

# Labor Market Trends in the Pioneer Valley 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 Pioneer Valley 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 Pioneer Valley
2. Labor Demand: Employment Trends of Jobs and Workers in Pioneer Valley
3. The Pipeline: Educational Supply of Post-Secondary Degrees Granted by Institutions Located in Pioneer Valley

The past decade has been challenging for the Pioneer Valley labor market. After two recessions and a decade of declining employment, the region is now gaining jobs and recovering at a modest pace. Moreover, the recent recovery from the Great Recession has been somewhat stronger in the region than in the state as a whole. Pioneer Valley has experienced relatively broad-based improvement, with stronger growth than the state in a majority of industries, helping to move the region ahead in the first year of the recovery.

While the unemployment rate in the region was nearly the same as the rate statewide through the first half of the past decade, the impact of the Great Recession was particularly severe in Pioneer Valley. The region's unemployment rate reached 9.2 percent in 2010, slightly below the national rate (9.6 percent) but far exceeding the statewide rate (8.5 percent), making it the third highest rate among all regional labor markets. This was significantly higher than the region's unemployment rate following the 2001-02 recession (5.8 percent in 2003) and much higher

than the region's unemployment rate at the beginning of the decade (3.0 percent).

While high unemployment has impacted all demographic groups, it has been disproportionately concentrated among the young and those with lower levels of education. For example, in 2008-2010 over 50 percent of the region's unemployed were 34 years of age or younger, though such individuals accounted for only 32 percent of the region's civilian labor force. Similarly, nearly 60 percent of those unemployed in Pioneer Valley had a High School Degree or less, while only 38 percent of the region's civilian labor force had such an education.

Massachusetts is one of the most highly educated states in the nation, but Pioneer Valley's residents and workforce (which include people who commute from other regions and other states) have education levels similar to their counterparts in the United States. Over the past decade, the region has seen progressively higher levels of educational attainment among its residents and workforce, but a High School

<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 reviews of trends over a longer time period.

Degree continues to be the most common level of educational attainment in the region. In 2008-2010, the share of the region's civilian labor force with a Bachelor's Degree or higher trailed that of Massachusetts (30.5 percent versus 41.2 percent). However, the share of the region's civilian labor force with some post-secondary education (61.8 percent) was closer to the share in Massachusetts (67.8 percent) because of the region's strong concentration of individuals with a Some College education (i.e. Certificates) or an Associate's Degree.

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, 47.1 percent of the region's civilian labor force was 45 years of age 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 progressively higher levels of education in the past decade, slower growth in those with Some College and Associate's Degrees may result in a potential future shortage in the num-

ber of younger residents and workers in the region with the needed skills to replace baby boomers as they retire. This may be particularly troublesome given that 91.5 percent of the region's employees are also residents; Pioneer Valley may not be able to attract workers from other regions to work in jobs with relatively low education requirements and pay, given that these positions are typically filled by less mobile populations. However, younger workers and those with lower levels of education, who are disproportionately unemployed, may provide a future supply of labor that can be educated and trained to address labor shortages.

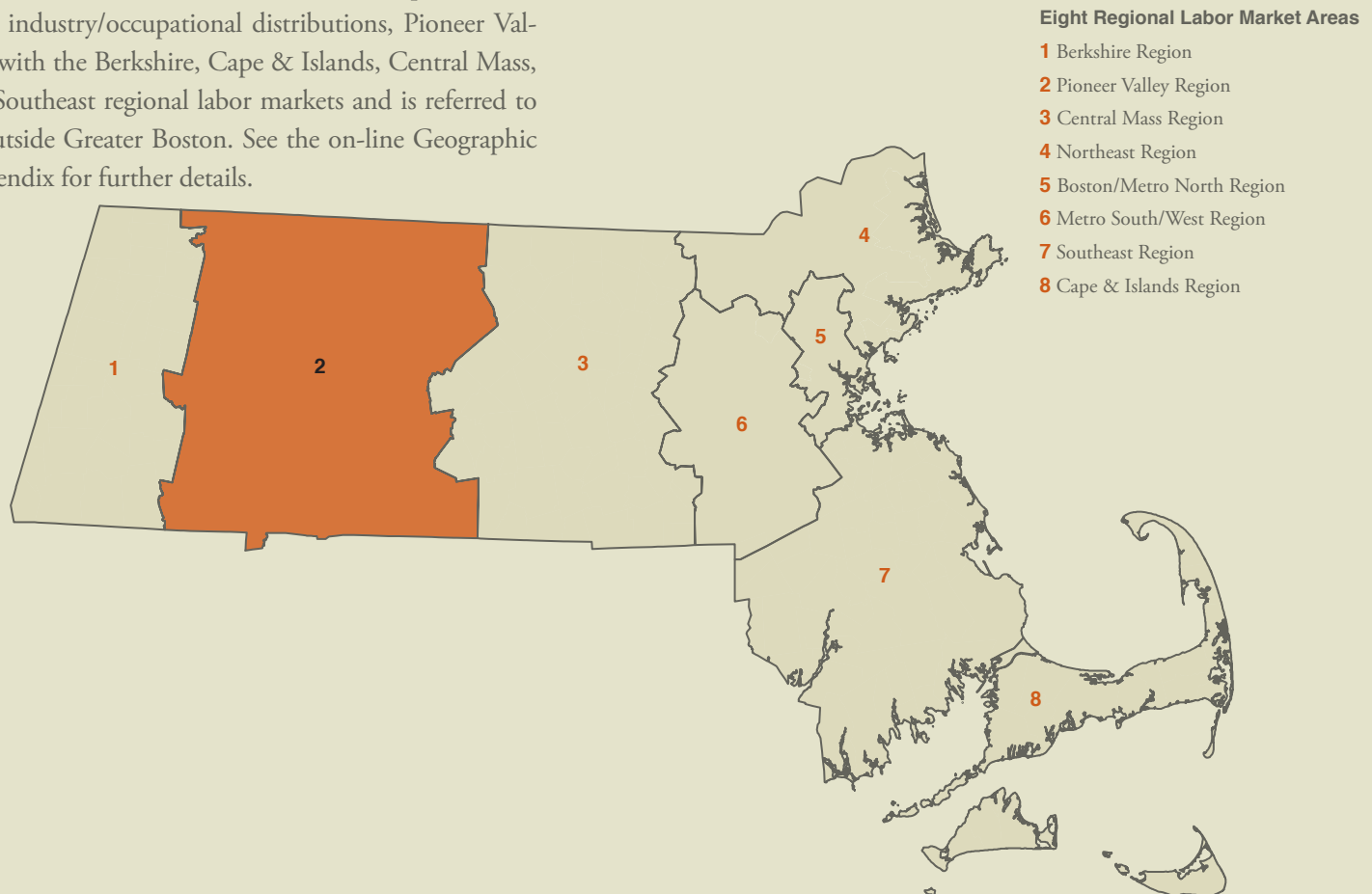
To foster strong economic growth in the future, Pioneer Valley should strive to align the education of its labor force to meet the demands of the region's employers. The higher education institutions in the region can play a key role in influencing the future supply of workers with post-secondary degrees. 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. Although Pioneer Valley saw similar growth in full-time and part-time enrollment at less-than-two-year, two-year, and four-year institutions, the region trailed state and national growth rates during the same time period. Similarly, the region saw more students completing post-secondary degrees and programs (Certificates, Associate's Degrees and Bachelor's Degrees) but trailed Massachusetts and the United States in the growth of such degree completions over the past decade. The strongest growth varied by postsecondary program and degree, with Health Sciences growing fastest among Certificates and Arts, Humanities, & Social Sciences among Associate's Degrees. Bachelor's Degrees growth was spread across a wide range of fields of study.

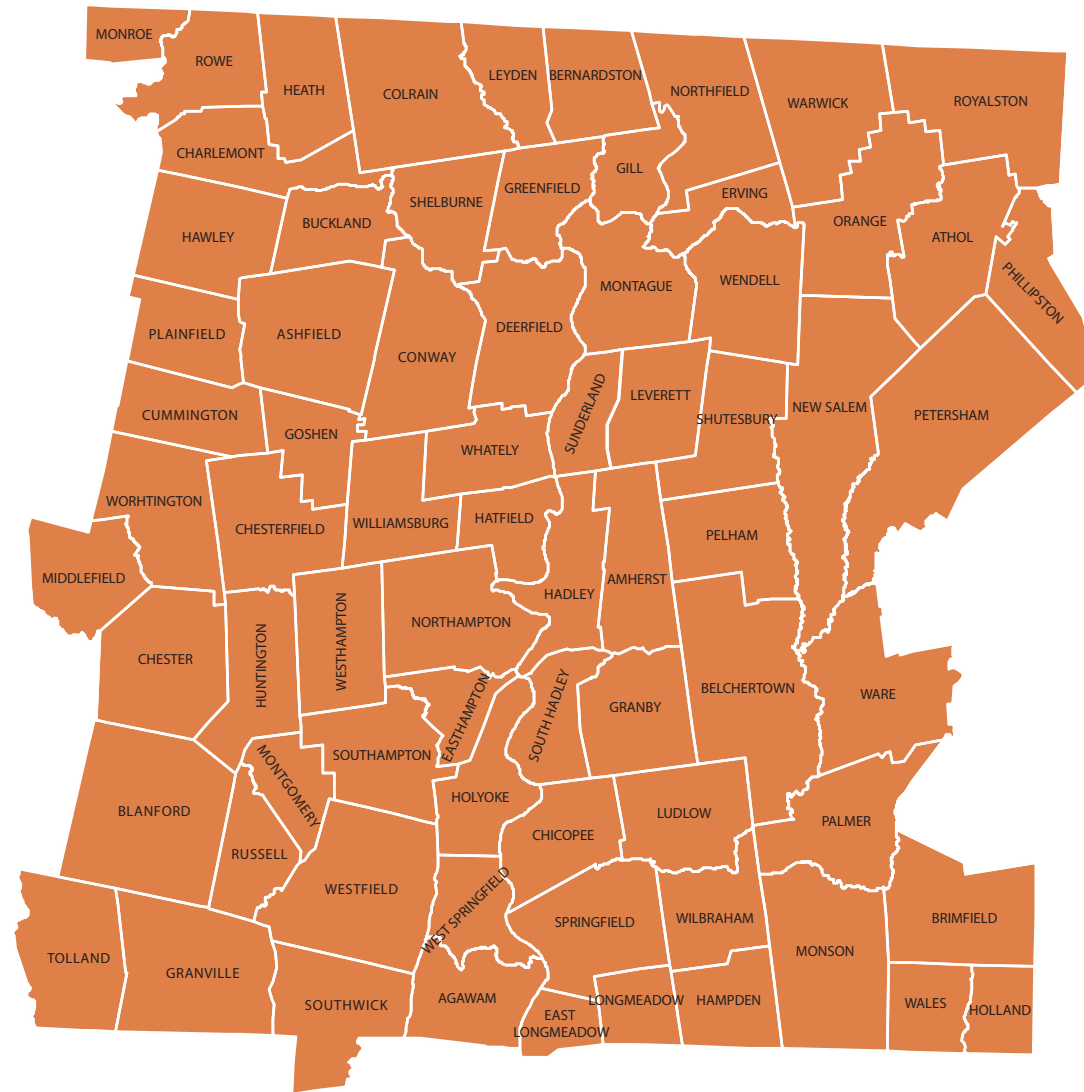
Please visit [www.bostonfed.org/neppc](http://www.bostonfed.org/neppc) for appendices describing geography and methodology, and for additional data.

## GEOGRAPHY OF THE REGIONAL LABOR MARKETS

The Pioneer Valley labor market borders two regional labor markets: Berkshire and Central Mass. It is composed of 73 Massachusetts cities and towns covering all of Hampden, Hampshire, and Franklin counties. In addition to Springfield, the third most populous city in Massachusetts, the region contains a number of other larger cities and towns, including: Chicopee, Westfield, Holyoke, Amherst, and Northampton. Because of data limitations, in certain aspects of this analysis, such as industry/occupational distributions, Pioneer Valley is combined with the Berkshire, Cape & Islands, Central Mass, Northeast, and Southeast regional labor markets and is referred to as the region Outside Greater Boston. See the on-line Geographic Definitions Appendix for further details.



## PIONEER VALLEY REGION





## EMPLOYMENT TRENDS AND RECESSIONS

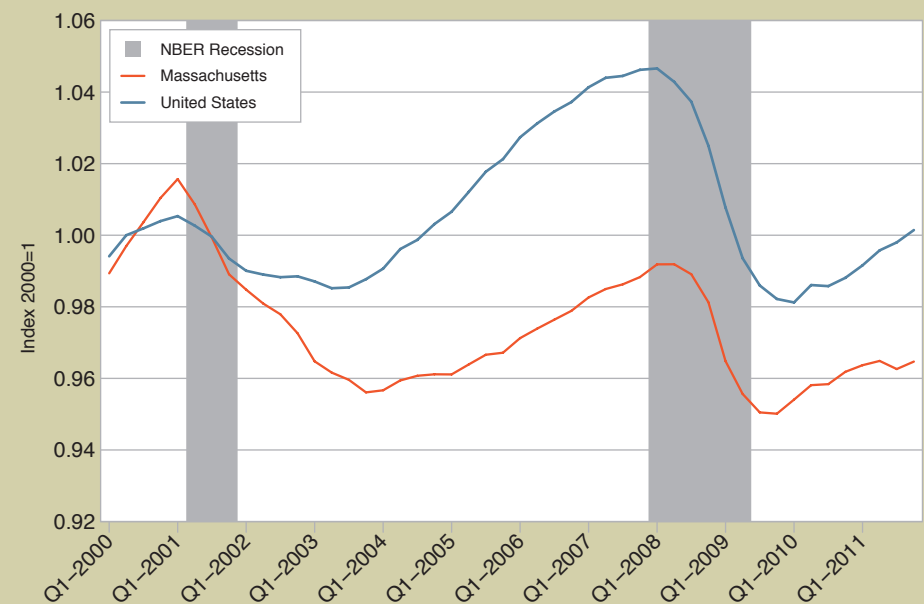
Massachusetts reached peak employment in 2001 and remained 5.0 percent below its peak (a loss of 169,800 jobs) at the end of 2011. Over the same period, total employment in the United States ended at only 0.4 percent below its 2001 peak (a loss of 513,700 jobs). One reason for the difference was that 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.

Non-Agricultural Employment for United States and Massachusetts,  
Q1 2000 to Q4 2011



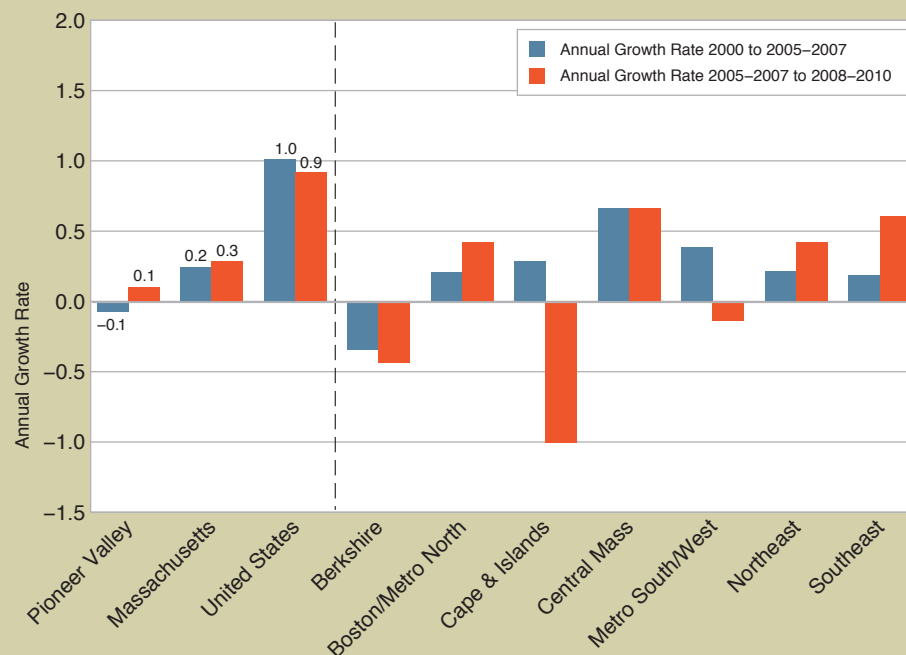
## POPULATION GROWTH TRENDS

Pioneer Valley accounted for 10.8 percent of the state's residential population at the end of the decade, making it the fifth most populous labor market. It was one of only two regions to decline in residential population between 2000 and 2005-2007, and it has experienced only a small increase in population in recent years. As such, the region's population was essentially unchanged over the course of the past decade. In comparison, the state and five of the regional labor markets gained population in the past decade. Only the Berkshire and Cape & Islands regions noticeably lost residential population over the full decade (2000 to 2008-2010).

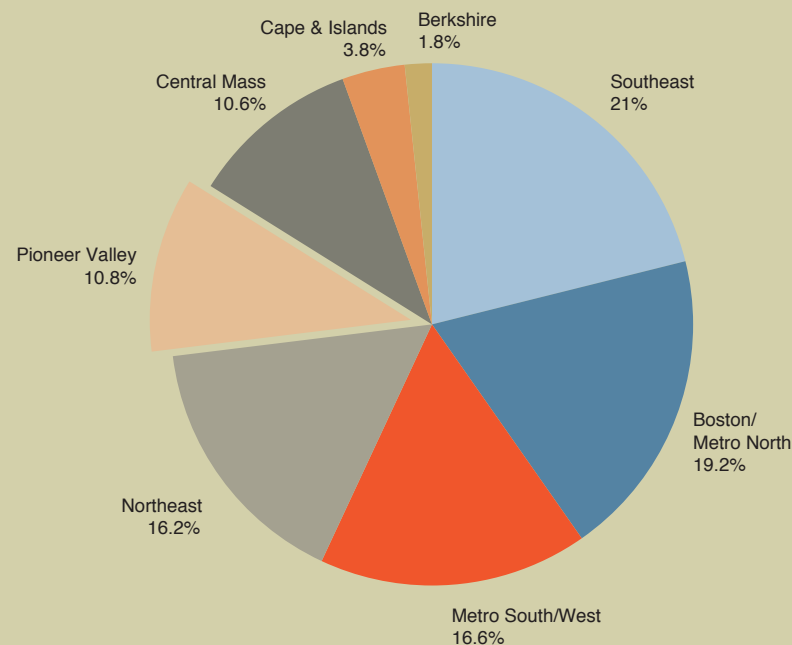
**Source:** US Census Bureau 2000 Decennial Census Public Use Microdata Samples (PUMS) data files, 2005-2007 and 2008-2010 American Community Survey Public Use Micro Sample (PUMS) data files.

**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 PIONEER VALLEY

Over the past decade, the number of people living in Pioneer Valley remained essentially the same. There was modest annual growth in the region's immigrant population (1.8 percent), but a declining native-born population offset such gains. The region became more diverse over the past decade, with strong growth among minority populations, most notably Asian and Hispanic residents. 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 5.0 percent over the course of the decade. In contrast, the region experienced only modest annual growth (0.3 percent) in 16-24-year-olds, the children of baby boomers who are commonly referred to as the echo-boom generation. This age group had much stronger growth in the Massachusetts regions that gained population in the past decade. With large losses among 25-44-year-olds and those 16 years of age or younger, the region's population stagnated while it increased in age.

