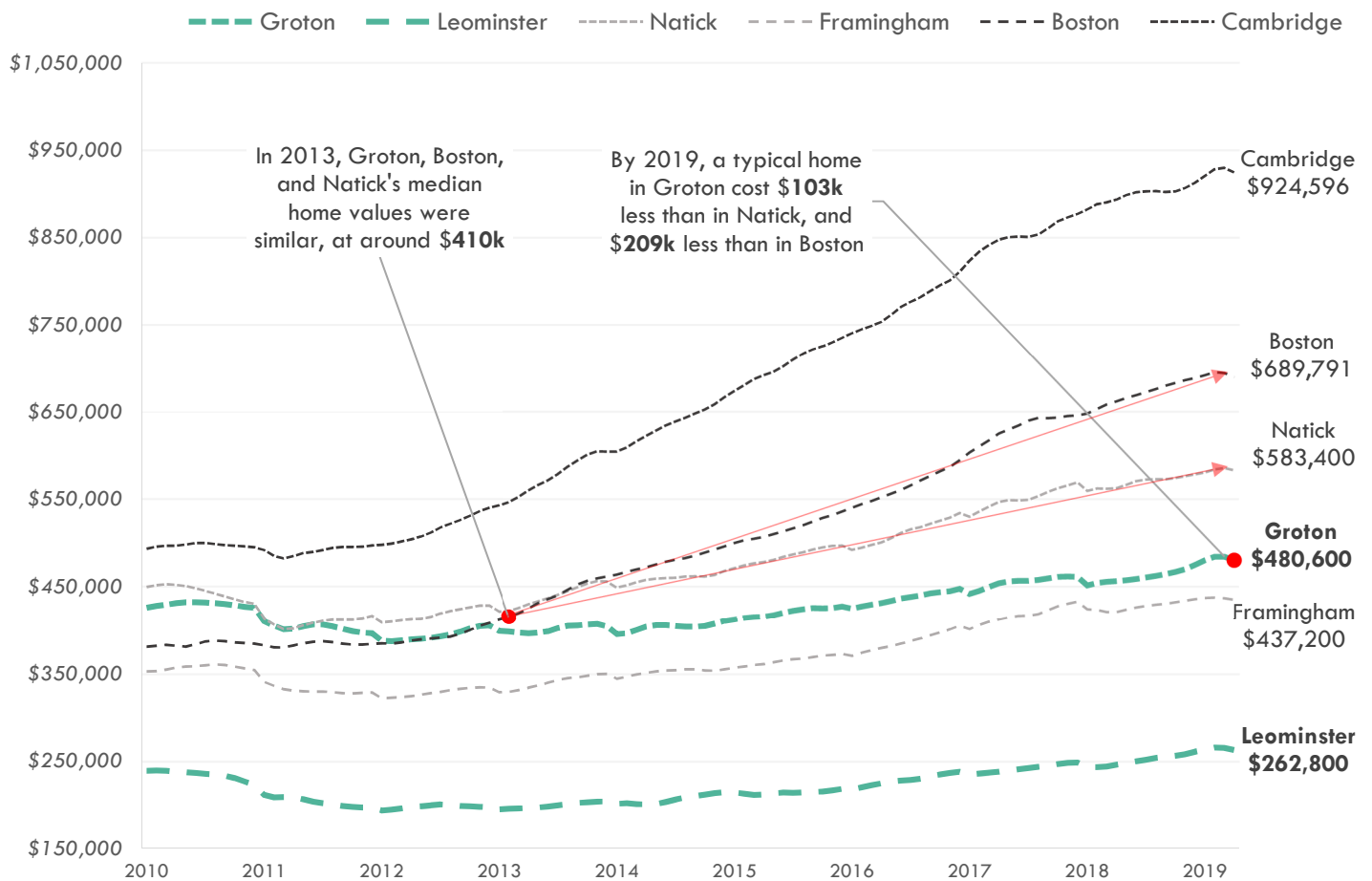
Figure 18. Median Home Values in North Central, MetroWest, and Boston-Cambridge, April 2019



Source: Zillow Research, Point in Time ZHVI (April 2019)

Figure 19 illustrates median home values (for *all* homes, single family and condominium/multi-family) over time for typical towns in North Central Massachusetts and two comparison regions. Groton (North Central) and Natick (MetroWest) were chosen as towns on the higher end of median home values in their respective regions, and Leominster (North Central) and Framingham (MetroWest) were chosen as two of the most populous towns in their respective regions. Boston and Cambridge are added to compare affordability in North Central to the state's largest urban center.

