



# Labor Market Developments in the Merrimack Valley Workforce Area

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**Appendix A:**

Detailed tabulations on the total population, working-age population, labor force, and the labor force participation rate in the Merrimack Valley Workforce Area, Massachusetts, the New England region, and the United States.

**Appendix B:**

Detailed tabulations on the wage and salary employment levels and trends in the Merrimack Valley Workforce Area and Massachusetts.

**Appendix C:**

Detailed tabulations on the occupational staffing patterns of industries and the educational attainment of workers by industry and occupation in Massachusetts.

# **Total Population, Working-Age Population, and the Labor Force of the Merrimack Valley Workforce Area**

## ***Introduction***

The employment, earnings, and income of the residents of an area represent the level of economic prosperity enjoyed by them. Each one of these measures is determined in the labor market. Employment and earnings are directly determined in the labor market. The employment rate measures an individual's success in gaining access to the labor market, which is also the source of their earnings. The third measure of economic prosperity, total income, is measured as the sum of the many sources of income including wages and salaries, self employment income, public assistance income, interest, dividends, rental income, retirement income, and other miscellaneous sources of income. Although the total income is derived from many sources, earnings from the labor market are the single biggest source of income for most people. Analysis of the 2006 ACS data by the authors indicates that among all working age individuals, earnings comprise 72 percent of total personal income. If the elderly population (65 years or older) is excluded, earnings account for 86 percent of personal income. Thus, the level of income for most individuals is closely related to the level of their earnings in the labor market.

The condition of the labor market, including the employment and earnings prospects of workers, is determined by the demand and the supply for labor. The demand for labor is expressed by the number of jobs in an area and the supply of labor is measured by the size of the workforce of an area. Beneath these very broad measures of labor demand and supply are a wide variety of nuanced measures that provide insights into the labor and job quality issues in the labor market, different sources of labor demand and labor supply, labor shortages and surpluses, and the state of demand and supply in different segments of the labor markets in a region. These factors are the key determinants of the labor market outcomes for individuals.

This section presents a thorough analysis of the condition of labor supply in the Merrimack Valley region as measured by the total resident population, the working-age

population and the labor force.<sup>1</sup> Selected comparisons are presented between the Merrimack Valley and the entire state of Massachusetts, the New England region, and the nation. It is organized to begin with a broad overview of the population developments in the region during the first half of this decade, between 2000 and the middle of the decade (2005-2006). The analysis focuses on the changes in size and composition of the total population as well as the working-age population. Although the working-age population is more immediately relevant to a discussion of the labor market, analysis of the changes in the total population sheds light on the changes to be expected in the future workforce of the region. This is followed by a discussion of the size and composition of the labor force in the Merrimack Valley area and the degree of labor force attachment among different subgroups of the region's working-age residents. The final segment presents a discussion of the journey to work of residents of other areas to work in the Merrimack Valley area, and the journey to work of Merrimack Valley area residents to work outside the Merrimack Valley area.

The findings presented in this section are based upon our analysis of the 2000 decennial census data and the 2005 and 2006 American Community Survey data. The 2000 decennial census data analysis is based upon the set of data known as the Public Use Microdata Sample (PUMS) data files. The 2000 PUMS data are based on the decennial census long-form questionnaire. These files are the actual responses to the long-form census questionnaire. Therefore these files can be used to produce any tabulation of the census data. The census long-form questionnaire was administered to a large sample of households—1 in 6 households or 16 percent of all households in the nation. The Merrimack Valley data analysis is based upon the responses of 5,300 individuals.

The mid-decade analysis is based upon a relatively new data set developed by the U.S. Census Bureau called the American Community Survey or the ACS. The ACS is a nationwide survey conducted by the U.S. Census Bureau that will replace the decennial census long form survey starting in 2010. The ACS began as a demonstration in 1996 and

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<sup>1</sup> Detailed data tabulations for the trends in the total population, working-age population, the composition of the labor force, and the labor force participation rates for the Merrimack Valley area, Massachusetts, the New England region, and the nation are provided in Appendix A.

culminated in full implementation in 2005. The 2005 ACS survey and every annual ACS survey thereafter will be implemented in every county of the nation with an annual sample of about three million housing units.

The ACS provides data for individuals on their demographic and socioeconomic characteristics, labor market experiences, educational attainment and school enrollment status, and earnings and incomes for all states, as well as for all cities, counties, metropolitan areas, and population groups of 65,000 people or more. Although the ACS sample sizes are quite large, we have combined ACS data files from two years to secure sufficiently large sample sizes to produce reliable estimates at the level of the local workforce area. Estimates presented in this section for the Merrimack Valley area are based upon the responses from nearly 3,600 households.

All estimates in this section are confined to the civilian non-institutional household population. Members of the armed forces are excluded from all analysis in this section. Also excluded are residents of institutional facilities such as nursing homes, correctional institutions, and juvenile institutions where residents are under the formal supervision or custody of the institution and residents of non-institutionalized facilities such as college dormitories and other group homes.

