Barriers to Employment

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Barriers to Employment Report

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About Barriers to Employment Report

The Department of Economic Research (DER) submits this Barriers to Employment report as required by section 7003-0100 in the FY2025 General Appropriation Act which states that "not later than February 24, 2025, the department shall submit a report to the house and senate committees on ways and means including, but not limited to: (i) sector by sector barriers to workers returning to work during the 2019 novel coronavirus pandemic, including the retail sector; and (ii) current programs that may be utilized to target the workforce in each sector".

About Department of Economic Research (DER)

The Massachusetts Executive Office of Labor and Workforce Development (EOLWD) Department of Economic Research produces, analyzes, and distributes various data, labor market reports, and other resources related to employment, unemployment, occupations, industries, and other components of the Massachusetts labor market. Our stakeholders include policy makers in state and local government, workforce development agencies, institutions within academia, employers, jobseekers, and others. Visit mass.gov/EconomicResearch to learn more.

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Introduction

The Massachusetts labor market has recovered more slowly from the pandemic than other states. Sectors such as Accommodation and Food Services, Retail Trade, Manufacturing, and Health Care and Social Assistance employed fewer people in 2023 than in 2019 (*2023 ETA Report*). Recent years have been characterized by tight labor markets across the nation, and in Massachusetts, an aging population coupled with slow population growth suggests these conditions will persist. This economic reality means it is critical to understand the barriers that Massachusetts residents face in getting a job and to determine which workers are most affected.

A barrier to employment is anything that prevents a person from finding and securing the best job that works for them. Many such barriers were identified in the 2024 Workforce Skills Cabinet *Regional Blueprints*. These regional workforce development plans were produced through a process led by the Healey-Driscoll Administration's Workforce Skills Cabinet with engagement by local leaders and workforce partners across the Commonwealth to identify workforce needs and challenges.

This report focuses on two broad types of barriers that were identified in the regional plans – skills barriers and geographic barriers. Skills barriers occur when workers lack the skills that employers are demanding. These could be technical or specialized skills required for a particular job, as well as English language skills necessary for most jobs. Geographic barriers result from challenges in reaching job locations, often due to a combination of high housing costs in areas with many jobs and limited or costly transportation options. These barriers are benchmarked across regions and occupations to help guide policymakers in directing resources to have the most impact in alleviating barriers.

The analysis is done by occupation, which in many cases tracks sectors, because the barriers to employment considered in this report are generally related to a worker's occupation. In many cases, the experiences of workers in a given occupation are representative of the broader experiences of workers in a sector. For example, Healthcare Practitioners and Technical Occupations and Healthcare Support Occupations are representative of workers in the healthcare sector, while Sales and Related Occupations are representative of experiences of many workers in the retail sector. Information on existing programs that address the barriers identified in this report can be found in *Section A* of the *Appendix*.

Summary of Findings on Skills Barriers

Limited proficiency in English is a significant barrier for foreign-born workers, especially a subset of roughly 110,000 individuals

For people who have immigrated to Massachusetts, limited English proficiency can pose a significant barrier to employment and negatively impacts earnings potential. Data from the 2023 American Community Survey indicates that more than 80,000 working-age adults in Massachusetts who immigrated in the past four years need help improving their English. Additionally, many immigrants in Massachusetts with bachelor's degrees are underemployed – working in jobs that do not fully use their skills – because of limited English proficiency. The underemployment rate for this group is 50%, more than twice that of immigrants with strong English skills. Providing ESOL (English for Speakers of Other Languages) programs to this group of about 30,000 people could help them overcome a significant barrier to finding jobs that match their qualifications.

Rapidly changing skill requirements do not affect most jobs, but could pose a barrier for certain workers

In today's economy, the skills that employers need are constantly evolving. This is especially true for specialized skills. When these changes happen quickly, it can create a gap between what employers are looking for and what job seekers currently offer. STEM (science, technology, engineering, and math) occupations are most impacted by this type of "skill disruption". Yet employer demand for specialized skills has not changed drastically since 2016 for most workers across Massachusetts. Central Massachusetts' labor market has been most affected with 14% of 2023 job postings in occupations with rapidly changing skill requirements; and in most regions the percentage is 10% or lower. Still, certain workers, such as Software Developers, may need to constantly update their skills to remain employed. In addition, changes in employer requirements are more pronounced in certain regions. For example, employers in Central Massachusetts have shifted the skills required of Medical Assistants from administrative skills to medical skills within the past seven years.

Misalignment between graduates of postsecondary programs and employer demand in the Berkshires, Cape & Islands, and Southeast makes skills gaps more likely in those regions

Sometimes, the skills and credentials that students get from postsecondary programs do not align with the occupations that employers in their region need. This misalignment can make it hard for graduates to find jobs, and for businesses to find qualified workers. The Berkshires, Cape & Islands, and

Southeast regions show signs of mismatch between the areas of study of local postsecondary graduates and the types of jobs that employers are hiring for. This mismatch may force new graduates to leave these regions to find jobs in their fields and suggests that there may be limited training options for workers to gain in-demand skills locally.

Summary of Findings on Geographic Barriers

Long commutes and lack of car access can limit job opportunities, especially for workers in the Southeast region

Getting to and from work can be a major hurdle for many workers, especially those who rely on public transportation or live far from job centers. Long commutes can limit job opportunities and make it hard to balance work and personal life. Workers in the Southeast region face the longest average commute times in the state, at nearly 35 minutes each way. This is significantly higher than the average commute in the Berkshires, which is under 25 minutes. The high reliance on personal vehicles across most of the state (over 90% outside of Greater Boston) also creates a barrier for those without access to a car, further limiting their job options.

High housing burden for Cape & Islands workers and high combined geographic burden (high housing costs + long commutes) for lower-wage workers living in regions bordering Boston likely pose significant barriers to employment

The cost of housing can make it difficult for workers to live near their jobs, especially in areas with many job opportunities. This can force workers to endure long commutes or limit their job choices to lower-paying positions closer to home. The Cape & Islands has the highest percentage of housing-burdened workers (28%), meaning more than a quarter of workers in this region spend over 30% of their income on housing. Occupations like Construction and Extraction, Building Cleaning and Maintenance, and Healthcare Support are particularly impacted by the combined burden of high housing costs and long commutes, especially in the Greater Boston, the Southeast, the Northeast, and Central MA regions.

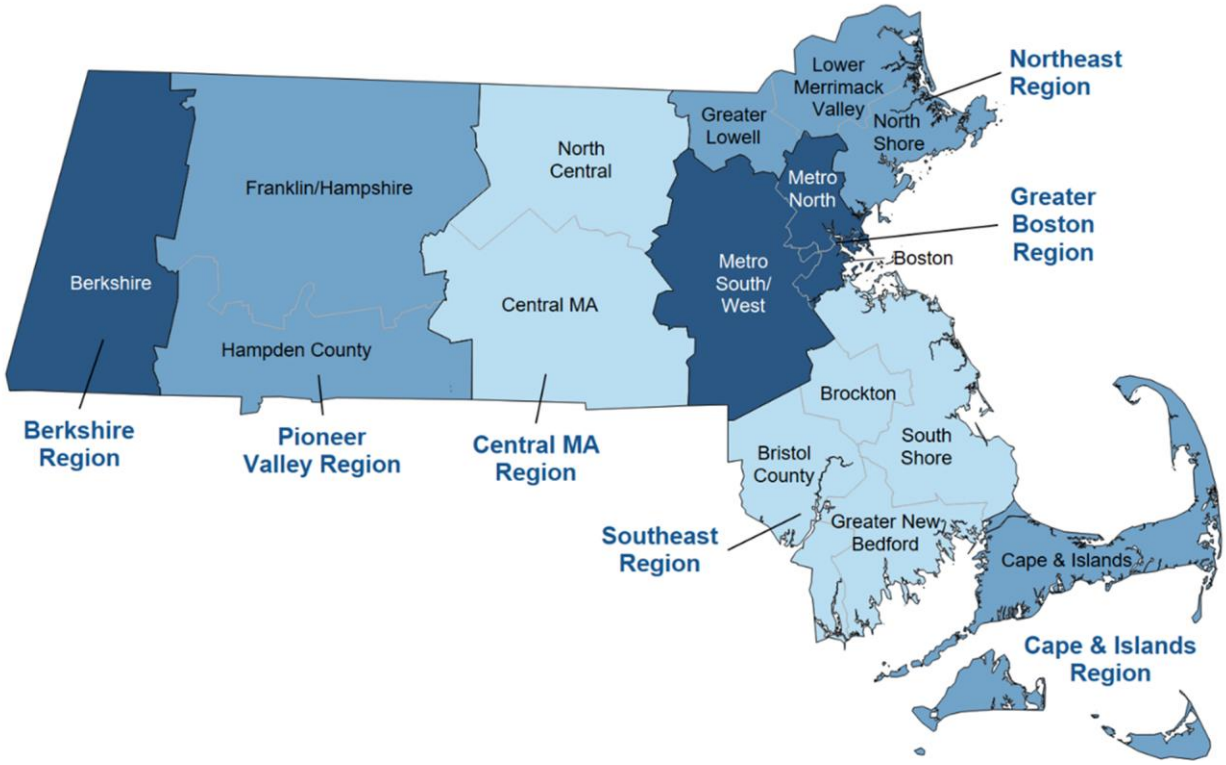
Identifying Barriers

The barriers to employment considered in this report are based on barriers identified in the 2024 Workforce Skills Cabinet regional workforce development plans—also referred to as "regional blueprints". These plans were developed by regional teams of educators, workforce development professionals, and industry partners in each of the seven Workforce Skills Cabinet regions (see Figure 1 below). The Workforce Skills Cabinet was established by Executive Order to align the programs and policies of the administration to improve workforce skills and job readiness of individuals in the Commonwealth's regions. Over the course of an extended regional planning process, these local teams met regularly to identify priority industries and occupations in their regions and document challenges associated with meeting talent development needs.

Figure 1

Workforce Skills Cabinet Regions of Massachusetts

(Workforce Skills Cabinet Regions in blue; Workforce Development Areas in black)



The workforce plans identified dozens of barriers to employment. Some barriers, like skills gaps, were common across regions and occupations. Other barriers were specific to a single region or sector, such as healthcare worker burnout.

This report focuses on four key barriers to employment. These barriers can be categorized as either skills barriers or geographic barriers. They were selected from the regional workforce plans for in-depth analysis because they were mentioned by multiple regions as being relevant across occupations, had quantitative data available for research, and were deemed priorities by Executive Office of Labor and Workforce Development policymakers. Table 1 shows which regions mentioned each of these barriers.

Table 1: Barriers to employment identified by regional workforce development plans

	Skills Barriers		**Geographic Barriers**	
Region	**Specialized Skills Gaps**	**Limited English Proficiency**	**Lack of Transportation to Work**	**Lack of Affordable Housing**
Berkshire	x	x	x	
Cape & Islands	x	x	x	x
Central MA	x	x	x	
Greater Boston	x		x	x
Northeast	x	x	x	x
Pioneer Valley	x		x	
Southeast	x	x	x	

Source: 2024 Workforce Skills Cabinet Regional blueprints (workforce development plans).

Assessing the Impact of Skills Gaps

Skills gaps occur when there is a mismatch between the skills that employers need and the skills that workers posses. Two barriers mentioned in the regional workforce plans fall into this category – gaps in specialized skills required by a particular job, and limited English proficiency that poses a barrier to getting almost any job.

This section examines the impact of skills gaps on regional labor markets, focusing on four key areas:

- How rapidly changing employer demand contributes to skills gaps.
- How mismatches between postsecondary programs and employers' needs contribute to skills gaps.
- The characteristics of foreign-born workers with limited English proficiency.
- How limited English proficiency affects labor market outcomes compared to English proficiency.

Gaps in Specialized Skills

For most jobs, employers want specific expertise that takes time and training to acquire. This expertise is typically described as a set of specialized skills tied to particular occupations. For example, "medical imaging" is a specialized skill associated with Radiologists, while "classroom management" is a specialized skill of Elementary Teachers. Local leaders across all regions identified specialized skills gaps in their workforce plans. Employers across various industries, including healthcare, manufacturing, IT, and the trades, report difficulties finding qualified workers with the necessary skills.

Skills gaps can arise from several key sources, creating challenges for both employers and job seekers:

- **Rapid Skill Change within Occupations**: The specific skills required for many jobs are not static. Skills demanded by employers within occupations can change rapidly, often driven by technological advancements, evolving industry practices, and unforeseen events. This rapid evolution makes it difficult for workers to keep their skills current, leading to skills gaps if they cannot adapt quickly enough. For example, a software developer who was proficient in older programming languages may find their skills less in demand as newer languages and frameworks become dominant. This challenge is amplified for older workers or those in regions with limited access to retraining opportunities.

- **Misalignment of Education and Training Programs with Labor Market Needs**: Even when skills within occupations are relatively stable, education and training programs may not always align with

the skills needed for in-demand jobs. This can occur for various reasons, including slow updates to curricula, a focus on general knowledge over specialized skills, or programs that are not tailored to the specific needs of the regional economy. As a result, graduates may struggle to find jobs that match their skills, while employers may find it difficult to recruit workers with the right skills to fill openings. This misalignment is further complicated by the fact that individuals may train in regions different from where job opportunities are concentrated. Some regions benefit from attracting skilled workers trained elsewhere, reducing the impact of misalignment, while other regions may face increased costs of misalignment if they are unable to retain skilled workers that are trained locally.

- **Shifts in Demand Across Sectors and Occupations**: Beyond changes within specific jobs, the overall composition of the economy can shift, leading to shifts in demand across sectors and occupations. As some industries grow and others decline, or as new industries emerge, the demand for specific skills in a region can change significantly. This sectoral shift can create a mismatch between the skills present in the labor force and the evolving regional demand. For example, a region heavily reliant on manufacturing may experience skills gaps if that sector declines and the workforce lacks the skills needed for growth sectors like technology or healthcare in that same area. This dynamic underscores the importance of adaptable training systems and regional economic diversification to mitigate skills gaps arising from broader economic changes.

This section examines rapid changes in employer skill requirements within occupations and the alignment of postsecondary education with employer demand to determine where skills gaps may occur. Although shifts in demand across sectors and occupations represent another critical source of skills mismatch, directly measuring this economy-wide mismatch in skills relative to regional demand is challenging due to limitations in available data on individual workers' skills. This broader sectoral shift and its regional implications remain a crucial dimension of skills gaps and present an important opportunity for future research to explore in more detail.

Rapid Changes in Skill Requirements within Occupations

Skill change within an occupation is normal in a dynamic economy. For example, the skills required of a surgeon in the 1950's were quite different than those required in 2024. When this change is slow and occurs over generations, there is time for younger waves of workers to get the right training. However, when there is a sudden shift in technology, policy, or the environment—such as the rapid growth of the internet, increased focus on clean energy, or a global pandemic—the skills demanded by employers for a particular occupation may change rapidly. Some researchers refer to this

as “skill disruption”, which refers to the need for workers to learn new skills when their job shifts. If workers cannot keep up with the new skills demanded in their occupation, or if education and training programs are behind on teaching these new skills, skill gaps may emerge. In this way, rapid change in employer demand can create barriers to employment.

