Socioeconomic Indicators for Massachusetts

March 29, 2024

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 March 29, 2024.

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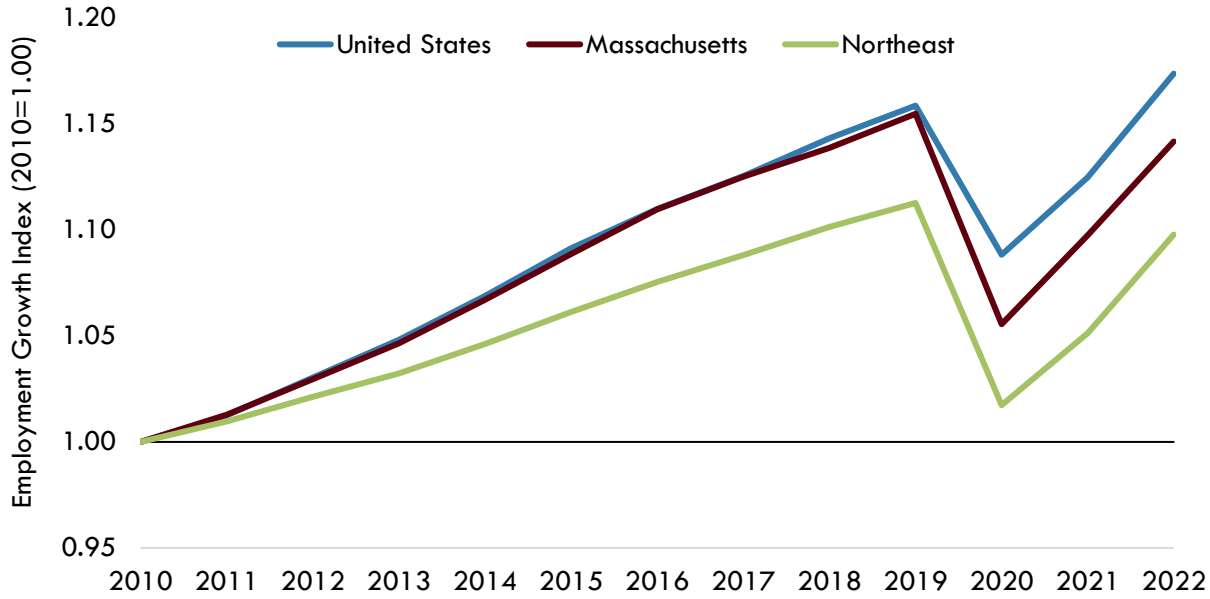
Economy

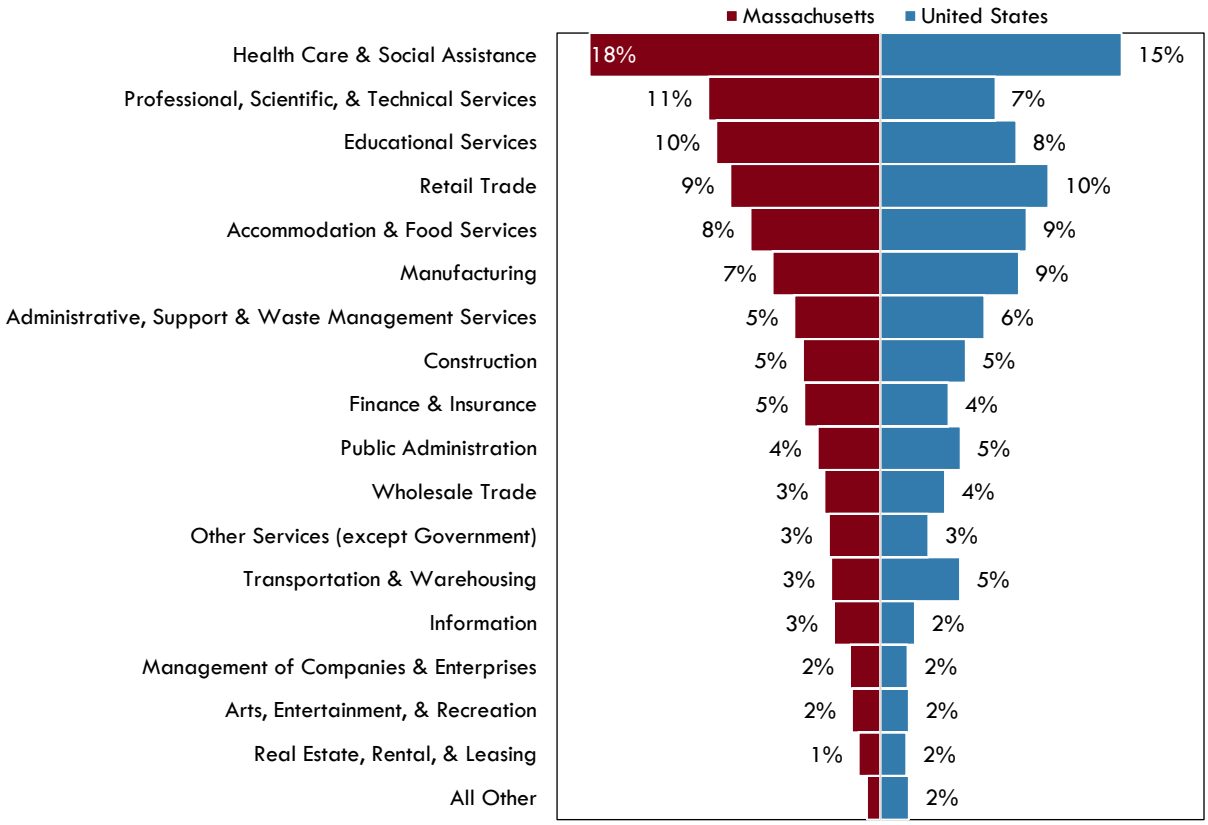
Over the past decade, Massachusetts has been a leader in job growth in the Northeast (Figure 1), driven largely by the state's highly-educated workforce, the overall diversity of industries, and strengths in knowledge-based industries, such as health care, education, and professional services (Figure 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 2022, 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, 2010-2022 (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, 2022 (Percent of Total Jobs)

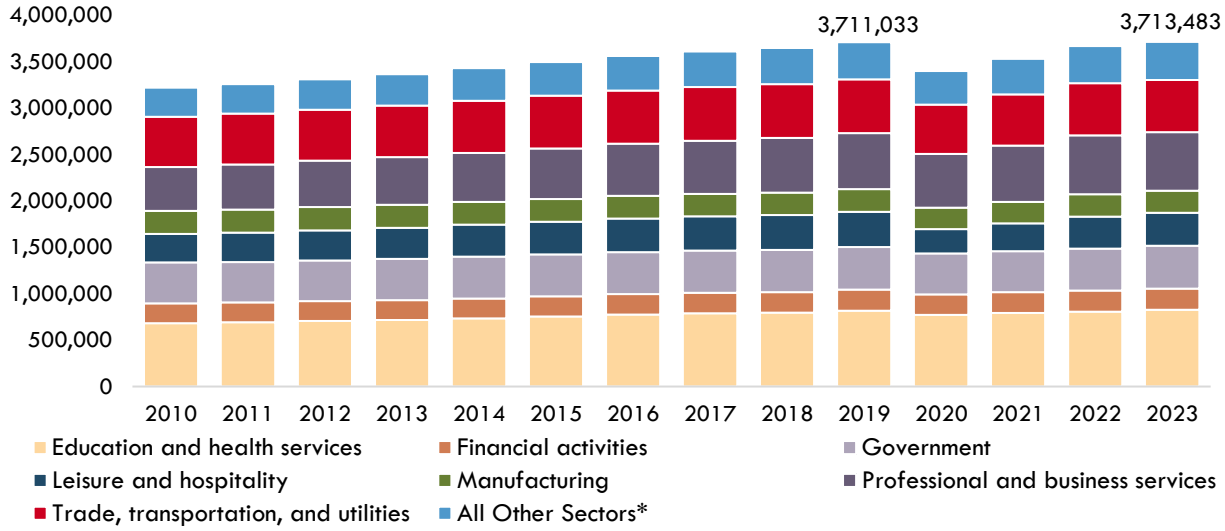


Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW), UMDI analysis.
Note: All Other includes: Utilities; Agriculture, Forestry, Fishing, & Hunting; and Mining, Quarrying, and Oil & Gas Extraction. Not seasonally adjusted.

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 five percent of jobs but contributing nine percent to the state GDP. While sixth in terms of employment in 2022, 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.

Looking at Bureau of Labor Statistics supersectors, education and health services, professional and business 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 by NAICS Supersector, 2010-2023



Source: U.S. Bureau of Labor Statistics, Current Employment Statistics (CES); UMDI analysis. For purposes of analysis, the Bureau of Labor Statistics aggregates NAICS sectors into groupings called supersectors.
*Includes the supersectors: Mining & Natural Resources, Construction, Information, and Other Services.

The COVID-19 pandemic interrupted the trajectory of the state's economic growth and had short- and long-term ramifications for the state's economy. Over 690,000 jobs were lost in spring 2020. By early 2024, the Commonwealth has recovered almost all jobs lost during the pandemic; as of January 2024, Massachusetts was 6,700 jobs below the February 2020 peak (Figure 4). The growth of professional and technical services during the pandemic 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 among 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 (Figure 4). Since the onset of the pandemic through January 2024, professional and technical services saw the largest gains in employment, this includes growth in scientific research and development services.

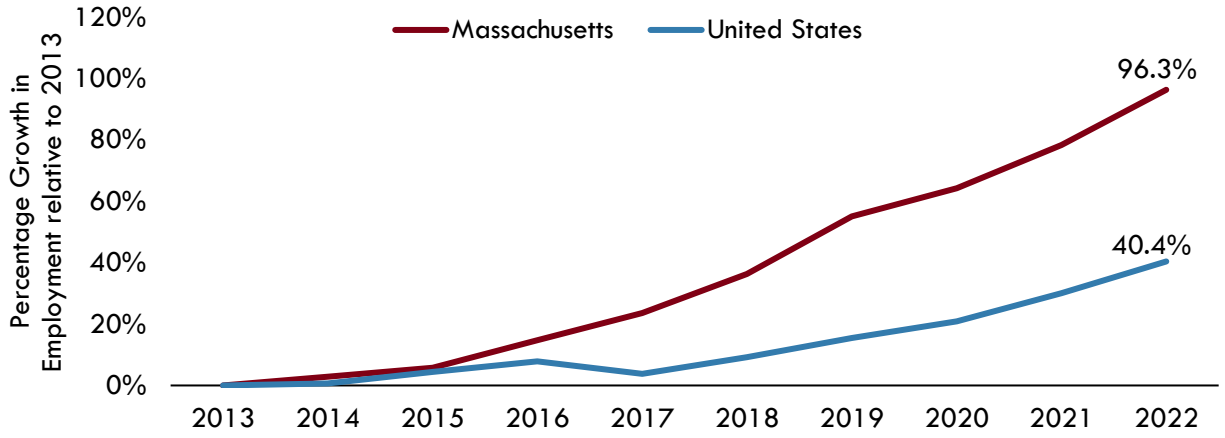
Figure 4. Jobs Deficit in Massachusetts Relative to February 2020 Peak by 2-Digit NAICS Industry

	Massachusetts				U.S.
Industry	**Feb-20**	**Jan-24**	**Change (N)**	**Change (%)**	**Change (%)**
Accommodation and food services	324,000	298,800	(25,200)	(7.8%)	(1.7%)
Retail trade	350,000	329,600	(20,400)	(5.8%)	0.6%
Manufacturing	242,900	236,300	(6,600)	(2.7%)	1.4%
Government	465,900	461,700	(4,200)	(0.9%)	1.1%
Management of companies and enterprises	73,400	70,400	(3,000)	(4.1%)	3.0%
Other services	142,100	140,100	(2,000)	(1.4%)	(1.1%)
Real estate and rental and leasing	49,000	48,600	(400)	(0.8%)	5.6%
Information	95,600	95,300	(300)	(0.3%)	3.8%
Mining and logging	1,000	1,100	100	10.0%	(6.7%)
Wholesale Trade	123,100	123,300	200	0.2%	4.5%
Transportation, warehousing and utilities	105,300	107,300	2,000	1.9%	12.2%
Arts, entertainment, and recreation	63,400	66,100	2,700	4.3%	5.1%
Health care and social assistance	645,700	648,700	3,000	0.5%	6.2%
Finance and insurance	178,200	182,400	4,200	2.4%	3.5%
Administrative and waste services	185,000	190,200	5,200	2.8%	1.6%
Educational services	185,000	190,800	5,800	3.1%	1.7%
Construction	165,900	174,400	8,500	5.1%	7.0%
Professional and technical services	350,600	374,300	23,700	6.8%	13.0%
Total nonfarm	**3,746,100**	**3,739,400**	**(6,700)**	**(0.18%)**	**3.4%**

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

Scientific research and development (R&D) is intensely clustered in Massachusetts compared to the U.S. and has become more concentrated over the past decade. This is true when we look at both jobs in the industry and establishments. The concentration of research universities, hospitals, research institutes, and private companies pursuing advances in biomedical research, life sciences, and other areas of research and development has contributed to the competitiveness of this industry. Over the past decade, employment in this area has nearly doubled in the Commonwealth with roughly 99,000 individuals working in scientific R&D (Figure 5). While these numbers are meaningfully large, they likely understate the significance of the industry in the Massachusetts economy, when considering employment in other industries supports research and development. R&D activity here also constitutes a large portion of national scientific activity: in 2022, more than one in every 10 scientific research and development jobs in the nation were in Massachusetts. This is despite the Commonwealth being home to only one in every 40 jobs overall in the nation. Jobs in scientific R&D pay notably higher wages than average for both Massachusetts and the US.

Figure 5: Employment Growth in Scientific Research and Development, 2013-2022



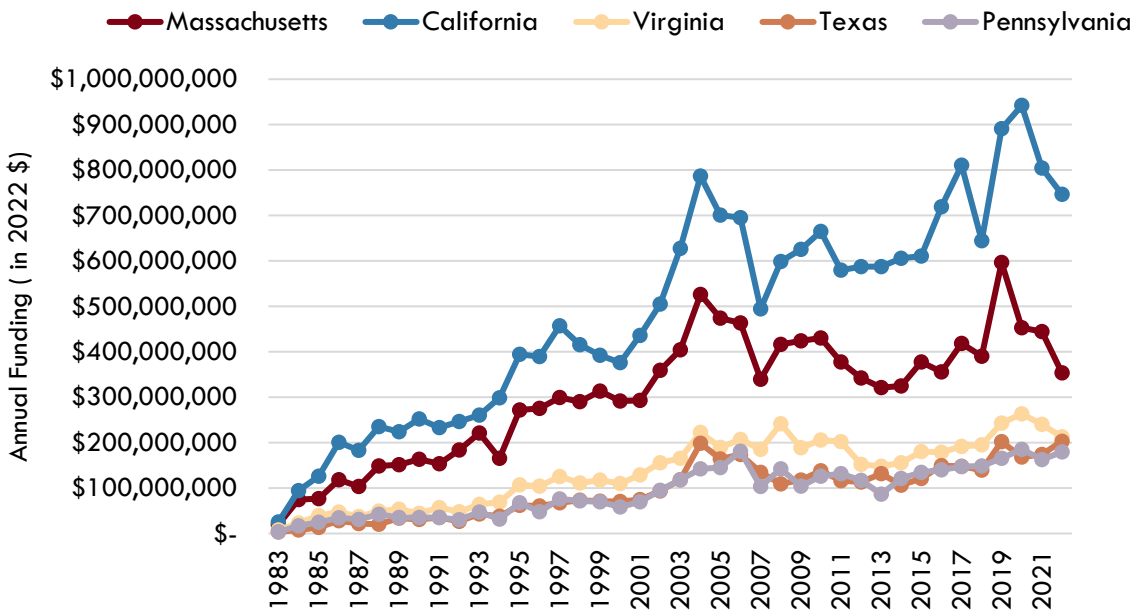
Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages. NAICS Code 5417, Scientific Research and Development Activities

Much of the funding for research and development comes from the federal government. Trends in three prominent sources of this funding, National Institutes of Health, Small Business Administration, and National Science Foundation, illustrate the competitiveness of Massachusetts in research and development.