Figure 19. Monthly Median Home Values in Groton, Leominster, and Comparison Geographies (2010-2019, \$2018 inflation adjusted)



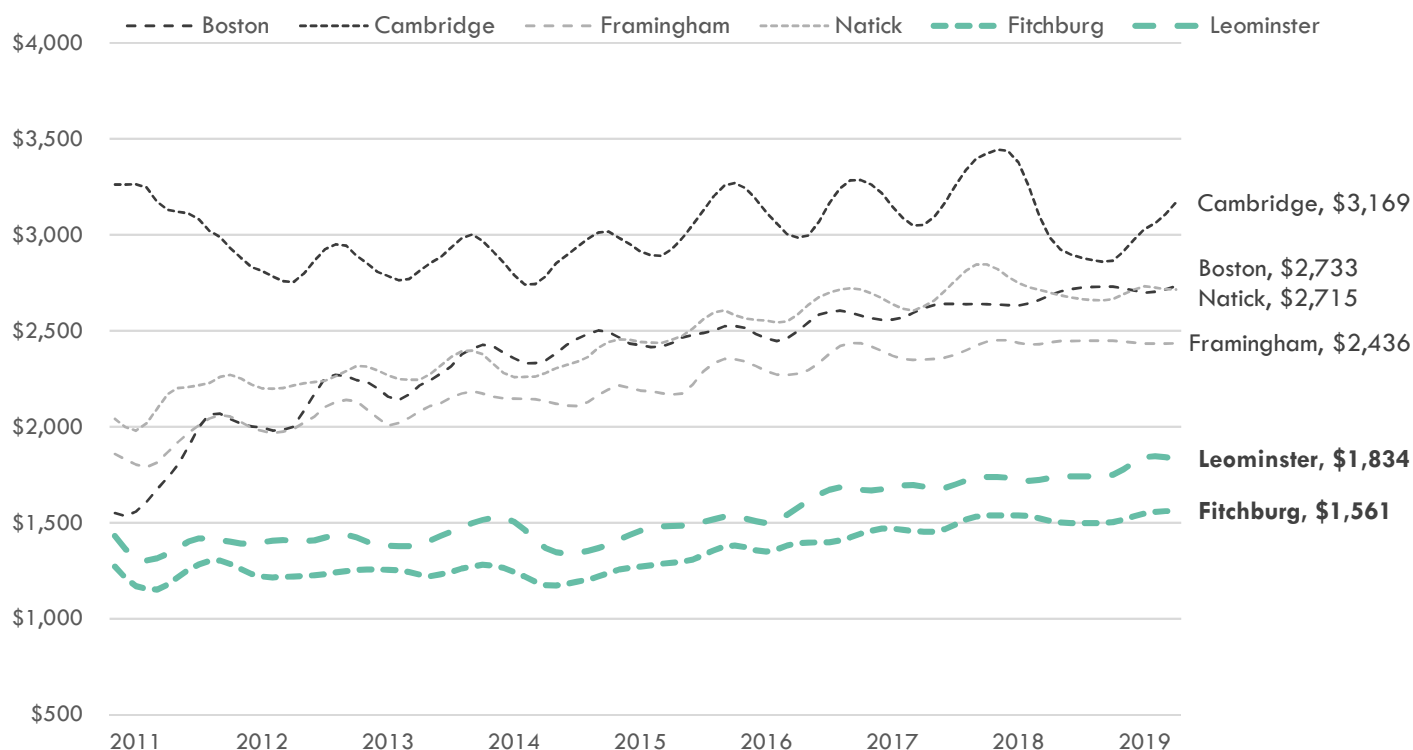
Source: Zillow Research based on the ZHVI (Zillow Home Value Index)

Median Rental Values

In addition to prospective homebuyers, North Central Massachusetts also offers a considerable value to renters. **Figure 20** below illustrates these trends. In 2011 (adjusted for inflation), single-family rentals in Leominster and Fitchburg were fairly similar to those in Boston, at around \$1,500. As Boston rents have skyrocketed, North Central towns have remained relatively stable.