However, the impact of this sort of rapid change on workers in Massachusetts is unclear. Research from the Burning Glass Institute and the Boston Consulting Group found that 37% of the top 20 skills needed for the average U.S. job were replaced between 2016 and 2021 (Sigelman et al., 2022). Although this is not a dominant theme in the workforce development plans, some Workforce Skills Cabinet regions discuss how technological change has driven demand for new skills. For instance, the Northeast’s plan mentions that Artificial Intelligence is likely to require workers to acquire new skills to stay competitive. Meanwhile, Central MA’s plan notes that many older workers lack the skills to continue working in industries such as advanced manufacturing, where computer numerical control (CNC) machining is becoming standard. It also mentions challenges employers face in sourcing skills for emerging fields like robotics and biotechnology.

To identify regions and occupations where skills gaps may exist, job posting data is used to quantify change in employer demand in recent years for each occupation in a region. Lightcast, a company that scrapes job boards and corporate websites to create a near universe of job postings, tags all skills mentioned in each posting according to its robust skill library. A measure of skill change is created by comparing the skills requested by postings over time. Following Deming and Noray (2020), this involves obtaining the list of skills mentioned for an occupation in each year, calculating the absolute value of the difference in demand for each skill between 2016 and 2023, and summing up over all the skills.

For example, Table 2 shows how demand for two skills among Software Developers in the Northeast region has changed between 2016 and 2023. It compares the percentage of job postings that listed a particular skill in 2016 to the percentage that listed the same skill in 2023. The last column displays the percentage point change, which represents how demand for that skill has changed over the last seven years. Python has gained importance – the share of software developer job postings requiring Python in the Northeast region doubled between 2016 and 2023. Meanwhile, demand for knowledge of Java Platform Enterprise Edition has waned.

This calculation is applied across all skills and occupations in a region. The percentage point differences are summed across all skills in an occupation to get an overall skill change score.

Table 2: Example of changes in skill requirements for software developers in the Northeast region

Skill	Percentage of Job Postings with Skill in 2016	Percentage of Job Postings with Skill in 2023	Percentage Point Change
Python programming language	13%	26%	13%
Java Platform Enterprise Edition	6%	1%	5%

Source: Lightcast.

Looking statewide, STEM occupations have experienced the most change in skills demanded since 2016. The occupations with the most substantial changes include Electro-Mechanical and Mechatronics Technologists and Technicians, Avionics Technicians, and Chemical Plant and System Operators. Biomedical Engineers and Computer and Information Research Scientists, Pharmacy Aides, and Business Operations Specialists also experienced notable shifts. This finding aligns with Deming and Noray's 2019 nationwide analysis, indicating that these STEM fields are rapidly evolving. In contrast, the skills that employers require of Bartenders, Waiters and Waitresses, Dishwashers, and Heavy and Tractor-Trailer Truck Drivers have not changed very much in the past seven years.

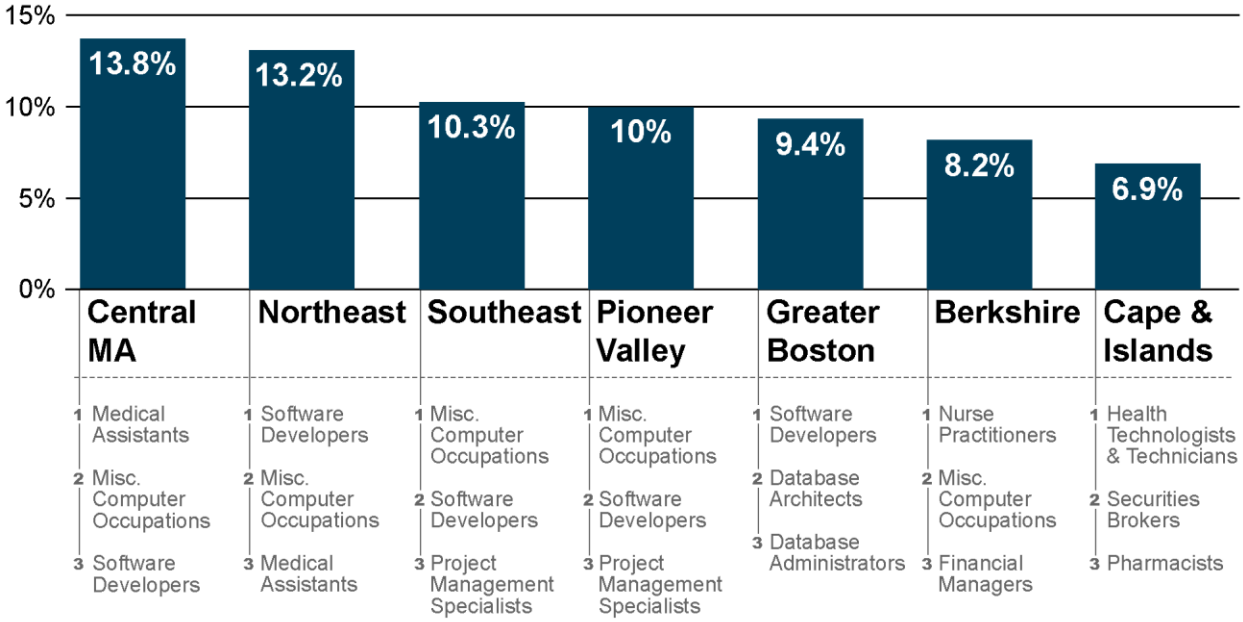
To assess how rapid skill change has impacted regional labor markets, the percentage of job postings in each region that are for occupations experiencing rapid skill change is calculated. An occupation is defined as undergoing rapid skill change in a specific region if its skill change score is above the 75th percentile statewide. This approach accounts for the regional variation in skills demanded since 2016. See Appendix Section B for examples of this variation, as well as for a list of occupations that establish the statewide cutoff for rapid skill change.

Figure 2 shows the percentage of job postings in each region that are for occupations experiencing rapid skill change. It also lists the top three demanded occupations where the skills demanded have changed rapidly.

Figure 2

Demand for occupations with rapid skill change as a percent of all job listings in 2023

Top three occupations with rapid skill change by region



Source: Lightcast

The figure shows that, across all regions, a relatively small fraction of job postings is for occupations that have experienced rapid skill change, although the degree varies across regions. Only 6.9% of job postings in the Cape & Islands are in occupations with rapid skill change, compared to 13.8% in Central MA. This implies that skills gaps resulting from "skills disruption" of an occupation are not likely a widespread problem for the Massachusetts labor force. This is good news, as it means that most workers are likely able to keep up with the change in skills demanded by employers in their occupations.

However, there are some occupations where skills gaps may exist, particularly in certain regions. For example, job postings for Medical Assistants in Central MA have shifted from requiring mainly administrative skills to requiring more medical skills. In 2016, 43% of job postings listed "setting appointments" as a required skill. This shrunk to 15% in 2023. On the other hand, 35% of 2023 job postings required candidates to be able to do "throat cultures", compared to 18% in 2016. This change may have led to barriers for workers who have not developed these skills. Similarly, Software Developers and workers in Miscellaneous Computer Occupations (who hold job titles such as Systems Engineer and IT Project Manager) may struggle to keep up with the rapidly changing requirements of these technology jobs.

In summary, this analysis has shown that while rapid changes in employer demand have occurred across all regions, the overall impact is relatively limited. In most regions, 1-in-10 job postings or fewer are for occupations experiencing rapid skill change. This suggests that widespread "skill disruption" is not a major problem in Massachusetts, and that most workers are likely to keep up with evolving skills demands. Yet this does not mean that the regional workforce development plans are overstating barriers caused by gaps in specialized skills. There could be other dynamics at play that result in skills gaps throughout Massachusetts.

Misalignment of Postsecondary Education with Employer Demand

Skills gaps could emerge if postsecondary graduates concentrate in programs that do not provide skills or credentials for in-demand occupations. Even if the skills required for those jobs have remained the same for decades, employers may struggle to find qualified workers. Meanwhile, new graduates may have a hard time getting a job. This mismatch is referred to as occupational misalignment.

Workers in regions with high occupational misalignment may face barriers to employment. Many new graduates may be forced to leave the area to find work, since there is not enough regional demand for their skills. For instance, if a region's massage therapy schools produce more massage therapists than are needed in that region, some graduates will need to move to another region to work in that occupation. High occupational misalignment can also be a symptom of insufficient training capacity for in-demand occupations in the region. For example, the regional workforce plans suggest that there are not enough academic and training programs for Clean Energy occupations in the Berkshire region, nor for Advanced Manufacturing, Healthcare, and Professional, Scientific, and Technical Services occupations in the Northeast region. This means that residents of these regions wishing to work in these occupations need to temporarily live elsewhere to get training, posing a substantial financial and logistical hurdle. Given these barriers, regional employers in these sectors must attract workers outside their region to fill roles.

To identify the regions and occupations most affected by occupational misalignment, the projected demand for workers is compared to supply of recent postsecondary graduates in each Workforce Skills Cabinet region. The analysis uses the following methodology:

- **Demand**: Average annual openings based on ten-year employment projections in each region are used to estimate demand.

- **Educational Requirements**: Recent job postings data is used to estimate the share of openings that require postsecondary training.
- **Supply**: The supply of potential workers is estimated by mapping all 2023 postsecondary graduates of programs in the region to their most likely occupations.

The result is an annual estimate of postsecondary graduates and openings for each occupation in a region. For more information on the methodology, see Appendix Section C. Note that only graduates of accredited postsecondary programs are included due to lack of data from non-credit-bearing programs such as technical bootcamps, industry certifications, and workforce development programs. Trade and vocational schools are generally excluded, unless they offer programs that provide postsecondary credit, such as a practical nursing program.

This data is used to compare the projected number of job openings that require postsecondary education in each region with the number of recent graduates from colleges, community colleges, and universities located in the region. When there is less than one graduate per job opening in a region, this indicates that a region has a shortage of postsecondary graduates relative to demand. On the other hand, a region with more than one graduate per opening has a surplus of graduates. Figure 3 shows how the Workforce Skills Cabinet regions are doing according to this measure, as well as the estimated annual shortage or surplus of graduates.

Figure 3

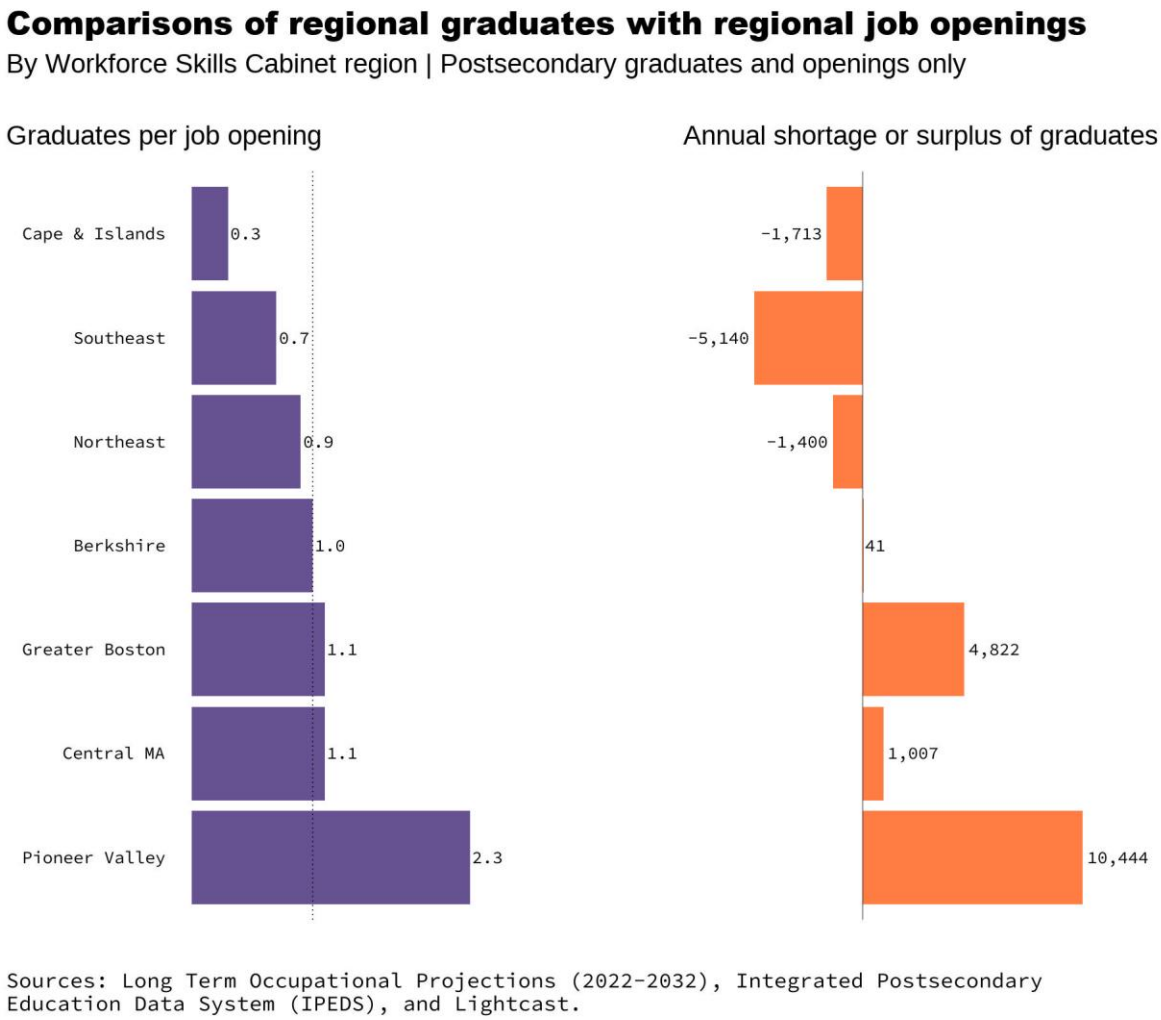


Figure 3 reveals that the Cape & Islands and Southeast regions are likely to experience the most severe shortages of postsecondary graduates. The Cape & Islands have 0.3 graduates per job opening, which means that there are over three job openings requiring a postsecondary degree for every postsecondary graduate in the region. The Southeast has 0.7 graduates per job opening, which corresponds to a large annual shortage of over 5,000 graduates. The five remaining regions have at least 0.9 graduates per job opening in the region, with the Pioneer Valley having a large surplus of graduates due to the presence of University of Massachusetts Amherst.