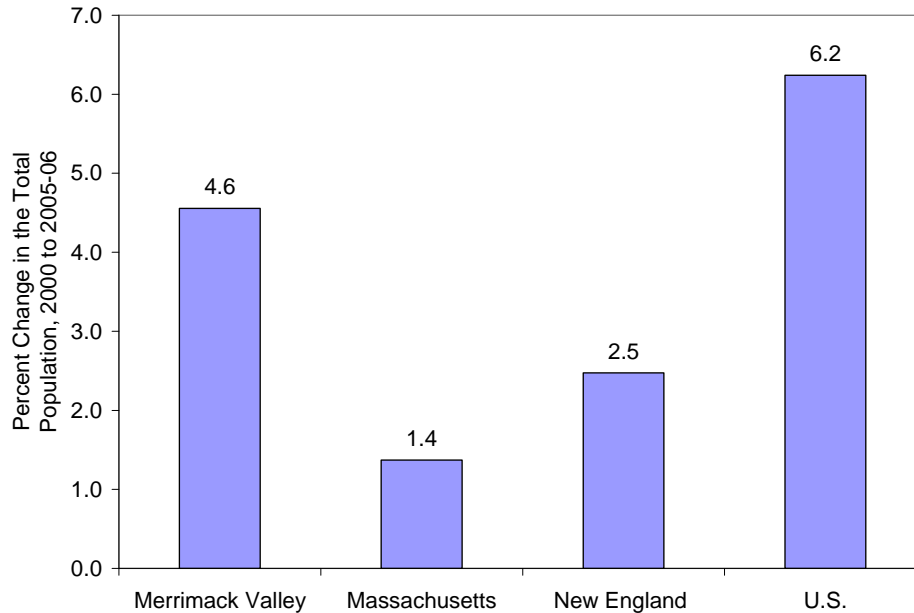
### ***Trends in the Total Population of the Merrimack Valley Area, 2000 to 2005-06***

At mid-decade, the Merrimack Valley area was home to 271,266 individuals, up from 259,446 in 2000, representing an increase of 11,820 or more than four percent. The population in the Merrimack Valley area grew at a faster pace compared to the population in the entire state (1.4 percent) and the New England region (2.5 percent), although at a slower pace than in the nation (6.2 percent).

The Merrimack Valley region's population growth of 11,800 residents between 2000 and 2005-06 is largely attributable to immigration. At the time of the 2005-2006 ACS surveys, the region was home to 9,073 new immigrant residents who had entered the United States between 2000 and 2005-2006. In the absence of the arrival of these new immigrants to the Merrimack Valley communities, the region would only have seen a

population increase of 2,727 or one percent (rather than the actual increase of 4.6 percent).

**Chart 1:**  
**Percent Change in the Total Population, 2000 to 2005-06**



Sources: 2000 Decennial Census Public Use Microdata Samples (PUMS) data files and 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

**Table 1:**  
**Immigrant Share of Total Population Growth, 2000 to 2005-06**

	Merrimack Valley	Mass.	New England	U.S.
Total Population, 2000	259,446	6,127,254	13,450,470	272,837,866
Total Population, 2005-06	271,266	6,211,127	13,783,286	289,865,830
Absolute change in the total population, 2000 to 2005-06	11,820	83,873	332,816	17,027,964
New immigrants arrived between 2000 and 2005-06	9,073	255,711	439,955	9,124,927
Share of population growth from new immigrants	76.8%	305%	132%	54%

Sources: 2000 Decennial Census Public Use Microdata Samples (PUMS) data files and 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

The ratio of new immigrants and the change in the total population of an area measures the proportion of the population growth that is attributable to immigration. In

the Merrimack Valley communities, new immigrants accounted for nearly 77 percent of the region's population growth. New immigrants accounted for all of the population growth in Massachusetts (305 percent) and New England (132 percent) and about 54 percent of the nation's population growth between 2000 and 2005-06. Thus, the contribution of immigrants to the population growth was sizable, not only in Merrimack Valley, but also in the entire state, the New England region and the nation.

An examination of the trends in population among demographic subgroups of the population of the Merrimack Valley area is presented in Table 2. The growth in the region's population occurred evenly among both men and women. The region's male population increased by 4.6 percent over the six year period while the female population grew by 4.5 percent.

Table 2:  
Change in the Total Population of the Merrimack Valley Area  
by Selected Characteristics, 2000 and 2005-06

	2000	2005-06	Absolute Change	Relative Change
Total	259,446	271,266	11,820	4.6%
<u>Gender</u>				
Male	125,571	131,316	5,745	4.6%
Female	133,875	139,950	6,075	4.5%
<u>Nativity Status</u>				
Foreign Born	46,074	56,889	10,815	23.5%
Native Born	213,372	214,377	1,005	0.5%
<u>Race-Ethnicity</u>				
White, non-Hispanic	192,835	184,501	-8,334	-4.3%
Black, non-Hispanic	-----SAMPLE TOO SMALL-----			
Hispanic	52,318	66,551	14,233	27.2%
Other, non-Hispanic	11,859	14,790	2,931	24.7%

Sources: 2000 Decennial Census Public Use Microdata Samples (PUMS) data files and 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

Population trends by race-ethnicity and immigration status reflect the important role of immigration in the region. All of the region's population growth came from increasing numbers of race-ethnic minorities. In fact, between 2000 and 2005-06 the



number of White non-Hispanic residents declined by more than 8,300 or four percent. The Hispanic and other-non Hispanic populations increased during these six years (by 27 percent and 25 percent, respectively). The foreign-born population in Merrimack Valley also increased at a dramatically quicker rate than the native born population of the region during these six years (24 percent versus one percent, respectively).