**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>	680,610	679,768	-842	0.0
<b>Gender</b>				
Male	326,958	325,509	-1,449	0.0
Female	353,652	354,259	607	0.0
<b>Nativity</b>				
Native Born	600,950	586,125	-14,825	-0.3
Immigrant	79,660	93,643	13,983	1.8
<b>Race/Ethnicity</b>				
White, non-Hispanic	547,634	515,440	-32,194	-0.7
Black, non-Hispanic	35,871	37,056	1,185	0.4
Asian, non-Hispanic	10,919	15,118	4,199	3.7
Hispanic	74,134	100,538	26,404	3.4
Other race, non-Hispanic	12,052	11,616	-436	-0.4
<b>Age</b>				
Less than age 16	153,428	135,421	-18,007	-1.4
Age 16-24	77,393	79,561	2,168	0.3
Age 25-34	86,272	78,184	-8,088	-1.1
Age 35-44	112,169	90,277	-21,892	-2.4
Age 45-54	98,968	109,333	10,365	1.1
Age 55-64	58,644	90,742	32,098	5.0
Age 65+	93,736	96,250	2,514	0.3

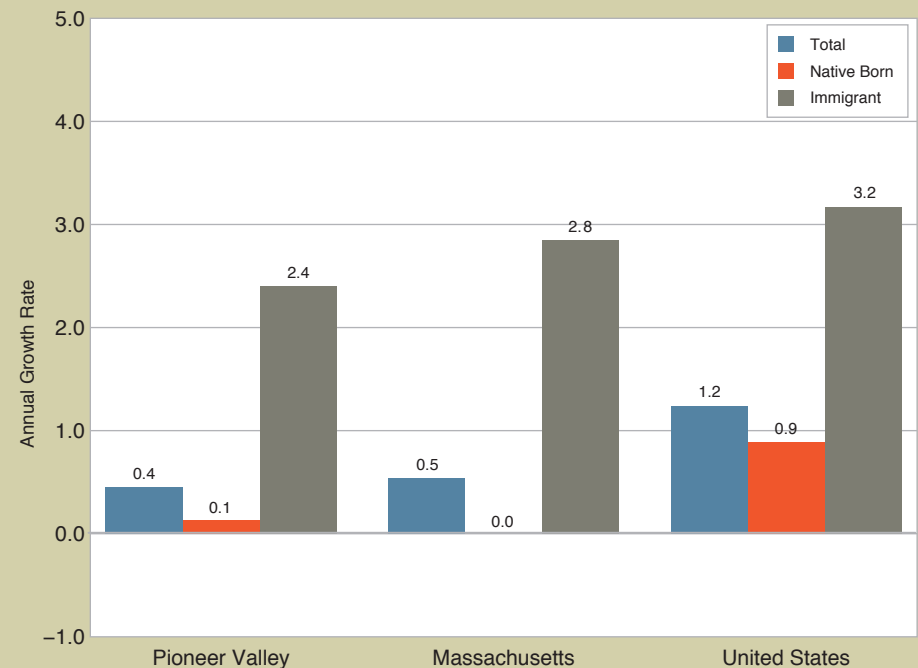
## GROWTH IN WORKING-AGE POPULATION BY NATIVITY STATUS

Although the total population in Pioneer Valley remained essentially the same over the course of the past decade, there was growth in the region's working-age population (a region's potential labor supply, typically defined as people 16 years of age or older). Between 2000 and 2005-2007, the number of working-age immigrants in the region grew at an annual rate of 2.4 percent, while the region's native-born working-age population increased by the slight annual rate of 0.1 percent. As a result, the total working-age population actually grew at an annual rate of 0.4 percent, compared to no change in the total population. Between 2005-2007 and 2008-2010, the region's native-born, working-age population declined slightly. However, the total working-age population increased annually by a modest 0.2 percent due to a 2.0 percent annual growth in the immigrant population. Despite such gains, the region trailed Massachusetts and the United States in the growth of the working-age population in the past decade.

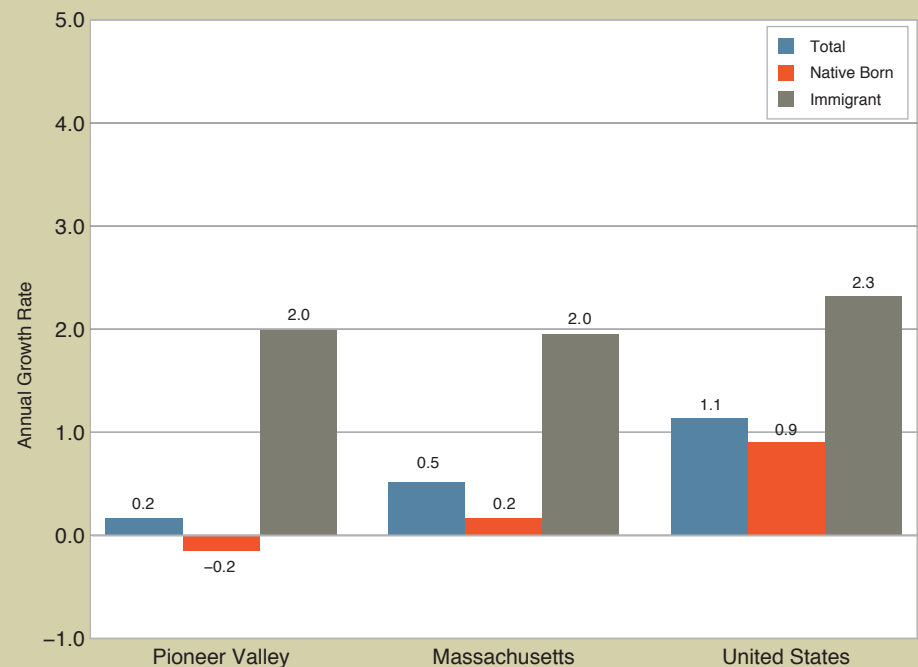
**Source:** US Census Bureau 2000 Decennial Census PUMS data files, 2005-2007 and 2008-2010 American Community Survey PUMS data files.

**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



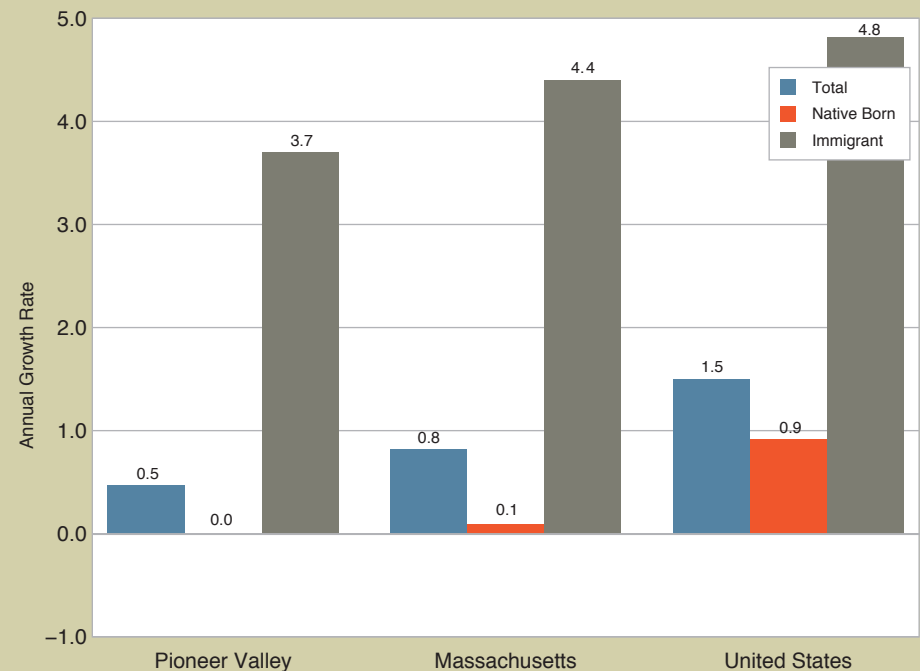
## GROWTH IN THE CIVILIAN LABOR FORCE BY NATIVITY STATUS

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). And as was the case with the working-age population, immigrants are driving growth in Pioneer Valley's civilian labor force. Despite little change in the number of native-born individuals in the civilian labor force between 2000 and 2005-2007, the overall labor force in the region continued to grow. This growth was a result of a 3.7 percent annual growth rate in the immigrant labor force. Between 2005-2007 and 2008-2010, the number of native-born people in the region's civilian labor force barely increased. Meanwhile, immigrants in the labor force continued to grow, but at a slower rate than in the first part of the decade. As a result, the Pioneer Valley civilian labor force increased at an annual rate of 0.5 percent but trailed the growth rates of both Massachusetts and the United States.

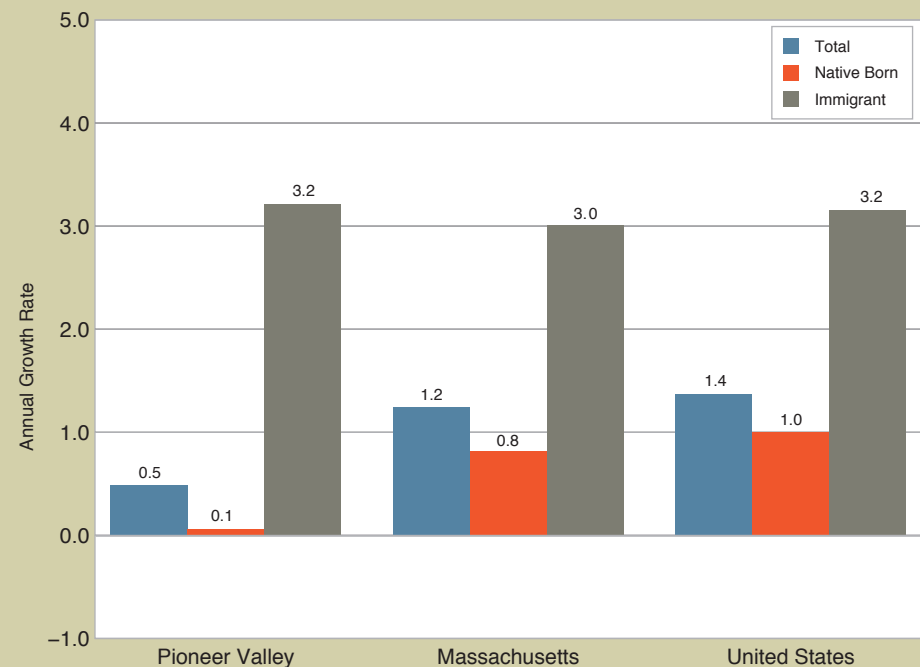
**Source:** US Census Bureau 2000 Decennial Census PUMS data files, 2005-2007 and 2008-2010 American Community Survey PUMS data files.

**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

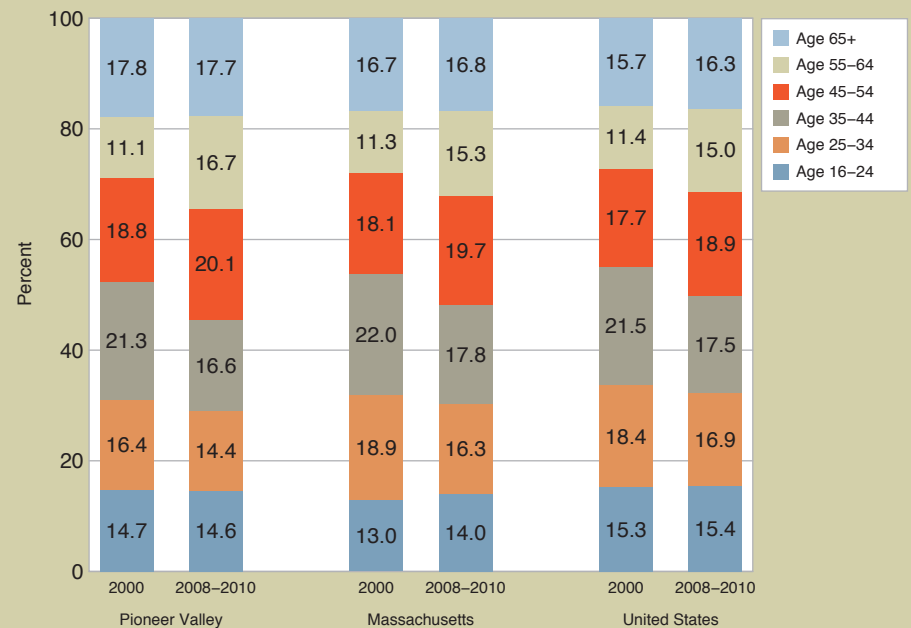


## THE AGE PROFILE OF THE WORKING-AGE POPULATION

Massachusetts is one of the oldest states in the country, and Pioneer Valley is even slightly older. Nearly 55 percent of the region's working-age population was 45 years of age or older in 2008-2010. In contrast, only 51.8 percent of the statewide working-age population was 45 or older. The region's older population was largely due to two demographic trends over the course of the past decade: the slower growth of 16-24-year-olds and the faster growth of 55-64-year-olds in the region relative to Massachusetts. Combined with the steep decline in the region's population of 25-44-year-olds, the age distribution of the working-age population in Pioneer Valley in 2008-2010 was older than that of Massachusetts and far older than that of the United States.

**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



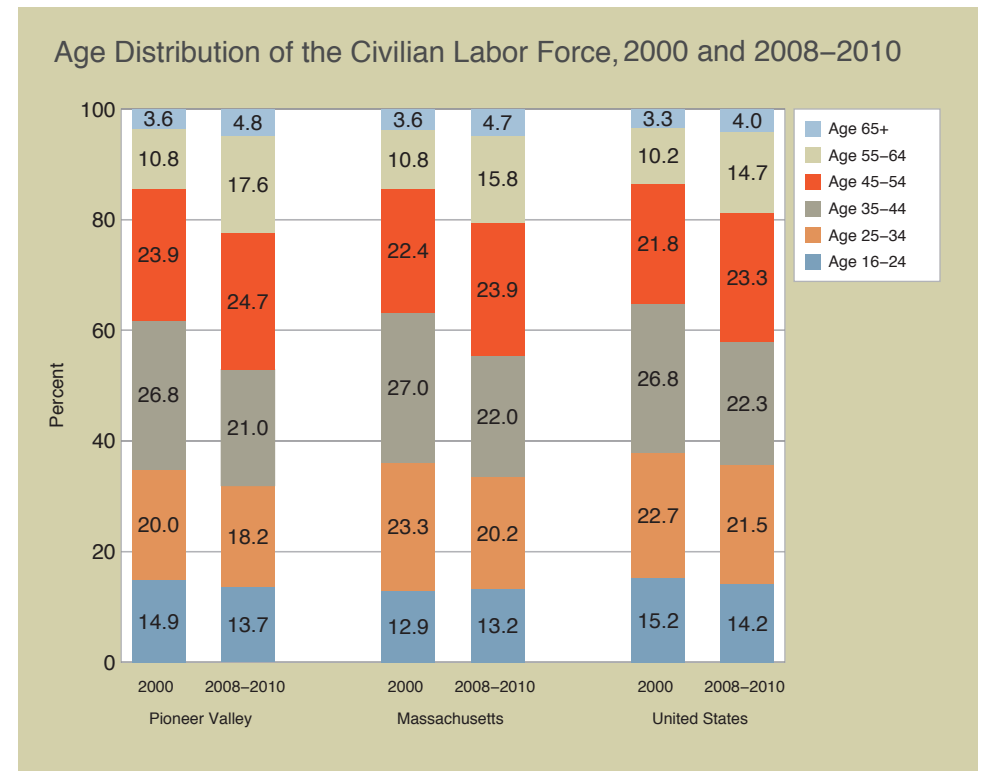
Growth of Working-Age Population by Age in Pioneer Valley

	2000	2008-2010	Absolute Change	Annual Growth Rate (Percent)
Age 16-24	77,393	79,561	2,168	0.3
Age 25-34	86,272	78,184	-8,088	-1.1
Age 35-44	112,169	90,277	-21,892	-2.4
Age 45-54	98,968	109,333	10,365	1.1
Age 55-64	58,644	90,742	32,098	5.0
Age 65+	93,736	96,250	2,514	0.3

## THE AGE PROFILE OF THE CIVILIAN LABOR FORCE

Given the age of the region's population, it is not surprising that Pioneer Valley is also seeing a rising share of its civilian labor force in the older age groups. In the past decade, there has been particularly strong growth in the civilian labor force of 55-to-64-year-olds. The second fastest growing civilian labor force age cohort in the region has been those 65 or older. At the same time, there have been a declining number of individuals between the ages of 16 and 44 in the Pioneer Valley civilian labor force. As a result, the share of the labor force age 45 or older grew from 38.3 percent in 2000 to 47.1 percent in 2008-2010. The share of the Pioneer Valley civilian labor force age 45 or older was greater than that of Massachusetts (44.5 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.



### Growth of Civilian Labor Force Population by Age in Pioneer Valley

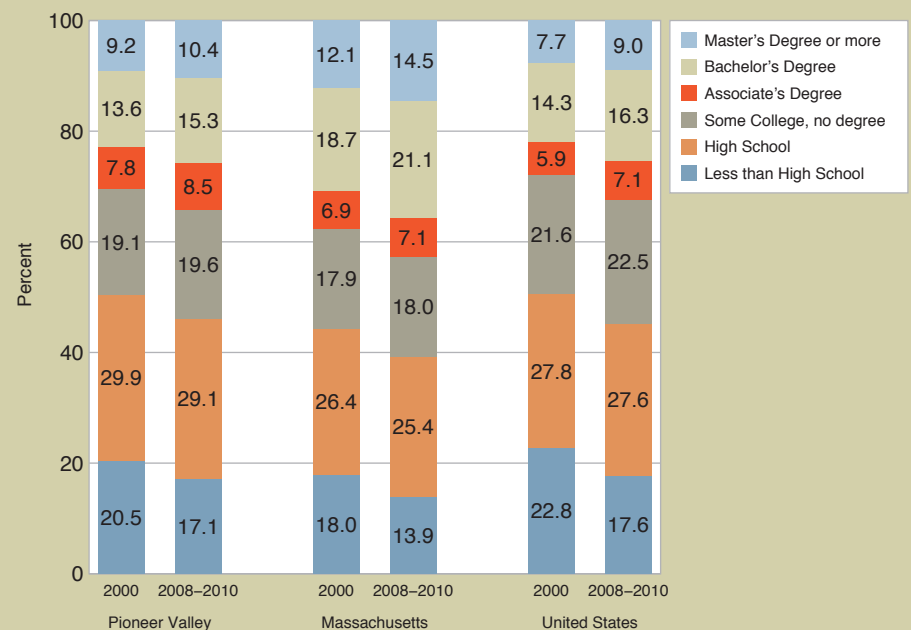
	2000	2008-2010	Absolute Change	Annual Growth Rate (Percent)
Age 16-24	51,988	49,788	-2,200	-0.5
Age 25-34	69,785	66,374	-3,411	-0.6
Age 35-44	93,293	76,470	-16,823	-2.2
Age 45-54	83,305	89,861	6,556	0.8
Age 55-64	37,717	64,105	26,388	6.1
Age 65+	12,570	17,336	4,766	3.6

## EDUCATIONAL ATTAINMENT OF THE WORKING-AGE POPULATION

While Massachusetts is one of the states with the highest share of population with a college degree, the educational attainment of the working-age population in Pioneer Valley more closely resembles that of the United States. Over the past decade, Pioneer Valley experienced strong growth at each level of higher educational attainment, with the working age population with a Bachelor's Degrees or Master's Degree increasing nearly 2.0 percent annually in the past decade. The only decline occurred among those with less than a High School Degree. The share of the population with a High School Degree or less declined to 46.2 percent in 2008-2010, nearly the same share as in the United States (45.2 percent) but still well above the statewide share (39.3 percent). And while the share of the population in Pioneer Valley with a Bachelor's Degree or higher rose to 25.7 percent by the end of the decade; it was nearly 10 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 Pioneer Valley

	2000	2008-2010	Absolute Change	Annual Growth Rate (Percent)
Less than High School	108,115	93,034	-15,081	-1.7
High School Graduate	157,467	158,200	733	0.1
Some College, no degree	100,751	106,680	5,929	0.6
Associate's Degree	40,895	46,429	5,534	1.4
Bachelor's Degree	71,481	83,283	11,802	1.7
Master's Degree or more	48,473	56,721	8,248	1.8

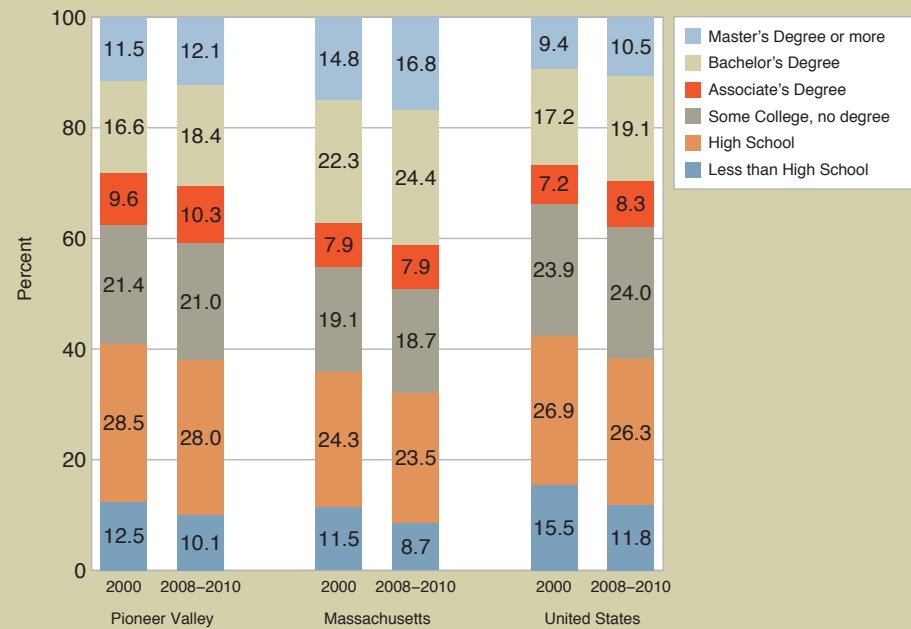


## EDUCATIONAL ATTAINMENT OF THE CIVILIAN LABOR FORCE

When looking at those actually participating in the labor force, we see somewhat higher levels of educational attainment. And much like the region's working-age population, the civilian labor force in Pioneer Valley has had progressively stronger growth at each higher level of educational attainment. By 2008-2010, 30.5 percent of the Pioneer Valley labor force had a Bachelor's Degree or higher, trailing the 41.2 percent in Massachusetts. However, 61.8 percent of the civilian labor force in Pioneer Valley 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 was identical to the 61.8 percent rate nationwide. While educational attainment increased over the course of the decade, the most common level of educational attainment among the civilian labor force in the region continued to be a High School Degree (28.0 percent in 2008-2010).

