

Socioeconomic Indicators for Massachusetts

March 16, 2023

UMassAmherst

Donahue Institute
Economic and
Public Policy Research

Prepared by the UMass Donahue Institute's Economic & Public Policy Research Group

This report was prepared by the UMass Donahue Institute and the information in text, tables, charts and graphs are the most recently available information as of February 10, 2023

Established in 1971, the UMass Donahue Institute is a public service, research, and economic development arm of the University of Massachusetts. Our mission is to apply theory and innovation to solve real world challenges and enable our clients to achieve their goals and aspirations. We serve clients in the public, non-profit, and private sectors in the Commonwealth and throughout the nation and the world. For more information, www.donahue.umass.edu.

The Institute's Economic & Public Policy Research (EPPR) group is a leading provider of applied research, helping clients make more informed decisions about strategic economic and public policy issues.

EPPR produces in-depth economic impact and industry studies that help clients build credibility, gain visibility, educate constituents, and plan economic development initiatives. EPPR is known for providing unbiased economic analysis on state-level economic policy issues in Massachusetts and beyond, and has completed a number of industry studies on IT, defense industries, telecommunications, health care, and transportation. Their trademark publication is called *MassBenchmarks*, an economic journal that presents timely information concerning the performance of and prospects for the Massachusetts economy, including economic analyses of key industries that make up the economic base of the state.

Contents

Economy 1

Workforce 8

Environment 19

Residents 23

List of Figures

Figure 1. Employment Growth Index in Massachusetts, the Northeast, and the United States, 2010-2021 (2010=1.00)	1
Figure 2. Industry Mix in Massachusetts and the United States, 2021 (Percent of Total Jobs)	2
Figure 3. Annual Average Employment in Massachusetts, 2010-2022 by NAICS Supersector	3
Figure 4. Jobs Deficit in Massachusetts Relative to February 2020 Peak by 2-Digit NAICS Industry	4
Figure 5. Growth in Real Product, Massachusetts and the United States, 2022 Q4	5
Figure 6. Massachusetts Imports, Exports, and Trade Deficit, 2012-2022 (in Billions of \$2022)	6
Figure 7. Massachusetts Top 10 Trade Partners in 2022 (in Billions of \$2022)	7
Figure 8. Export Growth for Massachusetts, the United States, and New England, 2013-2022	7
Figure 9. Unemployment Rates in Massachusetts and the United States as of December 2022 (Seasonally Adjusted)	8
Figure 10. Massachusetts Labor Force, January 2000-December 2022 (Seasonally Adjusted)	9
Figure 11. Labor Force Participation Rates in Massachusetts and the United States, January 2000-December 2022 (Seasonally Adjusted)	10
Figure 12. Job recovery rates in Massachusetts and all states, February 2020 and December 2022 (Seasonally adjusted)	11
Figure 13. Job openings rate and hire rate in Massachusetts, December 2000 – November 2022 (Seasonally adjusted)	12
Figure 14. Job quits rate in Massachusetts and the United States, December 2000 - November 2022 (Seasonally adjusted)	13
Figure 15. Average Nominal Weekly Wage Growth in Massachusetts vs Inflation, 2018 -2021	14
Figure 16. Real Average Weekly Wage Growth in Massachusetts, 2018-2021	14
Figure 17. Job Openings and Number of Unemployed in Massachusetts (Dec 2000- Nov 2022).....	15
Figure 18. Monthly Transit Ridership, 2019-2022	17
Figure 19. Logan Airport and U.S. Monthly Passenger Volumes in 2022 as a Percent of 2019	18
Figure 20. Jobs Located in 100-Year Flood Zones	20
Figure 21. Jobs Located in Hurricane Inundation Zones	20
Figure 22. Electric Power Generation by Primary Energy Source, 2000-2021	22
Figure 23. Change in Resident Population by Decade.....	23
Figure 24. Massachusetts Estimated Components of Population Change, 2000-2022	24

Figure 25. Educational Attainment of the Foreign Born in Massachusetts, 2021 25

Figure 26. Percent Change in Massachusetts County Population, Census 2010 to Census 2020 26

Figure 27. Share of Total Massachusetts Population by Race and Ethnicity in 2010 and 2020..... 27

Figure 28. Real Per Capita Personal Income in Massachusetts, the United States, and New England, 1971 - 2021 (in \$2021)..... 28

Figure 29. Per Pupil Expenditure in Public Elementary and Secondary Schools (in \$2021) 29

Figure 30. Persons in Massachusetts and the United States 25 Years and Older with a Bachelor's Degree or Higher by Race and Ethnicity in 2021 30

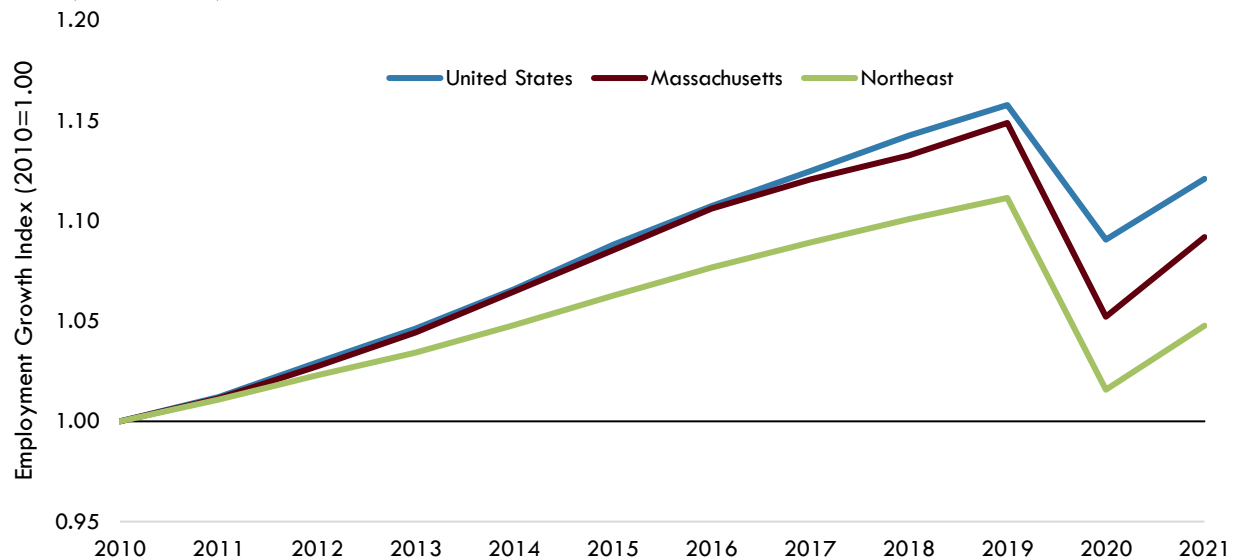
Figure 32. Housing-Cost-Burdened Households by Housing Tenure in Massachusetts and the United States (Spending 30 Percent or More of Income on Housing Costs)..... 32

Figure 33. Housing Tenure in Massachusetts in 2021 by Race and Ethnicity 32

Economy

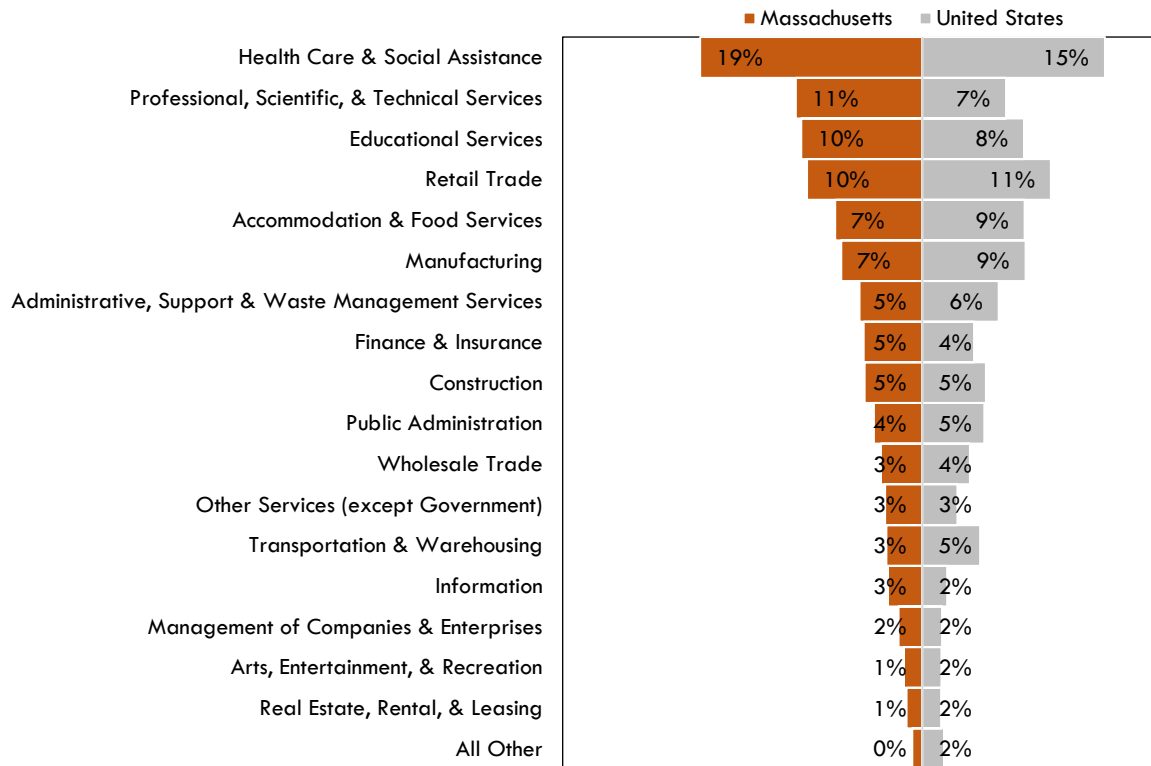
Over the past decade, Massachusetts has been a leader in job growth in the Northeast (Figure 1), driven largely by the state’s highly-educated workforce, the overall diversity of industries, and strengths in knowledge-based industries, such as health care, education, and professional services (Figure 2). Professional and technical services have been increasingly important in the state, both as a share of employment and in terms of its contribution to state gross domestic product (GDP). During the pandemic, professional and technical services moved from being fourth in the state in terms of employment, to second. In 2021, the industry accounted for 11 percent of jobs and the sector was first in the state as a share of GDP, making up 14 percent of the state GDP. While the sector includes everything from legal services to veterinary services, in Massachusetts the two leading subsectors in terms of employees are computer systems design and related services, and scientific research and development services. These subsectors benefit from the Commonwealth’s well-established higher education and health care sectors.

Figure 1. Employment Growth Index in Massachusetts, the Northeast, and the United States, 2010-2021 (2010=1.00)



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW); UMDI analysis

Figure 2. Industry Mix in Massachusetts and the United States, 2021 (Percent of Total Jobs)



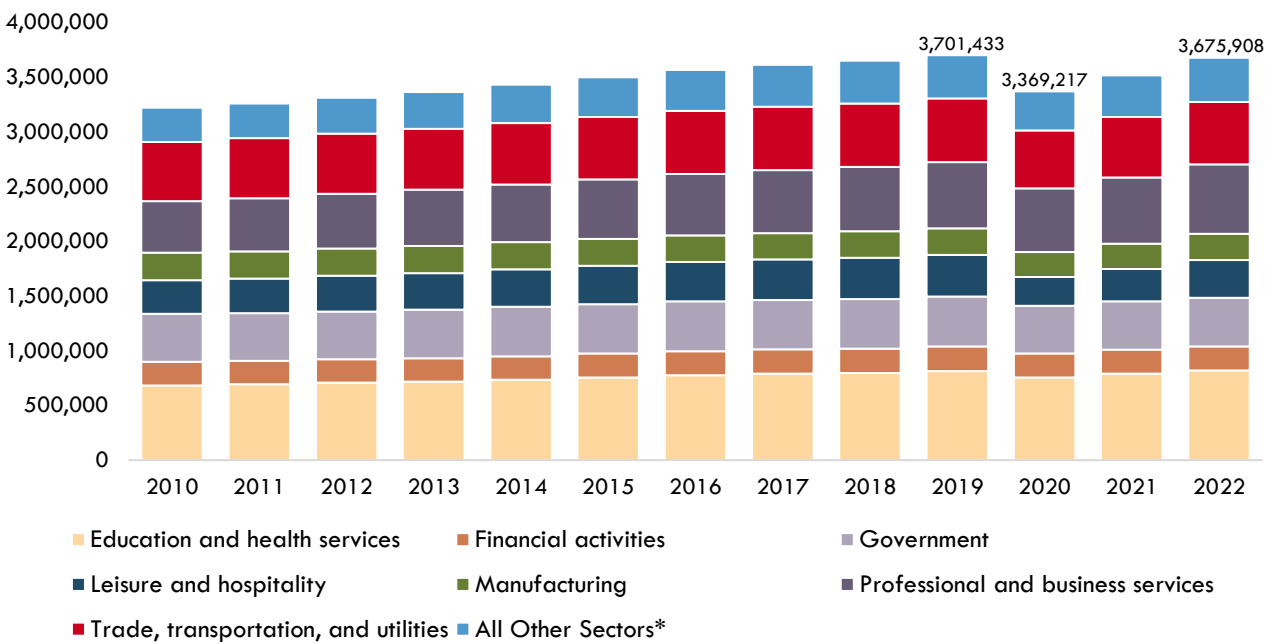
Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW), UMDI analysis.

Note: All Other includes: Utilities; Agriculture, Forestry, Fishing, & Hunting; and Mining, Quarrying, and Oil & Gas Extraction.

Educational services and health care and social assistance have consistently been among the top industries in the state. The clusters of colleges, universities, and teaching hospitals contribute to Massachusetts being a hub for technology and research. Finance and insurance have played an important role in the Massachusetts economy making up roughly 5 percent of jobs, but contributing 10 percent to the state GDP. While sixth in terms of employment in 2021, manufacturing has historically experienced declines. In recent years the decline has slowed considerably, but the Commonwealth’s share of manufacturing employment has remained lower than the share of employment in the United States as a whole.

Several NAICS service sectors, education and health services, professional services, and leisure and hospitality have grown to take the place of manufacturing in driving the Massachusetts economy and now account for almost half of total payroll employment, while financial activities, government, information, and trade, transportation and utilities have remained relatively level or declined in share (Figure 3).

Figure 3. Annual Average Employment in Massachusetts, 2010-2022 by NAICS Supersector



Source: U.S. Bureau of Labor Statistics, Current Employment Statistics (CES); UMDI analysis. *Includes Mining & Natural Resources, Construction, Information, and Other Services.

The COVID-19 pandemic interrupted the trajectory of the state’s economic growth and continues to have tremendous short- and long-term ramifications for the state’s economy. Over 690,000 jobs were lost in spring 2020. Despite the re-opening of the economy and the easing of measures instituted to curb the spread of COVID-19, the Commonwealth had 7,200 fewer jobs as of December 2022 than the peak in February 2020. (Figure 4). The growth of professional and technical services during the pandemic has occurred during a period when retail trade, other services (which includes equipment repair, laundry and drycleaning, barbershops, and pet care among others), and accommodations and food services all suffered losses in terms of jobs. These generally lower-paying industries have been the slowest sectors to recover in terms of absolute number of jobs lost and as a share of jobs lost compared to levels prior to the pandemic (Figure 4). The higher paying industries of construction and professional and technical services have both returned to well above their pre-pandemic levels and seen growth that outpaces the U.S. overall. In 2021, professional and technical services saw the largest gains in employment in scientific research and development services, management and technical consulting services, employment services, and services to buildings and dwellings.