The population growth patterns across age groups in the Merrimack Valley region are slightly different to those of the entire state of Massachusetts and the New England region, as well as the nation. Unlike in the other geographical areas the number of residents in the Merrimack Valley region under the age of 45 years increased marginally between 2000 and 2005-06 by 946, or 0.5 percent. However, this increase was solely concentrated within individuals in the 16-24 year old age group, who were born between

Table 3:  
Change in the Total Population of the Merrimack Valley  
Area by Age, 2000 and 2005-06

	2000	2005-06	Absolute Change	Relative Change
Total	259,446	271,266	11,820	4.6%
Under 16	67,654	64,202	-3,452	-5.1%
16-24	26,302	34,077	7,775	29.6%
25-34	34,378	33,200	-1,178	-3.4%
35-44	46,453	44,254	-2,199	-4.7%
45-54	35,011	41,982	6,971	19.9%
55-64	21,623	26,319	4,696	21.7%
65+	28,025	27,234	-791	-2.8%
Under 45	174,787	175,733	946	0.5%
45 and older	84,659	95,535	10,876	12.8%
55 and older	49,648	53,553	3,905	7.9%

Sources: 2000 Decennial Census Public Use Microdata Samples (PUMS) data files and 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

1981 and 1990 and are members of the echo boom generation.<sup>2</sup> The number of 16- to 24-year old residents in the Merrimack Valley area increased by nearly 7,800 or 30 percent.

<sup>2</sup> The Echo Boom generation roughly corresponds with individuals born between the early 1980s and late-1990s. The total number of births during the Echo Boom years peaked in 1989 and 1990—children who

However, during this six year period the region had fewer residents under 16 (-5.1 percent), between 25 and 34 (-3.4 percent), and between 35 and 44 (-4.7 percent).

Over the same period of time there were nearly 10,900 more residents aged 45 years and older in Merrimack Valley, representing a relative increase of almost 13 percent. Among the 45+ age group, the sharpest growth occurred among the 55 to 64 year old population. The number of 55 to 64 year old residents in the Merrimack Valley area increased from about 21,600 in 2000 to about 26,300 in 2005-06, representing an increase of 4,700 or 22 percent. The growth in this age group represents the aging of the baby boom generation. In the year 2000, members of the baby boom generation (born between 1946 and 1964) were between the ages of 36 and 54. By 2005-06, they were between 41 and 60 years old resulting in a large swell in the 55-60 year old population in the years 2005-06. The number of Merrimack Valley area residents who were 55 years or older also increased during this six year period by over 3,900, or eight percent.

Between 2000 and 2005-06 the rate of population growth slowed down in the nation, the New England region, and the state of Massachusetts. The Merrimack Valley region followed this pattern of a slower population growth. However, while the rate of population growth in Merrimack Valley was slower than in the nation, it was quicker than in the entire state of Massachusetts or the New England region. Furthermore, during these six years the Merrimack Valley region was very dependent on immigration to increase its population. As discussed previously, in the absence of new immigration, the Merrimack Valley population would only have increased by one percent. There were wide variations in the population trends among race-ethnicity, nativity and age subgroups of the population. A decline in the number of White, native-born and young residents (under 16 years and between the years of 25 and 44) was accompanied by a increase in the number of Hispanic, other non-Hispanic, male, female, foreign-born, and older residents (45+).

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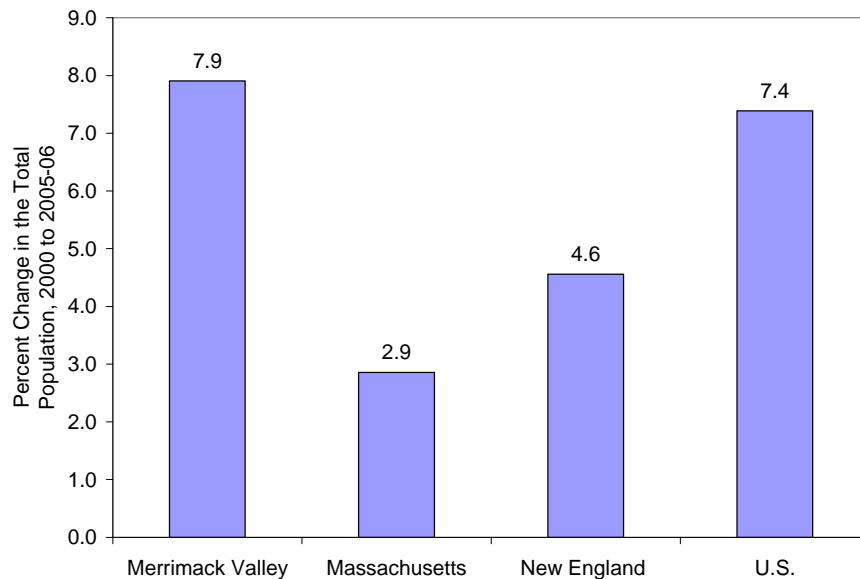
would have been 16 years old in 2005 and 2006. This generation is called the echo boom generation since many members of the generation are children of the baby boom generation.