The National Institutes of Health (NIH) has a budget of nearly $48 billion. Over 80 percent of that budget goes towards funding research through competitive grants. Researchers in Massachusetts have been successful at securing NIH awards at consistently high levels. In 2022, Massachusetts researchers were awarded over $3.1 billion in funding from the NIH, behind only New York and California. When considered on a per capita level, Massachusetts has been first in the nation every year for the last decade. Within Massachusetts the majority of the funding is focused in the Greater Boston area, though Worcester (home of UMass Chan Medical School) and Western Massachusetts (home of UMass Amherst) have also received large shares of grants from the NIH.

Similar to NIH funding, Massachusetts also leads in the US Small Business Administration's (SBA) innovation-focused programs (Figure 6). The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs, administered by SBA, are highly competitive award programs that encourage American small businesses to engage in federal R&D with the potential for commercialization. Focused on stimulating high-tech innovation, the purpose of the SBIR/STTR program is tech transfer and to bridge the gap between basic science and commercialization of the resulting innovations for small businesses while meeting federal research needs. Businesses must be owned and located in the US and have less than 500 employees. In addition, for the STTR program, small businesses are required to do at least 40 percent of the research, while formally collaborating with nonprofit research institutions. In FY2022 Massachusetts organizations and businesses received over $353 million in SBIR and STTR funding, behind California in total awards, but first in the nation when considered on a per capita basis.

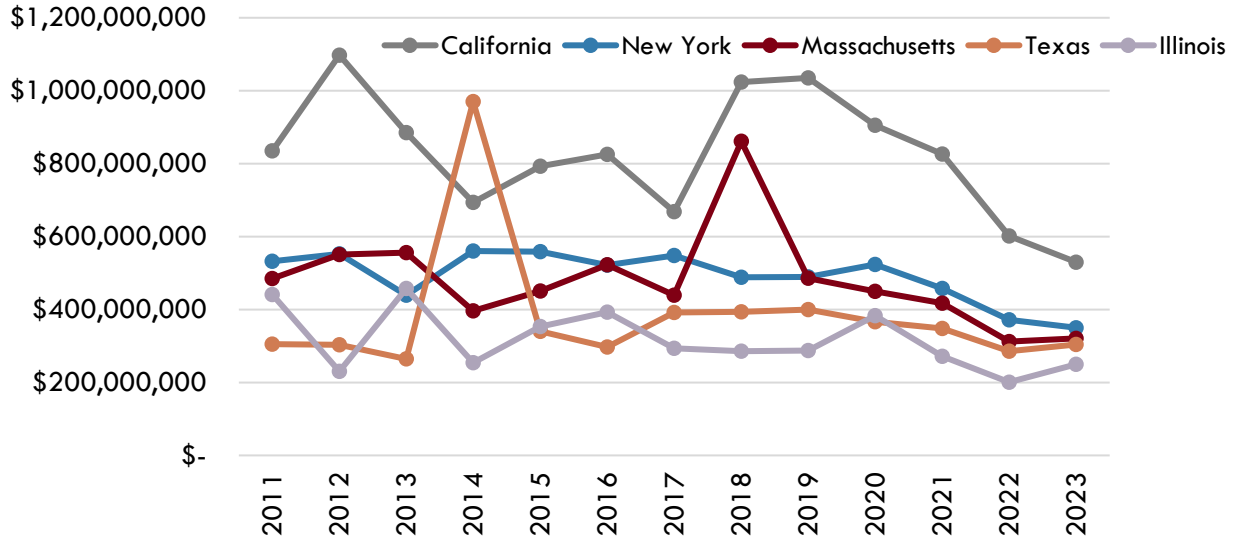
Figure 6: Annual SBIR and STTR Funding for Top 5 States with Highest Funding in 2022



Source: Small Business Administration, Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs. Bureau of Labor Statistics Consumer Price Index, All Urban Consumers, U.S. City Average.

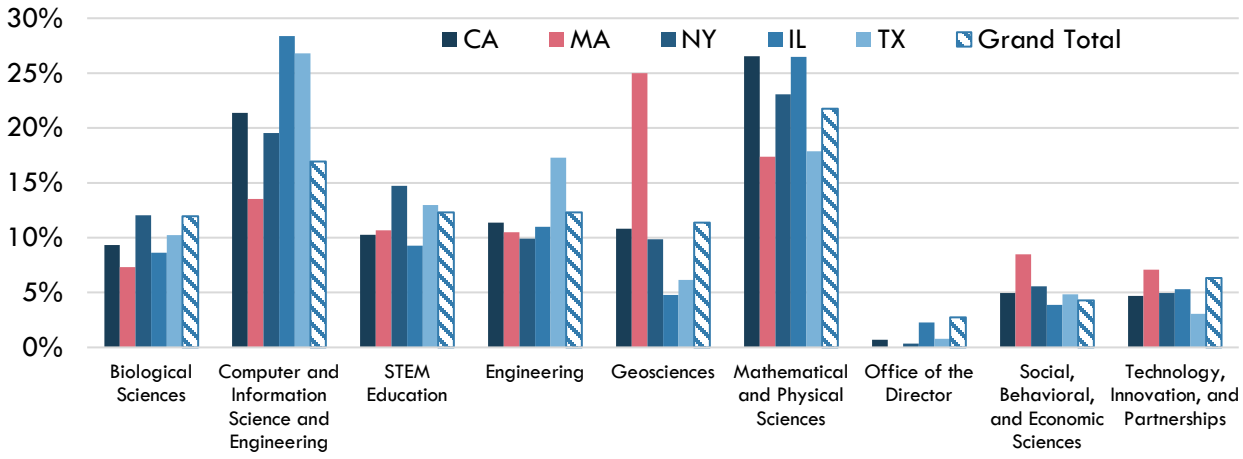
National Science Foundation (NSF) funding is another area where Massachusetts leads, among the top states in terms of overall funding, and first when funding is adjusted to reflect population size. In 2022, Massachusetts researchers were awarded over $321 million in NSF funding (Figure 7), placing Massachusetts behind California and New York in terms of total funding, but first in the nation on a per capita basis. Within the state, the majority of funding is directed to universities in the Greater Boston area, though Woods Hole Oceanographic Institution on the Cape and University of Massachusetts in Western Massachusetts are consistently among the five top-funded institutions in the Commonwealth. NSF funds research in many disciplines: geosciences, computer and information sciences, and mathematical physical sciences account for more than half of NSF funding in the Commonwealth. Massachusetts is particularly competitive in the field of geosciences and social, behavioral, and economic sciences (Figure 8).

Figure 7: Annual National Science Foundation Funding for Top 5 States with Highest Funding in 2023



Source: National Science Foundation. Bureau of Labor Statistics Consumer Price Index, All Urban Consumers, U.S. City Average.

Figure 8: Percent of State Funding by NSF Directorate for Massachusetts and Peer States, 2023



Source: National Science Foundation

At nearly $5 billion dollars in university expenditures in 2021, Massachusetts is among the top states in university research and development spending, and the states whose universities outspend Massachusetts have much larger populations, these include California, New York, Texas, Pennsylvania and Maryland.[1]

[1] The National Center for Science & Engineering Statistics conducts an annual Higher Education R&D survey which solicits responses directly from all universities and colleges that generate at least $150,000 in R&D expenditures in a year. This survey accounts for R&D funding from all sources, including federal, state, and local governments; businesses and non-profit foundations; and the institution's own funding.

After adjusting for population size, Maryland and Massachusetts' per capita research spending at universities is noticeably higher than all other states in the U.S. Both states are home to large concentrations of urban research institutions.

The investment of federal funding for research may be a driving factor in Massachusetts' standing as leader in terms of patents. In 2020, 8,790 patents were awarded in Massachusetts, among the top five states in the country. California by far has the most, but again Massachusetts was nearly on par with California on a per capita basis.

The Commonwealth has also attracted venture capital funding. Though Greater Boston has been consistently behind San Francisco and Silicon Valley, the region has received similar levels of venture capital funding as the New York City and Los Angeles areas, which are the two most populous regions in the country. In the third quarter of 2023, Greater Boston's venture capital deals totaled $4 billion, exceeding New York City and Los Angeles totals (of $3.6 billion and $3.1 billion, respectively). This was the first time since at least 2017 that Boston's venture capital has been second only to that of Silicon Valley.

Investment in research and development has also attracted talent from around the globe. Over the past two decades H-1B approvals in Massachusetts have increased dramatically, peaking in 2019 at almost 20,000 before retreating to 17,000 in 2020 and 2021 at the height of the COVID-19 Pandemic. Approvals increased in 2022 to nearly 19,000. Over the same period, the number of approvals in Cambridge, Waltham, and Sommerville all more than tripled. In 2022, Boston was ninth in the nation among cities for total approved H-1B visas.

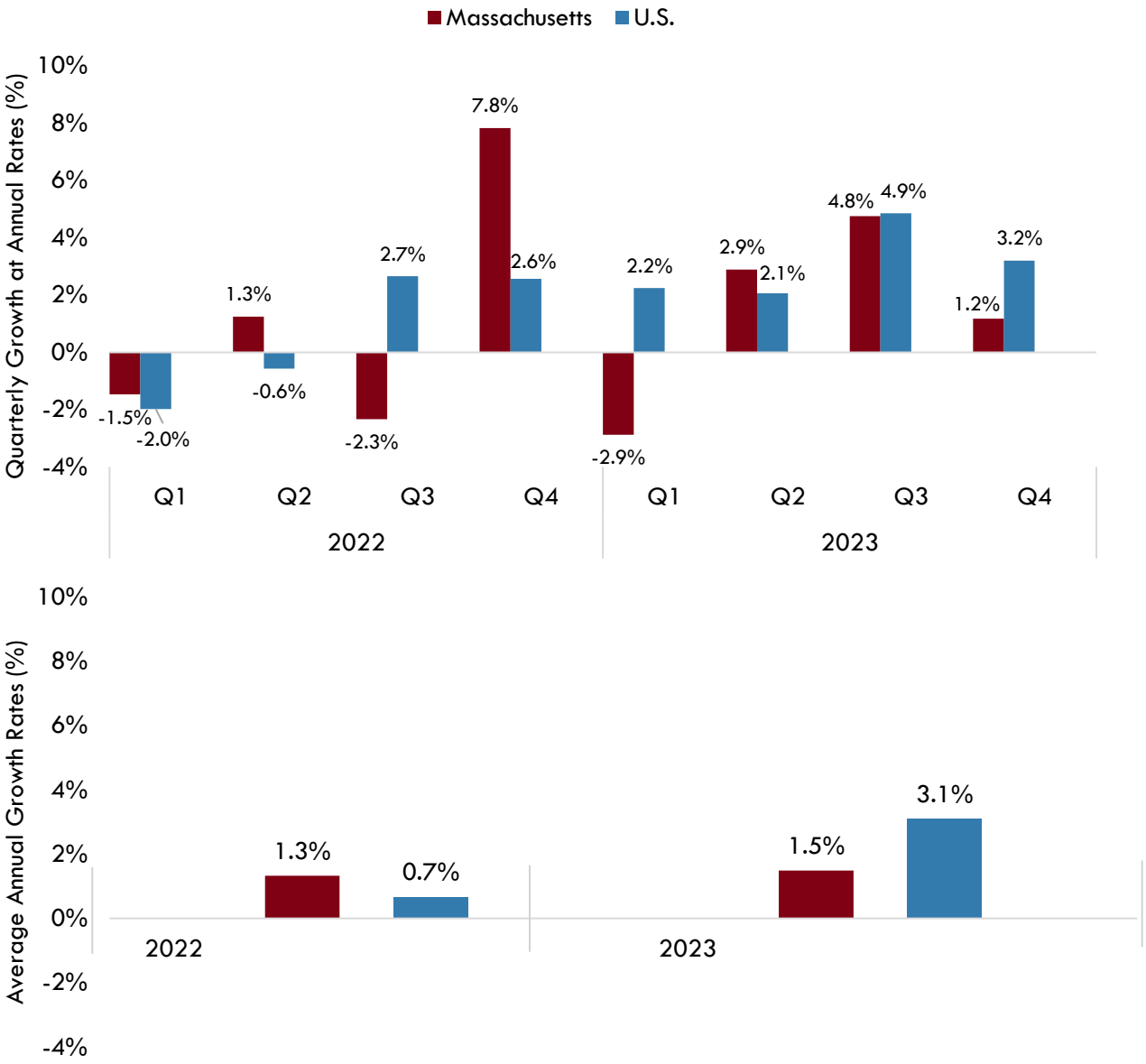
According to MassBenchmarks, the journal of the Massachusetts economy produced by the University of Massachusetts Donahue Institute (UMDI) and Federal Reserve Bank of Boston, in the fourth quarter of 2023, Massachusetts real gross state product (GDP) increased at an annual rate of 1.2 percent while U.S. GDP increased at a 3.3 percent annual rate, according to the U.S. Bureau of Economic Analysis (BEA). According to the BEA, in the third quarter of 2023, Massachusetts GDP grew at an annual rate of 4.8 percent while U.S. GDP grew at an annual rate of 4.9 percent. In the first and second quarters of 2023 the BEA estimates that Massachusetts GDP declined by 2.9 percent and grew by 2.9 percent respectively, while U.S. GDP grew at 2.2 percent and 2.1 percent respectively.

The performance of the Massachusetts economy was notably weaker than that of the U.S. in the final quarter of 2023. This weakness was broad based, and can be seen in employment, wage and salary income, and goods spending, all of which were weaker in the state than in the nation in Q4. This is due in part to the limits of state labor force capacity and Massachusetts being more sensitive to higher interest rates, particularly in technology and related services that rely on venture capital funding and business spending. Housing supply constraints — which are exacerbating affordability and cost of living challenges, likely fueling associated domestic out-migration — also likely limited growth in Q4 for reasons discussed below.

Wage and salary income in Massachusetts in the fourth quarter, as measured by seasonally adjusted withholding taxes on personal income, declined at an annual rate of 9.6 percent from the third quarter,

while nationally wage and salary income grew at a 4.6 percent annual rate. The decline in Massachusetts was likely due to a much weaker than usual bonus season. In the fourth quarter, withholding revenues fell short of the Massachusetts Department of Revenue's benchmark target by 2.2 percent. This suggests that after factoring out the effect of the smaller bonuses, Massachusetts experienced significantly weaker wage and salary income growth than for the U.S. in the fourth quarter, as much as 2 to 3 percent weaker.

Figure 9. Growth in Real Product, Massachusetts and the United States, 2023 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.