Looking at total graduates on its own provides an incomplete picture. It could be that a region has one or more graduates per job opening, but most postsecondary graduates are concentrated in occupations with low regional demand. This dynamic could lead to a shortage of graduates in highly demanded occupations. To assess this mismatch, a measure of occupational misalignment is used. This measure compares the distributions of graduates and job openings to see how similar they are across occupations. For example, if a large share of graduates in region received a degree in fine arts, but job

openings for artists are only a small share of total demand, the region would have higher occupational misalignment. If, on the other hand, the distribution of graduates closely matches the distribution of job openings, the region would have lower occupational misalignment. This comparison is completed across occupations in a region and summed to calculate a total misalignment score. To simplify the interpretation of this measure, each region's score is classified into a high, medium, or low level of misalignment relative to the other regions. See Appendix Section D for more information about the methodology.

Table 3: Occupational misalignment in the Workforce Skills Cabinet regions

Region	Occupational Misalignment
Berkshire	High
Cape & Islands	High
Pioneer Valley	Medium
Southeast	Medium
Central MA	Medium
Northeast	Low
Greater Boston	Low

Sources: Long Term Occupational Projections (2022-2032), Integrated Postsecondary Education Data (IPEDS), and Lightcast.

Table 3 displays the level of occupational misalignment between postsecondary graduates and job openings in each Workforce Skills Cabinet region. The Berkshires and the Cape & Islands are the most misaligned regions in the state.

Taken together, the results of these analyses point to three places where mismatch between postsecondary programs and job openings is likely to be most severe. Relative to other regions, this analysis shows that the Cape & Islands, Berkshire, and Southeast regions have the highest risk of significant skills gaps.

Cape & Islands

The Cape & Islands region faces a significant shortage of postsecondary graduates, with only 0.3 graduates per job opening. In 2023, the region was estimated to have had approximately 2,500 annual openings requiring a postsecondary degree but only 750 graduates from local institutions. One contributing factor is that there are only two postsecondary institutions in the region—Cape Cod

Community College and Massachusetts Maritime Academy, a four-year university. By comparison, the Berkshire region, with less than half the population of the Cape & Islands, is home to four postsecondary institutions.

Additionally, the region has a high level of occupational misalignment between the areas of study of graduates and the needs of employers. To see what is driving the misalignment, Table 4 shows a selection of occupations that have more graduates than needed (overproduced) and fewer graduates than needed (underproduced).

Table 4: Overproduced and underproduced occupations in the Cape & Islands region

Overproduced Occupations	**Underproduced Occupations**
Architectural and Engineering Managers	Elementary School Teachers
Aircraft Mechanics and Space Technicians	Accountants and Auditors
Captains, Mates, and Pilots of Water Vessels	Registered Nurses

Sources: Long Term Occupational Projections (2022-2032), Integrated Postsecondary Education Data (IPEDS), and Lightcast.

As Table 4 shows, the Cape & Islands overproduces graduates with skills relevant to technical occupations such as Architectural and Engineering Managers, Aircraft Mechanics and Space Technicians, and Captains, Mates, and Pilots of Water Vessels. With limited local job opportunities in these fields, many graduates may need to relocate for work.

A key driver of this occupational misalignment is that the region's only four-year university, Massachusetts Maritime Academy, specializes in maritime related fields. Its mission is to train graduates for careers in the Merchant Marine or the military rather than for the local workforce. A similar dynamic exists with Cape Cod Community College's Aviation Maintenance Technology Program, which trains highly skilled technicians for jobs that are typically located outside the region.

Meanwhile, the Cape & Islands region underproduces graduates with the skills needed for occupations such as Elementary School Teachers and Accountants and Auditors. The lack of regional training programs for elementary education and accounting means that residents must either enter these fields with less specialized training or seek education elsewhere. The nearest four-year programs for these occupations are at Bridgewater State University, requiring a commute of over an hour.

Although nursing is the most popular program at Cape Cod Community College, it still does not produce enough Registered Nurses to meet local demand. Additionally, a factor contributing to the region's high occupational misalignment is that 16% of Cape Cod Community College's 2023 graduates earned degrees in General Studies or Liberal Arts and Sciences—programs that do not have direct career pathways.

Overall, the data suggests that the Cape & Islands is at a higher risk of skills mismatch. The region's overproduction of graduates in certain fields and underproduction in others, coupled with a large overall shortage of postsecondary graduates, indicates that the Cape & Islands must rely on workers moving to the region to meet demand. This includes Cape Cod natives who left the region for school and new residents from other parts of the state. Online professional profiles show that 94% of Cape & Islands workers with a postsecondary degree attended school outside the region (Lightcast). Yet given the high cost of housing, continuing to attract workers may be a challenge (see geographic barriers section for more details). Better alignment between education and employer needs could help retain residents and alleviate this barrier.

Southeast

The Southeast also has a large shortage of postsecondary graduates. In 2023, postsecondary institutions in the region produced over 5,000 fewer graduates than projected postsecondary openings. This shortage reflects the low postsecondary educational attainment rate in the region. Just 39% of adults in Bristol County have an associate's degree or higher compared to 54% statewide, the lowest rate of any county in the Commonwealth (American Community Survey 2022 5-year data). Given that the Southeast region is second to only Greater Boston in terms of population, this is important to state-level outcomes. To understand which occupations are most affected, Table 5 displays occupations that are overproduced and underproduced relative to demand in the region.

Table 5: Overproduced and underproduced occupations in the Southeast region

Overproduced Occupations	Underproduced Occupations
Secondary School Teachers	Accounting and Auditing Clerks
Registered Nurses	Sales Representatives
Natural Sciences Managers	Accountants and Auditors
Clinical and Counseling Psychologists	Elementary School Teachers
Supervisors of Police and Detectives	Financial Managers
Skincare Specialists	Human Resources Specialists

Sources: Long Term Occupational Projections (2022-2032), Integrated Postsecondary Education Data (IPEDS), and Lightcast.

Table 5 illustrates that many graduates in the Southeast region concentrate in programs such as English, Biology, and Psychology that have broad career applications. These disciplines align most closely with occupations such as Secondary School Teachers, Natural Sciences Managers, and Clinical and Counseling Psychologists, which have relatively few openings in the region. Meanwhile, the oversupply of Supervisors of Police and Detectives is largely driven by the popularity of Criminal Justice programs, despite the fact that police officers typically do not require a college degree. Notably, the data shows that institutions in the Southeast produced more Registered Nurses in 2023 than the region's annual job openings. This implies that many nurses trained in the region ultimately find employment elsewhere, particularly Greater Boston and the Cape & Islands.

Except for Elementary School Teachers, the top six under-produced occupations are all business related. The shortage of Accounting and Auditing Clerks, Accountants and Auditors, and Financial Managers points to a deficit in accounting and finance skills in the region. Future research could investigate whether there is insufficient training capacity for these occupations, or if the region's relevant programs are under-enrolled. Regardless of the cause, the data strongly suggests that employers in the Southeast region need to recruit workers from outside the area to fill these critical roles.

Berkshire

The Berkshire region presents a unique case when it comes to analyzing skills gaps. On the surface, postsecondary institutions in the Berkshires supply about the same number of graduates as employers demand overall, but the number of graduates per job openings metric is misleading on its own. The region's high level of occupational misalignment suggests that there are likely significant gaps

in the specialized skills demanded by employers. To illustrate this, Table 6 presents some of the most overproduced and underproduced occupations in the Berkshires.

Table 6: Overproduced and underproduced occupations in the Berkshire region

Overproduced Occupations	Underproduced Occupations
Secondary School Teachers	Registered Nurses
Natural Sciences Managers	Accountants and Auditors
Data Scientists	Market Research Analysts
Licensed Practical and Vocational Nurses	Medical and Health Services Managers
Clinical and Counseling Psychologists	Elementary Teachers

Sources: Long Term Occupational Projections (2022-2032), Integrated Postsecondary Education Data (IPEDS), and Lightcast.

Similar to the Southeast and the Cape & Islands, the Berkshire region overproduces graduates aligned with career paths in discipline-based occupations and underproduces those aligned with career paths in medical and business occupations. This means that, relative to projected openings in the Berkshires, there is a shortage of Registered Nurse graduates and a surplus of graduates aligned with career paths such as Secondary School Teachers, Natural Sciences Managers, Data Scientists, and Clinical and Counseling Psychologists. What makes the postsecondary landscape in the Berkshires more challenging to analyze is that unlike the Cape & Islands and the Southeast, institutions in the Berkshires tend to educate out-of-state students. For example, Williams College is the largest institution in the region, and historically about 16% of its graduates stay in Massachusetts after graduating (based on online profiles data scraped by Lightcast). Thus, Williams College is likely not focused on the needs of regional employers, as its primary mission is not to train students for the local workforce.

This contributes to higher occupational misalignment in the Berkshires. It also means that Figure 3 does not tell the full story about the availability of workers in the region, since many of these graduates from regional schools leave the state. Rather than a slight surplus of postsecondary graduates in the region, there is likely a shortage of postsecondary graduates to meet local demand.

Since Berkshire Community College is the only option in the region for Berkshire residents to get training for medical and business skills, residents likely face significant barriers to acquiring the skills needed for in-demand jobs in the region. This highlights the challenge faced by employers in the Berkshires, who must compete with employers in other regions to attract qualified workers.

Conclusion

In summary, the data indicates that gaps in specialized skills are likely a barrier to employment in particular Workforce Skills Cabinet regions and occupations. One driver of specialized skill gaps is "skill disruption" within rapidly changing occupations such as Medical Assistants in Central MA, as well as within various Computer and Mathematical occupations across the state. While this has not affected a wide swath of the workforce, it does affect key occupations to the Massachusetts economy. In particular, workers in the technology industry impacted by recent layoffs could find it even harder to find a job since their skills may not be aligned with current demand.

Meanwhile, misalignment between postsecondary institutions and employer demand is likely driving significant skills gaps for many workers in the Southeast, Cape & Islands, and Berkshires. These regions are not producing enough graduates from their postsecondary institutions to satisfy local demand for workers with postsecondary skills, which means employers must recruit workers who completed training outside their region. In addition, individuals that get a postsecondary education frequently graduate with liberal arts degrees and may find it difficult to find a suitable job nearby with only broad, foundational skills. Together, these two factors are likely driving shortages of workers with in-demand specialized medical and business skills. This mismatch could explain why employers in the regional workforce plans report difficulties finding workers, while workers say they are struggling to find jobs (Hudzik & Frenier, 2024).

The next section examines another type of skills gap – gaps in English language skills. Those with limited English proficiency (LEP) are likely to struggle with communication in the workplace, which means that they are less attractive to employers even if they have the right specialized skills. This is a barrier for most job seekers to securing a job and achieving positive labor market outcomes.

Limited English Proficiency

While the previous section focused on mismatches in specialized skills, limited English proficiency (LEP) is another significant barrier to employment for foreign-born workers in the labor force. Regional workforce plans in the Central MA, Southeast, and Northeast regions highlight the challenges immigrant workers face accessing quality jobs due to LEP. The Central MA plan, for instance, emphasizes the need to expand training opportunities for these workers.

English for Speakers of Other Languages (ESOL) programs are the primary way of addressing LEP as a barrier to employment. However, funding for ESOL programs has not kept up with the growth of

the LEP population. A 2024 MassINC study reported that although the Massachusetts population with limited English proficiency grew by 50% over the last two decades, state funding per LEP resident fell by 25% and federal funding has fallen by 40%. This decline in funding has resulted in longer waitlists for ESOL programs and reduced access to language training for those who need it most. In addition, there are regional disparities in ESOL training. In most Gateway cities, the waitlist for ESOL training exceeds the number of available seats (*Massachusetts Needs an Actionable Strategy to Expand ESOL Services*, 2024).

Given the high demand and limited resources for ESOL programs, this section uses data to identify opportunities to target resources that address this critical skill gap. It examines data on LEP immigrants, including their length of time in the U.S., region of residence, occupations, and labor market outcomes, such as underemployment.

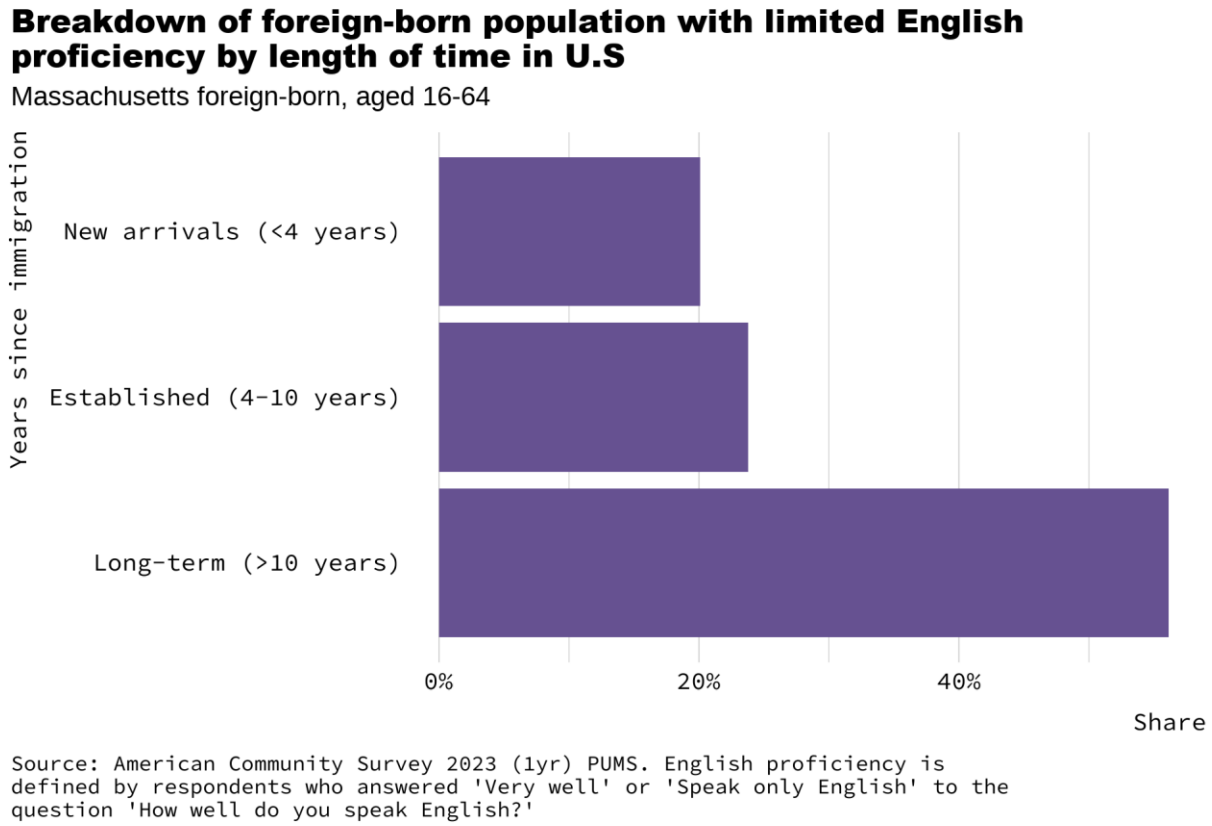
The Working Age Population with Limited English Proficiency

Massachusetts is home to approximately 1 million working age (16-64) foreign-born individuals.[1] Of this population, an estimated 40%, or about 400,000 people, are estimated to have LEP based on self-reported English-speaking ability.[2] Figure 4 provides a breakdown of this LEP population by length of time in the U.S., showing the percentage of working-age foreign-born LEP individuals who have lived in the country less than 4 years, 4 to 10 years, and more than 10 years.