Figure 4. Jobs Deficit in Massachusetts Relative to February 2020 Peak by 2-Digit NAICS Industry

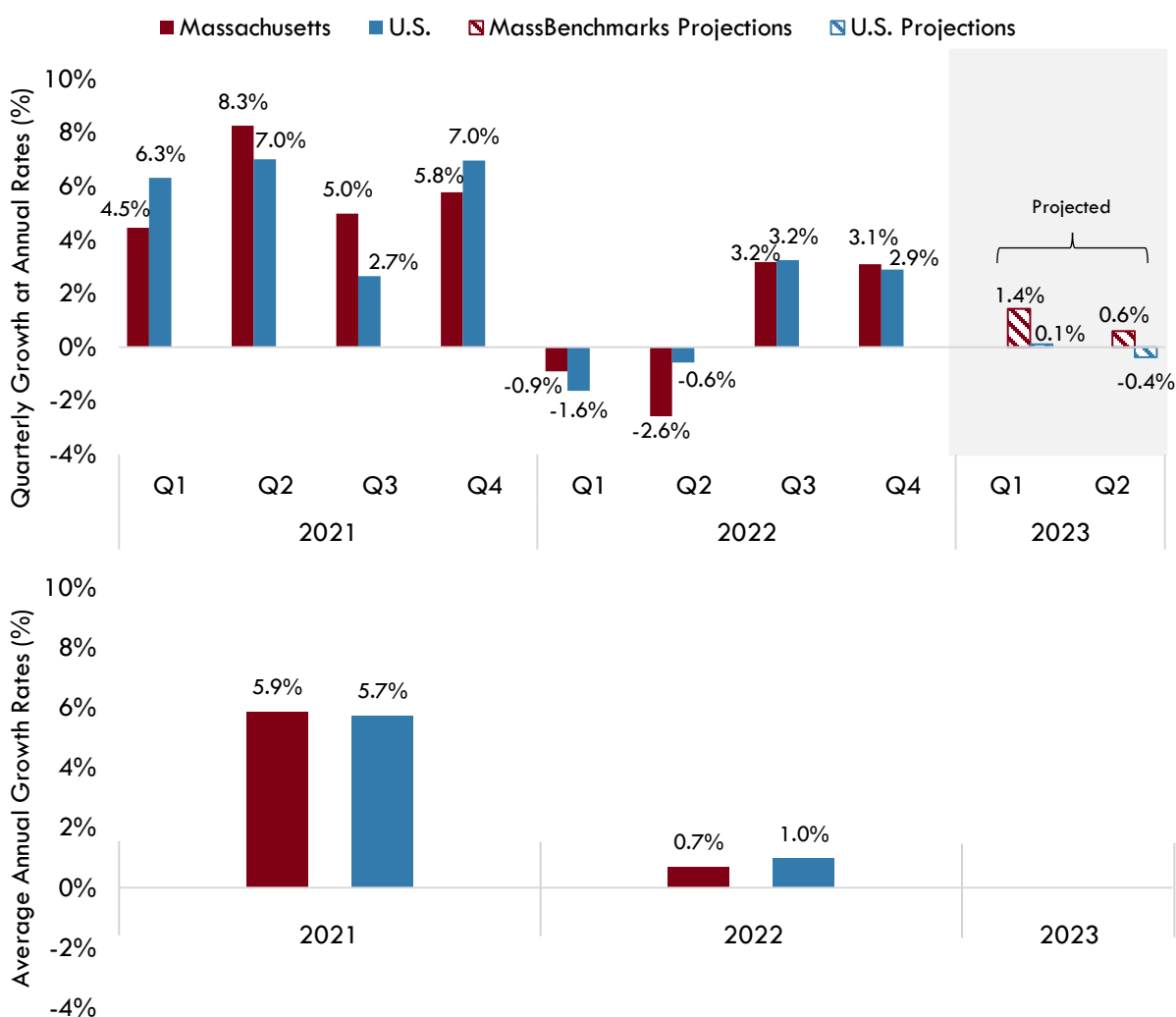
Industry	Massachusetts				U.S.
	Feb-20	Dec-22	Change (N)	Change (%)	Change (%)
Accommodation and food services	322,500	294,600	(27,900)	(8.7%)	(3.9%)
Retail trade	351,300	336,800	(14,500)	(4.1%)	(0.9%)
Other services	139,000	127,500	(11,500)	(8.3%)	(2.5%)
Government	460,300	452,600	(7,700)	(1.7%)	(2.5%)
Arts, entertainment, and recreation	63,200	58,500	(4,700)	(7.4%)	(4.1%)
Finance and insurance	176,700	173,300	(3,400)	(1.9%)	3.0%
Management of companies and enterprises	73,400	70,400	(3,000)	(4.1%)	3.8%
Manufacturing	243,000	240,200	(2,800)	(1.2%)	1.5%
Health care and social assistance	646,600	644,700	(1,900)	(0.3%)	0.9%
Educational services	186,000	185,300	(700)	(0.4%)	1.4%
Mining and logging	1,000	1,000	0	0.0%	(8.3%)
Real estate and rental and leasing	48,800	50,500	1,700	3.5%	2.0%
Information	95,500	98,500	3,000	3.1%	7.6%
Wholesale Trade	123,300	127,200	3,900	3.2%	2.3%
Administrative and waste services	186,500	190,900	4,400	2.4%	3.5%
Transportation, warehousing and utilities	105,600	112,500	6,900	6.5%	15.9%
Construction	166,300	179,000	12,700	7.6%	3.1%
Professional and technical services	351,100	389,400	38,300	10.9%	10.6%
Total nonfarm	3,740,100	3,732,900	(7,200)	(0.2%)	1.3%

Source: Massachusetts Executive Office of Labor and Workforce Development, Current Employment Statistics (CES-790); UMDI analysis

Over the course of 2021, the state demonstrated continued economic recovery. However, the economy contracted at the first half of 2022 in the U.S. and Massachusetts, recovering in the second half of 2022. According to MassBenchmarks, the journal of the Massachusetts economy produced by the University of Massachusetts Donahue Institute (UMDI) and Federal Reserve Bank of Boston, in the fourth quarter of 2022, Massachusetts real GDP increased at a 3.1 percent annualized rate. (Figure 5). For the year, fourth quarter 2021 to fourth quarter 2022, GDP growth was 0.7 percent for Massachusetts and 1.0 percent for the U.S.

In the second half of 2022, both the state and national economies exhibited signs of a healthy and expanding economy including a strong labor market, low unemployment, and a declining but still elevated rate of inflation. Nonetheless, leading indicators suggest that economic growth is likely to decelerate or become negative moving forward.

Figure 5. Growth in Real Product, Massachusetts and the United States, 2022 Q4



Source: U.S. Bureau of Economic Analysis, MassBenchmarks calculations by Dr. Alan Clayton-Matthews. U.S. projections from Wall Street Journal. Note: average annual growth is calculated by averaging the four quarters of annual growth rates for the calendar year.

Inflation has slowed somewhat in recent months. In Massachusetts, the Consumer Price Index (CPI) grew at a 4.8 percent annualized rate in the fourth quarter, falling from a 6.0 percent annualized rate in the third quarter. Nationally, inflation grew at a 3.1 percent rate in the fourth quarter, down from 5.7 percent in the third quarter. Year over year (Q4 2021 to Q4 2022), prices rose 7.0 percent in Massachusetts and 7.1 percent nationwide.

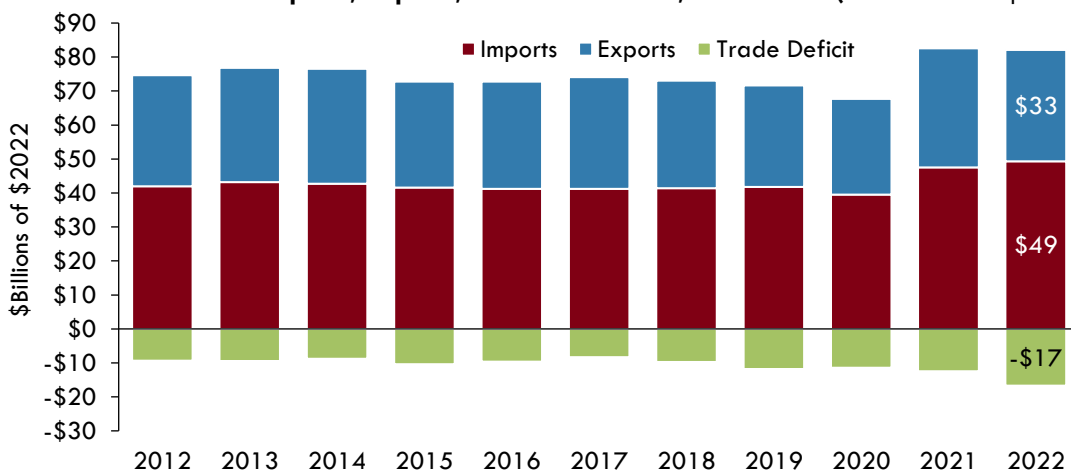
Massachusetts tax revenues in the fourth quarter provide conflicting signals. Wage and salary income, as estimated from state withholding tax revenue, declined at a 1.3 percent annual rate, while spending on items subject to the state’s sales tax – which includes most goods and motor vehicles – grew at a 22.1 percent annual rate. According to MassBenchmarks, these modest declines in wages and salary income

may reflect a weaker than usual bonus season, as stock and bond prices fell during the last year. Massachusetts wage and salary income is more sensitive to swings in bonuses than the nation due to its concentration in the financial investment sector. Timing of the receipt of withholding tax revenues can also affect quarter to quarter estimates of this income component.

Despite these signs of strength, there is a widespread expectation among analysts and forecasters that growth will slow further in 2023 in response to higher interest. Interest rate sensitive sectors like housing, and firms that rely on low borrowing costs, such as high-tech businesses, are already beginning to feel the effects of these policies, as can be seen in lower home sales, declining home prices, and reports of layoffs at many of the nation’s leading technology companies. The MassBenchmarks Leading Economic Index is projecting annualized GDP growth of 1.4 percent in the first quarter of this year, slowing to 0.6 percent in the second quarter.

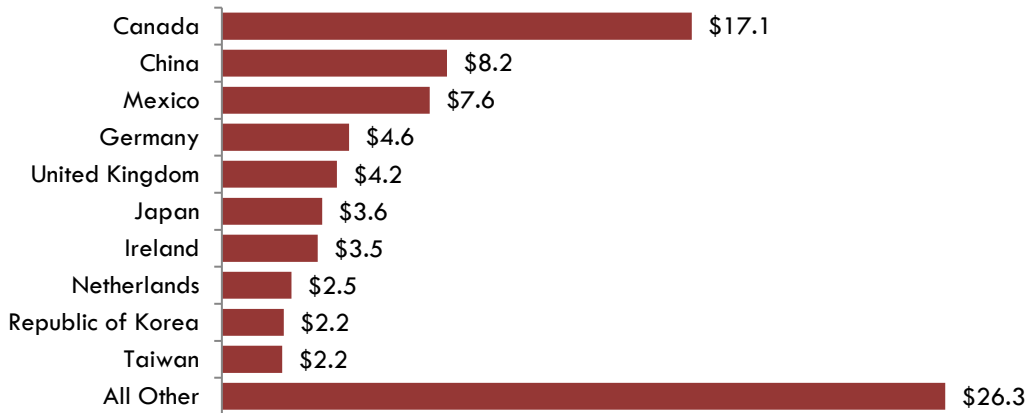
Massachusetts trade has stabilized since the pandemic declines in 2020 and after a large rebound in 2021. The Commonwealth’s total trade volume (exports and imports) increased 21.9 percent from 2020-2021 and fell 0.6 percent from 2021-2022; the total trade volume was \$82 billion in 2022 (Figure 6). Canada was by far our most valuable trading partner, with a trade volume of \$17.1 billion, 20.8 percent of the total state trade (Figure 7). The Massachusetts’ trade deficit, \$16.6 billion, increased 33.3 percent in 2022. Massachusetts ranked 19th in the U.S. in 2022 and first in New England with \$32.7 billion in exports. This was a 6.6 percent decrease from the previous year’s export value, while national exports increased by 8.9 percent and total exports from New England decreased by 4.2 percent (Figure 8). China was our top export destination in 2022 with \$3.7 billion. Imports increased 3.9 percent year-over-year to \$49.3 billion in 2022. Canada was the largest source for Massachusetts imports in 2022, from which we imported \$13.4 billion, or 27.2 percent, of our total. Russia’s invasion of Ukraine precipitated a drastic reduction in trade with Russia. Between 2021 and 2022, Massachusetts’ exports to Russia dropped from \$151 million to \$33 million, and imports halved from \$315 million to \$170 million, causing Russia to drop from our 29th largest trading partner to 42nd by total trade volume. In contrast, trade with Ukraine stayed largely constant and Ukraine remained our 75th largest trade partner.

Figure 6. Massachusetts Imports, Exports, and Trade Deficit, 2012-2022 (in Billions of \$2022)



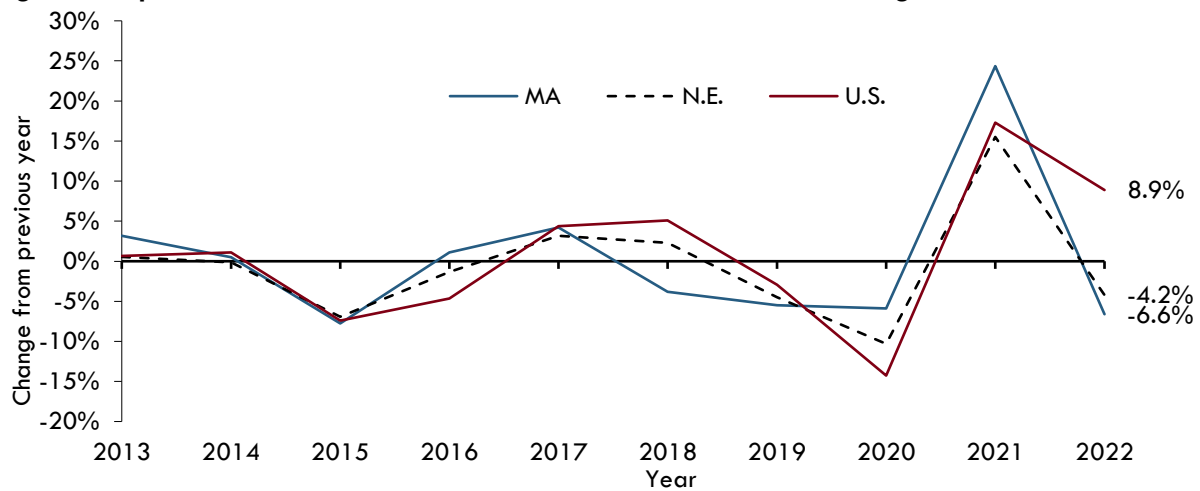
Source: WISERTrade.org; UMDI analysis

Figure 7. Massachusetts Top 10 Trade Partners in 2022 (in Billions of \$2022)



Source: WISERTrade.org; UMDI analysis

Figure 8. Export Growth for Massachusetts, the United States, and New England, 2013-2022

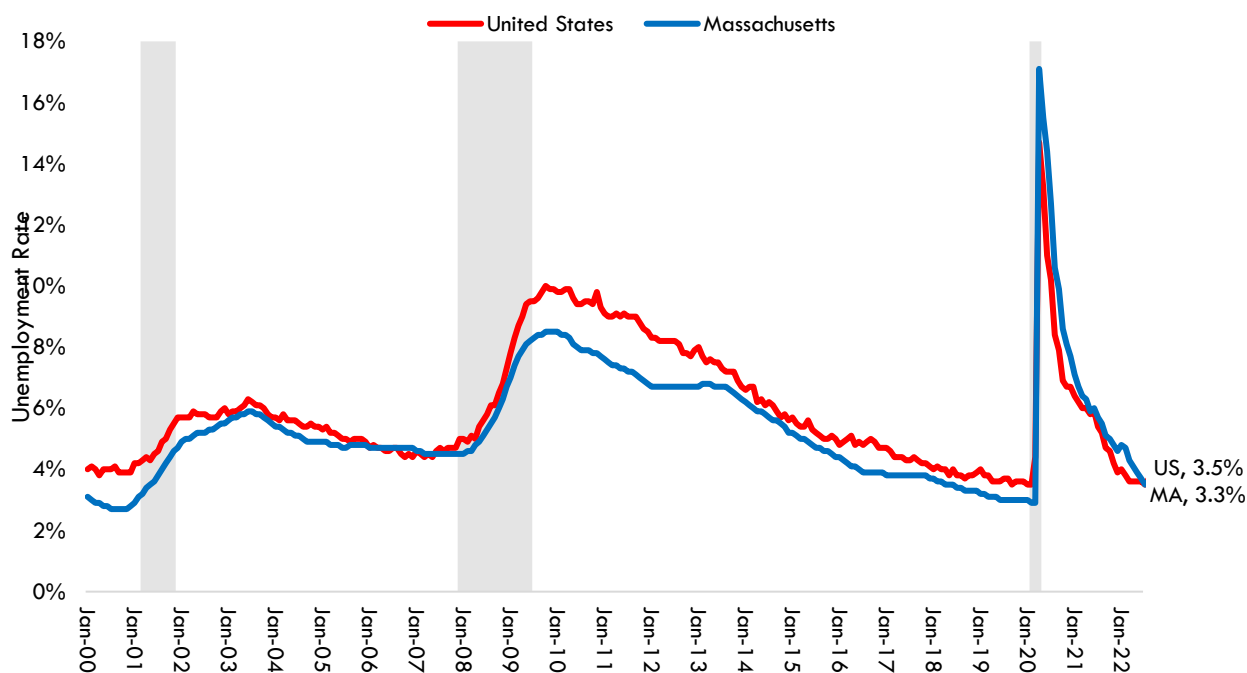


Source: WISERTrade.org; UMDI analysis

Workforce

In recent history, the Massachusetts economy has generally outperformed the U.S., with the state unemployment rate typically below the nation. This was especially the case during and the period following the Great Recession. The Commonwealth's mix of knowledge-based industries and well-educated workforce led to high levels of labor force participation and low levels of unemployment in the state overall. That said, the early outbreak of COVID-19 in the northeastern part of the U.S. coupled with proactive social distancing efforts by the Commonwealth in the spring and summer of 2020 led to significant job losses throughout the state. Massachusetts unemployment peaked at 17.1 percent in April 2020, while the U.S. peaked at 14.7 percent in the same month (Figure 9). Unemployment continued to fall in 2022 and stood at 3.3 percent in December for the Commonwealth and 3.5 percent for the nation.