Consumer prices generally have been rising more slowly in the Boston metropolitan area than in the U.S. (all metro areas). Although the "all items" Boston area inflation rate exceeded that of the U.S. in the fourth quarter, 3.5 percent for Boston versus 2.8 percent for the U.S., the year-over-year (Q4 22 -Q4 23) inflation rate was lower for the Boston area, 2.3 percent versus 3.2 percent for the U.S. Core price inflation continues to be lower in Greater Boston than nationally. In the fourth quarter, core prices rose 2.5 percent in the Boston area versus 3.4 percent for the U.S.; and 3.2 percent between the fourth quarter 2022 and the fourth quarter 2023, as compared to 4.0 percent nationally during the same period.

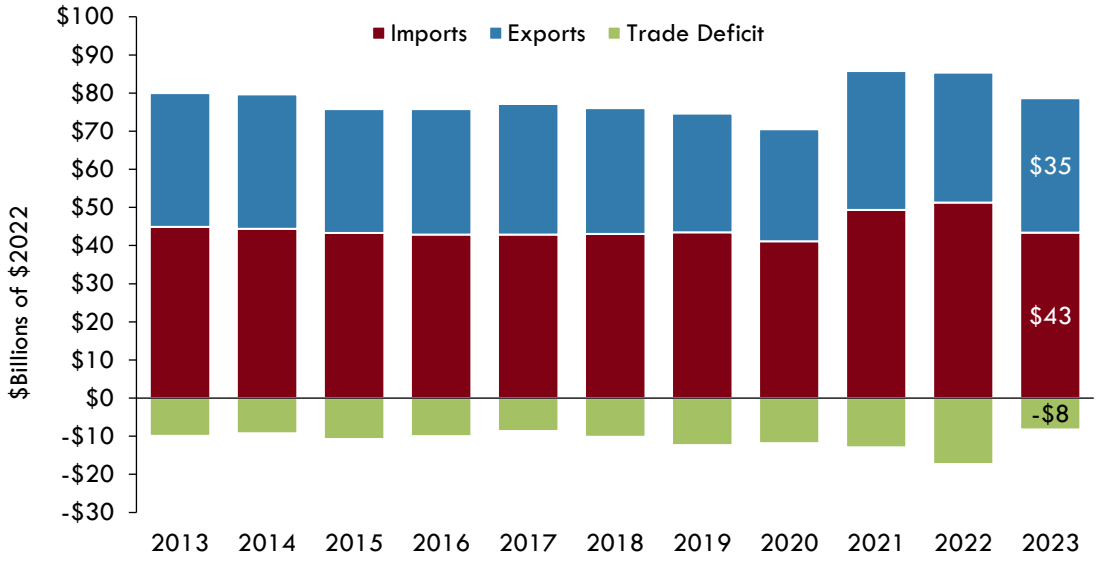
Higher interest rates appear to be taking their toll on the Massachusetts economy, arguably to a greater degree than nationally, at least for now. This can be seen in state tax revenue collections, which have been coming in below expectations for several months. In December, a forecast prepared by Professor Clayton-Matthews estimated that the direct impacts of higher real interest rates would lower fiscal year 2024 state tax revenues by approximately $500 million in the last 8 months of the 2024 fiscal year, and by $1.3 billion in fiscal year 2025.

The outlook of the Wall Street Journal survey of economists is for U.S. GDP growth to slow in the first half of this year to an annualized rate of 0.9 percent in the first quarter and 0.5 percent in the second quarter, followed by somewhat faster growth in the second half of this year. It is likely that Massachusetts will continue to grow slowly in the first half of 2024.[2]

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 24.2 percent from 2020-2021 and then fell -6.6 percent from 2021-2022 and subsequently rose 3.5 percent from 2022-2023; the total trade volume was $78 billion in 2023 (Figure 10). Canada was by far our most valuable trading partner, with a trade volume of $14.7 billion, 18.7 percent of the total state trade (Figure 11). Massachusetts' trade deficit, $8 billion, decreased roughly by half from 2022 to 2023. Massachusetts ranked 19th in the U.S. in 2023 and first in New England with $35.2 billion in exports. This was a 3.5 percent increase from the previous year's export value, while national exports decreased by 6.1 percent and total exports from New England were little changed, down by 0.2 percent (Figure 12). Belgium and China were our top two export destinations in 2023 with $4.8 and $3.3 billion each, respectively. Belgium is notable on this, as Massachusetts only exported $780 million to the country in 2022. This change seems primarily driven by a roughly $4 billion increase in pharmaceutical products export to Belgium between 2022 and 2023. Future data will show whether this is the start of a new trend or a one-year outlier. Imports decreased 15.4 percent year-over-year to $43.4 billion in 2023. Canada was the largest source for Massachusetts imports in 2023, from which we imported $11.4 billion, or 26.3 percent, of our total.

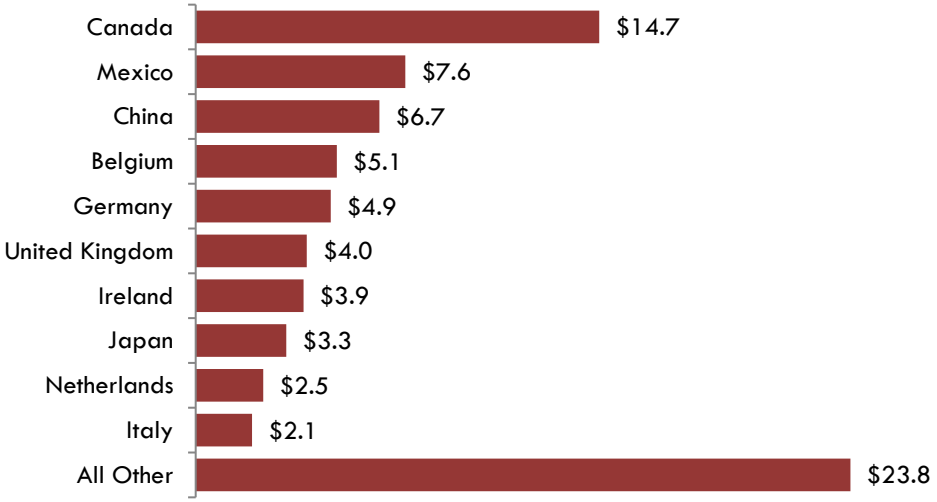
[2] Note that MassBenchmarks did not produce projections for Massachusetts in its February 1, 2024 *Current and Leading Indices for Massachusetts* report.

Figure 10. Massachusetts Imports, Exports, and Trade Deficit, 2013-2023 (in Billions of $2023)



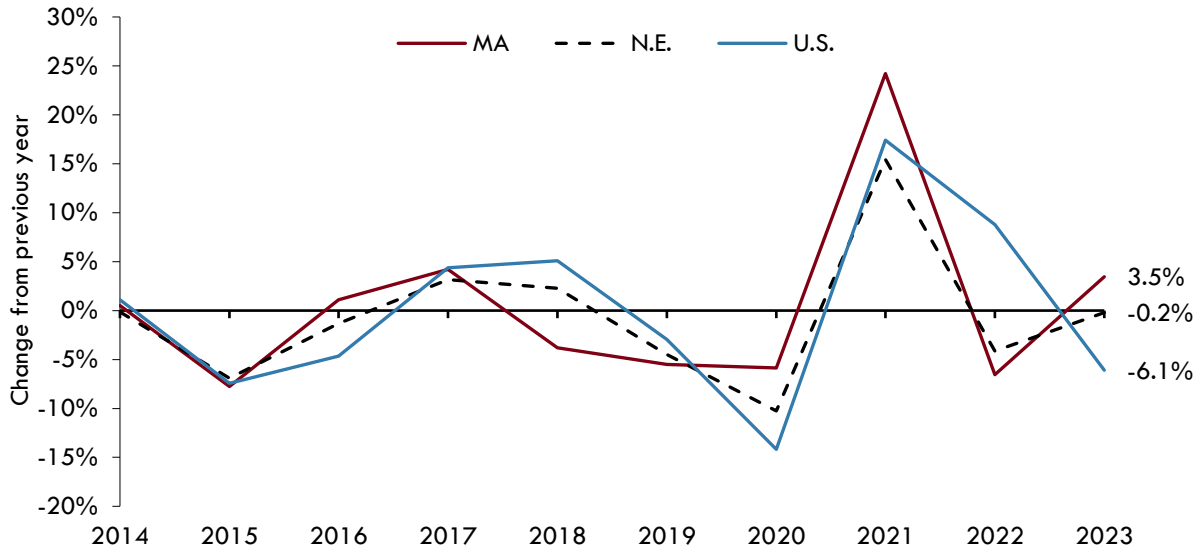
Source: WISERTrade.org; UMDI analysis

Figure 11. Massachusetts Top 10 Trade Partners in 2023 (in Billions of $2023)



Source: WISERTrade.org; UMDI analysis

Figure 12. Export Growth for Massachusetts, the United States, and New England, 2014-2023

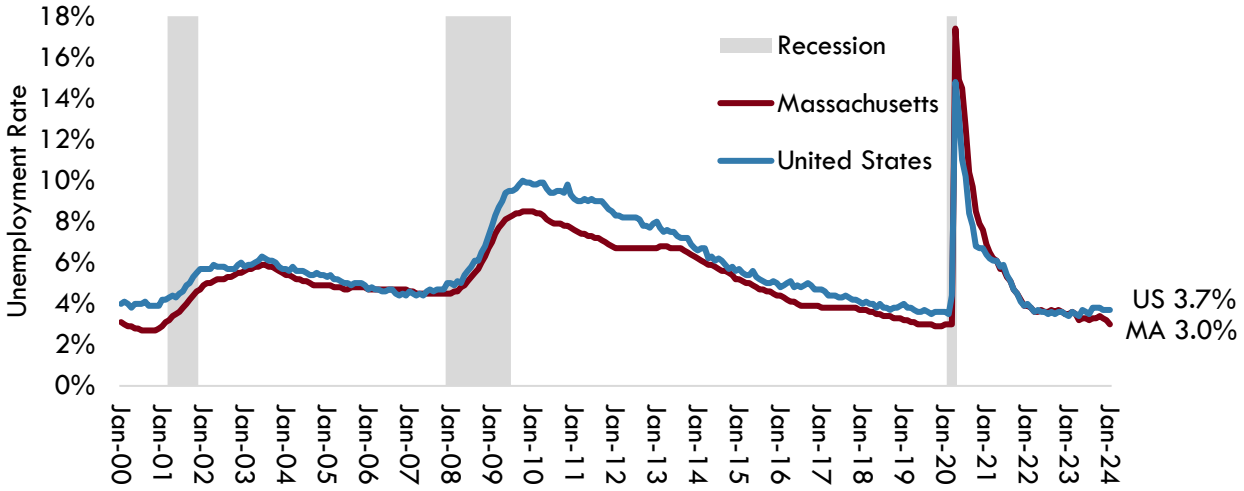


Source: WISERTrade.org; UMDI analysis

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. The tightness of the current labor market is reflected in the unemployment rate, which has recently reached historically low levels. The January 2024 unemployment rate for Massachusetts was 3.0 percent, just above the historic low of 2.7 percent recorded at the end of the tech boom in the summer and fall of 2000 and among the lowest since these data were first collected in 1969. The U.S. unemployment rate, which was 3.7 percent in January 2024, reached its nadir of 3.4 percent one year before, the lowest level since the end of the 1960s (Figure 13).

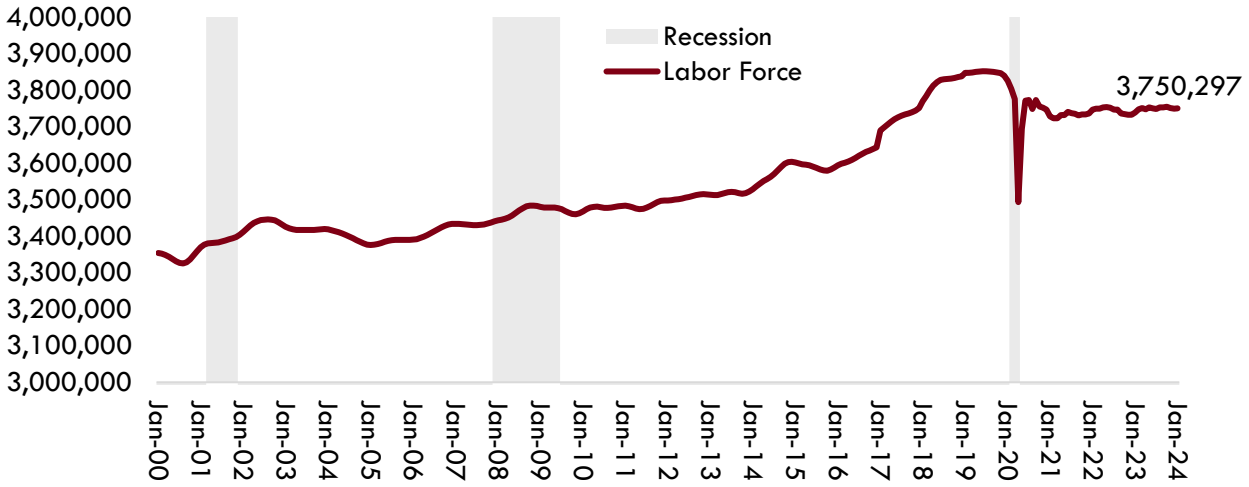
Figure 13. Unemployment Rates in Massachusetts and the United States as of January 2024 (Seasonally Adjusted)



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

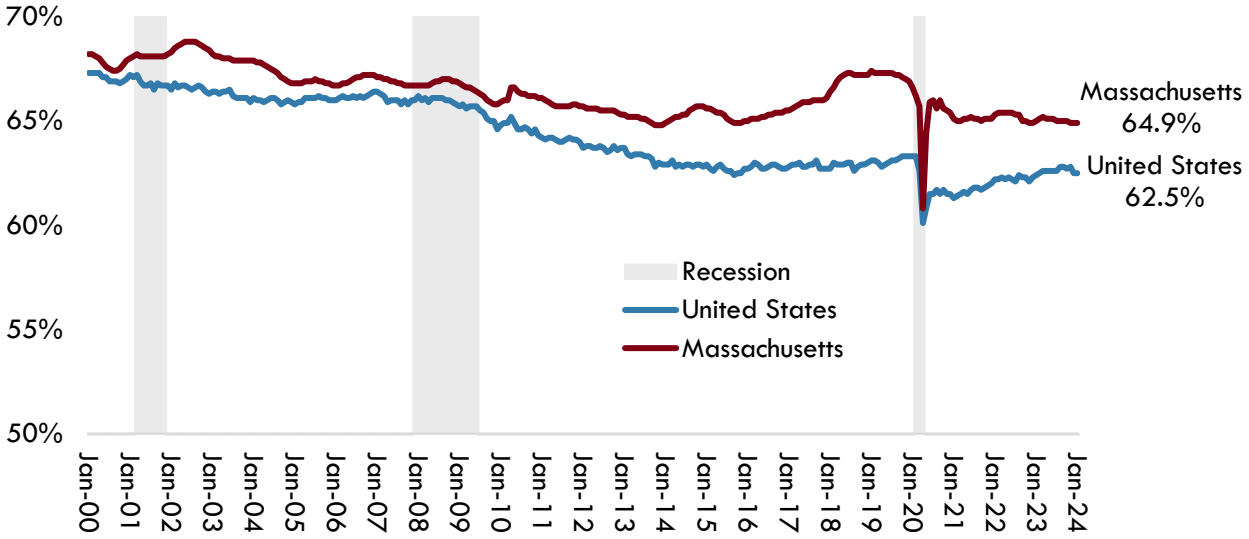
The size of the labor force has remained relatively stable since Fall 2020 (Figure 14). At the same time, Massachusetts has consistently maintained higher rates of labor force participation than the U.S., though the difference has narrowed considerably. As of January 2024, 64.9 percent of Massachusetts working-age residents were in the workforce (Figure 15). The rate is down 0.1 percentage points from January 2023 to January 2024 and below the pre-pandemic level of 66.6 percent in January 2020.