**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



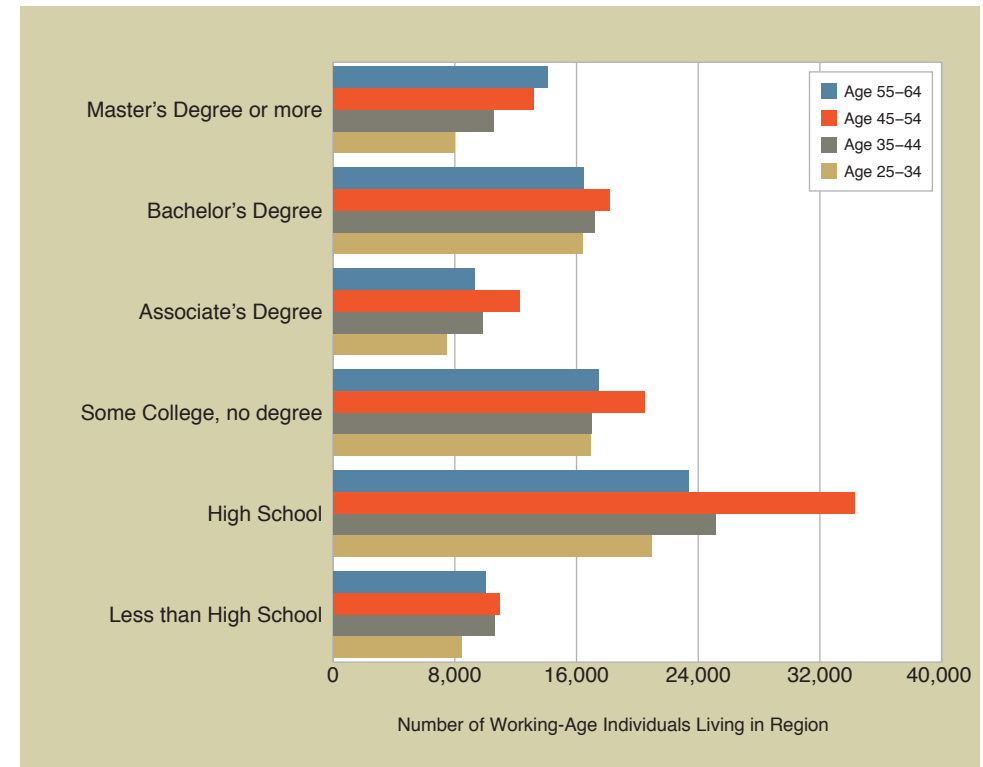
Growth of Civilian Labor Force Population by Educational Attainment in Pioneer Valley

	2000	2008-2010	Absolute Change	Annual Growth Rate (Percent)
Less than High School	43,531	36,718	-6,813	-1.9
High School Graduate	99,351	102,076	2,725	0.3
Some College, no degree	74,523	76,508	1,985	0.3
Associate's Degree	33,331	37,413	4,082	1.3
Bachelor's Degree	57,777	67,035	9,258	1.7
Master's Degree or more	40,145	44,184	4,039	1.1

## EDUCATIONAL ATTAINMENT BY AGE GROUP, PIONEER VALLEY, 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 increased in age, 45-54-year-olds have become the largest age cohort in nearly all educational attainment groups (the exception being those with a Master's Degree or higher). As the boomers near retirement age and, over time, leave the labor force, nearly every educational category faces a potential shortfall of workers. For example, in 2008-2010 there were more than 12,200 individuals with an Associate's Degree between the ages of 45 and 54 in Pioneer Valley, but slightly less than 7,500 in the same category between the ages of 25 and 34. This amounts to a potential shortage of more than 4,700 individuals, which is equivalent to 38.8 percent of the 45-54 year-old population with such an education. However, such shortages may actually be much smaller, 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.



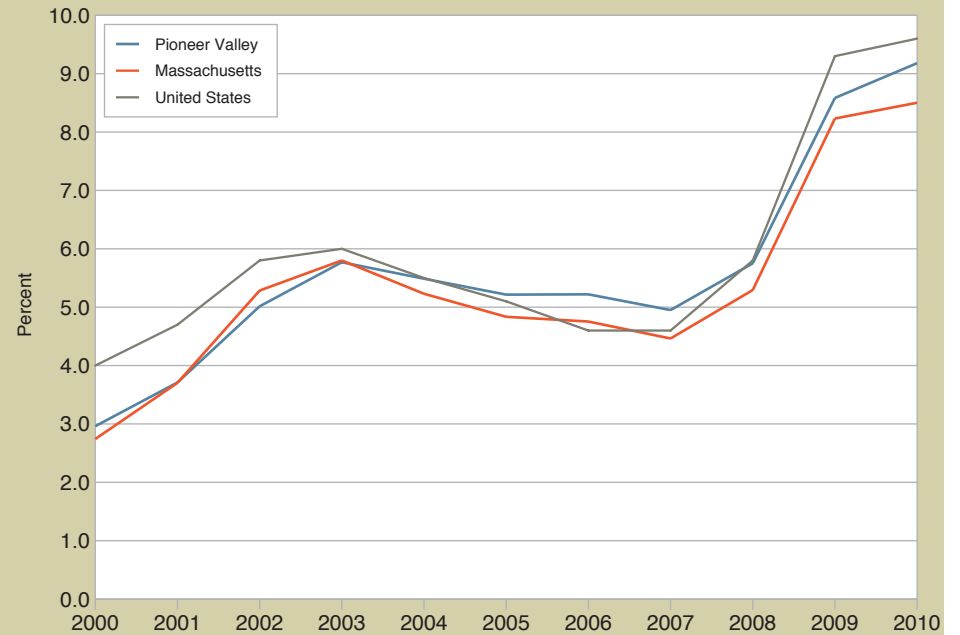
## UNEMPLOYMENT RATE TRENDS

During the Great Recession, the unemployment rate nationwide increased sharply, and the same was true in Pioneer Valley. Beginning the decade at 3.0 percent, the region's unemployment rate climbed to nearly 5.8 percent in 2003 before declining to slightly under 5.0 percent in 2007. In the Great Recession, Pioneer Valley's unemployment rate jumped to 9.2 percent. Over the course of the decade, the region's unemployment rate consistently exceeded that of Massachusetts, and it was the third highest unemployment rate of all regional labor markets in 2010.

**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



### Pioneer Valley Unemployment

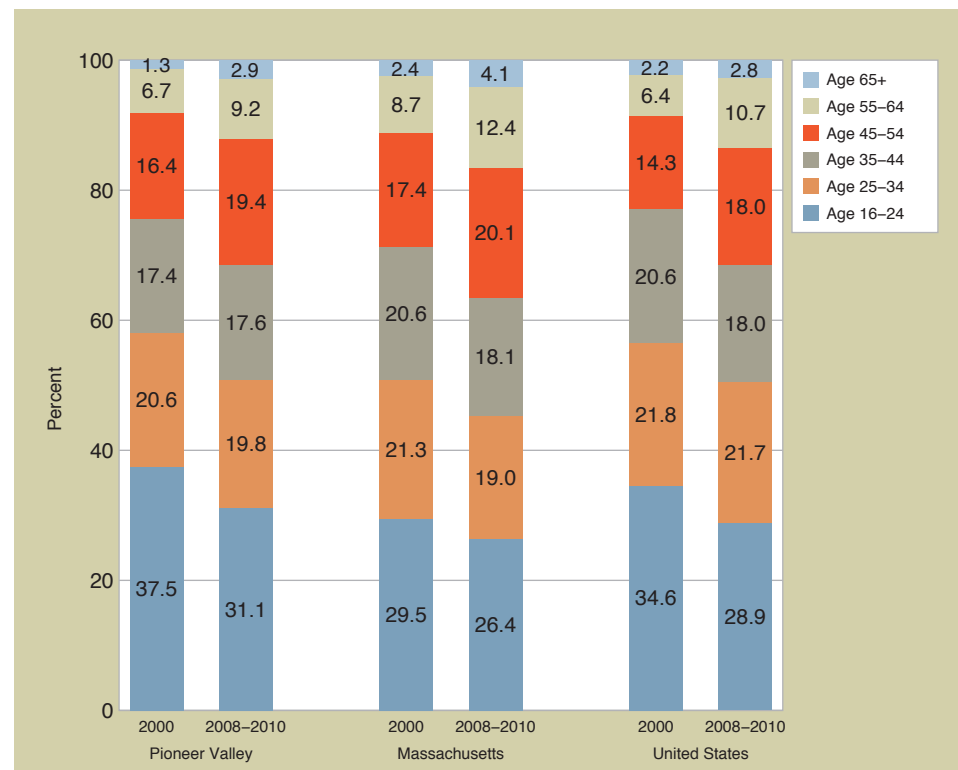
	2000	2010	Relative Change	Annual Growth Rate (Percent)
Unemployed	10,420	33,284	22,864	12.3
Employed	341,399	329,308	-12,091	-0.4
Civilian Labor Force	351,819	362,592	10,773	0.3
Unemployment Rate	3.0	9.2	-	-

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

While 32 percent of the civilian labor force in Pioneer Valley was 34 years of age or younger at the end of the decade, over 50 percent of the region's unemployed was 34 or younger. This was down from 58.1 percent at the beginning of the decade, as the increasing share of the population age 45 or older also translated into a higher share of such individuals among the unemployed. However, the younger age cohorts continue to be disproportionately represented among the unemployed. For example, 16-24-year-olds accounted for the largest share of the unemployed (31.1 percent) among all age cohorts in 2008-2010 but were the second smallest age cohort in the civilian labor force (behind those age 65 and older), at only 13.7 percent. In fact, such disproportional unemployment far exceeds that in both Massachusetts and the United States.

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

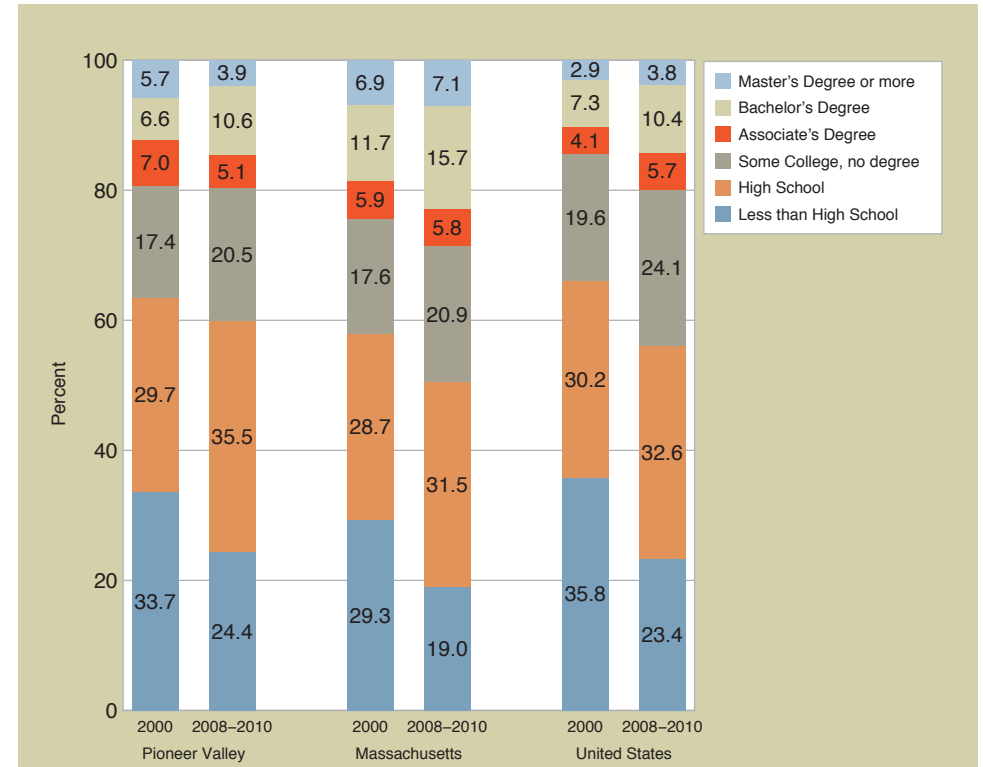
**Note:** Unemployed are individuals age 16 or older not employed and actively looking for work.



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

Nearly 60 percent of those unemployed in Pioneer Valley had a High School Degree or less in 2008-2010, well above the share in both Massachusetts (50.5 percent) and the United States (56.0 percent). This was down slightly from 63.4 percent in 2000, as the share of the unemployed with Some College education and a Bachelor's Degree increased. However, people with lower levels of education continue to be disproportionately represented among the unemployed. In particular, in 2008-2010, those with less than a high school education accounted for 24.4 percent of the unemployed in Pioneer Valley but were only 10.1 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 IN PIONEER VALLEY (2008-2010)

An overwhelming majority of the employed residents of Pioneer Valley work in the region, making Pioneer Valley one of the labor markets least likely to rely on commuters as a large share of its workforce. With 85.5 percent of the employed residents in the region also working in the region, the largest share of outbound commuters (7.3 percent of all employed residents) cross the border to Connecticut for work, while only 5.8 percent commute to other Massachusetts labor markets (mostly to Berkshire and Central Mass). Even smaller shares of workers commute into Pioneer Valley, with 91.5 percent of employees also being residents. The largest group of inbound commuters crosses the Connecticut border into Pioneer Valley (3.6 percent of all workers in the region), while smaller shares commute from a number of regional labor markets in Massachusetts, led by Central Mass (1.9 percent). As a result, Pioneer Valley is a net exporter of workers, with nearly 21,200 more 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 Pioneer Valley...	324,026	100.0
...who work in:		
Pioneer Valley	277,172	85.5
Central Mass	8,718	2.7
Berkshire	5,431	1.7
Other parts of Massachusetts	4,714	1.5
Connecticut	23,550	7.3
Vermont	1,337	0.4
New York	1,032	0.3
Other places outside Massachusetts	2,072	0.6
Total number of persons working in Pioneer Valley...	302,831	100.0
...who live in:		
Pioneer Valley	277,172	91.5
Central Mass	5,902	1.9
Berkshire	2,762	0.9
Other parts of Massachusetts	2,309	0.8
Connecticut	10,797	3.6
New York	1,039	0.3
Vermont	832	0.3
Other places outside Massachusetts	2,018	0.7
Net in-commuting (Number of Persons Employed in Region minus Number of Persons Living in Region)	-21,195	-

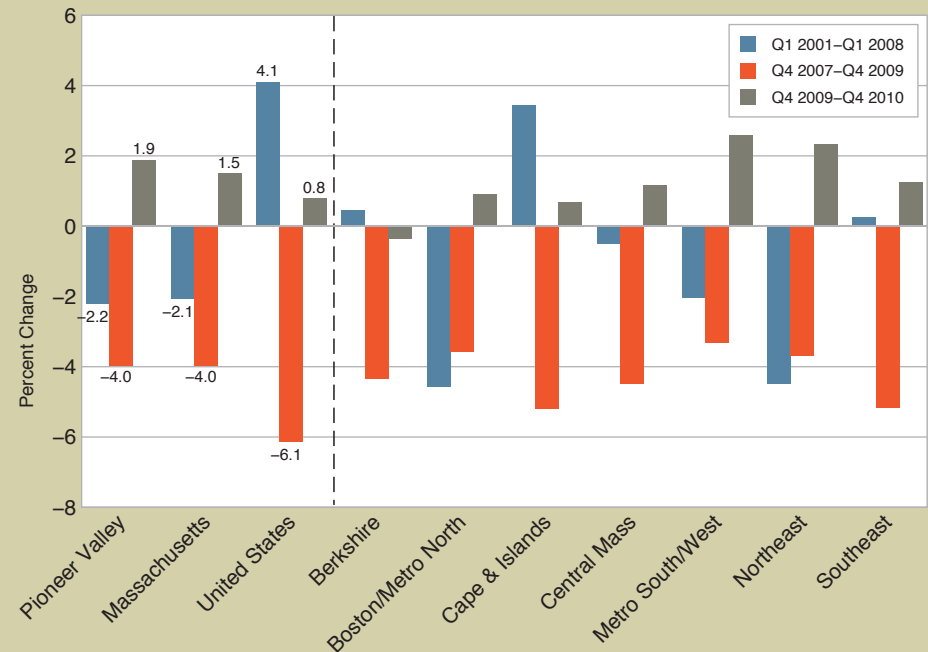
## EMPLOYMENT TRENDS

While Pioneer Valley accounts for 10.8 percent of the state's population the region accounts for only 9.1 percent of the state's employment, or more than 286,000 jobs. The employment trends in Pioneer Valley were similar to those in Massachusetts over the past decade. The region's employment declined at a rate nearly identical to Massachusetts between 2001 and 2008 (2.2 percent versus 2.1 percent), compared with a 4.1 percent gain nationwide. Both the region and state experienced more modest employment losses than did the United States during the Great Recession, with employment in the region and state declining by 4.0 percent from 2007 to 2009, compared with 6.1 percent nationwide. But in the first year of the labor market recovery, employment in Pioneer Valley increased by 1.9 percent, exceeding the gains in both Massachusetts (1.5 percent) and the United States (0.8 percent).

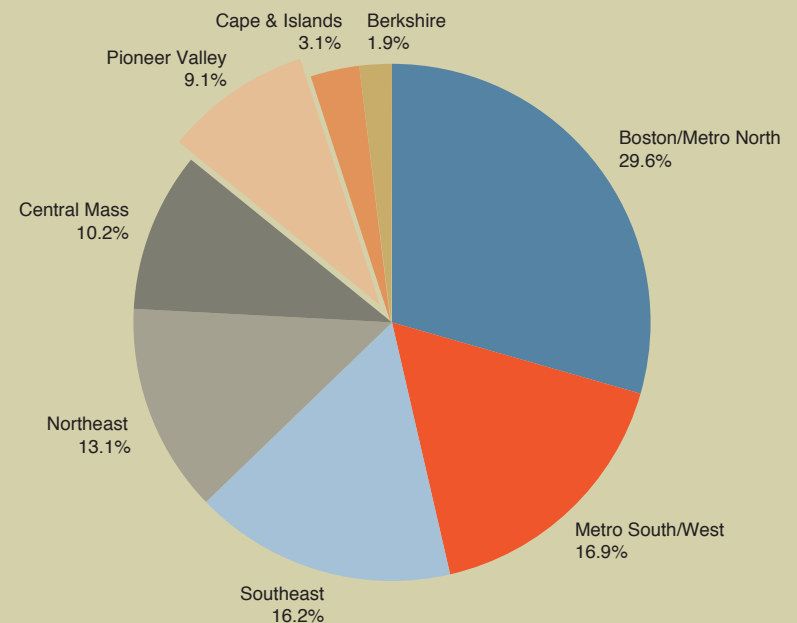
**Source:** US Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW) and Massachusetts Executive Office of Labor and Workforce Development ES-202.

**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 or Leisure & Hospitality vary considerably across regions.

### Changes in Total Employment



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



## DEMOGRAPHIC CHARACTERISTICS OF THE POPULATION EMPLOYED IN PIONEER VALLEY

With the employed residential population in Pioneer Valley making up 91.5 percent of the region's workforce, the demographic characteristics of the two groups are very similar. Over the past decade, the region employed more immigrants but lost native-born workers. The region's workers also became more diverse, with growth in Black, Asian, and Hispanic employees. And much like the residential population of Pioneer Valley, there is a strong concentration of older employees. Employees have been obtaining increasingly higher levels of education but workers with a High School Degree continue to be the largest educational attainment category of those employed in the region.