Figure 9. Unemployment Rates in Massachusetts and the United States as of December 2022 (Seasonally Adjusted)

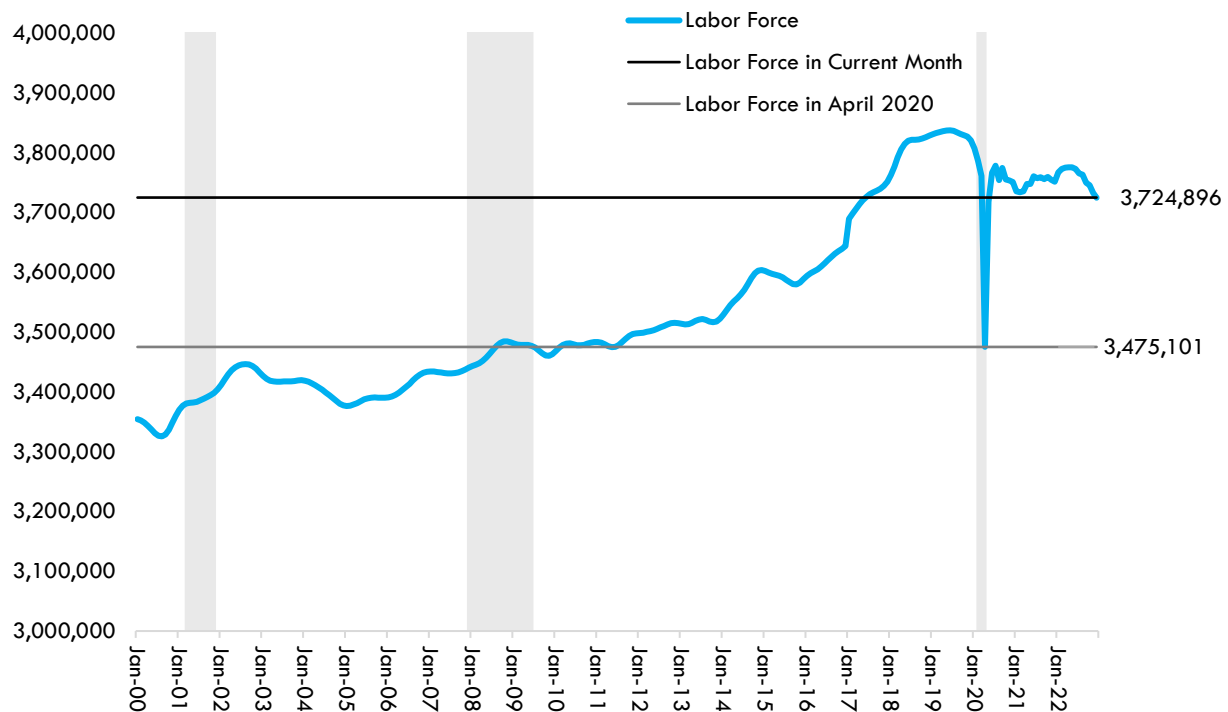


Source: Massachusetts Executive Office of Labor and Workforce Development, Local Area Unemployment (LAU) Statistics; UMDI analysis

Both the public health and the economic crises caused by COVID-19 have disproportionately harmed historically marginalized groups. In part this is due to the concentration of marginalized populations in certain sectors of the economy that meant they were more likely to be working in essential services or losing their jobs as shut-down orders shuttered restaurants and retail establishments. For example, the leisure and hospitality sector, which has a younger and less educated workforce, experienced the greatest loss of jobs and has been the slowest to recover. In contrast, highly-educated workers in knowledge-based industries were more likely to be able to work from the home during the COVID-19 pandemic and less

likely to lose their jobs. Massachusetts ranked fourth in the U.S. for teleworking during the pandemic. In Massachusetts, workers with previous well-established capacity to work from home were clustered in the Greater Boston area.

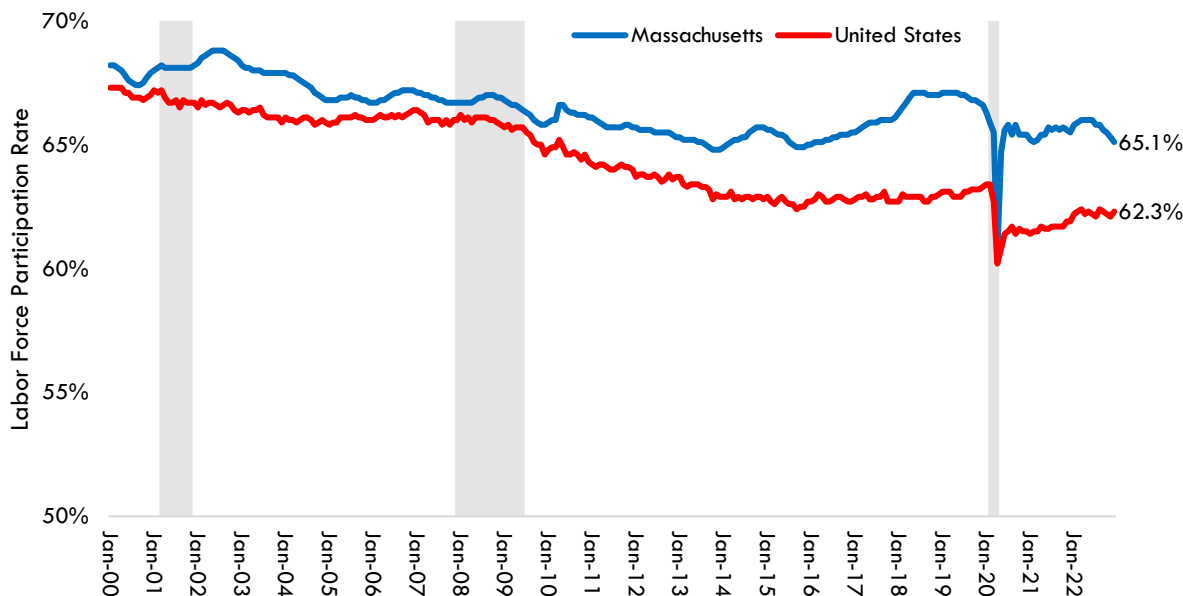
Figure 10. Massachusetts Labor Force, January 2000-December 2022 (Seasonally Adjusted)



Source: Massachusetts Executive Office of Labor and Workforce Development, Local Area Unemployment (LAU) Statistics; UMDI analysis

The size of the labor force in the state has largely recovered since the initial collapse at the start of the pandemic (Figure 10). Massachusetts has consistently maintained higher rates of labor force participation than the U.S. on a whole. As of December 2022, 65.1 percent of Massachusetts working-age residents were in the workforce (Figure 11). The rate is down 0.9 percentage points from June 2022 to December 2022 and below the pre-pandemic level of 66.3 percent in January 2020. Labor force participation rates and unemployment rates vary across race, gender, age and education levels. With higher peak unemployment rates during the pandemic being experienced by people of color, women, and younger workers, with lower levels of education who were more likely to be working in sectors impacted by the pandemic. While all groups have benefited from the economic recovery, rates of recovery have varied across demographics. The fact that educational attainment, age, race, and gender are all interconnected with access to job opportunities in the more resilient sectors of the economy has meant that historically marginalized populations have faced greater challenges during all stages of the pandemic. For example, in the spring of 2020, Massachusetts’ residents of color experienced the highest levels unemployment in decades with unemployment rates exceeding 26 percent in April 2020—nearly 12 percentage points higher than their white counterparts. For women, unemployment peaked in June 2020 at 20.3 percent.

Figure 11. Labor Force Participation Rates in Massachusetts and the United States, January 2000-December 2022 (Seasonally Adjusted)

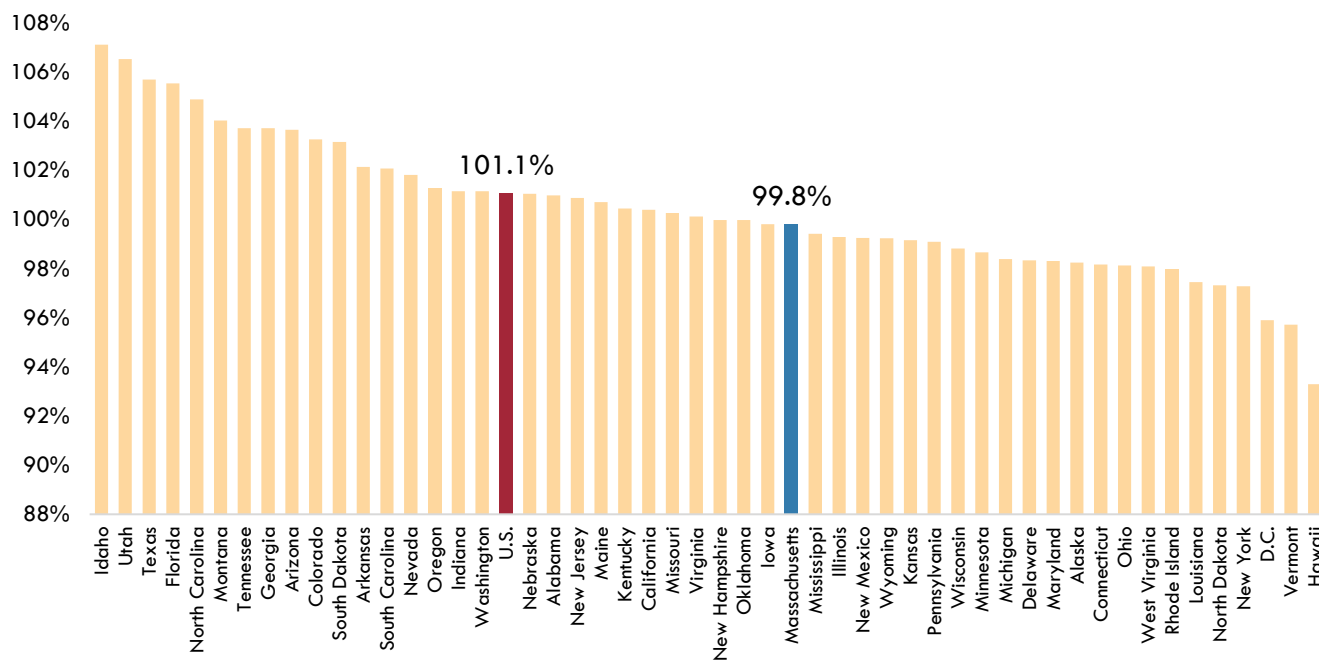


Source: Massachusetts Executive Office of Labor and Workforce Development, Local Area Unemployment (LAU) Statistics; UMDI analysis

For much of 2021 and 2022, labor market condition improved dramatically for many workers in the U.S. following the initial wave of COVID-19 related shutdowns. Jobs recovered at a fast rate, with employment totals are above pre-pandemic levels for the nation and 28 states. An additional 8 states (including Massachusetts) are within one percentage point of their February 2020 job peak (Figure 12). While the COVID recession affected people across the Massachusetts economy, both the downturn and the subsequent recovery were deeply uneven. Job losses were most acutely felt in the service sectors of the economy, especially in those industries requiring face-to-face interaction (e.g. tourism, restaurants, personal care). These led to disproportionate job loss among young people, people of color, women, and workers with less than a college education. Initial job gains were concentrated in knowledge-based industries, particularly in professional, technical, and business services. Only more recently have jobs started to recover in service sectors of the economy.

While the COVID recession affected people across the Massachusetts economy, both the downturn and the subsequent recovery were deeply uneven. Job losses were most acutely felt in the service sectors of the economy, especially in those industries requiring face-to-face interaction (e.g. tourism, restaurants, personal care). These led to disproportionate job loss among young people, people of color, women, and workers with less than a college education. Initial job gains were concentrated in knowledge-based industries, particularly in professional, technical, and business services. Only more recently have jobs started to recover in service sectors of the economy.

Figure 12. Job recovery rates in Massachusetts and all states, February 2020 and December 2022 (Seasonally adjusted)



Source: Massachusetts Executive Office of Labor and Workforce Development, Current Employment Statistics (CES-790); UMDI analysis

The combination of uneven job losses and recovery, as well as an overall decline in the total labor force size in the state have led to several hiring and staffing challenges for employers. An examination of the Bureau of Labor Statistics’ Job Opening and Labor Turnover Survey (JOLTS) shows some interesting trends in job postings, hiring, and quits. On the one side, employers were routinely expressing an inability to find available workers to fill current vacancies. On the other side, was a significant increase in voluntary job separations (or “quits”) during the recovery period following initial COVID job losses. The national media and popular discourse initially referred to this as “the Great Resignation” or “the Big Quit” and often boiled hiring challenges down to a fundamental shift in workers’ views on work-life balance.¹ Quits in the labor market seem to be tied more to the extremely tight labor market conditions caused by pent up labor demand, reduced labor force size caused by demographic factors, and competition for available workers, and not the ongoing challenges related to childcare shortages and costs, or the need for flexible work arrangements.

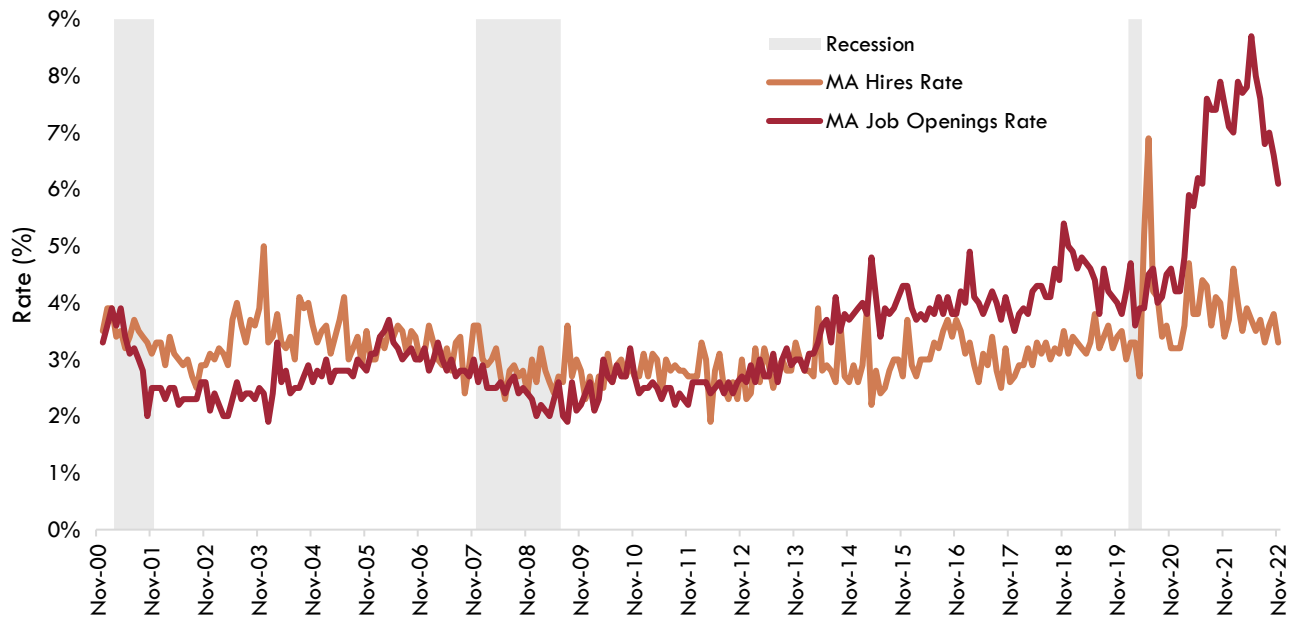
The following graphic (Figure 13) shows the current tension in Massachusetts between current job openings and hires. The red line shows the job opening rate in the state, or the number of job postings over the total number of jobs. The orange line shows the hiring rate, or the number of jobs filled over the total number of jobs in the state. Over time, we see that the hiring rate and the job opening rates moves closely together.