[1] This population is much less likely than native-born individuals to have grown up speaking English at home, so they are the focus of this section.

[2] An individual is considered English proficient if they report speaking English only or "very well". Any other answer to this question, which includes "not at all", "not well", or "well" means the individual is considered to have LEP.

Figure 4



In 2023, "new arrivals"—those who have been in the U.S. for fewer than 4 years— represented 20% of the LEP population, those who have been in the U.S. 4-10 years represented roughly 25% of the LEP population, and those who have been in the U.S. for more than 10 years represented more than 55% of the LEP population. While this data is from 2023 and may not fully reflect the most recent wave of immigration, even with this influx, new arrivals still likely comprise a minority of the foreign-born LEP population in Massachusetts.

Although the long-term population was three times as numerous as new arrivals in 2023, they may not benefit as much from ESOL training as new arrivals. Those who have been in the U.S. for more than 10 years tend to be older and may have already found employment and adapted to life in Massachusetts without full English proficiency. In contrast, more than 70% of new arrivals are under the age of 39. They earn substantially less than the long-term population, even after controlling for differences in age, occupation, and education. In addition, they are more likely to be successful at learning English. Research has shown that the most significant growth potential in English language acquisition occurs within the first few years of immigration (Espenshade & Fu, 1997).

Thus, while new arrivals represent a minority of the LEP working age population, they may benefit the most from targeted training and support. Based on this definition, in 2023, there were

approximately 80,000 working age people in the new arrival cohort, and it is likely even larger today given the recent wave of immigration.

Understanding where the foreign-born LEP working age population lives is crucial for effectively targeting ESOL resources and support services. Table 7 shows how the total LEP working age population is distributed across the Workforce Skills Cabinet regions of Massachusetts as of 2023, as well as how the new arrival population is distributed (those who have been in the U.S. for fewer than 4 years).

Table 7: Foreign-born population with limited English proficiency (LEP) by region

	Total Foreign-Born			New Arrivals	
Region	Total Population	Share of Total Population	LEP per 1,000	New Arrivals	Share of New Arrivals
Greater Boston	179,621	44.3%	72	37,117	45.6%
Northeast	78,010	19.2%	71	11,865	14.6%
Southeast	72,940	18.0%	51	15,531	19.1%
Central MA	46,040	11.4%	52	10,929	13.4%
Pioneer Valley	18,940	4.7%	27	3,522	4.3%
Cape & Islands	6,707	1.7%	25	996	1.2%
Berkshire	3,182	0.8%	25		
Total	405,441	100.0%	56	81,427	100.0%

The distribution of the foreign-born LEP population reflects the population distribution across Massachusetts generally, with most living in Greater Boston, the Northeast, and the Southeast. Notably, Greater Boston and the Northeast have comparable rates of concentration of LEP immigrants compared to their regional populations (LEP per 1,000). This implies that these regions are in similar positions when it comes to absorbing and integrating these individuals. The distribution of new arrivals with LEP mirrors the pattern of the broader LEP group, except that those outside of Greater Boston are slightly more likely to be drawn to the Southeast or Central MA as opposed to the Northeast.

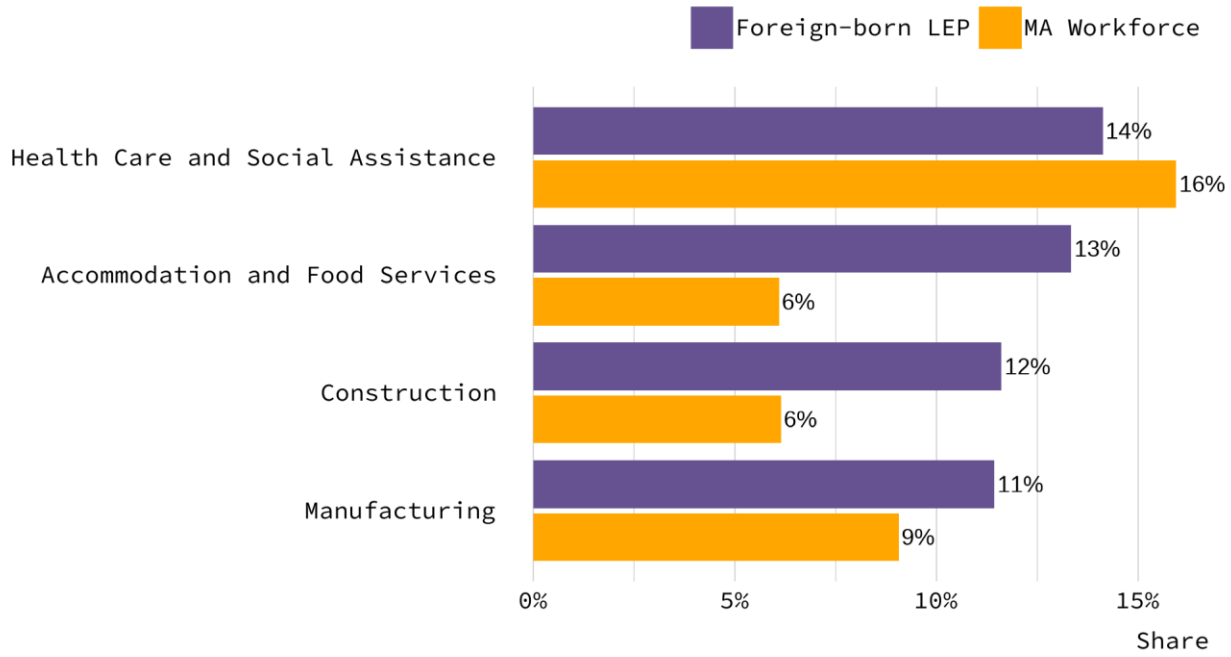
Workers with Limited English Proficiency in the Labor Force

To understand the types of jobs held by foreign-born LEP workers, it is helpful to examine their distribution across industries and occupations. Figure 5 shows the industries in which foreign-born LEP workers are commonly employed and the share employed in each industry. The data reveals that the most common industries for this population to work in are Health Care and Social Assistance and Accommodation and Food Services, followed by Construction and Manufacturing. Compared to the overall Massachusetts workforce, foreign-born LEP workers are overrepresented in Accommodation and Food Services, Construction, and Manufacturing. Indeed, they are twice as likely to work in Accommodation and Food Services or Construction as the average Massachusetts worker.

Figure 5

Most common industries for foreign-born LEP workers

Massachusetts foreign-born with LEP vs. total workforce, aged 16-64



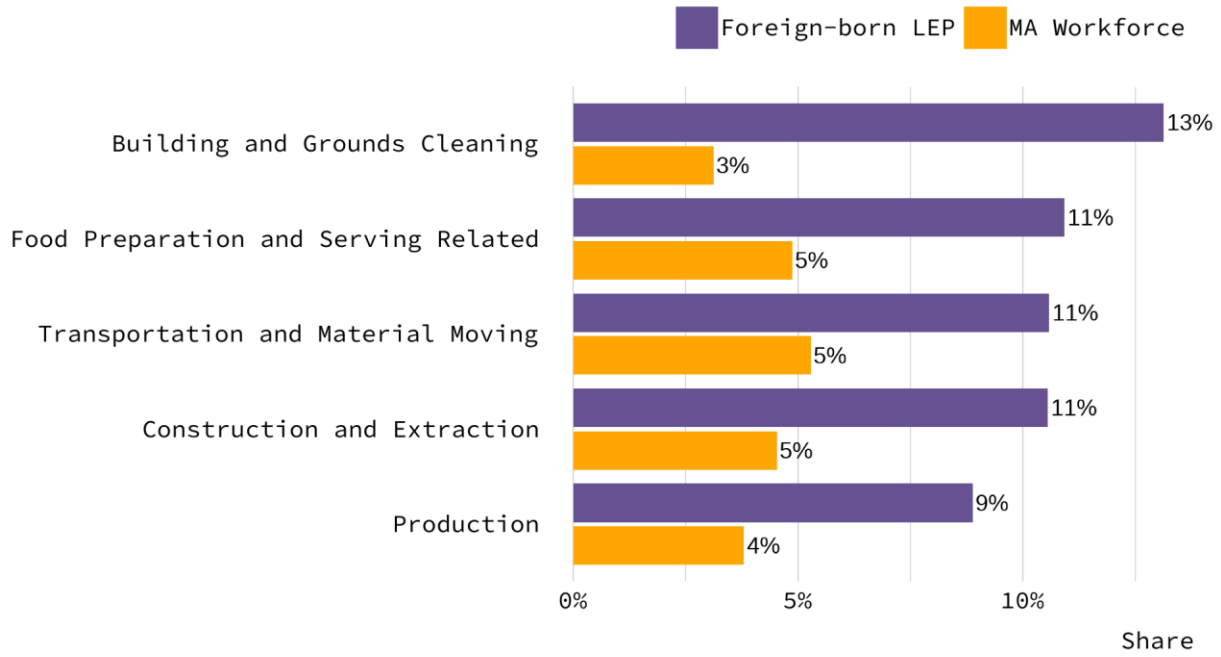
Source: American Community Survey 2022 (5yr) PUMS. English proficiency is defined by respondents who answered 'Very well' or 'Speak only English' to the question 'How well do you speak English?'

Figure 6 shows the occupations in which foreign-born LEP workers are commonly employed and the share employed in each occupation. Half of foreign-born LEP individuals hold jobs in Building and Grounds Cleaning, Food Preparation and Serving, Transportation and Material Moving, Construction and Extraction, and Production. Foreign-born LEP workers are more likely to be employed in these industries than the average Massachusetts worker. The most common roles include maids and housekeeping cleaners, cooks, waitstaff, and food preparation workers. Foreign-born LEP individuals also work as nursing assistants and personal/home health care aides, but these are less common occupations than the ones in Figure 6.

Figure 6

Most common occupations for foreign-born LEP workers

Massachusetts foreign-born with LEP vs. total workforce, aged 16-64



Source: American Community Survey 2022 (5yr) PUMS. English proficiency is defined by respondents who answered 'Very well' or 'Speak only English' to the question 'How well do you speak English?'

To understand the extent to which limited English proficiency impacts earnings and opportunities, the next section compares the labor market outcomes of the foreign-born LEP workers with those of the 600,000 foreign-born workers in Massachusetts who are proficient in English.

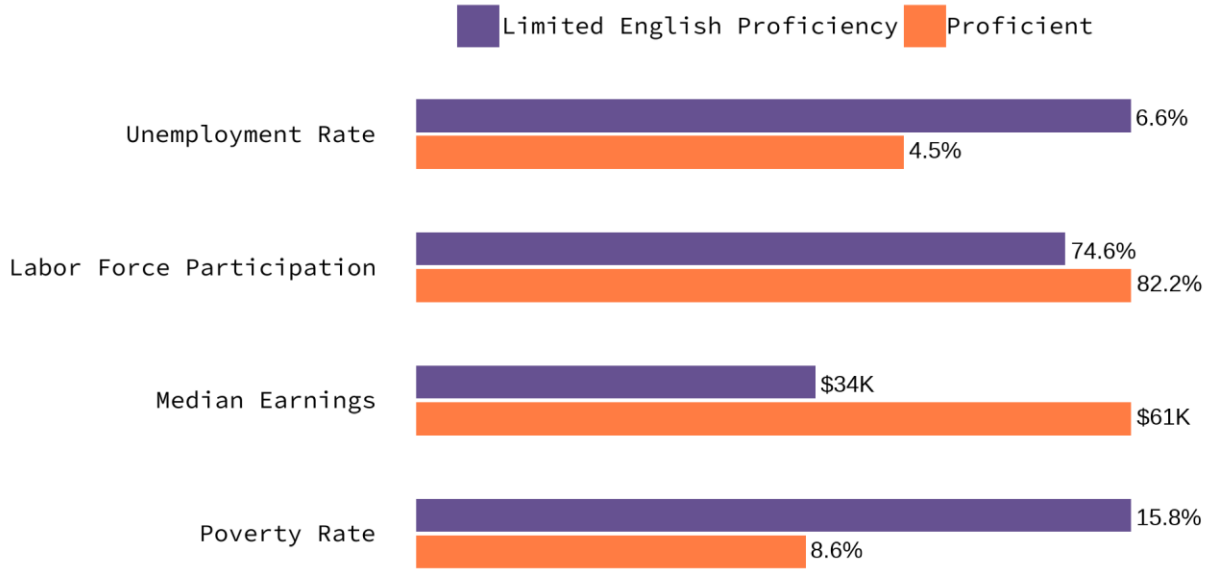
Labor Market Outcomes

Foreign-born workers with LEP experience significantly worse labor market outcomes compared to their English-proficient counterparts. Figure 7 illustrates these disparities across four key measures: unemployment rate, labor force participation rate, median annual earnings, and poverty rate. Foreign-born LEP workers have higher unemployment rates, lower labor force participation rates, significantly lower median earnings, and much higher poverty rates. They earn nearly half the annual income and are almost twice as likely to be in poverty.