**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	300,226	302,831	2,605	0.1
<b>Gender</b>				
Male	150,804	147,270	-3,534	-0.3
Female	149,422	155,561	6,139	0.4
<b>Nativity</b>				
Native Born	269,501	261,737	-7,764	-0.3
Immigrant	30,725	41,094	10,369	3.3
<b>Race/Ethnicity</b>				
White, non-Hispanic	259,816	247,144	-12,672	-0.6
Black, non-Hispanic	12,904	15,346	2,442	1.9
Asian, non-Hispanic	4,772	7,508	2,736	5.2
Hispanic	18,032	28,493	10,461	5.2
Other race, non-Hispanic	4,702	4,340	-362	-0.9
<b>Age</b>				
Age 16-24	41,931	36,240	-5,691	-1.6
Age 25-34	59,038	55,650	-3,388	-0.7
Age 35-44	81,161	64,479	-16,682	-2.5
Age 45-54	73,078	75,578	2,500	0.4
Age 55-64	33,765	55,212	21,447	5.6
Age 65+	11,253	15,672	4,419	3.7
<b>Educational Attainment</b>				
Less than High School	35,092	25,896	-9,196	-3.3
High School Graduate	85,122	83,200	-1,922	-0.3
Some College, no degree	64,678	63,451	-1,227	-0.2
Associate's Degree	28,050	32,446	4,396	1.6
Bachelor's Degree	51,071	58,578	7,507	1.5
Master's Degree or more	36,213	39,260	3,047	0.9

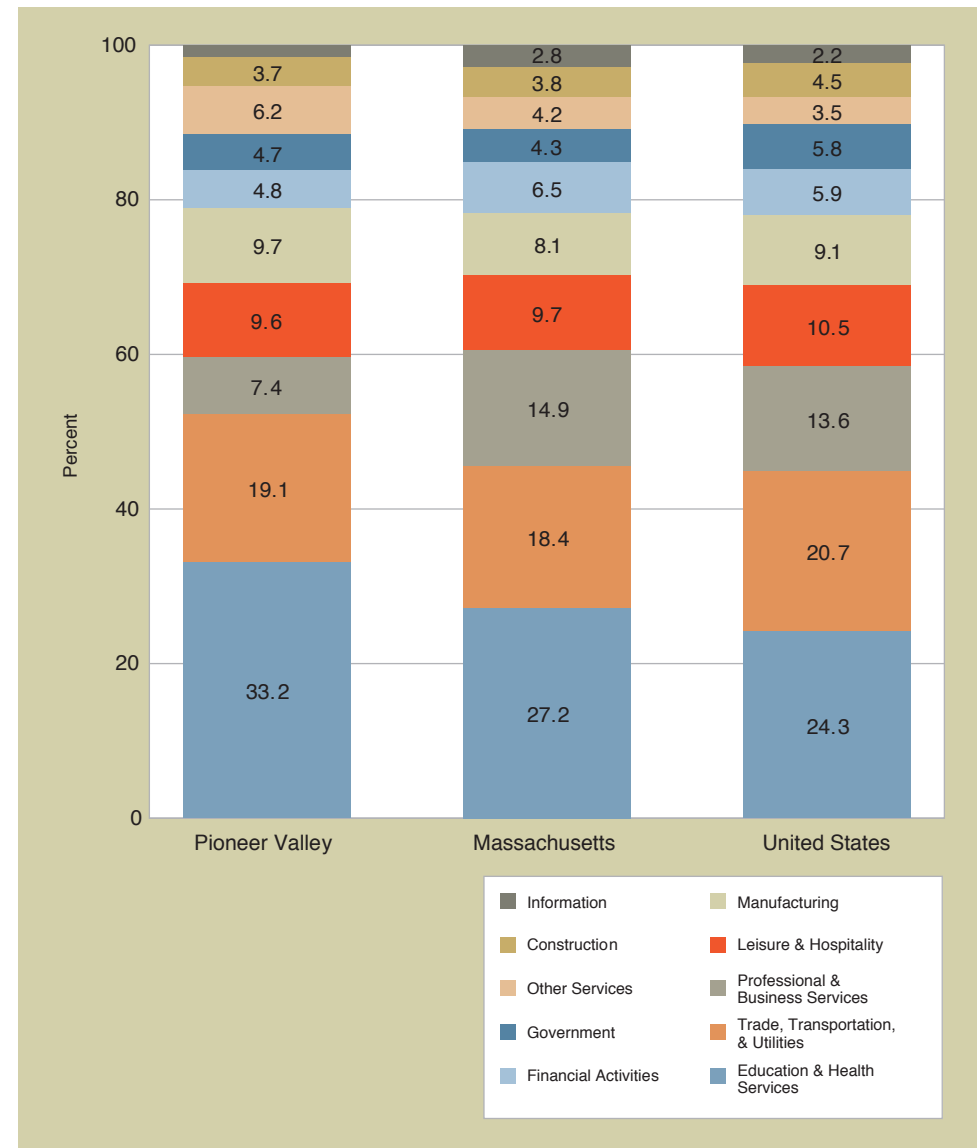


## DISTRIBUTION OF EMPLOYMENT BY SUPERSECTOR (Q4 2010)

The largest sector of employment in Pioneer Valley is Education & Health Services. Accounting for 33.2 percent of jobs in the region, the sector is proportionately much larger in Pioneer Valley than it is statewide and nationally. Compared with the state, the region's employment is also more concentrated in the Trade, Transportation, & Utilities supersector, albeit less concentrated than in the United States. The region also has smaller employment concentrations in Information and Financial Activities, as employment in such industries tends to be concentrated in the Greater Boston regional labor markets. Pioneer Valley also has a notably smaller share of employment in Professional & Business Services (7.4 percent) than does Massachusetts (14.9 percent), making it the fifth largest supersector for employment in the region. Like most regions outside of Greater Boston, Pioneer Valley has a higher employment concentration than does the state in Manufacturing (9.7 percent versus 8.1 percent), making it the region's third largest sector for 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.



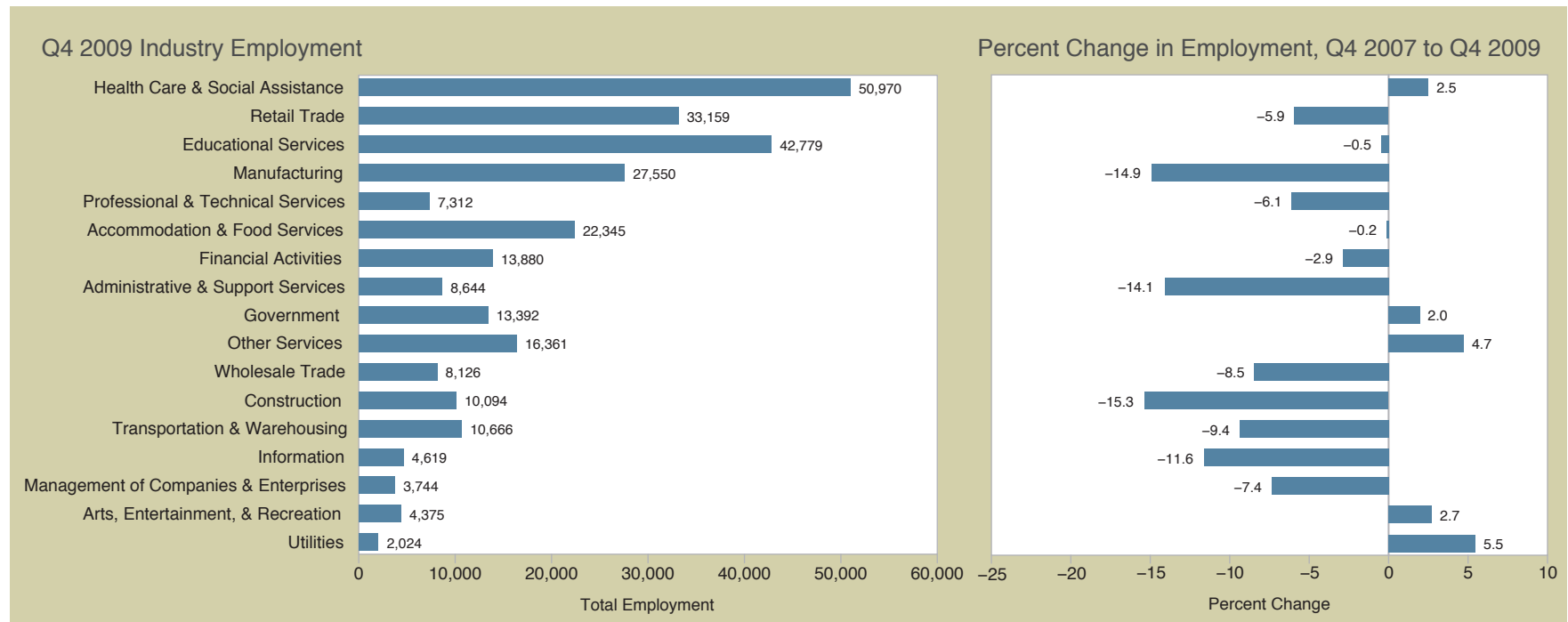
## CHANGES IN EMPLOYMENT DURING THE ECONOMIC DOWNTURN BY MAJOR INDUSTRY: PIONEER VALLEY

While Pioneer Valley lost jobs between 2007 and 2009, five industries were able to avoid losses. Health Care & Social Assistance, the largest industry in the region, increased employment by 2.5 percent and added over 1,200 jobs. The employment increases were mostly from the sub-industries of Ambulatory Health Care Services (1,090 jobs). An additional 1,200 jobs came from the other four industries that did not lose jobs. However, these gains were more than offset by a loss of nearly 8,700 jobs in industries hit hardest by the Great Recession: Information (-11.6 percent), Administrative & Support Services

(-14.1 percent), Manufacturing (-14.9 percent), and Construction (-15.3 percent). Further employment contractions in the Trade, Transportation, & Utilities industries of Retail Trade (-5.9 percent), Wholesale Trade (-8.5 percent), and Transportation & Warehousing (-9.4 percent) resulted in an additional loss of 3,950 jobs.

**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.



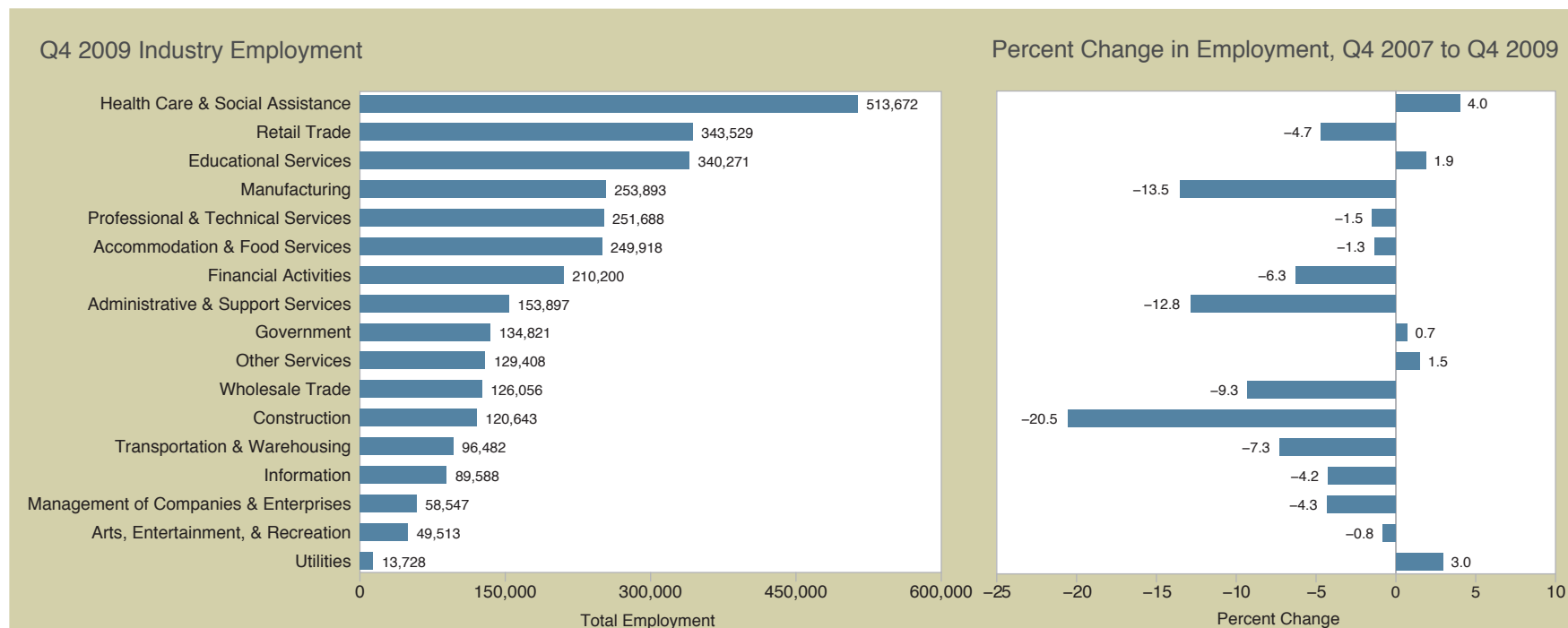
## CHANGES IN EMPLOYMENT DURING THE ECONOMIC DOWNTURN BY MAJOR INDUSTRY: MASSACHUSETTS

Massachusetts and Pioneer Valley experienced similar employment losses in the downturn and fairly similar employment changes across industries. As in Pioneer Valley, the state's strongest employment gains came in the Health Care & Social Assistance industry (4.0 percent), resulting from strong growth in the sub-industry of Ambulatory Health Care Services (7.7 percent). The state also experienced significant losses in Administrative & Support Services (-12.8 percent), Manufacturing (-13.5 percent), and Construction (-20.5 percent). Within Trade, Transportation, & Utilities, the state experienced large losses in three major industries: Retail Trade (-4.7 percent), Transportation &

Warehousing (-7.3 percent), and Wholesale Trade (-9.3 percent). Divergences from this trend include the state's employment gains in Educational Services (1.9 percent), which declined in the region, and the region's employment gains in Arts, Entertainment, & Recreation employment, which declined statewide. The state also experienced more modest growth, relative to Pioneer Valley, in a number of other industries that added jobs.

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

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



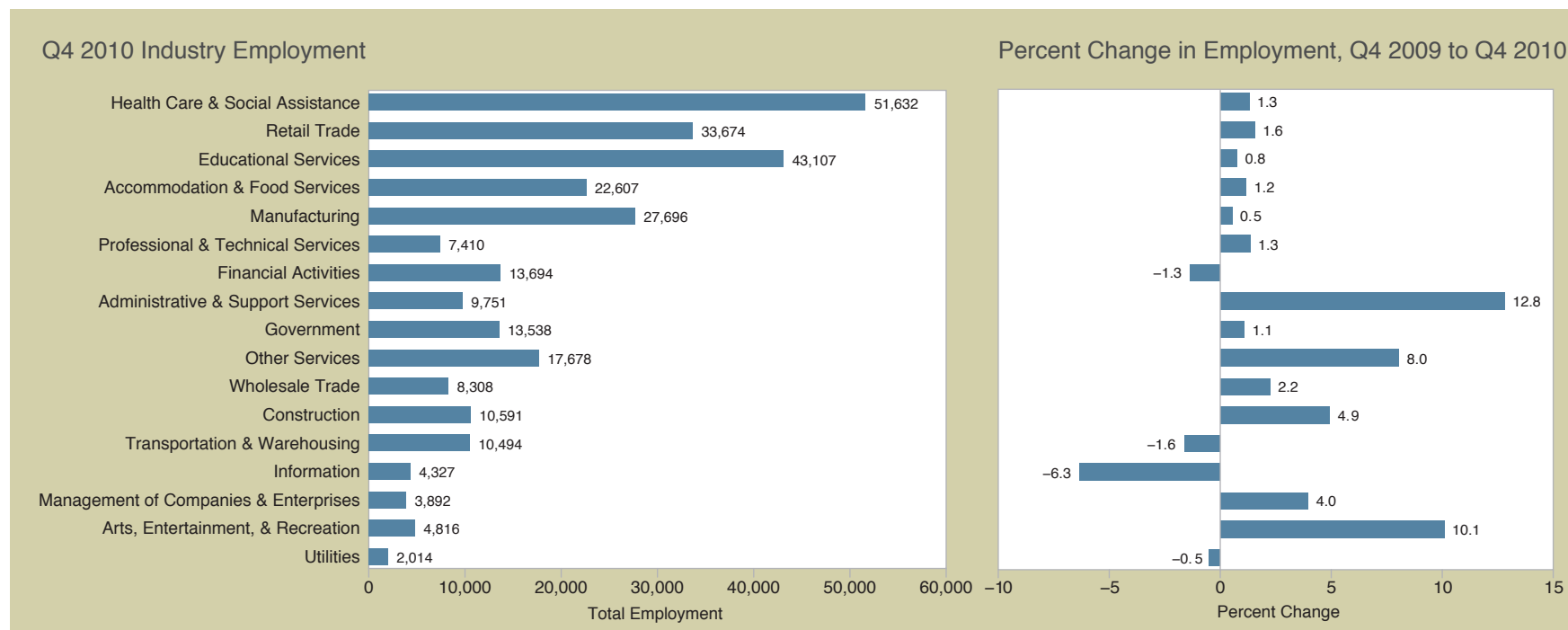
## INDUSTRIES DRIVING THE RECOVERY: PIONEER VALLEY

Since the trough of the downturn, Pioneer Valley has experienced modest growth across a broad set of industries. Only four industries lost jobs between the fourth quarters of 2009 and 2010, with the largest decline in Information (292 jobs, or -6.3 percent). While a number of industries expanded employment, the largest number (1,317 jobs) was added by the Other Services industry, which includes jobs in Laundry, Maintenance, and Membership Organizations. Of the jobs gained in Other Services in the first year of the expansion, 1,290 were in Private Household employment (e.g., cooks, maids, chauffeurs, and gardeners). Administra-

tive & Support Services also experienced strong growth, increasing employment by 12.8 percent by adding over 1,100 jobs. Combining these figures with modest growth in most other industries, the region added nearly 5,300 jobs, increasing employment by 1.9 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.



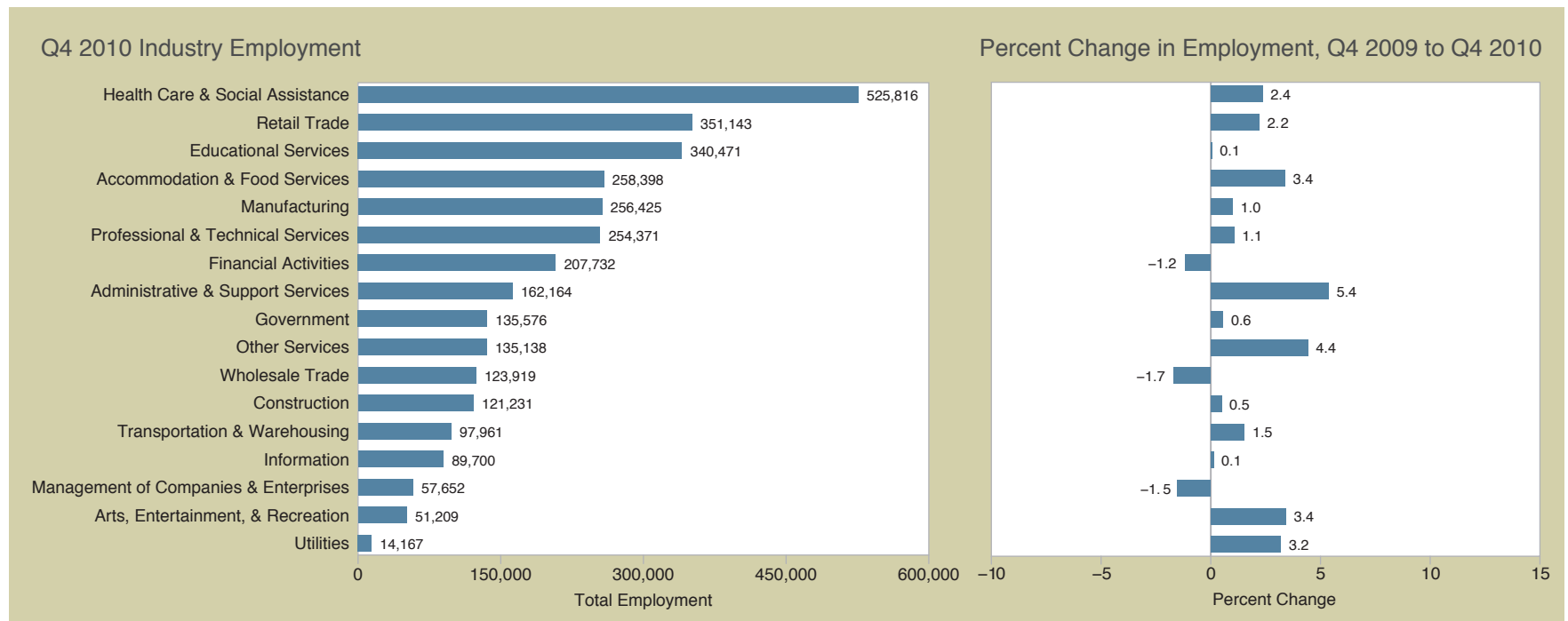
## INDUSTRIES DRIVING THE RECOVERY: MASSACHUSETTS

Massachusetts has also had a broad-based recovery. The state expanded employment in industries ranging from a 0.1 percent increase in Information to a 5.4 percent increase 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 (3,300 jobs), and Hospitals (5,600 jobs). Between the fourth quarters of 2009 and 2010, the state experienced slight declines in three in-

dustries: Financial Activities, Wholesale Trade, and Management of Companies & Enterprises. In total, the state added over 47,000 jobs, increasing employment by 1.5 percent in the earliest stages of the recovery. Such growth trailed that of Pioneer Valley—the region experienced stronger employment gains than did the state in nine out of 17 industries between the fourth quarters of 2009 and 2010.