¹ Newport, Cal. 2021. “Why Are So Many Knowledge Workers Quitting?” *The New Yorker*, August 16, 2021.

<https://www.newyorker.com/culture/office-space/why-are-so-many-knowledge-workers-quitting>.

In the pre-COVID period, the strong economic conditions in Massachusetts helped to increase demand, as we see the opening rate separate from the hiring rate between 2016 and 2019. Unsurprisingly, the hiring rate dips in the pandemic and then jumps dramatically as social distancing restrictions start to lift. Since 2021 there develops a significant gap between job openings and hires in the state. These data confirm the narrative from employers that they are having a hard time filling current openings.

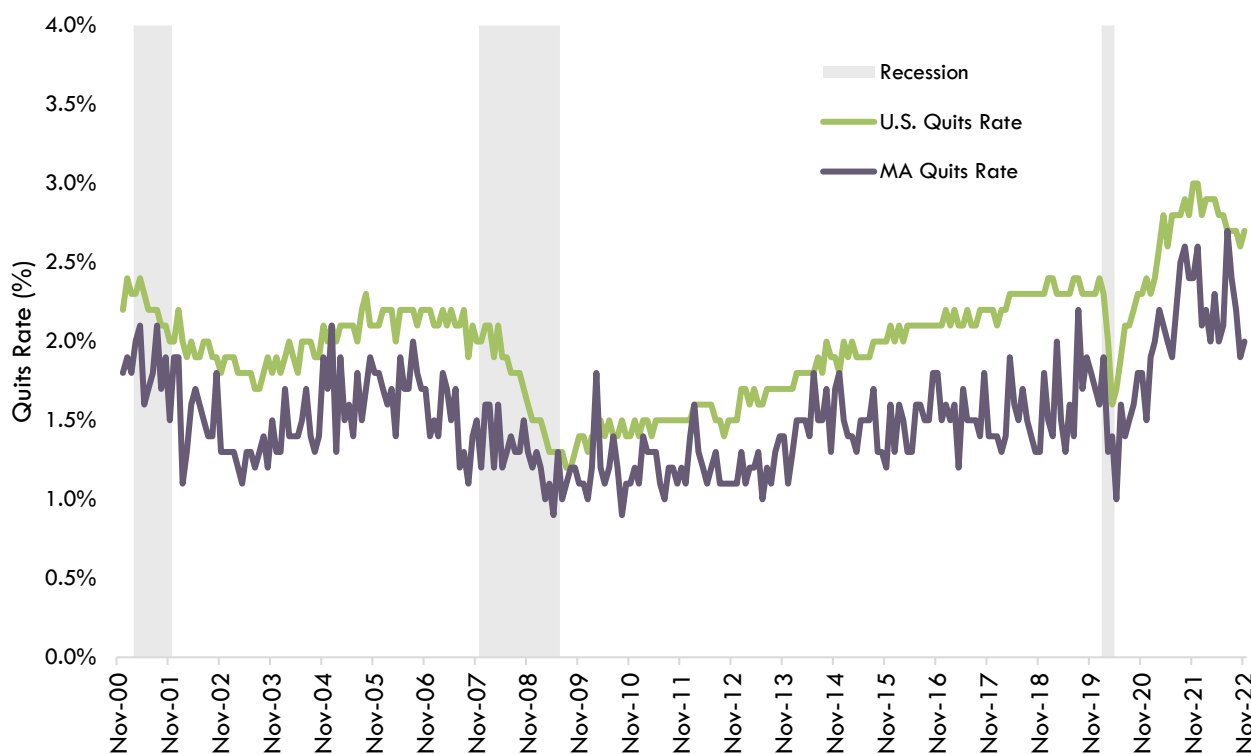
Figure 13. Job openings rate and hire rate in Massachusetts, December 2000 – November 2022 (Seasonally adjusted)



Source: U.S. Bureau of Labor Statistics, Job Openings and Labor Turnover Survey (JOLTS); UMDI analysis

Similarly, the pandemic appeared to impact voluntary job changes. The graphic below (Figure 14) shows the monthly job quit rate for Massachusetts and the U.S. dating back to 2001. As one would expect, quits tend to go down during recessionary periods in the economy and increase when labor demand is stronger. The quit rate for the U.S. tends to be a bit higher than Massachusetts historically. This is likely due to the high education attainment of Massachusetts workers coupled with the state’s industry mix.

Figure 14. Job quits rate in Massachusetts and the United States, December 2000 - November 2022 (Seasonally adjusted)



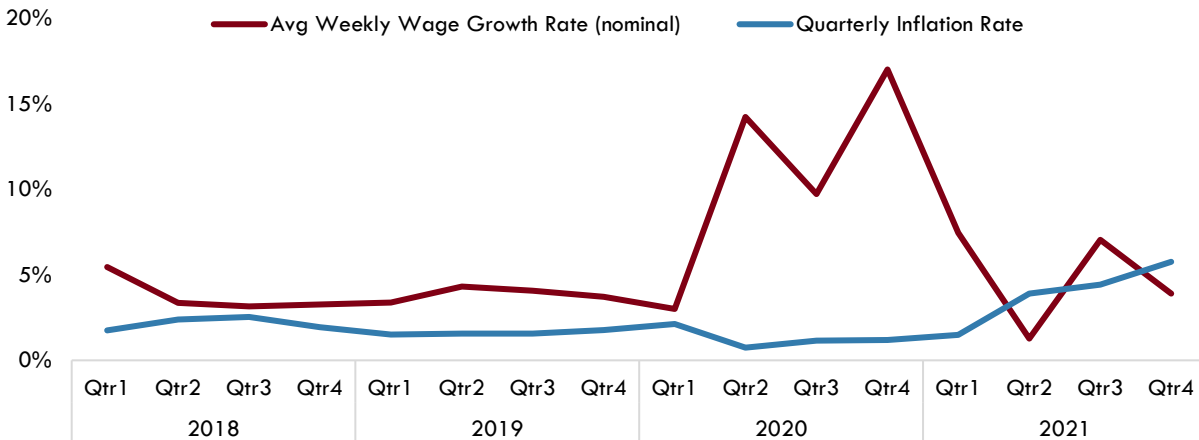
Source: U.S. Bureau of Labor Statistics, Job Openings and Labor Turnover Survey (JOLTS); UMDI analysis

Predictably, voluntary separations or “quits” dropped during the COVID recession. With layoffs and involuntary separations spiking throughout the economy, those who were able to stay in their current jobs were unlikely to quit during the economic downturn. As the economy opened back up quits spiked dramatically, especially in 2021. While there are a host of factors that would influence increased voluntary separations in the aggregate (e.g. health, family care responsibilities, pay, etc.), the primary cause of the increased quits is tight labor market conditions, reflected in the high number of job openings, low unemployment rates, and wage increases (though, not at the pace of current inflation). While some workers have not returned to the workforce, many seized the opportunity to find new employment. In short, with increased demand in the labor market and fewer available workers to draw from, workers were better positioned to seek out higher paying opportunities and more flexible work arrangements than they were during the early stages of the pandemic.

Competition for workers in a tight labor market led to wage increases across the Massachusetts economy in 2020 and 2021. While in recent quarters wage growth has declined, year-over-year wages increased 11 percent from 2019 to 2020 and five percent from 2020 to 2021. There were particularly notable increases in knowledge-based sectors such as information and professional and technical services, as well as service sectors such as retail. Interestingly, accommodation and food services, which is one of the last industries experiencing employment recovery in the economy, experienced dramatic wage growth in 2021

(11%, compared to 5% for the whole economy) further signaling increased competition for labor helping lead to wage gains in the economy.

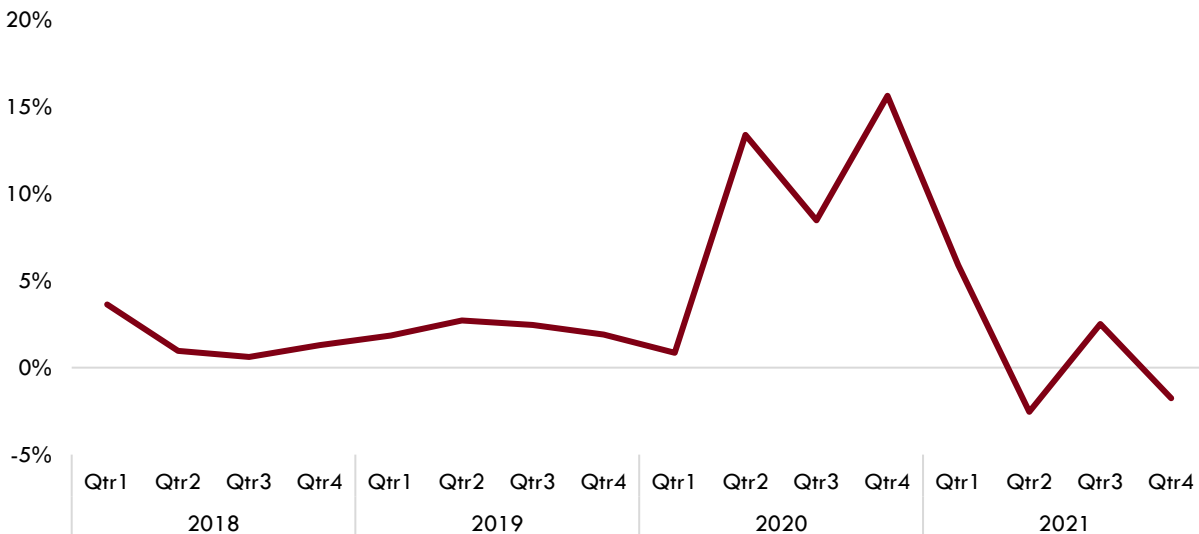
Figure 15. Average Nominal Weekly Wage Growth in Massachusetts vs Inflation, 2018 -2021



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Consumer Price Index

Despite the wage gains experienced by many workers in the economic recovery period, those gains have failed to keep up with the rate of inflation, leading to households having reduced spending power, despite any wage gains experienced over the economic recovery period.

Figure 16. Real Average Weekly Wage Growth in Massachusetts, 2018-2021

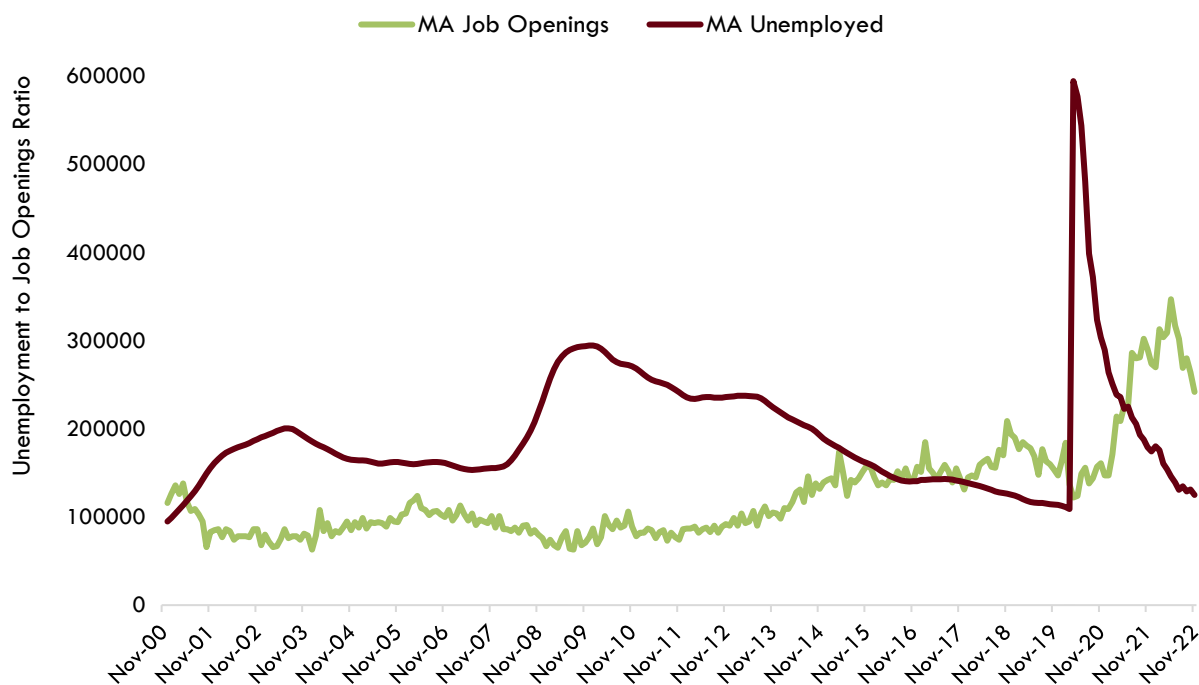


Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Consumer Price Index

This tension between labor demand and available workers is likely to continue for the foreseeable future due to several factors. As we will cover in the “Resident” section later in this report, the pandemic led to both an uptick in deaths in the state, as well as a dramatic decrease in international migration. This coupled with losses in net domestic migration is helping to lead to a slightly smaller labor force in Massachusetts than before the pandemic. In addition, with baby boomers approaching traditional retirement ages, Massachusetts (along with the rest of the U.S.) will be facing labor shortages in the coming decades.

Focusing on the current labor market, the uneven economic downturn and recovery signals some elements of skills mismatches in the economy. In 2021, U.S. workers with a bachelor’s degree had an unemployment rate of 3.5 percent, compared to 6.2 percent for individuals with a high school diploma, and 8.3 percent for workers with less than a high school education. Regardless, there are currently fewer unemployed workers in the state than current job openings, meaning that short of an increase in labor force participation in the current population and/or an influx of new workers, there simply are not enough available workers to fill vacancies in the current economy.

Figure 17. Job Openings and Number of Unemployed in Massachusetts (Dec 2000- Nov 2022)



Source: U.S. Bureau of Labor Statistics, Job Openings and Labor Turnover Survey (JOLTS); UMDI analysis

In addition to upending the labor market, the pandemic has had lasting impacts on transportation in the Commonwealth. Transportation and mobility are essential to the economy and workforce. On one side, the industry sectors – transportation, warehousing, and wholesale trade – are indicative of the activities related to the movement of people and freight in Massachusetts and can be measured by jobs and contribution to the state’s GDP. On the other side, indicators like congestion levels, vehicle miles traveled

(VMT), public transit ridership, and air passengers have traditionally served as proxy measures of how the economy is performing. It remains to be seen to what extent employees will resume commuting to work and how the relationship between mobility and employment will evolve.

For many workers the transition to remote or hybrid work has been beneficial as it reduced or eliminated commuting. Leading up to the pandemic, the delays that Massachusetts drivers faced for their commutes had risen dramatically. The typical driver in Boston sat in traffic for nearly 90 hours per year as compared to just over 30 in the early 1980s. Nationally, the Boston urban area has consistently ranked among the highest in the nation in terms of annual hours of delay and Boston's traffic congestion has outpaced other areas of the Commonwealth for this period, at times more than doubling the hours of delay incurred by Worcester or Springfield area drivers. All areas of the state saw unprecedented declines in 2020 as overall travel declined due to the COVID-19 pandemic.