Figure 14. Massachusetts Labor Force, January 2000-January 2024 (Seasonally Adjusted)



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

Figure 15. Labor Force Participation Rates in Massachusetts and the United States, January 2000-January 2024 (Seasonally Adjusted)

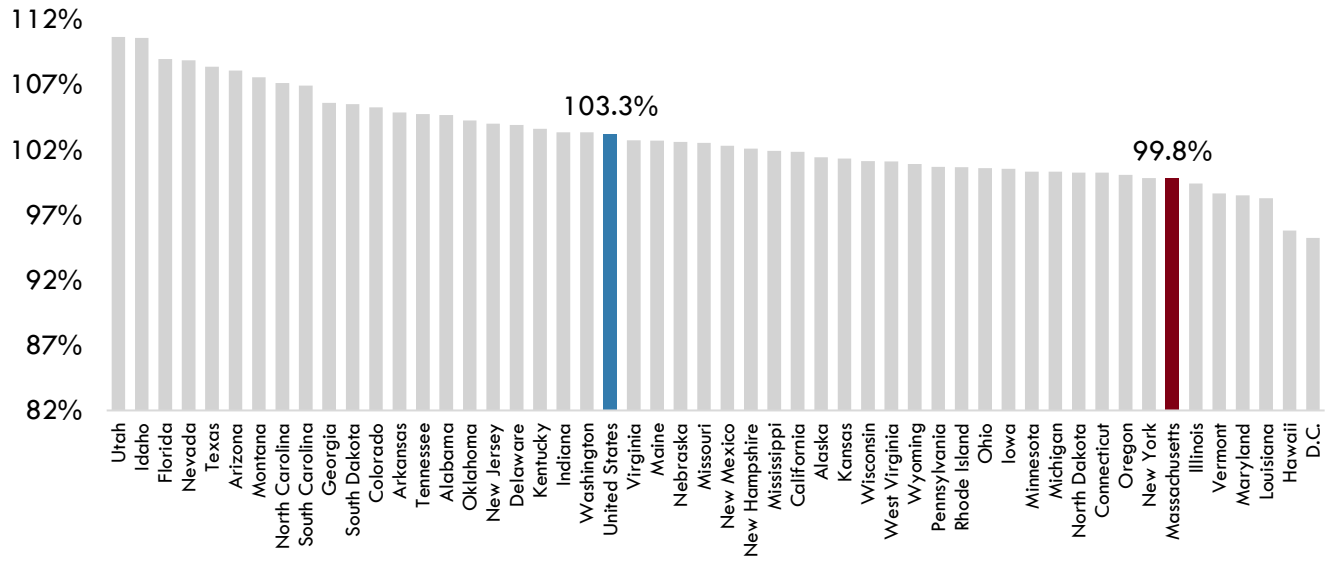


Source: Massachusetts Executive Office of Labor and Workforce Development, Local Area Unemployment (LAU) Statistics; UMDI analysis

Over the past three years, labor market conditions 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 above pre-pandemic levels for the nation and 43 states. The remaining 7 states, including Massachusetts are mostly a few percentage points of their February 2020 job peak (Figure 16).[3]

Figure 16. Job recovery rates in Massachusetts and all states, February 2020 and January 2024 (Seasonally adjusted)

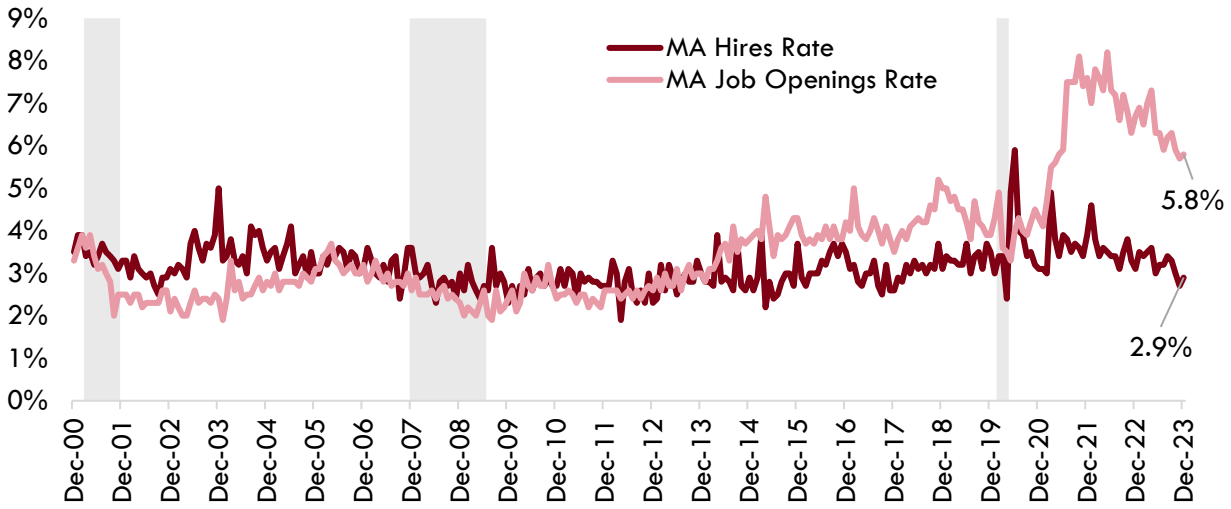


Source: Massachusetts Executive Office of Labor and Workforce Development, Current Employment Statistics (CES-790); UMDI analysis

There are signs that the labor market is changing from the era of post-pandemic "Big Quit" when a combination of uneven job losses and recovery, and an overall decline in the total labor force size led to hiring and staffing challenges for employers. The gap between Massachusetts job openings and hire rates is still greater than it was before the pandemic but shrinking (Figure 17). The ongoing gap between job openings and hires in the state support the narrative that employers are having a hard time filling current openings.

[3] Note the BLS issues revisions to its state employment figures in March of every year. March 2024 revisions significantly changed estimates of Massachusetts jobs recovery rates. This revisions extended back to 2019 and covered the period of the pandemic.

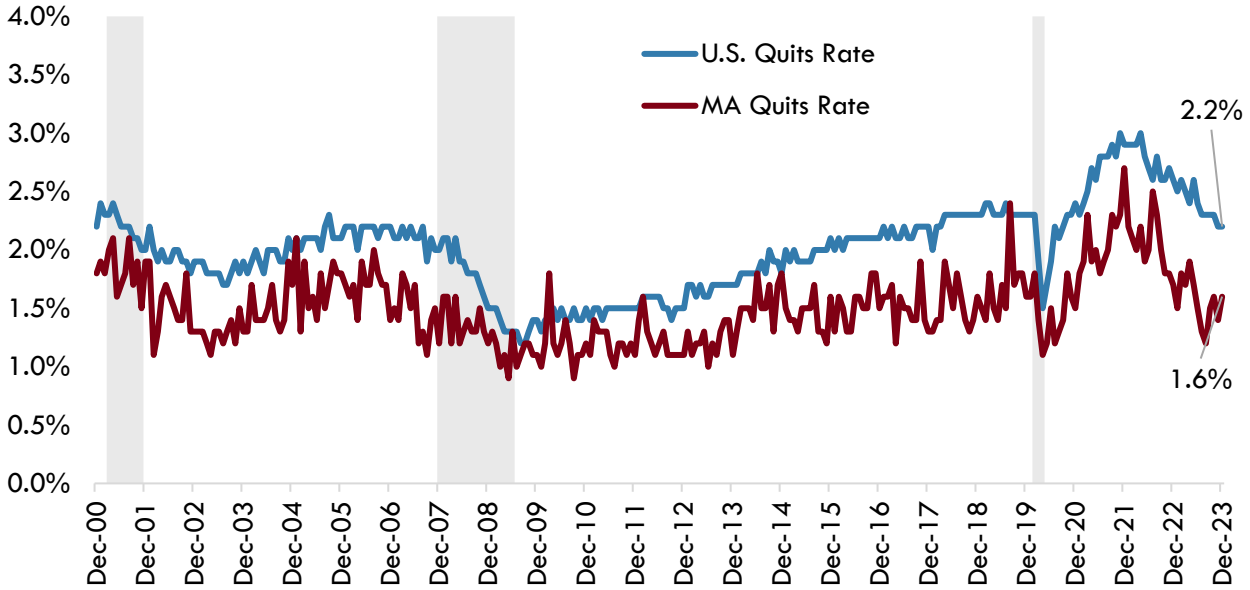
Figure 17. Job openings rate and hire rate in Massachusetts, December 2000 – December 2023 (Seasonally adjusted)



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

At the same time the spike in voluntary job changes has subsided (Figure 18). The monthly job quit rate for Massachusetts and the U.S. have returned to pre-pandemic rates. 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 18. Job quits rate in Massachusetts and the United States, December 2000 - December 2023 (Seasonally adjusted)



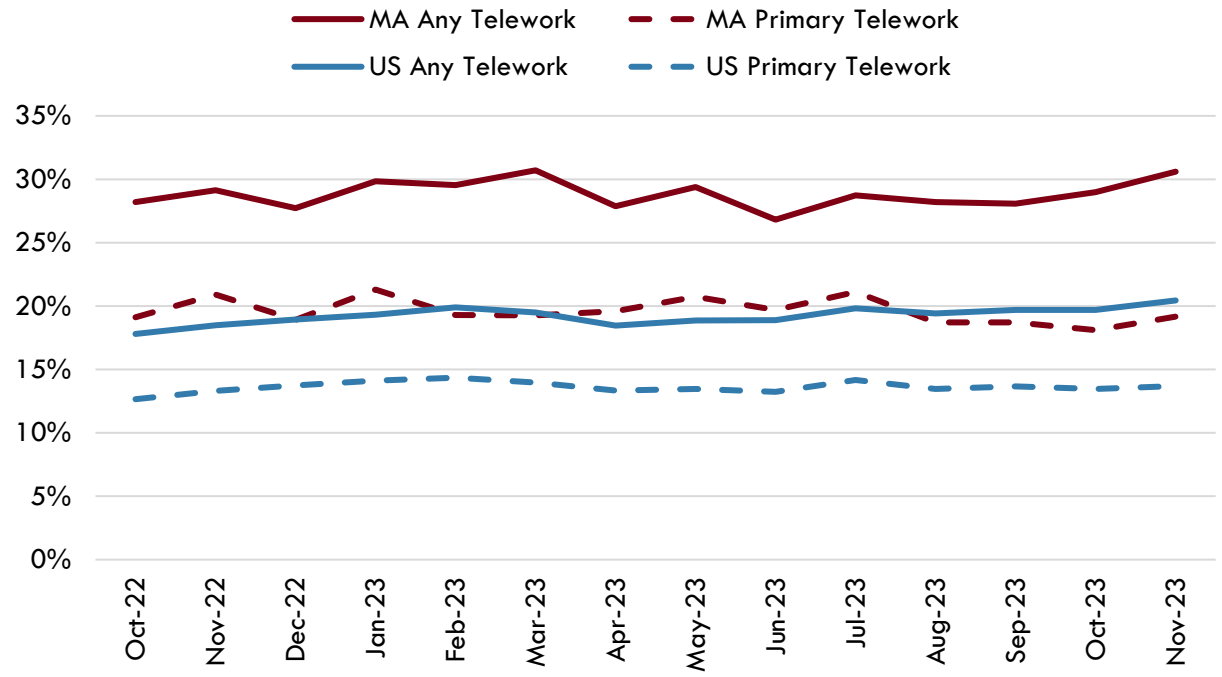
Source: U.S. Bureau of Labor Statistics, Job Openings and Labor Turnover Survey (JOLTS); UMDI analysis

Competition for workers in a tight labor market has led to wage increases across the Massachusetts economy. 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. In contrast, wage growth from 2021 to 2022 moderated to 2.3 percent. Despite the wage gains experienced by many workers in the economic recovery period, those gains have largely 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.

One way the pandemic appears to have permanently altered the workforce is by increasing the prevalence of teleworking. Prior to the pandemic the technology to work remotely existed, however uptake among firms was limited. Then nearly overnight in March 2020 employers and employees across industries and occupations were forced to adopt new ways of doing business and working. Analysis of American Community Survey data on commuting patterns estimate that in 2019 less than six percent of working adults worked from home in the week prior to responding to the survey. In contrast in 2021, 25 percent of respondents in Massachusetts reported working from home. While the share of workers primarily working from home has declined since 2020, telework, remote work, hybrid work, and flexible schedules are unlikely to return to pre-pandemic levels. Nearly one in three employees in Massachusetts reported working remotely at least some of the time since the U.S. Census Current Population Survey incorporated remote work into their questionnaire in October 2022. The embrace of remote and hybrid work has implications for employers, employees, businesses that cater to commuters in downtowns, and regions centered on dense urban cores.

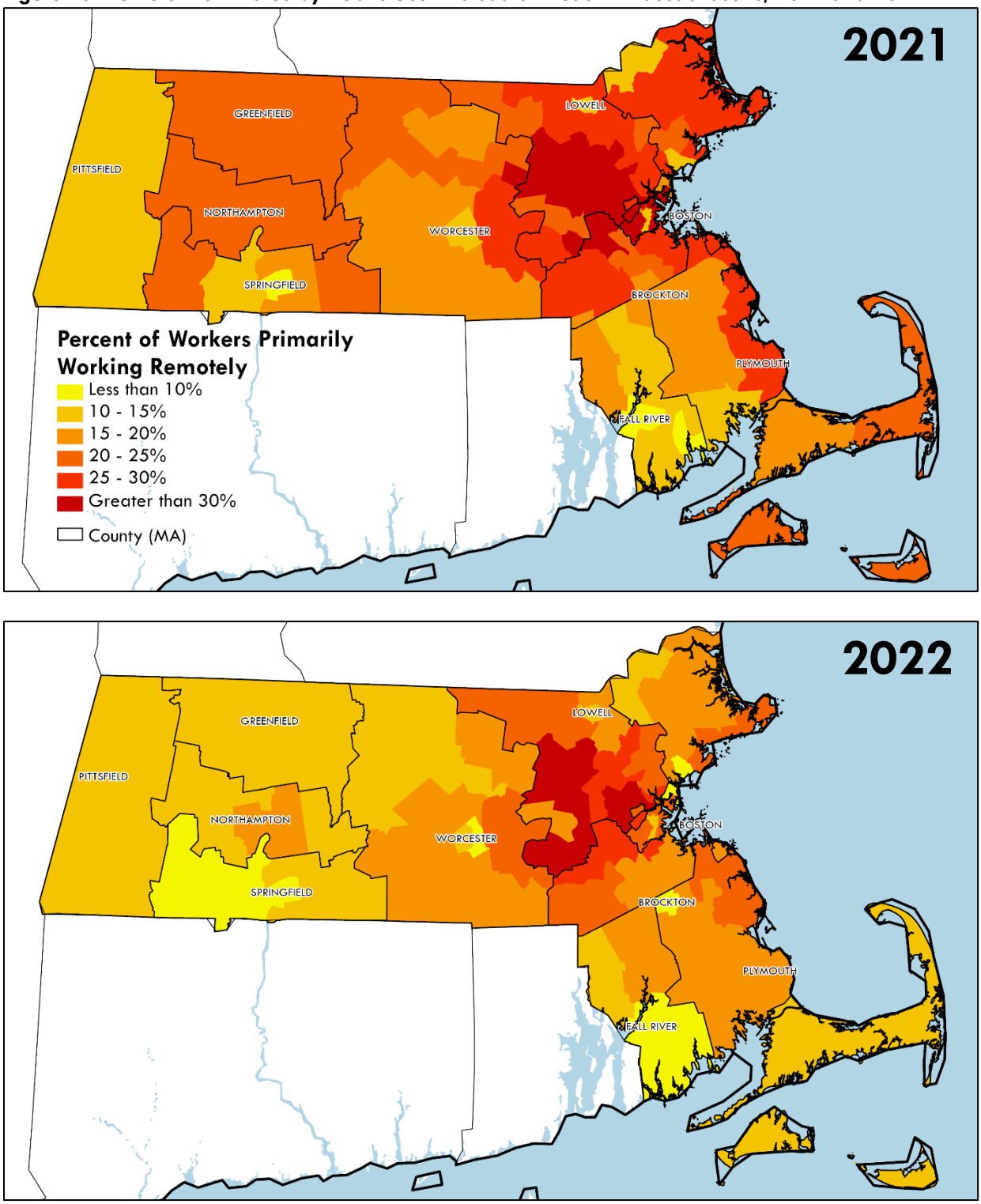
Throughout the nation and the Commonwealth rates of telework vary geographically. Massachusetts has higher rates of teleworking than the nation. Over 30 percent of workers in Massachusetts are working remotely at least part of the time and nearly 20 percent are working from home primarily (Figure 19). While rates of remote work have declined somewhat since 2021 in the state, teleworking remains concentrated in the suburbs just west of Boston (Figure 20).