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

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

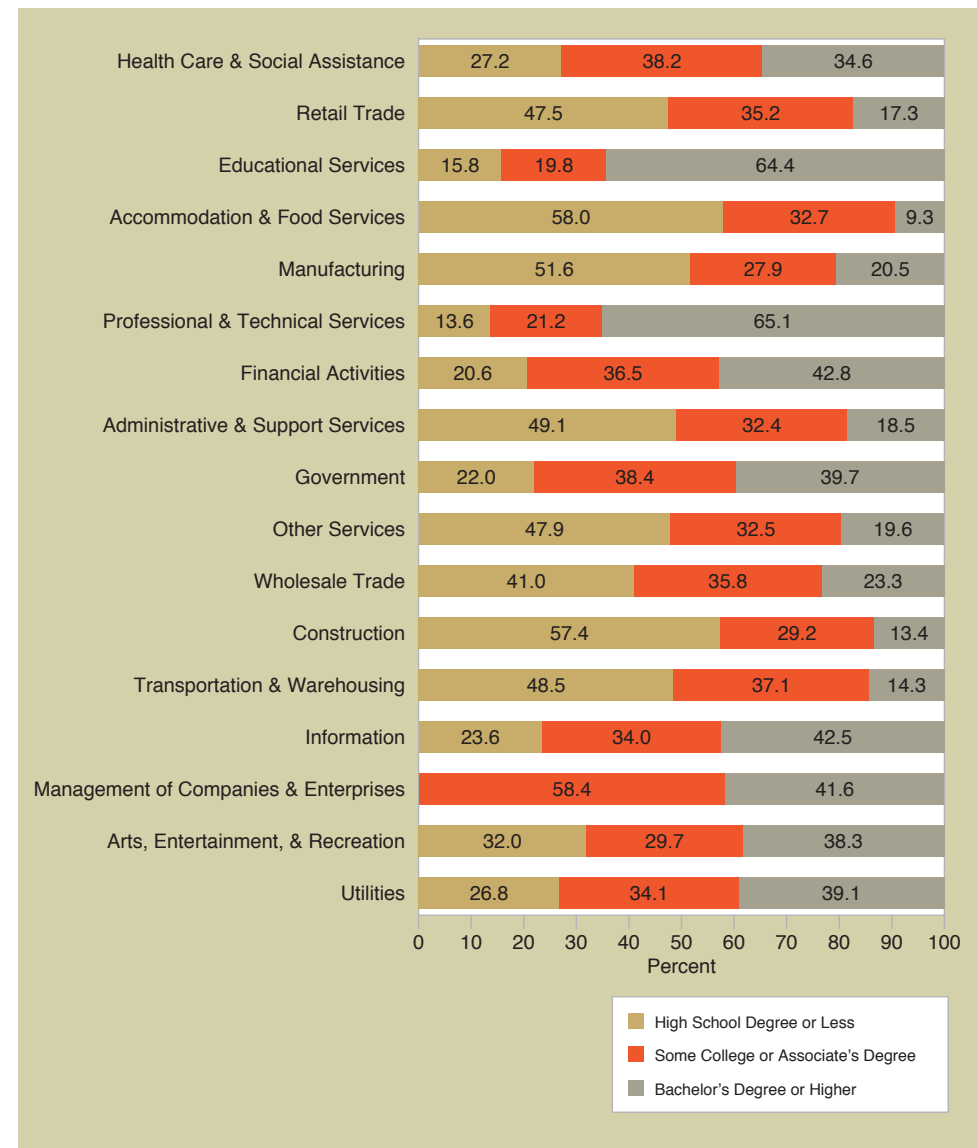


## EDUCATIONAL ATTAINMENT OF EMPLOYEES BY MAJOR INDUSTRY IN PIONEER VALLEY (2008-2010)

An increasing number of workers in Pioneer Valley had a Bachelor's Degree or higher over the past decade, but the most common level of educational attainment among the region's employees remains a High School Degree. As a result, the educational attainment level of employees by industries is fairly evenly split in Pioneer Valley. In 2008-2010, seven 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 category. In a few industries, there was a clear majority of employees with a Bachelor's Degree or higher, such as Professional & Technical Services, or a clear majority with a High School Degree or less, such as Construction. In most industries, however, the educational attainment of employees was somewhat evenly distributed, including 15 industries having 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.

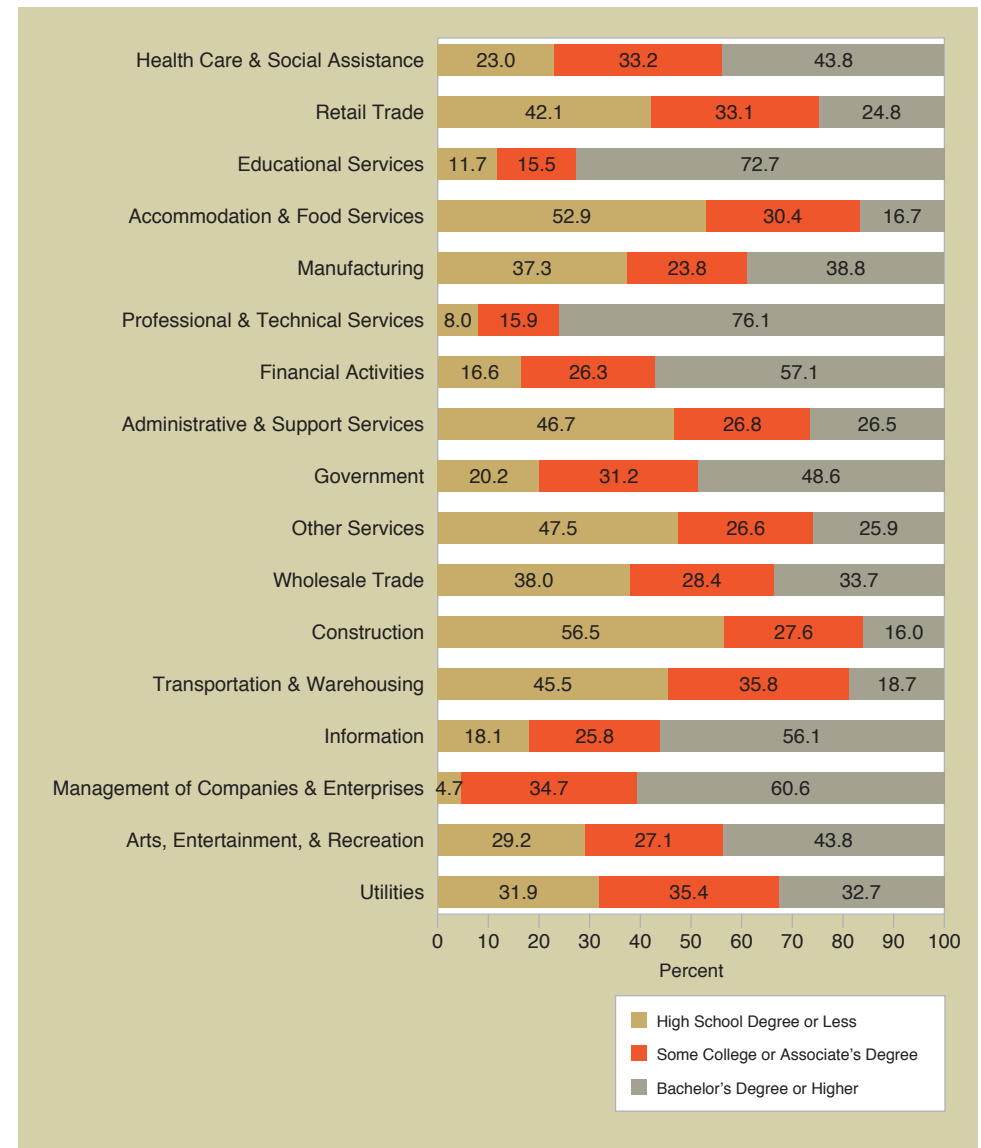


## EDUCATIONAL ATTAINMENT OF EMPLOYEES BY MAJOR INDUSTRY IN MASSACHUSETTS (2008-2010)

The educational attainment across industries in Massachusetts was much higher than in Pioneer Valley 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 (16 of the 17, all but Utilities), the share of employees with a Bachelor's Degree or higher was greater than for their industrial counterparts in Pioneer Valley. Only two industries in Massachusetts had a higher share of employees with a High School Degree or less than in Pioneer Valley. Massachusetts also had a lower share of employees with Some College education or an Associate's Degree than Pioneer Valley in nearly all industries. However, the share of employees with a post-secondary education (Some College or Higher) in Massachusetts was higher than in Pioneer Valley for 15 of the 17 major industries.

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

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

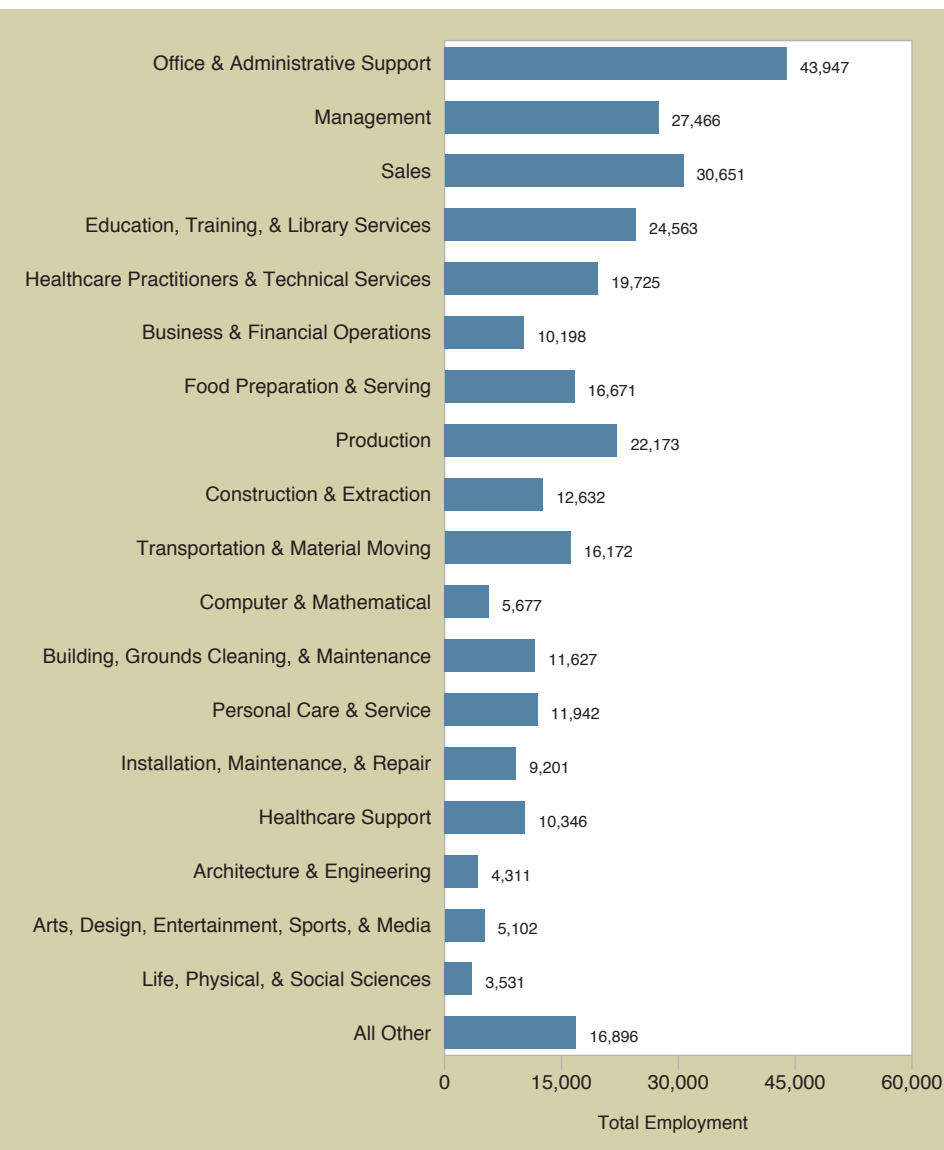


## EMPLOYMENT BY MAJOR OCCUPATION: PIONEER VALLEY (2008-2010)

Industries are where people work, and occupations are what people do. Occupations help to capture what types of workers are in demand by businesses. In Pioneer Valley, Office & Administrative Support is the largest occupational group, accounting for 14.5 percent of the region's jobs in 2008-2010. However, the number of jobs in the occupation in 2008-2010 was actually fewer than in 2000. Sales jobs make up the second largest occupational group and increased over the course of the decade. Employment increased in occupations that are closely associated with growing industries, such as Healthcare Support occupations with a very high employment concentration in Health Care & Social Assistance. 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.



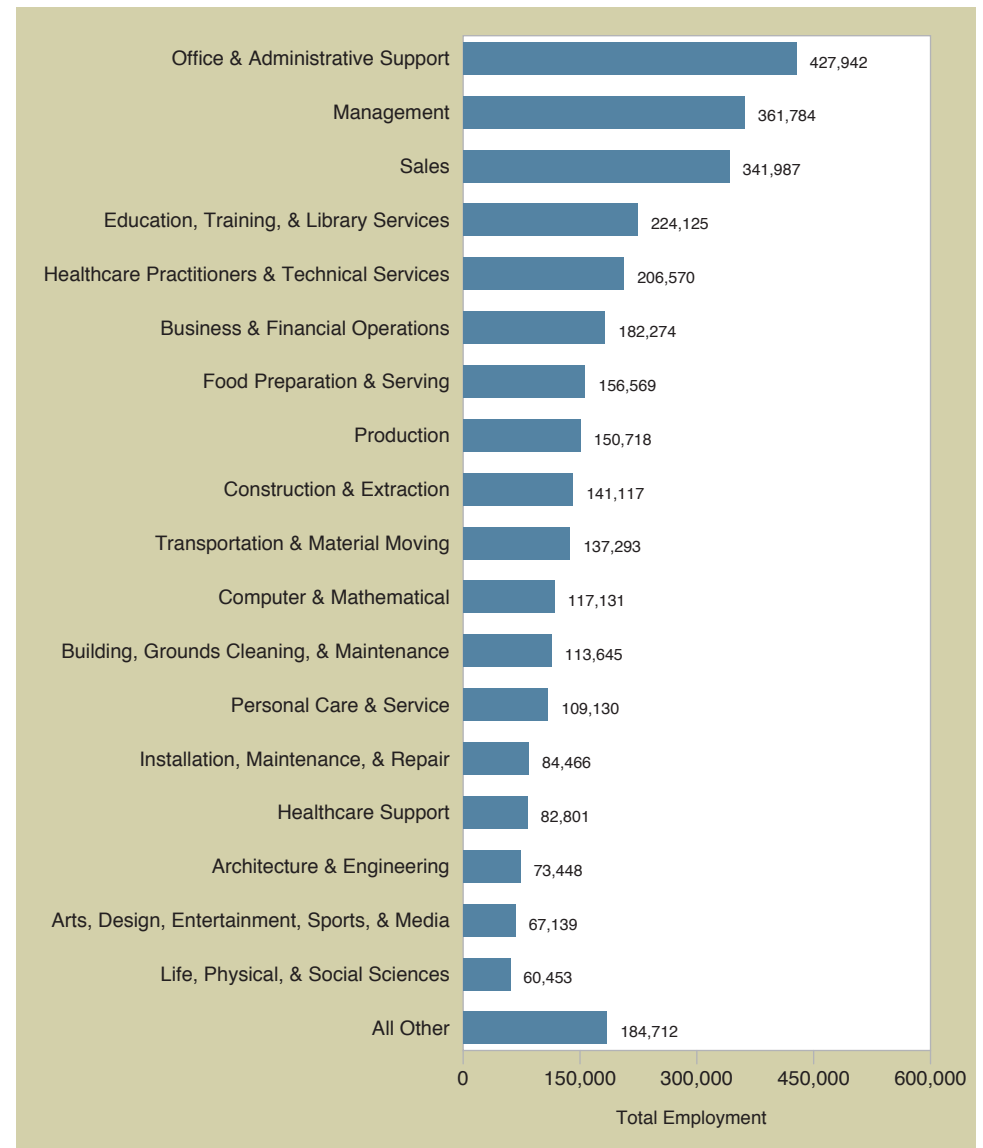


## EMPLOYMENT BY MAJOR OCCUPATION: MASSACHUSETTS (2008-2010)

Massachusetts's occupational composition, much like its industrial composition, is somewhat different from that of Pioneer Valley. Office & Administrative Support is 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 Pioneer Valley. In turn, Pioneer Valley has stronger occupational concentrations in Production and in Transportation & Material Moving. Despite such differences in occupational compositions, Pioneer Valley and Massachusetts saw fairly similar occupational employment trends over the past decade. The few major differences were the statewide growth in Education, Training, & Library Services and in Business & Financial occupations, both of which declined slightly in the region, and Pioneer Valley's growth in Computer & Mathematical occupations, which declined statewide.

**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 it difficult to do this for small geographic regions. Due to the different 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 Pioneer Valley). Some occupations in the Outside Greater Boston labor market 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 Service 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 relatively strong concentrations in the occupational categories of Management and Business & Financial Operations, and in the supersectors of Professional & Technical Services and Financial Activities, the labor market compositions of Metro South/West and Boston/Metro North are 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 the supersectors of Trade, Transportation, & Utilities, Leisure & Hospitality, and/or Manufacturing, and in the occupational categories of Sales, Office & Administrative Support, and Production. While there are differences among the regional labor markets exclusive of 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 IN GREATER BOSTON (2008-2010)

We can also consider what the distribution of occupations within a given supersector looks like. Certain occupations account for major shares 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 over 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 consistently account for a large share of employment in each supersector. In fact, the two largest occupational groups—Office & Administrative Support and Management—together account for a sizable share of jobs 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 relatively strong concentrations in the occupational categories of Management and Business & Financial Operations, and in the supersectors of Professional & Technical Services and Financial Activities, the labor market compositions of Metro South/West and Boston/Metro North are 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 the supersectors of Trade, Transportation, & Utilities, Leisure & Hospitality, and/or Manufacturing, and in the occupational categories of Sales, Office & Administrative Support, and Production. While there are differences among the regional labor markets exclusive of Greater Boston, industrial and occupational concentrations are likely similar enough to approximate their distributions for these labor markets.