From 2011 to 2019, median single-family rents in Leominster and Fitchburg increased by 28 and 23 percent, respectively. Over the same period, median rents increased by 36 percent in Natick, and by an astronomical 76 percent in Boston.

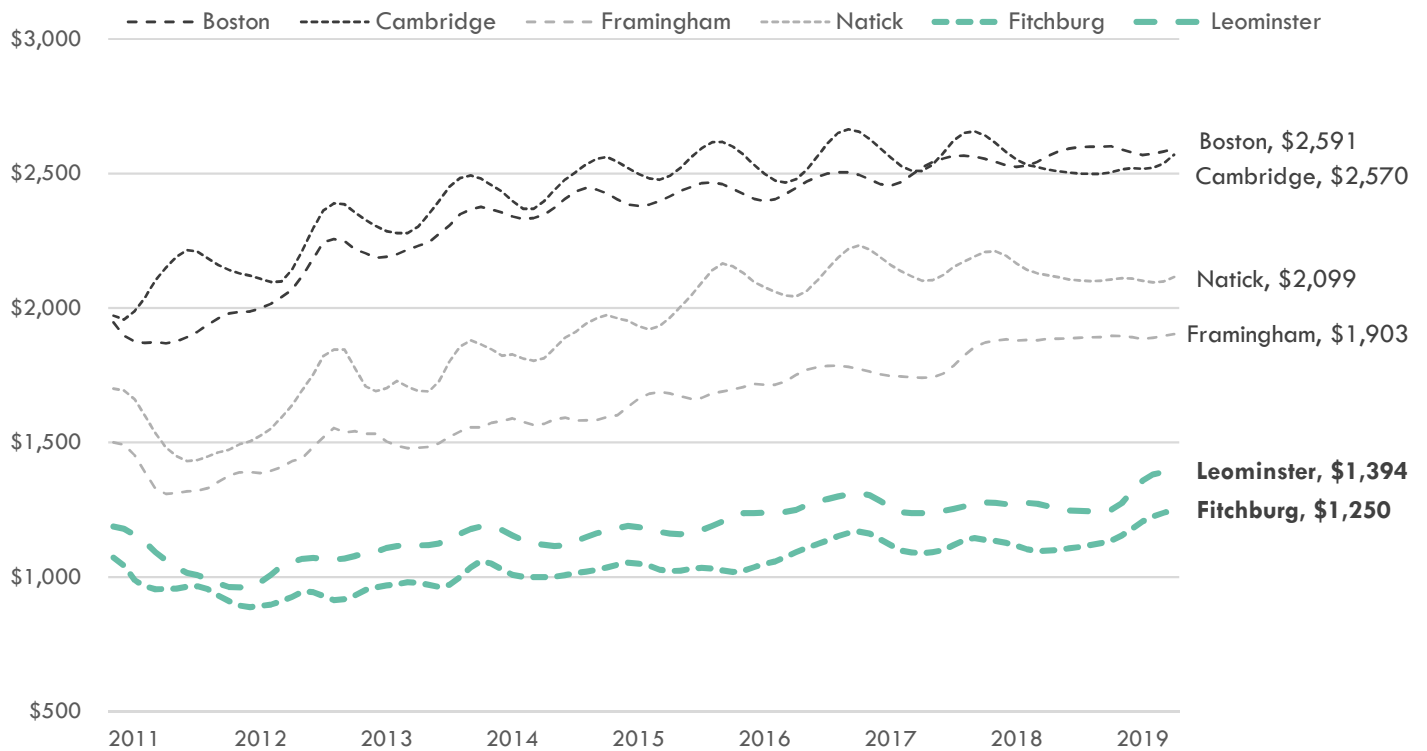
Figure 20. Single-Family Median Rents by Month, Fitchburg, Leominster and Comparison Geographies (2011-2018, \$2018)



