

# Labor Market Trends in the **Central Mass Region**

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*This profile was developed by Robert Clifford, a policy analyst at the New England Public Policy Center.*

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## EXECUTIVE SUMMARY

Using the most recent data available, the Central Mass regional labor market profile provides a detailed picture of the region's current and future labor supply.<sup>1</sup> For context, it also provides detailed information on labor demand in the region over the past decade. This profile is designed to help guide workforce development professionals, policy makers, and civic, education, and business leaders as they make decisions about education and training opportunities.

The charts and analysis are divided into three sections:

1. Labor Supply: Demographic Trends of Residents Who Live in Central Mass
2. Labor Demand: Employment Trends of Jobs and Workers in Central Mass
3. The Pipeline: Educational Supply of Post-Secondary Degrees Granted by Institutions Located in Central Mass

The past decade has been challenging for the Central Mass labor market. After two recessions and a decade of declining employment, the region is now gaining jobs and recovering at a modest pace. Compared with other regions of the state, however, the recent recovery from the Great Recession has been somewhat slower in Central Mass. The region falls in the middle of the pack compared with other regional labor markets and trails statewide growth. While the recovery of the labor market is in its earliest stages, the region has had a varied employment situation, with strong growth in industries such as Transportation & Warehousing and Other Services but declines in others such as Educational Services and Wholesale Trade. In contrast, Massachusetts has had a stronger recovery in its earliest stages, with modest gains in most industries.

Although Central Mass has lost jobs over the course of the past decade, the region has gained population. In fact, Central Mass had the fastest growing residential population of all regional labor markets in Massachusetts, increasing at an annual rate of 0.7 percent be-

tween 2000 and 2008-2010. Central Mass also exceeded all other regional labor markets in the growth of its working-age population and its civilian labor force over this time period. One of the major contributing factors to the region's population growth was the increasing number of immigrants settling in Central Mass. With a slowly growing native-born population, a majority of the growth in the population of Central Mass came from immigrants. Moreover, the growth of immigrants in the region's residential and working-age populations and civilian labor force consistently exceeded the rates in Massachusetts and the United States over the course of the decade.

The residents and workforce of Central Mass (which includes people who commute from other regions and other states) have education levels that are similar to those of their counterparts in the United States but are also lower than the state average. Over the past decade, the region saw progressively higher levels of educational attainment among its residents and workforce, but a High School Degree con-

<sup>1</sup>This profile builds on the work of the 2008 regional labor market profiles completed by Paul Harrington and Neeta Fogg, formerly at Northeastern University's Center for Labor Market Studies. This work employs their methodology and includes expanded analysis of the educational attainment of the region's population, more detailed analysis of the distribution of occupations by industry, and a review of trends over a longer time period.

Please visit [www.bostonfed.org/neppc](http://www.bostonfed.org/neppc) for appendices describing geography and methodology, and for additional data.

tinued to be the most common level of attainment. In 2008-2010, the share of the civilian labor force in the region with a Bachelor's Degree or higher trailed the share of Massachusetts residents with comparable educational attainment (34.5 percent versus 41.2 percent). Nonetheless, the share of the region's civilian labor force with at least some post-secondary education (64.4 percent) was closer to the share in Massachusetts (67.8 percent) because of the strong concentration of individuals in Central Mass with Certificates or Associate's Degrees.

Looking forward, the region faces the demographic challenges of an aging population and potential shortfalls in workers with the educational levels required by employers. In 2008-2010, 45.2 percent of the region's civilian labor force was 45 years or older, while only 31.6 percent was 34 or younger. This suggests that the region's businesses may face a potential overall shortage of younger workers to replace baby boomers as they retire in the coming decades. And while the region's residents have obtained higher levels of education in the past decade, slow growth among those with Some College or an Associate's Degree may result in

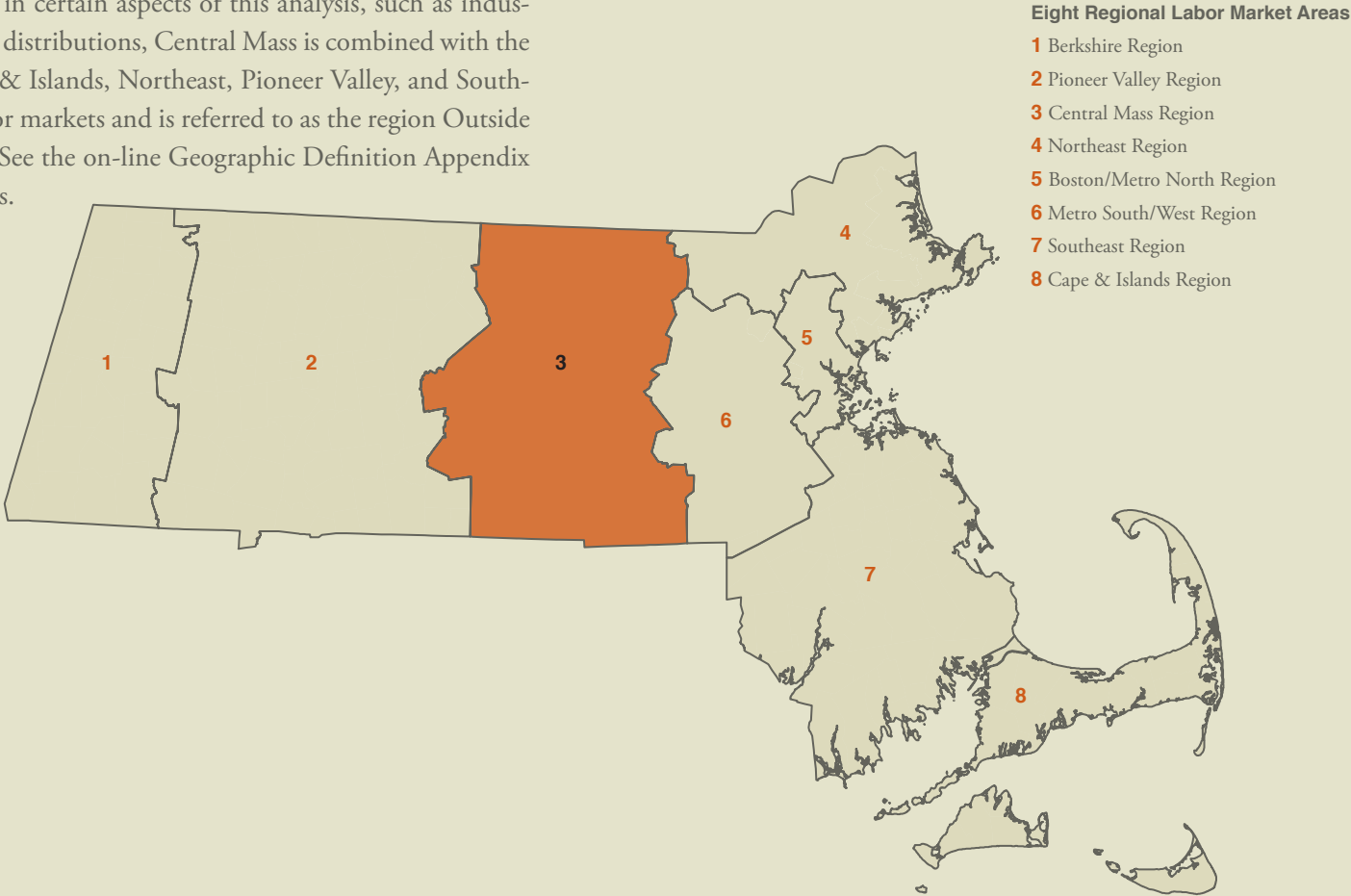
a shortage of younger residents and workers with the skills to replace baby boomers as they retire. Further, Central Mass is not a major destination for workers from other labor markets. Most of the region's employees are also residents of Central Mass (81.3 percent), and the region may face difficulty in filling any labor shortages by attracting commuters, particularly in positions with low education requirements and low pay that are traditionally filled by less mobile populations. However, people who are younger than 35 years old represent nearly 45 percent of the region's unemployed, despite accounting for only 31.6 percent of the region's civilian labor force. Thus, younger workers, who are disproportionately unemployed, may provide a future supply of labor if they have the education and skills to meet the demands of employers.

To foster strong economic growth in the future, Central Mass should strive to align the education of its labor force to meet the demands of the region's employers. The higher education institutions in the region can play a key role in influencing the future supply of workers with post-secondary degrees. This supply will

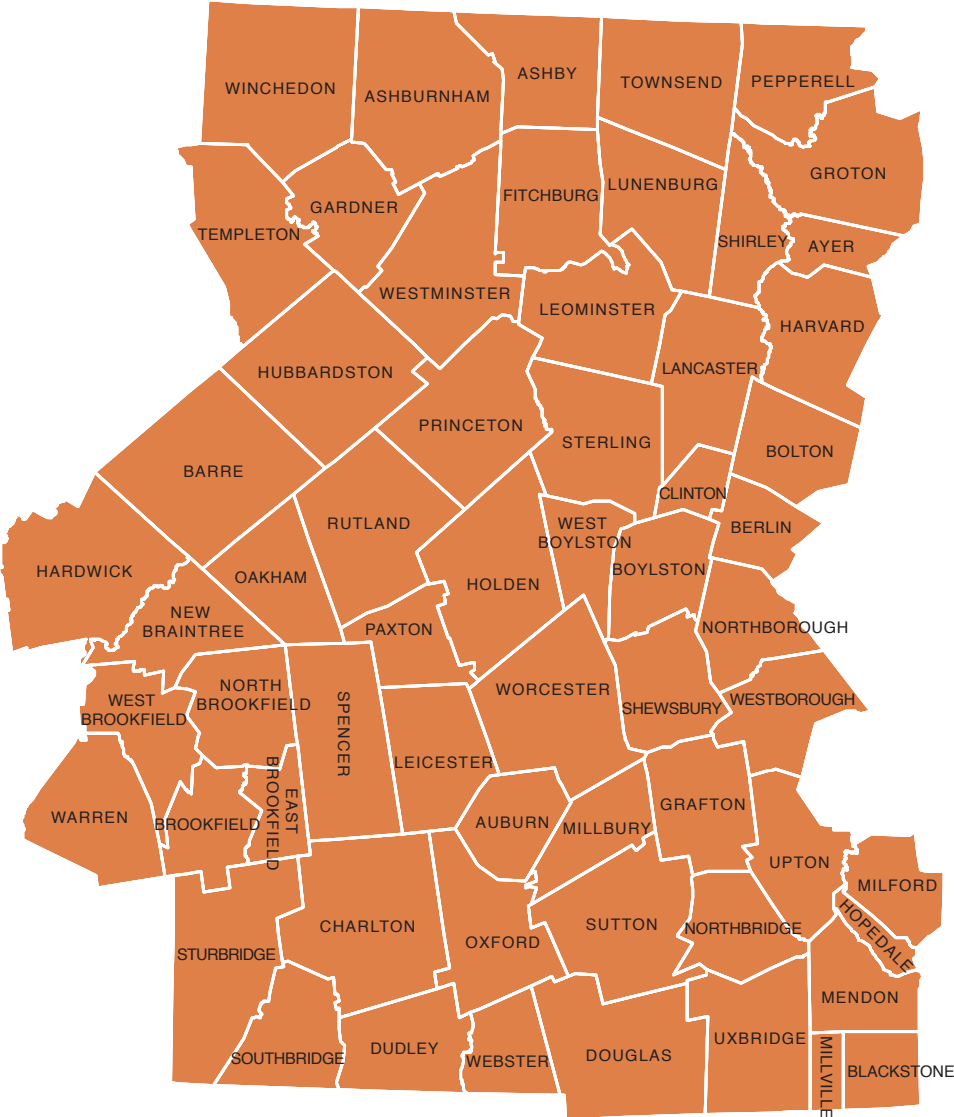
be critical to help meet the demographic challenges posed by the aging workforce and the increasing demand for educated workers. National and state enrollment patterns indicate that more individuals sought post-secondary education over the past decade. In Central Mass, growth in full-time enrollment at less-than-two-, two-, and four-year institutions and in part-time enrollment at less-than-two-year and two-year institutions exceeded state rates during the same period. And more students in the region have completed post-secondary degrees (Certificates, Associate's Degrees, and Bachelor's Degrees), exceeding the growth in such degrees in Massachusetts. An increase in the number of degrees completed has translated to strong growth in most major fields of study for each degree type. In particular, the number of people earning Certificates and Associate's Degrees has increased in the fields of Health Sciences, Services, and Business, potentially reflecting the region's increasing demand for "middle-skill" workers in such fields.

# GEOGRAPHY OF THE REGIONAL LABOR MARKETS

The Central Mass labor market borders three other regional labor markets: Pioneer Valley, Northeast, and Metro South/West. It is composed of 61 Massachusetts cities and towns covering all of Worcester County and parts of Middlesex County. Along with Worcester, the second most populous city in Massachusetts, the region contains a number of other large cities and towns, including: Leominster, Fitchburg, Shrewsbury, and Milford. Because of data limitations, in certain aspects of this analysis, such as industry/occupational distributions, Central Mass is combined with the Berkshire, Cape & Islands, Northeast, Pioneer Valley, and Southeast regional labor markets and is referred to as the region Outside Greater Boston. See the on-line Geographic Definition Appendix for further details.



# CENTRAL MASS REGION





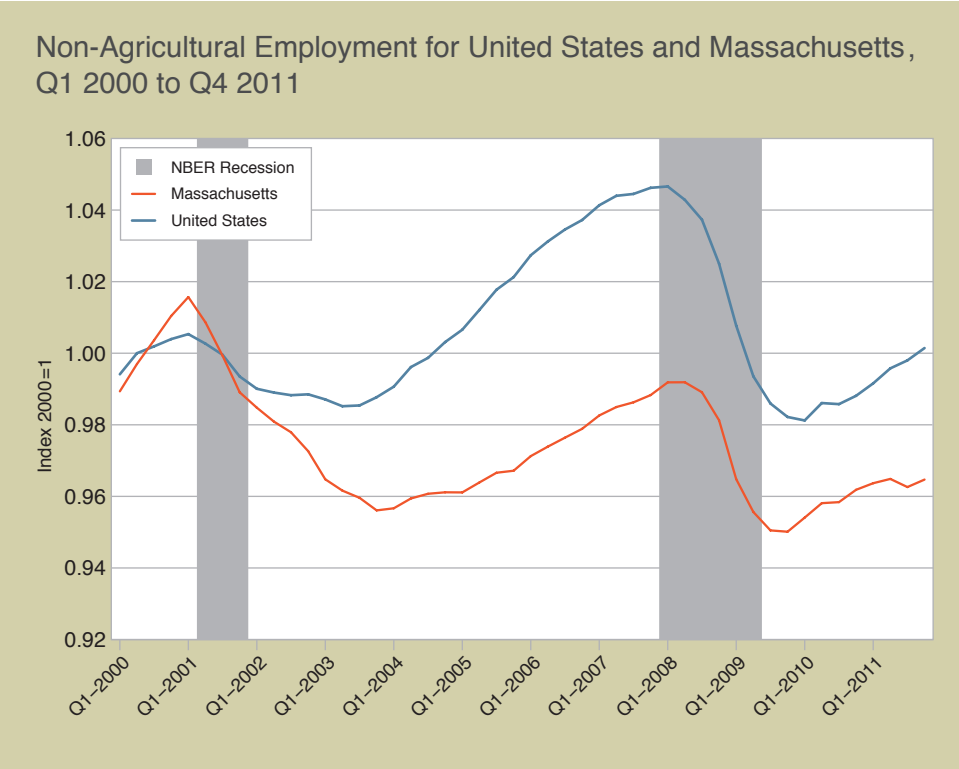
# EMPLOYMENT TRENDS AND RECESSIONS

Massachusetts reached peak employment in 2001 and remained 5.0 percent below its peak (a loss of 169,800 jobs) at the end of 2011. Over the same period, total employment in the United States ended at only 0.4 percent below its 2001 peak (a loss of 513,700 jobs). One reason for the difference was that the short national recession at the beginning of the decade created a prolonged contraction and slow recovery in Massachusetts. By the start of the Great Recession, Massachusetts had still not recovered all of the jobs it had lost during the previous downturn. In contrast, the nation experienced a short labor market contraction in 2001, followed by a strong recovery that expanded employment up until the Great Recession. The Great Recession impacted the nation severely, while Massachusetts experienced a less pronounced downturn, with a slightly stronger recovery through 2010 followed by slower employment growth in 2011.

These differences between Massachusetts and the United States over the economic cycles are important to keep in mind when evaluating the performances of the eight regional labor markets. When possible, these labor market profiles will look at labor market information for the beginning of the millennium, the period preceding the Great Recession, and the decline in and recovery from the Great Recession.

**Source:** US Bureau of Labor Statistics.

**Note:** Shaded bars are National Bureau of Economic Research dated national recessions.



## POPULATION GROWTH TRENDS

The third smallest region by residential population, Central Mass accounted for 10.6 percent of the state’s population in 2008-2010. However, Central Mass has been the fastest growing region in Massachusetts; the region experienced consistent annual population growth of 0.7 percent over the past decade. Between 2000 and 2005-2007, the region’s population grew three times faster than the statewide rate and almost twice as fast as the second fastest growing region (Metro South/West at 0.4 percent). Between 2005-2007 and 2008-2010, labor markets in eastern Massachusetts (in particular, Boston/Metro North, the Northeast, and the Southeast) experienced stronger population growth than earlier in the decade, but they still lagged the growth in Central Mass. Despite leading all regions and far exceeding the state’s population growth, Central Mass trailed the annual 1.0 percent population growth nationwide over the course of the past decade.

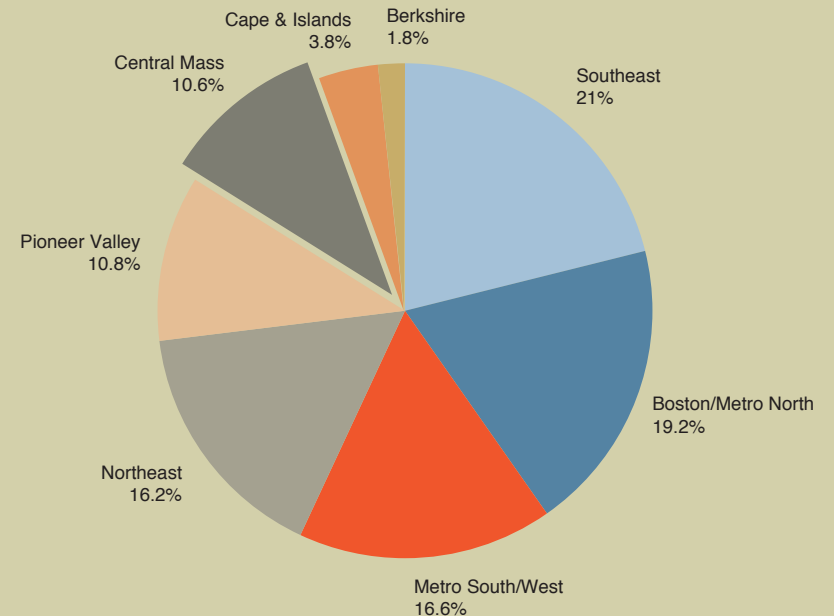
**Source:** US Census Bureau 2000 Decennial Census Public Use Microdata Samples (PUMS) data files, 2005-2007 and 2008-2010 American Community Survey Public Use Micro Sample (PUMS) data files.

**Note:** The use of the three-year American Community Survey was necessary to capture accurate sample size for the small geographic areas. The three-year sample is representative of the demographic and employment characteristics of the region over a 36-month period.

### Annual Growth Rates



### Massachusetts Population Distribution Across Regional Labor Markets, 2008-2010



## DEMOGRAPHIC CHARACTERISTICS OF THE RESIDENT POPULATION OF CENTRAL MASS

Over the past decade, the number of people living in Central Mass increased at an annual rate of 0.7 percent. Strong growth in the region's immigrant population was accompanied by slight growth in the native-born population, which declined in most other regions of the state. The region also became more diverse over the past decade, with strong growth among Black, Asian, and Hispanic populations. In particular, the number of Asian residents in Central Mass nearly doubled between 2000 and 2008-2010. The region's population also became considerably older as baby boomers (born between 1946 and 1964) neared retirement age. In particular, the 55-64-year-old age cohort grew at a robust annual rate of 4.9 percent over the course of the decade, and the cohort of 45-54-year-olds grew the second fastest at 2.3 percent.

**Source:** US Census Bureau 2000 Decennial Census PUMS data files and 2008-2010 American Community Survey PUMS data files.

**Note:** Further data for racial/ethnic and gender characteristics for the residential population, as well as the working-age, civilian labor force, unemployed, and employed populations, are available in the on-line Data Appendix.

	2000	2008-2010	Absolute Change	Annual Growth Rate (Percent)
<b>Resident Population</b>	628,644	667,115	38,471	0.7
<b>Gender</b>				
Male	304,428	325,996	21,568	0.8
Female	324,216	341,119	16,903	0.6
<b>Nativity</b>				
Native Born	557,843	568,814	10,971	0.2
Immigrant	70,801	98,301	27,500	3.7
<b>Race/Ethnicity</b>				
White, non-Hispanic	538,545	534,042	-4,503	-0.1
Black, non-Hispanic	15,628	26,035	10,407	5.8
Asian, non-Hispanic	15,701	28,658	12,957	6.9
Hispanic	46,575	65,550	18,975	3.9
Other race, non-Hispanic	12,195	12,830	635	0.6
<b>Age</b>				
Less than age 16	148,132	142,791	-5,341	-0.4
Age 16-24	62,184	73,151	10,967	1.8
Age 25-34	89,305	80,580	-8,725	-1.1
Age 35-44	110,086	99,029	-11,057	-1.2
Age 45-54	88,698	108,934	20,236	2.3
Age 55-64	50,966	78,624	27,658	4.9
Age 65+	79,273	84,006	4,733	0.6

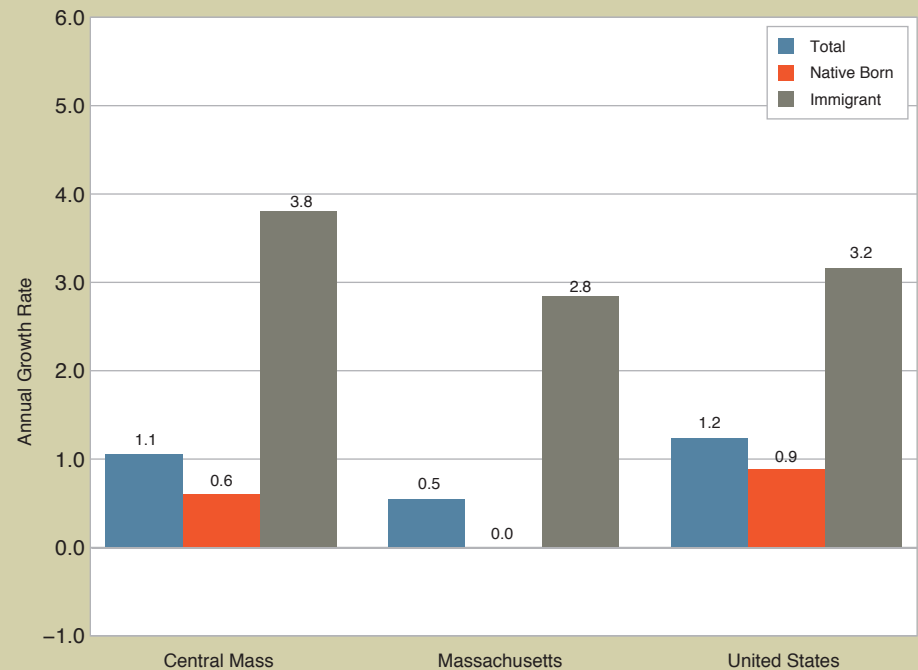
## GROWTH IN THE WORKING-AGE POPULATION BY NATIVITY STATUS

Immigrants in Central Mass have been a major driver of growth in the working-age population (a region's potential labor supply, typically defined as individuals 16 years of age or older). Between 2000 and 2005-2007, the growth of working-age immigrants (3.8 percent) in the region exceeded the growth of working-age immigrants in both Massachusetts and the United States. Combining this strong increase with modest native-born population growth, the total working-age population grew 1.1 percent and far exceeded the growth rate of Massachusetts (0.5 percent). In fact, it was closer to the growth rate in the United States (1.2 percent). As the native-born population in the region stagnated in recent years, stronger annual growth in the immigrant population (5.0 percent) led to an overall growth of the working-age population of 0.8 percent between 2005-2007 and 2008-2010. In comparison, the growth of working-age immigrants slowed in both Massachusetts and the United States, but a growing native-born population buoyed the working-age population.