Freeway daily vehicle miles traveled (VMT) throughout the three most populous regions of the state thoroughly outpaced population growth for the period of 1982-2019, increasing roughly 120 percent for the Boston, Springfield, and Worcester urban areas, regardless of the varying changes in population growth that each area experienced. This points potentially to statewide changes in driving behavior (e.g., more cars taking more and longer-distance trips) independent of population growth as well as land use patterns potentially favoring vehicle-focused types of development. A significant dip in VMT that occurred in 2020 due to the pandemic appears to have significantly reversed by Summer and Fall of 2021, with average weekday and weekend VMT in November 2021 hovering between 75-90 percent of their pre-pandemic March 2020 peaks.

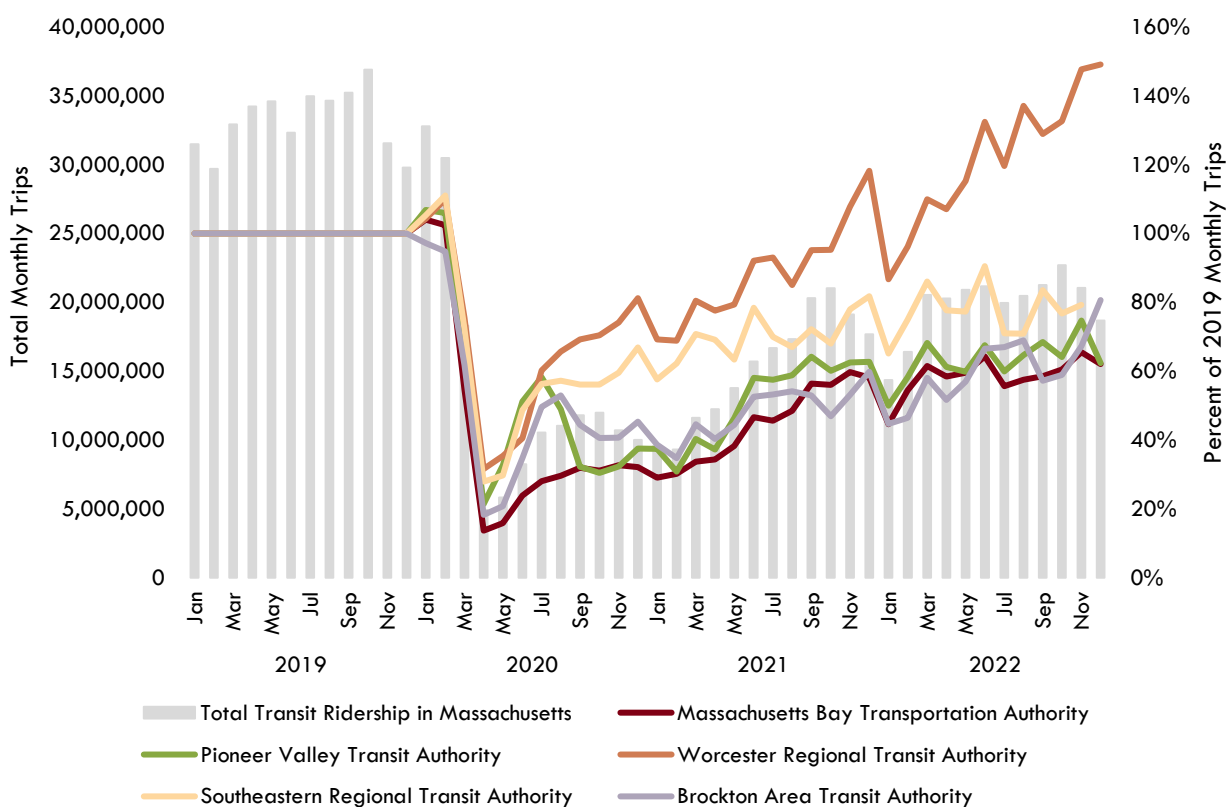
In contrast to daily VMT, public transit ridership has largely lagged the economic recovery in Massachusetts following the beginning of the COVID-19 pandemic in spring 2020 (Figure 18). Immediately following the emergence of COVID-19 and subsequent "stay at home" orders, transit authorities uniformly experienced a sharp decline in ridership. Total public transit ridership across the state has since started recovering, showing signs of seasonal variation with dips in the winters of 2020-21 and 2021-22 and relative peaks in summers.

The MBTA and the Commonwealth's regional transit authorities (RTAs) have seen highly variable rates of recovery. Among the top five largest transit authorities in the state measured by February 2020 ridership, one has surpassed its pre-pandemic ridership (the Worcester RTA), one is approaching its pre-pandemic ridership (Southeastern RTA), and the remaining three are around two thirds of 2019 ridership (Pioneer Valley Transit Authority, Brockton Area Transit Authority and the MBTA). The Worcester RTA has suspended fare collection on its buses since the beginning of the pandemic, and this is one possible explanation for why the region has consistently exceeded the state's ridership recovery overall. The new initiative named "Try Transit" set to remove fares from all RTAs (but not the MBTA) throughout December 2022 will create the opportunity to test the effect of fare free transit for Massachusetts communities.

Industry mix may explain some variation in ridership recovery across the Commonwealth as well. Worcester, with its emphasis on health care jobs, likely has many commuters who must still travel to their place of work. Boston, on the other hand, has a greater share of financial, tech, and professional services jobs - employees who are much more likely to work from home at least part of the time. Incomes may play

a role as well. Low-income residents of Worcester may still rely on buses, whereas the MBTA serves different income groups across its commuter rail, rapid transit rail lines, and bus network. High-income workers may be less likely to return to transit if they have easier access to a personal vehicle.

Figure 18. Monthly Transit Ridership, 2019-2022



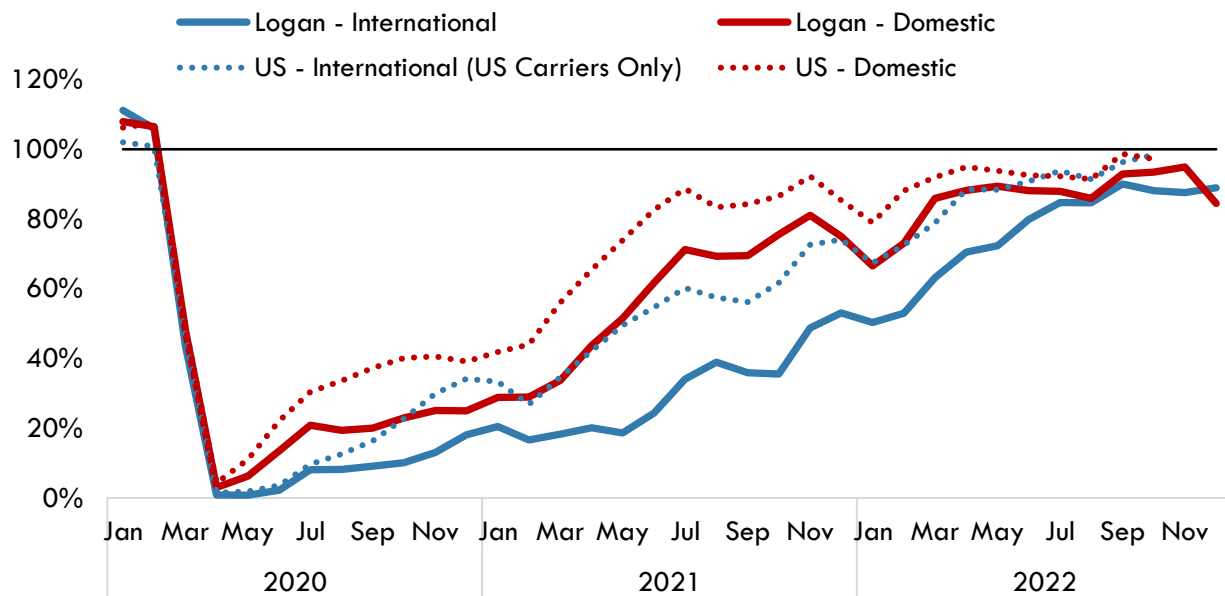
Source: National Transit Database. Note: total ridership is the sum of MBTA and Regional Transit Authority ridership per month. Top five transit authority by February 2020 ridership are shown as a share of their monthly ridership relative to the comparable month in 2019, e.g. September 2020 / September 2019.

There are several MBTA expansion and redesign plans under construction or consideration that have potential to benefit tens of thousands of current and new riders. The Green Line Extension of light rail north of Lechmere opened in 2022 in phases; the Union Square Branch in Somerville opened in March 2022 and the Medford Branch opened on December 12th, 2022. New Bedford and Fall River, both Gateway Cities, will gain a Commuter Rail connection to Boston in 2023 through the South Coast Rail project. The MBTA’s Bus Network Redesign project released a draft of its complete reconfiguration of Greater Boston region bus routes in May 2022 (a revised draft was released in October 2022); the review process for this project is underway and is expected to be phased in over the course of several years. This spring, the Commonwealth also pledged to create a new rail authority in the state to advance East-West Rail, a plan to connect Boston, Worcester, Springfield, and Pittsfield by passenger rail. The effects of these expansion and redesign plans remain to be seen considering the uncertainty of future travel patterns from the pandemic.

Logan International Airport, like the state’s transit agencies, logged a significant decline in passenger volume in 2020 and 2021 below record numbers seen in 2019 (Figure 19). After reaching over 42 million domestic and international passengers in the calendar year before the COVID-19 pandemic, passenger volumes collapsed to less than 13 million in 2020. Many air carriers expanded service to Asian, European, Middle Eastern, South American, and African destinations from Logan during the 2010s, but with the onset of COVID-19 and its travel restrictions, international passenger volumes were still only a fraction of the 2019 peak.

Logan initially lagged the U.S. overall in passenger recovery throughout 2020 and 2021 for both domestic flights and international flights carried out by U.S. carriers. Throughout 2022, resumption in overseas service and resurgent domestic travel helped passenger levels at Logan and across the country to continue their recovery. By September 2022, domestic and international passenger recovery was only 6 percentage points below that of the U.S. as overall passenger numbers return to pre-pandemic levels. As a global hub of education, technology, finance, medicine, and tourism, Massachusetts benefits from higher service levels and the passengers they bring into the state via Logan Airport.

Figure 19. Logan Airport and U.S. Monthly Passenger Volumes in 2022 as a Percent of 2019



Source: MassPort; Bureau of Transportation Statistics, T-100 Domestic & International Market
 Note: U.S. International passenger data are from U.S. carriers only.

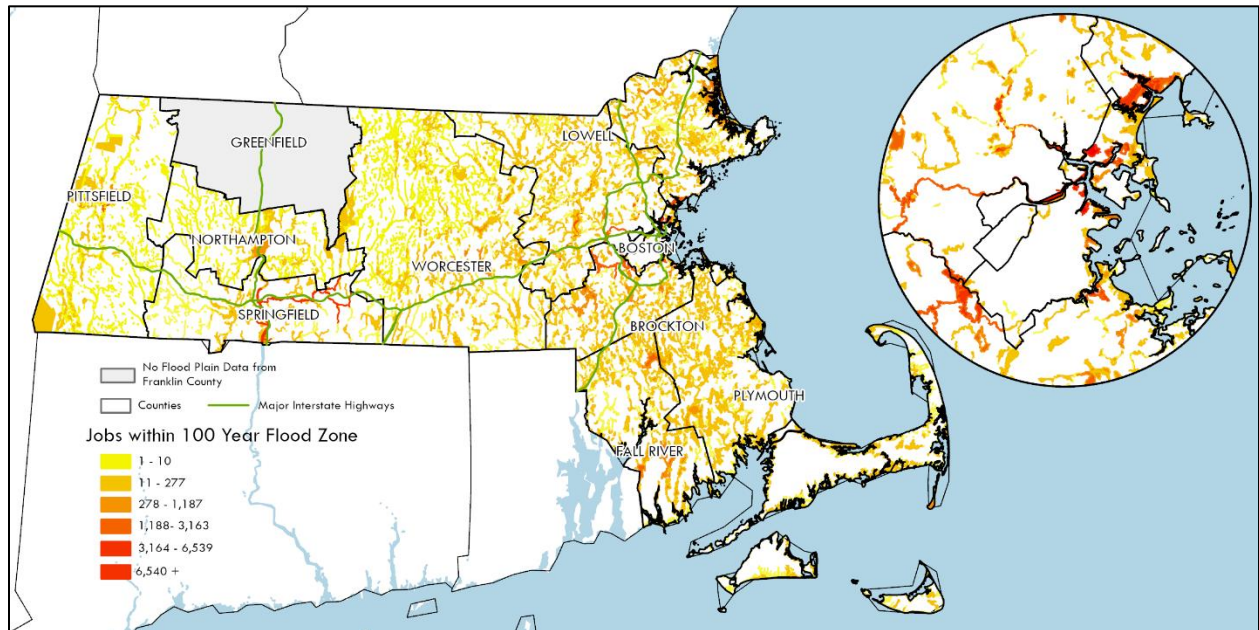
Environment

Massachusetts faces diverse risks related to climate change that will have broad economic impacts, depending on the extent to which adaptive measures are taken, at the state, national, and global levels. The threat posed by sea-level rise is of particular concern in Massachusetts because so much of the state's economic activity is concentrated along the coast, where the effects of climate change are already being felt. For example, in Boston the average number of flood days per a year has increased from 2.8 days during the 1950s and 1960s to 13.8 days from 2010 through 2020. Furthermore, the 2022 Sea Level Rise Technical Report released by the National Oceanic and Atmospheric Administration, estimated that sea levels along the East Coast will rise by 10-14 inches by 2050. The impact of coastal alteration, larger storm surges, and greater storm damage may be acutely felt where economic activity and residents are clustered. In 2019, approximately 500,000 jobs in Massachusetts were located in 100-year flood plains (Figure 20).² With rising sea levels, flooding in these areas is likely to be more frequent and intense. Hurricanes are expected to threaten the East Coast more frequently.³ The number of jobs potentially effected by hurricanes is significant in Massachusetts. There are almost 800,000 jobs in areas designated by the Army Corps of engineers as being in hurricane inundation zones (Figure 21).

² This estimate excludes jobs located in Franklin County because flood maps for Franklin County were not available.

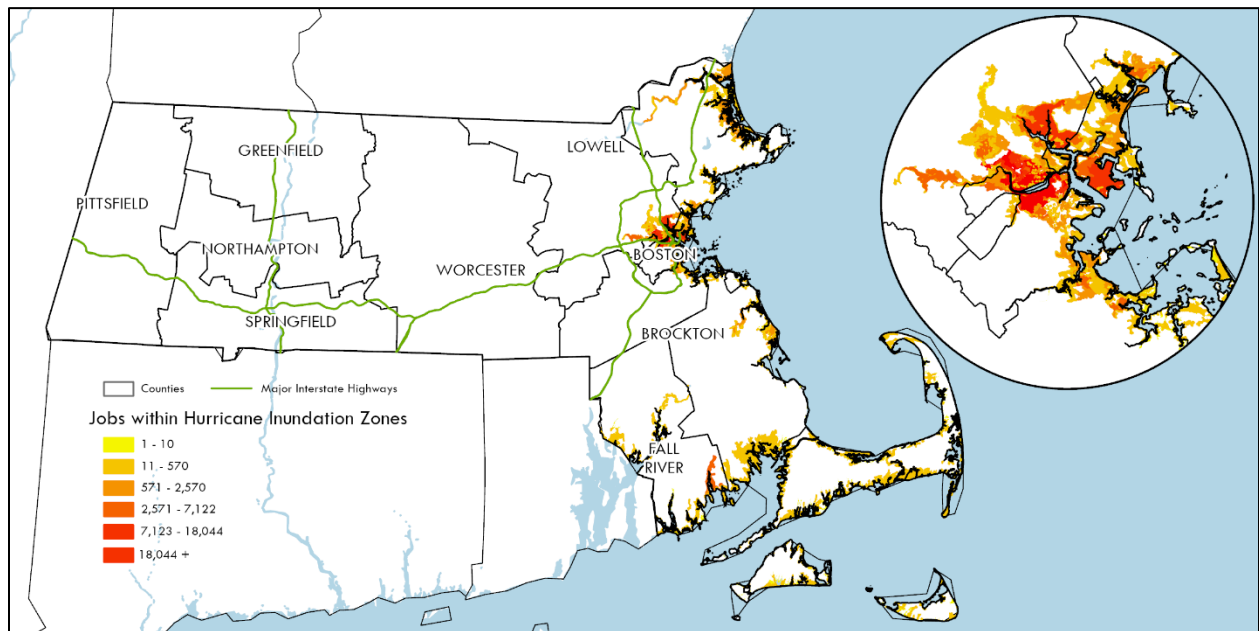
³ Gori, A., Lin, N., Xi, D. *et al.* Tropical cyclone climatology change greatly exacerbates U.S. extreme rainfall–surge hazard. *Nat. Clim. Chang.* 12, 171–178 (2022). <https://doi.org/10.1038/s41558-021-01272-7>

Figure 20. Jobs Located in 100-Year Flood Zones



Source: FEMA National Flood Hazard Layer via MA GIS, U.S. Census Bureau 2019 LODES data on Total Jobs; UMDI analysis
 Note: Counts of jobs in this table represent jobs in Census Blocks or parts of blocks that intersect or are fully contained within areas designated as 100 Year Flood Zones by FEMA and assumes an even distribution of jobs in those blocks. FEMA's current national flood hazard layer does not contain finalized flood data for Berkshire, Franklin or Hampshire counties; data from the previous flood map was used for Berkshire and Hampshire counties. Data for Franklin County was not available.