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

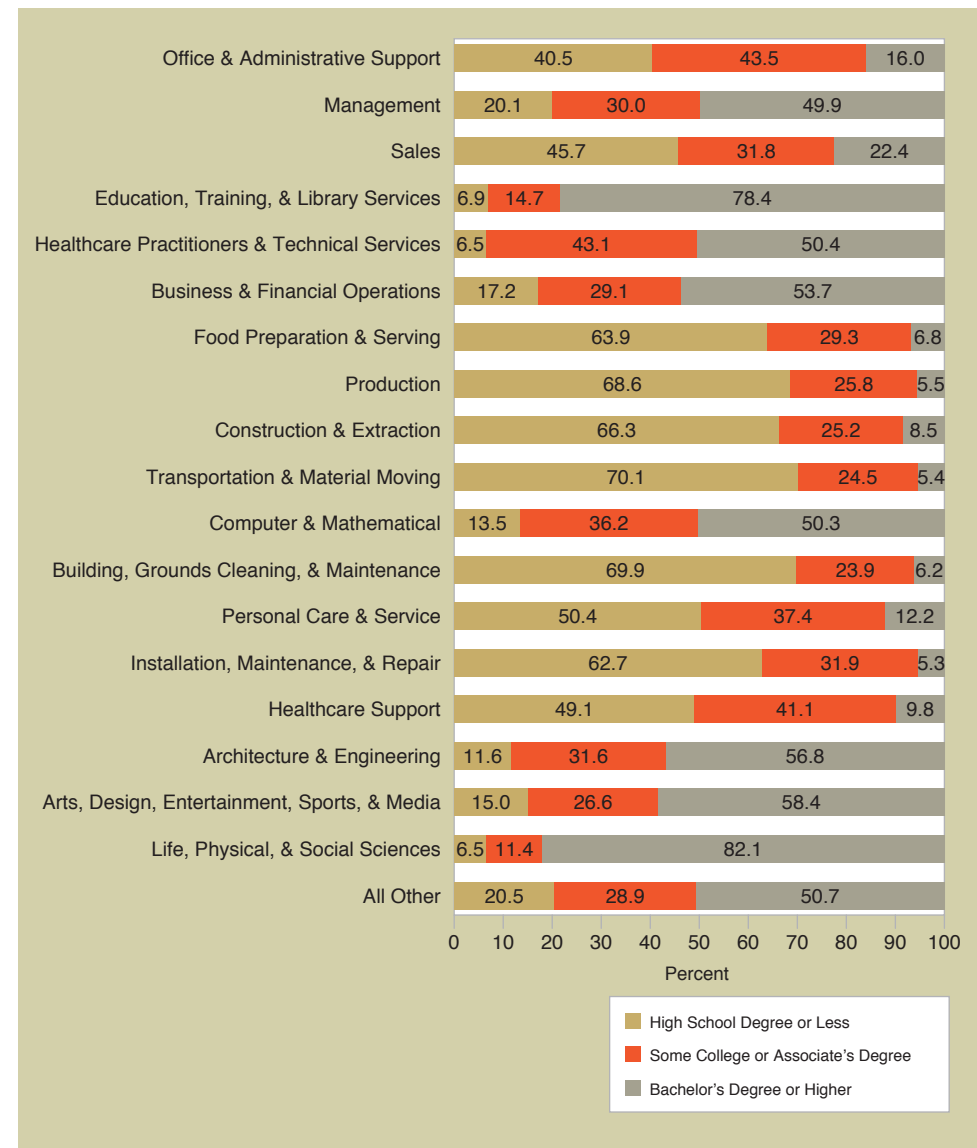
	Education & Health Services	Trade, Transportation, & Utilities	Professional & Business Services	Manufacturing	Leisure & Hospitality	Financial Activities	Construction	Other	All Industries
Office & Administrative Support	11.7	18.9	15.3	11.1	5.9	30.2	5.9	14.7	14.0
Management	7.2	5.4	11.0	14.3	12.1	17.5	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 PIONEER VALLEY (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, 43.5 percent of employees in Pioneer Valley had Some College education or an Associate's Degree, and a slightly smaller percentage (40.5 percent) had a High School Degree or less. By comparison, 49.9 percent of employees in Management had a Bachelor's Degree or higher. Educational attainment gives some indication of the skills requirement, but it is not a perfect proxy for skill. Some occupations require significant training, certifications, or other credentials. For example, in Installation, Maintenance, & Repair occupations, 62.7 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.

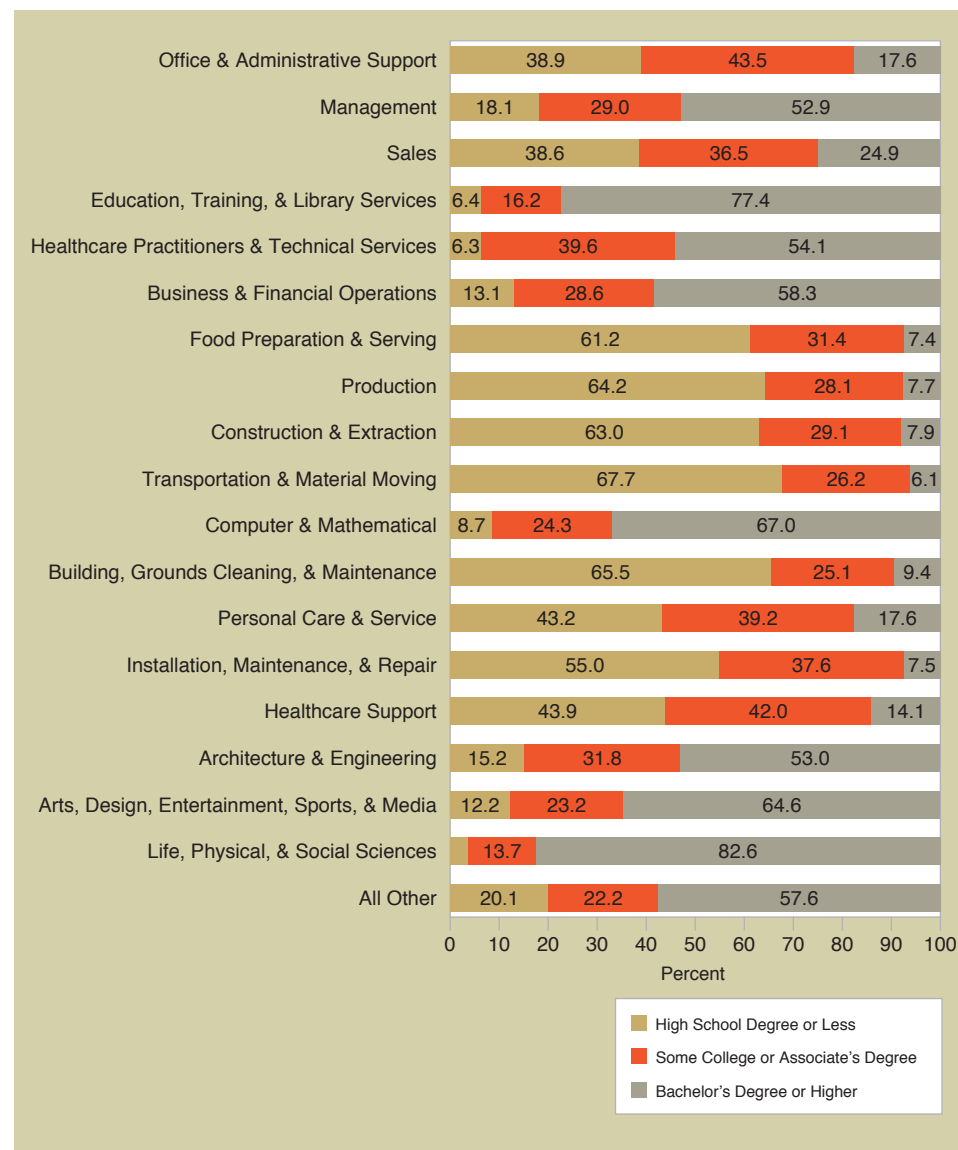


## EDUCATIONAL ATTAINMENT OF EMPLOYEES BY MAJOR OCCUPATION IN PIONEER VALLEY (2008-2010)

Over the past decade, the share of employees with a Bachelor's Degree or higher increased in 16 of the 19 major occupations in Pioneer Valley. For example, the share of Computer & Mathematical employees with a Bachelor's Degree or higher grew by more than 16 percentage points to reach 67.0 percent in 2008-2010. Even occupations with a mix of educational levels, such as Office & Administrative Support, saw declines in the share of employees with a High School Degree or less and growth in the share of employees with a Bachelor's Degree or higher. 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.

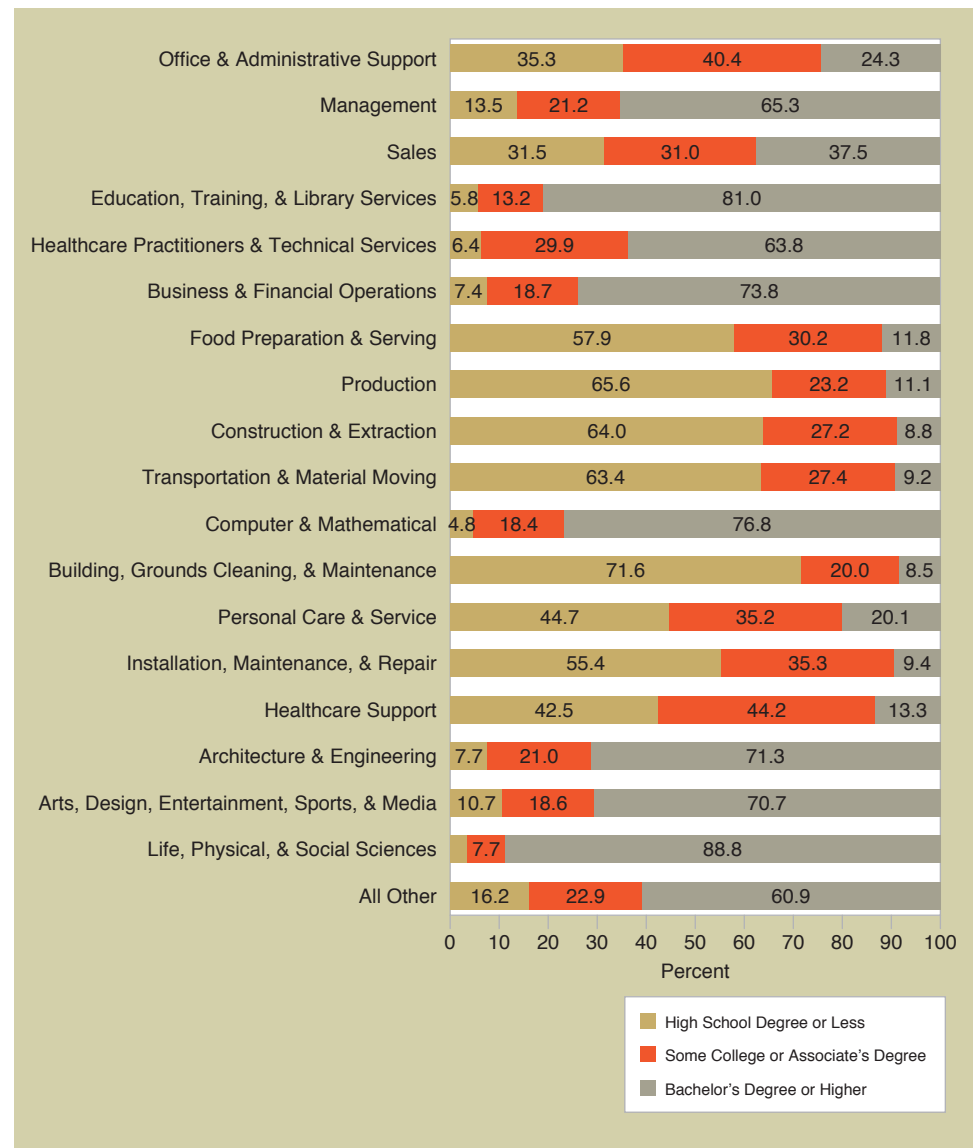


## EDUCATIONAL ATTAINMENT OF EMPLOYEES BY MAJOR OCCUPATION IN MASSACHUSETTS (2008-2010)

Despite the increasing levels of educational attainment across occupations in Pioneer Valley, the region still tends to have lower levels of educational attainment compared with Massachusetts. Of the 19 major occupation groups in Massachusetts, 17 had greater shares of employees with a Bachelor's Degree or higher compared with those in Pioneer Valley in 2008-2010. These included occupations that had a majority of employees with high levels of education (e.g., Management and Business & Financial Operations), mixed educational attainment (e.g., Office & Administrative Support), and predominantly lower education levels (e.g., Construction & Extraction). However, Pioneer Valley had much higher concentrations of employees with Some College or an Associate's Degree in 16 of the 19 major occupations. But 13 of the major 19 occupations in Massachusetts still had higher shares of employees with some post-secondary education (Some College or higher) than in Pioneer Valley.

**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.





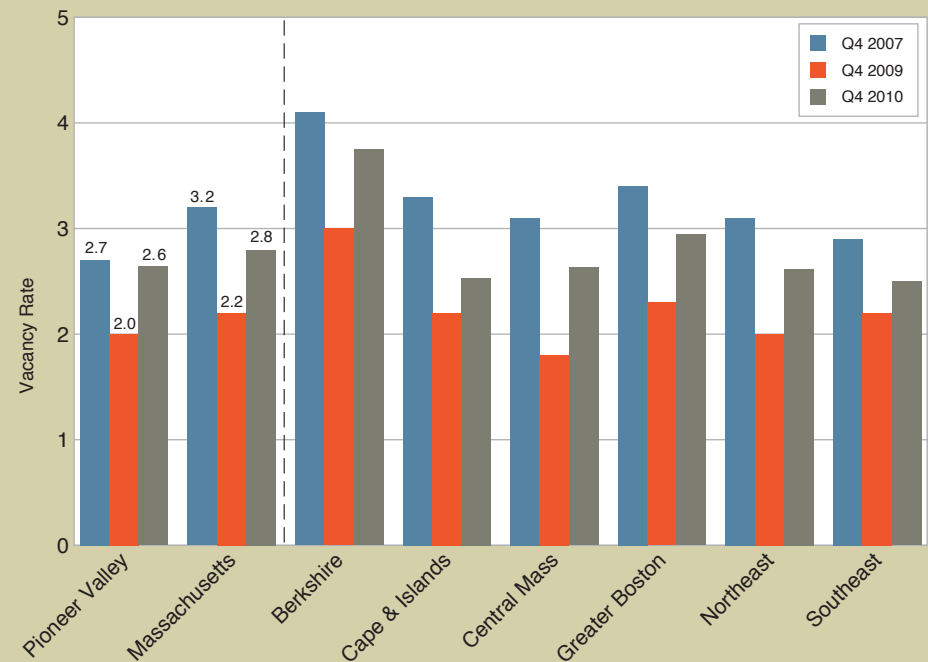
## JOB VACANCIES IN THE GREAT RECESSION AND RECOVERY

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 lower turnover as employees stay longer in jobs. At the end of 2007, the job vacancy rate in Pioneer Valley was 2.7 percent, the lowest of all regional labor markets. As a result of the Great Recession, the regional vacancy rate declined to 2.0 percent by the end of 2009. But as the economy started to recover, the vacancy rate rose by more than half a percentage point, reaching 2.6 percent by the end of 2010. At that point, Pioneer Valley accounted for 9.1 percent of the state's employment but only 8.5 percent of the job vacancies.

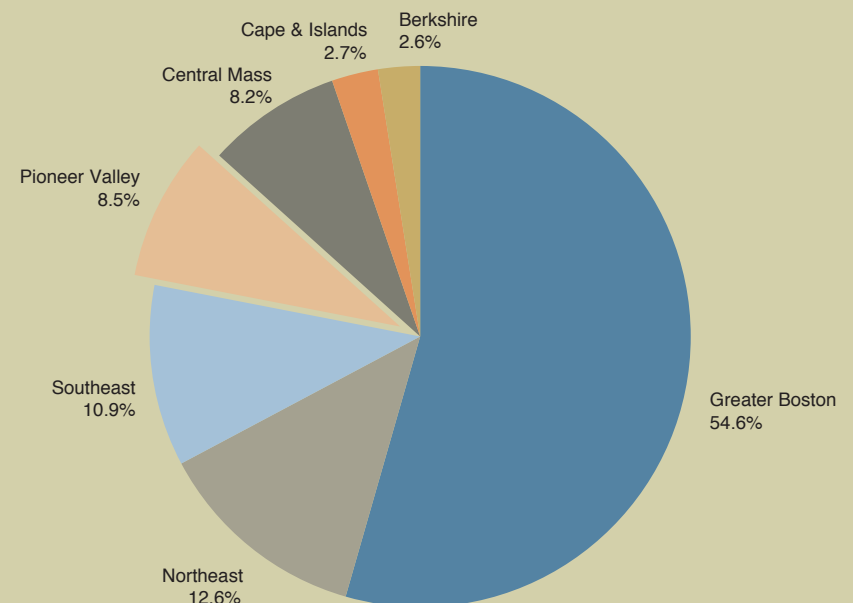
**Source:** Massachusetts Executive Office of Labor and Workforce Development Job Vacancy Survey.

**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 GREATER BOSTON (Q4 2010)

At the end of 2010, 46.3 percent of the vacancies in Pioneer Valley were concentrated in three occupations (Sales, Office & Administrative Support, and Food Preparation & Serving). Sales positions accounted for the largest share of vacancies (22.1 percent) and the highest vacancy rate (5.4 percent) of all occupations in Pioneer Valley. However, some of these positions, especially in retail, are seasonal in nature. Other occupations with a large number of vacancies and an above-average vacancy rate included Business & Financial Operations and Healthcare Support. In contrast, Office & Administrative Support was an example of an occupational group with a large share of total vacancies (10.5 percent) but a relatively low vacancy rate (1.5 percent). Not surprisingly, the region saw low numbers of vacancies and vacancy rates in occupations hit hardest by the Great Recession, such as Construction & Extraction (with a vacancy rate of 0.6 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	6,650	100.0	2.6
Sales	1,469	22.1	5.4
Office & Administrative Support	695	10.5	1.5
Food Preparation & Serving Related	916	13.8	3.8
Business & Financial Operations	384	5.8	4.3
Healthcare Practitioner & Technical	463	7.0	2.3
Computer & Mathematical	*	-	1.1
Management	136	2.0	1.1
Healthcare Support	446	6.7	4.4
Transportation & Material Moving	330	5.0	2.0
Education, Training & Library	218	3.3	0.8
Personal Care & Service	*	-	3.2
Production	359	5.4	1.7
Architecture & Engineering	41	0.6	1.5
Building, Grounds Cleaning & Maintenance	270	4.1	3.1
Arts, Design, Entertainment, Sports & Media	101	1.5	2.7
Community & Social Services	202	3.0	2.7
Life, Physical, & Social Services	21	0.3	0.8
Installation, Maintenance & Repair	84	1.3	0.8
Protective Service	99	1.5	1.5
Construction & Extraction	42	0.6	0.6

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

As in Pioneer Valley, the largest number of job vacancies and highest vacancy rate in Massachusetts are in Sales occupations, and at the end of 2010, over 40 percent of vacancies were concentrated in the same three occupations in both the region and the state. However, Massachusetts had a lower vacancy rate and share of vacancies coming from Sales occupations, relative to Pioneer Valley. The state also had much smaller shares of vacancies and lower vacancy rates in Health Support, Production, and Building, Grounds Cleaning, & Maintenance occupations compared with Pioneer Valley. However, Massachusetts tends to have higher concentration of vacancies in Office & Administrative Support, Management, and Computer & Mathematical occupations.

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

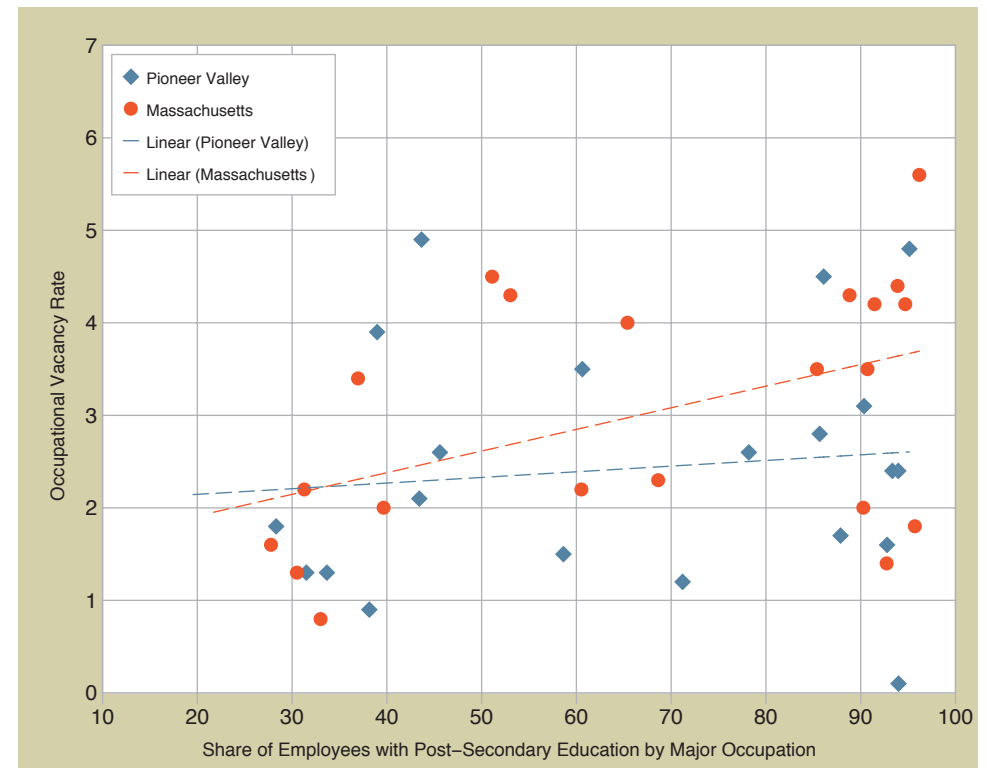
	Number of Vacancies	Share of Vacancy (Percent)	Job Vacancy Rate (Percent)
Total	78,589	100.0	2.8
Sales	16,584	21.1	5.2
Office & Administrative Support	8,650	11.0	1.6
Food Preparation & Serving Related	8,195	10.4	3.1
Business & Financial Operations	6,079	7.7	3.6
Healthcare Practitioner & Technical	5,249	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 the Great Recession, there was a 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 was not surprising, as jobs in occupations that have larger shares of employees with a High School Degree or less can sometimes be filled by number of individuals with little training, and can be done at lower costs to employers. In contrast, jobs in highly specialized occupations that require specific educational requirements faced competition both regionally and globally for the limited number of individuals who can fill such positions. Further, strong 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, can lead to increased vacancies and demand for employees that can fill such positions. But the correlation between educational attainment and job vacancies was fairly weak in Pioneer Valley even during the peak labor market; this was due to occupations tending to having low shares of employees with post-secondary education in the region, as well as the region's stronger employment concentrations in certain 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 Pioneer Valley in Q4 2007 proxy vacancy rates in a peak labor market, and educational attainment data by occupation in Pioneer Valley 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.