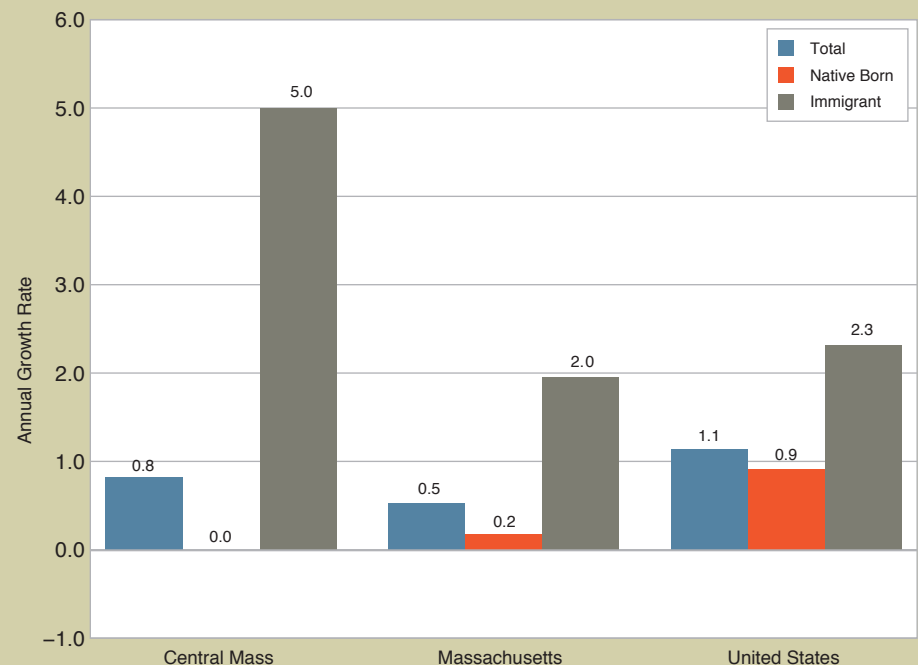
**Source:** US Census Bureau 2000 Decennial Census PUMS data files, 2005-2007 and 2008-2010 American Community Survey PUMS data files.

**Note:** The working-age population is defined as individuals 16 years of age or older, excluding institutionalized populations. Immigrants are individuals born outside the country.

Annual Growth Rate, 2000 to 2005-2007



Annual Growth Rate, 2005-2007 to 2008-2010



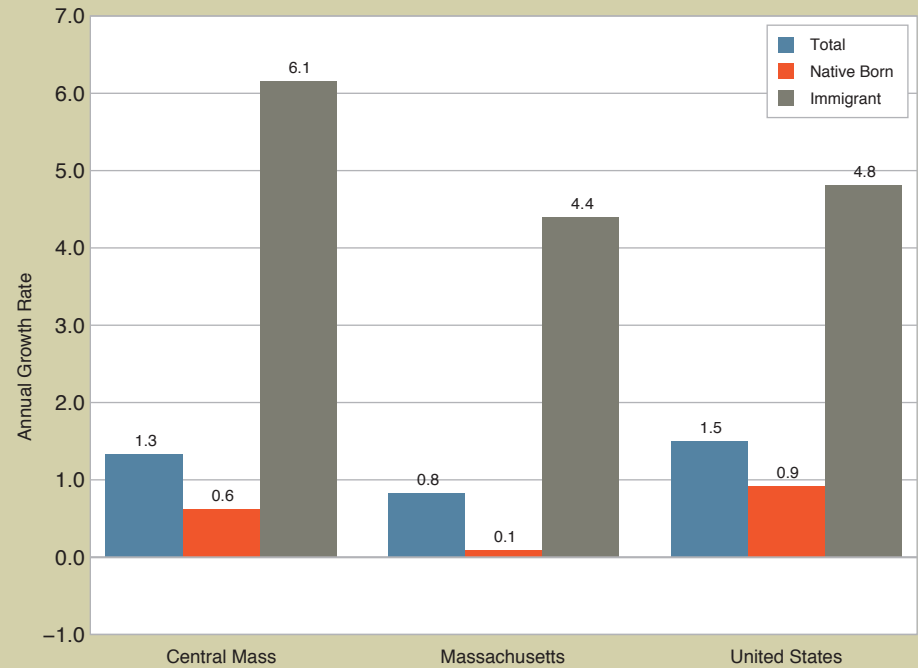
## GROWTH IN THE CIVILIAN LABOR FORCE BY NATIVITY STATUS

The civilian labor force consists of the people who live in a region and are either working or unemployed but actively looking for work (a region's actual labor supply). In Central Mass, immigrants are driving the growth of the civilian labor force. Between 2000 and 2005-2007, the growth of immigrants in the civilian labor force (6.1 percent) far exceeded the growth of their immigrant counterparts in both Massachusetts and the United States. With modest growth in the native-born civilian labor force, the overall growth in the civilian labor force in Central Mass (1.3 percent) exceeded that of Massachusetts and slightly trailed the United States. Between 2005-2007 and 2008-2010, the number of immigrants in the civilian labor force increased at an even faster rate (6.5 percent), more than double the rates in Massachusetts and the United States. As a result, the total civilian labor force grew at an annual rate of 1.8 percent over this time period, exceeding the growth of both Massachusetts and the United States.

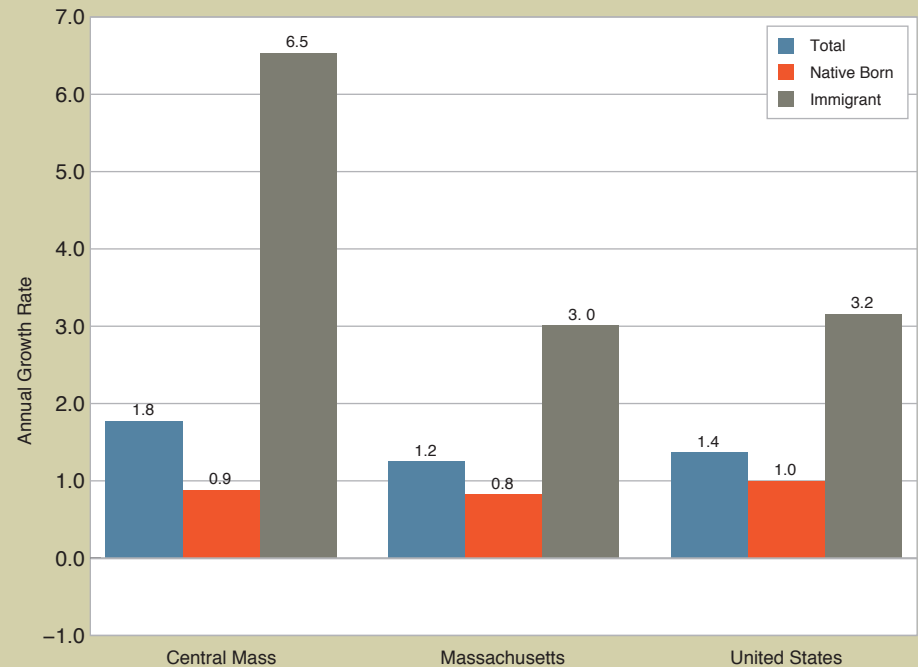
**Source:** US Census Bureau 2000 Decennial Census PUMS data files, 2005-2007 and 2008-2010 American Community Survey PUMS data files.

**Note:** The civilian labor force consists of all individuals 16 years of age or older who are classified as employed or unemployed and actively looking for work. Immigrants are individuals born outside the country.

Annual Growth Rate, 2000 to 2005–2007



Annual Growth Rate, 2005–2007 to 2008–2010

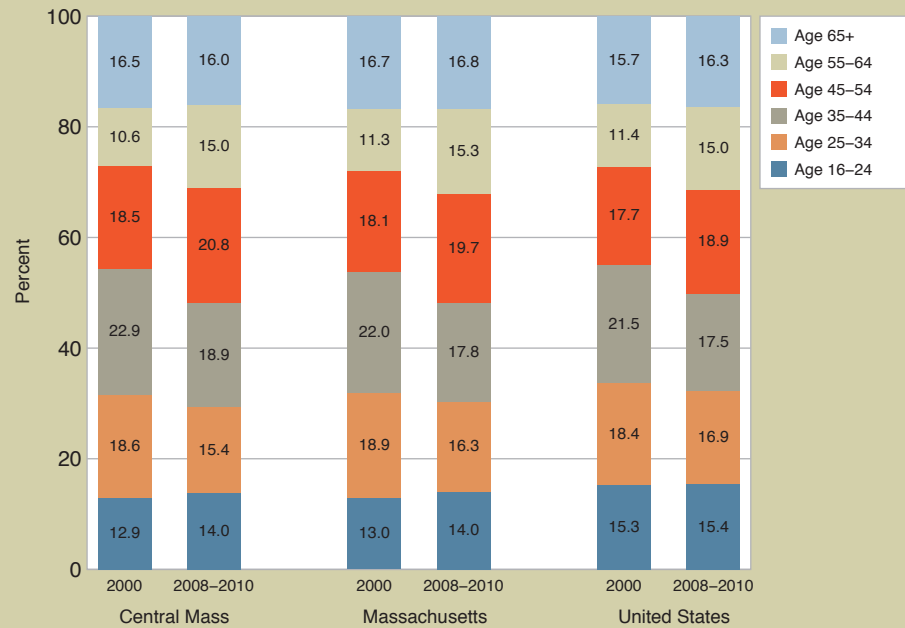


## THE AGE PROFILE OF THE WORKING-AGE POPULATION

Massachusetts is one of the oldest states in the country, and Central Mass is similar to the state in its age composition. Roughly one-third of the region's and state's working-age population is 55 years old or older. Nearly 30 percent of the region's and state's working-age population is 34 years old or younger. In Central Mass, 39.7 percent of the region's working-age population is between the ages of 35 and 54. In contrast, 37.5 percent of the state's working-age population is in this age cohort. The United States working-age population is fairly evenly divided among age cohorts, with about a third of the population each in the 16-34, 35-54, and 55-or-older age cohorts.

**Source:** US Census Bureau 2000 Decennial Census PUMS data files and 2008-2010 American Community Survey PUMS data files.

Age Distribution of the Working-Age Population, 2000 and 2008–2010



Growth of Working-Age Population by Age in Central Mass

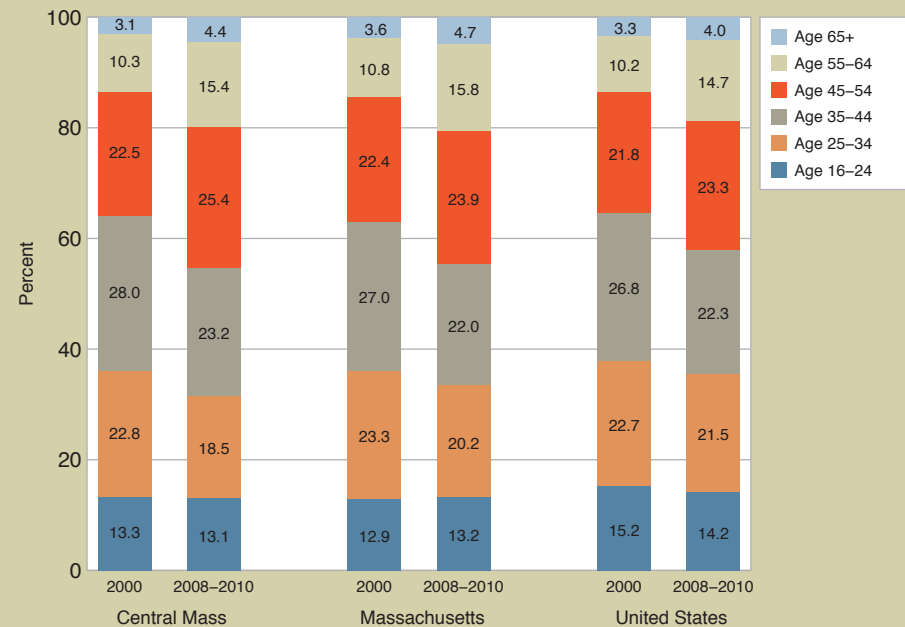
	2000	2008-2010	Absolute Change	Annual Growth Rate (Percent)
Age 16-24	62,184	73,151	10,967	1.8
Age 25-34	89,305	80,580	-8,725	-1.1
Age 35-44	110,086	99,029	-11,057	-1.2
Age 45-54	88,698	108,934	20,236	2.3
Age 55-64	50,966	78,624	27,658	4.9
Age 65+	79,273	84,006	4,733	0.6

## THE AGE PROFILE OF THE CIVILIAN LABOR FORCE

Given the age of the region's population, it is not surprising that the civilian labor force in Central Mass is also aging. In the past decade, there has been strong growth in the number and share of workers who are 45 years old or older. By comparison, there has been barely any growth in the civilian labor force among those between the ages of 16 and 44, with the growing number of 16-24-year-olds being canceled out by the declining number of 25-34- and 35-44-year-olds. As a result, in 2008-2010 the share of the Central Mass civilian labor force age 45 or older reached 45.2 percent, surpassing both Massachusetts (44.4 percent) and the United States (42.0 percent).

**Source:** US Census Bureau 2000 Decennial Census PUMS data files and 2008-2010 American Community Survey PUMS data files.

Age Distribution of the Civilian Labor Force, 2000 and 2008-2010



Growth of Civilian Labor Force Population by Age in Central Mass

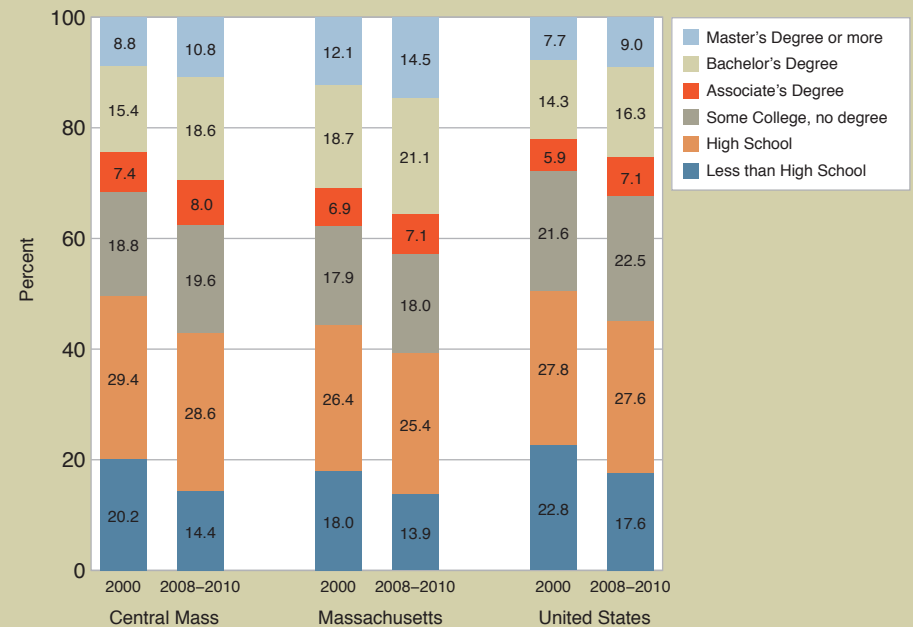
	2000	2008-2010	Absolute Change	Annual Growth Rate (Percent)
Age 16-24	43,301	48,654	5,353	1.3
Age 25-34	74,045	68,782	-5,263	-0.8
Age 35-44	91,053	85,937	-5,116	-0.6
Age 45-54	73,323	94,138	20,815	2.8
Age 55-64	33,576	57,115	23,539	6.1
Age 65+	9,942	16,504	6,562	5.8

## EDUCATIONAL ATTAINMENT OF THE WORKING-AGE POPULATION

Massachusetts is one of the states with the highest shares of population with a college degree; the educational attainment of the working-age population in Central Mass has somewhat lagged that of the state. Over the past decade, Central Mass has seen progressively stronger growth in the share of the working-age population with higher levels of education, coupled with declines among those with less than a High School Degree. Even with these educational gains, the share of the population with a High School Degree or less was 43.0 percent in 2008-2010, closer to the share in the United States (45.2 percent) than in Massachusetts (39.3 percent). And while the share of the population in Central Mass with a Bachelor's Degree or higher increased to 29.4 percent at the end of the decade, it was more than five percentage points behind the share in Massachusetts (35.6 percent).

**Source:** US Census Bureau 2000 Decennial Census PUMS data files and 2008-2010 American Community Survey PUMS data files.

Educational Distribution of the Working-Age Population, 2000 and 2008-2010



Growth of Working-Age Population by Educational Attainment in Central Mass

	2000	2008-2010	Absolute Change	Annual Growth Rate (Percent)
Less than High School	97,303	75,425	-21,878	-2.8
High School Graduate	141,087	149,798	8,711	0.7
Some College, no degree	90,360	102,713	12,353	1.4
Associate's Degree	35,321	42,129	6,808	2.0
Bachelor's Degree	74,090	97,646	23,556	3.1
Master's Degree or more	42,351	56,613	14,262	3.3

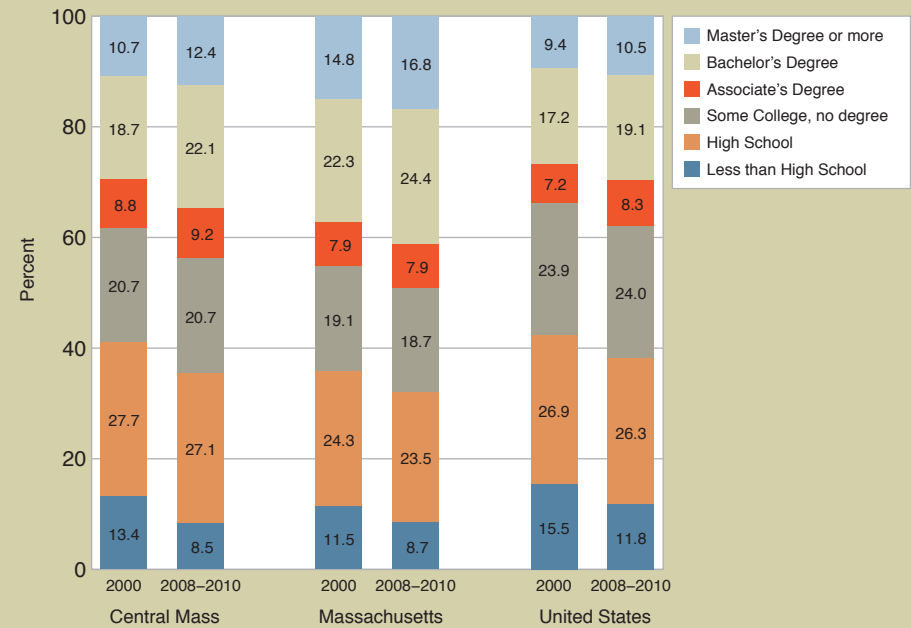


## EDUCATIONAL ATTAINMENT OF THE CIVILIAN LABOR FORCE

We see even higher levels of educational attainment, relative to the working-age population, among those who are actually participating in the labor force. And, similar to the working-age population, there has been progressively stronger growth in the level of educational attainment of the civilian labor force in Central Mass. By 2008-2010, 34.5 percent of the Central Mass labor force had a Bachelor's Degree or higher, but that still trailed the 41.2 percent in Massachusetts who had such a degree. However, 64.4 percent of the civilian labor force in Central Mass had completed at least some post-secondary education (Some College or higher). This trailed the nearly 68 percent of Massachusetts labor force who had some post-secondary education but exceeded the 61.9 percent nationwide. Nonetheless, the most common level of educational attainment among people in the civilian labor force in the region continued to be a High School Degree (27.1 percent).

**Source:** US Census Bureau 2000 Decennial Census PUMS data files and 2008-2010 American Community Survey PUMS data files.

Educational Distribution of the Civilian Labor Force, 2000 and 2008-2010



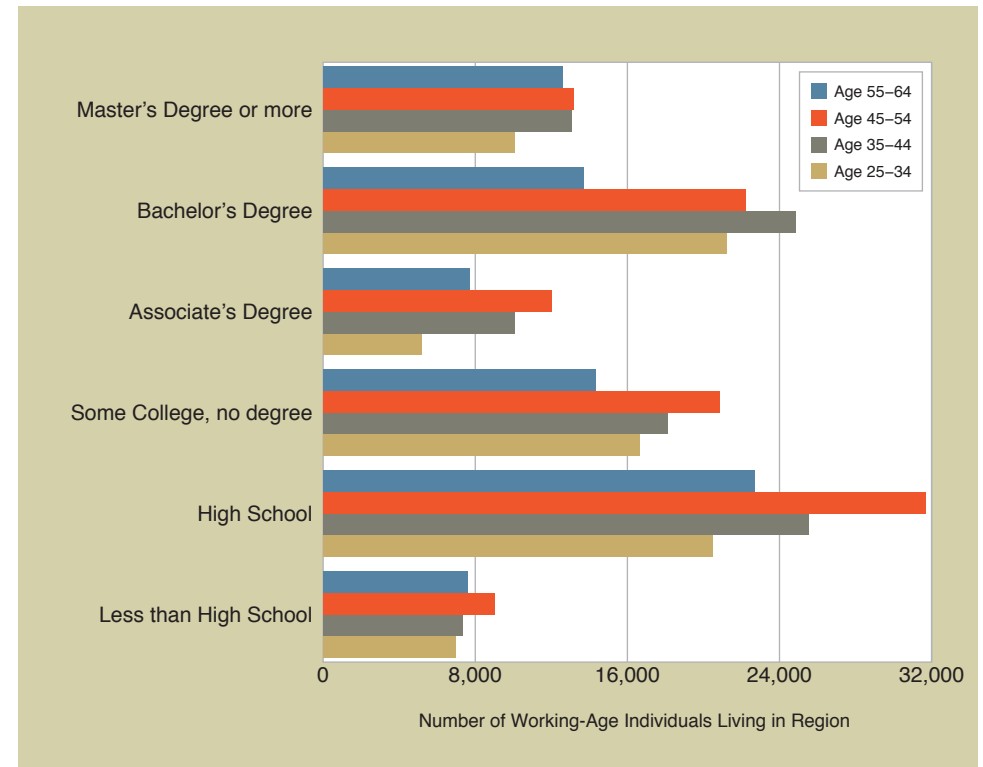
Growth of Civilian Labor Force Population by Educational Attainment in Central Mass

	2000	2008-2010	Absolute Change	Annual Growth Rate (Percent)
Less than High School	43,425	31,422	-12,003	-3.5
High School Graduate	90,216	100,683	10,467	1.2
Some College, no degree	67,425	76,780	9,355	1.5
Associate's Degree	28,482	34,099	5,617	2.0
Bachelor's Degree	60,766	81,946	21,180	3.4
Master's Degree or more	34,926	46,200	11,274	3.2

## EDUCATIONAL ATTAINMENT BY AGE GROUP: CENTRAL MASS (2008–2010)

If we look at the region's population by both age and education, we get an understanding of the workers who will be replacing the baby boomers. As the baby boomers have aged, 45-54-year-olds have become the largest age cohort. As the boomers continue to age and, over time, leave the labor force, nearly every educational category may face a shortfall of workers. For example, in 2008-2010, over 12,000 people between the ages 45 and 54 had an Associate's Degree in Central Mass, but only 5,200 between the ages 25 and 34 had such an education. This amounts to a potential shortage of over 6,800 individuals, equivalent to more than 50 percent of the 45-54-year-old population with such an education. There may be similar shortages of working-age individuals with High School Degrees (11,200 or 35.3 percent) or with Some College (4,200 or 20.1 percent). However, such shortages may actually be much less, given the long-term trend of a shift toward employees with higher levels of education in most occupations and industries.