Figure 19: Rate of Telework (all teleworkers and primary teleworkers) in Massachusetts and United States, 2022-2023



Source: U.S. Census Bureau, Current Population Survey Microdata Massachusetts

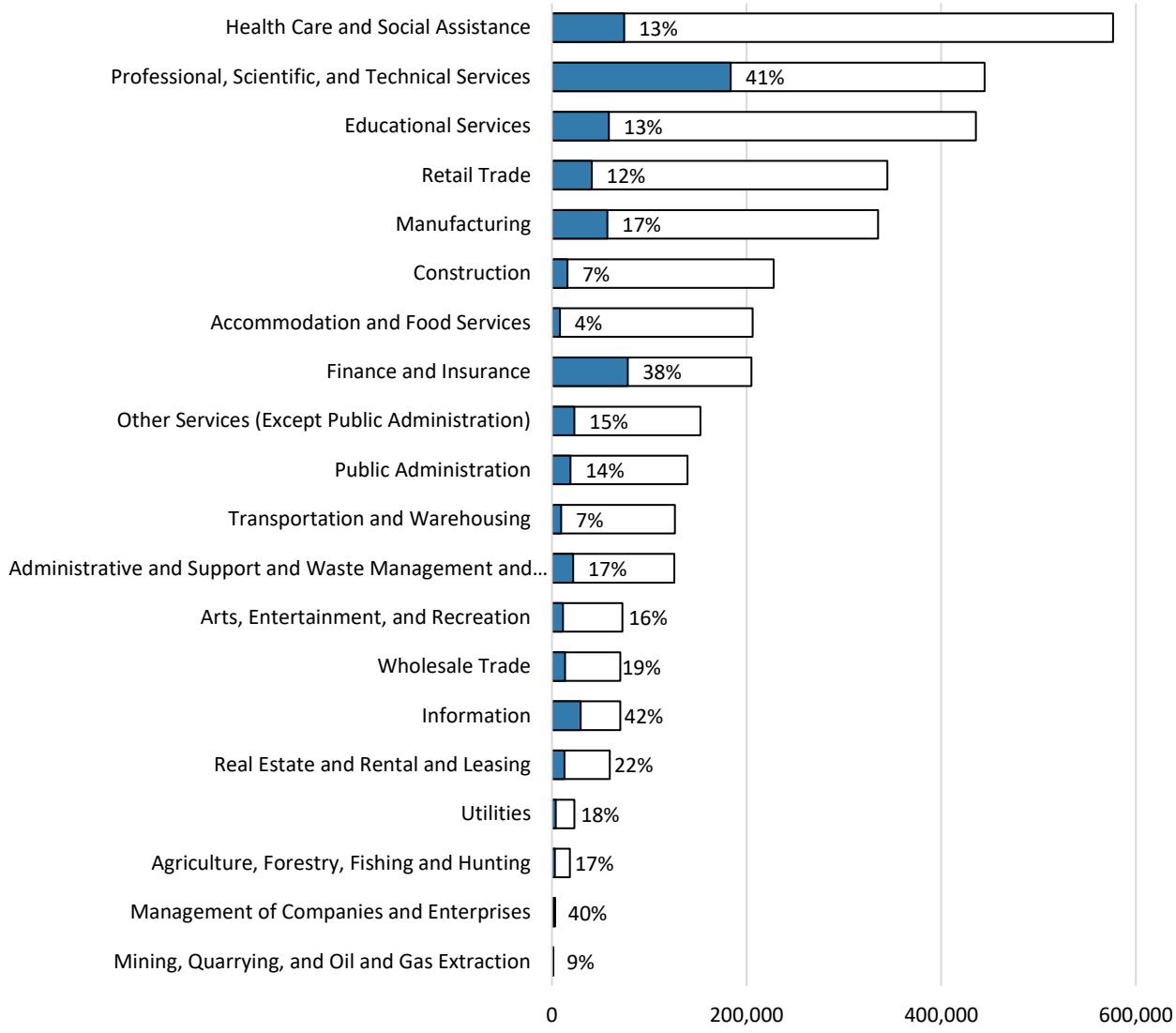
Figure 20: Remote Work Rates by Public Use Microdata Areas in Massachusetts, 2021 and 2022



Source: U.S. Census American Community Survey Microdata via IPUMS. Calculations by UMDI.

Teleworking is also concentrated in certain industries: information, professional, scientific and technical services, finance and insurance, and management are all above the state average in terms of telework (Figure 21). Related to the industries where remote work is concentrated, it is not surprising that the advantages of flexible work arrangements are disproportionately accruing to workers who are relatively well-off. Remote workers are more likely to be college educated; more likely to be white or AAPI; and more likely to be high-wage earners. They are slightly more likely to be native born, to have children under the age of 18 in their household, and 35-44 years old.

Figure 21: Remote Work Rates by Industry in Massachusetts, 2022



Source: U.S. Census American Community Survey Microdata via IPUMS. Calculations by UMDI.

For employers, remote work offers advantages and disadvantages. Remote work or hybrid work is an amenity for many workers, so offering flexibility means that businesses may have an easier time attracting

workers. If employees only work in person once or twice a week or are completely remote, they can potentially live farther from the office, and the employer can search for new workers in a wider labor pool. Businesses that employ more remote or hybrid workers do not need to maintain as much physical office space and can save money on downtown office building leases. The productivity implications of a workforce that is primarily or partially working from home are still unclear and may depend on industry and other factors. It is also unknown to what extent remote and hybrid work will impact downtowns and office parks. Commercial real estate markets have been strained by the rise in vacancies and interest rate. While some see the potential to transform commercial real estate into much needed housing, the feasibility of such transformations in the short-term is limited. The decline in commercial real estate markets could have negative impacts on Boston's and other cities' revenues. Long-term declines in office space values could lead to revenue shortfalls in the future, which may in turn impact city services.

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. Traffic volumes across the state have largely reversed and almost fully recovered from the significant dip in VMT that occurred in 2020 due to the pandemic, with average weekday and weekend VMT in January 2024 hovering between 85-115 percent of their pre-pandemic January 2019 levels.[4]

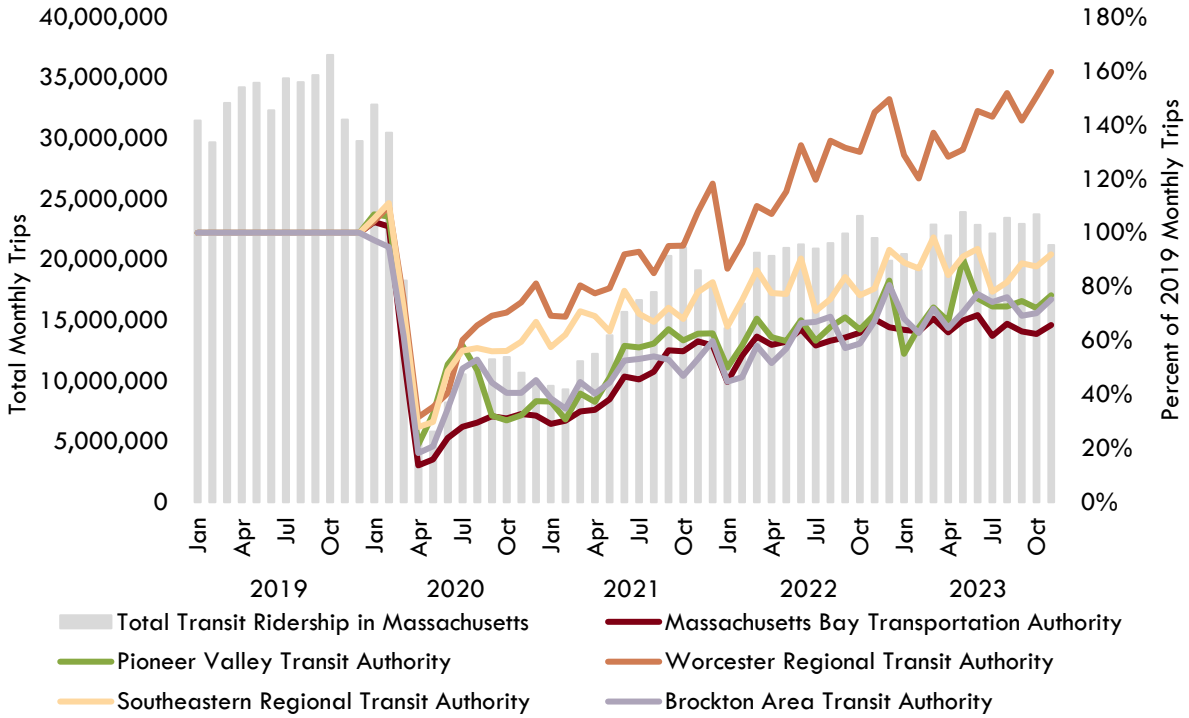
[4] Massachusetts Department of Transportation Mobility Dashboard, Average Traffic Volumes at Select Count Locations. https://mobility-massdot.hub.arcgis.com/

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 22). 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 and relative peaks in summers.

The Massachusetts Bay Transportation Authority (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), while the other four have recovered between 66 to 92 percent of pre-pandemic ridership. 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. As of March 2024, fare collection in Worcester has continued to be suspended through at least June 2024. The new initiative named "Try Transit" removed fares from all RTAs (but not the MBTA) throughout December 2022 and created the opportunity to test the effect of fare free transit for Massachusetts communities. Various transit agencies have run free fare trials throughout 2023 and into 2024. Funding in the FY24 state budget, representing new investment from the Fair Share Amendment, is directed at the Commonwealth's Regional Transit Authorities, a portion of which may be used to extend fare free transit programs.

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 22. Monthly Transit Ridership, 2019-2023



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 in December 2022. New Bedford and Fall River, both Gateway Cities, will gain a Commuter Rail connection to Boston in 2024 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. In October 2023, the Massachusetts Department of Transportation released details on Compass Rail, an initiative that combines East-West Rail, a plan to connect Boston, Worcester, Springfield, and Pittsfield by passenger rail, with improvements in other rail routes particularly in Western Mass.[5] The effects of these expansion and redesign plans remain to be seen considering the uncertainty of future travel patterns from the pandemic.

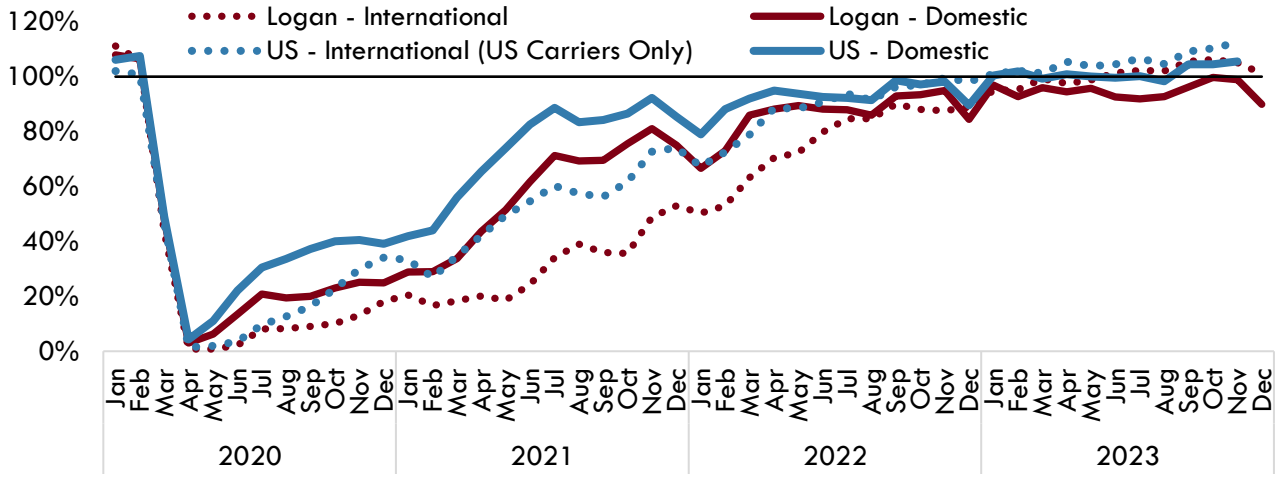
Logan International Airport, like the state's transit agencies, logged a significant decline in passenger volume in 2020 and 2021 below record numbers seen in 2019 (Figure 23). After reaching over 42 million domestic and international passengers in the calendar year before the COVID-19 pandemic, passenger

[5] Compass Rail: Passenger Rail for the Commonwealth. October 18, 2023. https://www.mass.gov/doc/compass-rail-passenger-rail-for-the-commonwealth-presentation-to-the-board-on-october-18-2023/download

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 July 2023, domestic and international passenger recovery was within 8 percentage points 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 23. Logan Airport and U.S. Monthly Passenger Volumes through 2023 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.

In late June 2023, the Healey-Driscoll Administration released the FY24 – FY28 Capital Investment Plan (CIP).[6] This document, in addition to the MassDOT and MBTA CIPs, as well as those from Massachusetts Municipal Planning Organizations (MPOs) steer significant funding toward transportation priorities in the Commonwealth. The Commonwealth's CIP includes a commitment to replacing the aging Cape Cod Bridges as well as funding repair and modernization efforts at the MBTA and building out electric vehicle charging facilities across the state, in addition to many other projects.