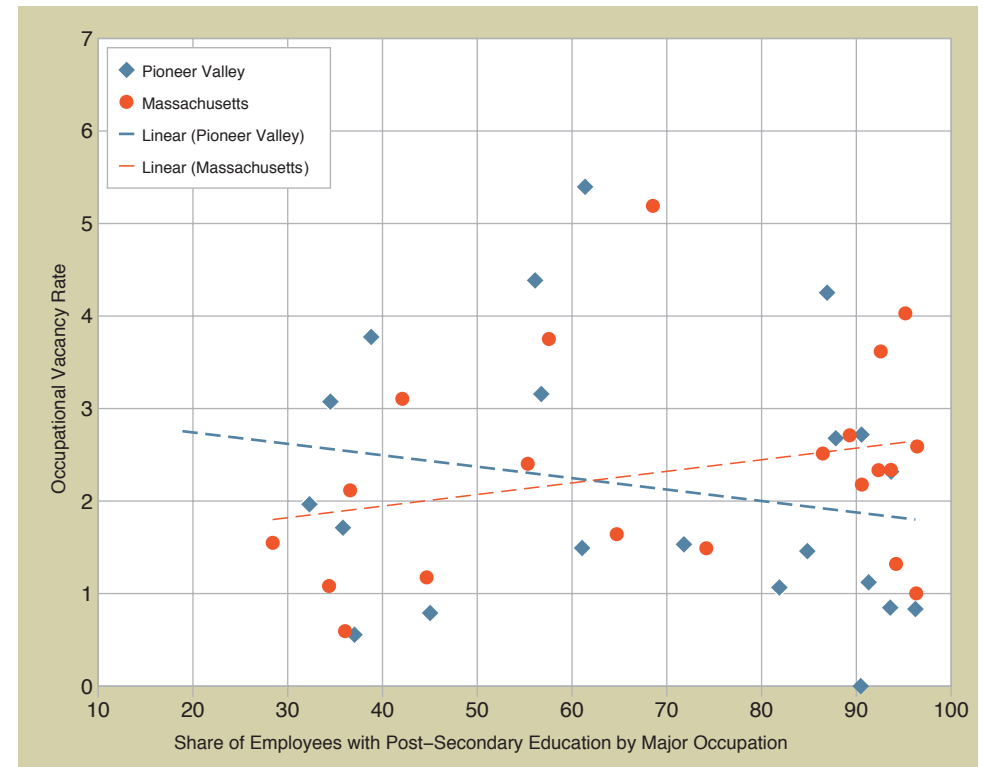


## COMPARING VACANCY RATES AND EDUCATIONAL ATTAINMENT: RECOVERING LABOR MARKET

During the Great Recession, the relationship between vacancy rates and educational attainment weakened somewhat statewide and actually reversed in Pioneer Valley. This reversal of this relationship in the Pioneer Valley is likely driven by three factors: (1) the lower educational attainment levels of employees in the region relative to Massachusetts, (2) the region's lower vacancy rates in occupations with predominantly higher levels of education, such as Management and Computer & Mathematical occupations, and higher vacancy rates in occupations that typically require less education, such as Healthcare Support and Production, and (3) the region's stronger growth (relative to Massachusetts) in a number of industries with larger shares of employees that have lower levels of educational attainment, such as Wholesale Trade and Construction, resulting in increased demand and more vacancies 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 Pioneer Valley in Q4 2010 proxy vacancy rates in a recovering labor market, and educational attainment data by occupation in Pioneer Valley 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 less-than-two-, two-, and four-year institutions increased in Pioneer Valley, Massachusetts, and the United States. Enrollment growth in two- and four-year institutions in Pioneer Valley trailed that of both Massachusetts and the United States. Two-year institutional enrollment trailed due to slower growth in public enrollment in Pioneer Valley, which accounted for the entire enrollment in this category in 2010. Enrollment at four-year institutions grew more slowly mainly due to the weak enrollment growth at the region's public institutions (1.2 percent), which was half the rate experienced both statewide and nationally. In contrast,

regional growth in full-time enrollment at less-than-two-year institutions exceeded the national trend but trailed Massachusetts over the past decade, with enrollment solely concentrated in 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.

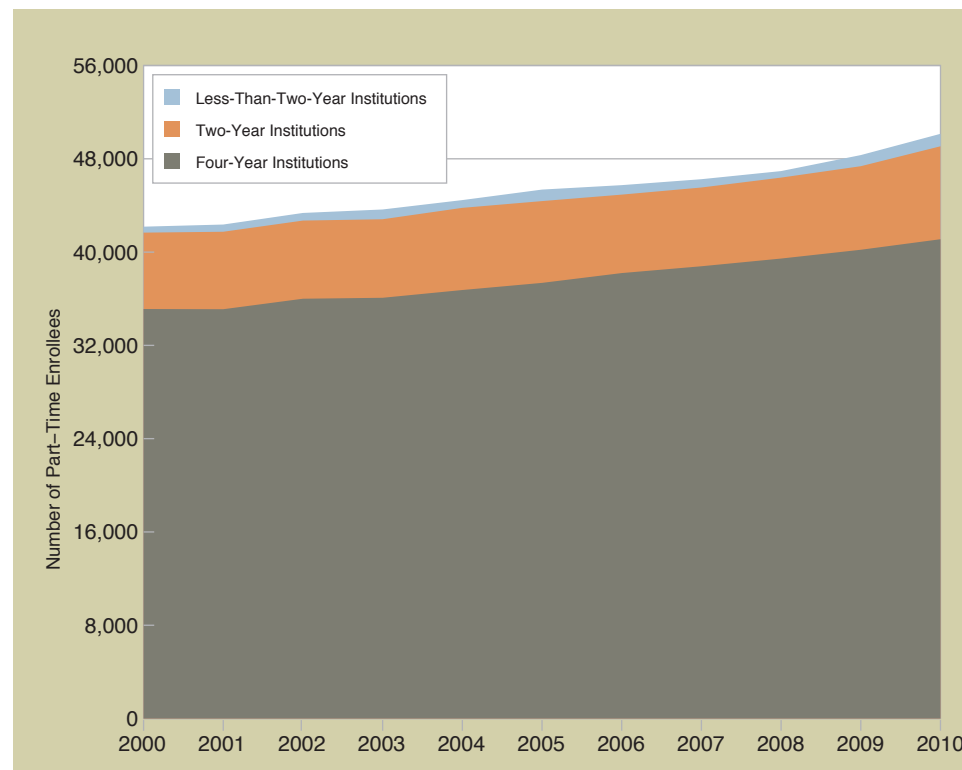
		Less-than-Two-Year Institutions			Two-Year Institutions			Four-Year Institutions		
		Pioneer Valley	MA	US	Pioneer Valley	MA	US	Pioneer Valley	MA	US
Public	Enrollment 2000	0	382	43,504	6,321	31,002	2,008,336	21,205	58,489	3,733,341
	Enrollment 2010	0	316	42,117	7,970	44,278	2,922,622	23,858	73,940	4,904,272
	Absolute Change	0	-66	-1,387	1,649	13,276	914,286	2,653	15,451	1,170,931
	Annual Growth Rate (Percent)	NA	-1.9	-0.3	2.3	3.6	3.8	1.2	2.4	2.8
Private	Enrollment 2000	514	3,427	138,260	227	5,796	259,071	13,915	125,640	1,863,471
	Enrollment 2010	1,072	9,609	277,341	0	5,457	457,134	17,244	153,139	3,000,813
	Absolute Change	558	6,182	139,081	-227	-339	198,063	3,329	27,499	1,137,342
	Annual Growth Rate (Percent)	7.6	10.9	7.2	-100.0	-0.6	5.8	2.2	2.0	4.9
Total	Enrollment 2000	514	3,809	181,764	6,548	36,798	2,267,407	35,120	184,129	5,596,812
	Enrollment 2010	1,072	9,925	319,458	7,970	49,735	3,379,756	41,102	227,079	7,905,085
	Absolute Change	558	6,116	137,694	1,422	12,937	1,112,349	5,982	42,950	2,308,273
	Annual Growth Rate (Percent)	7.6	10.1	5.8	2.0	3.1	4.1	1.6	2.1	3.5

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

Four-year institutions continued to account for most of the full-time enrollment in higher education institutions in Pioneer Valley, but their share fell slightly over the past decade, from 83.3 percent in 2000 to 82.0 percent in 2010. While full-time enrollment at four-year institutions grew at a fairly consistent pace in the past decade, there were sharp increases in enrollment at two-year and less-than-two-year institutions in recent years. Between 2000 and 2008, the annual rate of growth in full-time enrollment at two-year institutions grew at a fairly moderate pace (0.7 percent) before growing at an annual rate of 7.2 percent between 2008 and 2010. Enrollment at less-than-two-year institutions was more volatile over the course of the decade, growing from slightly over 500 full-time enrollees in 2000 to 986 in 2005, then dropping to 563 in 2008. From 2008 to 2010, however, full-time enrollment at such institutions nearly doubled to reach 1,072 in 2010.

**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 at less-than-two-year institutions was nearly 1,100 in 2010, compared with more than 41,100 at four-year institutions that year. All three areas combined represent the total number of enrollees in post-secondary educational institutions in Pioneer Valley, of which there were more than 50,100 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 Pioneer Valley, part-time enrollment at public two-year institutions increased at a sluggish annual rate of 1.0 percent between 2000 and 2010. The region's enrollment growth lagged behind the rates in Massachusetts and the United States. Part-time enrollment in both public and private four-year institutions in Pioneer Valley and the state declined over the past decade while growing nationwide. In comparison, the small number of part-time enrollees at the region's

private less-than-two-year institutions grew at a robust annual rate (21.0 percent) between 2000 and 2010, far exceeding both state and national enrollment patterns.

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

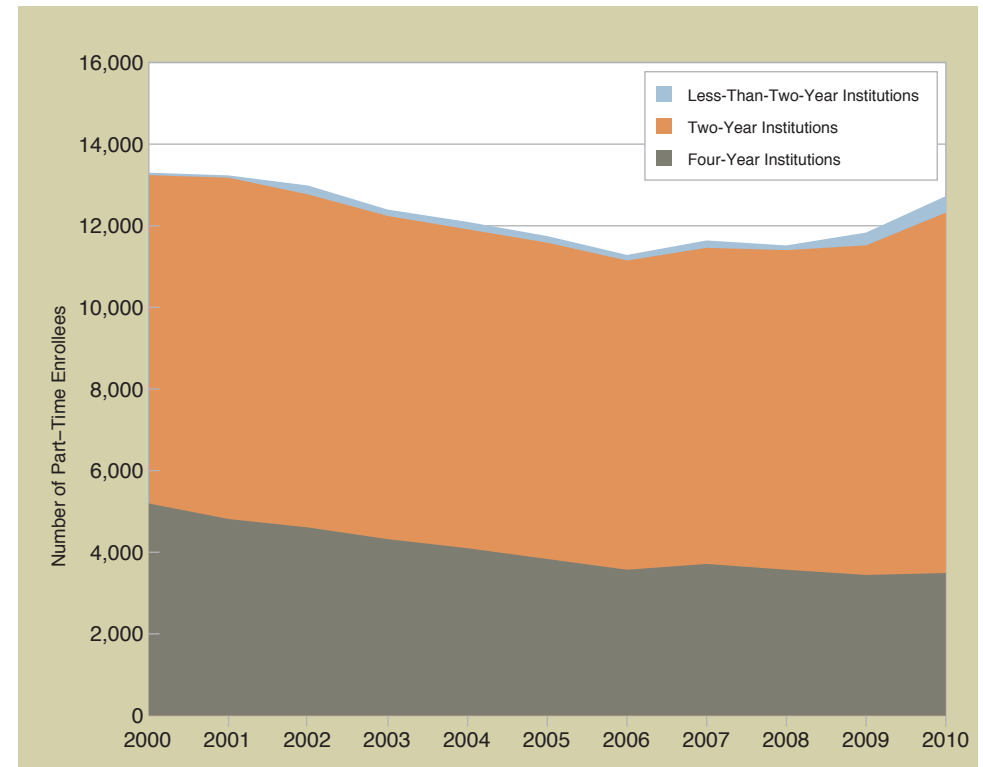
		Less-than-Two-Year Institutions			Two-Year Institutions			Four-Year Institutions		
		Pioneer Valley	MA	US	Pioneer Valley	MA	US	Pioneer Valley	MA	US
Public	Enrollment 2000	0	25	31,407	8,046	48,506	3,509,639	2,449	22,160	1,045,388
	Enrollment 2010	0	65	27,264	8,831	58,043	4,247,674	2,058	16,120	1,380,877
	Absolute Change	0	40	-4,143	785	9,537	738,035	-391	-6,040	335,489
	Annual Growth Rate (Percent)	NA	10.0	-1.4	0.9	1.8	1.9	-1.7	-3.1	2.8
Private	Enrollment 2000	60	1,522	31,827	0	3,536	66,870	2,746	27,425	476,690
	Enrollment 2010	404	2,633	44,382	0	1,554	61,006	1,433	19,155	775,694
	Absolute Change	344	1,111	12,555	0	-1,982	-5,864	-1,313	-8,270	299,004
	Annual Growth Rate (Percent)	21.0	5.6	3.4	NA	-7.9	-0.9	-6.3	-3.5	5.0
Total	Enrollment 2000	60	1,547	63,234	8,046	52,042	3,576,509	5,195	49,585	1,522,078
	Enrollment 2010	404	2,698	71,646	8,831	59,597	4,308,680	3,491	35,275	2,156,571
	Absolute Change	344	1,151	8,412	785	7,555	732,171	-1,704	-14,310	634,493
	Annual Growth Rate (Percent)	21.0	5.7	1.3	0.9	1.4	1.9	-3.9	-3.3	3.5



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

Part-time enrollment at two-year institutions in Pioneer Valley increased over the course of the past decade, with recent growth driving this trend. Between 2000 and 2006, part-time enrollment at two-year institutions actually declined at an annual rate of 0.9 percent. But between 2006 and 2010, part-time enrollment increased at an annual rate of 3.9 percent. In comparison, part-time enrollment at four-year institutions experienced an even steeper decline between 2000 and 2006 (-6.1 percent), before declining at a more modest annual rate of 0.6 percent between 2006 and 2010. The small number of part-time enrollees at less-than-two-year institutions increased at an annual rate of 8.5 percent between 2000 and 2008 to 115 enrollees and then nearly quadrupled to 404 enrollees at the end of the decade.

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

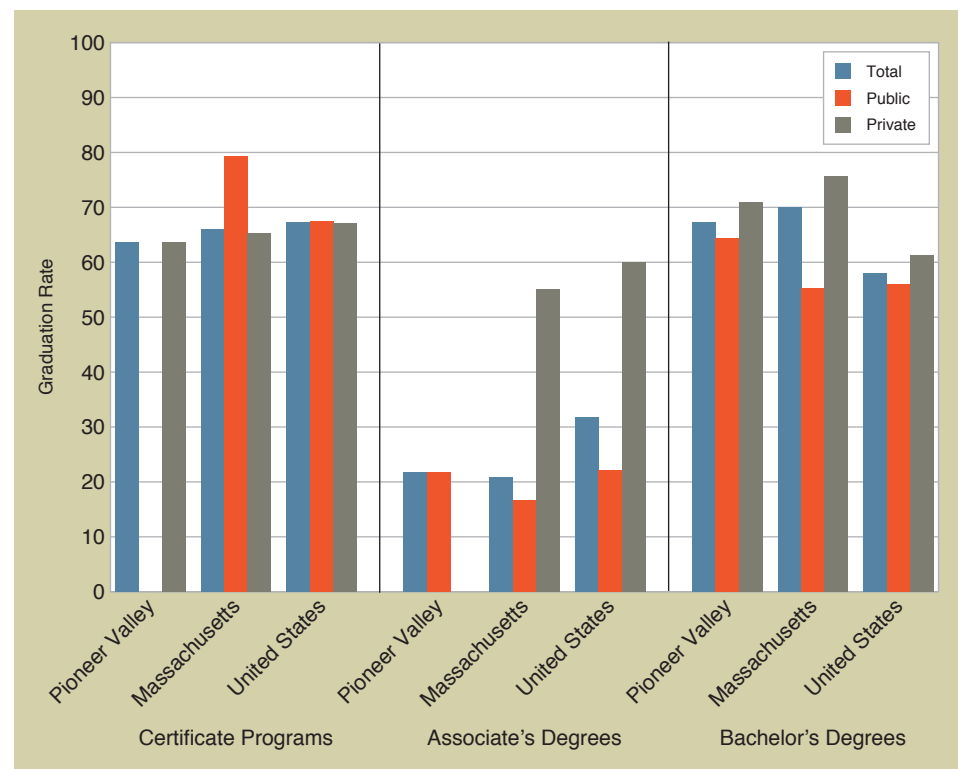


## GRADUATION RATES BY TYPE OF DEGREE (2009)

Enrollment figures indicate a potential supply of post-secondary educated labor, 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 the Pioneer Valley region (e.g., those who earned a Bachelor's Degree within six years) was 67.2 percent. This was slightly lower than the statewide rate but above the national rate. The six-year Bachelor's Degree graduation rate at public institutions (64.4 percent) was lower than those at private institutions in the region but higher than at public institutions in Massachusetts and the United States. The three-year Associate's Degree graduation rate (21.7 percent) was also fairly similar to the statewide rate but trailed that in the United States. The Certificate program graduation rate in Pioneer Valley (63.7 percent) was the only category in which the region trailed both statewide and national rates. Because there are no graduates from public institutions, the region's graduation rate for Certificates is based on private institutions. According to statewide data, private institutions granting Certificates tend to have slightly lower graduation rates than their public counterparts.

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

**Note:** Graduation rates reflect 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 (e.g., 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 enrollees 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. From 2000 to 2010, the number of people earning Certificates, Associate's Degrees, and Bachelor's Degrees granted by institutions in Pioneer Valley, Massachusetts, and the United States grew. However, the region trailed both state and national growth in the completions of all programs and degrees over the course of the decade. The strongest annual growth (4.0 percent) came from the number of students earning Certificates, with increases at both public and private institutions. There were also increases in the numbers of students earning Bachelor's Degrees at both public (2.0 percent) and private

(1.8 percent) institutions. The slowest growth was in the number of students completing Associate's Degrees; that number increased by just 1.2 percent annually at public institutions and declined by 1.0 percent at private institutions between 2000 and 2010.

**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		
		Pioneer Valley	MA	US	Pioneer Valley	MA	US	Pioneer Valley	MA	US
Public	Completions 2000	369	2,273	298,282	1,788	7,487	471,339	4,878	12,718	811,076
	Completions 2010	609	3,618	460,865	2,007	9,831	670,395	5,933	16,251	1,049,058
	Absolute Change	240	1,345	162,583	219	2,344	199,056	1,055	3,533	237,982
	Annual Growth Rate (Percent)	5.1	4.8	4.4	1.2	2.8	3.6	2.0	2.5	2.6
Private	Completions 2000	640	5,221	258,503	83	3,812	135,604	3,759	29,658	431,412
	Completions 2010	890	8,195	430,685	75	4,366	249,258	4,475	35,972	603,141
	Absolute Change	250	2,974	172,182	-8	554	113,654	716	6,314	171,729
	Annual Growth Rate (Percent)	3.4	4.6	5.2	-1.0	1.4	6.3	1.8	1.9	3.4
Total	Completions 2000	1,009	7,494	556,785	1,871	11,299	606,943	8,637	42,376	1,242,488
	Completions 2010	1,499	11,813	891,550	2,082	14,197	919,653	10,408	52,223	1,652,199
	Absolute Change	490	4,319	334,765	211	2,898	312,710	1,771	9,847	409,711
	Annual Growth Rate (Percent)	4.0	4.7	4.8	1.1	2.3	4.2	1.9	2.1	2.9

## EDUCATIONAL INSTITUTIONS AWARDING THE MOST DEGREES IN PIONEER VALLEY (2010)

Public institutions play a large role in postsecondary educational attainment in Pioneer Valley, although the share they account for varies by degree type. Holyoke and Springfield Technical Community Colleges together accounted for more than one-quarter of the Certificates completed in 2010. However, nearly 60 percent of Certificates were awarded by the region's private institutions, led by the Branford Hall Career Institute (35.4 percent). In comparison, the region's three community colleges—Holyoke, Springfield Technical, and Greenfield—accounted for nearly all of the Associate's Degrees completed in the region in 2010 (92.9 percent). The region's two public colleges, University of Massachusetts–Amherst and Westfield State University, also accounted for a majority (57.0 percent) of Bachelor's Degree completions in Pioneer Valley that year. However, the region's private institutions also played a considerable role in granting Bachelor's Degrees. Led by Springfield College (9.6 percent), the nine private institutions in Pioneer Valley accounted for 43.0 percent of Bachelor's Degree completions in 2010.