**Source:** US Census Bureau 2008-2010 American Community Survey PUMS data files.



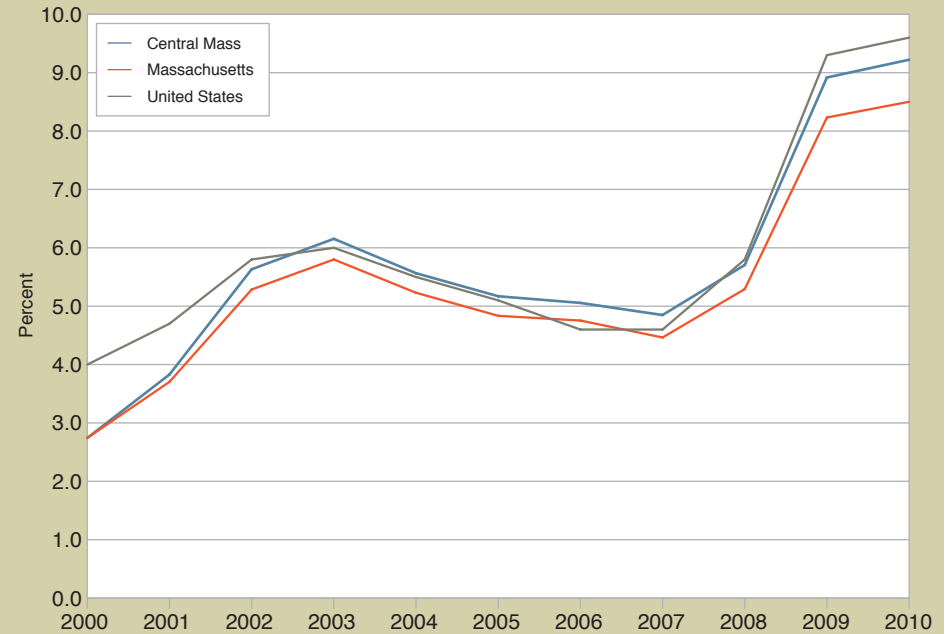
## UNEMPLOYMENT RATE TRENDS

During the Great Recession, the unemployment rate nationwide increased sharply. In Central Mass at the beginning of the decade, the unemployment rate was 2.7 percent. It then climbed to 6.1 percent in 2003 before declining to slightly 4.8 percent in 2007. In the Great Recession, the region's unemployment rate reached 9.2 percent. Over most of the past decade, the region's unemployment rate exceeded that of Massachusetts and was the second highest unemployment rate of all regional labor markets in 2010 (behind the Southeast region).

**Source:** US Bureau of Labor Statistics and Massachusetts Executive Office of Labor and Workforce Development.

**Note:** The annual unemployment rate is a 12-month average of the non-seasonally-adjusted unemployment rate.

Unemployment Rate, 2000 to 2010



### Central Mass Unemployment

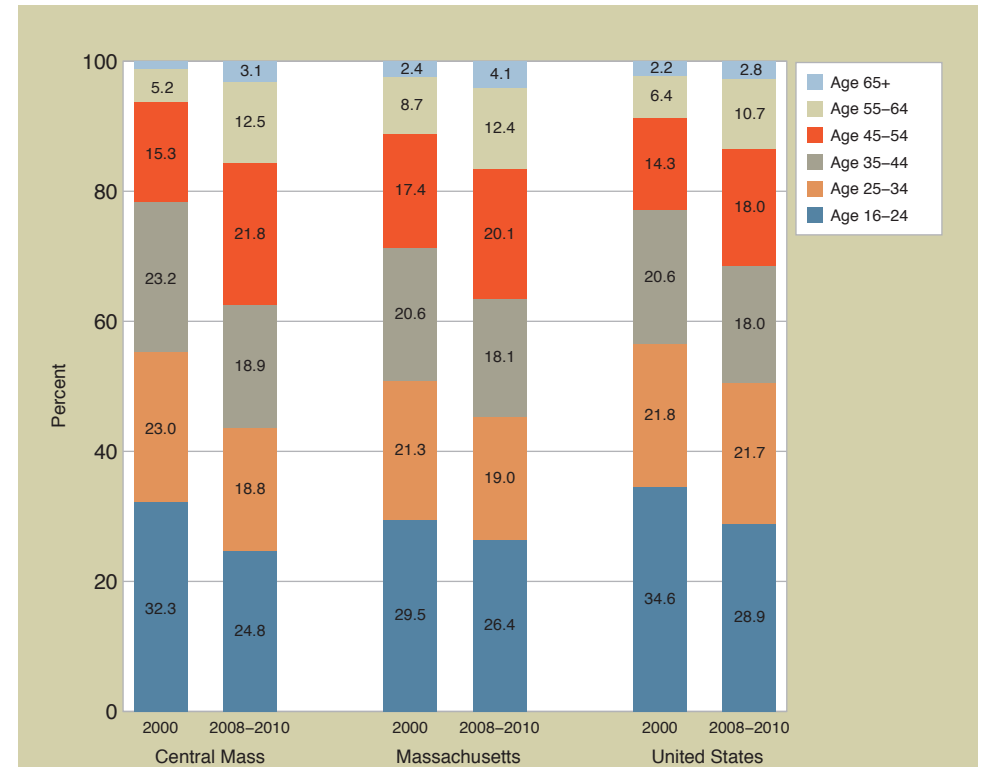
	2000	2010	Relative Change	Annual Growth Rate (Percent)
Unemployed	11,018	38,970	27,952	13.5
Employed	390,692	383,614	-7,078	-0.2
Civilian Labor Force	401,710	422,584	20,874	0.5
Unemployment Rate	2.7	9.2	-	-

## THE UNEMPLOYED: AGE DISTRIBUTION (2000 AND 2008-2010)

Younger workers were disproportionately unemployed in Central Mass at the beginning and end of the decade. While 32 percent of the civilian labor force in Central Mass was 34 years or younger at the end of the decade, 43.6 percent of the region's unemployed was 34 years or younger in 2008-2010 (down from 55.3 percent at the beginning of the decade). In fact, in 2008-2010, 16-24-year-olds accounted for the largest share of the unemployed (24.8 percent) but were the second smallest age cohort of the Central Mass civilian labor force (behind those age 65 and older), at only 13.1 percent. However, the region's disproportional unemployment among young people was still not as strong as it was in both Massachusetts and the United States in 2008-2010.

**Source:** US Census Bureau 2000 Decennial Census PUMS data files and 2008-2010 American Community Survey PUMS data files.

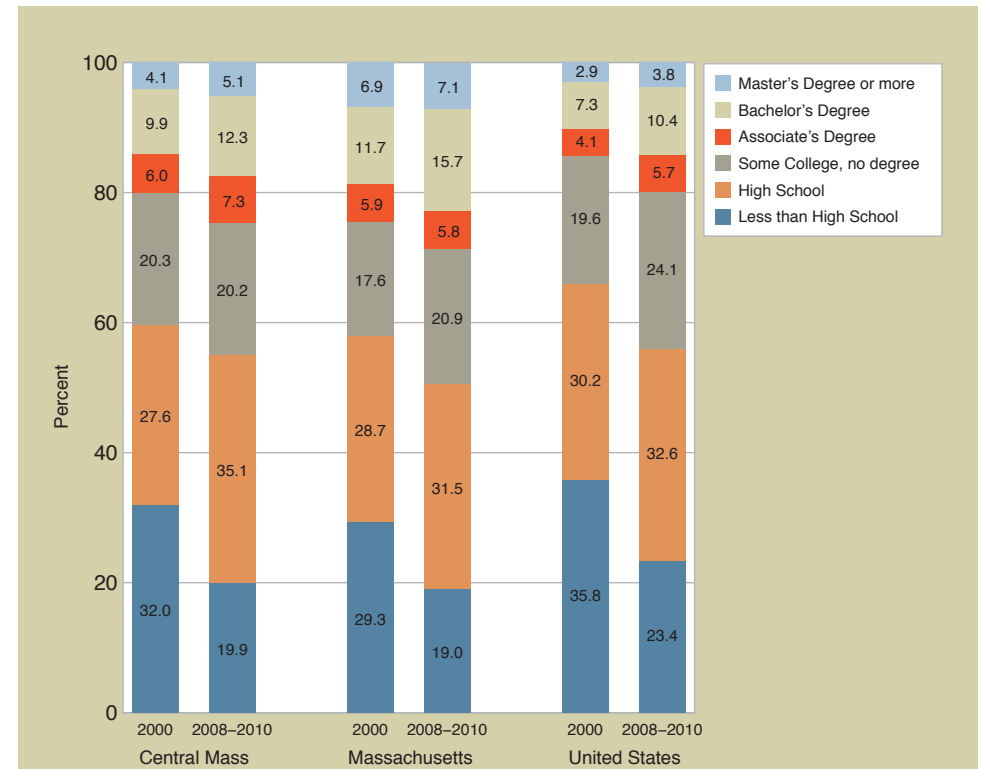
**Note:** Unemployed are individuals age 16 or older not employed and actively looking for work.



## THE UNEMPLOYED: EDUCATIONAL ATTAINMENT (2000 AND 2008-2010)

Residents with a High School Degree or less accounted for 55.0 percent of the unemployed in Central Mass in 2008-2010, well above the share in Massachusetts (50.5 percent) but similar to the rate in the United States (56.0 percent). This was down from nearly 60 percent in 2000. Over the course of the decade, the share of unemployed increased for all educational attainments levels above high school. However, people with less education continue to be disproportionately represented among the unemployed relative to their share of the civilian labor force. For example, in 2008-2010, those with less than a high school education accounted for 19.9 percent of the unemployed in Central Mass but represented only 8.5 percent of the civilian labor force.

**Source:** US Census Bureau 2000 Decennial Census PUMS data files and 2008-2010 American Community Survey PUMS data files.



## COMMUTING PATTERNS OF RESIDENTS AND WORKERS: CENTRAL MASS (2008-2010)

Central Mass is closely tied to its neighboring labor markets and has a large share of residents who work in neighboring regions. While 71.5 percent of the region's employed residents also work in the region, the remaining 28.5 percent commute to other regions and states for work. The Metro South/West region is the most common destination for commuters, accounting for 16.9 percent of all workers who live in Central Mass. A smaller number of workers commute into Boston/Metro North for work. In terms of inbound commuters, Metro South/West has the largest share (8.0 percent of all workers in Central Mass), followed by Pioneer Valley (3.0 percent) and Connecticut (1.8 percent). Central Mass is a net exporter of workers, with over 39,900 more residents commuting out of the region every day than commuting into the region.

**Source:** US Census Bureau 2008-2010 American Community Survey PUMS data files.

	Number	Percent of Total
Total number of employed persons living in Central Mass...	332,752	100.0
...who work in:		
Central Mass	238,002	71.5
Metro South/West	56,392	16.9
Boston/Metro North	11,564	3.5
Northeast	7,105	2.1
Pioneer Valley	5,902	1.8
Other parts of Massachusetts	3,291	1.0
Connecticut	3,412	1.0
Rhode Island	2,696	0.8
New Hampshire	2,432	0.7
Other places outside Massachusetts	1,956	0.6
Total number of persons working in Central Mass...	292,812	100.0
...who live in:		
Central Mass	238,002	81.3
Metro South/West	23,306	8.0
Boston/Metro North	2,859	1.0
Northeast	3,942	1.3
Pioneer Valley	8,718	3.0
Other parts of Massachusetts	3,148	1.1
Connecticut	5,360	1.8
Rhode Island	3,552	1.2
New Hampshire	2,640	0.9
Other places outside Massachusetts	1,285	0.4
Net in-commuting (Number of Persons Employed in Region minus Number of Persons Living in Region)	-39,940	-

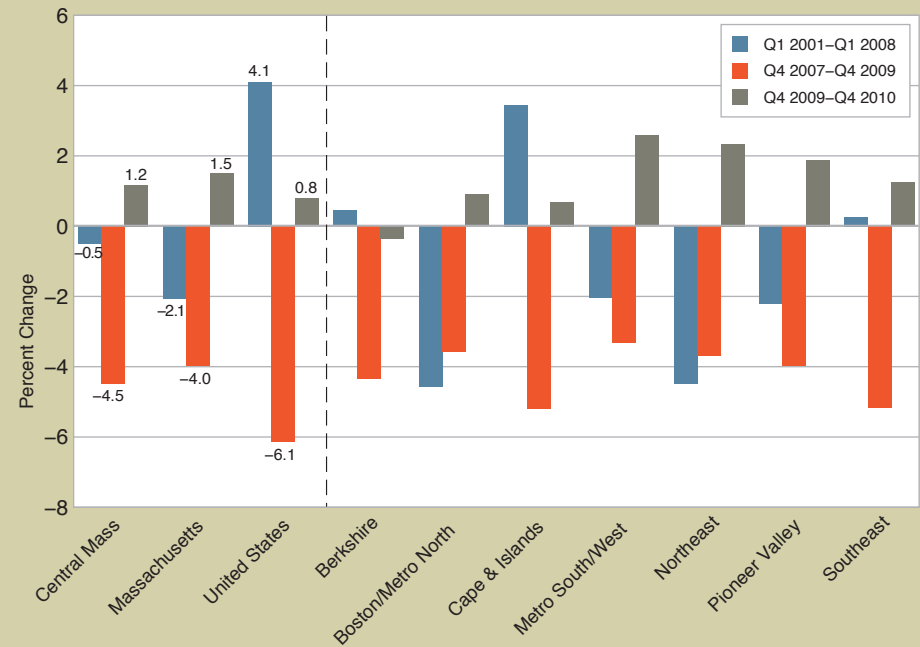
## EMPLOYMENT TRENDS

Central Mass accounts for 10.6 percent of the state's population and 10.2 percent of the state's employment, with roughly 320,000 jobs in the region. Over the past decade, the region's employment situation has been somewhat different from the state's. Employment in Central Mass declined at a slight 0.5 percent between 2001 and 2008, compared with a loss of 2.1 percent in Massachusetts. The employment loss in both the region and the state was more modest than in the United States during the Great Recession, but the region's losses were greater than the state's (4.5 percent versus 4.0 percent). In the first year of recovery, Central Mass employment increased by 1.2 percent, slightly trailing the gains in Massachusetts (1.5 percent) but exceeding the gains in the United States (0.8 percent).

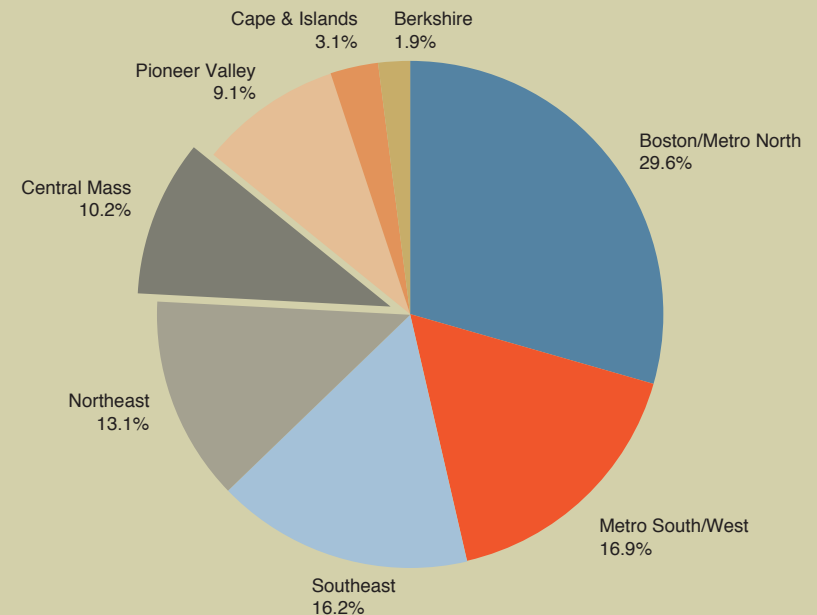
**Source:** US Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW) and Massachusetts Executive Office of Labor and Workforce Development ES-202.

**Note:** ES-202 and QCEW are not seasonally adjusted. Therefore, comparisons need to be made across consistent time periods, such as the first quarter of one year to the first quarter of another. Comparisons between different quarters will be distorted, as seasonal employment in industries such as Retail Trade and Leisure & Hospitality vary considerably overtime and across regions.

### Changes in Total Employment



### Distribution of Employment Across Regional Labor Markets, Q4 2010



## DEMOGRAPHIC CHARACTERISTICS OF THE POPULATION EMPLOYED IN CENTRAL MASS

Because 81.3 percent of the employees in Central Mass also live in the region, the demographic characteristics of the two groups are fairly similar. Over the past decade, the region has employed more immigrants while maintaining a fairly stable level of native-born workers. The region's workers have become more diverse from growth in Black, Asian, and Hispanic employees, with the number of Asian employees in the region more than doubling in the past decade. And much like the residential population of Central Mass, there is a strong concentration of older employees. Workers have been obtaining increasingly higher levels of education, but a High School Degree continues to be the most common level of educational attainment among the employed.

**Source:** US Census Bureau 2000 Decennial Census PUMS data files and 2008-2010 American Community Survey PUMS data files.

**Note:** Further data for racial/ethnic and gender characteristics for total, working-age, and civilian labor force population are available in the on-line Data Appendix.

	2000	2008-2010	Absolute Change	Annual Growth Rate (Percent)
Employed Population	274,136	292,812	18,676	0.7
<b>Gender</b>				
Male	143,533	145,234	1,701	0.1
Female	130,603	147,578	16,975	1.4
<b>Nativity</b>				
Native Born	243,569	244,426	857	0.0
Immigrant	30,567	48,386	17,819	5.2
<b>Race/Ethnicity</b>				
White, non-Hispanic	244,208	244,532	324	0.0
Black, non-Hispanic	6,239	10,718	4,479	6.2
Asian, non-Hispanic	5,880	11,280	5,400	7.5
Hispanic	13,745	22,251	8,506	5.5
Other race, non-Hispanic	4,064	4,031	-33	-0.1
<b>Age</b>				
Age 16-24	34,724	36,475	1,751	0.5
Age 25-34	58,427	52,497	-5,930	-1.2
Age 35-44	77,676	66,720	-10,956	-1.7
Age 45-54	63,779	74,296	10,517	1.7
Age 55-64	30,239	48,011	17,772	5.3
Age 65+	9,291	14,813	5,522	5.3
<b>Educational Attainment</b>				
Less than High School	35,049	23,246	-11,803	-4.5
High School Graduate	77,652	78,758	1,106	0.2
Some College, no degree	55,971	61,897	5,926	1.1
Associate's Degree	23,503	27,663	4,160	1.8
Bachelor's Degree	49,661	62,135	12,474	2.5
Master's Degree or more	32,300	39,113	6,813	2.1

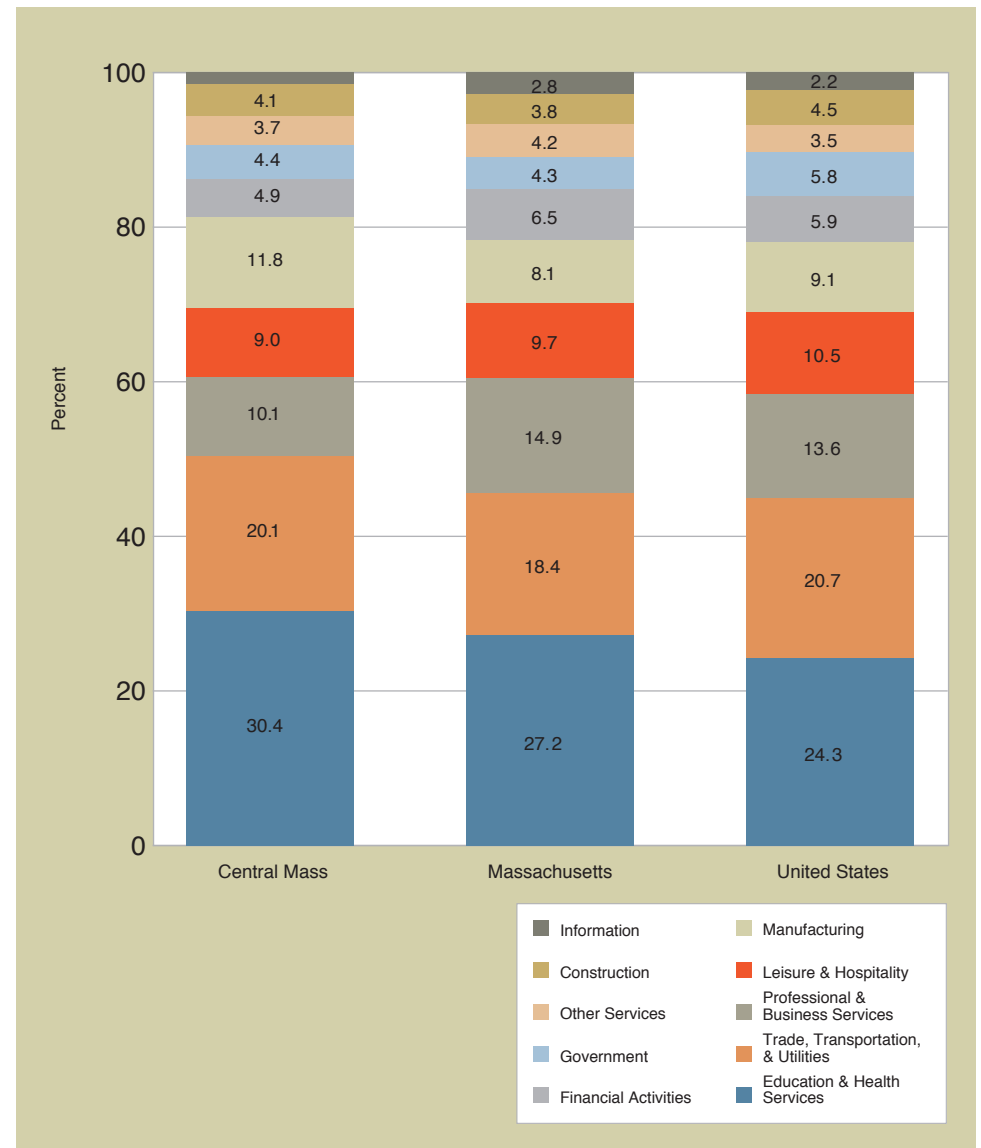


## DISTRIBUTION OF EMPLOYMENT BY SUPERSECTOR (Q4 2010)

The largest sector of employment in Central Mass is Education & Health Services. Accounting for 30.4 percent of jobs in the region, the sector is proportionately much larger than it is statewide and nationally. Employment is also more concentrated in the Trade, Transportation, & Utilities supersector than it is in Massachusetts, but the share is still slightly smaller than in the United States. In comparison with Massachusetts, the region has smaller employment concentrations in Information, Financial Activities, and Professional & Business Services. Employment in these industries tends to be concentrated in the Greater Boston regional labor markets. Like most regions outside of Greater Boston, Central Mass has a strong employment concentration in Manufacturing (11.8 percent), making it the region's third largest sector. In both Massachusetts and the United States, the share of Manufacturing employment is less than 10 percent and is the fifth largest sector by employment.

**Source:** US Bureau of Labor Statistics QCEW and Massachusetts Executive Office of Labor and Workforce Development ES-202.

**Note:** Supersectors are groupings of major industry categories. See the on-line Data Appendix for the major industries that make up supersectors.