Source: Zillow Research

We can see from **Figure 21** below that multi-family rentals in Boston are only marginally cheaper (less than \$200 per month) than single-family rentals. Multi-family rentals in Leominster and Fitchburg, on the other hand, are \$440 and \$310 cheaper, respectively, than single-family rentals. As rental markets in and around Boston continue to squeeze out residents unable to afford the rising costs, North Central Massachusetts becomes an increasingly viable option for both single-family and multi-family renters.

Figure 21. Multi-Family Median Rents by Month, Fitchburg, Leominster and Comparison Geographies (2011-2018, \$2018)

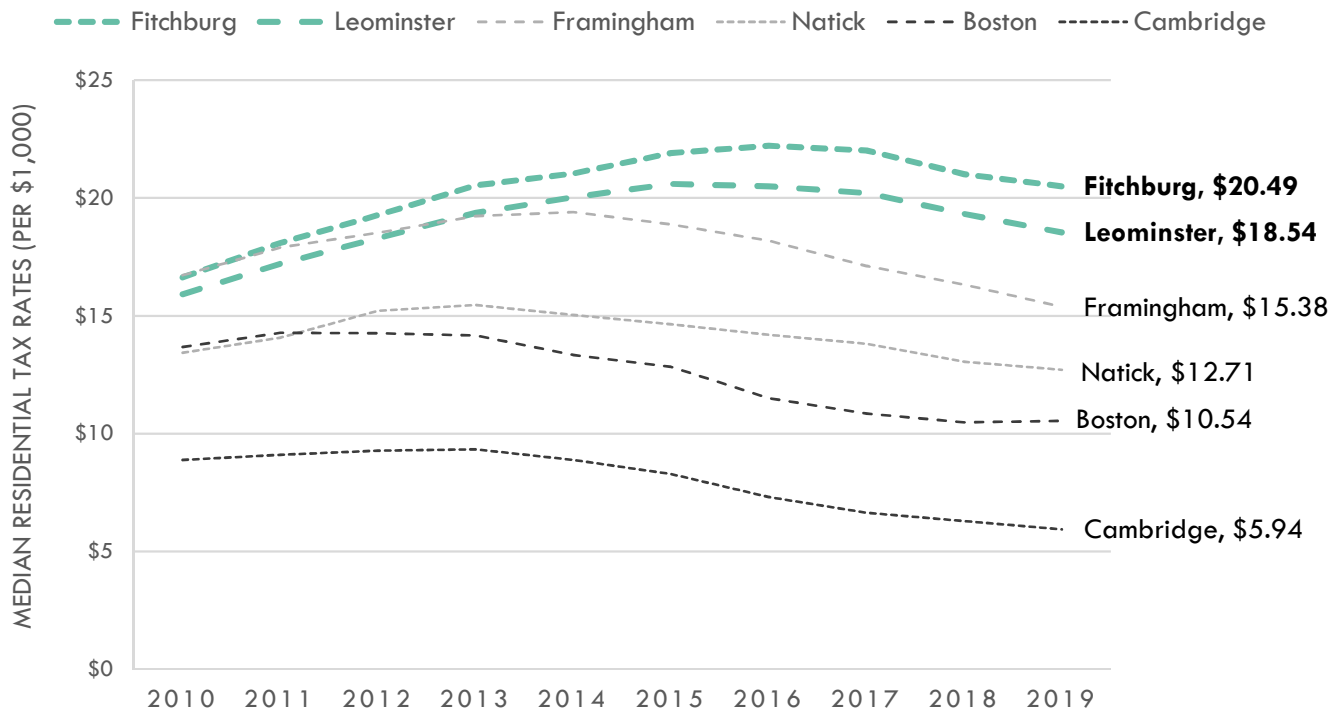


Source: Zillow Research

Residential Tax Rates

Fitchburg and Leominster have historically had higher residential tax rates than Boston, Cambridge and Natick since 2010 in inflation-adjusted dollars, as seen in **Figure 22**. However, these rates are applied to much lower property values in Fitchburg (\$213,000) and Leominster (\$262,000) compared to Natick (\$583,000) and Framingham (\$437,000), creating lower overall financial burdens.