## ***Trends in the Working-Age Population of the Merrimack Valley Area, 2000 to 2005-06***

The working-age population consists of individuals who are 16 years or older. The discussion so far has focused on the total population. The working-age population is a subset of the total population and represents the pool from which the current labor supply is drawn. Trends in the size and composition of the working-age population provide important insights into the changes in the potential labor supply of the region.

There were a total of about 207,000 working age residents in the Merrimack Valley area during 2005-06. This is up from 191,800 in 2000 and represents an increase of 15,200 working-age residents or 7.9 percent over the six year period. The region had a higher rate of growth of the working-age population than the rate of growth of its total population. Underlying this difference in growth rates was the decline in the region's population under 16 years old. As noted in the previous section, the Merrimack Valley communities saw a 5.1 percent decline in the number of residents under age 16 between 2000 and 2005-06.

Chart 2:  
Percent Change in the Working-Age Population, 2000-2005/06



Sources: 2000 Decennial Census Public Use Microdata Samples (PUMS) data files and 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

When compared to the state of Massachusetts, the New England region, and the nation, the Merrimack Valley area had an above average rate of growth of its working age population over the six year time period between 2000 and 2005-06. Statewide, the working-age population increased by nearly three percent, a rate of increase that was only equal to 37 percent of the rate of increase in the Merrimack Valley area. Although the New England region added nearly 477,400 working-age residents between 2000 and 2005-06, representing a 4.6 percent growth rate, this rate of increase was only equal to 58 percent of the growth rate in the Merrimack Valley area. The nation saw its working-age population increase by 15.4 million residents, a rate of increase of 7.4 percent over six years and only slightly slower than the rate of increase in Merrimack Valley.

Similar to the trends in the total population growth in the region, the growth in the Merrimack Valley region's working-age population varied sharply by gender, race-ethnicity, and nativity status. Between 2000 and 2005-06 the male working-age population increased by nine percent whereas the female population increased at a slightly slower rate of seven percent. However, despite this, by 2005-06 (as in 2000) female residents continued to account for a slightly larger share of the working-age population in Merrimack Valley than male residents (females accounted for 52 percent).

Between 2000 and 2005-06 the immigrant working-age population in the Merrimack Valley communities increased by nearly 11,700 persons or 28 percent, while the region's native-born population only increased by almost 3,500 or two percent. Consequently, over this period of six years the share of immigrants in the working-age population of the Merrimack Valley region increased from 22 percent to 26 percent.

Trends in the race-ethnicity of the working-age population in the Merrimack Valley area also reflect the high levels of immigration. The White working-age population declined by 1,900 individuals or one percent at the same time as the number of working-age Hispanic residents increased by 12,600 or 38 percent during this six year time period, while the number of other non-Hispanics increased by 29 percent.

The heavy reliance of the region on immigrants to increase its working-age population is evident in the proportion of the region's working-age population growth that consists of new immigrants. We have defined new immigrants as those foreign-born

Table 4:  
Change in the Working-Age Population of the Merrimack Valley Area  
by Selected Characteristics, 2000 and 2005-06

	2000	2005-06	Absolute Change	Relative Change
Total	191,792	206,952	15,160	7.9%
<u>Gender</u>				
Male	90,897	99,116	8,219	9.0%
Female	100,895	107,836	6,941	6.9%
<u>Nativity Status</u>				
Foreign Born	41,419	53,110	11,691	28.2%
Native Born	150,373	153,842	3,469	2.3%
<u>Race-Ethnicity</u>				
White, non-Hispanic	148,837	146,904	-1,933	-1.3%
Black, non-Hispanic	-----SAMPLE TOO SMALL-----			
Hispanic	33,533	46,116	12,583	37.5%
Other, non-Hispanic	7,811	10,097	2,286	29.3%

Sources: 2000 Decennial Census Public Use Microdata Samples (PUMS) data files and 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

Table 5:  
Immigrant Share of Working-Age Population Growth, 2000 to 2005-06

	Merrimack Valley	Mass.	New England	U.S.
Total working-age population, 2000	191,792	4,788,971	10,471,904	208,782,718
Total working-age population, 2005-06	206,952	4,925,682	10,949,262	224,204,853
Absolute change in the working-age population, 2000 to 2005-06	15,160	136,711	477,358	15,422,135
New working-age immigrants arrived between 2000 and 2005-06	6,960	210,010	354,237	7,293,453
Share of working-age population growth from new immigrants	45.9%	153.6%	74.2%	47.3%

Sources: 2000 Decennial Census Public Use Microdata Samples (PUMS) data files and 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

individuals who entered the United States at any time between 2000 and 2005-06. In the Merrimack Valley communities there were 6,960 recent immigrants of working-age who had immigrated to the U.S. between 2000 and 2005-06. Over the same time period, the