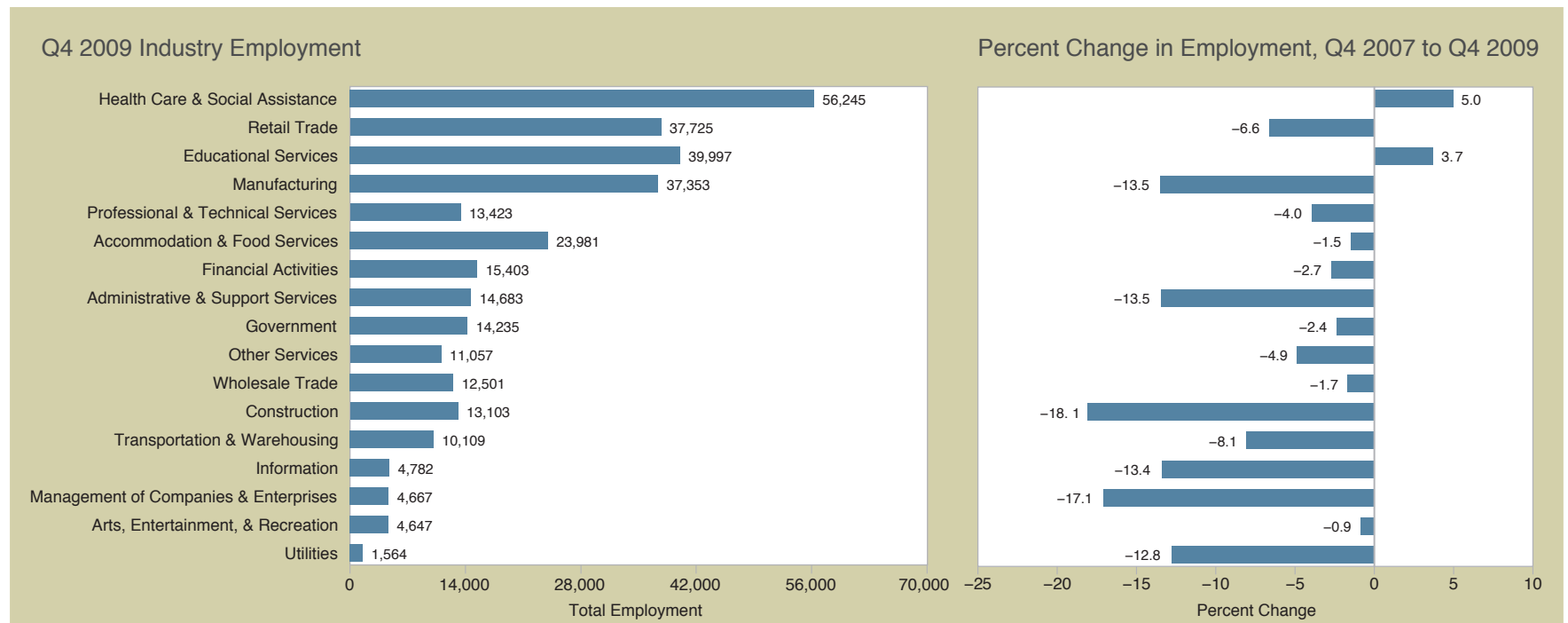
## CHANGES IN EMPLOYMENT DURING THE ECONOMIC DOWNTURN BY MAJOR INDUSTRY: CENTRAL MASS

Between 2007 and 2009, job losses in Central Mass were spread across nearly every major industry. The only employment gains came in Education Services (3.7 percent) and Health Care & Social Assistance (5.0 percent), the two industries that compose the Education & Health Services supersector. Although these two industries added 4,100 jobs in the downturn, such gains were more than offset by significant job losses in most other industries. Six industries in the region reported declines in excess of 10 percent of employment. Manufacturing lost the largest number of jobs, declining by 13.5 percent or 5,800 jobs. Within Manufacturing,

the largest losses in Central Mass occurred in Fabricated Metal Product Manufacturing (–1,026 jobs). Combining this with losses in Construction (–2,897 jobs), Retail Trade (–2,678 jobs), and Administrative & Support Services (–2,283 jobs), among other industries, the region lost more than 14,800 jobs between the fourth quarters of 2007 and 2009.

**Source:** Massachusetts Executive Office of Labor and Workforce Development ES-202.

**Note:** Industries are sorted by size in Massachusetts in Q4 2009. See the on-line Data Appendix for supersector and major industry employment trends.



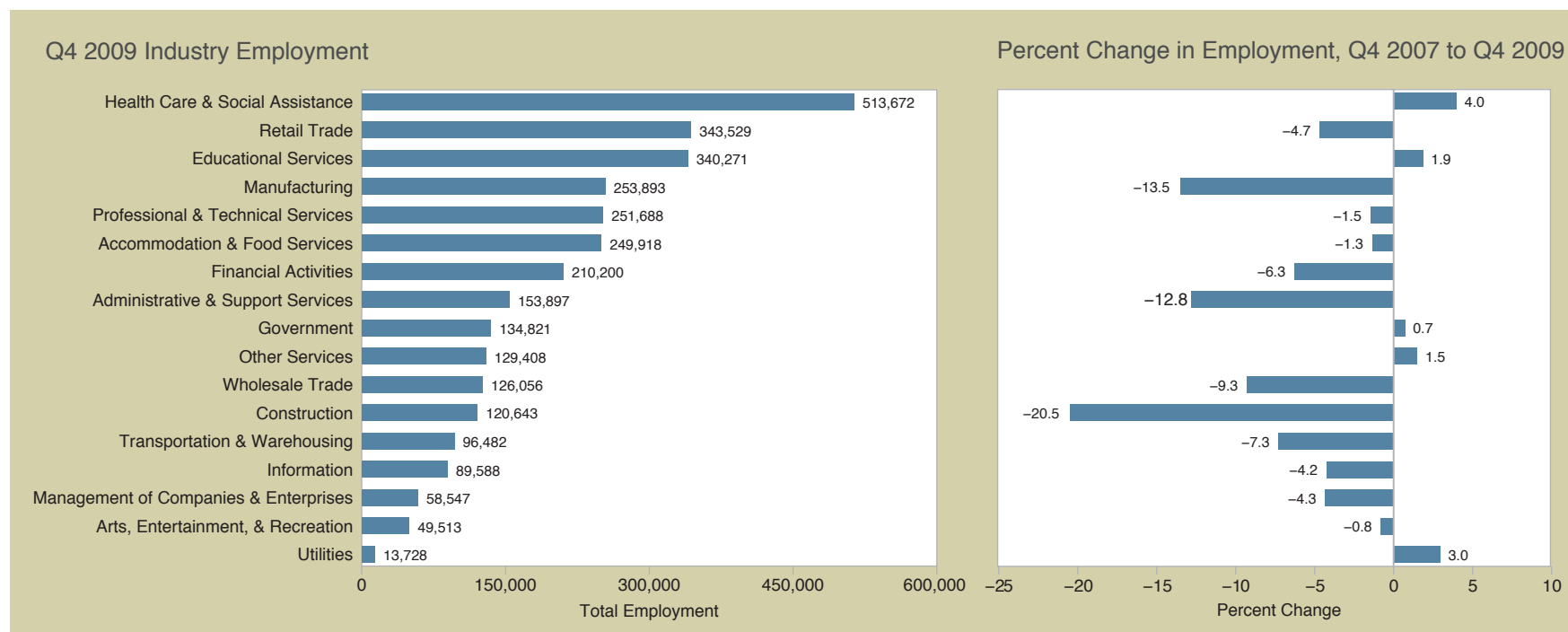
## CHANGES IN EMPLOYMENT DURING THE ECONOMIC DOWNTURN BY MAJOR INDUSTRY: MASSACHUSETTS

Massachusetts fared slightly better in the downturn than did Central Mass. The state's strongest employment gains also came in the Health Care & Social Assistance industry (4.0 percent), as a result of strong growth in the sub-industry of Ambulatory Health Care Services (7.7 percent). Further gains in Education Services (1.9 percent) were offset by significant losses in the Administrative & Support Services (-12.8 percent), Manufacturing (-13.5 percent), and Construction (-20.5 percent) industries. Within the Trade, Transportation, & Utilities sector, the state experienced large losses in two major industries: Retail Trade (-4.7 percent) and

Wholesale Trade (-9.3 percent). However, Massachusetts did not experience job losses as steep as did Central Mass in most industries and actually increased employment in a number of industries that declined in the region (i.e. Government, Other Services, and Utilities). As a result, employment losses statewide were less than those in Central Mass in the downturn between 2007 and 2009.

**Source:** Massachusetts Executive Office of Labor and Workforce Development ES-202.

**Note:** Industries are sorted by size in Massachusetts in Q4 2009.



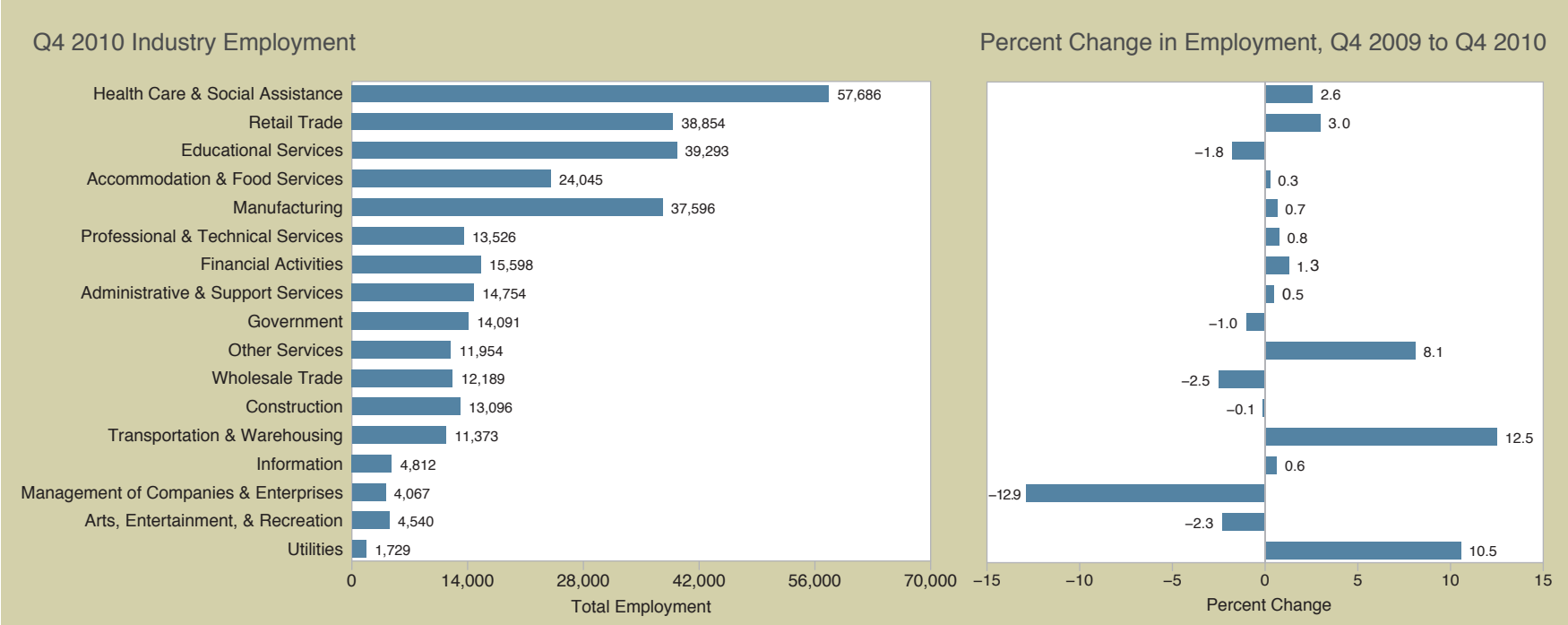
# INDUSTRIES DRIVING THE RECOVERY: CENTRAL MASS

Since the trough of the downturn, Central Mass has experienced modest growth across a broad set of industries. Only six industries lost jobs between the fourth quarters of 2009 and 2010, with the largest declines coming from Management of Companies & Enterprises (600 jobs, or 12.9 percent) and Educational Services (704 jobs, or 1.8 percent). Health Care & Social Assistance continued to add jobs (more than 1,400), growing 2.6 percent. After cutting jobs in the recession, industries in the region's Trade, Transportation, & Utilities sector began to add jobs. Transportation & Warehousing was the fastest expanding industry, growing

by 12.5 percent and adding nearly 1,300 jobs. Retail trade, one of the hardest hit industries in the downturn, had somewhat more modest growth (3.0 percent), adding over 1,100 jobs. Combining this with more modest growth in most other industries, Central Mass added over 3,700 jobs, increasing employment by 1.2 percent in the first year of the recovery.

**Source:** Massachusetts Executive Office of Labor and Workforce Development ES-202.

**Note:** Industries are sorted by size in Massachusetts in Q4 2010.



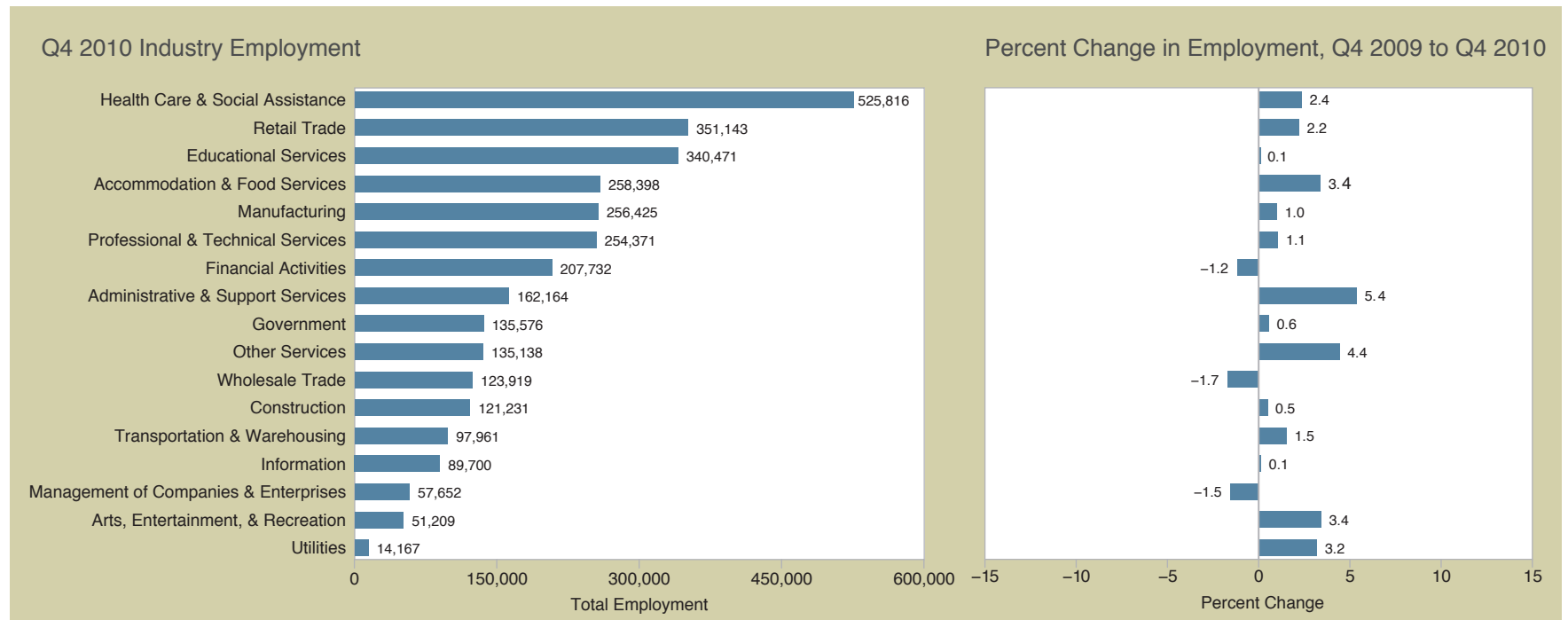
## INDUSTRIES DRIVING THE RECOVERY: MASSACHUSETTS

Massachusetts as a whole has had a broad-based recovery across industries. The state expanded employment in industries ranging from a 0.1 percent increase in Information and Educational Services to 5.4 percent in Administrative & Support Services between the fourth quarters of 2009 and 2010. The Health Care & Social Assistance industry added over 12,100 jobs, an increase in employment of 2.4 percent in the recovery to date. Job growth was spread across a number of the sub-industries that make up Health Care & Social Assistance, including: Social Assistance (3,200 jobs), Ambulatory Health Care Services (3,400 jobs), and

Hospitals (5,700 jobs). During the recovery, the state has experienced slight declines in only three industries: Financial Activities, Wholesale Trade, and Management of Companies & Enterprises. In comparison with Central Mass, the state had a stronger industrial recovery, exceeding Central Mass in the growth of most industries, with the exception of Utilities, Transportation & Warehousing, and Other Services.

**Source:** Massachusetts Executive Office of Labor and Workforce Development ES-202.

**Note:** Industries are sorted by size in Massachusetts in Q4 2010.

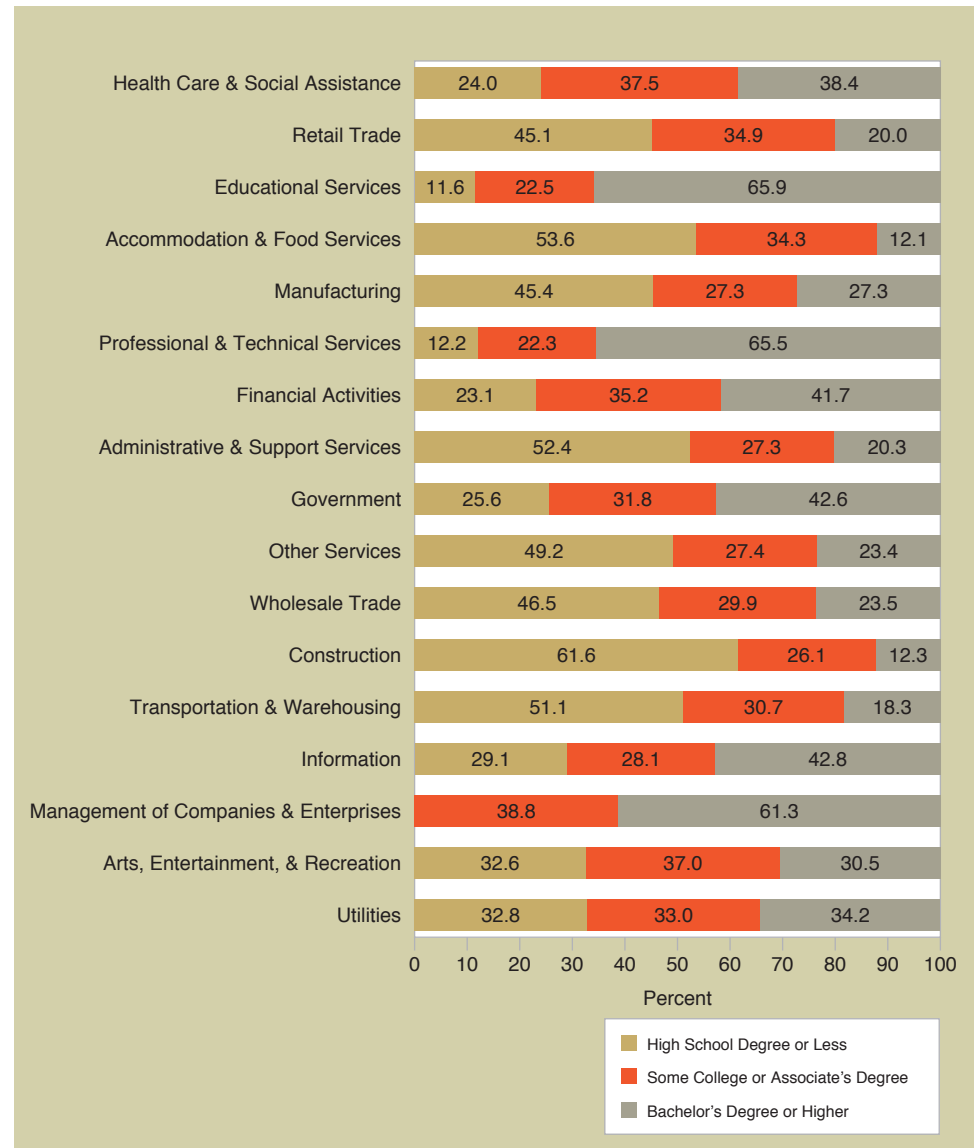


## EDUCATIONAL ATTAINMENT OF EMPLOYEES BY MAJOR INDUSTRY IN CENTRAL MASS (2008-2010)

The number of workers in Central Mass with a Bachelor's Degree or higher increased over the past decade, but the most common level of educational attainment among the region's workers is a High School Degree. As a result, the educational attainment level of employees by industries is fairly evenly split in Central Mass. In 2008-2010, eight of the 17 major industries in the region had a workforce where the largest share of employees had a Bachelor's Degree or higher. Another eight industries had a High School Degree or less as the largest educational attainment category. In a few industries, there was a clear majority of employees with a Bachelor's Degree or higher, such as Educational Services, or a clear majority with a High School Degree or less, such as Construction. However, in most industries the educational attainment of employees was somewhat evenly distributed, including 15 industries that had at least 25 percent of employees with Some College education or an Associate's Degree.

**Source:** US Census Bureau 2008-2010 American Community Survey PUMS data files.

**Note:** Industries are sorted by size in Massachusetts in Q4 2010.

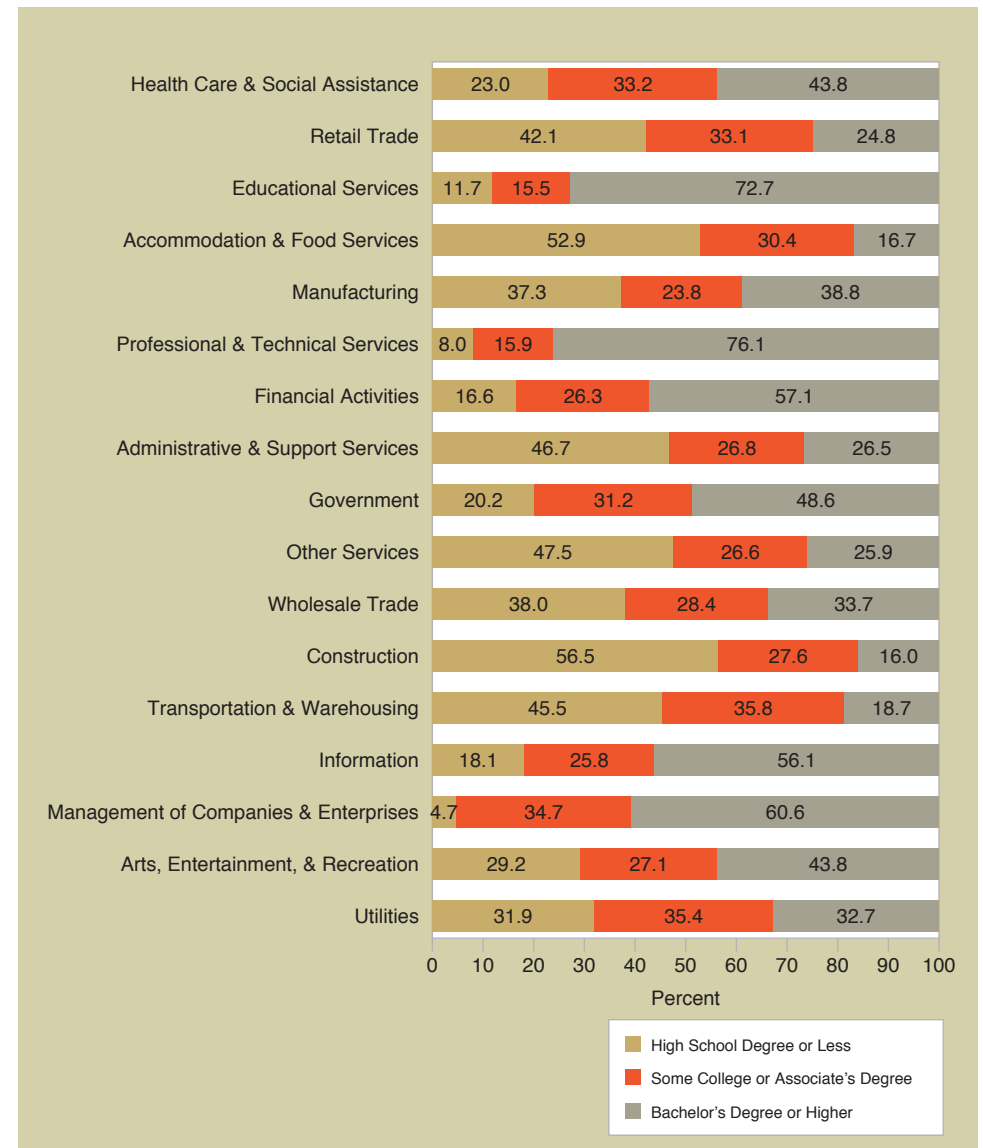


## EDUCATIONAL ATTAINMENT OF EMPLOYEES BY MAJOR INDUSTRY IN MASSACHUSETTS (2008-2010)

The educational attainment across industries in Massachusetts was much higher than in Central Mass in 2008-2010. In Massachusetts, nine of the 17 major industries had a workforce where the largest share of employees had a Bachelor's Degree or higher. And in nearly every major industry statewide (15 of the 17), the share of employees with a Bachelor's Degree or higher was greater than their industrial counterparts in Central Mass, save for Management of Companies & Enterprises and Utilities. Massachusetts, relative to Central Mass, employed particularly stronger concentrations of employees with Bachelor's Degrees in Manufacturing, Professional & Technical Services, Financial Activities, Information, and Arts, Entertainment, & Recreation. In most industries, Massachusetts had lower shares of employees with Some College education or an Associate's Degree, compared with Central Mass. Only two industries in Massachusetts had a higher share of employees with High School Degrees or less when compared with Central Mass.