Figure 22. Residential Tax Rates in North Central, MetroWest, and Boston-Cambridge



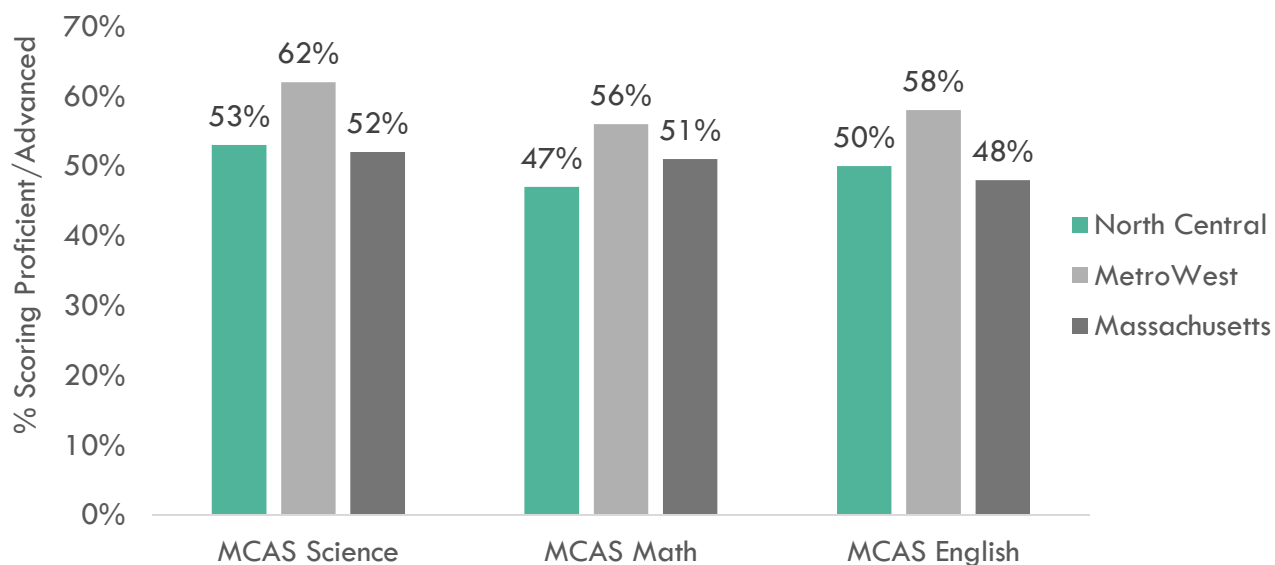
Source: Massachusetts Department of Revenue, Division of Local Services; UMDI analysis

Education

Overall, school performance in North Central Massachusetts is high, as evidenced in **Figure 23** and **Table 4** below.

- Massachusetts consistently ranks as the top ranking state in most measures conducted on the National Assessment of Educational Progress (NAEP) testing. On the Massachusetts-only MCAS test, the North Central region also shows itself to be high-achieving, scoring higher than state averages in science and English while just below the state average in math.
- Standardized test scores are on par with the state: SAT scores are slightly higher than the state average, at 558 and 559 (out of 800) for SAT Math and Reading, and about 40% of AP test takers score a 4 or 5 (out of 5) in the region, only 3 percent lower than the state's average.
- The dropout rate is lower than the state average, at 1.4 percent, and the graduation rate is slightly higher, at 89 percent. The percent of high school graduates attending college in both North Central and Massachusetts is equal, at 73 percent.