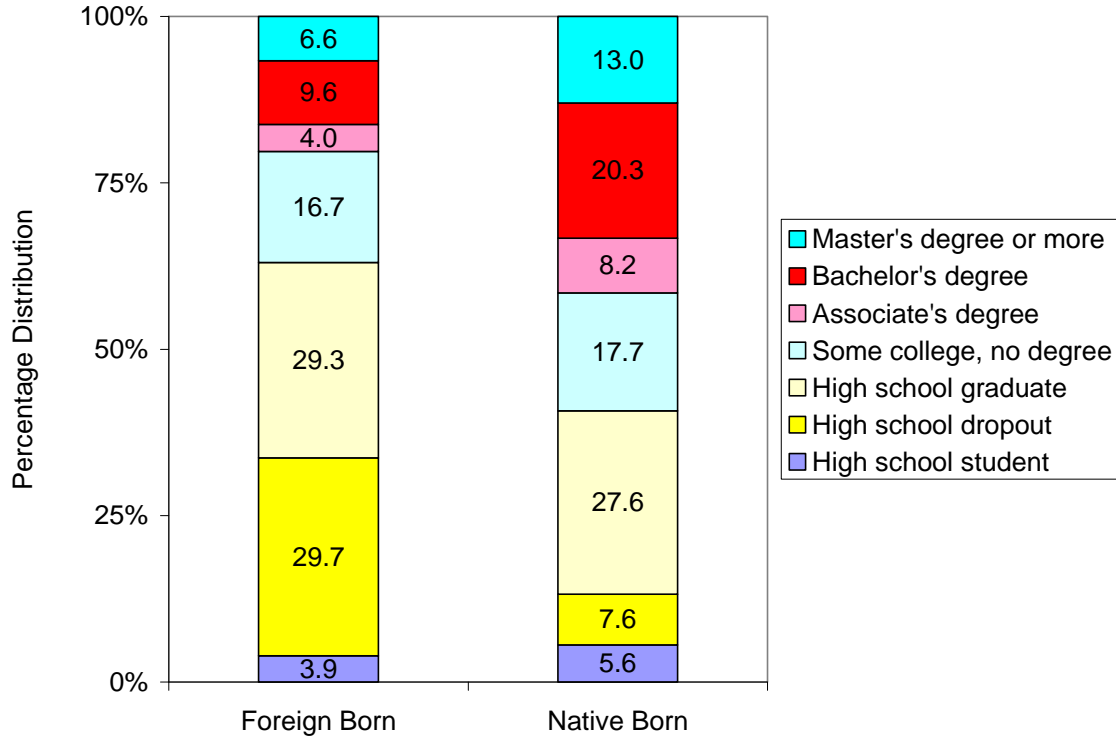
region's working-age population increased by 15,160, which means that recent immigrants accounted for more than 45 percent of the net growth in the working-age population of the Merrimack Valley area. In the absence of immigration the region would have only seen a four percent increase in its working-age population, half the rate of the actual increase of eight percent.

Immigrants also played an important role in the growth of the working-age population in the state, the New England region, and the nation. All of the growth of the state's working-age population during the six year time period was from immigrants. Nearly 154 percent of the working-age population growth in Massachusetts is attributable to immigration. In the absence of immigration, the state would have witnessed a decline in its working-age population. In New England and the nation, although new immigrants did not account for the entire growth in the working-age population, they made sizable contributions to it. New immigrants comprised three-quarters of the growth of the working-age population of New England and one-half in the nation between 2000 and 2005-06.

The educational characteristics of working-age immigrants who reside in the Merrimack Valley communities are very different from the educational characteristics of native born residents of these communities. Immigrant residents are considerably more likely to have dropped out of high school. Nearly 30 percent of immigrant residents of working age were high school dropouts, a ratio that was nearly four times as high as that among their native born counterparts (eight percent). Both groups of working-age residents had about the same share of high school graduates (29 percent of immigrant residents versus 28 percent of native born residents).

Postsecondary education was considerably more common among native-born individuals than among their foreign-born counterparts. Over 59 percent of native born working-age residents of the Merrimack Valley area had completed some postsecondary education or had earned a postsecondary degree compared to only 37 percent of their foreign-born counterparts. There were twice as many Associate's and Bachelor's degree holders among native born working-age residents in Merrimack Valley as among foreign

Chart 3:  
Percentage Distribution of the Working-Age Foreign-Born and Native-Born Residents of  
the Merrimack Valley Area by Educational Attainment, 2005-06



Source: 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

born working-age residents in the area (only four percent of foreign born residents were Associate’s degree holders versus eight percent of native born residents, and only ten percent of immigrant residents were Bachelor’s degree holders versus 20 percent of the native born). Native-born individuals were also more likely than immigrant residents of the Merrimack Valley communities to have completed some postsecondary education without earning a postsecondary degree (18 percent versus 17 percent) or have earned a Master’s degree or higher (13 percent versus seven percent).

These differences in the educational attainment of immigrant and native-born residents of the Merrimack Valley area are not unique to the region. Similarly large differences exist between the educational attainment of the native born and immigrant populations in the state, the New England region and the nation. The educational deficits

are also similarly severe among *new* immigrants in the Merrimack Valley communities as well as in the state and the nation. These educational deficits of immigrant residents of the Merrimack Valley area mean that many cannot be a source of labor supply to jobs that require post secondary education or training, or college labor market jobs. Although immigrants have managed to shore up the number of working-age residents and therefore the potential labor supply in the area, many immigrants will not meet the qualifications to work in many of the industries and occupations in the region without considerable investments in their education, skills, and literacy proficiencies.