Figure 21. Jobs Located in Hurricane Inundation Zones



Source: U.S. Army Corps of Engineers Hurricane Surge Inundation Zones via MA GIS, U.S. Census Bureau 2019 LODES data on Total Jobs, Analysis by the Donahue Institute

There are also risks associated with rising temperatures. According to the 2022 National Oceanic and Atmospheric Administration National Centers for Environmental Information State Climate Summaries temperatures in Massachusetts have risen by 3.5 degrees Fahrenheit since the beginning of the 20th century and are predicted to continue to rise to historically unprecedented levels.

While the full effects of climate change are hard to predict at this time, it is certain that some industries will bear more of the burden than others. For example, the tourism industry will likely be affected as there are more than a dozen ski areas in the Commonwealth that will face challenges as precipitation is expected to shift from snow to rain with warmer winter temperatures. Agriculture will be impacted by changes to the growing season and increased risk of drought. Fisheries will be impacted as increasing temperatures change the habitats of ocean species. The health of residents may be impacted by climate change. For example, changes in temperature will likely increase the risk or incidence of acute respiratory diseases, such as Asthma, and increase the presence of ticks that carry Lyme disease and mosquitoes carrying West Nile Virus. The risks vary across the state, within communities, and from resident to resident. Vulnerability to climate change is a function of exposure, sensitivity, and adaptive capacity. The most vulnerable are often the young, old, and medically vulnerable, those who live in areas with higher risk of extreme events and those without the resources to adapt.

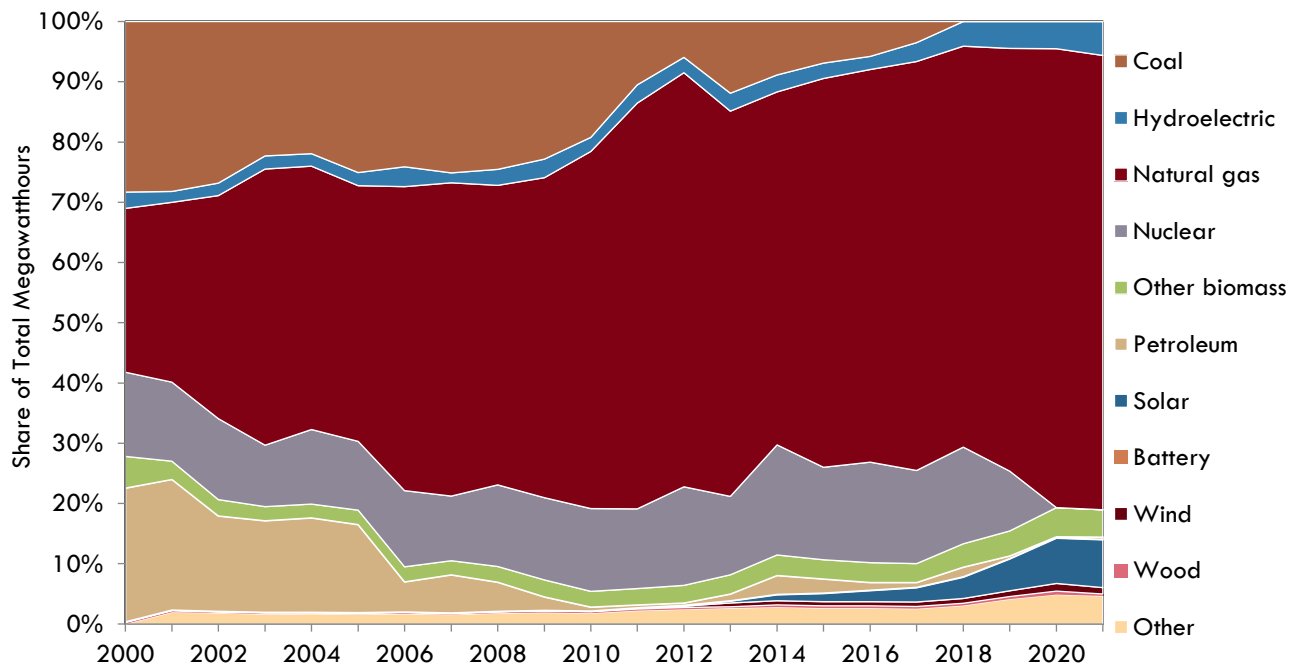
Changes to the environment, such as extreme weather events, do not respect political boundaries, therefore, policy makers have limited ability to mitigate the course of environmental change. However, local officials can prepare for natural disasters and plan for predicted changes in the environment, such as rising temperatures and sea-levels. To this end Massachusetts established the Municipal Vulnerability Preparedness grant program that supports city and towns through grants and technical assistance that fund and support local assessments of vulnerability to climate change and adaptation projects. The grants have funded a wide-variety of projects that support different stages of adaptation, from the development of local climate action plans to construction projects related to river restoration. Over 90 percent of municipalities in the state have enrolled in the program.

There have been significant legislative efforts to address the environmental risks of climate change. Most recently in August 2022, legislation was passed and signed that, among other provisions focused on creating local clean energy economy and modernizing the grid, requires that all new vehicles in the state be zero-emission beginning in 2035. This builds on the March 2021 net-zero emissions law that set the goal of Massachusetts achieving net-zero emissions by 2050. In addition, the law sets interim emission targets and sets targets for six sectors: electricity, transportation, commercial and industrial buildings, residential buildings, industrial processes, and natural gas distribution. Currently, Massachusetts consumes about 15 times more energy than it produces and relies on the regional grid to meet demand. However, Massachusetts uses less energy to produce a dollar of GDP than all but two other states, New York and California. Furthermore, according to the U.S. Energy Information Administration, Massachusetts used less energy per capita than all but six other states in 2019.

Over the past 20 years, Massachusetts has increasingly been reliant on natural gas for electric power generation, with the share of electric power from natural gas more than doubling from 2001 to 2020; (Figure 22). The state receives the majority of its natural gas through pipelines that bring in natural gas from sources in Appalachia and offshore Nova Scotia in Canada. In addition, natural gas arrives in the

state through liquefied natural gas import terminals in Everett and offshore in Massachusetts Bay. The Commonwealth is generating less energy from coal, petroleum, and nuclear; the last nuclear power plant in the state closed in 2019. Solar energy has steadily increased. Furthermore, Massachusetts ranked eighth in the U.S. in net generation from all solar in 2021. Electricity prices in Massachusetts are higher than in the nation as a whole. As of August 2022, Massachusetts consumers faced the fourth highest electricity prices in the nation. Nationwide, energy prices rose in the first half of 2022 when the onset of the war in Ukraine and sanctions on Russia limited the supply of oil. While oil and gasoline prices have begun to decline, there is continued uncertainty and the U. S. Energy Information Administration (EIA) forecasts continued growth in nominal residential electricity prices, EIA forecasts that homes using heating oil will see expenditures increase 45 percent compared with last winter, which will be difficult for Massachusetts residents where temperatures in winter months are cold.

Figure 22. Electric Power Generation by Primary Energy Source, 2000-2021



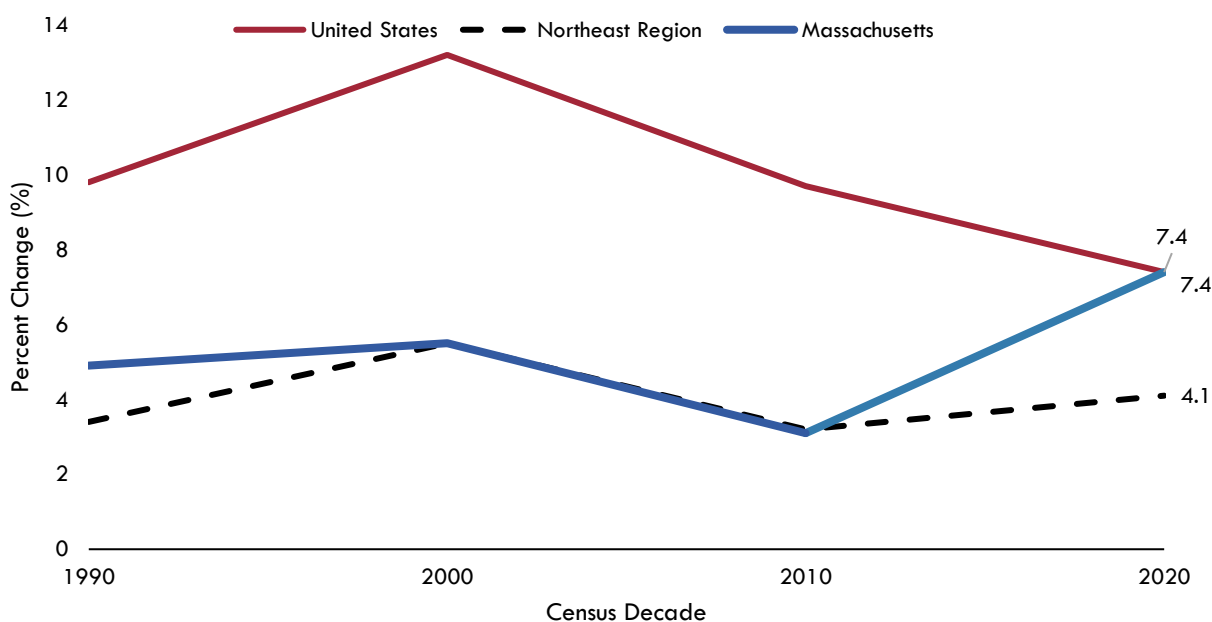
Source: U.S. Dept. of Energy, <http://www.eia.doe.gov/>; state electricity profiles.

Note: Other includes batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, tire-derived fuels and misc. technologies. Pumped storage is omitted from the graph because it represents the storage of power generated elsewhere rather than newly generated power.

Residents

Just over seven million residents called Massachusetts home in 2020, an increase of 7.4 percent since 2010, making it the fastest-growing state in the Northeast. The 2020 Decennial Census P.L. 94-171 Redistricting dataset, which was released in August 2021, provides a snapshot of Massachusetts' population and how it has changed over the past decade. From 2010-2020 the population increased by 482,288 people, from 6,547,629 to 7,029,917 (7.4%). In contrast, the average population growth in the Northeast was 4.1 percent (Figure 23).⁴

Figure 23. Change in Resident Population by Decade



Source: U.S. Census Bureau; UMDI analysis

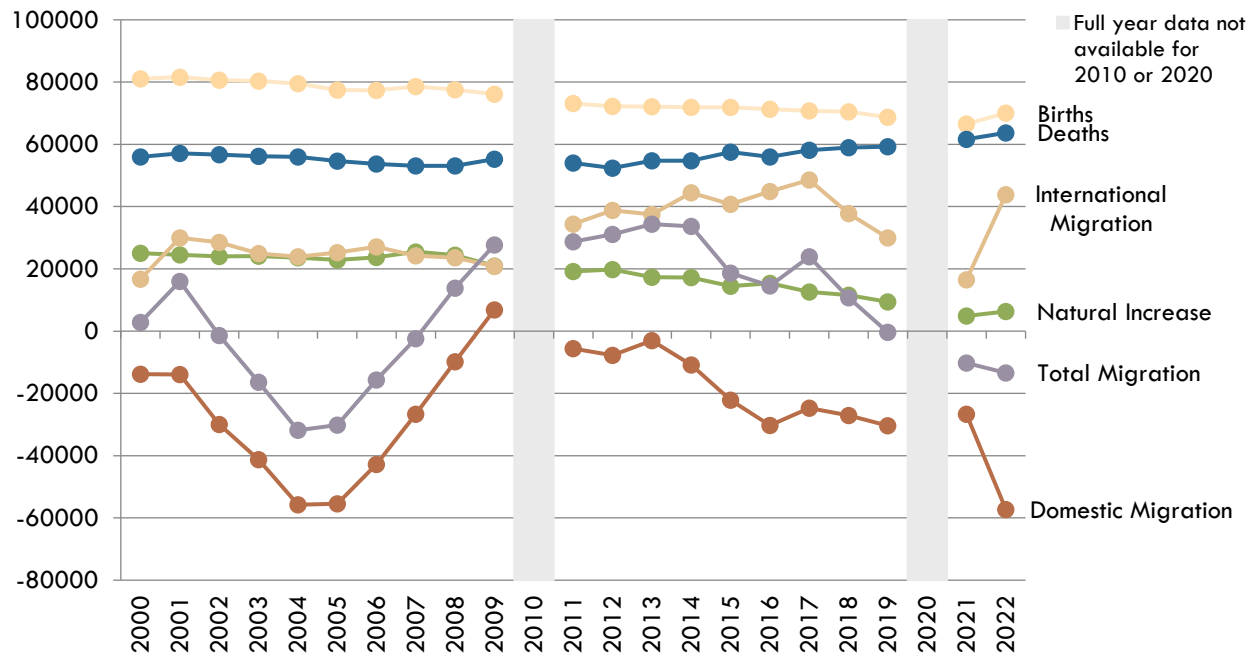
Increasing levels of international migration have driven population growth in Massachusetts over the last couple of decades. Conversely, migration from Massachusetts to other states has increased. Natural increases in the population have slowly declined largely due to an aging population and declining birth rates (Figure 24). Massachusetts' combination of higher education institutions and knowledge-based industries appears to be an important factor in attracting and retaining foreign-born residents. The foreign-born in Massachusetts has a bimodal education distribution with a high concentration with less than a high school education (21% in 2021) and a significant concentration with college degree (19%).

⁴ The Northeast includes: Maine, New Hampshire, Vermont, Massachusetts, New York, Connecticut, Rhode Island, Pennsylvania, and New Jersey.

Interestingly, a higher proportion of immigrants in the state hold a graduate degree (22%) than native-born residents (21%) (Figure 25).