Figure 7

Labor market outcomes for the foreign-born population by English proficiency status

Massachusetts foreign-born, aged 16-64



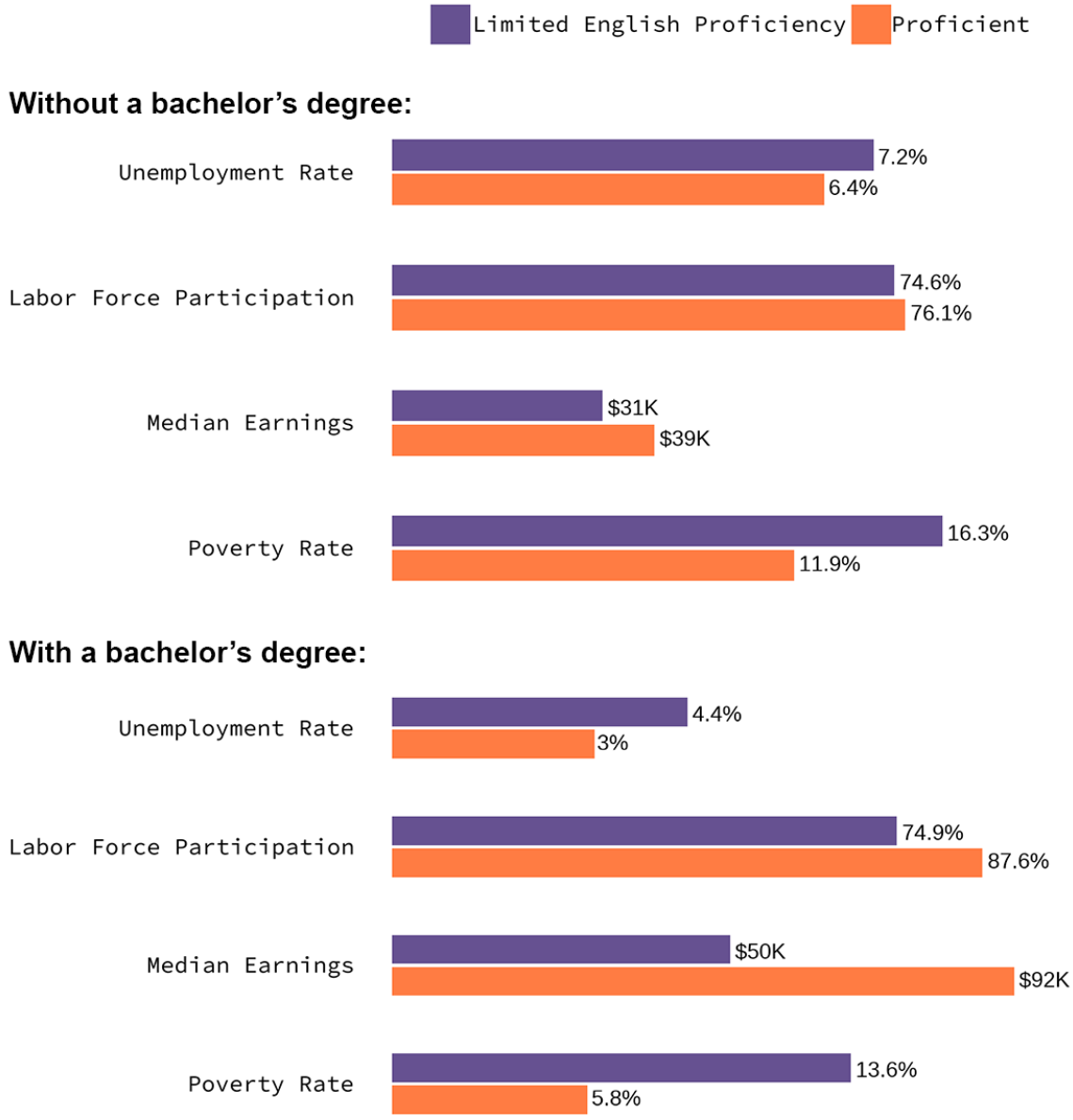
Source: American Community Survey 2022 (5yr) PUMS. English proficiency is defined by respondents who answered 'Very well' or 'Speak only English' to the question 'How well do you speak English?'

However, attributing this disparity solely to limited English proficiency may be inaccurate, as other factors, such as education level, could also play a significant role. Indeed, 50% of proficient foreign-born workers hold bachelor's degrees, compared with only 15% of the limited English foreign-born workers. This difference in educational attainment suggests that the observed disparities may be partly due to overall skill and education level. To better isolate the impact of English proficiency, it is necessary to control for education level. The following two graphs in Figure 8 examine labor market outcomes by English proficiency status for those who have a bachelor's degree separately from those who do not. By comparing individuals with similar educational backgrounds, the impact of limited English proficiency on labor market outcomes can be more accurately assessed.

Figure 8

Labor market outcomes for the foreign-born population with and without a bachelor's degree by English proficiency status

Massachusetts foreign-born, aged 16-64



Source: American Community Survey 2022 (5yr) PUMS. English proficiency is defined by respondents who answered 'Very well' or 'Speak only English' to the question 'How well do you speak English?'

English proficiency has a significant impact on labor market outcomes for foreign-born individuals in Massachusetts, regardless of their educational attainment. Foreign-born LEP individuals of working age have higher unemployment rates, lower labor force participation rates, earn less, and are more likely to be in poverty than those who are proficient in English across both levels of

education. This demonstrates that limited English proficiency is a significant barrier to employment, even controlling for education.

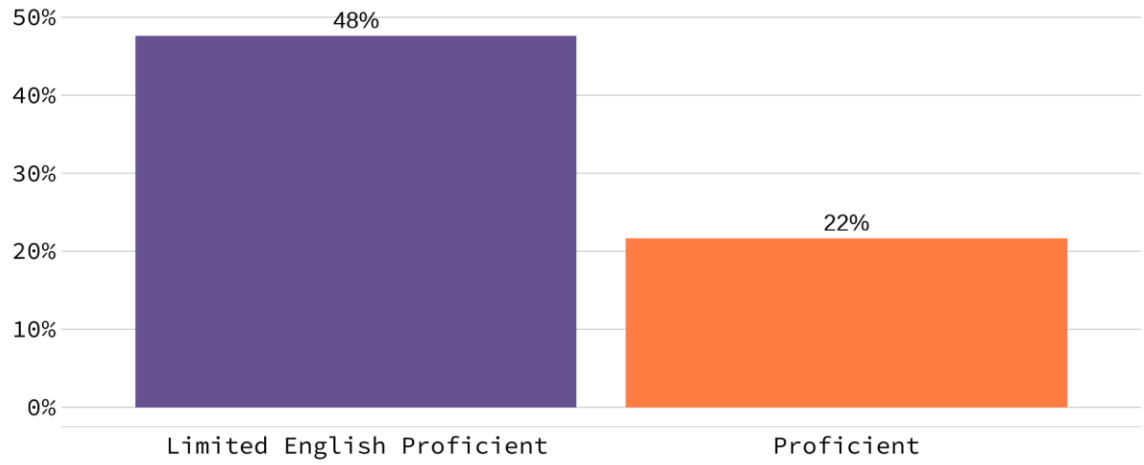
However, the discrepancies are more pronounced for those who are more educated. The median LEP worker with a bachelor's degree earns $50,000 annually, nearly half of the $92,000 that the median English proficient worker earns with a bachelor's degree. In comparison, the median earnings of LEP workers without a bachelor's degree are much closer to the earnings of comparable proficient workers ($31,000 vs. $39,000). This result suggests that LEP limits the earnings potential of higher-skilled workers, preventing them from fully leveraging their education in the labor market. This is consistent with data presented in the MassINC report which found that among bachelor's degree holders, those who spoke English "Very Well" earn approximately $30,000 more per year than those who speak English "Well", further highlighting the economic benefits of strong English proficiency for highly educated immigrants (*Massachusetts Needs an Actionable Strategy to Expand ESOL Services*, 2024).

The significant earnings gap among highly educated workers likely stems from underemployment, which occurs when individuals with a bachelor's degree work in jobs that do not typically require that level of education. One explanation is that LEP prevents workers from securing jobs that fully utilize their specialized skills, forcing them to accept lower-skilled and lower-paying positions. To investigate this further, Figure 9 compares the rate of underemployment among foreign-born LEP workers with a bachelor's degree to the rate among their English proficient counterparts.

Figure 9

Underemployment rates for foreign-born workers with bachelor's degrees by English proficiency status

Massachusetts | Percent of workers with bachelor's degree in jobs not typically requiring bachelor's degree



Source: American Community Survey 2022 (5yr) PUMS. Includes workers aged 25+. English proficiency is defined by respondents who answered 'Very well' or 'Speak only English' to the question 'How well do you speak English?'. For comparison, the underemployment rate among Massachusetts workers born in the U.S. was roughly 27%

Underemployment is more than twice as common among foreign-born LEP workers than among comparable English proficient workers, as 48% of LEP workers are underemployed compared to 22% of English proficient workers. These college-educated LEP workers commonly work as Accounting and Auditing Clerks, Childcare Workers, and Office Clerks.

This substantial difference in underemployment demonstrates that limited English proficiency is a major barrier to employment for this population, preventing them from securing jobs that leverage their specialized skills. Since they already have higher-level skills, English proficiency is likely a significant barrier holding them back from higher-paying roles.

In 2023, there were an estimated 30,000 underemployed foreign-born LEP workers with a bachelor's degree for whom ESOL programs would be likely to have a significant impact. Since LEP workers with a bachelor's degree already have higher-level skills, improved English proficiency could be the key to unlocking their full earnings potential. However, the ability of these workers to utilize their higher education in the labor market may depend on the region in which they live.

For example, Greater Boston, which is home to the largest number of foreign-born workers with a bachelor's degree, has the lowest rate of underemployment for this group at 42%. This is significantly lower than in other regions. For example, in the Northeast region, the rate of underemployment for LEP workers with bachelor's degrees is 61%, and in the Berkshires, it reaches 94%. This suggests that there are more jobs in Boston that can utilize high-skilled foreign-born workers even if they are LEP. In addition, the sheer size of Greater Boston's economy may offer more opportunities in general. Outside of Boston, LEP underemployment rates tend to be much higher. These trends suggest that strategies aimed at reducing barriers for LEP workers with a bachelor's degree might need to be tailored to the specific regional context. Simply improving English proficiency may not be enough to overcome the challenges faced by LEP workers in regions with less diversified economies or fewer jobs requiring a bachelor's degree. A more comprehensive approach that considers regional variations in industry mix, employer attitudes, and support networks is likely needed to effectively address underemployment among this population.

LEP as a Barrier to Employment

In summary, the data strongly suggests that limited English proficiency (LEP) is a barrier to employment for foreign-born workers. Those who have gaps in their English skills have significantly worse labor market outcomes than those who are proficient in English. Especially given the recent influx of immigrants to Massachusetts, addressing this barrier is necessary to alleviating skills gaps and allowing this group to thrive in the workforce.

The results of the analysis in this section suggest that targeting ESOL resources to new arrivals (those who have arrived in the U.S. in the past 4 years) and underemployed individuals (those with bachelor's degrees working in jobs that that do not typically require that level of education) could have the biggest impact on job outcomes. While other segments of the LEP population would likely still benefit from ESOL programs, limited English proficiency appears to pose the biggest barrier to employment for these two groups.

Addressing this barrier across Massachusetts will require working with regional partners, given that the regions face different economic landscapes. For instance, underemployment is less common for bachelor's-educated LEP workers in Greater Boston than it is in other Workforce Skills Cabinet regions, likely because there are more opportunities for these workers to use their specialized skills. One way to help LEP workers in regions with fewer opportunities is to support initiatives that cultivate English skills in the context of in-demand jobs. As an example, the Cape & Islands Workforce Board has helped create a healthcare-specific ESOL program at Cape Cod Community College, which gives LEP

individuals on the Cape the skills necessary for employment in the healthcare sector. These kinds of programs may be effective in addressing gaps in both specialized and English skills across the regions.

The Implications of Skills Barriers

This analysis has highlighted the potential for significant barriers to employment from skills gaps—situations where workers lack the skills that employers seek, making it difficult to secure their desired job. Two types of skills gaps have been considered—gaps in specialized skills and gaps in English language proficiency. The findings indicate that the impact of these gaps varies based on factors such as occupation, region, and education level.

Key findings in this section include:

- **Limited Impact of Rapid Skill Change:** While rapid changes in skills demanded within occupations do create challenges, the data suggests that this "skills disruption" is not widespread. However, Software Developers and workers in other Computer and Mathematical occupations may struggle to keep up with the change in skills demanded by employers.
- **Postsecondary Program Misalignment:** In the Cape & Islands, Southeast, and Berkshires, a mismatch exists between the areas of study of local postsecondary graduates and the in-demand jobs in the region. This misalignment is due to several factors, including:
  - **Program Discrepancies:** There is high demand for workers with medical, business, and teaching skills, while local graduates tend to major in general studies or liberal arts.
  - **Specialized Program Scarcity:** Some specialized programs are not feasible to offer, forcing residents from smaller and more rural regions to relocate for training, presenting a potential barrier.
  - **Limited Access:** Residents of the Cape & Islands and the Berkshires, in particular, have limited access to postsecondary institutions that serve the local population.
- **English Proficiency as a Barrier:** Limited English proficiency significantly hinders employment prospects for foreign-born workers. Those with LEP are more likely to be unemployed, earn lower wages, and live in poverty than their English proficient counterparts. Notably, the lack of English skills is particularly detrimental for those with a bachelor's degree. The data suggests that ESOL programs should be prioritized for two groups with limited English proficiency:
  - **New arrivals:** Individuals who have been in the U.S. for less than 4 years (estimated at 80,000 in 2023, and likely higher in 2024).
  - **Underemployed college graduates:** Individuals with bachelor's degrees working in jobs that don't utilize those skills (estimated at 30,000 in 2023).

Addressing these skills gaps requires region-specific strategies. Potential approaches include expanding ESOL access in conjunction with in-demand specialized skills for a particular region, encouraging postsecondary educators to update curricula in areas with high misalignment, or working with industry partners to reskill incumbent workers in occupations with rapidly changing skill requirements. Without these interventions, workers facing these skills gaps will likely continue to experience low labor market outcomes. Continued monitoring and research should be conducted to support the development of effective strategies in each region.