[6] *Five-Year Capital Investment Plan FY2024–FY2028*. (2023). Commonwealth of Massachusetts Executive Office for Administration and Finance. https://budget.digital.mass.gov/capital/fy24/static/1475dce8ff3a8e8167606105e8acb94f/fy24capitalplanma.pdf

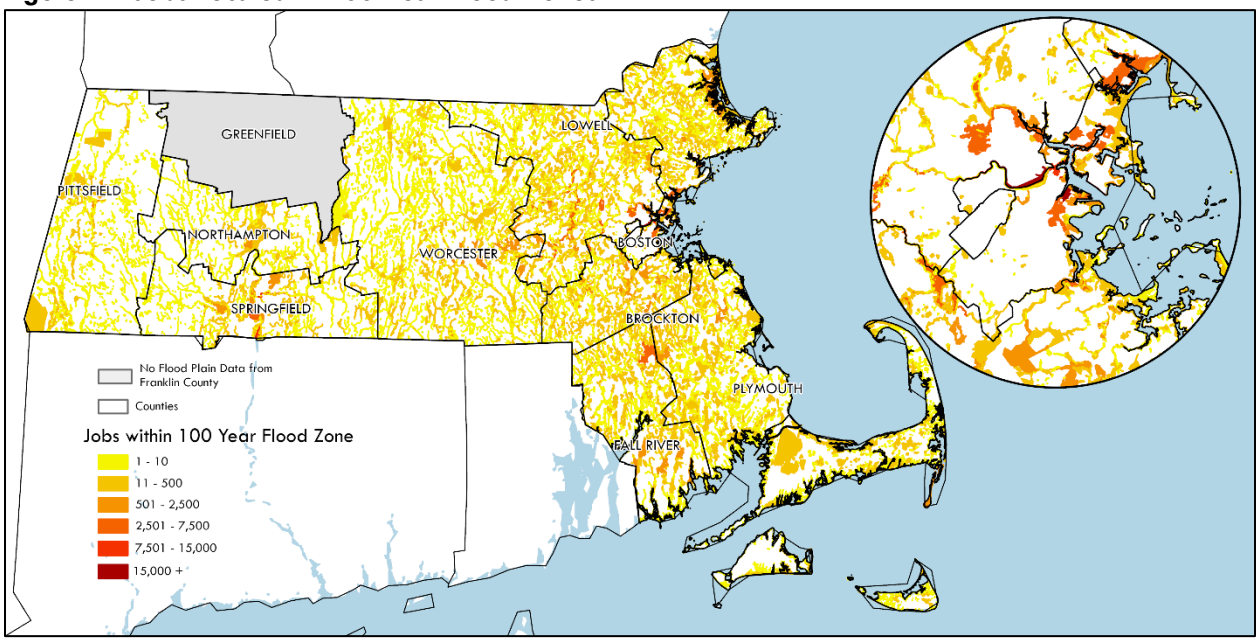
Environment

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 2021, approximately 620,000 jobs in Massachusetts were located in 100-year flood plains (Figure 24).[7] Considering the economic recovery that has since occurred of jobs lost during the pandemic, the number of jobs in flood zones in 2024 is most certainly greater than this. With rising sea levels, flooding in these areas is likely to be more frequent and intense. The summer of 2023 illustrated that flooding can occur far from the coast, as Central and Western Massachusetts experienced flooding that endangered residents and resulted in the loss of crops. Hurricanes are expected to threaten the East Coast more frequently.[8] 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 25).

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

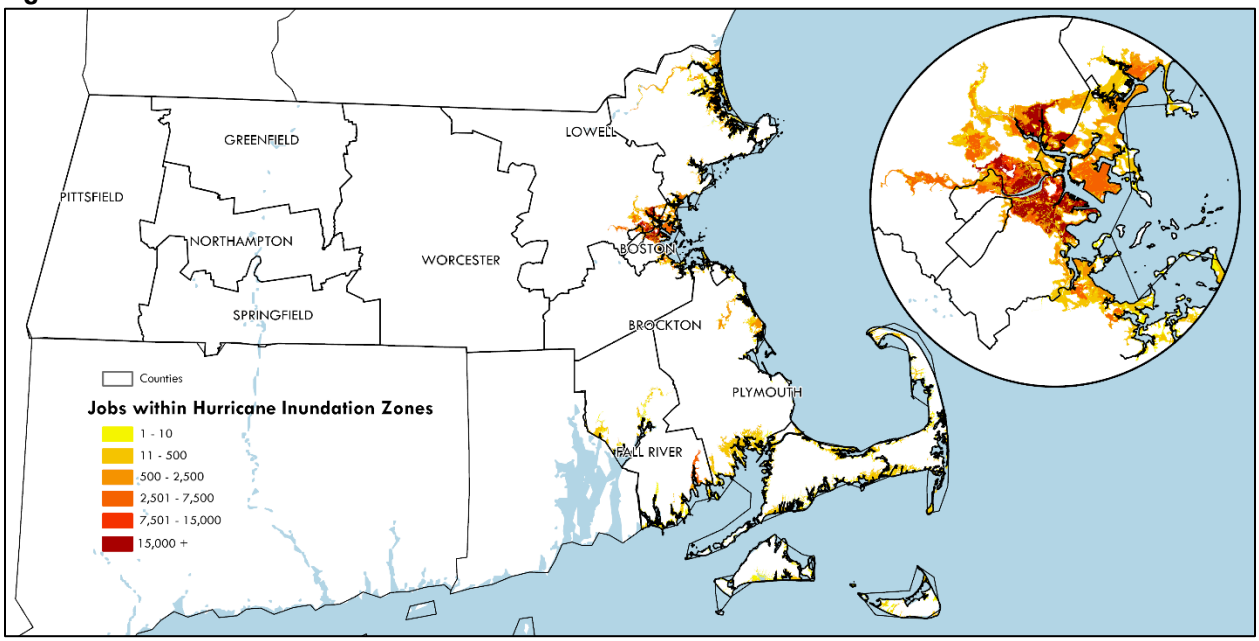
[8] Gori, A., Lin, N., Xi, D. *et al*. Tropical cyclone climatology change greatly exacerbates U.S. extreme rainfall–surge hazard. *Nat. Clim. Chang.* 12, 171–178 (2022). https://doi.org/10.1038/s41558-021-01272-7

Figure 24. Jobs Located in 100-Year Flood Zones



Source: FEMA National Flood Hazard Layer via MA GIS, U.S. Census Bureau 2021 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 25. Jobs Located in Hurricane Inundation Zones



Source: U.S. Army Corps of Engineers Hurricane Surge Inundation Zones via MA GIS, U.S. Census Bureau 2021 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.

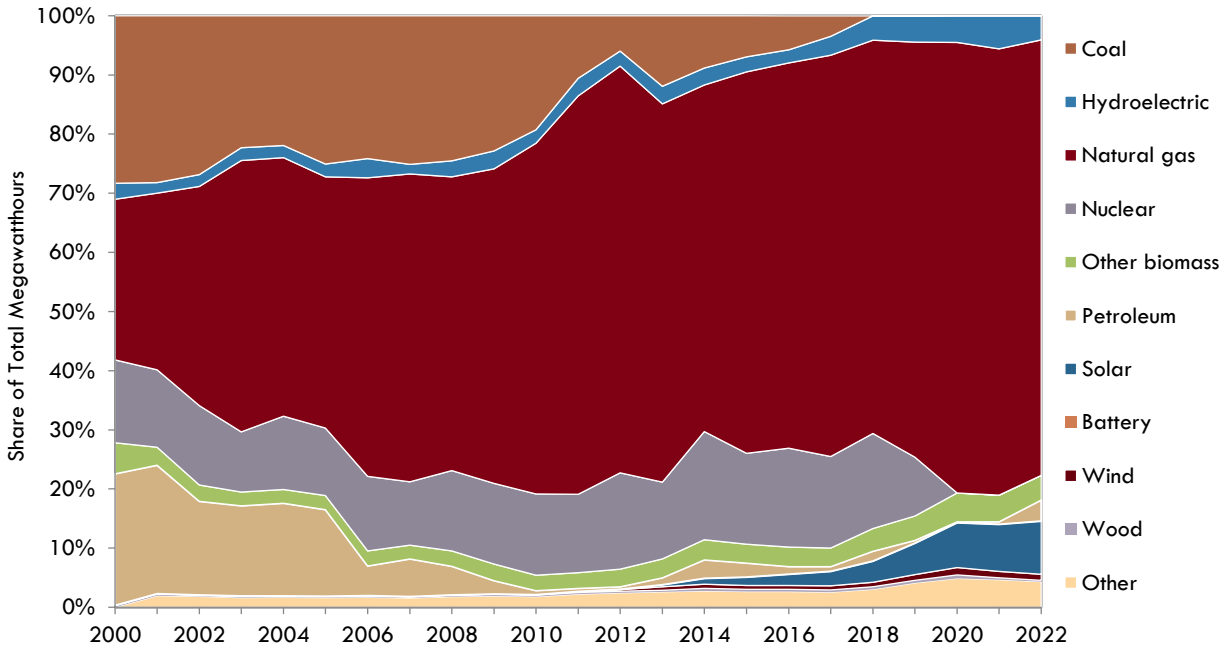
Changes to the environment, such as extreme weather events, do not respect political boundaries, therefore, policy makers have limited ability to mitigate the course of environmental change. However, local officials can prepare for natural disasters and plan for predicted changes in the environment, 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. 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. In October 2023, the States new Climate Chief released a set of recommendations to outline how the Commonwealth will meet its goals related to climate change. Currently, Massachusetts consumes about 17 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 one other state, New York. Furthermore, according to the U.S. Energy Information Administration, Massachusetts used less energy per capita than all but four other states in 2020.

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 to 2001 to 2020; (Figure 26). 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. Electricity prices in Massachusetts are higher than in the nation as a whole. As of June 2023, Massachusetts consumers faced the fifth highest electricity prices in the nation.

Figure 26. Electric Power Generation by Primary Energy Source, 2000-2022



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.

The state Capital Investment Plan (CIP)[9] for the five years of FY24 – FY28 plans to invest in decarbonization efforts through efforts toward promoting electric vehicles and making school buildings, housing, and public transportation more efficient. Additionally, the CIP funds the Municipal Vulnerability Preparedness grant program at $125 million, which will assist towns and cities as they manage the effects of extreme weather, heat, and other effects of climate change.

[9] *Five-Year Capital Investment Plan FY2024–FY2028*. (2023). Commonwealth of Massachusetts Executive Office for Administration and Finance. https://budget.digital.mass.gov/capital/fy24/static/1475dce8ff3a8e8167606105e8acb94f/fy24capitalplanma.pdf

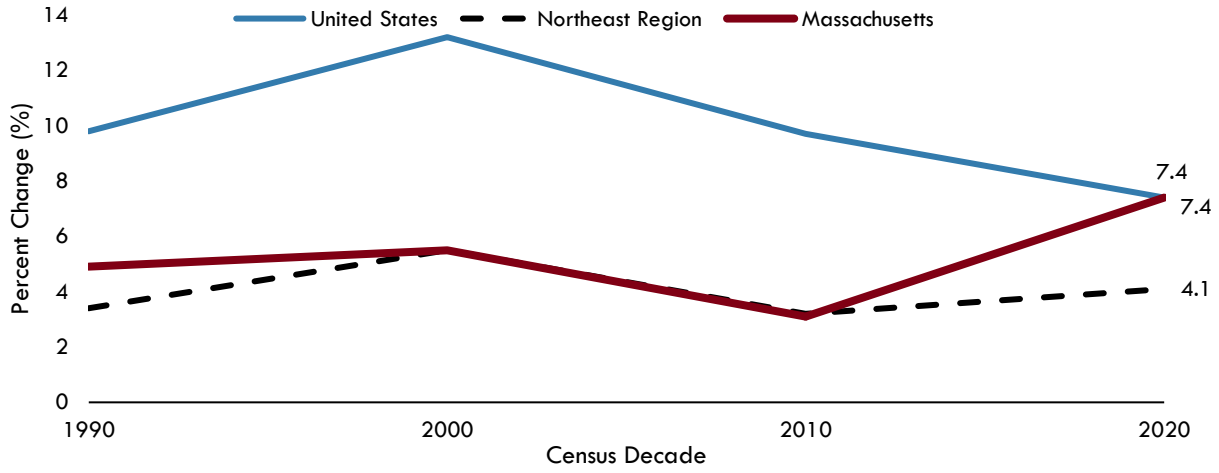
Residents

From 2010 through 2020, Massachusetts enjoyed a sustained period of population growth, driven largely by significant gains in the state's foreign-born population. That said, there has been a great deal of attention on modest year-over-year declines in the total Massachusetts population that occurred during the pandemic. Increases in domestic out migration over the last few years have alarmed economists and public policy makers alike; in 2023 Massachusetts's population grew again for the first time since 2020, albeit at a slow rate. While Massachusetts has long had a significant churn of young adults moving into and out of the state around college-aged years, the combination of decreased immigration and increased retirement during the pandemic, coupled with increased domestic out migration has led to the Massachusetts labor force being smaller today than it was pre-pandemic. With the baby boomer generation increasingly reaching retirement ages in the coming years, the state's ability to attract and retain workers will be paramount in maintaining the economic strength and competitiveness that Massachusetts has enjoyed over the last couple of decades.

When seeking to understand state population trends, the primary sources of data come from the U.S. Census Bureau. The gold standard in demographic data in the U.S. continues to be the official decennial census enumeration. This is the official total population of an area as of April 1st of the enumeration year and these are the figures used, most notably, for determining congressional representations and political redistricting. The Census Bureau also annually estimates the total population for locations by estimating the various components of population change (natural change and migration) and applying them to the estimated population from the previous year. This estimate represents the total population of an area as of July 1st of the year in question. In addition, the Census Bureau fields an annual survey called the American Community Survey (ACS). The ACS captures detailed socioeconomic and demographic characteristics of the population, including information like educational attainment, household income, nativity status, and other variables. The combination of these three data sources provides a rich understanding of population patterns, especially as it relates to state population growth, decline, and migration.

While New England has been a slow growth region for much of the last several decades, as higher numbers of people move to the southeast and western parts of the U.S., Massachusetts stands out as maintaining relatively strong population growth decade-to-decade among the New England states. Between the 2000 and 2010 census decennial enumerations, Massachusetts resident population grew at the same rate as the Northeast region. From 2010-2020, Massachusetts experienced considerable resident population growth, placing it well above the average population change throughout the Northeast region (Figure 27).[10] Between the 2010 and 2020 Census, the Massachusetts population grew from approximately 6.5 million to 7.0 million residents. This marked a 7.4 percent increase in the state's population, in line with the U.S. overall growth and making the Bay State the fastest growing state in the Northeast. In contrast, the average population growth in the Northeast was 4.1 percent.