**Source:** US Census Bureau 2008-2010 American Community Survey PUMS data files.

**Note:** Industries are sorted by size in Massachusetts in Q4 2010.

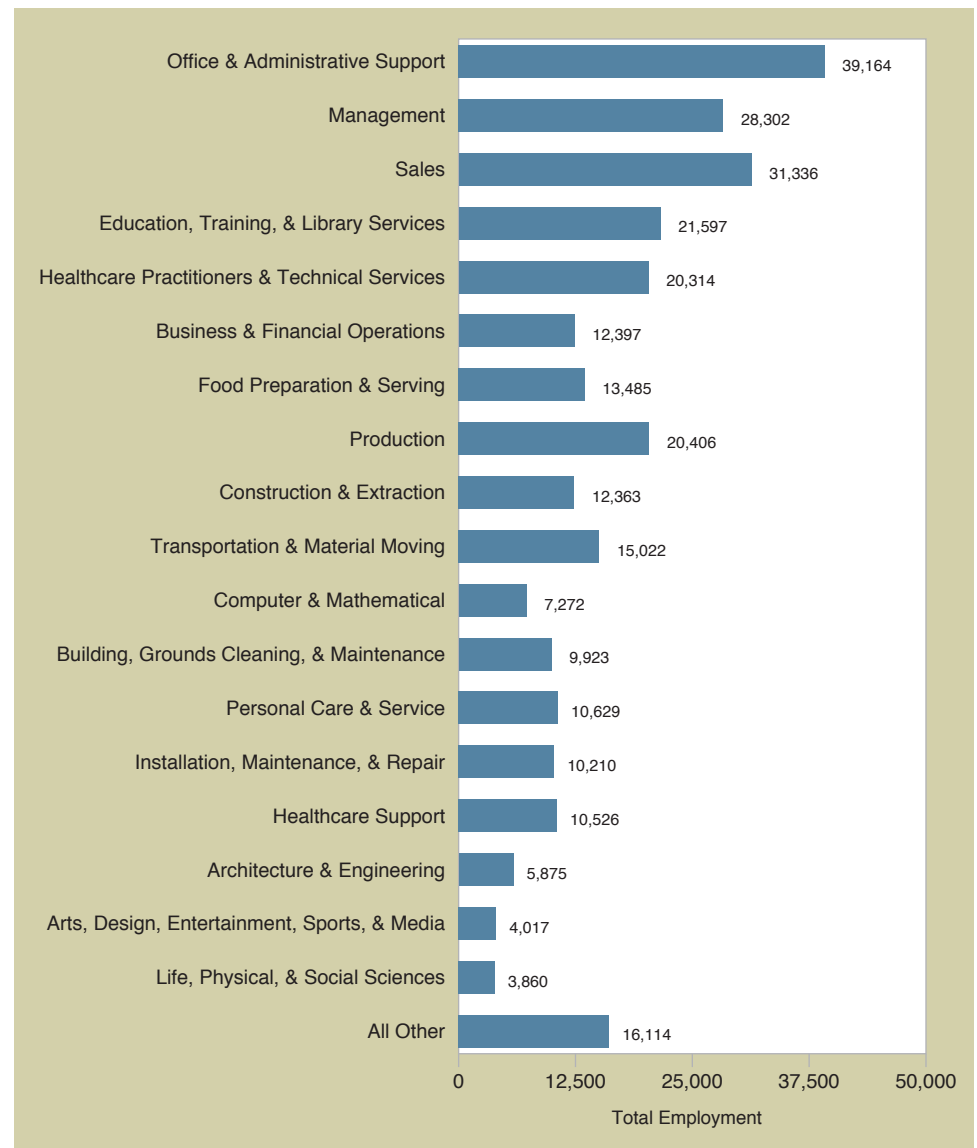


## EMPLOYMENT BY MAJOR OCCUPATION: CENTRAL MASS (2008-2010)

Industries are where people work; occupations are what people do. Understanding occupational patterns helps to illustrate what types of workers are in demand by industries. In Central Mass, Office & Administrative Support is the largest occupational group, accounting for 13.4 percent of the region's jobs at the end of the decade. However, the number of jobs in this occupation in 2008-2010 was actually fewer than in 2000. The second largest occupational group is Sales, which grew over the course of the decade. Occupations that are closely associated with growing industries have increased, such as Healthcare Support, which has a very high employment concentration in Education & Health Services. Similarly, some occupations that are strongly concentrated in declining industries have contracted, such as Production occupations in the Manufacturing sector.

**Source:** US Census Bureau 2008-2010 American Community Survey PUMS data files.

**Note:** All Other occupations are composed of Community & Social Services, Legal, Protective Services, Farming, Fishing & Forestry, and Military Specific. Occupations are sorted largest to smallest by size in Massachusetts in 2008-2010. See the on-line Data Appendix for occupational employment trends.



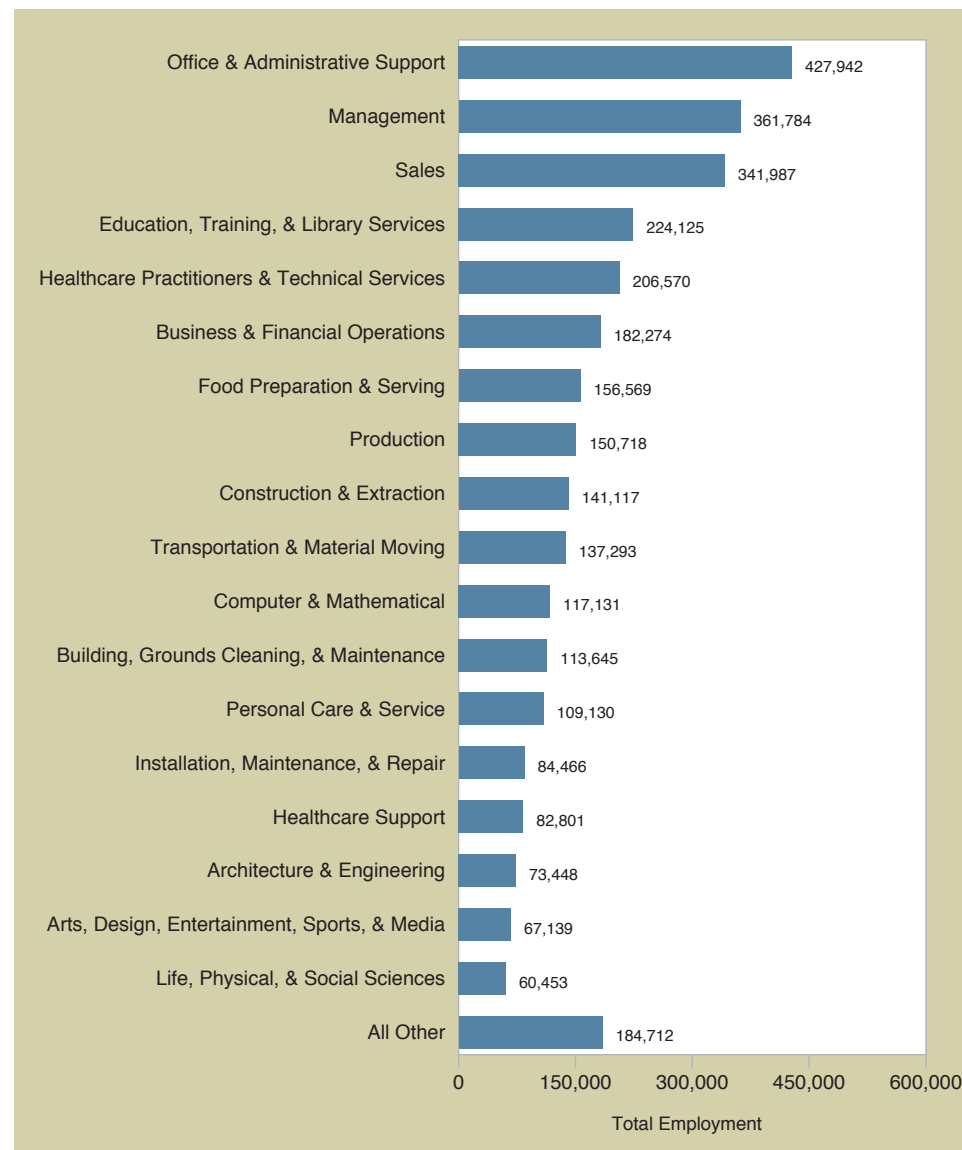


## EMPLOYMENT BY MAJOR OCCUPATION: MASSACHUSETTS (2008-2010)

Massachusetts's occupational composition, much like its industrial composition, is somewhat different from that of Central Mass. Office & Administrative Support is also the largest occupation and accounts for over 13 percent of employment in the state. However, the state has much stronger employment concentrations in Management, Business & Financial Operations, and Computer & Mathematical occupations, compared with Central Mass. Central Mass has stronger occupational concentrations in Production, Transportation & Material Moving, and Healthcare Support. Despite such differences in occupational composition, Central Mass and Massachusetts have seen fairly similar occupational employment trends over the past decade. The few exceptions were the weaker growth in Healthcare Support occupations statewide relative to the region and the decline in Computer & Mathematical occupations statewide, which grew in Central Mass over the past decade.

**Source:** US Census Bureau 2008-2010 American Community Survey PUMS data files.

**Note:** All Other occupations are composed of Community & Social Services, Legal, Protective Services, Farming, Fishing & Forestry, and Military Specific. Occupations are sorted largest to smallest by size in Massachusetts in 2008-2010. See the on-line Data Appendix for occupational employment trends.



## DISTRIBUTION OF OCCUPATIONS ACROSS SUPERSECTORS OUTSIDE GREATER BOSTON (2008-2010)

Because changes in industries and occupations can impact each other, it is important to see how occupations are distributed across industries. Unfortunately, data limitations make this difficult to do for small geographic areas. Due to the different labor market compositions of Metro South/West and Boston/Metro North relative to the other labor markets, we have split Massachusetts into two labor markets: Greater Boston (Metro South/West and Boston/Metro North) and Outside Greater Boston (the other six labor markets, including Central Mass). In the Outside Greater Boston labor market, some occupations are concentrated in one or two industries, while other occupations are spread across a number of industries. Consider that nearly 95 percent of Education, Training, & Library Services jobs are located in the Education & Health Services supersector. In contrast, Management jobs account for more than 10 percent of employment in every supersector except Construction.

**Source:** US Census Bureau 2008-2010 American Community Survey PUMS data files.

**Note:** Due to sample size limitations in the Census and American Community Survey, it is not possible to provide an occupational distribution across industries for small geographic areas. Therefore, Metro South/West and Boston/Metro North were grouped to increase observations and provide an occupation/industry distribution for Greater Boston. With stronger concentrations in Management occupations, Business & Financial Operations, Professional & Technical Services, and the Financial Activities sector, the labor market composition of Metro South/West and Boston/Metro North is fairly similar. When combined, these two regions account for 46.4 percent of the state's employment. In comparison, the labor markets outside of the Greater Boston region (Berkshire, Pioneer Valley, Central Mass, Northeast, Southeast, and the Cape & Islands) tend to have stronger concentrations in sectors such as Trade, Transportation, & Utilities, Leisure & Hospitality, and/or Manufacturing, and in occupations such as Sales, Office & Administrative Support, and Production. While there are differences among the regional labor markets outside Greater Boston, industrial and occupational concentrations are likely similar enough to approximate their distributions for these labor markets.

## DISTRIBUTION OF OCCUPATIONS ACROSS SUPERSECTORS OUTSIDE GREATER BOSTON (2008-2010)

	Education & Health Services	Trade, Transportation, & Utilities	Professional & Business Services	Manufacturing	Leisure & Hospitality	Financial Activities	Construction	Other	All Industries
Office & Administrative Support	22.4	26.1	10.3	9.4	3.5	13.6	2.6	12.1	100.0
Management	19.6	10.7	10.5	17.3	10.2	11.2	8.7	11.8	100.0
Sales	0.9	68.5	3.7	5.7	4.5	11.2	0.6	5.0	100.0
Education, Training, & Library Services	94.8	0.2	0.4	0.2	1.1	0.2	0.0	3.1	100.0
Healthcare Practitioners & Technical Services	86.4	6.5	4.0	0.2	0.1	0.4	0.1	2.3	100.0
Business & Financial Operations	10.0	12.1	22.4	12.7	1.4	27.9	2.7	10.8	100.0
Food Preparation & Serving	11.9	5.5	0.2	0.5	80.0	0.4	0.0	1.4	100.0
Production	3.1	11.3	3.5	73.2	1.0	0.2	0.8	6.9	100.0
Construction & Extraction	2.2	3.0	1.7	2.7	0.1	0.9	88.3	1.1	100.0
Transportation & Material Moving	4.4	62.1	4.8	13.7	4.8	1.2	3.0	6.1	100.0
Computer & Mathematical	9.8	7.5	38.4	20.7	0.8	12.4	0.1	10.5	100.0
Building, Grounds Cleaning, & Maintenance	26.9	5.1	37.0	2.4	10.8	4.0	0.5	13.3	100.0
Personal Care & Service	40.2	2.4	1.6	0.0	14.5	0.3	0.1	41.0	100.0
Installation, Maintenance, & Repair	3.3	26.3	4.6	13.5	2.5	2.6	8.4	38.7	100.0
Healthcare Support	92.6	1.0	1.4	0.1	0.6	0.2	0.0	4.1	100.0
Architecture & Engineering	2.5	5.8	31.8	50.6	0.2	0.4	3.6	5.2	100.0
Arts, Design, Entertainment, Sports, & Media	12.0	11.6	22.6	8.6	20.4	1.4	0.5	22.9	100.0
Life, Physical, & Social Sciences	36.7	2.8	28.5	18.2	0.9	1.9	0.3	10.6	100.0
All Other	28.9	3.4	17.4	0.8	3.6	1.9	0.1	43.7	100.0
All Occupations	26.8	19.4	9.4	11.9	8.3	6.3	6.1	11.6	100.0

## DISTRIBUTION OF OCCUPATIONS WITHIN SUPERSECTORS OUTSIDE GREATER BOSTON (2008-2010)

We can also consider what the distribution of occupations within a given supersector looks like. Certain occupations account for the majority of employment within a supersector. For example, Outside Greater Boston sees nearly 45 percent of its employment in the Education & Health Services supersector coming from two occupations: Education, Training, & Library Services and Healthcare Practitioners & Technical Services. Further, the Construction supersector has more than two-thirds of its employment in Construction & Extraction occupations. While some occupations account for an overwhelming majority of the employment in a given supersector, others are consistently a large share of employment in each supersector. In fact, the two largest occupational groups, Office & Administrative Support and Management, together account for roughly 20 percent or more of employment within every supersector (ranging from 18.0 percent in Leisure & Hospitality to 47.7 percent of Financial Activities).

**Source:** US Census Bureau 2008-2010 American Community Survey PUMS data files.

**Note:** Due to sample size limitations in the Census and American Community Survey, it is not possible to provide an occupational distribution across industries for small geographic areas. Therefore, Metro South/West and Boston/Metro North were grouped to increase observations and provide an occupation/industry distribution for Greater Boston. With stronger concentrations in Management occupations, Business & Financial Operations, Professional & Technical Services, and the Financial Activities sector, the labor market composition of Metro South/West and Boston/Metro North is fairly similar. When combined, these two regions account for 46.4 percent of the state's employment. In comparison, the labor markets outside of the Greater Boston region (Berkshire, Pioneer Valley, Central Mass, Northeast, Southeast, and the Cape & Islands) tend to have stronger concentrations in sectors such as Trade, Transportation, & Utilities, Leisure & Hospitality, and/or Manufacturing, and in occupations such as Sales, Office & Administrative Support, and Production. While there are differences among the regional labor markets outside Greater Boston, industrial and occupational concentrations are likely similar enough to approximate their distributions for these labor markets.

## DISTRIBUTION OF OCCUPATIONS WITHIN SUPERSECTORS OUTSIDE GREATER BOSTON (2008-2010)

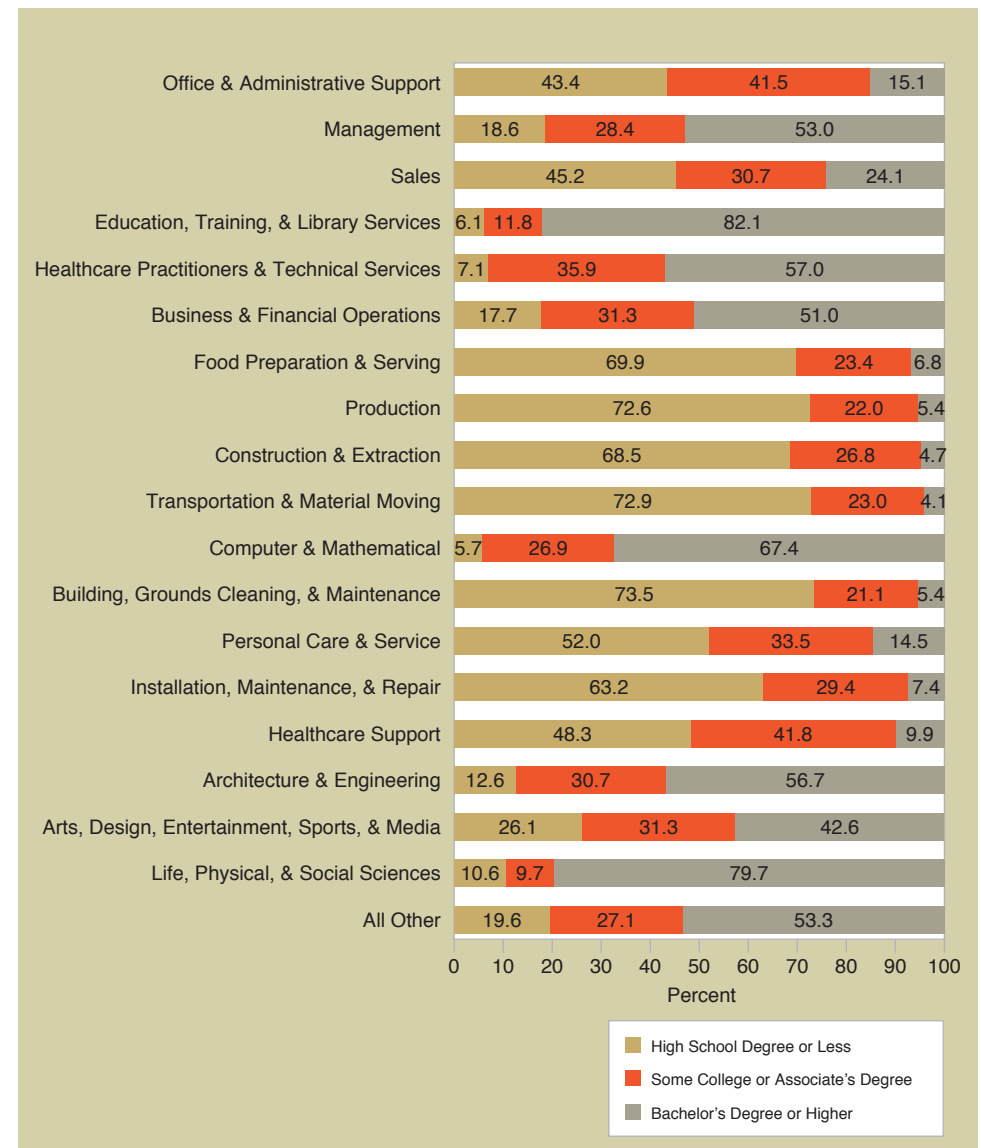
	Education & Health Services	Trade, Transportation, & Utilities	Professional & Business Services	Manufacturing	Leisure & Hospitality	Financial Activities	Construction	Other	All Industries
Office & Administrative Support	11.7	18.9	15.3	11.1	5.9	30.2	5.9	14.7	14.0
Management	7.2	5.4	11.0	14.3	12.1	17.5	14.0	10.1	9.9
Sales	0.4	40.0	4.5	5.4	6.1	20.0	1.0	4.9	11.3
Education, Training, & Library Services	24.7	0.1	0.3	0.1	0.9	0.2	0.0	1.9	7.0
Healthcare Practitioners & Technical Services	20.2	2.1	2.7	0.1	0.1	0.4	0.1	1.3	6.3
Business & Financial Operations	1.6	2.6	10.1	4.5	0.7	18.7	1.8	3.9	4.2
Food Preparation & Serving	2.4	1.5	0.1	0.2	51.6	0.3	0.0	0.7	5.4
Production	0.7	3.5	2.3	37.4	0.7	0.2	0.8	3.6	6.1
Construction & Extraction	0.4	0.7	0.8	1.1	0.0	0.7	68.1	0.5	4.7
Transportation & Material Moving	0.8	15.9	2.5	5.7	2.8	0.9	2.5	2.6	5.0
Computer & Mathematical	0.9	0.9	9.6	4.1	0.2	4.6	0.0	2.1	2.4
Building, Grounds Cleaning, & Maintenance	3.6	1.0	14.3	0.7	4.7	2.3	0.3	4.2	3.6
Personal Care & Service	5.6	0.5	0.6	0.0	6.5	0.1	0.0	13.2	3.7
Installation, Maintenance, & Repair	0.4	4.0	1.5	3.4	0.9	1.2	4.0	9.8	3.0
Healthcare Support	11.3	0.2	0.5	0.0	0.2	0.1	0.0	1.2	3.3
Architecture & Engineering	0.2	0.6	6.8	8.5	0.0	0.1	1.2	0.9	2.0
Arts, Design, Entertainment, Sports, & Media	0.7	1.0	3.9	1.2	4.0	0.4	0.1	3.2	1.6
Life, Physical, & Social Sciences	1.5	0.2	3.3	1.6	0.1	0.3	0.1	1.0	1.1
All Other	5.8	1.0	10.0	0.4	2.3	1.7	0.1	20.4	5.4
All Occupations	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

## EDUCATIONAL ATTAINMENT OF EMPLOYEES BY MAJOR OCCUPATION IN CENTRAL MASS (2000)

By looking at the educational attainment of an occupational group, we better understand the education required in that field of employment. In 2000, in Office & Administrative Support occupations, 41.5 percent of employees in Central Mass had Some College education or an Associate's Degree, and a similar percentage had a High School Degree or less. By comparison, 53.0 percent of employees in Management had a Bachelor's Degree or higher. Educational attainment gives some indication of skill requirements, but is not a perfect proxy for skill. Some occupations require significant training or other credentials. For example, in Installation, Maintenance, & Repair occupations, more than 60 percent of employees have a High School Degree or less, but these occupations often require apprenticeships, professional certifications, or significant on-the-job training.