Geographic Barriers to Employment

Geographic barriers to employment pose a significant challenge to Massachusetts' economic vitality, creating disparities in access to opportunity and hindering the ability of businesses to thrive. Unlike skills barriers, which can primarily be addressed through training and education, geographic barriers stem from the spatial mismatch between where job seekers live and where jobs are located. This "spatial mismatch" often results in long commutes and higher housing costs near jobs, creating obstacles for workers, particularly in certain regions and occupations. For instance, the Southeast workforce development plan mentions that limited transportation options prevent job seekers from accessing employment and training opportunities. Meanwhile, the Greater Boston plan acknowledges that the high cost of housing and difficult commutes make it challenging to recruit workers from other areas, especially out of state. This section examines these geographic barriers across the Commonwealth, using data on transportation and housing costs to identify areas of concern. The following sections analyze:

- Regional variations in commute times
- The role of personal vehicles in transportation
- Occupational differences in commuting patterns
- The relationship between high unemployment and long commutes
- The impact of housing cost burden
- A combined index of housing and transportation burden to identify the most vulnerable populations

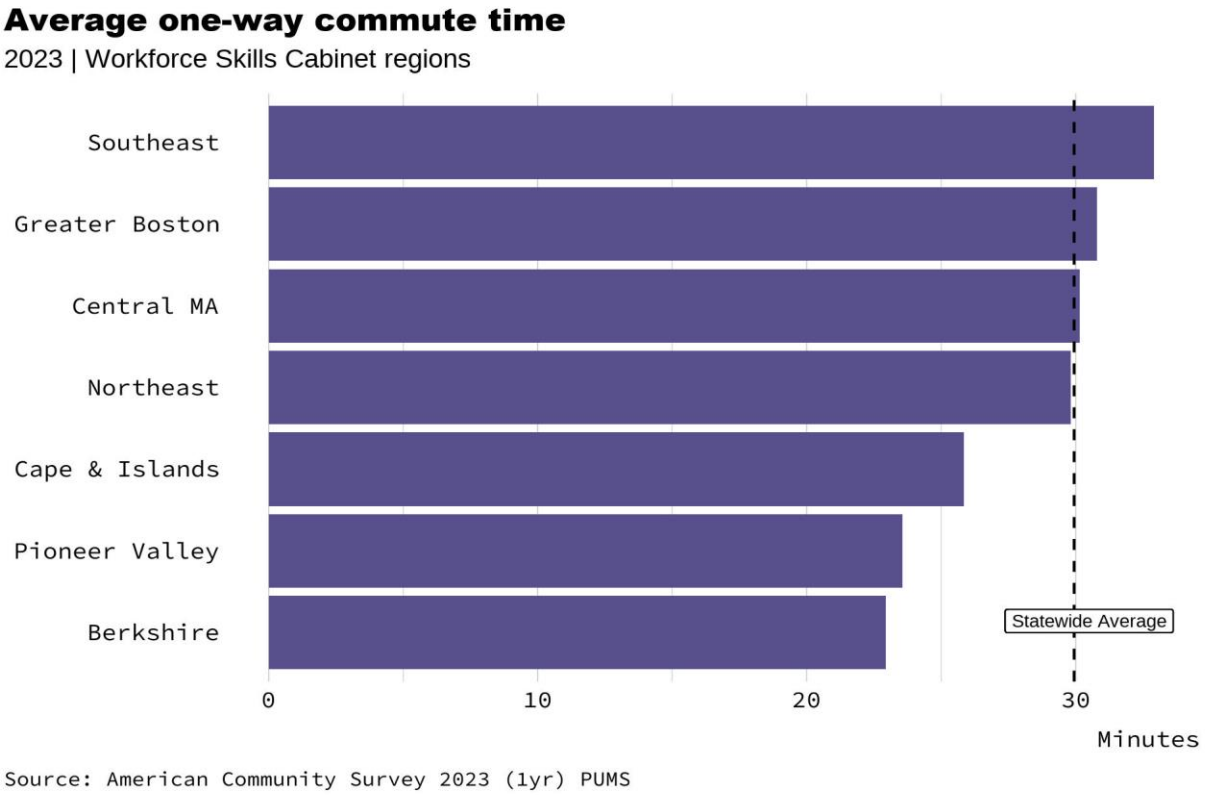
Commute Times and Transportation Challenges

For many workers in Massachusetts, long and difficult commutes are a significant barrier to employment. Particularly in regions with limited transportation options, the time and cost of traveling to and from work can limit job opportunities, reduce overall earnings, and negatively impact work-life balance. Examining both commute times and transportation modes across the state reveals distinct geographic disparities that affect workforce accessibility.

Regional Variations in Commute Times

As shown in Figure 10, average commute times vary considerably across the state, presenting distinct challenges for the workforce in different Workforce Skills Cabinet regions.

Figure 10



The bars in Figure 10 represent the average one-way commute in minutes for workers in the seven Workforce Skills Cabinet regions. For example, workers in the Southeast Region face an average commute of nearly 35 minutes each way, while those in the Berkshire region have a shorter average commute of under 25 minutes.

The Greater Boston Metropolitan, Central, and Northeast Regions experience average commute times that are close to the statewide overage of 30 minutes each way. While not as extreme as the Southeast, these commutes still represent a considerable portion of a worker's day.

It is important to acknowledge that these regional averages do not capture the full picture. There may be significant variation within specific communities or for certain occupations, as will be explored in later sections. Nevertheless, the data underscores a key point: regional disparities in average commute times reveal areas where workers may face greater challenges in accessing and maintaining employment. These disparities contribute to geographic barriers to employment by limiting the range of jobs that workers can reasonably access. Long commutes are generally associated with increased transportation costs, reduced time available for personal activities, and potential negative impacts on work-life balance.

The Dominance of Personal Vehicles and Its Implications

In addition to long commute times, the overwhelming reliance on personal vehicles as the primary mode of transportation to work in Massachusetts contributes to geographic barriers to employment. As illustrated in Figure 11, this trend can create a significant barrier for individuals without access to a car.

Figure 11

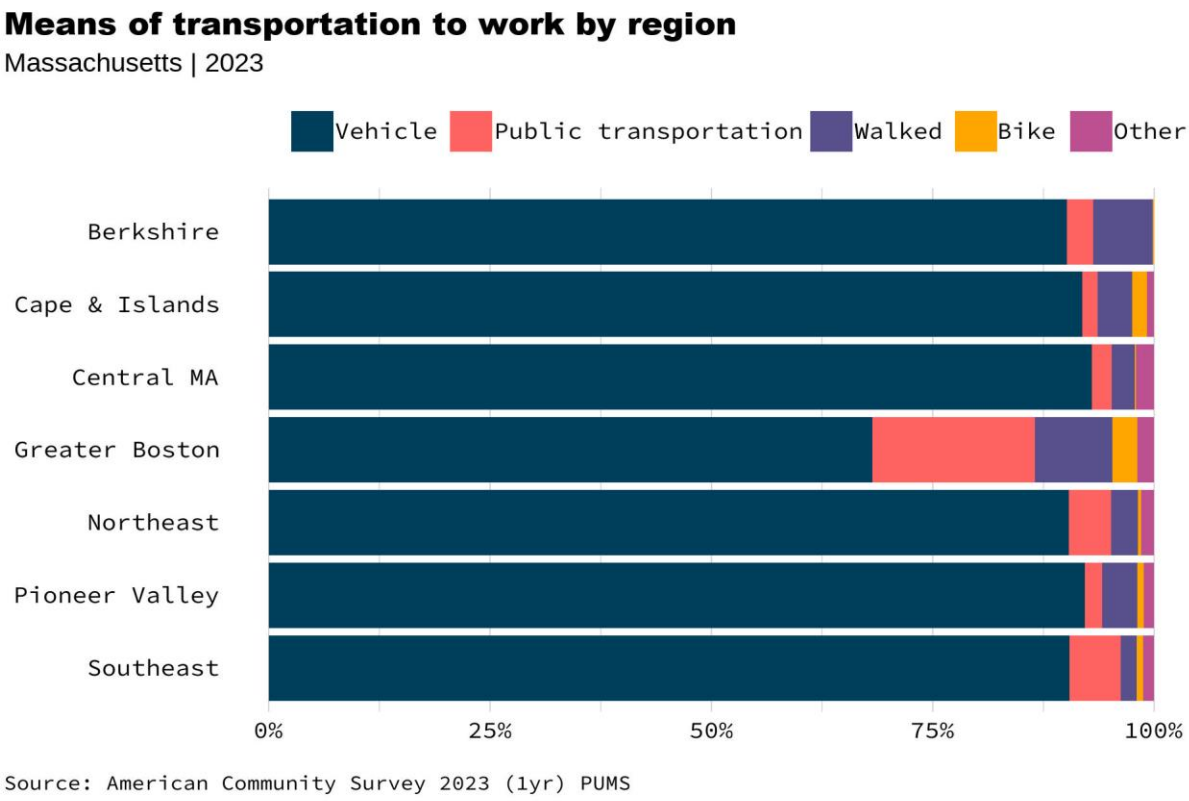


Figure 11 shows the percentage of workers in the region using various means of transportation to get to work, including driving, public transportation, walking, biking, and other options. Each bar represents a specific region, and the segments show the proportion of workers using each mode of transportation.

The data reveals that a large majority of workers in most regions rely on personal vehicles for their commute. In the Berkshire, Cape & Islands, Central, Northeast, Pioneer Valley, and Southeast regions, more than 90% of workers drive to work. This high level of dependence on cars suggests that individuals without access to a vehicle in these areas face a significant disadvantage in the labor market.

Greater Boston stands as a notable exception to this trend. While still high, the reliance on personal vehicles in this region is around two-thirds of workers, considerably lower than other parts of the state. This difference likely reflects the greater availability of public transportation options within the Greater Boston area, including the MBTA subway, bus, and commuter rail systems. These options provide a viable alternative for workers who may not own a car or prefer not to drive in congested urban areas.

However, the high reliance on personal vehicles outside of Greater Boston highlights a critical challenge: limited access to reliable and affordable transportation restricts employment opportunities, particularly for lower-income individuals who may not be able to afford car ownership or the associated costs of fuel, maintenance, and insurance. For individuals without a car, the available jobs may be limited to those within a restricted geographic area, potentially excluding them from better-paying or more suitable positions located further away.

Commute Times by Occupation

While regional variations in commute times provide a broad overview of the challenges faced by workers in Massachusetts, a closer look at commute times by occupation reveals further disparities and specific hurdles faced by certain types of workers. As shown in Figure 12, average commute times vary considerably depending on the nature of the job, with some occupations experiencing significantly longer commutes than others.

Figure 12

Figure 12 displays the average one-way commute time in minutes for selected occupations across the different Workforce Skills Cabinet regions. The color intensity of each cell indicates the average commute time for that occupation in that region, with red representing longer commutes.

As the data shows, Construction and Extraction workers have the longest average commutes across regions, with average travel times exceeding 40 minutes in some areas. This is particularly pronounced in the Central and Southeast regions, where these workers face average commutes of 43 and 41 minutes, respectively. The nature of construction work, which often requires workers to travel

to different project sites, likely contributes to these extended commutes. This creates a specific type of geographic barrier for construction workers, as their job locations are often not fixed and may be far from where they can afford to live. It also means that workers without access to a car or public transit that reaches job sites may not be able to work in construction. Interviews conducted by the UMass Donahue Institute in partnership with the Greater Brockton Workforce Board align with the finding that transportation is a barrier to employment in the construction and trades sector in the Southeast region (Bernstein et al., 2023). Thus, transportation difficulties can make it challenging to attract and retain construction workers, potentially exacerbating labor shortages in the sector across the state.

The data also reveals that certain workers in jobs typically concentrated in urban areas, such as Computer and Mathematical occupations, as well as Architecture and Engineering, also experience longer average commutes. This pattern is especially evident in the Central, Southeast, and Northeast regions. While these workers may have a higher tolerance for longer commutes due to factors like higher salaries or a preference for living in areas with certain amenities, the length of their commutes may also reflect housing affordability issues near major job centers. The high cost of housing in many urban areas may force these workers to live further away from their jobs, leading to longer commutes.

In contrast, occupations requiring on-site presence, such as those in Healthcare Support, Personal Care and Service, and Food Preparation, tend to have shorter average commutes. However, this does not necessarily mean that these workers face no commuting challenges. While the average commute for on-site occupations may be shorter, workers in these fields can still face challenges if they live in areas with a low density of job opportunities. For example, a nursing assistant living in a rural area with few healthcare facilities may have to travel much further to reach the nearest available job than a nursing assistant living in a city with many hospitals and clinics. For these workers, the commute to the nearest available job may be significantly longer than the regional average for their occupation, posing a barrier to employment. The data suggests that geographic proximity to employment is critical for these on-site jobs.

These occupational differences in commute times highlight the complex interplay between occupation, job location, and transportation. The challenges faced by construction workers underscore the need to consider the geographic distribution of projects and the availability of workers in those areas. Mismatches between site locations and workers within a close commuting distance could pose a barrier to meeting the demand for construction workers. Addressing this issue may require strategies such as coordinating place-based workforce development programs with planned construction projects. For high-skilled workers, longer commutes may point to a need for more affordable housing options closer to urban centers or further investment in transportation infrastructure to reduce travel

times. Finally, for occupations requiring on-site presence, ensuring affordable housing is available within a reasonable commuting distance is crucial.

Areas with High Unemployment and Transportation Challenges

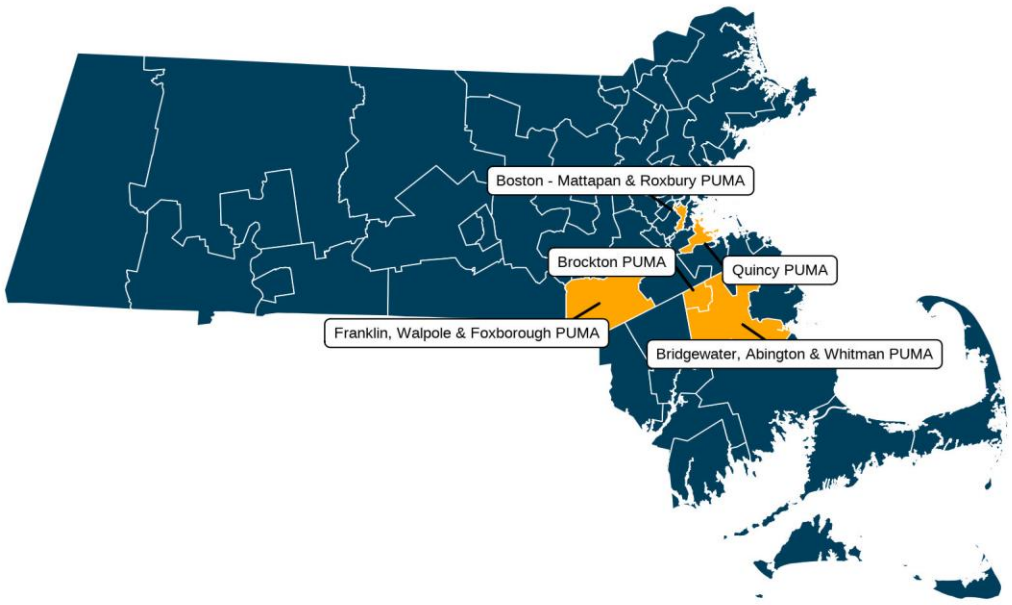
The relationship between unemployment rates and commute times further illuminates geographic barriers to employment in Massachusetts. Examining specific areas reveals a concerning pattern: two distinct types of communities face unique transportation-related challenges that likely contribute to barriers to employment.

In areas like Mattapan and Roxbury in Boston, Quincy, and Brockton, higher unemployment rates are coupled with longer average commute times, as illustrated in Figure 13.