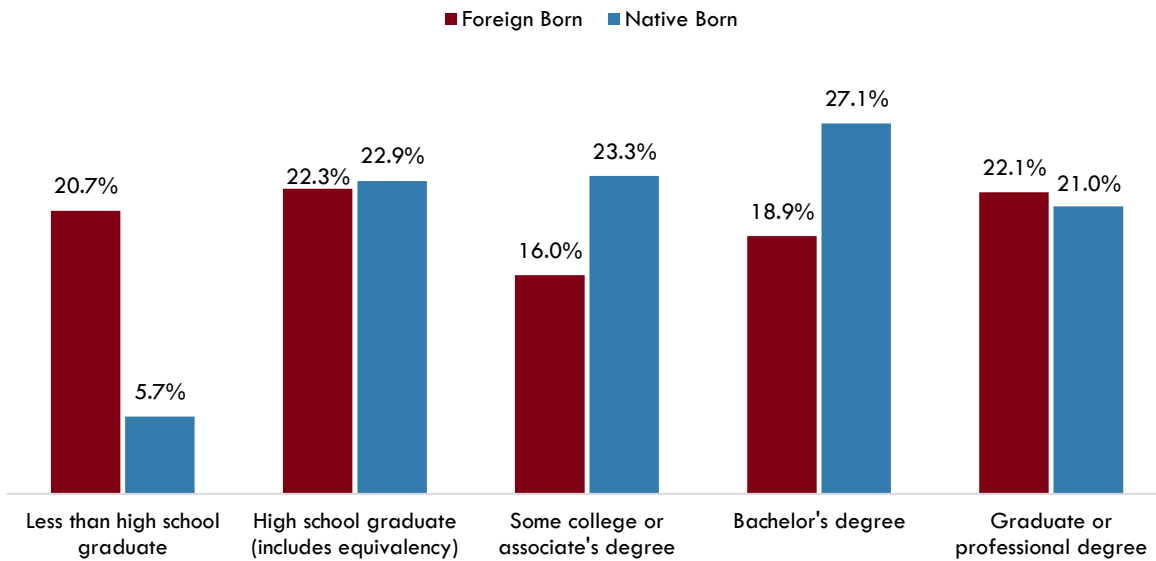
While the population in Massachusetts has grown strongly over the past decade, the latest population estimates showed a 0.1 percent decline over the year, from 6,989,690 on July 1, 2021 to 6,981,974 as of July 1, 2022. Population in the U.S. increased overall. Massachusetts was among the five out of nine Northeast states that lost population over the last year and cumulatively since the 2020 count. Since the last Census count on April 1, 2020, the Massachusetts population decreased by 47,975, down from 7,029,949. This 0.7% cumulative decrease is more substantial than most other Northeast states except New York, which decreased by 2.6% in the same period. Overall, the Northeast Region decreased by 1% since the census count. The U.S. grew at a rate of 0.4 percent from 2021 to 2022, up slightly from the historically low rate of 0.1 percent from 2020 to 2021. The pandemic halted migration to the state and contributed to higher death rates and lower birth rates. Furthermore, domestic migration out of the state increased. Again, this trend was not unique to Massachusetts, as the Southern Region of the U.S. was the only region to experience positive net domestic migration. As the pandemic recedes, a return to international migration in 2022 was an encouraging sign resuming growth in the population.

Figure 24. Massachusetts Estimated Components of Population Change, 2000-2022



UMass Donahue Institute. Source Data: ST-2000-7; CO-EST2010-ALLDATA; and NST-EST2022-ALLDATA, U.S. Census Bureau Population Division.

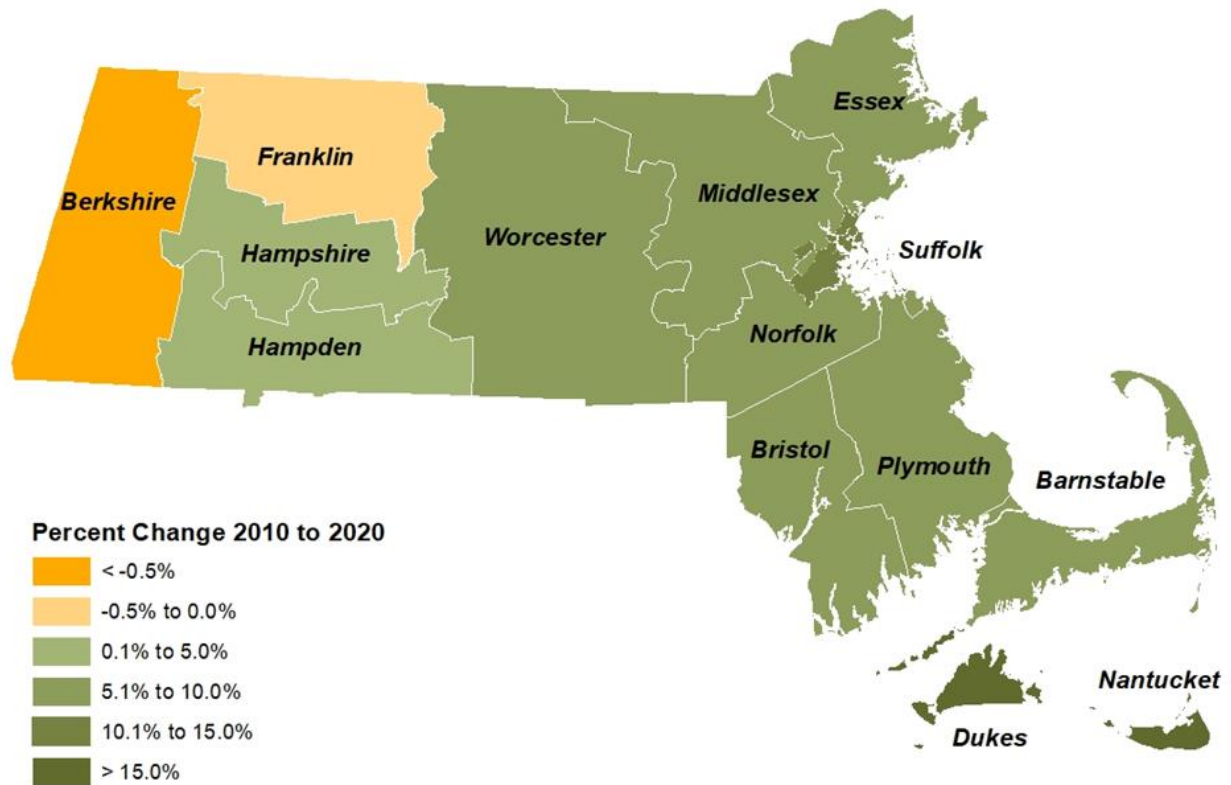
Figure 25. Educational Attainment of the Foreign Born in Massachusetts, 2021



Source: U.S. Census Bureau, 2021 1-Year American Community Survey; UMDI analysis.

Overall, population growth in the state between 2010 and 2020 was uneven. Population growth, much like the previous decade, was strongest in the eastern part of the state, particularly in the Greater Boston region. Middlesex County saw the largest growth in absolute terms and grew at a rate of 8.6 percent. It was followed by Essex and Worcester Counties, which grew at rates of 9 and 8 percent respectively, all faster than the state as a whole. In terms of percentage change, the fastest population growth since Census 2010 was observed in the small island counties of Nantucket and Dukes, at 40.1 percent and 24.6 percent respectively. The two western-most counties, Franklin and Berkshire, saw small population declines over the last decade (Figure 26).

Figure 26. Percent Change in Massachusetts County Population, Census 2010 to Census 2020



Source: UMDI, U.S. Census Bureau

The population growth trends in Massachusetts reflect trends in the U.S. over the past decade. Metropolitan areas and urban and suburban counties grew much more rapidly than small places and rural counties. Similarly, in Massachusetts, population growth has been clustered around the Greater Boston area and Gateway Cities. The cities that grew the most in absolute terms were Boston, Worcester, Cambridge, Lawrence, and Brockton. In addition, all but two of Massachusetts’ 26 “Gateway Cities” showed Census 2020 population counts greater than the Vintage 2020 evaluation estimates⁵, which are based on the 2010 Census, suggesting that growth in these cities out-performed the Census Bureau’s estimates. The Gateway Cities account for 15 out of the 25 most populous places in Massachusetts, and 25 out of the top 40.

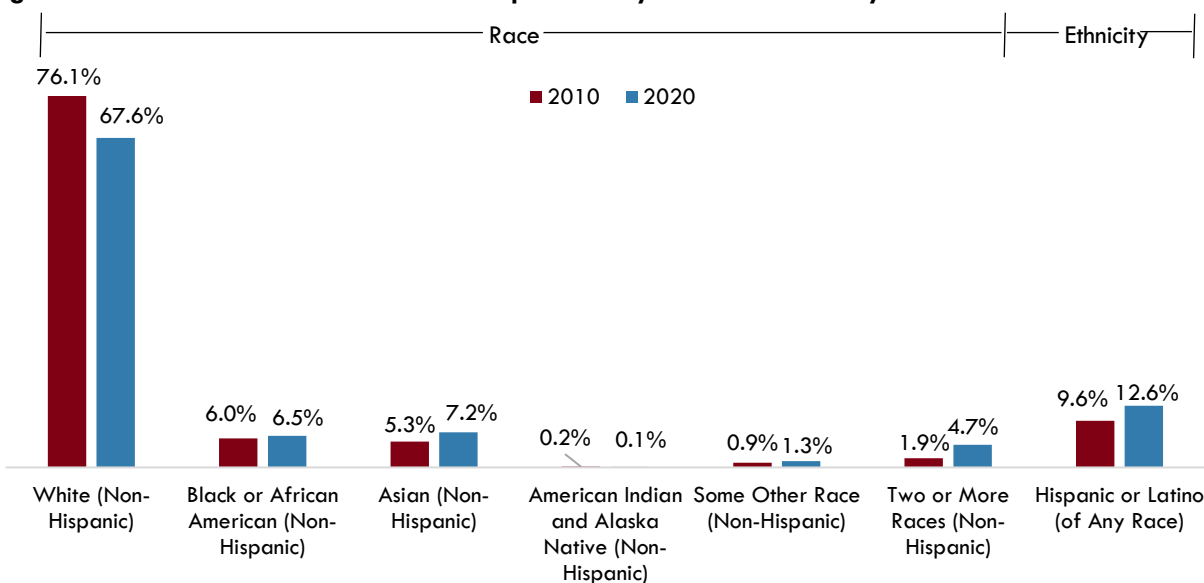
The four slowest growing Gateway Cities were all in Hampden County. Hampden County, along with Berkshire, Franklin, and Hampshire counties, is located in the Western Massachusetts region, which had a

⁵ The UMass Donahue Institute Population Estimates Program produces population projections for the Commonwealth of Massachusetts, the most recent of which were developed in 2018 (referred to as Vintage estimates) and included estimates for 2020, for which we now have Decennial Census data. UMDI is currently producing new estimates, set for release later this year.

much slower rate of growth than Massachusetts as a whole, 0.5 percent. Furthermore, the region grew at a slower rate from 2010 to 2020 than it had from 2000 to 2010 (1.1% from 2000 to 2010; 0.5% from 2010 to 2020). Both Berkshire and Franklin counties have been declining in population since 2000, while Hampden and Hampshire counties have seen modest growth. In contrast the Cape and the Islands region has experienced a dramatic increase in population. The Island of Nantucket was the fastest growing place in Massachusetts followed by Martha’s Vineyard. Cape Cod also experienced increased growth compared to the prior decade, growing at a rate of 6.1 percent. The strong growth in these areas that had seen declines from 2000 to 2010 may be attributable to the pandemic, as more individuals could choose where to live untethered from where their employer was located. It is unclear whether this trend will continue.

As with the nation, Massachusetts is becoming more racially and ethnically diverse. The share of the population that identifies as non-Hispanic, white decreased from 76 percent to 68 percent from 2010 to 2020, while the shares that identify as Black non-Hispanic, Asian non-Hispanic, and Hispanic increased to 6.5 percent, 7.2 percent, and 12.6 percent respectively. The share that identifies as two or more races (non-Hispanic) more than doubled to 4.7 percent (Figure 27). The state’s population is older than the nation as a whole—the median age is 39.6 compared to 38.2 for the nation. The Commonwealth has the lowest median age in New England and, due to the presence of higher education institutions, young adults are somewhat overrepresented in the Commonwealth, 21 percent of residents are between the ages of 20-34 compared to 20 percent in the United States.

Figure 27. Share of Total Massachusetts Population by Race and Ethnicity in 2010 and 2020

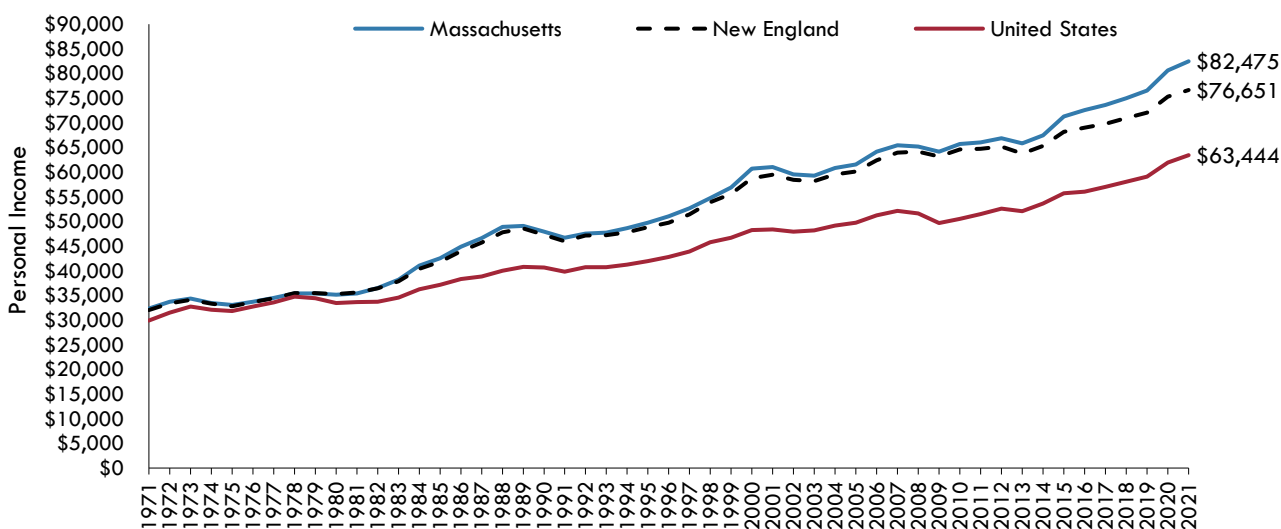


Source: 2010 Source Data: Census 2010 Summary File 1; 2020 Source Data: Census 2020 PL-91-171; UMDI analysis

Massachusetts’ residents earn some of the highest incomes in the nation. Real per capita income has consistently exceeded incomes in the New England and the U.S. and in 2021, Massachusetts had the highest real per capita personal income in the nation, excluding the District of Columbia. The Commonwealth’s real per capita income was nearly \$82,500 compared to approximately \$77,000 in New England and just under \$63,000 in the U.S. (Figure 28). The relatively high-income levels reflect the

high level of education and the concentration of high-wage industries such as, health care, professional services, and finance and insurance. The poverty rate is lower in Massachusetts than in the nation at 9.4 percent compared to 12.3 percent. However, in several cities the poverty rate exceeds the state average: Holyoke, Springfield, and Worcester, all Gateway cities, have poverty rates of 15.2 percent, 10.9 percent and 10.7 percent, respectively. Boston is slightly above the state average with a rate of 9.6 percent. Higher rates of poverty in these Gateway Cities and Boston are particularly concerning because Gateway Cities are home to a large share of the state's communities of color and immigrant communities. Forty-one percent of all people of color in Massachusetts live in Gateway Cities and 18 percent live in Boston. Furthermore, 36 percent of Massachusetts immigrants live in Gateway Cities and 17 percent live in Boston. The concentration of poverty in these cities raises concerns about equity and quality of life.