A look at the trends in the overall educational attainment of the working-age residents of the Merrimack Valley area reveals declines in the number of high school dropouts and increases at the higher educational levels. This represents the continuing improvement in the educational attainment of the nation's and the state's population. Although immigrants have played an important role in the increasing the population of the Merrimack Valley area, the majority of the working-age population of the area (74 percent) still consists of native-born individuals and their education is more heavily represented in the educational attainment of the entire working-age population.

Between 2000 and 2005-06 the number of high school dropouts in the working-age population of the Merrimack Valley region declined considerably by almost 5,300 individuals, representing a 16 percent decline. At the same time there was a marked increase of almost 16 percent in the number of high school graduates and, as in 2000, in 2005-06 this level of educational attainment was the most commonly held among the working-age population in Merrimack Valley (28 percent of the working-age population in the region were high school graduates). There was also an increase of eight percent in the number of working-age residents who had completed some college but had failed to earn a degree. This group may consist of those who earned a postsecondary certificate or those who may have attended a college but failed to graduate with a degree. This group is quite large, representing 17 percent of the working-age residents of Merrimack Valley in 2005-06. The number of residents with either an Associate's, Bachelor's or Master's degree or more also increased considerably during this six year period (by 14 percent, 13 percent and 16 percent, respectively). Consequently, by 2005-06 the share of working-age residents in the Merrimack Valley area with an Associate's degree was seven percent,



the share with a Bachelor's degree was 18 percent and the share with a post-baccalaureate degree was eleven percent.

Table 6:  
Trends in the Working-Age Population of the Merrimack Valley Area  
and Massachusetts, by Educational Attainment, 2000 to 2005-06

Educational Attainment	2000	2005-06	Absolute Change	Relative Change
<b>Merrimack Valley area</b>				
High school dropout	32,800	27,549	-5,251	-16.0%
High school graduate	50,077	58,006	7,929	15.8%
Some college, no degree	33,384	36,109	2,725	8.2%
Associate's degree	12,922	14,773	1,851	14.3%
Bachelor's degree	32,139	36,337	4,198	13.1%
Master's degree or more	20,245	23,517	3,272	16.2%
<b>Massachusetts</b>				
High school dropout	656,163	538,112	-118,051	-18.0%
High school graduate	1,264,999	1,354,099	89,100	7.0%
Some college, no degree	857,450	824,373	-33,077	-3.9%
Associate's degree	328,013	351,002	22,989	7.0%
Bachelor's degree	895,926	978,931	83,005	9.3%
Master's degree or more	581,590	676,980	95,390	16.4%

Sources: 2000 Decennial Census Public Use Microdata Samples (PUMS) data files and 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

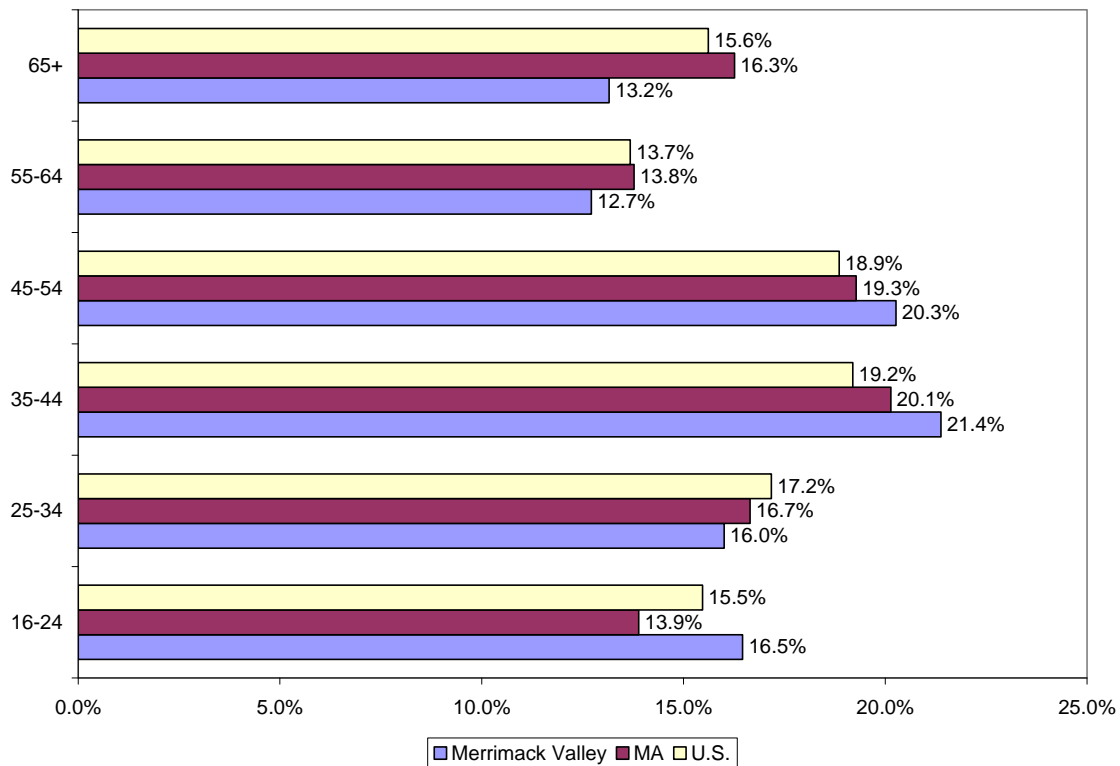
Although the educational trends among the working-age residents of the entire state of Massachusetts were largely similar to those of the Merrimack Valley area, the magnitude of change was different. Compared to the Merrimack Valley communities, the state experienced a larger decline in the number of high school dropouts (18 percent versus 16 percent) and smaller increases in the number of high school graduates (seven percent compared to 16 percent), in the number of individuals with Associate's degrees (seven percent versus 14 percent) and in the number of individuals with Bachelor's degrees (nine percent versus 13 percent). The increase in the number of residents with a Master's or higher degree was the same in both the Merrimack Valley region and the entire state (16 percent in each). However, unlike in Merrimack Valley, the number of