**Source:** US Census Bureau 2000 Decennial Census PUMS data files.

**Note:** Occupations are sorted by size in Massachusetts in 2008-2010 American Community Survey PUMS data files.

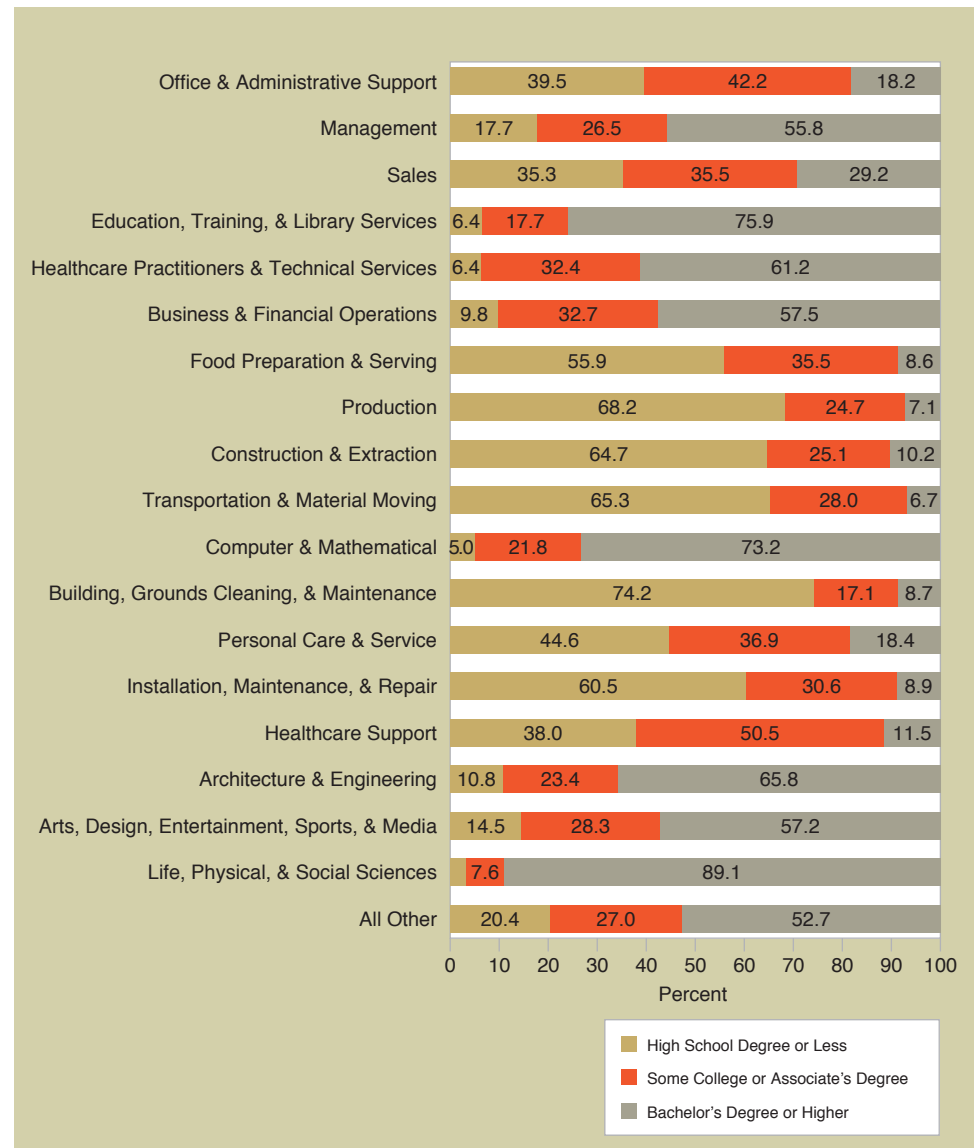


## EDUCATIONAL ATTAINMENT OF EMPLOYEES BY MAJOR OCCUPATION IN CENTRAL MASS (2008-2010)

Over the past decade, the educational attainment of employees in almost all occupations increased in Central Mass. The share of employees with a Bachelor's Degree or higher rose in 17 of the 19 major occupations. For example, the share of Business & Financial Operations employees with a Bachelor's Degree or higher grew by more than 6 percentage points to reach 57.5 percent in 2008-2010. Even occupations with a mix of education levels, such as Office & Administrative Support, saw declines in the share of employees with High School Degrees or less and growth in the share of employees with a Bachelor's Degree or higher, as well as those with Some College or an Associate's Degree. The educational attainment of employees even increased in occupations where workers traditionally have less education, such as Production. As such, nine occupations in the region had a majority of employees with a Bachelor's Degree or higher in 2008-2010, while six occupations had a majority of employees with a High School Degree or less.

**Source:** US Census Bureau 2008-2010 American Community Survey PUMS data files.

**Note:** Occupations are sorted by size in Massachusetts in 2008-2010 American Community Survey PUMS data files.

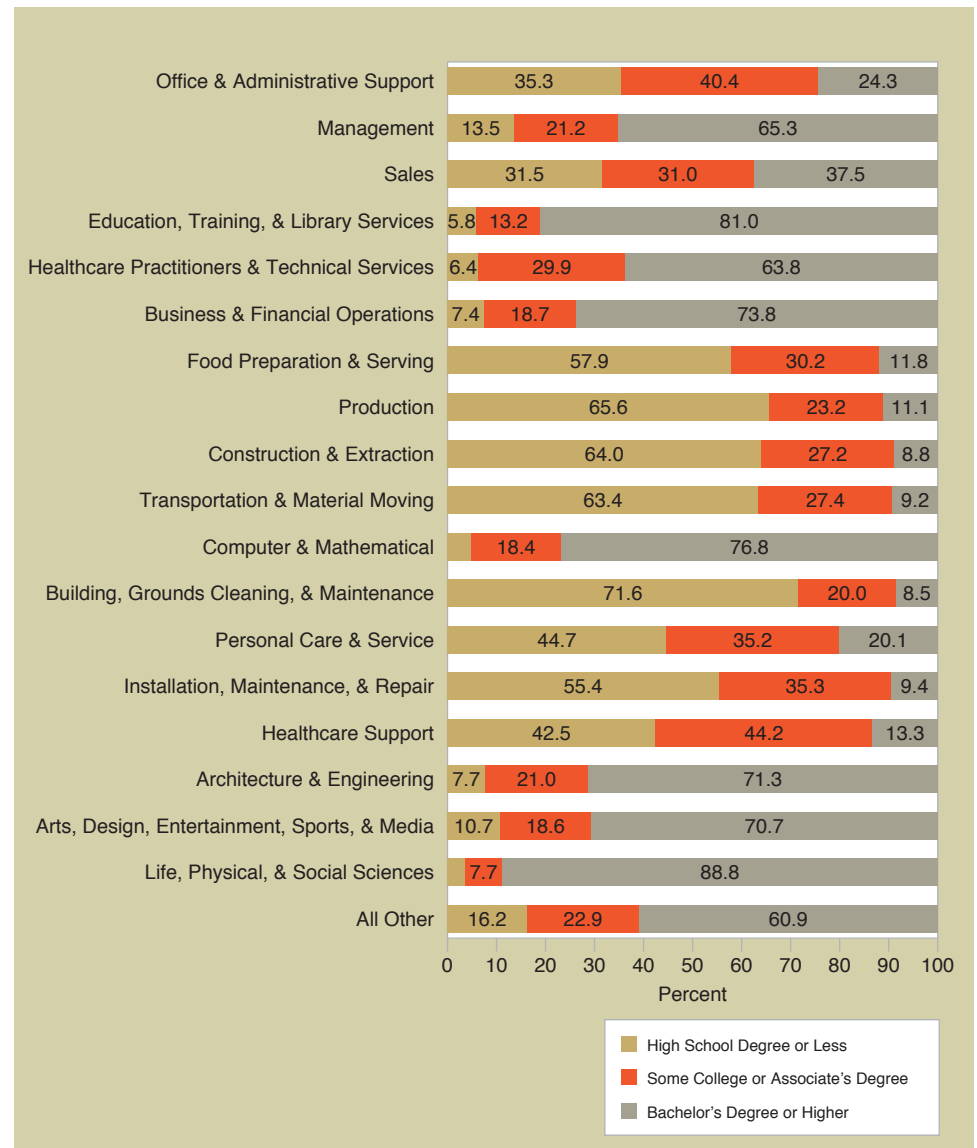


## EDUCATIONAL ATTAINMENT OF EMPLOYEES BY MAJOR OCCUPATION IN MASSACHUSETTS (2008-2010)

Despite the increasing levels of educational attainment across occupations in Central Mass, the region still tends to have lower levels of educational attainment compared with Massachusetts. Of the 19 major occupation groups in Massachusetts, 16 have greater shares of employees with a Bachelor's Degree or higher compared with those in Central Mass. These include occupations that have a majority of employees with high levels of education (i.e., Management and Business & Financial Operations), mixed educational attainment (i.e., Office & Administrative Support), and predominantly lower education levels (i.e., Production). Meanwhile, Central Mass has much higher concentrations of employees with Some College or an Associate's Degree in 15 of the 19 major occupations. But the preponderance of Bachelor's Degrees statewide results in 15 occupations in Massachusetts having a higher share of employees with some post-secondary education (Some College or Higher) compared with Central Mass.

**Source:** US Census Bureau 2008-2010 American Community Survey PUMS data files.

**Note:** Occupations are sorted by size in Massachusetts in 2008-2010 American Community Survey PUMS data files.





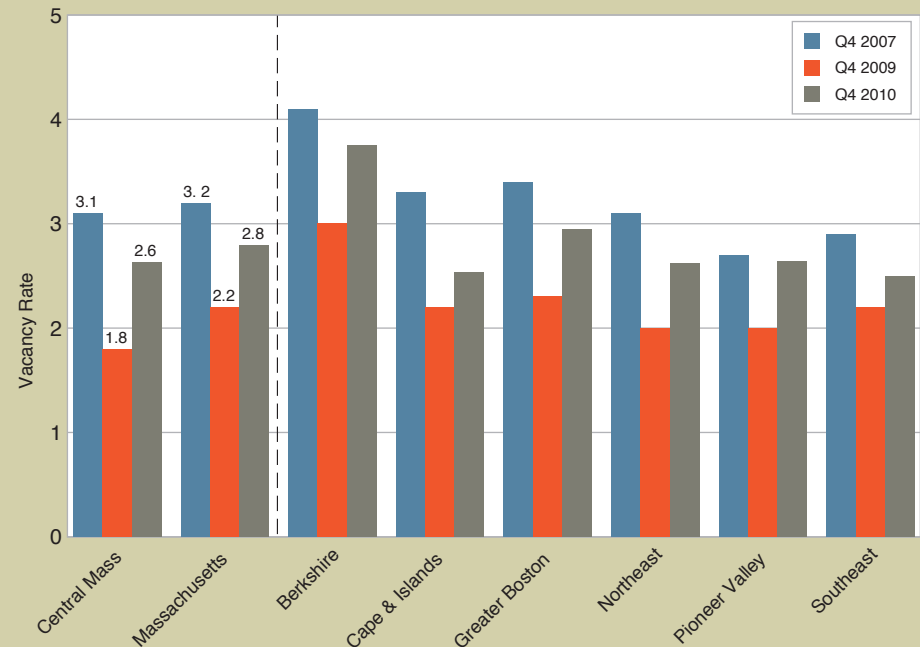
## JOB VACANCIES IN THE GREAT RECESSION AND RECOVERY

Job vacancies exist even in a healthy labor market due to turnover and constant flux in the labor market. As businesses expand, they need to hire individuals who meet specific skill requirements, and employees with skills that are in demand leave jobs for better positions. As the economy enters a downturn, job vacancies decline due to an overall decline in labor demand, there is an increase in the number of applicants available to fill positions, and there is less turnover as employees stay longer in jobs. At the end of 2007, the job vacancy rate in the Central Mass was 3.1 percent. As a result of the Great Recession, it fell to 1.8 percent by the end of 2009, making it the lowest among all regional labor markets. As the economy started to recover, the vacancy rate rose, hitting 2.6 percent by the end of 2010. At that point, Central Mass accounted for 10.2 percent of the state's employment but only 8.2 percent of the job vacancies.

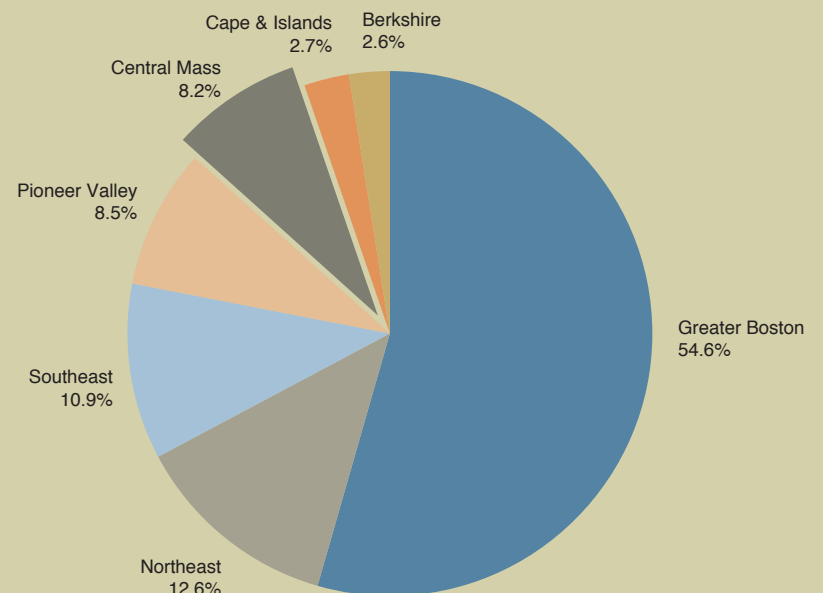
**Source:** Massachusetts Executive Office of Labor and Workforce Development Job Vacancy Survey.

**Note:** The Massachusetts Job Vacancy Survey is collected for seven regions in the state. Vacancy rates are calculated by taking the total number of job vacancies and dividing by the total number employed in the region. The Greater Boston region covers portions of the Northeast, Metro South/West, Central Mass, and Southeast regions of the regional labor market profiles. The vacancy information for the Greater Boston region is used as an approximation of the vacancies trends experienced in the Metro South/West and Boston/Metro North regions.

### Job Vacancy Rates



### Distribution of Job Vacancies Across Regional Labor Markets, Q4 2010



## JOB VACANCIES AND VACANCY RATES BY MAJOR OCCUPATION IN CENTRAL MASS (Q4 2010)

At the end of 2010, one-half of the vacancies in Central Mass were concentrated in four occupations (Sales, Office & Administrative Support, Food Preparation & Serving, and Healthcare Practitioner & Technical). The Healthcare Practitioner & Technical occupation accounted for the largest share of vacancies (14.0 percent) and had the highest vacancy rate (4.3 percent) of all occupations in Central Mass. Other occupations with a large number of vacancies and an above-average vacancy rate included Healthcare Support and Transportation & Material Moving. In contrast, Office & Administrative Support was an example of a large occupational group that accounted for a high share of total vacancies (10.1 percent) but had a relatively low vacancy rate (1.5 percent). Not surprisingly, the number of vacancies and vacancy rates in occupations hit hardest by the Great Recession, such as Construction & Extraction, were low in the region (1.1 percent).

**Source:** Massachusetts Executive Office of Labor and Workforce Development Job Vacancy Survey.

**Note:** Vacancy rates are calculated by taking the total number of job vacancies and dividing by the total number employed in the occupation. An asterisk (\*) indicates there were vacancies in the occupation that were suppressed due to disclosure issues.

	Number of Vacancies	Share of Vacancy (Percent)	Job Vacancy Rate (Percent)
Total	6,408	100.0	2.6
Sales	862	13.5	2.9
Office & Administrative Support	647	10.1	1.5
Food Preparation & Serving Related	796	12.4	3.5
Business & Financial Operations	368	5.7	4.0
Healthcare Practitioner & Technical	894	14.0	4.3
Computer & Mathematical	60	0.9	1.7
Management	171	2.7	1.2
Healthcare Support	369	5.8	3.6
Transportation & Material Moving	592	9.2	4.0
Education, Training & Library	469	7.3	2.1
Personal Care & Service	139	2.2	2.0
Production	293	4.6	1.3
Architecture & Engineering	102	1.6	2.5
Building, Grounds Cleaning & Maintenance	95	1.5	1.3
Arts, Design, Entertainment, Sports & Media	58	0.9	2.0
Community & Social Services	115	1.8	1.6
Life, Physical, & Social Services	70	1.1	2.7
Installation, Maintenance & Repair	142	2.2	1.6
Protective Service	43	0.7	0.7
Construction & Extraction	107	1.7	1.1
Legal	*	-	0.8

## JOB VACANCIES AND VACANCY RATES BY MAJOR OCCUPATION IN MASSACHUSETTS (Q4 2010)

Job vacancies in Massachusetts are different from those in Central Mass. In the fourth quarter of 2010, the largest share of job vacancies (21.1 percent) and the highest vacancy rate (5.2 percent) in Massachusetts were in Sales occupations, and they were much higher compared with Sales occupations in Central Mass. The state also tends to have higher concentrations of vacancies in the categories of Computer & Mathematical and Business & Financial Operations. However, Massachusetts has much smaller shares of vacancies and lower vacancy rates in Food Preparation & Serving, Healthcare Practitioners & Technical, Transportation & Material Moving, Education, Training, & Library, and Production occupations compared with Central Mass.

**Source:** Massachusetts Executive Office of Labor and Workforce Development Job Vacancy Survey.

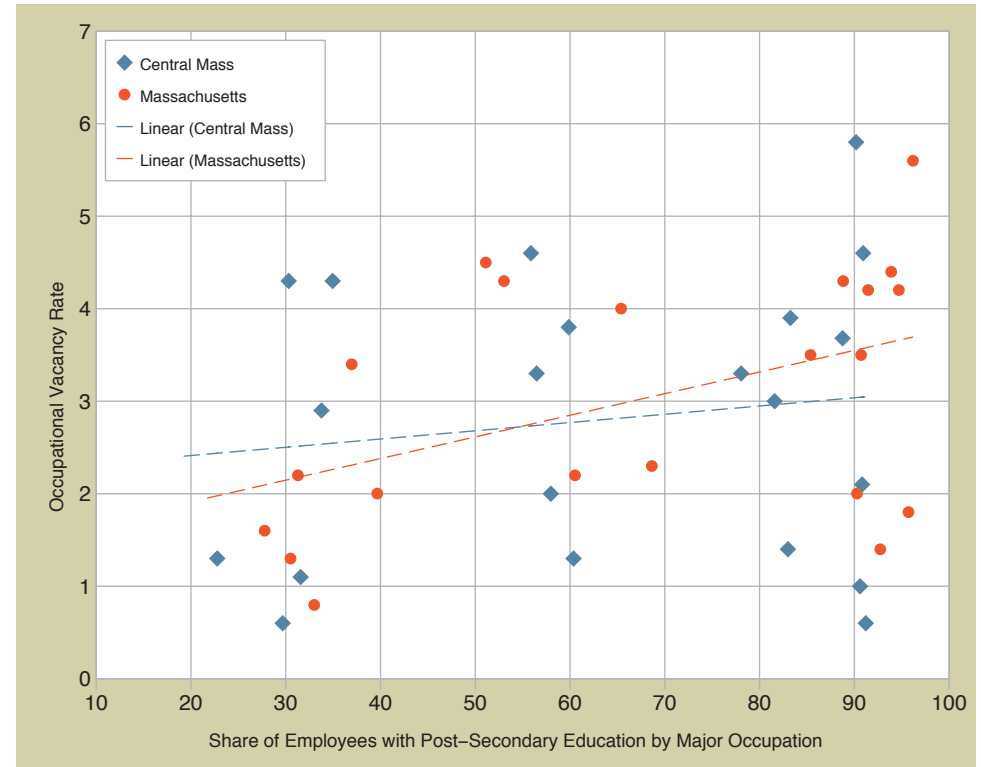
	Number of Vacancies	Share of Vacancy (Percent)	Job Vacancy Rate (Percent)
Total	78,589	100.0	2.8
Sales	16,584	21.1	5.2
Office & Administrative Support	8,650	11.0	1.6
Food Preparation & Serving Related	8,195	10.4	3.1
Business & Financial Operations	6,079	7.7	3.6
Healthcare Practitioner & Technical	5,249	6.7	2.3
Computer & Mathematical	4,950	6.3	4.0
Management	4,595	5.8	2.5
Healthcare Support	3,634	4.6	3.8
Transportation & Material Moving	3,214	4.1	2.1
Education, Training & Library	2,895	3.7	1.3
Personal Care & Service	2,055	2.6	2.4
Production	1,774	2.3	1.1
Architecture & Engineering	1,734	2.2	2.3
Building, Grounds Cleaning & Maintenance	1,555	2.0	1.5
Arts, Design, Entertainment, Sports & Media	1,421	1.8	2.7
Community & Social Services	1,411	1.8	2.2
Life, Physical, & Social Services	1,398	1.8	2.6
Installation, Maintenance & Repair	1,160	1.5	1.2
Protective Service	1,124	1.4	1.5
Construction & Extraction	583	0.7	0.6
Legal	244	0.3	1.0

## COMPARING VACANCY RATES AND EDUCATIONAL ATTAINMENT: PEAK LABOR MARKET

Before entering the Great Recession, there was a positive correlation between educational attainment and job vacancies in Massachusetts. That is, occupations with workers who had higher levels of educational attainment had higher vacancy rates. This is not necessarily surprising, as occupations that have larger shares of employees with a High School Degree or less can sometimes be filled by a number of individuals with less training and at lower costs to employers. In contrast, jobs in highly specialized occupations that require specific educational requirements face competition both regionally and globally for a limited number of individuals who can fill such positions. Further, statewide growth in industries that employ large shares of individuals with high levels of educational attainment, such as Health Care & Social Assistance and Professional & Technical Services, has led to increased vacancies and demand for employees that can fill such positions. This relationship was fairly weak in Central Mass due to its occupations tending to have lower shares of employees with post-secondary education and stronger employment concentrations in sectors with lower educational attainment, such as Manufacturing and Trade, Transportation, & Utilities.

**Source:** Massachusetts Executive Office of Labor and Workforce Development Job Vacancy Survey and US Census Bureau 2005-2007 American Community Survey.

**Note:** Occupational vacancy rates for Central Mass in Q4 2007 proxy vacancy rates in a peak labor market and educational attainment data by occupation in Central Mass from the 2005-2007 American Community Survey proxy share of employees with a post-secondary education in a peak labor market. Workers have attained a post-secondary education if they have attended Some College or obtained an Associate's Degree, Bachelor's Degree, or Master's Degree or higher.