Figure 23. Percent of Total MCAS Takers Scoring Proficient/Advanced



Source: MA Department of Elementary and Secondary Education

Table 4. SAT Math and Reading, AP Performance, Dropout and Graduation Rates (Grades 9-12) and Grads Attending College, 2018

	SAT Math	SAT Reading	AP test takers scoring 4 or 5	Dropout Rate	Graduation Rate	Grads Attending College
North Central (weighted)	558	559	38.9%	1.4%	88.8%	73.3%
MetroWest (weighted)	594	584	56.0%	0.9%	92.6%	83.4%
Massachusetts	552	550	41.7%	1.9%	87.9%	73.6%

Source: MA Department of Elementary and Secondary Education

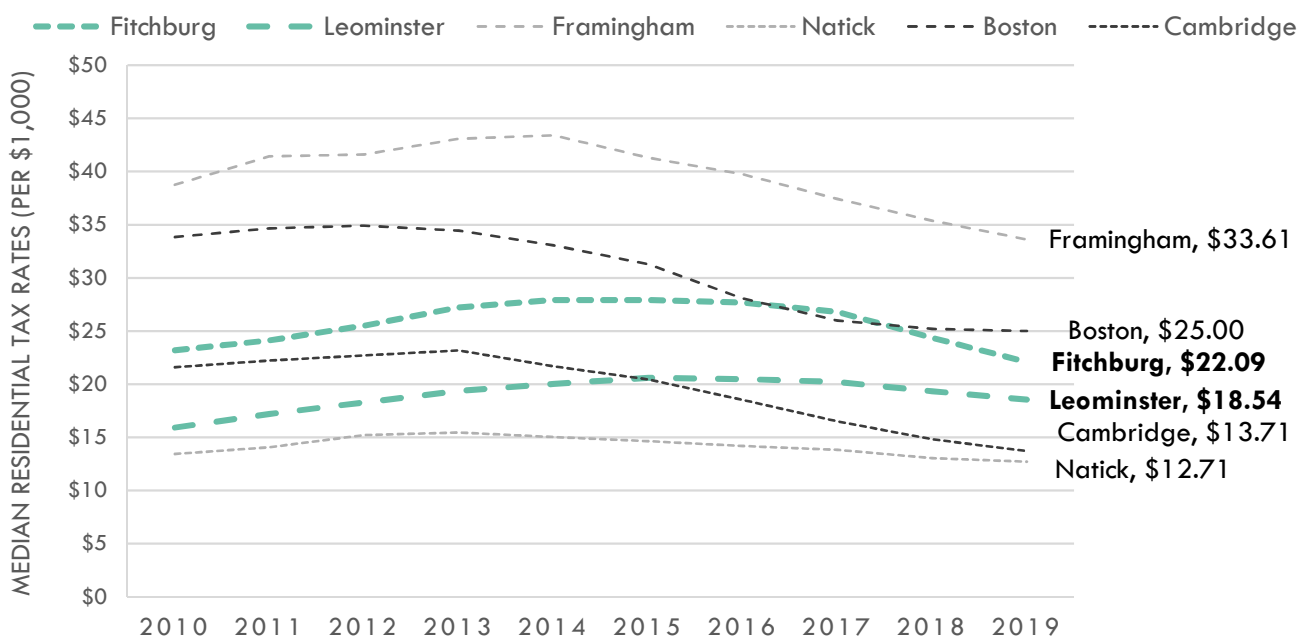
Business Climate

Commercial and Industrial Tax Rates

Tax rates for “commercial and industrial” properties are recorded as a single tax rate in the two largest cities in North Central Massachusetts, Fitchburg and Leominster, as well as in Boston, Cambridge, and two major cities in MetroWest, Framingham and Natick. Fitchburg and Leominster’s commercial and industrial tax rates are between those in Framingham, Boston, Cambridge, and Natick, as can be seen in **Figure 24**.

The current commercial and industrial rates of Fitchburg and Leominster stand at \$22.09 and \$18.54 per \$1,000 valuation, respectively. Framingham and Boston lead the comparison communities with \$33.61 and \$25.00 while Cambridge and Natick have respective commercial and industrial tax rates of \$13.71 and \$12.71. Similar to housing, the overall tax burdens for commercial and industrial properties in the North Central region would almost universally be lower than in competing regions due to lower property valuations.