working-age residents who had completed some college but had failed to earn a degree decreased in the entire state (by almost four percent).

Our discussion of the trends in the population by age in the previous section reveals that a large part of the increase in the population of the Merrimack Valley area occurred among residents who were 16-24 years old and 45 years or older (with especially large increases among the 55-64 population). What is the impact of these trends on the age composition of the working age population in the Merrimack Valley area?

In 2005-06, the working-age population of the Merrimack Valley area had a smaller share of older residents and a comparable share of younger residents, relative to Massachusetts and the nation. The elderly population (65+) represented 13 percent of the working-age population in the Merrimack Valley area, smaller than the 16 percent in both

**Chart 4:**  
**Percentage Distribution of the Working-Age Population by Age, 2005-06**



Source: 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

Massachusetts and the nation. The pre-retirement cohort (55-64 years old), among the working-age residents of the Merrimack Valley area was also smaller than that in the state and the nation (13 percent in Merrimack Valley compared to 14 percent in both the state and the nation). Consequently, nearly 26 percent of the working age population in the Merrimack Valley region was 55 years or older, smaller than the 30 percent in the state and 29 percent in the nation. Meanwhile, the 16 to 24 year old cohort represented 17 percent of the working-age population in Merrimack Valley, more than in both the state and the nation (14 percent and 16 percent, respectively). The 25 to 34 year old cohort made up a smaller share of the working-age population in Merrimack Valley (16 percent) than it did in either the state or the nation (17 percent in each). As a consequence, 33 percent of the working-age residents of the Merrimack Valley area were under the age of 35, equal to the share in the nation and only slightly bigger than the 31 percent share in the state.

### ***Characteristics of the Resident Labor Force of the Merrimack Valley Area, 2005-06***

The labor force is a subset of the working-age population and although the working-age population represents the *potential* labor supply, the labor force represents the *actual* labor supply available to employers in the region. The measurement of the labor force in this section is based upon the data derived from the American Community Survey (ACS) which has a set of questions that are administered to members of households who are of working age (16 years and older) to determine their labor force status. The labor force status of respondents is determined from their answers to questions regarding their activities during the reference week. Respondents are classified into three mutually exclusive groups based upon their answer to questions regarding their labor market activities during the reference week —employed, unemployed, or out of the labor force.

To be classified as employed, the respondent has to meet **any** of the following criteria: worked one hour or more for pay or profit in the prior calendar week, or had a job from which they were temporarily absent due to such reasons as vacation, illness, weather, or an industrial dispute at the work place, or worked without pay for 15 or more

hours in a family owned business in the prior week. To be classified as unemployed, the respondent had to meet **all** of the following criteria: The respondent had no work for pay or profit in the reference week of the survey, and had actively looked for work in the past four weeks, and was available to take a job during the reference week of the survey. Respondents who are neither employed nor unemployed are classified as out of the labor force. The labor force is the sum of all individuals in an area who are classified as employed or unemployed using these criteria.

We have measured the labor force from combining the 2005 and 2006 American Community Survey data. Unlike the previous segments of this section where we have presented comparisons of the size and characteristics of the population and the working-age population between 2000 and 2005-06, our analysis of the labor force and the labor force participation rate is confined to just 2005-06 averages from the combined ACS 2005 and 2006 surveys. We have not presented labor force comparisons with the 2000 decennial census because of the difference in the reference period of the two surveys. The 2000 decennial census enumeration was to be on April 1, 2000 and the reference week was the week prior to that date. Unlike the decennial census data that are collected at one point in time, the ACS data are collected year-round resulting in what the Census Bureau terms a ‘revolving reference period.’ The reference week is the week prior to the respondent completing the interview. Because of these differences in the reference week of the two databases, estimates of labor force derived from the two databases are not perfectly comparable.<sup>3</sup>

Nearly 139,600 Merrimack Valley residents were participating in the labor force—were employed or unemployed as defined above—during the 2005-06 time period. The gender, nativity status, and race-ethnicity characteristics of these 139,600 labor force members in the Merrimack Valley area and their counterparts in the entire state of Massachusetts, the New England region, and the nation are presented in Table 7. Even though males accounted for a smaller share of the working-age population (48 percent), they account for a larger share of the region’s labor force. The reason for that is