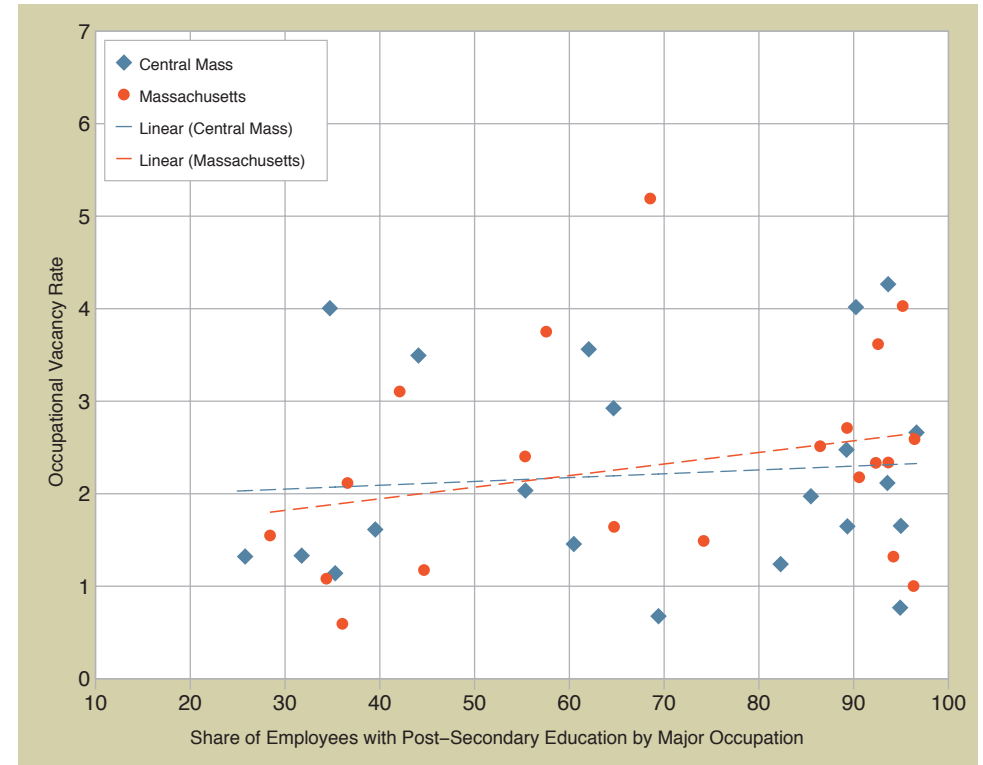


## COMPARING VACANCY RATES AND EDUCATIONAL ATTAINMENT: RECOVERING LABOR MARKET

In the Great Recession, the relationship between vacancy rates and educational attainment weakened statewide, and it almost disappeared in Central Mass by the end of 2010. This change in Central Mass was likely driven by three factors: (1) the lower levels of educational attainment of employees in nearly all occupations in Central Mass; (2) the region's lower vacancy rates in occupations with predominantly higher levels of education, such as Computer & Mathematical and Management, and higher vacancy rates in occupations that typically require less education, such as Transportation & Material Moving and Food Preparation & Serving; and (3) the region's strongest employment gains being concentrated in industries with larger shares of employees that have lower levels of educational attainment, such as Transportation & Warehousing and Other Services—resulting in increased demand for, and vacancies in, in such occupations.

**Source:** Massachusetts Executive Office of Labor and Workforce Development Job Vacancy Survey and US Census Bureau 2008-2010 American Community Survey.

**Note:** Occupational vacancy rates for Central Mass in Q4 2010 proxy vacancy rates in a recovering labor market and educational attainment data by occupation in Central Mass from the 2008-2010 American Community Survey proxy share of employees with a post-secondary education in a recovering labor market.



## GROWTH IN POTENTIAL SUPPLY OF EDUCATED WORKERS: FULL-TIME ENROLLMENT TRENDS IN THE PAST DECADE

Between 2000 and 2010, the number of full-time students enrolled at two- and four-year institutions grew in Central Mass, Massachusetts, and the United States. Growth in full-time enrollment at two-year institutions in the region exceeded both state and national trends, due to a combination of solid annual growth in enrollments at public institutions (5.2 percent) and strong enrollment increases at private institutions (20.7 percent) over the last decade. Enrollment at public four-year institutions in the region also grew solidly (3.7 percent annually) over the course of the past decade. However, a majority of the region's students are enrolled at private four-year institutions, and enrollments at such institutions grew at a more modest annual rate of 2.1 percent. As a

result, Central Mass trailed full-time enrollment patterns at four-year institutions nationwide but exceeded those in Massachusetts. In comparison, enrollment at less-than-two-year institutions declined due to a drop in enrollments at private institutions.

**Source:** National Center for Education Statistics, Integrated Post Secondary Education Data System.

**Note:** Enrollment data are from the fall semester of the academic year. For example, 2010 enrollment is from the fall of 2009 of the 2009-2010 academic year. Enrollment data are provided by the type of institution. Students can earn different types of degrees within an institution. For example, the enrollment at a community college would be categorized as being in a two-year institution for all students enrolled that year. However, students at community colleges complete different type of programs, such as Certificates and Associate's Degrees.

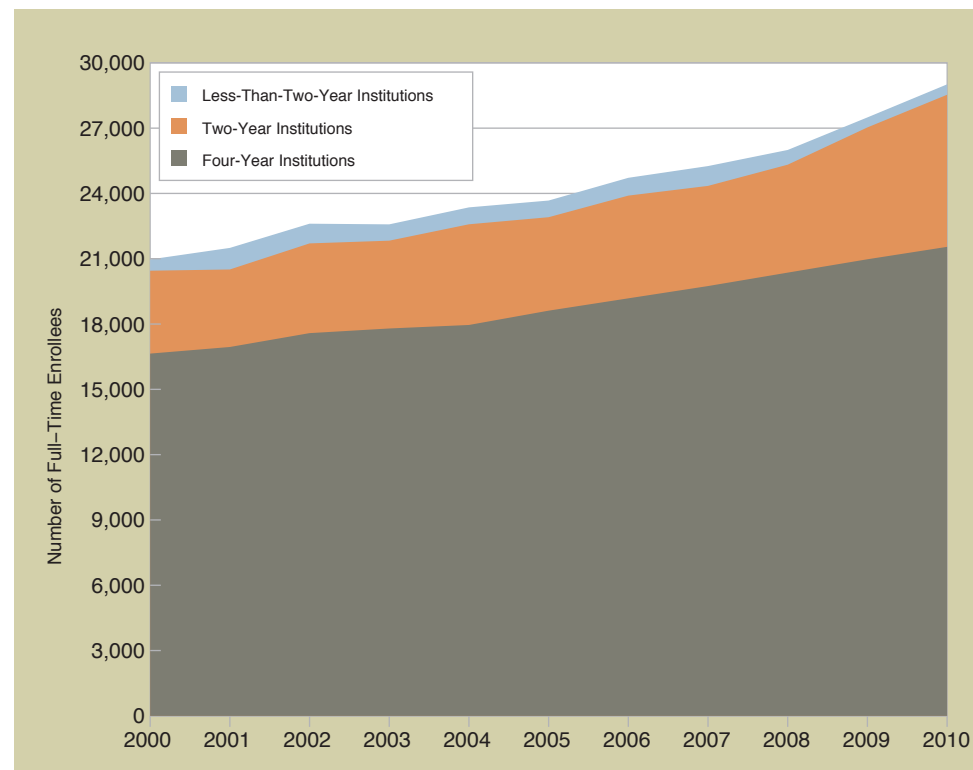
		Less-than-Two-Year Institutions			Two-Year Institutions			Four-Year Institutions		
		Central Mass	MA	US	Central Mass	MA	US	Central Mass	MA	US
Public	Enrollment 2000	0	382	43,504	3,669	31,002	2,008,336	4,883	58,489	3,733,341
	Enrollment 2010	27	316	42,117	6,075	44,278	2,922,622	7,006	73,940	4,904,272
	Absolute Change	27	-66	-1,387	2,406	13,276	914,286	2,123	15,451	1,170,931
	<i>Annual Growth Rate (Percent)</i>	NA	-1.9	-0.3	5.2	3.6	3.8	3.7	2.4	2.8
Private	Enrollment 2000	518	3,427	138,260	139	5,796	259,071	11,760	125,640	1,863,471
	Enrollment 2010	452	9,609	277,341	913	5,457	457,134	14,540	153,139	3,000,813
	Absolute Change	-66	6,182	139,081	774	-339	198,063	2,780	27,499	1,137,342
	<i>Annual Growth Rate (Percent)</i>	-1.4	10.9	7.2	20.7	-0.6	5.8	2.1	2.0	4.9
Total	Enrollment 2000	518	3,809	181,764	3,808	36,798	2,267,407	16,643	184,129	5,596,812
	Enrollment 2010	479	9,925	319,458	6,988	49,735	3,379,756	21,546	227,079	7,905,085
	Absolute Change	-39	6,116	137,694	3,180	12,937	1,112,349	4,903	42,950	2,308,273
	<i>Annual Growth Rate (Percent)</i>	-0.8	10.1	5.8	6.3	3.1	4.1	2.6	2.1	3.5

## NUMBER OF FULL-TIME ENROLLEES BY TYPE OF DEGREE GRANTING INSTITUTION IN CENTRAL MASS (2000-2010)

Four-year institutions continue to account for most of the full-time enrollment in higher education institutions in Central Mass, but their share fell from 79.4 percent to 74.3 percent over the past decade. While full-time enrollment at four-year institutions grew at a fairly consistent pace in the past decade, there was a sharp increase in enrollment at two-year institutions in recent years. Between 2000 and 2008, the annual rates of growth in full-time enrollment at four-year (2.6 percent) and two-year institutions (3.4 percent) were not that different. Between 2008 and 2010, however, the number of full-time enrollments at two-year institutions increased from 4,950 to nearly 7,000, an annual growth rate of 18.7 percent. This far exceeded the annual rate of growth in full-time enrollment at four-year institutions (2.9 percent).

**Source:** National Center for Education Statistics, Integrated Post Secondary Education Data System.

**Note:** In the above stacked-area chart, the different areas represent the number of enrollees by institution type. For example, enrollment in less-than-two-year institutions was nearly 500 in 2010, compared with more than 21,500 at four-year institutions that year. All three areas combined represent the total number of enrollees in post-secondary educational institutions in Central Mass, of which there were more than 29,000 in 2010. The areas are stacked in order of size in 2010, with enrollment at four-year institutions, the largest enrollment group, on the bottom and enrollment at less-than-two-year institutions, the smallest group, at the top.



## GROWTH IN POTENTIAL SUPPLY OF EDUCATED WORKERS: PART-TIME ENROLLMENT TRENDS IN THE PAST DECADE

The majority of part-time enrollees at post-secondary educational institutions are in public two-year institutions. In Central Mass, part-time enrollment at public two-year institutions increased at an annual rate of 2.9 percent between 2000 and 2010. The region's part-time enrollment growth exceeded the rates in Massachusetts and the United States. Reflecting a similar pattern seen statewide, part-time enrollment in both public and private four-year institutions in Central Mass declined over the past decade, while growing nationwide. The small number of part-time enrollees at private,

less-than-two-year institutions more than doubled from 44 in 2000 to 92 in 2010.

**Source:** National Center for Education Statistics, Integrated Post Secondary Education Data System.

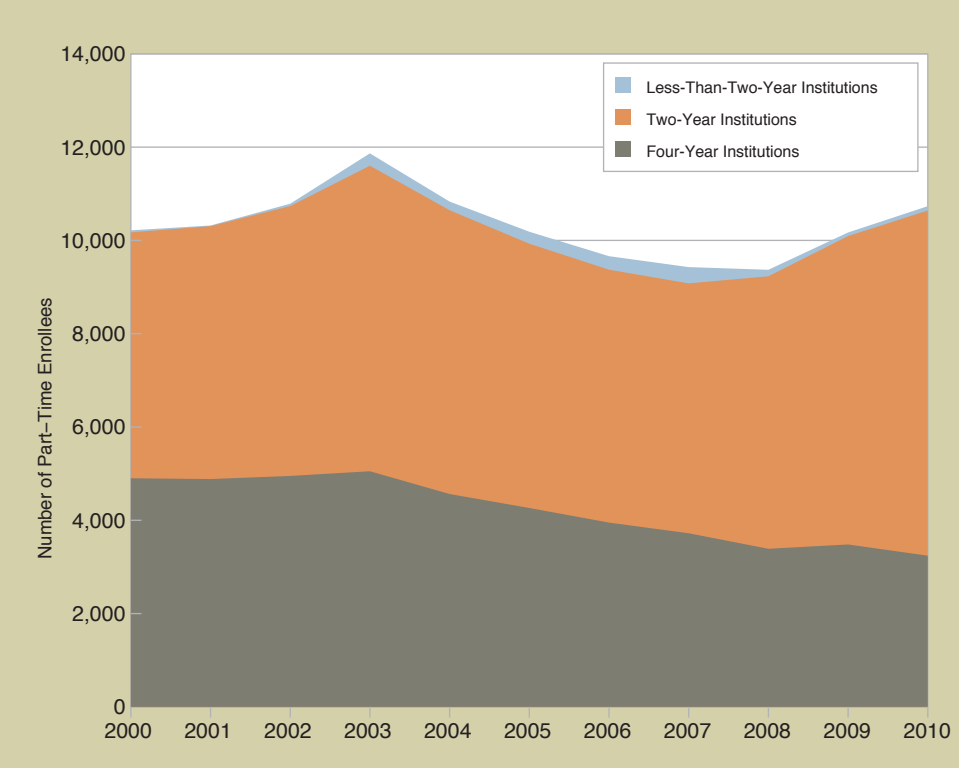
		Less-than-Two-Year Institutions			Two-Year Institutions			Four-Year Institutions		
		Central Mass	MA	US	Central Mass	MA	US	Central Mass	MA	US
Public	Enrollment 2000	0	25	31,407	5,271	48,506	3,509,639	2,934	22,160	1,045,388
	Enrollment 2010	0	65	27,264	7,035	58,043	4,247,674	1,920	16,120	1,380,877
	Absolute Change	0	40	-4,143	1,764	9,537	738,035	-1,014	-6,040	335,489
	<i>Annual Growth Rate (Percent)</i>	<i>NA</i>	<i>10.0</i>	<i>-1.4</i>	<i>2.9</i>	<i>1.8</i>	<i>1.9</i>	<i>-4.2</i>	<i>-3.1</i>	<i>2.8</i>
Private	Enrollment 2000	44	1,522	31,827	0	3,536	66,870	1,967	27,425	476,690
	Enrollment 2010	92	2,633	44,382	366	1,554	61,006	1,321	19,155	775,694
	Absolute Change	48	1,111	12,555	366	-1,982	-5,864	-646	-8,270	299,004
	<i>Annual Growth Rate (Percent)</i>	<i>7.7</i>	<i>5.6</i>	<i>3.4</i>	<i>NA</i>	<i>-7.9</i>	<i>-0.9</i>	<i>-3.9</i>	<i>-3.5</i>	<i>5.0</i>
Total	Enrollment 2000	44	1,547	63,234	5,271	52,042	3,576,509	4,901	49,585	1,522,078
	Enrollment 2010	92	2,698	71,646	7,401	59,597	4,308,680	3,241	35,275	2,156,571
	Absolute Change	48	1,151	8,412	2,130	7,555	732,171	-1,660	-14,310	634,493
	<i>Annual Growth Rate (Percent)</i>	<i>7.7</i>	<i>5.7</i>	<i>1.3</i>	<i>3.5</i>	<i>1.4</i>	<i>1.9</i>	<i>-4.1</i>	<i>-3.3</i>	<i>3.5</i>



# NUMBER OF PART-TIME ENROLLEES BY TYPE OF DEGREE GRANTING INSTITUTION IN CENTRAL MASS (2000-2010)

While part-time enrollment in two-year institutions in Central Mass increased over the course of the past decade, it did not consistently expand over the years. Between 2000 and 2003, part-time enrollment in two-year institutions increased at an annual rate of 7.5 percent, before declining at an annual rate of 4.9 percent between 2003 and 2007. Afterward, enrollment grew between 2007 and 2010 at an annual rate of 11.4 percent. In comparison, part-time enrollments at four-year institutions also increased between 2000 and 2003 (1.0 percent) but subsequently declined through the end of the decade. Enrollment at less-than-two-year institutions was more volatile over the course of the decade, growing from fewer than 50 part-time students in 2000 to nearly 350 in 2006, before dropping to 92 in 2010.

**Source:** National Center for Education Statistics, Integrated Post Secondary Education Data System.

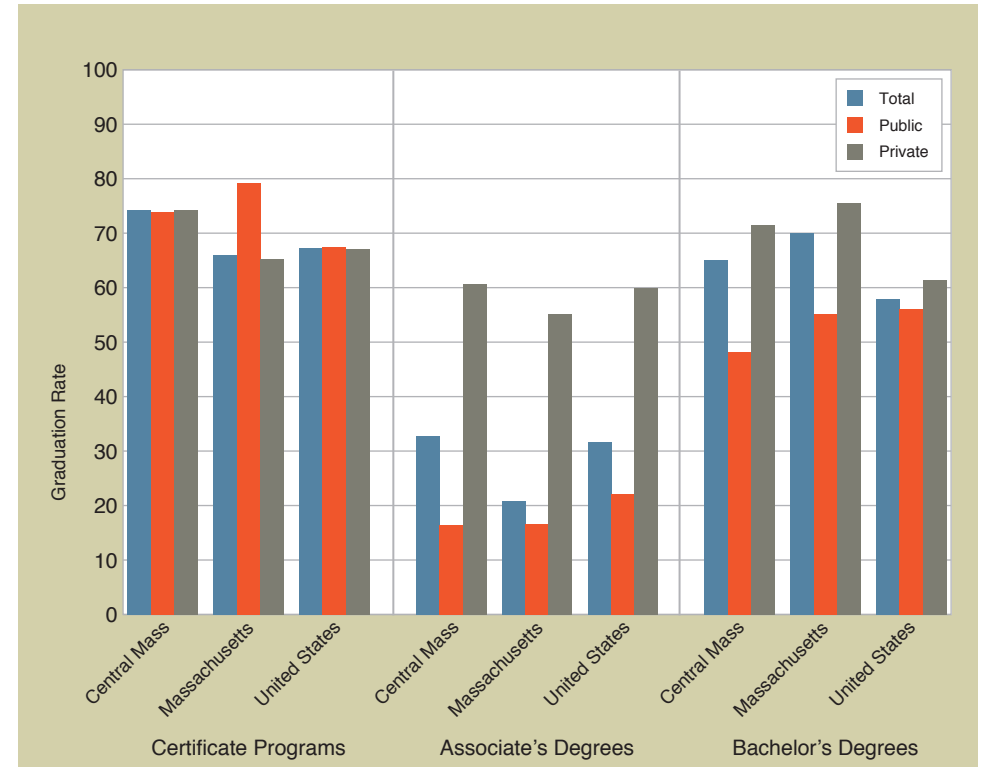


## GRADUATION RATES BY TYPE OF DEGREE (2009)

Enrollment indicates a potential supply of workers with a post-secondary degree, but the actual supply depends on how many students complete their programs and earn a degree or a certificate. In 2009, the graduation rate for first-time full-time students at four-year institutions in Central Mass (i.e., those who earned a Bachelor's Degree within six years) was 65.1 percent. This graduation rate was lower than the statewide rate but higher than the national rate. But the six-year Bachelor's Degree graduation rate at public institutions (48.1 percent) was lower than the graduation rate at public four-year institutions both in Massachusetts and in the United States. It was also much lower than the graduation rate at private institutions (71.6 percent) in the region. The three-year Associate's Degree graduation rate (32.7 percent) was higher in the region than in Massachusetts and United States, due to higher graduation rates at private institutions. The Certificate program graduation rate in Central Mass (74.2 percent) was also higher than it was statewide and nationally, with high private and public graduation rates.

**Source:** National Center for Education Statistics, Integrated Post Secondary Education Data System.

**Note:** Graduation rates are the number of first-time full-time students who completed their degree/program within 150 percent of the time expected to complete the degree/program as a share of the number of first-time full-time students that started the degree/program (i.e., a Bachelor's Degree is considered to have been earned on time if it is completed within six years or less, or 150 percent of four years). Comparisons of graduation rates to enrollments or degree completions can be misleading as the first-time full-time students are a small subset of the student population, particularly for certain degrees/programs. Graduation rates do not include part-time students and are excluded when there is an inadequate sample size of first-time full-time entrants for the degree/program to calculate a graduation rate. See the on-line Methodological Appendix for further details.



## CROSSING THE FINISH LINE: TRENDS IN DEGREE COMPLETIONS OVER THE PAST DECADE (2000-2010)

Total annual completions show the number of people who have earned a degree or Certificate in a given year. The strongest annual growth (7.7 percent) over the course of the past decade in Central Mass came from the number of students earning Certificates, which nearly doubled at both public and private institutions, exceeding the growth in both Massachusetts and the United States. The region also experienced strong annual growth in the number of students earning Associate's Degrees at both public (3.8 percent) and private (3.9 percent) institutions. While such growth was stronger than that seen statewide, it trailed the annual national growth rate of 4.2 percent. There was only modest growth in both

public and private completions of Bachelor's Degrees from institutions in the region (2.1 percent) over the past decade. While this matched the statewide trend, it trailed the 2.9 percent increase of Bachelor's Degrees completed nationwide.

**Source:** National Center for Education Statistics, Integrated Post Secondary Education Data System.

**Note:** Degree completions are for those students who completed degrees at institutions within the defined geography. The students may not actually live in the region. Completion totals are based on degrees completed in an academic year. For example, 2010 completions represent degrees completed in the 2009-2010 academic year.

		Certificates			Associate's Degrees			Bachelor's Degrees		
		Central Mass	MA	US	Central Mass	MA	US	Central Mass	MA	US
Public	Completions 2000	243	2,273	298,282	914	7,487	471,339	1,185	12,718	811,076
	Completions 2010	565	3,618	460,865	1,321	9,831	670,395	1,464	16,251	1,049,058
	Absolute Change	322	1,345	162,583	407	2,344	199,056	279	3,533	237,982
	Annual Growth Rate (Percent)	8.8	4.8	4.4	3.8	2.8	3.6	2.1	2.5	2.6
Private	Completions 2000	357	5,221	258,503	238	3,812	135,604	2,689	29,658	431,412
	Completions 2010	699	8,195	430,685	349	4,366	249,258	3,285	35,972	603,141
	Absolute Change	342	2,974	172,182	111	554	113,654	596	6,314	171,729
	Annual Growth Rate (Percent)	7.0	4.6	5.2	3.9	1.4	6.3	2.0	1.9	3.4
Total	Completions 2000	600	7,494	556,785	1,152	11,299	606,943	3,874	42,376	1,242,488
	Completions 2010	1,264	11,813	891,550	1,670	14,197	919,653	4,749	52,223	1,652,199
	Absolute Change	664	4,319	334,765	518	2,898	312,710	875	9,847	409,711
	Annual Growth Rate (Percent)	7.7	4.7	4.8	3.8	2.3	4.2	2.1	2.1	2.9

## EDUCATIONAL INSTITUTIONS AWARDING THE MOST DEGREES IN CENTRAL MASS (2010)

Mount Wachusett and Quinsigamond, the region's two public community colleges, accounted for more than 40 percent of the Certificates completed at Central Mass institutions in 2010. However, private institutions awarded 55.3 percent of the region's Certificates in 2010, with the largest share coming from the Salter School (26.7 percent). In contrast, Associate's Degrees were mostly completed at the region's two community colleges (79.1 percent), with the remaining degrees coming from the region's six private Associate's Degree granting institutions. Despite the fact that the largest share of Bachelor's Degrees came from Worcester State College (16.2 percent), 69.2 percent of the degrees completed in 2010 were at the region's nine private Bachelor's Degree granting institutions. Of the private institutions, Worcester Polytechnic Institute awarded the most Bachelor's Degrees.