Figure 13

Areas with high unemployment rates and long average commutes

2023 | Massachusetts PUMAS



Source: American Community Survey 2023 (1yr) PUMS

These areas are within or near Greater Boston, suggesting that residents should theoretically have access to a large and diverse job market, yet the unemployment rates significantly exceed the statewide rate in these areas. However, despite their proximity to job centers, workers in these communities face commutes that are either excessively long, burdensome, or unreliable because of inadequate public transportation. For example, in 2023, Mattapan and Roxbury had an average

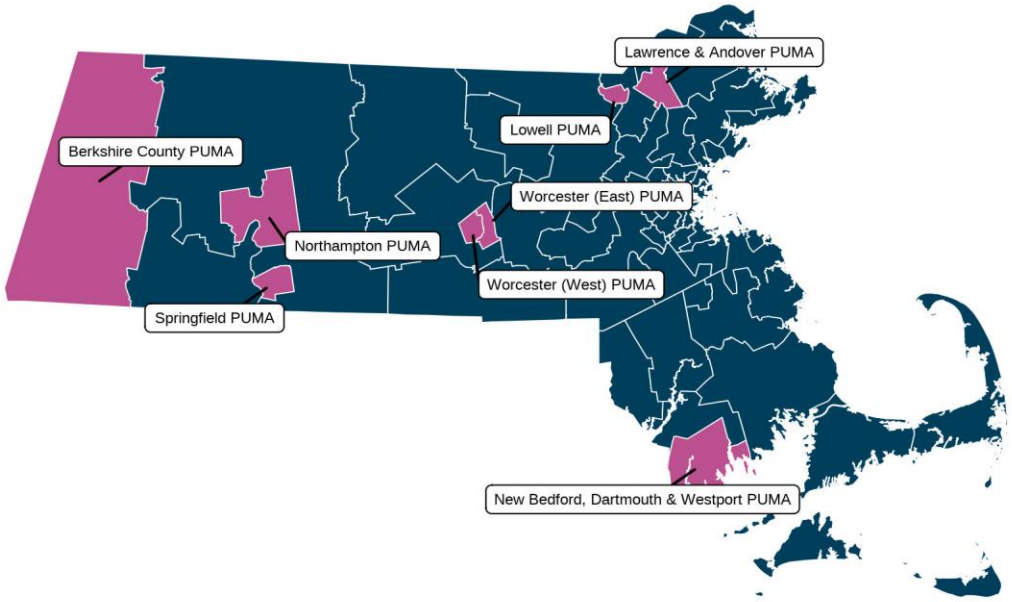
unemployment rate of 9.2% and an average commute time of 34 minutes, while Quincy had an average unemployment rate of 7.5% and an average commute time of 39 minutes. This "spatial mismatch" between residential locations and job opportunities, even within a major metropolitan area, creates a significant barrier to employment.

A second group of areas exhibits a different but equally concerning trend: high unemployment coupled with short average commutes. As shown in Figure 14, these areas include parts of the Berkshires, Springfield, Lowell, Worcester, and New Bedford.

Figure 14

Areas with high unemployment rates and short average commutes

2023 | Massachusetts PUMAS



Source: American Community Survey 2023 (1yr) PUMS

These communities are generally located further from the Greater Boston job center, making daily commutes to Greater Boston less feasible for most workers. The relatively short average commute times in these areas likely indicate that residents are primarily working within their local areas. However, the high unemployment rates suggest a lack of sufficient job opportunities within these communities. For unemployed workers in these areas, the combination of limited local job options and inadequate transportation options to access larger job markets can create barriers to employment. This dynamic reflects how a lack of transportation options may create a barrier to employment for workers in regions that are distant from large job centers.

These patterns reflect a combination of factors:

- **Limited Local Job Opportunities:** A lack of diverse industries and job openings within these communities forces residents to either seek work further away or face unemployment.
- **Inadequate Transportation Infrastructure:** Inefficient or insufficient public transportation options make it difficult, time-consuming, or expensive for residents to access jobs outside their immediate area.
- **Housing Cost Barriers:** The concentration of jobs in high-cost areas may prevent residents of higher-unemployment areas from affording housing closer to job centers.

The data reveals that when suitable jobs are not available locally, and when transportation options to access jobs in other areas are limited or burdensome, residents of high-unemployment areas face a significant disadvantage in the labor market. Whether it is areas within or near Greater Boston with long commutes or areas further afield with limited job options and shorter commutes, this spatial mismatch can trap individuals in a cycle of unemployment, hindering economic mobility and potentially exacerbating existing social and economic inequalities.

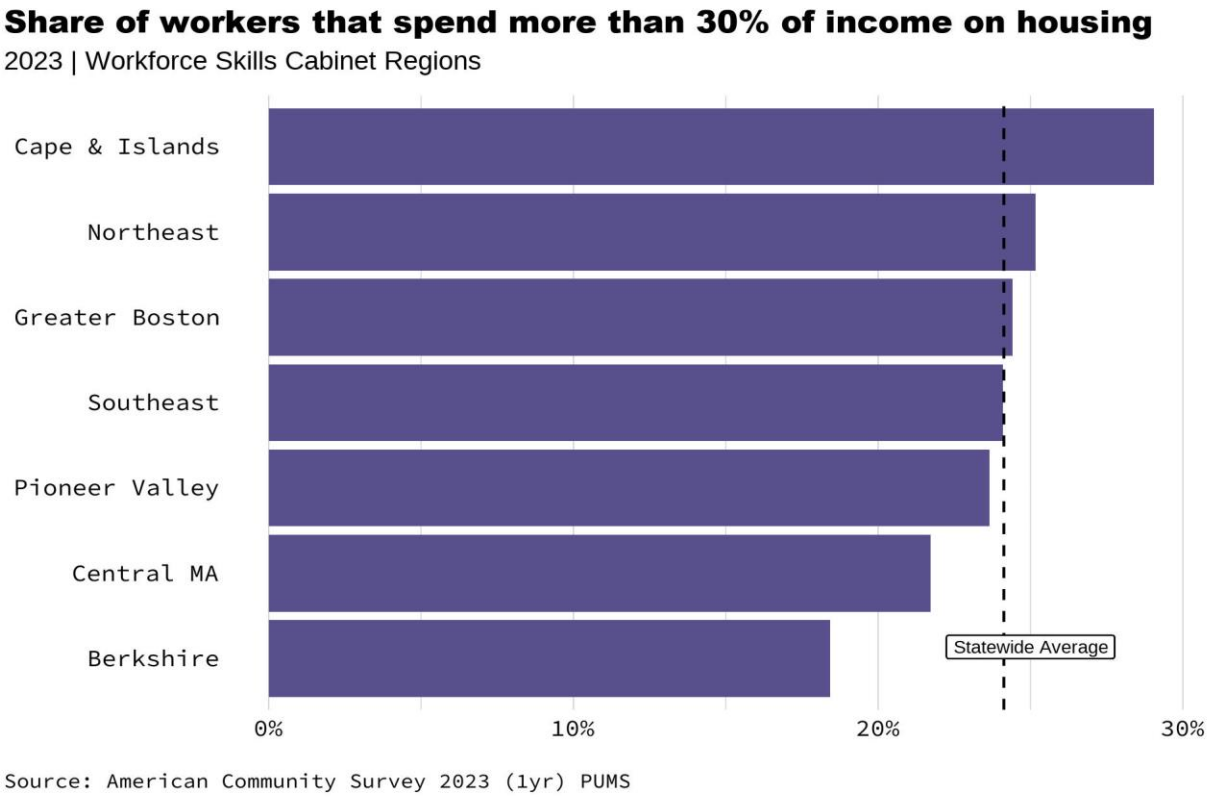
Housing Burden Across Regions and Occupations

Housing costs represent a substantial barrier to employment in Massachusetts, particularly for workers who are "housing burdened," meaning they spend 30% or more of their income on housing. This financial strain can significantly limit their ability to access and maintain employment, creating disparities across both regions and occupations. High housing costs can force workers to live further from their jobs, increasing commute times and transportation costs, or to live in areas with fewer job opportunities. This creates a geographic barrier to employment, as where a worker can afford to live can dictate their job prospects.

Regional Variations in Housing Burden

Figure 15 shows the percentage of workers in each Workforce Skills Cabinet region who spend 30% or more of their income on housing.

Figure 15



As the data shows, the share of housing-burdened workers varies considerably across regions. The Cape & Islands region faces the most significant challenge, with 28% of its workforce classified as housing burdened. This high percentage likely reflects the region's high tourism demand and limited housing availability, which drive up housing costs. In contrast, Berkshire has the lowest rate at 18%, suggesting a more affordable housing market in that region.

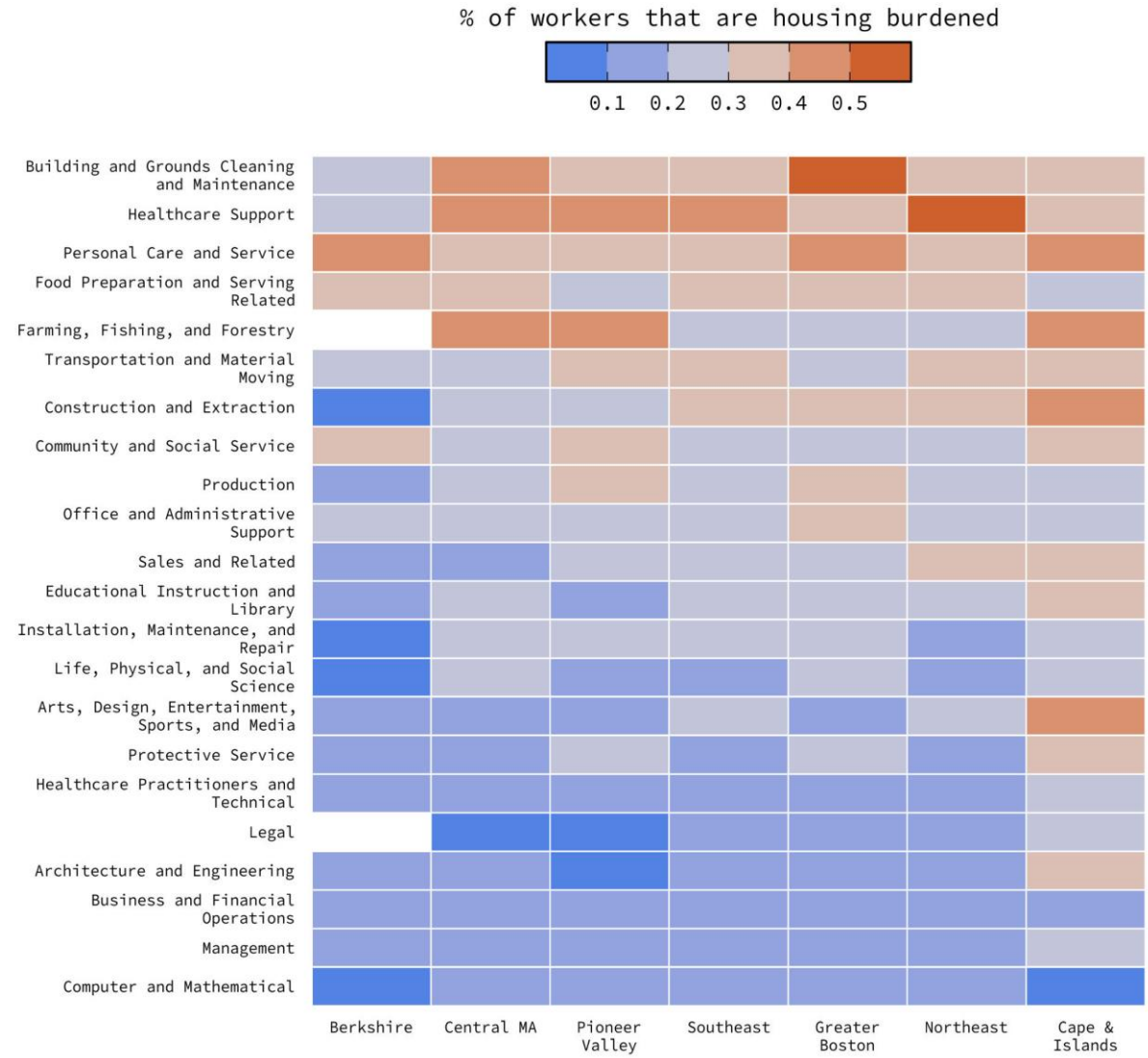
Occupational Disparities in Housing Burden

Figure 16 displays the percentage of workers in selected occupations across different Workforce Skills Cabinet regions who spend 30% or more of their income on housing. The color of each cell indicates the share of housing-burdened workers for that occupation in that region, with red colors representing higher percentages.

Figure 16

Share of workers that spend more than 30% of income on housing by occupation & region

2023 | Massachusetts



Source: American Community Survey 2023 (1yr) PUMS. Blank cells represent insufficient data.

Figure 16 reveals significant disparities in housing burden across different occupations. Lower-wage workers in occupations requiring on-site presence, such as Building Cleaning and Maintenance, Personal Care, and Food Preparation, experience the highest rates of housing burden. For example, in Greater Boston, more than 50% of Building Cleaning and Maintenance workers are housing burdened, compared to just over 20% in Berkshire County. Moreover, 40% of Food Preparation workers in Greater Boston are housing burdened, compared to 13% of Computer and Mathematical workers. Similar disparities are observed in other regions. This stark contrast likely reflects the lower wages paid in these occupations relative to regional housing costs. Workers in these essential roles often struggle

to afford housing within a reasonable commute of their workplaces, particularly in regions with high housing costs. In contrast, workers in higher-paying occupations like Computer and Mathematical, Legal, and Management experience significantly lower housing burden rates. The higher incomes associated with these occupations provide greater flexibility in housing choices and a greater ability to absorb housing costs.

This disparity in housing burden across both regions and occupations contributes to a mismatch between job openings and available workers, particularly for on-site jobs that require workers to live within a reasonable commuting distance. This mismatch represents a geographic barrier to employment, as workers' housing options, dictated by affordability, limit their ability to access certain jobs. Workers struggling with high housing costs may have limited ability to relocate for work, even if job opportunities are available in other regions. They may also be forced to accept lower-paying positions closer to home to minimize transportation costs or may be unable to afford the upfront costs associated with moving, such as security deposits and first month's rent.

The high housing burden among lower-wage, on-site workers creates a significant challenge for employers, making it difficult to attract and retain talent in these essential occupations, particularly in regions with high housing costs. This, in turn, can negatively impact businesses and the overall economy.

Housing burden represents a critical barrier to employment in Massachusetts, affecting workers across different regions and occupations, but with a disproportionate impact on lower-wage workers in on-site jobs. Recognizing the unique challenges faced by workers in different occupations and regions is crucial for developing targeted interventions that can effectively address housing-related barriers to employment and ensure a stable and diverse workforce across Massachusetts.

Combined Housing and Transportation Burden: Identifying Workforce Pressure Points

To gain a more comprehensive understanding of the geographic barriers to employment in Massachusetts, it is essential to consider the combined impact of housing and transportation burdens. By analyzing these two factors together, we can identify specific occupational groups and regions facing the most significant challenges. Figure 17 presents a combined index of housing and transportation burden, where higher scores indicate a greater overall burden.