Figure 28. Real Per Capita Personal Income in Massachusetts, the United States, and New England, 1971-2021 (in \$2021)

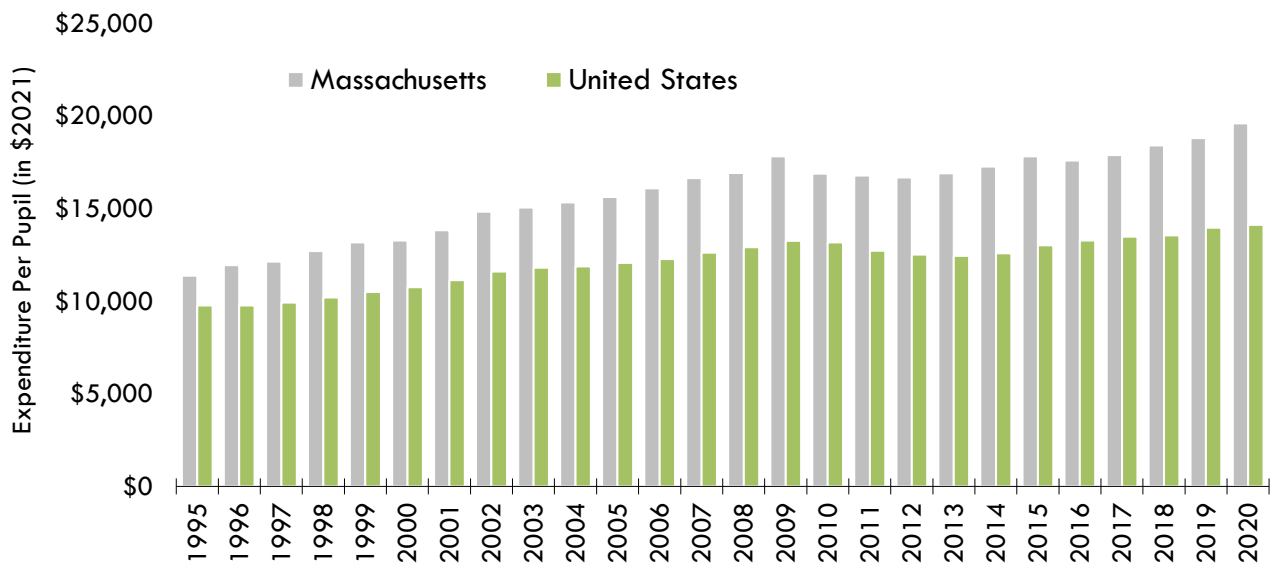


Source: U.S. Department of Commerce, Bureau of Economic Analysis

The presence of a skilled and well-educated population is an important resource for the Commonwealth. At the primary and secondary level, the state invests more than the national average in its public schools (Figure 29). Furthermore, students in Massachusetts' K-12 public schools consistently outperform their peers in the U.S. on national assessments. The state has the most well-educated population in the country, with over 46 percent of all residents 25 years of age or older earning a bachelor's degree or more. However, educational attainment varies significantly across racial groups: Black and Hispanic residents are less likely to have a bachelor's degree than the state average, at 32 percent and 23 percent respectively. Fifty percent of white residents and 64 percent of Asian residents hold a bachelor's degree or higher. That said, across all racial groups, educational attainment rates are higher than the national average (Figure 26). For adults without a high school diploma and/or low English proficiency, the State has recently increased investment in adult basic education and English for speaker of other languages services through its Department of Elementary and Secondary Education.

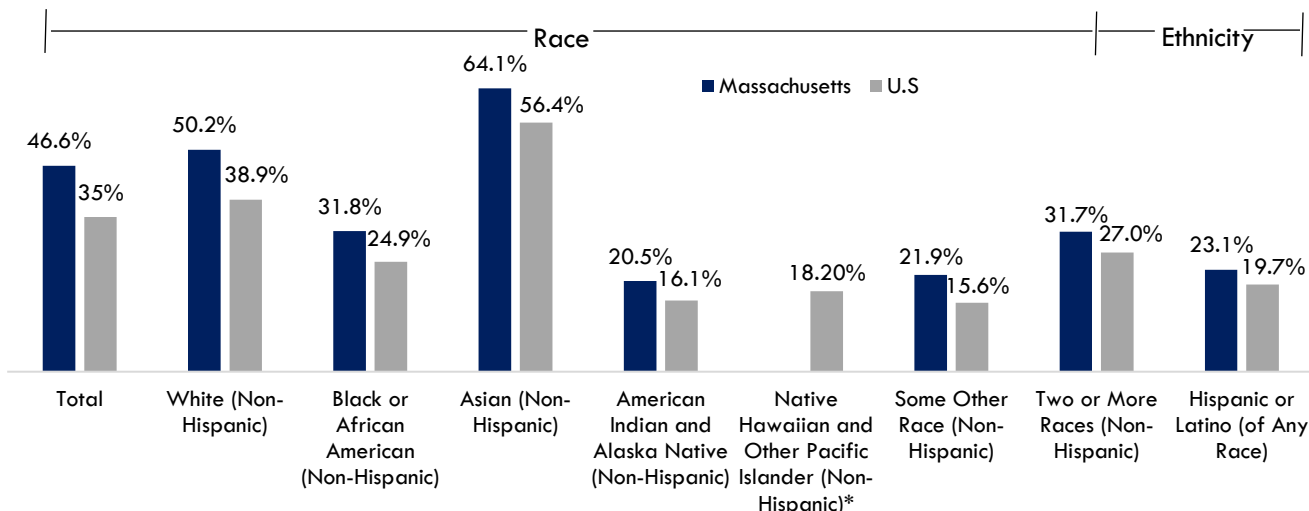
The well-educated population supports and is a product of the concentration of elite public and private colleges and universities in the state. Educational services is the third largest industry in Massachusetts in terms of jobs. Nearly half a million students are enrolled in higher education in the state. The number of international students is down from nearly 74,000 in the 2019/2020 academic year to 66,200 students in the 2020/2021 academic year. This marks the first time since 2003 that enrollment of international students declined, this was likely due to pandemic-related travel restrictions and the temporary transition to remote learning in many higher education institutions.

Figure 29. Per Pupil Expenditure in Public Elementary and Secondary Schools (in \$2021)



Source: U.S. Census Bureau, Public Elementary–Secondary Education Finance Data.

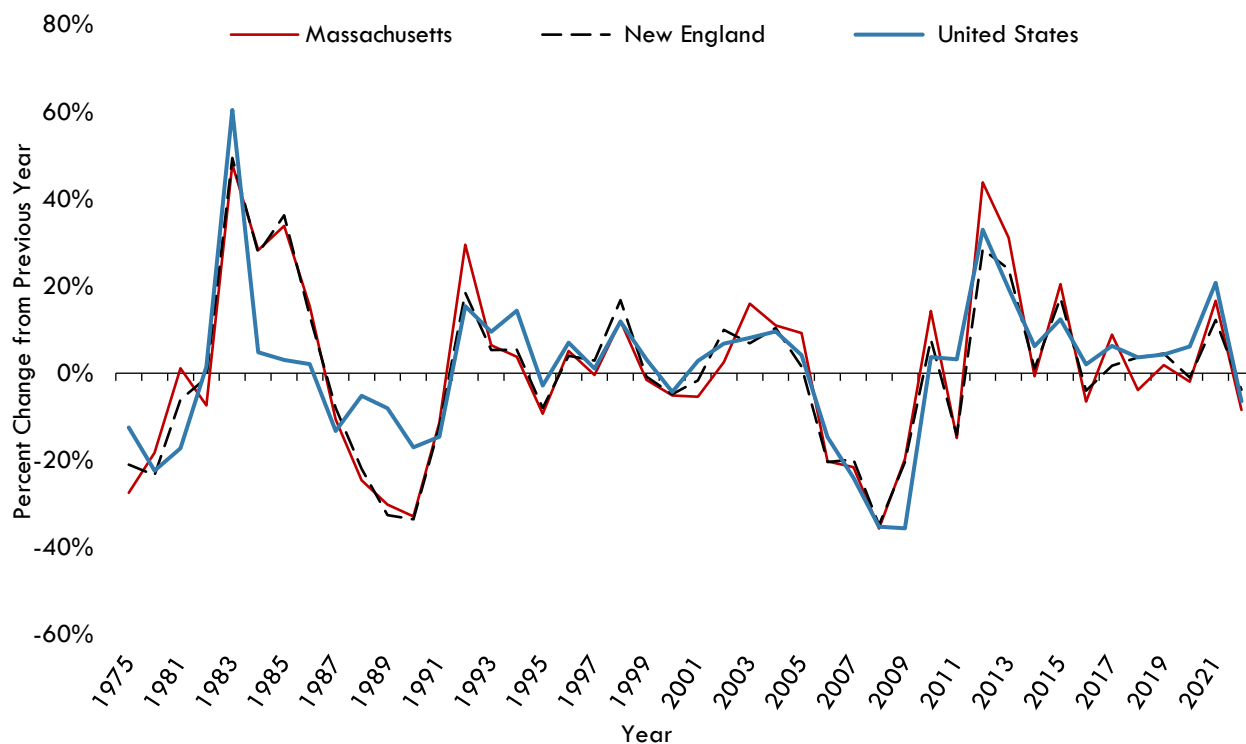
Figure 30. Persons in Massachusetts and the United States 25 Years and Older with a Bachelor's Degree or Higher by Race and Ethnicity in 2021



Source: U.S. Census Bureau, 2021 1-Year American Community Survey; UMDI analysis.

*Note: The estimate for Native Hawaiian and Other Pacific Islander (Non-Hispanic) in Massachusetts cannot be displayed because there were an insufficient number of sample cases in the selected geographic area.

While residents enjoy higher incomes than most other states, the cost of housing in Massachusetts is a burden for many, especially for Black and Hispanic households. Housing costs are rising across the Commonwealth, driven in part by population and economic growth and inadequate housing production over the last couple of decades. The sales price of existing homes continued to increase, but at a slower rate, as higher interest rates have contributed to a slow-down in the housing market. In 2022, prices increased to \$575,000 from \$530,000 in 2021, an 8.5 percent increase. Prices have remained well above the national median, which according to the National Association of Realtors was at \$366,900 in December 2021. Construction is not keeping up with demand. Preliminary data shows that nationally, the number of building permits decreased 6.4 percent from 2021 to 2022, but in Massachusetts the decline was greater, permits decreased 8.4 percent over the same period (Figure 31).

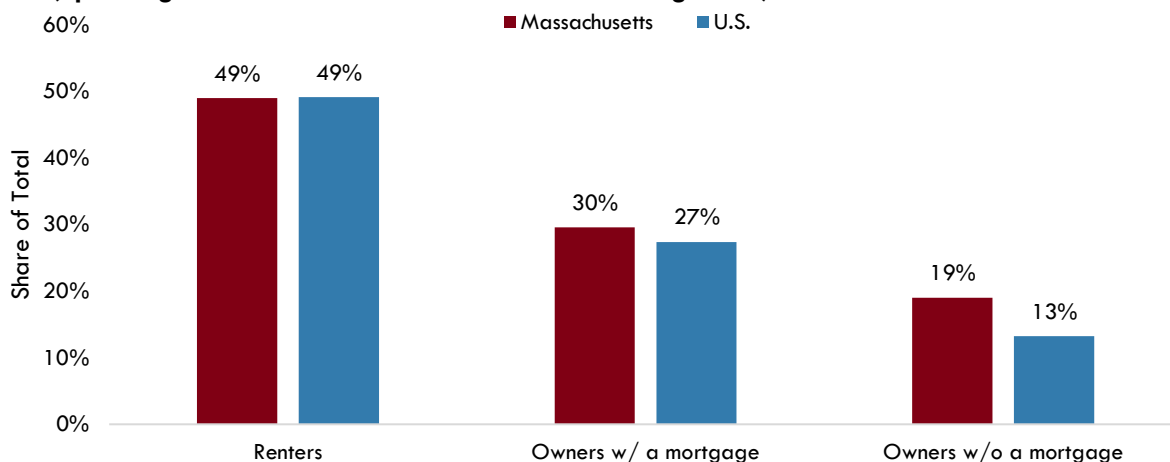
Figure 31. Housing Units Authorized by Building Permit, Percent Change from Previous Year

Source: U.S. Census Bureau Building Permits Survey; UMDI analysis
 Note: Reported data plus data imputed for non-reporters & partial reporters.

The increase in sale prices and the low supply of homes for sale has translated into high rental costs as well. In addition, low vacancy rates have contributed to higher costs; rental vacancy rates in the state were at 3.3 percent in 2021 compared to 5.7 percent nationally. Mirroring rates in the U.S., nearly half or renters are cost burdened, meaning they spend over 30 percent of their income on housing costs, and nearly a quarter (23%) of Massachusetts renters are severely cost burdened, meaning they spend 50 percent or more of their income on housing (Figure 32). In contrast, 30 percent of owners with a mortgage are cost burdened and 10 percent are severely cost burdened. The rates of cost burden are highest among low-income residents, as well as Black and Hispanic households. It is important to note that rates of housing cost burden depend on both the income of residents and housing costs. For example, in the Boston Metro Area 46 percent of renters were cost burdened in 2021, compared to 50 percent in Springfield Metro Area, where rents are relatively lower than the Boston Metro Area, but out-of-reach for many lower income families. Due to a history of discriminatory housing policies, rates of homeownership vary by race and ethnicity. Among the most detrimental federal policies that originated in the 1930's was "redlining," which meant that racial and ethnic identity were a primary factor in the determination of loan risk, leading to the racist assignment of lower ratings to communities or color than neighboring and similar white communities. This system kept people of color from buying their own homes, one of the most important forms of intergenerational wealth. The harmful impact of this system is still felt today in the

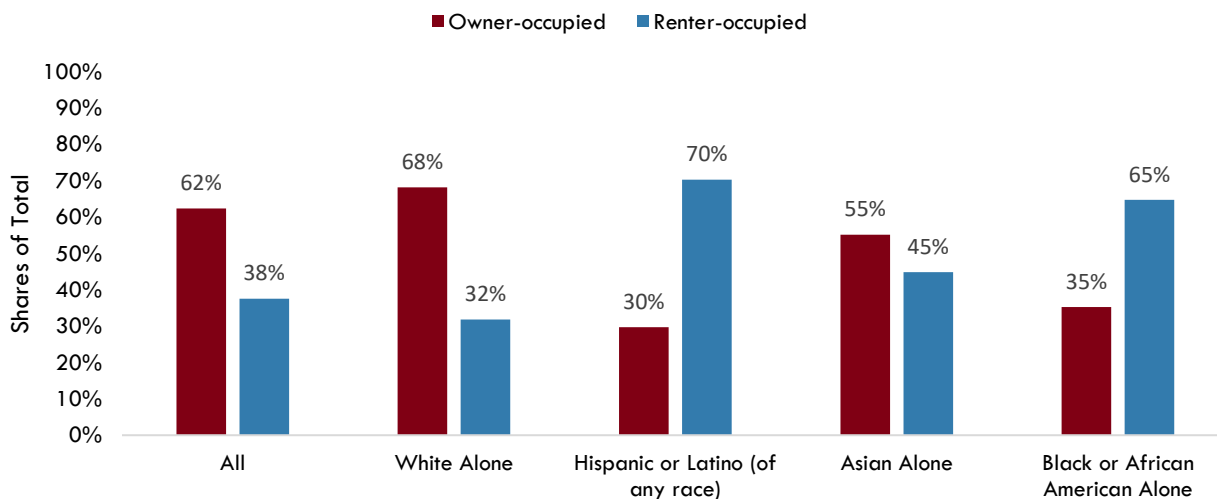
disproportionate rate that people of color rent, where they live, and their substantially lower levels of wealth than their white peers.

Figure 32. Housing-Cost-Burdened Households by Housing Tenure in Massachusetts and the United States (Spending 30 Percent or More of Income on Housing Costs)



Source: ACS 2017-2021 5-Year Estimates, Table DP04, A through I.

Figure 33. Housing Tenure in Massachusetts in 2021 by Race and Ethnicity



Source: ACS 2017-2021 5-Year Estimates, Table B25003, A through I.

Overall, 62 percent of households in Massachusetts are owner-occupied and 38 percent are renter-occupied. The majority of white and Asian households own their homes and Black and Latino households are more likely to rent (Figure 33). The disparity in homeownership rates matters because homeownership is a fundamental mechanism for building wealth in the U.S. and homeowners are far less likely to experience severe housing cost burden.

With the goal of increasing housing production, particularly near transit hubs, the Commonwealth has passed legislation to amend the state Zoning Act. Known as the “Housing Choice” Act it included several

provisions to remove zoning-related barriers to production. The Act changed voting standards for local city councils or town meetings to adopt or change zoning ordinances and bylaws from two-thirds to a simple majority. Among other measures, the Act also requires “by right”, multi-family zoning in “MBTA” communities, 176 communities that are served by the Massachusetts Bay Transportation Authority. Renters and owners, who struggled to afford housing during the pandemic, benefited from targeted federal American Rescue Plan Act (ARPA) funds that have flowed into the Commonwealth. In particular, the Emergency Rental Assistance Program and Homeowner Assistance Fund helped keep residents housed during the COVID-19 pandemic. In addition, the State has also received flexible funds through ARPA that it intends to use to address the housing need. In November 2022 the legislature passed and the Governor signed an economic development bill that included \$407 million in funds to support housing production and affordability in the Commonwealth.