**Source:** National Center for Education Statistics, Integrated Post Secondary Education Data System.

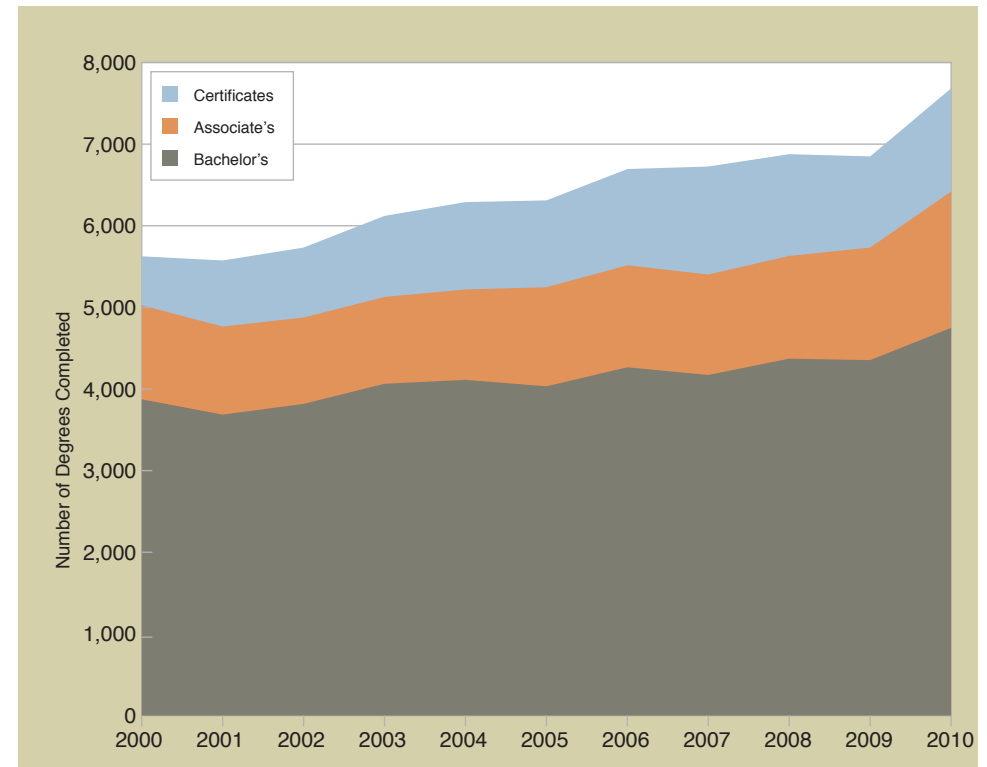
**Note:** See the on-line Data Appendix for a full list of degree completions by institution.

	Institution	Type	Public or Private	Degrees Awarded	Share of Degree Type Completed in Region
Certificates	The Salter School	< Two Years	Private	337	26.7
	Mount Wachusett Community College	Two Year	Public	270	21.4
	Quinsigamond Community College	Two Year	Public	242	19.1
Associate's	Quinsigamond Community College	Two Year	Public	802	48.0
	Mount Wachusett Community College	Two Year	Public	519	31.1
	Salter College-West Boylston	Two Year	Private	183	11.0
Bachelor's	Worcester State University	Four Year	Public	768	16.2
	Worcester Polytechnic Institute	Four Year	Private	720	15.2
	College of the Holy Cross	Four Year	Private	716	15.1

## NUMBER OF DEGREE COMPLETIONS BY DEGREE TYPE: CENTRAL MASS (2000-2010)

Adding up Bachelor's and Associate's Degrees and Certificates, the total number of postsecondary degrees awarded by institutions in Central Mass grew at an annual rate of 3.2 percent between 2000 and 2010. Such growth was faster than the growth in Massachusetts (2.5 percent) but slower than the growth in United States (3.7 percent). Between 2000 and 2007, the number of Certificates completed in Central Mass doubled and grew at an annual rate of 12.0 percent. However, in 2007 the region's Certificate completions peaked and subsequently declined at an annual rate of 1.5 percent through the end of the decade. In comparison, Associate's Degree completions increased consistently between 2000 and 2008, growing at an annual rate of 1.1 percent. Between 2008 and 2010, the number of people earning Associate's Degrees in Central Mass grew considerably faster, increasing at an annual rate of 15.2 percent. The number of people earning Bachelor's Degrees, on the other hand, increased at a fairly stable rate over the course of the decade, with a moderately higher growth in completions in 2009 and 2010.

**Source:** National Center for Education Statistics, Integrated Post Secondary Education Data System.



## CERTIFICATES AWARDED BY MAJOR FIELD OF STUDY (2000-2010)

At institutions in Central Mass, Health Sciences and Services were the two largest fields of study and accounted for most of the growth in the number of Certificates granted. The number of people earning Health Sciences certificates in the region more than doubled, and between 2000 and 2010, Health Sciences certificates increased from 38.0 percent to 48.7 percent of all the region's Certificates. This increase was similar to the experience statewide. The number of students earning Services Certificates actually tripled over the same time period, and in 2010, they accounted for 28.2 percent of the region's Certificates. Services Certificates include a wide range of areas of specialization, including Cosmetology, Law Enforcement, Construction Trades, Sports & Fitness Studies,

Library Sciences, Social Work, Appliance Installation & Repair, Welding Technology, and Construction Equipment Operations. Another major field of study in Central Mass to see a large increase was Engineering & Computer Science, with completed Certificates rising from 34 in 2000 to 102 in 2010, even as they declined statewide.

**Source:** National Center for Education Statistics, Integrated Post Secondary Education Data System.

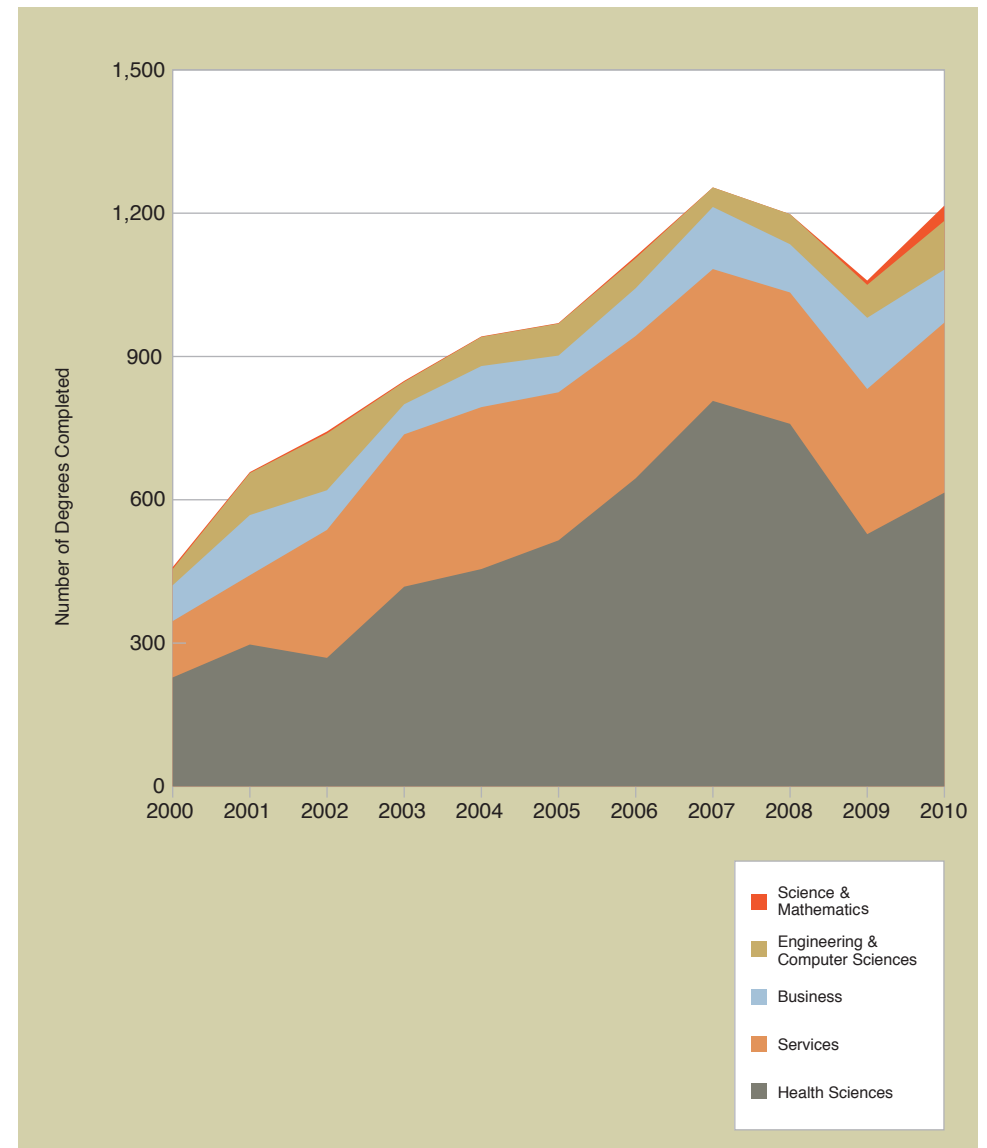
**Note:** For major fields of study by degree type for the United States, see the on-line Data Appendix.

Major Field of Study	Central Mass				Massachusetts			
	2000		2010		2000		2010	
	Certificates Completed	Major's Share of Total (Percent)	Certificates Completed	Major's Share of Total (Percent)	Certificates Completed	Major's Share of Total (Percent)	Certificates Completed	Major's Share of Total (Percent)
Health Sciences	228	38.0	615	48.7	2,080	27.8	5,638	47.7
Services	118	19.7	356	28.2	2,479	33.1	3,984	33.7
Engineering & Computer Sciences	34	5.7	102	8.1	1,013	13.5	752	6.4
Business	75	12.5	111	8.8	709	9.5	513	4.3
Arts, Humanities, & Social Sciences	44	7.3	2	0.2	271	3.6	424	3.6
Legal	10	1.7	28	2.2	132	1.8	189	1.6
Education	9	1.5	3	0.2	129	1.7	87	0.7
Science & Mathematics	4	0.7	32	2.5	248	3.3	80	0.7
Other	16	2.7	15	1.2	81	1.1	146	1.2
<b>Total</b>	<b>600</b>	<b>100.0</b>	<b>1,264</b>	<b>100.0</b>	<b>7,494</b>	<b>100.0</b>	<b>11,813</b>	<b>100.0</b>

## ANNUAL COMPLETIONS BY TOP FIVE CERTIFICATE MAJORS IN CENTRAL MASS (2000-2010)

The number and type of Certificates awarded by Central Mass institutions fluctuated considerably from year to year during the past decade. For example, from 2000 to 2010, Health Sciences Certificates in Central Mass grew at an annual rate of 10.4 percent. However, the region had much stronger growth between 2000 and 2007, with such certificates growing at an annual rate of 19.8 percent. Health Sciences Certificates then declined in 2008 and 2009 before growing modestly in 2010. The persistently large share of certificates in Health Sciences may reflect an increasing demand for employees with such education and training from growing industries such as Health Care & Social Assistance.

**Source:** National Center for Education Statistics, Integrated Post Secondary Education Data System.



## ASSOCIATE'S DEGREES AWARDED BY MAJOR FIELD OF STUDY (2000-2010)

Almost half the growth in Associate's Degrees granted by institutions in Central Mass occurred in the Health Sciences field. Between 2000 and 2010, the number of Health Sciences degrees grew at an annual rate of 5.2 percent and accounted for the largest share of the region's Associate's Degrees (35.6 percent). The region also experienced increases in Business and Engineering & Computer Sciences degrees. As in Central Mass, the state's largest increase in Associate's Degrees came from Health Sciences. However, Massachusetts also increased the number of Associate's Degree completions in Arts, Humanities, & Social Science (the largest major statewide) and Services. In contrast to Central Mass,

there were fewer completions in Massachusetts of Engineering & Computer Sciences and Legal degrees over the course of the decade. In fact, the only decline in Associate's Degrees in Central Mass was outside the major fields of study (the "Other" category). With such a broad increase across major fields of study, the growth of Associate's Degrees in Central Mass surpassed the growth statewide over the course of the decade.

**Source:** National Center for Education Statistics, Integrated Post Secondary Education Data System.

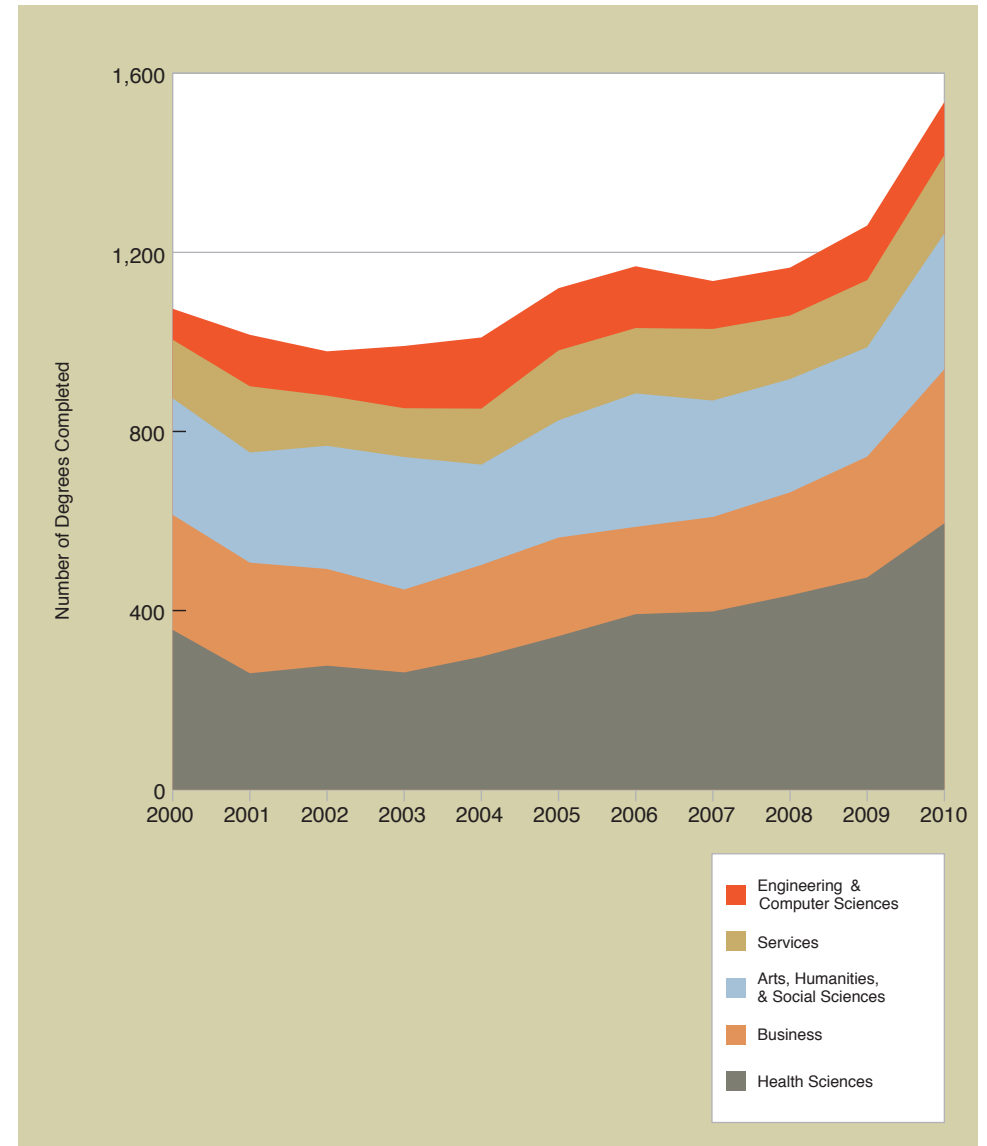
Major Field of Study	Central Mass				Massachusetts			
	2000		2010		2000		2010	
	Associate's Completed	Major's Share of Total (Percent)	Associate's Completed	Major's Share of Total (Percent)	Associate's Completed	Major's Share of Total (Percent)	Associate's Completed	Major's Share of Total (Percent)
Arts, Humanities, & Social Sciences	260	22.6	303	18.1	3,130	27.7	3,833	27.0
Health Sciences	357	31.0	595	35.6	2,302	20.4	3,559	25.1
Services	131	11.4	175	10.5	1,216	10.8	2,389	16.8
Business	257	22.3	344	20.6	2,198	19.5	2,250	15.8
Engineering & Computer Sciences	69	6.0	119	7.1	1,561	13.8	1,162	8.2
Education	12	1.0	45	2.7	293	2.6	442	3.1
Science & Mathematics	16	1.4	36	2.2	231	2.0	260	1.8
Legal	11	1.0	19	1.1	189	1.7	117	0.8
Other	39	3.4	34	2.0	179	1.6	185	1.3
<b>Total</b>	<b>1,152</b>	<b>100.0</b>	<b>1,670</b>	<b>100.0</b>	<b>11,299</b>	<b>100.0</b>	<b>14,197</b>	<b>100.0</b>



## ANNUAL COMPLETIONS BY TOP FIVE ASSOCIATE'S DEGREE MAJORS IN CENTRAL MASS (2000-2010)

In large part, the growth in the number of Associate's Degrees granted in Central Mass over the decade was due to increases in the number of completions in the largest majors in recent years. Between 2000 and 2004, degree completions in four of the five largest majors declined, with the exception being Engineering & Computer Sciences degrees. Thereafter, degree completions in these four fields increased between 2004 and 2010, with annual growth rates between 5.2 percent in Arts, Humanities, & Social Sciences and 12.3 percent in Health Sciences. While each of these fields made considerable gains in the second half of the decade, the largest increase came between 2009 and 2010, with increases in completions ranging from 16.6 percent in Services to 27.4 percent in Business degrees. Engineering & Computer Sciences, on the other hand, declined from a peak level in 2004 through the end of the decade, falling at an annual rate of 4.8 percent.

**Source:** National Center for Education Statistics, Integrated Post Secondary Education Data System.



## BACHELOR'S DEGREES AWARDED BY MAJOR FIELD OF STUDY (2000-2010)

Central Mass and Massachusetts have similar concentrations of Bachelor's Degrees in most major fields of study, with the largest number in Arts, Humanities, & Social Services. The major difference is the region's much higher concentration in the Science, Engineering, Technology, and Mathematics (STEM) fields (Engineering & Computer Sciences and Science & Mathematics majors), mostly due to a much higher concentration in Engineering & Computer Sciences (12.5 percent) than in Massachusetts (7.7 percent). And while Central Mass and Massachusetts have had similar annual rates of growth in Bachelor's Degree completions (2.1 percent) over the course of the decade, they have dif-

fered by fields of study. While the region and state had similar annual rates of growth in Arts, Humanities, & Social Sciences in the past decade, the annual growth in Bachelor's Degree completions in Central Mass has been strongest in the Business (4.6 percent) and Services (8.0 percent) degrees, whereas in Massachusetts the stronger annual growth has been in Science & Mathematics (2.8 percent) and Health Sciences (2.0 percent) degrees.

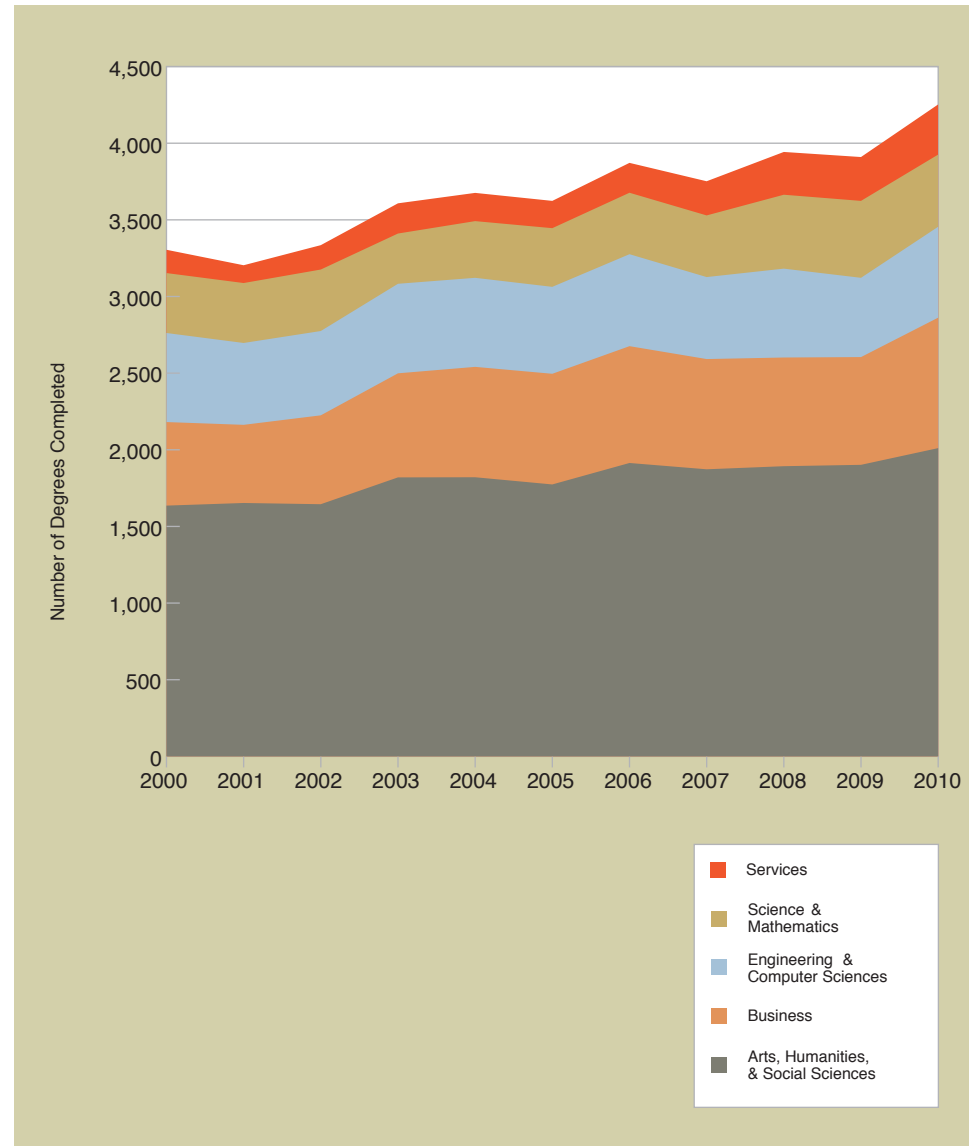
**Source:** National Center for Education Statistics, Integrated Post Secondary Education Data System.

Major Field of Study	Central Mass				Massachusetts			
	2000		2010		2000		2010	
	Bachelor's Completed	Major's Share of Total (Percent)	Bachelor's Completed	Major's Share of Total (Percent)	Bachelor's Completed	Major's Share of Total (Percent)	Bachelor's Completed	Major's Share of Total (Percent)
Arts, Humanities, & Social Sciences	1,636	42.2	2,011	42.3	18,891	44.6	23,405	44.8
Business	545	14.1	851	17.9	7,596	17.9	9,990	19.1
Science & Mathematics	391	10.1	471	9.9	3,818	9.0	5,054	9.7
Engineering & Computer Sciences	581	15.0	593	12.5	3,726	8.8	3,997	7.7
Health Sciences	329	8.5	267	5.6	2,938	6.9	3,589	6.9
Services	152	3.9	327	6.9	2,495	5.9	3,170	6.1
Education	211	5.4	141	3.0	1,922	4.5	1,362	2.6
Legal	8	0.2	11	0.2	176	0.4	190	0.4
Other	21	0.5	77	1.6	797	1.9	1,466	2.8
<b>Total</b>	<b>3,874</b>	<b>100.0</b>	<b>4,749</b>	<b>100.0</b>	<b>42,376</b>	<b>100.0</b>	<b>52,223</b>	<b>100.0</b>

## ANNUAL COMPLETIONS BY TOP FIVE BACHELOR'S DEGREE MAJORS IN CENTRAL MASS (2000-2010)

Between 2000 and 2003, the number of Bachelor's Degree completions in Arts, Humanities, & Social Services and Business, the region's two largest majors, increased at annual rates of 3.6 percent and 7.6 percent, respectively. From 2003 to 2008, degree completions in these two majors slowed and grew at annual rates of less than 1 percent. However, growth in degree completions resumed in the last three years of the decade, with Arts, Humanities, & Social Sciences completions increasing by 3.0 percent and Business by 9.5 percent. In comparison, Services degrees completions consistently grew at a robust rate over this time period, leading the growth of all major fields of study. The number of STEM degrees completed fluctuated throughout the decade. Science & Mathematics degrees declined 5.7 percent between 2000 and 2003, grew by 8.0 percent between 2003 and 2008, and then declined by 1.1 percent to end the decade. In contrast to such ebbs and flows, Bachelor's Degree completions in Engineering & Computer Sciences were at nearly the same level every year, growing at an annual rate of 0.2 percent between 2000 and 2010.

**Source:** National Center for Education Statistics, Integrated Post Secondary Education Data System.





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