Figure 17

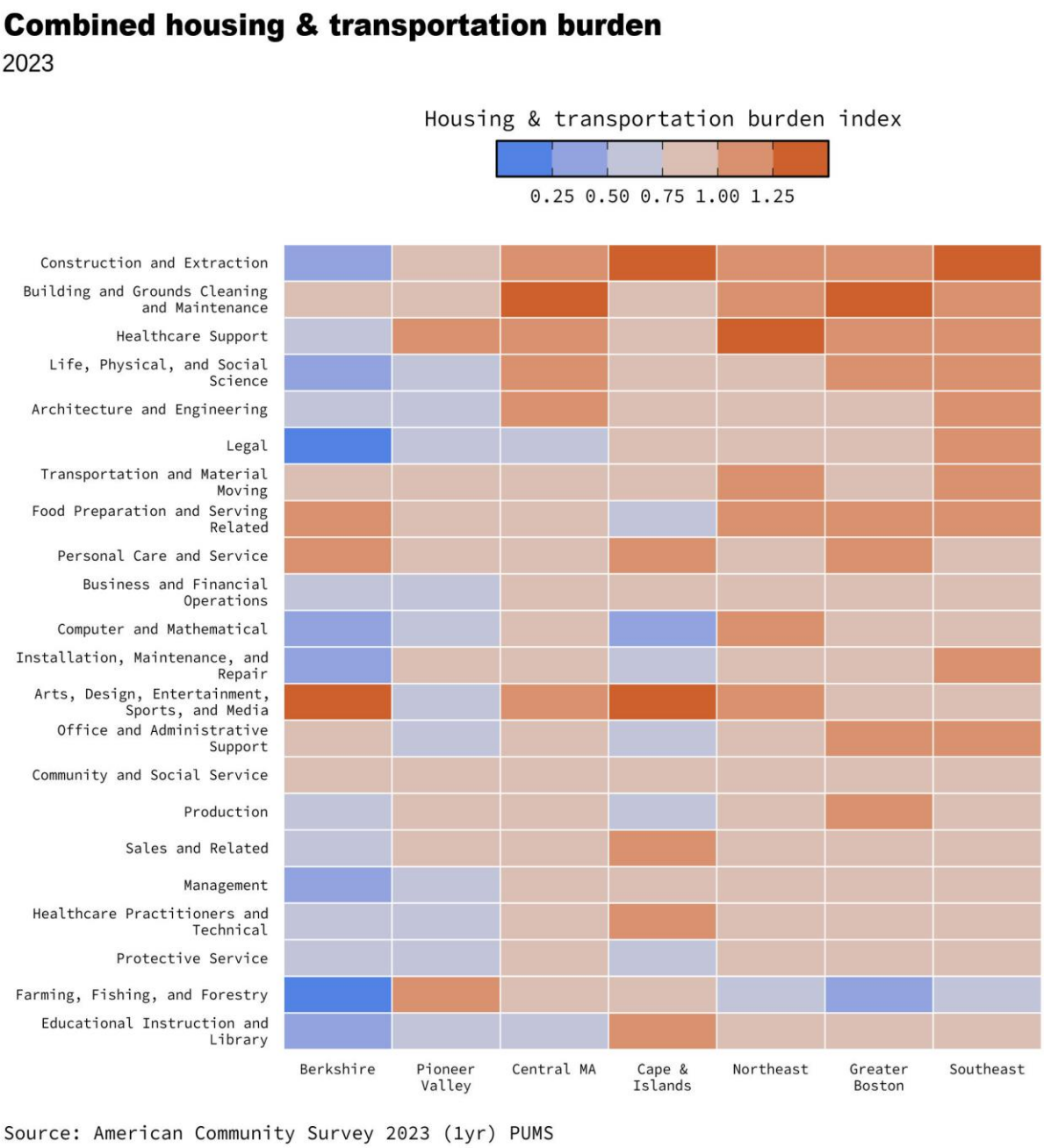


Figure 17 displays the combined housing and transportation burden index scores for selected occupations across different Workforce Skills Cabinet regions. The color intensity of each cell indicates the combined burden score for that occupation in that region, with red colors representing higher scores and thus a greater burden.

The index reveals that Construction and Extraction workers experience a particularly high combined burden across multiple regions. This finding is consistent with earlier sections that highlighted the long commutes and high housing burden faced by workers in this industry. The double

burden of lengthy travel times and high housing costs can create significant barriers to attracting and retaining construction workers, potentially contributing to labor shortages in this critical sector.

Similarly, Building Cleaning and Maintenance and Healthcare Support occupations also exhibit elevated combined burden scores across multiple regions. These essential workers, who often earn lower wages, are disproportionately affected by the high costs of both housing and transportation. The combined burden can make it difficult for individuals in these occupations to find and maintain stable employment, potentially leading to high turnover rates and challenges for employers seeking to fill these vital roles. This data further demonstrates how the combined effect of housing and transportation costs contribute to geographic barriers to employment, particularly for lower-wage workers in essential on-site occupations.

The Implications of Geographic Barriers

This analysis has highlighted the potential for significant geographic barriers to employment, driven by the combined effects of long commutes and high housing costs. The data underscores that these challenges are not uniformly distributed across the state but rather vary considerably by region and occupation. Key findings in this section include:

- **Long Commutes and Car Dependence:** Long commute times, especially in the Southeast region and for construction workers statewide, create significant burdens. The overwhelming reliance on personal vehicles across most of the state exacerbates these challenges, particularly for those without access to a car.
- **Housing Burden:** High housing costs, especially in the Cape & Islands and for lower-wage, on-site workers in various regions, limit workers' ability to live near jobs or relocate for job opportunities.
- **Combined Burden:** The combined index of the housing and transportation burden reveals that workers in occupations such as Construction and Extraction, Building Cleaning and Maintenance, and Healthcare Support face particularly severe challenges, often experiencing both long commutes and high housing costs.

These findings show the critical impact of geographic factors on access to employment, particularly for lower-wage workers. This analysis serves as an important step in identifying these geographic disparities, which is essential to work towards a more inclusive and accessible labor market in Massachusetts.

State policies in Massachusetts are actively working to address the geographic barriers to employment highlighted in the report, as evidenced by both the 2024 Affordable Homes Act and the

Massachusetts Department of Transportation's 2024 "Beyond Mobility" transportation plan. The $800 million allocated to the Affordable Housing Trust Fund, coupled with the $425 million for the Housing Stabilization and Investment Trust Fund, aims to catalyze the creation of new affordable units, potentially reducing the spatial mismatch between housing and employment opportunities. Furthermore, the Act promotes the creation of housing near transit nodes, conversion of commercial properties to residential use, and more than $426 million in funding for local housing initiatives. The "Beyond Mobility" plan complements these efforts by outlining a comprehensive strategy that integrates investments in housing, transit, and multimodal infrastructure to create a more equitable and accessible transportation system. By prioritizing equity, focusing on Environmental Justice communities, and incorporating data-driven decision-making, both the Affordable Homes Act and the "Beyond Mobility" plan focus on reducing disparities in access to opportunity and improving the overall quality of life for all Massachusetts residents. These coordinated state policies represent critical steps toward mitigating the geographic barriers to employment by increasing the availability of affordable housing, improving transit reliability and connectivity, and promoting sustainable and equitable development.

Conclusion

This report fulfills the requirements outlined by the FY25 General Appropriation Act by analyzing four key barriers to employment in Massachusetts identified in the 2024 Workforce Skills Cabinet regional workforce development plans: two types of skills barriers (specialized skill gaps and limited English proficiency) and two types of geographic barriers (long commute times and high housing costs). The analysis reveals that certain regions and occupations are disproportionately affected. Workers in the Cape & Islands, Southeast, and Berkshire regions, along with workers across the state in Computer and Mathematical occupations, face a higher risk of gaps in specialized skills. For foreign-born individuals, limited English proficiency is associated with poor labor market outcomes, particularly for recent immigrants (those in the U.S. for less than four years) and college graduates who are underemployed. Geographically, workers in the Southeast region have the longest average commute times, while those in the Cape & Islands region are most likely to be burdened by high housing costs. These burdens are especially acute for lower-wage, on-site workers in occupations such as Construction and Extraction, Building Cleaning and Maintenance, and Healthcare Support.

Several key takeaways emerge. First, barriers to employment affect workers across the earnings and education spectrum. While lower-wage workers are more vulnerable to high housing costs and transportation challenges, skills gaps impact both higher- and lower- wage workers. Second, the Southeast and the Cape & Islands face a confluence of both skills and geographic barriers, making it difficult for employers to fill jobs with local workers and to attract talent from elsewhere. Third, foreign-born workers with limited English proficiency encounter multiple barriers. Not only do they face a critical skills barrier that negatively impacts labor market outcomes, but they also have a higher likelihood of working in occupations with significant geographic barriers.

Addressing these barriers is crucial for maintaining a robust workforce and ensuring equitable economic opportunities in Massachusetts, especially given the state's aging population and projected slow population growth. The challenges faced by foreign-born workers and residents of the Southeast region are particularly concerning, as these groups represent significant segments of the workforce and often reside in Gateway cities.

Ideally, this report should serve as a catalyst for a broader initiative to further understand and address barriers to employment. While the findings highlight important relationships, further research is needed to establish causality and to explore other significant barriers, such as the high cost of childcare. Future projects should also evaluate the effectiveness of existing programs in addressing these barriers and identify gaps in service provision (see Section A of the Appendix for a list of

programs). As new policies and programs are developed and implemented, ongoing monitoring and evaluation will be essential to guide policy and maximize impact.

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Appendix

A. List of Programs Mapping to Each Barrier

The following is a non-exhaustive list of programs that address the four barriers discussed in this report. Most of these were taken from the 2024-2028 Workforce Innovation and Opportunity Act (WIOA) State Plan.

Programs that Address Gaps in Specialized Skills

- MassHire Career Centers Career Technical Initiative (CTI)
- Workforce Training Fund Program (WTFP)
- Adult and Community Learning Services (ACLS)
- Workforce Competitiveness Trust Fund (WCTF)
- Workforce Skills Fund
- MassReconnect / MassEducate
- Competitive Integrated Employment Services (CIES) by MassAbility

Programs that Address Limited English Proficiency

- ESOL classes via Adult and Community Learning Services (ACLS)
- ESOL classes via Employment Supports Services Program by the Office for Refugees and Immigrants (ORI)
- English Acquisition programs via SNAP

Programs that Address Lack of Transportation to Work

- Transportation subsidies via TAFDC
- Transportation subsidies via SNAP
- Path to Work program
- Flexible funds via Secure Jobs Program
- MBTA Reduced Fare Program Transition Access Pass Program
- "Wheels to Work" program via Good News Garage & MassAbility

Programs that Address Lack of Affordable Housing

- Secure Jobs Program by DTA & Executive Office of Housing and Livable Communities (EOHLC)
- Public Housing Program by EOHLC
- Rental Assistance Program by EOHLC

- Down payment assistance programs by MassHousing
- One Mortgage Program by Massachusetts Housing Partnership

B. Rapid Skill Change Occupations

Examples of Occupations with Variation in Rapid Skill Change among Regions

Occupation	Regions where rapid skill change has occurred	Regions where rapid skill change has not occurred	Regions with fewer than 35 postings for this occupation
Financial and Investment Analysts	Southeast Central MA Pioneer Valley	Greater Boston Northeast	Berkshire Cape & Islands
Medical Assistants	Northeast Central MA	Berkshire Cape & Islands Greater Boston Southeast Pioneer Valley	
Architectural and Engineering Managers	Southeast Pioneer Valley Northeast Central MA	Greater Boston	Berkshire Cape & Islands
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Central MA	Berkshire Greater Boston Southeast Northeast Pioneer Valley	
Healthcare Social Workers	Pioneer Valley Cape & Islands	Greater Boston Central MA Northeast Southeast	
Precision Instrument and Equipment Repairers, All Other	Greater Boston	Northeast Southeast Central MA Pioneer Valley	Berkshire Cape & Islands

Occupations Just Above/Below the 75th Percentile Cutoff that Defines Rapid Skill Change

Just Below:

- Grinding and Polishing Workers, Hand
- Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers
- Biological Scientists, All Other
- Psychiatric Technicians
- Electrical Power-Line Installers and Repairers

Just Above:

- Civil Engineers
- Drafters, All Other
- Survey Researchers
- Computer Systems Analysts
- Credit Analysts

C. Estimating Demand & Supply for Postsecondary Graduates

Steps to Estimate Demand

1. Annual job openings by occupation and region are taken from an unsuppressed version of Long Term Occupational Projections (2022-2032). A public version of this data can be found here.
2. Data is extracted from job postings from November 2023 - October 2024 to estimate the percentage of annual openings that require postsecondary training per occupation and region. The minimum required education level is tagged by Lightcast when it is listed in the posting. Job postings tagged as requiring an "Associate's", "Bachelor's", "Master's", or "PhD or professional degree" are considered to require postsecondary training, while those tagged as requiring "High school or GED" are not. However, many job postings do not list education at all. Thus, the the Bureau of Labor Statistics' "Typical Entry Level Education" classification is used to help determine if those postings are more likely to require postsecondary training (and do not list education because it is obvious), or not (and do not list because no formal education is required).

3. Multiplying projected total openings by the percentage of openings that require postsecondary training yields estimates of demand for postsecondary graduates for each occupation and region.

Steps to Estimate Supply

1. 2023 completions data from accredited programs of Massachusetts institutions is taken from the Integrated Postsecondary Education Data System (IPEDS). This covers all graduates earning associate's, bachelor's, master's, and doctoral degrees, as well as postsecondary awards, certificates, and diplomas.
2. A crosswalk published by the Bureau of Labor Statistics and the National Center for Education Statistics is used to establish which programs map to which occupations based on the skills they provide graduates.
3. The relative share of state employment is used to allocate graduates of a program to the corresponding occupations from the crosswalk. For example, the table below shows how the 210 graduates of Boston University's Biomedical Engineering program are allocated to three different occupations.

Occupation	State Employment	Share of State Employment	Number of Graduates
Architectural and Engineering Managers	7,040	62%	129
Bioengineers and Biomedical Engineers	2,920	25%	53
Engineering Teachers, Postsecondary	1,530	13%	28

4. Adding up all graduates that map to each occupation in a region yields estimates of the supply of postsecondary graduates.

D. Measuring Occupational Misalignment

To quantify occupational misalignment, a measure called the index of dissimilarity is used to compare the distribution of projected openings and completions over occupations. This measure is created for each region separately. The formula is as follows:

$$D = \frac{1}{2}\sum_{i=1}^{N}\left|\frac{a_i}{A} - \frac{b_i}{B}\right|$$

Where a_i is the number of annual projected openings in occupation i, A is the total number of annual projected openings, b_i is the number of completions at postsecondary institutions in 2023 mapped to occupation i, and B is the total number of completions at postsecondary institutions in 2023.

The resulting measure of misalignment, D, can range from 0 to 1. A score of 0 would mean that openings and completions are distributed evenly across occupations, while a score of 0.5 would mean that 50% of completions would need to exchange places with openings in other occupations to achieve an even distribution.

Given that the mapping of completions to occupations is roughly estimated, this calculation results in a relatively high measure across all regions. To simplify, the resulting values are categorized as low, medium, or high relative to each other. Low occupational misalignment is between 0.46 to 0.5. Medium occupational misalignment is between 0.5 and 0.57. High occupational misalignment is greater than 0.7.