Figure 24. Commercial and Industrial Tax Rates in Fitchburg, Leominster, and Comparison Geographies, 2010-2019 (\$2018)



Source: Massachusetts Department of Revenue, Division of Local Services; UMDI analysis

Commercial Real Estate

In addition to lower home prices, North Central Massachusetts offers a value proposition to business through lower commercial real estate costs, including taxation and lease rates.

In 2018, both the commercial and industrial tax rates (per \$1,000 of property value), on average, were \$20, slightly lower than the rates in MetroWest. Lower overall property values in North Central Massachusetts compared to MetroWest would add further to business cost savings.

In 2018, the average gross office rent per square foot in Fitchburg and Leominster (**Table 5**) were far below the state average and Boston's, and less expensive than two typical cities in MetroWest (Framingham and Natick).

Table 5. Average Office Rent per Square Foot, 2018

Average Office Rent (\$ per SF)	Boston	MA	Framingham	Natick	Fitchburg	Leominster
	\$56.32	\$23.27	\$22.73	\$18.70	\$16.87	\$13.25

Source: CoStar

Conclusion

North Central Massachusetts captures a cross-section of the Commonwealth of Massachusetts. The eastern portion of the region is within metropolitan Boston and offers commuters direct rail and highway access into the city. Moving towards the west, North Central Massachusetts includes northern suburbs of Worcester, New England's second largest city as well as traditional hubs of industry, Devens, Fitchburg, Gardner, Leominster and Athol. The region's terrain, including Mt. Wachusett, the tallest mountain in the state outside the Berkshires, helps to support both an expanding tourism industry, including skiing, and a growing agricultural-food production sector. While the economy in North Central Massachusetts is diverse, its large manufacturing sector is a particular standout. Manufacturing, led by plastics products and pharmaceuticals, is twice as concentrated in the region as the U.S. average. With its 800 square miles, transportation linkages, and infrastructure capacity, North Central Massachusetts has ample land to accommodate business growth. A skilled workforce and lower costs relative to Boston and its closer in suburbs have also helped to draw large-scale expansions to North Central Massachusetts, including companies in the state's thriving biopharmaceuticals industry.

As we head into 2020, the assets of North Central Massachusetts seem to be gaining recognition from employers and prospective residents, alike. In recent years, the region has seen upticks in both its population and jobs growth, mostly centered on the eastern parts of the region. As Boston has become both more expensive and congested, North Central Massachusetts' lower costs in combination with a high quality of life (as can be seen in the region's school performance), have likely contributed to the recent growth in the region. As such, the region's assets should help to continue to attract businesses and residents in future years. In terms of threats to growth, with approximately four percent of the state's population and 2.6 percent of the jobs, the regional relies heavily on its transportation assets to move labor and support local businesses. A strategic opportunity for the region would be to foster business growth that would keep a higher share of its labor force closer to home. Further, North Central Massachusetts, like the state and the country, must adjust to a large wave of people (Baby Boomers) aging out of the workforce. UMDI's projections indicate that the 65+ age group's share of the region's population will increase by 50 percent between 2020 and 2040. As such, initiatives need to be in place to find and train new workers to replace the individuals heading into retirement.

This report, completed by the UMass Donahue Institute for the North Central Massachusetts Chamber of Commerce, offers a pulse on the demographic and economic trends in North Central Massachusetts. By illuminating these trends as well as the region's assets regarding business climate and quality of life, the report provides context that can help regional stakeholders and business leaders with the information they need to inform decision-making and the strategic development of North Central Massachusetts. The report is complemented by a Regional Data Center, including an Interactive Data Dashboard and Data Warehouse, housed by the North Central Massachusetts Chamber of Commerce and the North Central Massachusetts Development Corporation that allows users to analyze the region and its municipalities, including comparisons with other parts of the state, on the factors highlighted in this report. The Regional Data Center can be accessed by following this link:

<https://www.northcentralmass.com/regional-data-center/>