Figure 27. Change in Resident Population by Decade

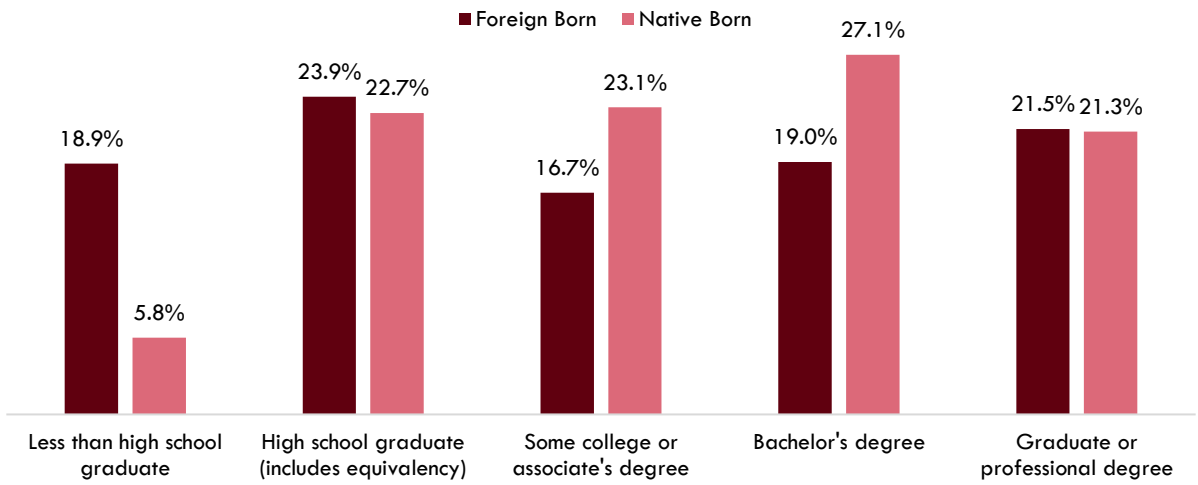


Source: U.S. Census Bureau; UMDI analysis

As mentioned above, annual population estimates from the Census Bureau build on the enumerations generated by the decennial census. The Census Bureau compiles data on the various components of population change (i.e., birth, death, in-and-out migration) each year to estimate an annual population. These components of change offer insights on broad demographic patterns for location. For example, during the 2000s population growth in Massachusetts has largely been driven by significant gains in international migration. 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 (18.9% in 2022) and a significant concentration with college degree (41%). A similar proportion of immigrants in the state hold a graduate degree as native-born residents (21%) (Figure 28).

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

Figure 28. Educational Attainment of the Foreign Born in Massachusetts, 2022

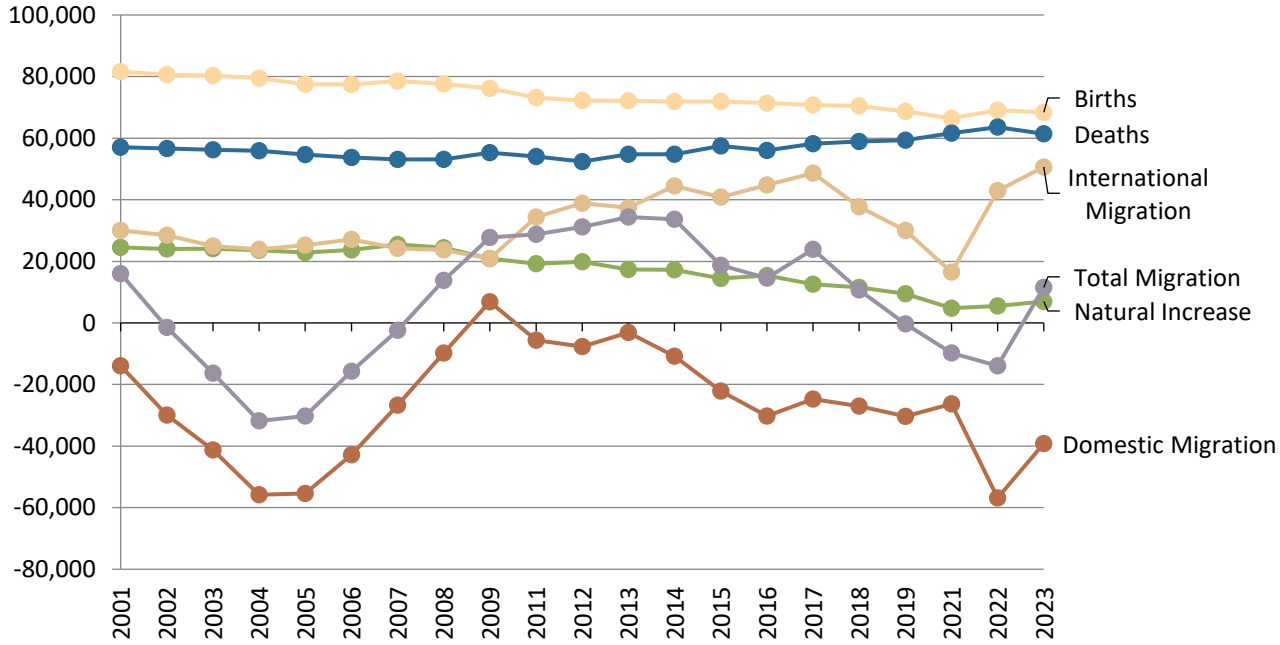


Source: U.S. Census Bureau, 2022 1-Year American Community Survey; UMDI analysis.

These gains in international migration have offset typical losses in domestic outmigration (i.e. people moving from Massachusetts to another state). The decline in natural population increases (i.e. the difference between births and deaths) is notable as well. Massachusetts has an extremely well-educated population, with high labor force participation from women. This often equates to later family formation and smaller household sizes. Couple this with an aging population and a global pandemic reducing birth rates and increasing death rates, the natural increase in Massachusetts has declined precipitously over the last several years.

While Massachusetts showed steady growth between the 2010 and 2020 Census, the onset of the global COVID pandemic appears to have spurred some unique and new population patterns in the state. For example, while Massachusetts has experienced net population losses through domestic outmigration over the last 20 years, 2022 showed a dramatic increase in the state's domestic outmigration rate, essentially doubling from the typical outmigration seen in the state over the last several years (Figure 29). Conversely, in both 2020 and 2021 international migration, which had slowed somewhat during the early part of the Trump administration, slowed dramatically due to pandemic related restrictions, only to finally return to a more typical rate for the state in 2022.

Figure 29. Massachusetts Estimated Components of Population Change, 2000-2023



UMass Donahue Institute. Source Data: ST-2000-7; CO-EST2010-ALLDATA; and NST-EST2023-ALLDATA, U.S. Census Bureau Population Division. Components of population change data for decennial Census years are based on only three months of data, and so are excluded.

The U.S. Census Bureau Population Estimates Program provides a view of the changes in domestic migration and population changes within the Northeast states from 2019-2022. During this period, Massachusetts experienced an out-of-state migration rate that doubled from -0.4 percent to -0.8 percent. The United States experienced a 0.6 percent increase in population between 2020-2022, and in contrast Massachusetts' population declined by -0.7 percent placing the Commonwealth below the national average of population growth.

The outmigration rate in Massachusetts increased between 2020-2022 compared to other states in the Northeast region who experienced net increases in domestic migration. The one state in the Northeast that has experienced a higher rate of out-migration than Massachusetts is New York, which experienced an outmigration rate of -1.5 percent in 2022 compared to -0.9 percent in 2019. In 2023, migration trends started to revert to pre-pandemic rates; Massachusetts climbed to an outmigration rate of -0.6 percent from -0.8 percent in 2022. Many other states in the Northeast that were benefitting from outmigration from Massachusetts and New York reversed as well and saw declining in-migration in 2023 compared to 2022.

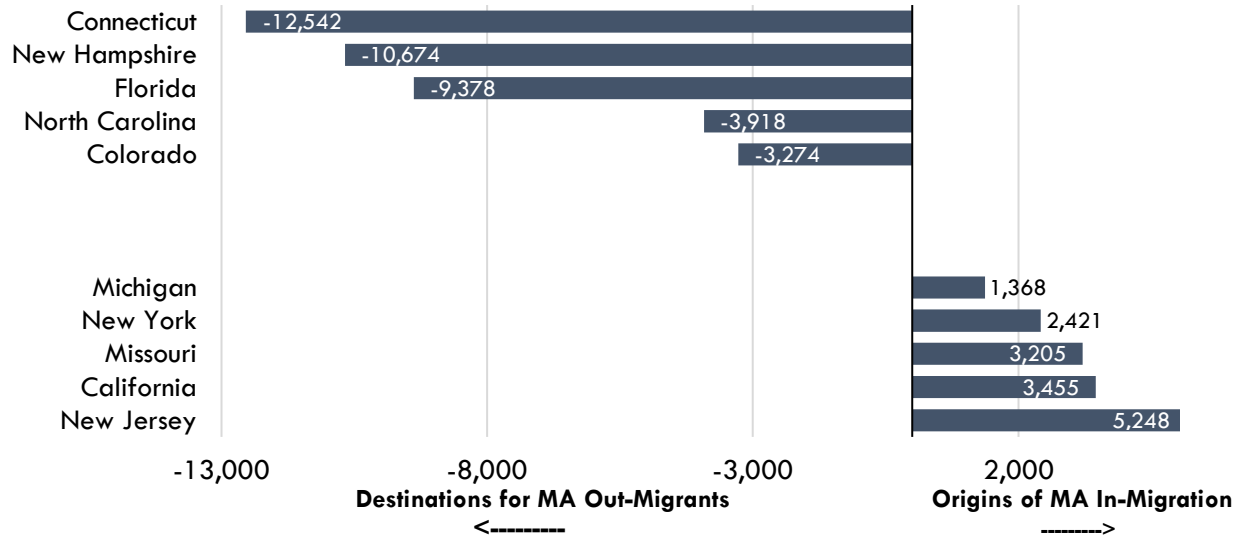
To examine migration patterns by state and by county, the Internal Revenue Service (IRS) U.S. Population Migration dataset was used. This annual dataset presents migration patterns based on year-to-year address changes reported in individual income tax returns filed with the IRS. From 2019-2020, the IRS U.S. Population Migration data has shown that domestic outmigration in Massachusetts is highest among counties

in Greater Boston. Prior to 2020, the highest rate of domestic out-migration occurred in the western half of Massachusetts, within Franklin and Berkshire Counties.

Massachusetts has experienced a dramatic divergence in migration trends in recent years from what it was pre-pandemic. The 2020-2021 IRS population migration data shows that this trend flipped, with Suffolk and Middlesex counties experiencing the highest rate of out-migration in the state. However, domestic migration rates have not flipped in all counties. The island counties of Dukes and Nantucket, as well as Barnstable County have all experienced positive domestic migration rates over the past decade through 2021, particularly during 2020 when the global pandemic began.

Using microdata from the 2022 U.S. Census Bureau's American Community Survey, net migration to Massachusetts is most concentrated throughout the 18–24-year-old age group. This group includes the large number of young adults who migrate to Massachusetts for their college education. The age group experiencing the largest number of out-migration is 25–34-year-olds. This group contains post graduate professionals, many of whom are at a point in their life where personal priorities include focusing on home ownership and starting families. It is likely that this group finds the cost of living, particularly with housing costs, challenging, and so are moving to states where the cost of living is lower. On the other hand, as in-person work became more common again as the pandemic progressed and restrictions were lifted, many workers in this age category may still need to be located close enough to commute in to work on a semi-regular basis. This may explain why Connecticut (with 12,500 net migrants from Massachusetts) and New Hampshire (10,600 net-migrants) were the two most popular destinations for Massachusetts movers (Figure 30). Florida was third, notably a large population state and a top destination for retirees. The state that sent the most migrants into Massachusetts was New Jersey, which sent roughly 5,200 new Massachusetts residents.

Figure 30: Net Migration to Massachusetts, 2021-2022



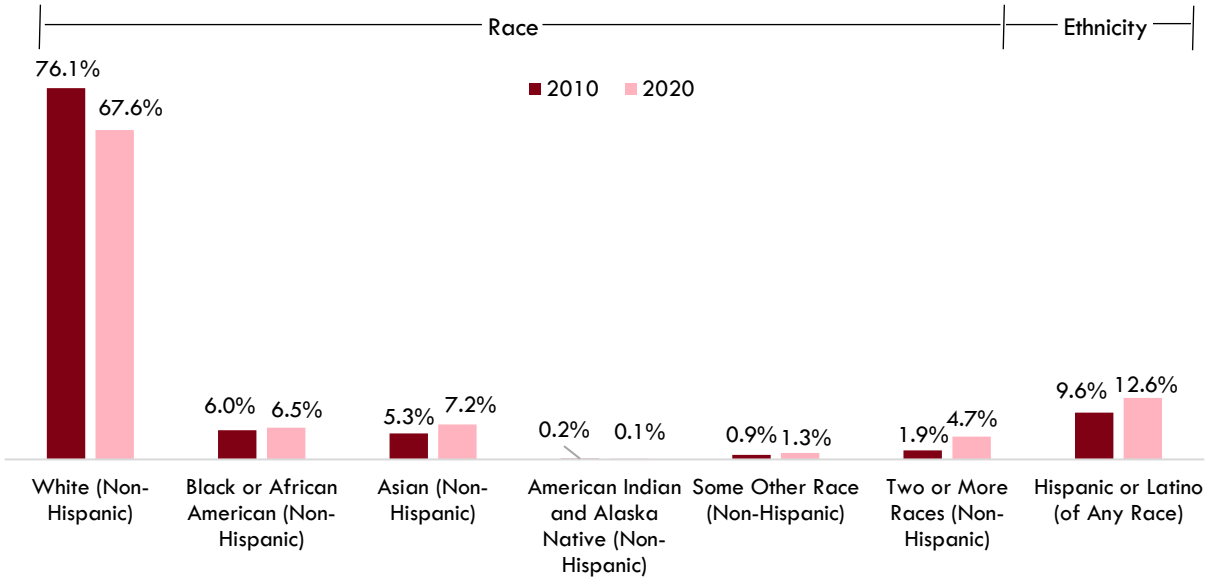
Source: U.S. Census Bureau, American Community Survey Microdata, 1-Year Estimates 2022.

Looking at the out-migration trend during the pandemic raises understandable concern over the increase in the rate of former residents moving out of the state. It is important to note that the COVID crisis upended residential patterns and migration trends. At this point, it is unclear which of these patterns are short-term reactions to the pandemic and which ones may be more durable over the term. With that, state migration trends should be analyzed cautiously as the years following the pandemic are likely not representative of an average year of out migration. Indeed, the U.S. Census Population Estimates data for 2023 could signal the start of a return to pre-pandemic trends.

The question that remains is where out-migration trends will normalize. We have already seen some trends from the Internal Revenue Service, U.S. Population Migration Data (2020-2021) that indicate certain areas within the state have already returned to their similar pre-pandemic migration trends, such as we see happening on the Cape in Barnstable County. Over the next few years, it will be important to continue tracking out migration trends to see where residential patterns normalize.

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 31). The state's population is older than the nation as a whole—the median age is 40.3 compared to 39 for the nation in 2022. The Commonwealth has the lowest median age in New England, due to the presence of higher education institutions.