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

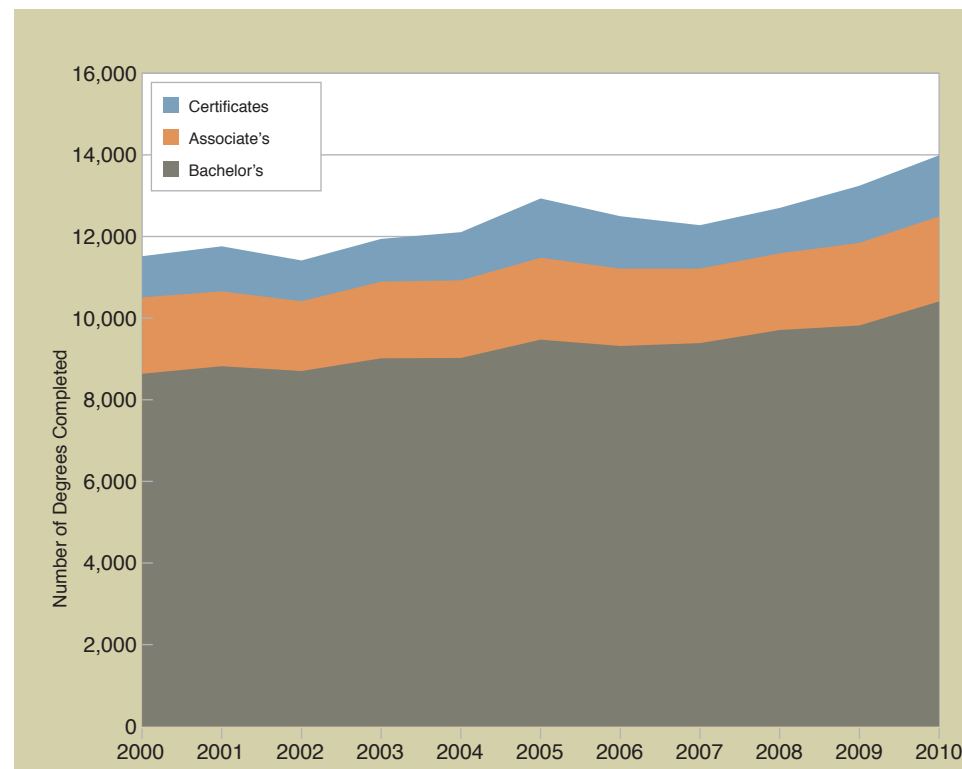
**Note:** See the on-line Data Appendix for a full list of degree completions by institution.

	Institution	Type	Public or Private	Degrees Awarded	Share of Degree Type Completed in Region
Certificates	Branford Hall Career Institute	< Two Years	Private	530	35.4
	Springfield Technical Community College	Two Year	Public	204	13.6
	Holyoke Community College	Two Year	Public	189	12.6
Associate's	Holyoke Community College	Two Year	Public	906	43.5
	Springfield Technical Community College	Two Year	Public	780	37.5
	Greenfield Community College	Two Year	Public	249	12.0
Bachelor's	University of Massachusetts - Amherst	Four Year	Public	4,851	46.6
	Westfield State University	Four Year	Public	1,082	10.4
	Springfield College	Four Year	Private	999	9.6

## NUMBER OF DEGREE COMPLETIONS BY DEGREE TYPE: PIONEER VALLEY (2000-2010)

Adding up Bachelor's and Associate's Degrees and Certificates, the total number of postsecondary degrees granted by institutions in Pioneer Valley grew at an annual rate of 2.0 percent between 2000 and 2010. Such growth was slower than in Massachusetts (2.5 percent) and the United States (3.7 percent), both of which experienced particularly strong growth in Associate's Degrees. While growth in the three post-secondary educational attainment categories was fairly stable in the region over the course of the decade, all three experienced mid-decade lulls in 2006 and 2007. Between 2000 and 2005, completions grew at annual rates ranging from 1.4 percent for Associate's Degree to 7.6 percent for Certificates. However, in 2006 and 2007 the number of degree completions in Pioneer Valley for all categories declined before picking up at the end of the decade. As such completions of all degrees experienced their strongest annual increases of the decade between 2007 and 2010; increasing 12.1 percent for Certificates, 4.5 percent for Associate's Degrees, and 3.5 percent for Bachelor's Degrees.

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



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

In Pioneer Valley, the increase in the number of Certificates granted between 2000 and 2010 mostly came from the two largest fields of study: Health Sciences and Services. The number of Health Sciences Certificates increased by two-thirds, and this field's share increased from 34.3 percent to 38.6 percent of all the region's Certificates. But this increase trailed the numbers statewide, where the number of Health Sciences Certificates more than doubled and accounted for almost 50 percent of Certificates in 2010. Services Certificates also increased by two-thirds in Pioneer Valley and accounted for 31.4 percent of the region's Certificates in 2010. Services Certificates include a large range of specializations, including Cosmetology, Law Enforcement, Construction Trades, Sports & Fitness Studies, Library Sciences, Social Work,

Appliance Installation & Repair, Welding Technology, and Construction Equipment Operations. The other major field of study to see a large increase in Certificate completions in Pioneer Valley was Arts, Humanities, & Social Sciences, with the number of program completions more than doubling between 2000 and 2010. As such, the Certificates in the field accounted for 16.5 percent of total Certificates completed in 2010, more than four times larger than their share statewide; this was due to a large number of degrees in the Arts, such as Photography.

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

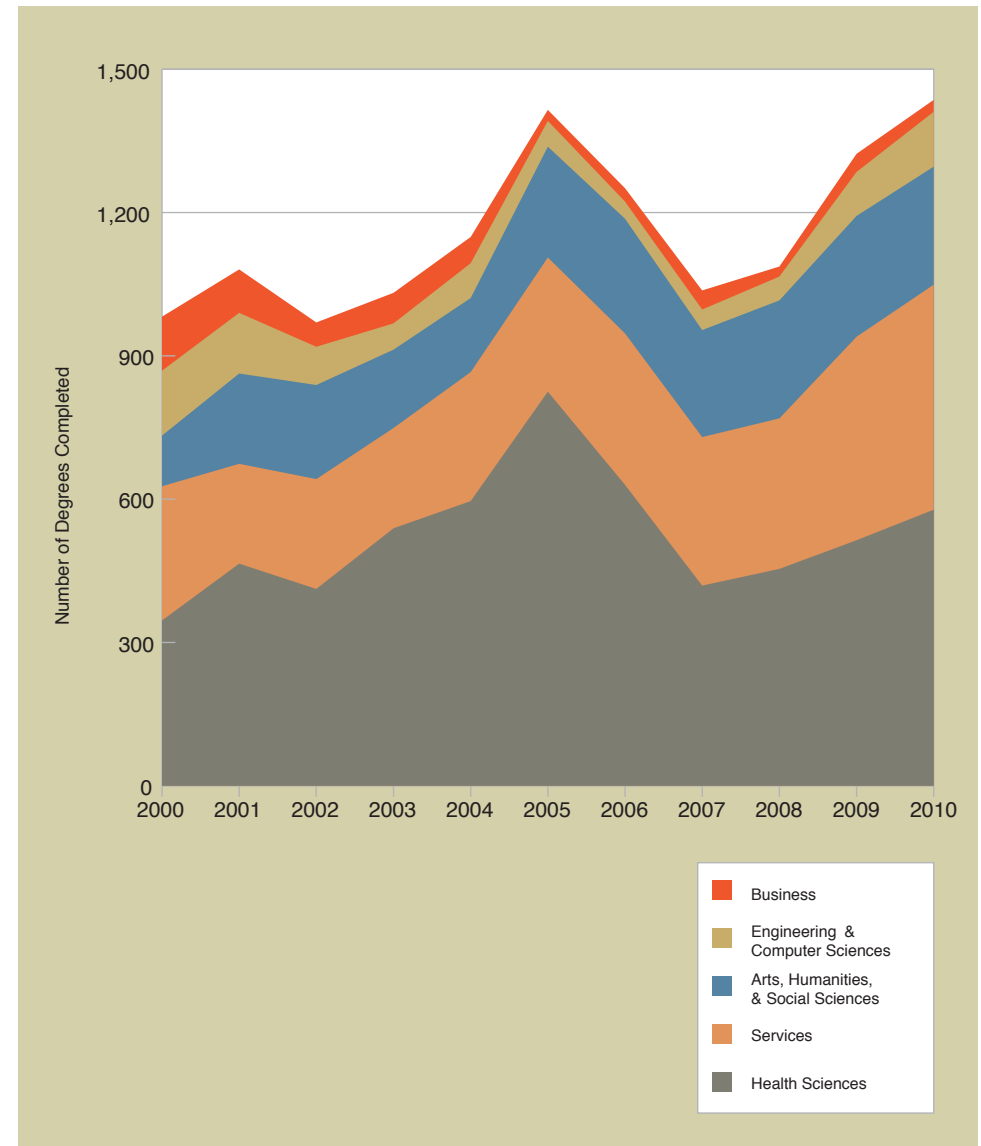
**Note:** For major fields of study by degree type for the United States, see the on-line Data Appendix.

Major Field of Study	Pioneer Valley				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	346	34.3	578	38.6	2,080	27.8	5,638	47.7
Services	281	27.8	471	31.4	2,479	33.1	3,984	33.7
Engineering & Computer Sciences	136	13.5	115	7.7	1,013	13.5	752	6.4
Business	113	11.2	25	1.7	709	9.5	513	4.3
Arts, Humanities, & Social Sciences	106	10.5	247	16.5	271	3.6	424	3.6
Legal	23	2.3	17	1.1	132	1.8	189	1.6
Education	4	0.4	1	0.1	129	1.7	87	0.7
Science & Mathematics	0	0.0	23	1.5	248	3.3	80	0.7
Other	0	0.0	22	1.5	81	1.1	146	1.2
Total	1,009	100.0	1,499	100.0	7,494	100.0	11,813	100.0

## ANNUAL COMPLETIONS BY TOP FIVE CERTIFICATE MAJORS IN PIONEER VALLEY (2000-2010)

The number and type of Certificates awarded by Pioneer Valley institutions fluctuated considerably from year to year. For example, from 2000 to 2010, Health Sciences Certificates in the region grew at an annual rate of 5.3 percent. However, the number of degrees actually peaked in the middle of the decade, with Health Sciences certificates growing at an annual rate of 19.0 percent between 2000 and 2005. Certificates in this field of study then declined in 2006 and 2007 before growing modestly through the end of decade. The consistently 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. In comparison, the declining completions of Certificates in fields, such as Business, may reflect a demand for higher levels of educational attainment in such fields.

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



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

A majority of the growth in Associate's Degrees granted by institutions in Pioneer Valley came from the increase in the Arts, Humanities, & Social Sciences field. Between 2000 and 2010, the number of Arts, Humanities, & Social Sciences degrees grew at annual rate of 2.3 percent and accounted for the largest share of Associate's Degrees (39.2 percent) awarded in the region in 2010. The region also had modest gains in students earning degrees in Health Sciences, Services, and Business, but there were declines in the number of students earning degrees in every other major field of study over the course of the decade. Massachusetts also had strong growth in students earning degrees in Arts, Humanities, &

Social Sciences, as well as in Health Sciences and in Services. In addition, there were statewide gains in students earning degrees in a number of other major fields, with declines only in students earning Engineering & Computer Sciences and Legal degrees. With broad-based growth in more fields of study, the growth in students earning Associate's Degrees in Massachusetts surpassed the growth in Pioneer Valley over the course of the decade.

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

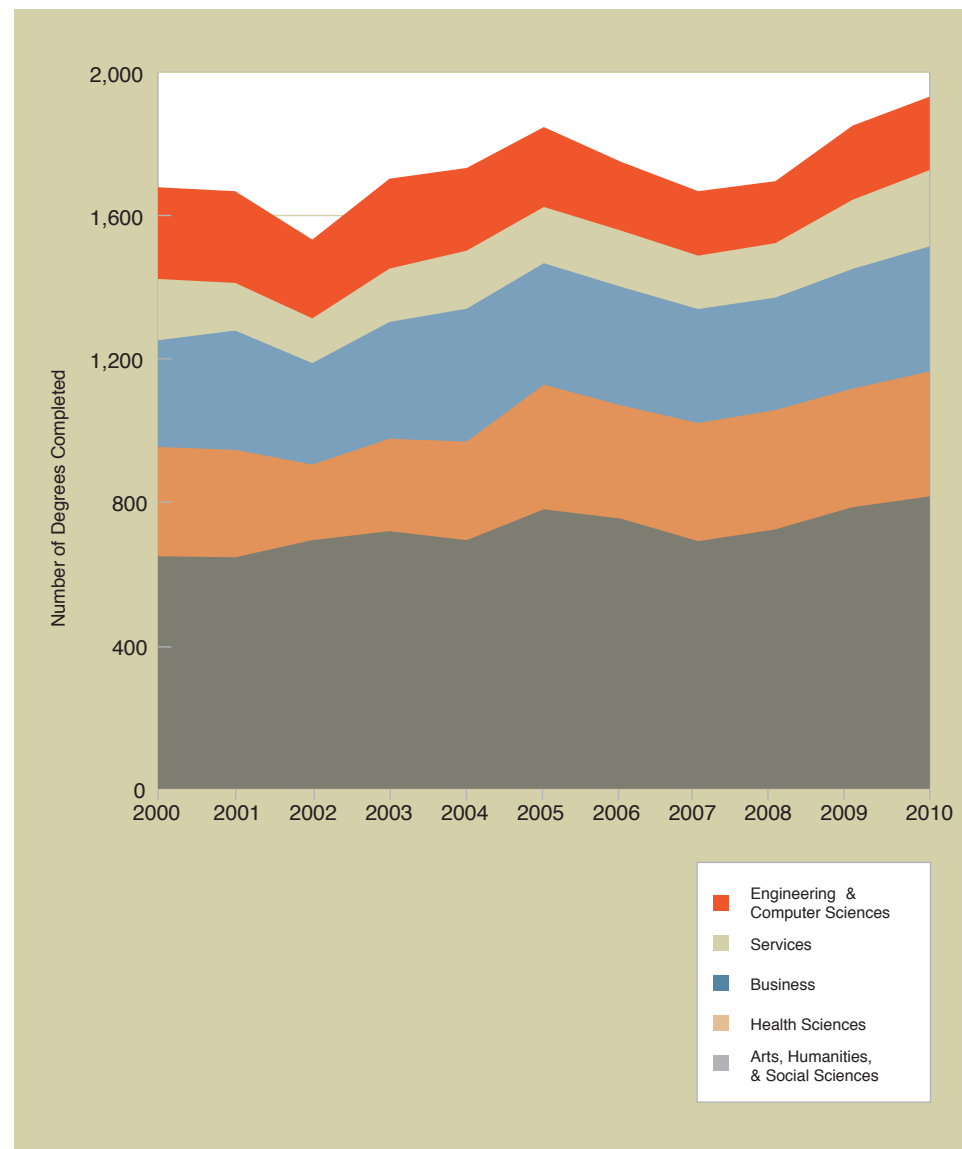
Major Field of Study	Pioneer Valley				Massachusetts			
	2000		2010		2000		2010	
	Associate's Completed	Major's Share of Total (Percent)	Associate's Completed	Major's Share of Total (Percent)	Associate's Completed	Major's Share of Total (Percent)	Associate's Completed	Major's Share of Total (Percent)
Arts, Humanities, & Social Sciences	649	34.7	816	39.2	3,130	27.7	3,833	27.0
Health Sciences	305	16.3	349	16.8	2,302	20.4	3,559	25.1
Services	171	9.1	213	10.2	1,216	10.8	2,389	16.8
Business	298	15.9	349	16.8	2,198	19.5	2,250	15.8
Engineering & Computer Sciences	256	13.7	205	9.8	1,561	13.8	1,162	8.2
Education	43	2.3	27	1.3	293	2.6	442	3.1
Science & Mathematics	104	5.6	89	4.3	231	2.0	260	1.8
Legal	10	0.5	8	0.4	189	1.7	117	0.8
Other	35	1.9	26	1.2	179	1.6	185	1.3
<b>Total</b>	<b>1,871</b>	<b>100.0</b>	<b>2,082</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 PIONEER VALLEY (2000-2010)

In Pioneer Valley, the number and share of students earning Associate's Degrees in the largest majors was fairly consistent over the course of the decade, with only modest increases in the four largest majors. The number of completions in Arts, Humanities, & Social Sciences, Health Sciences, and Business increased at a more rapid pace in the first half of the decade before leveling off in the second half, with only slightly more degrees being completed in those majors in 2010 than in 2005. In comparison, students earning Services degrees declined at an annual rate of 1.7 percent between 2000 and 2005, before increasing at annual rate of 6.3 percent between 2005 and 2010. As a result, Services majors accounted for a majority of the growth in Associate's Degrees completed in Pioneer Valley in the second half of the decade. On the other hand, the number of students earning Engineering & Computer Sciences degrees consistently declined on an annual basis throughout the decade, dropping from the fourth largest major in 2000 to fifth largest in 2010.

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



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

While Pioneer Valley and Massachusetts have similarly high concentrations of Bachelor's Degrees in Arts, Humanities, & Social Services, they differ in a number of other majors. In particular, the region had a much higher concentration in Services degrees (12.1 percent) than did Massachusetts (6.1 percent) in 2010. In the Science, Engineering, Technology, and Mathematics (STEM) fields, Pioneer Valley is more concentrated in Science & Mathematics than in Engineering & Computer Sciences, while Massachusetts has more equal shares in these two categories. Despite this difference, both the region and state saw increases in

students completing degrees in nearly every major field of study over the course of the decade, with the exception of Education. Among the growing fields of study, the annual rate of growth in degree completions between 2000 and 2010 in Pioneer Valley ranged from 0.9 percent in Services to 3.4 percent in Science & Mathematics.

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

Major Field of Study	Pioneer Valley				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	3,698	42.8	4,402	42.3	18,891	44.6	23,405	44.8
Business	1,182	13.7	1,491	14.3	7,596	17.9	9,990	19.1
Science & Mathematics	954	11.0	1,327	12.7	3,818	9.0	5,054	9.7
Engineering & Computer Sciences	400	4.6	478	4.6	3,726	8.8	3,997	7.7
Health Sciences	518	6.0	596	5.7	2,938	6.9	3,589	6.9
Services	1,146	13.3	1,258	12.1	2,495	5.9	3,170	6.1
Education	337	3.9	286	2.7	1,922	4.5	1,362	2.6
Legal	104	1.2	142	1.4	176	0.4	190	0.4
Other	298	3.5	428	4.1	797	1.9	1,466	2.8
Total	8,637	100.0	10,408	100.0	42,376	100.0	52,223	100.0

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

While the growth of Bachelor's Degrees completions in Pioneer Valley has been fairly consistent over the past decade, growth in the region's largest majors has varied over the years. The share of students completing Bachelor's Degree in Arts, Humanities, & Social Sciences increased at a more rapid pace in the first half of the decade (3.5 percent annually) before leveling off in the second half, yielding only slightly more degrees completed in this field in 2010 than in 2005. The share of students earning Services degrees grew between 2000 and 2005 (4.1 percent annually), but the number declined through the end of the decade (02.2 percent annually). Conversely, Health Sciences degree completions declined through the first half of the decade (-4.9 percent annually) but grew at a robust 8.1 percent annually between 2005 and 2010. The share of students earning Business and Science & Mathematics degrees were virtually unchanged in the first half of the decade, but grew at robust annual rates of 5.7 percent and 6.5 percent, respectively, between 2005 and 2010.

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