Figure 31. Share of Total Massachusetts Population by Race and Ethnicity in 2010 and 2020

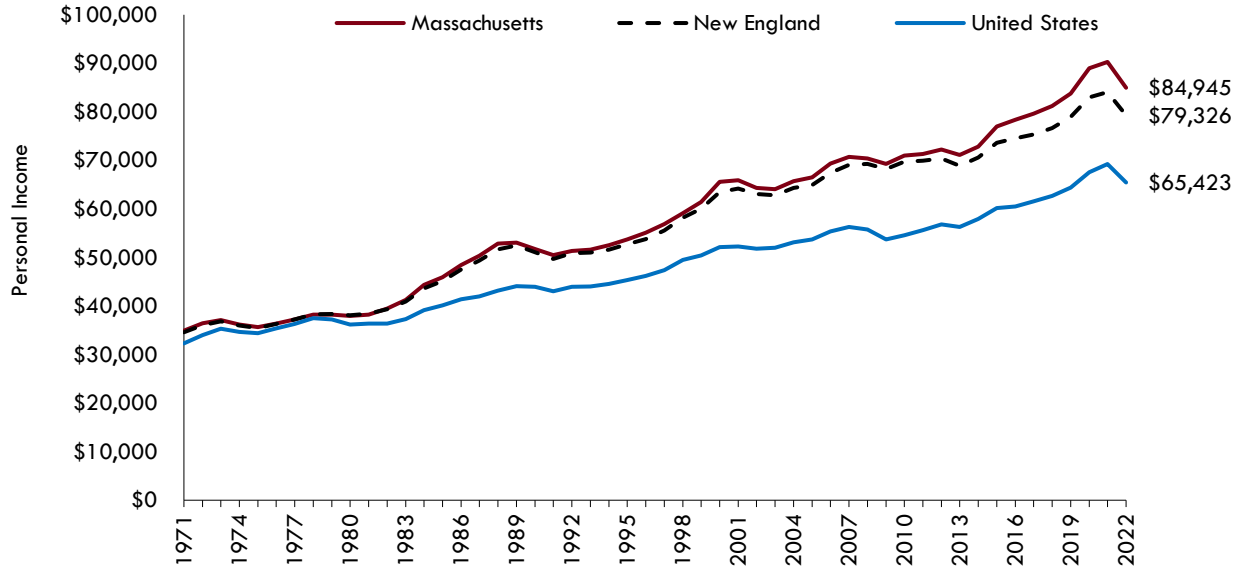


Source: 2010 Source Data: Census 2010 Summary File 1; 2020 Source Data: Census 2020 PL-91-171; UMDI analysis

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 2022, Massachusetts had the second highest real per capita personal income in the nation, excluding the District of Columbia.

Connecticut had the highest, though the BEA estimates a less than $30 gap between the two. In 2022, the Commonwealth's real per capita income was nearly $85,000 compared to approximately $79,000 in New England and just over $65,000 in the U.S. (Figure 32). High inflation in 2021-2022 eroded some purchasing power for consumers nationwide, and so inflation adjusted incomes in 2022 were lower than in 2020 or 2021. 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 9.9 percent compared to 12.5 percent according to the 2022 Five-Year American Community Survey. However, in several cities the poverty rate exceeds the state average: for example, in the Gateway cities of Holyoke, Springfield, and Worcester poverty rates were 26 percent, 25.3 percent and 19.5 percent, respectively. Boston is also above the state average with a rate of 17.5 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. The concentration of poverty in these cities raises concerns about equity and quality of life.

Figure 32. Real Per Capita Personal Income in Massachusetts, the United States, and New England, 1971-2022 (in $2022)



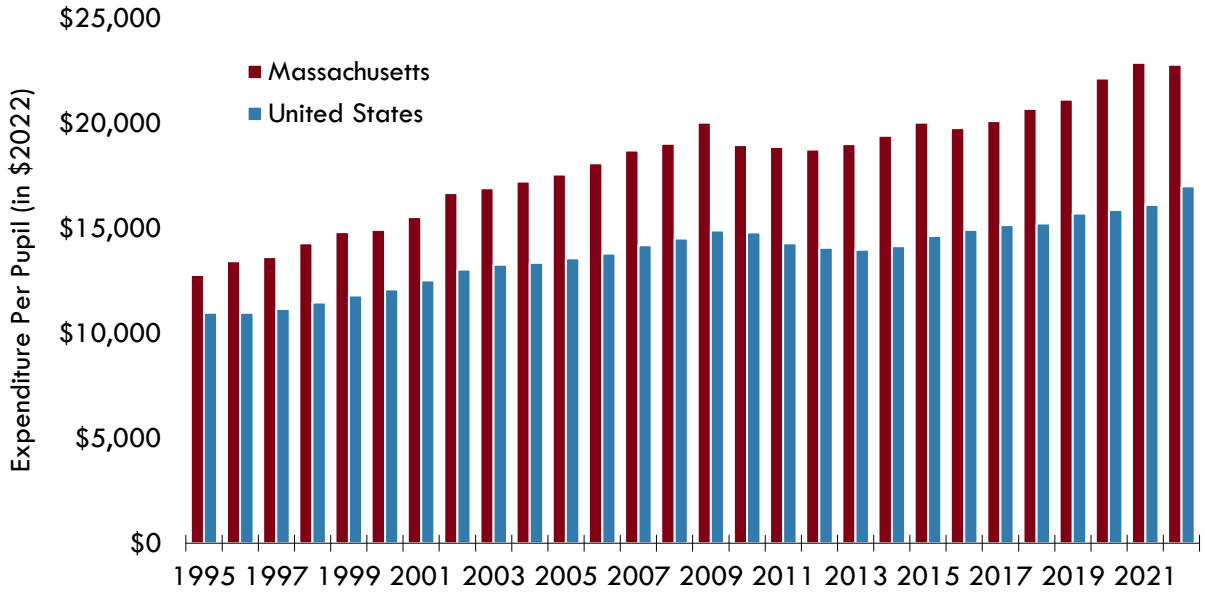
Source: U.S. Department of Commerce, Bureau of Economic Analysis

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 33). Furthermore, students in Massachusetts's 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 34).

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. For adults with a high school diploma but no college degree (associates or bachelor's), the state included in the FY 24 budget a program called MassReconnect which offers free tuition at Massachusetts's 15 public community colleges.[11] Implementation of this program started in Fall 2023, and the effects of which will start being seen in the coming years as the first cohorts of students complete their degrees.

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 has rebounded from pandemic-era lows of 66,000 in the 2020/2021 academic year to an all-time high of 79,800 international students in the 2022/2023 academic year.

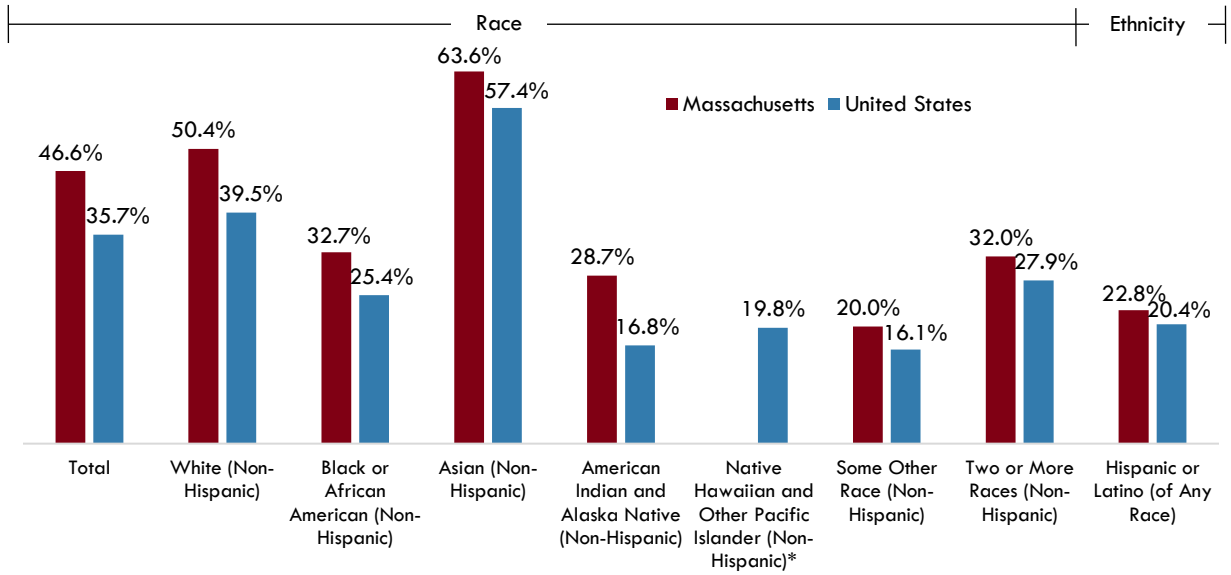
Figure 33: Per Pupil Expenditure in Public Elementary and Secondary Schools (in $2022)



[11] https://www.mass.edu/osfa/programs/massreconnect.asp

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

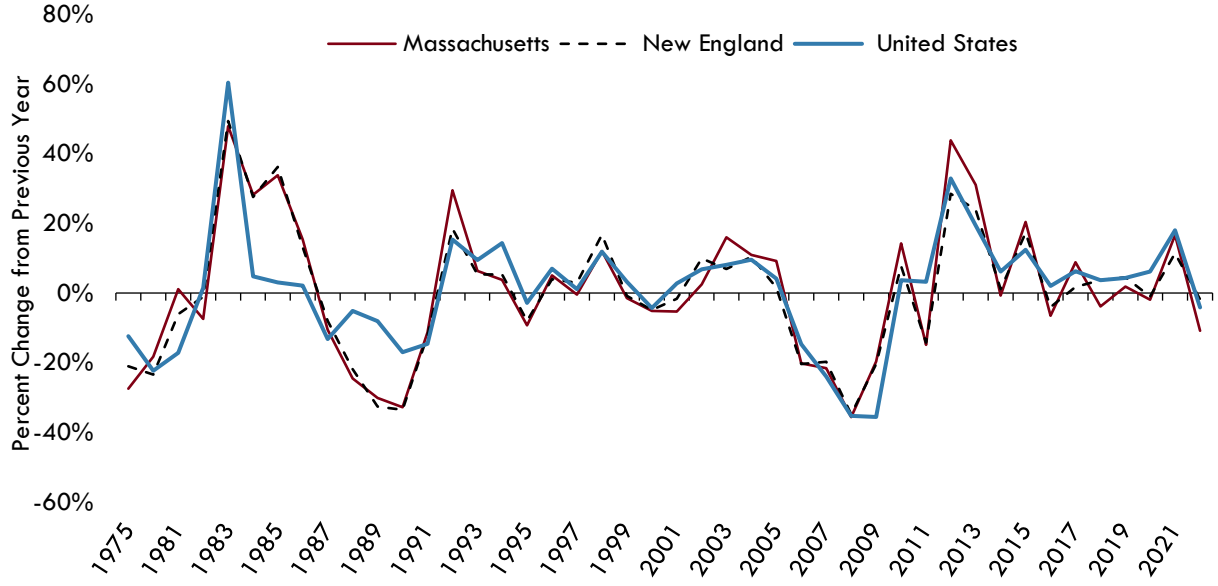
Figure 34. Persons in Massachusetts and the United States 25 Years and Older with a Bachelor's Degree or Higher by Race and Ethnicity in 2022



Source: U.S. Census Bureau, 2022 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 remain high 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, and higher interest rates have further increased the cost of owning a home. In 2023, median single-family home prices increased to $600,000 from $571,810 in 2022, a 4.9 percent increase. Prices have remained well above the national median of existing homes, which according to the National Association of Realtors was $ 389,300 in 2023. Construction is not keeping up with demand. Nationally, the number of building permits decreased 4.1 percent from 2021 to 2022, but in Massachusetts the decline was greater, permits decreased 10.9 percent over the same period (Figure 35).

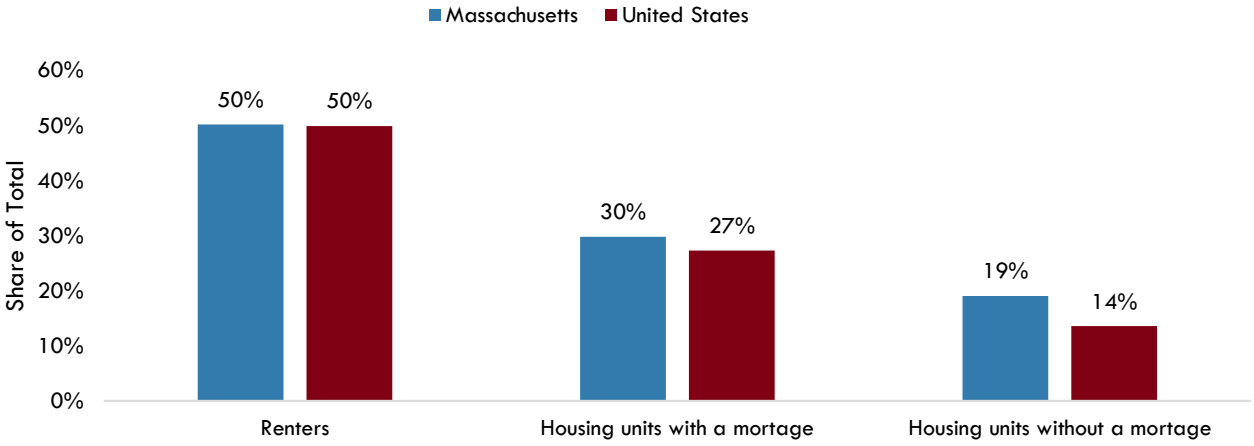
Figure 35. Housing Units Authorized by Building Permit, Percent Change from Previous Year, 1975-2022



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

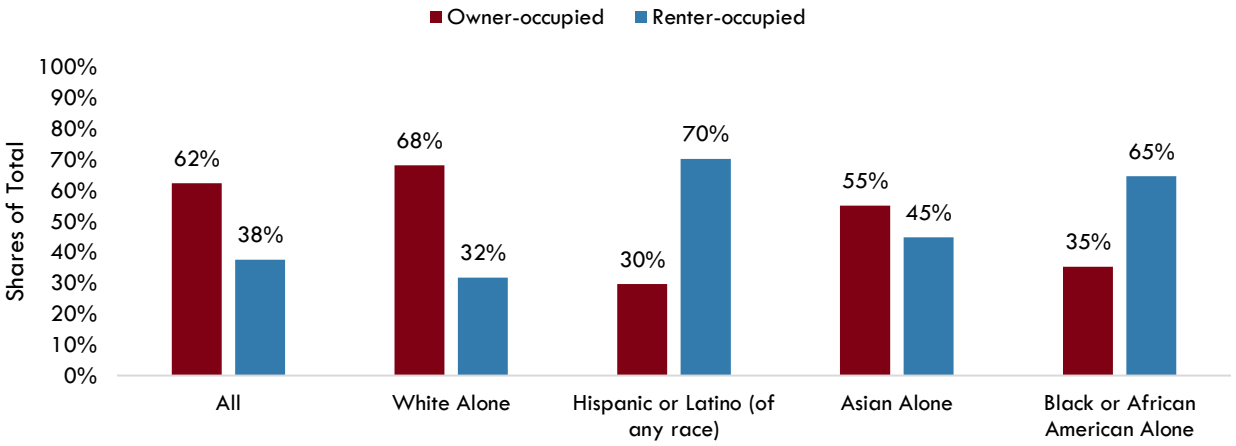
The increase in sale prices and the low supply of homes for sale has translated into high rental costs as well. In addition, low vacancy rates have contributed to higher costs. Mirroring rates in the U.S., nearly half of renters are cost burdened, meaning they spend over 30 percent of their income on 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 36). 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 53 percent of renters were cost burdened in 2022, compared to 58 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 of 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 36. 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 2017-2022 5-Year Estimates, Table DP04.

Figure 37. Housing Tenure in Massachusetts in 2021 by Race and Ethnicity



Source: ACS 2017-2022 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 37). 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 passed legislation to amend the state Zoning Act. The Massachusetts Bay Transportation Authority (MBTA) communities law includes several provisions to remove zoning-related barriers to housing production. The law 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 requires "by

right", multi-family zoning in 177 MBTA communities. Communities that fail to comply with the law shall not be eligible for certain funds from the State. In addition, Governor Healey has also introduced the Affordable Homes Act, legislation which would authorize $4 billion in spending and numerous policy changes to support the construction of housing and address the housing crisis in the state.