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<sup>3</sup> For details on the comparability of the ACS data with other databases, See: “How to Use the Data: Guidance on Comparing 2006 ACS Data to Other Sources” on the U.S. Census Bureau website (<http://www.census.gov/acs/www/UseData/compACS.htm>)

that males' rates of labor force participation are much higher than females, giving them a higher share in the labor force of an area (see Chart 6). Males accounted for about 52

Table 7:  
Percentage Distribution of the Civilian Labor Force by Gender,  
Nativity Status, and Race-Ethnicity, 2005-06

	Merrimack Valley	Massachusetts	New England	U.S.
Total	139,573	3,369,817	7,521,725	148,191,267
<u>Gender</u>				
Male	52.2%	52.0%	52.2%	53.5%
Female	47.8%	48.0%	47.8%	46.5%
<u>Nativity Status</u>				
U.S. born	74.5%	81.3%	85.0%	84.1%
Foreign born	25.5%	18.7%	15.0%	15.9%
Foreign born entered since 2000	3.5%	4.2%	3.3%	3.3%
<u>Race-Ethnicity</u>				
White, non-Hispanic	71.8%	81.2%	83.4%	68.8%
Black, non-Hispanic	--	5.1%	4.9%	11.1%
Hispanic	21.4%	7.0%	6.6%	13.6%
Other, non-Hispanic	4.9%	6.6%	5.1%	6.4%

Source: 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

percent of the labor force in the Merrimack Valley area, Massachusetts, and the New England region. The nation had a slightly higher concentration of males in its labor force (53.5 percent).

More than a quarter of the Merrimack Valley's resident labor force consisted of foreign born individuals. New immigrants comprised four percent of the region's resident labor force. Compared to the rest of the state, the Merrimack Valley area had a larger share of immigrants in its resident labor force. Immigrants comprised nearly 19 percent and new immigrants were 4.2 percent of the state's resident labor force. The New England region and the nation were considerably less likely than the Merrimack Valley area to have immigrants in the resident labor force (15 percent in New England and 16 percent in the nation).

The race-ethnicity of the resident labor force of the Merrimack Valley area, Massachusetts, and New England region consisted of a White majority. While the White majority in Merrimack Valley (72 percent) was considerably smaller than the White majority in the entire state or the New England region (81 percent and 83 percent, respectively), it was slightly bigger than the White majority nationwide (69 percent). Hispanics accounted for more than a fifth of the resident labor force in Merrimack Valley (21 percent), three times as big as their share in both Massachusetts and New England (seven percent in each), while seven percentage points bigger than their share nationwide (14 percent). The sample size of the Black population in the Merrimack Valley area in the 2005-06 ACS was too small to accurately estimate its size. Blacks accounted for 5 percent each of the resident labor force of Massachusetts and New England and 11 percent in the nation. The share of other non-Hispanics in the Merrimack Valley area (five percent) was equal to the share in the New England region, but slightly smaller than the shares in the entire state and the nation (seven percent and six percent).

The age distribution of the labor force reveals that just over one quarter of the resident labor force of the Merrimack Valley region was between the ages of 35 and 44 (26 percent) and another quarter was between the ages of 45 and 54. The remaining half of the labor force consists of 34 percent who were 34 years and younger and about 16 percent who were 55 years or older. A comparison of the age distribution of the resident labor force of the Merrimack Valley area with that of the state, the New England region, and the nation reveals relatively comparable shares of younger, middle age and older

Table 8:  
Percentage Distribution of the Civilian Labor Force by Age, 2005-06

Age	Merrimack Valley	Mass.	New England	U.S.
16-24	14.8%	13.3%	13.5%	15.0%
25-34	19.0%	20.6%	19.2%	21.5%
35-44	25.9%	24.6%	24.5%	24.1%
45-54	24.6%	23.7%	24.5%	23.1%
55-64	12.4%	14.0%	14.4%	12.9%
65+	3.3%	3.8%	3.9%	3.5%

Source: 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

residents. About 34 percent of the region’s resident labor force was under 35 years old, equal to the share in the state, marginally bigger than the 33 percent share in the New England region, although smaller than the 37 percent share in the nation. The share of older persons (55 and over) in the resident labor force of the Merrimack Valley area (16 percent) was equal to the share in the nation, but smaller than the shares in both Massachusetts and New England (18 percent each).

An examination of the education levels of the resident labor force of an area provides insights into the quality of the workforce. An examination of the education of the resident labor force in the Merrimack Valley area, the state, the New England region and the nation are presented in Table 9. Eight percent of the resident workforce of the Merrimack Valley communities had failed to complete a high school education, slightly higher compared to seven percent in the state and in the New England region but smaller than the 11 percent in the nation. Just over 60 percent of the Merrimack Valley workforce had completed at least some postsecondary education. In comparison to the Merrimack Valley region the share of the labor force with some college education was slightly higher

Table 9:  
Percentage Distribution of the Civilian Labor Force by  
Educational Attainment, 2005-06

Educational Attainment	Merrimack Valley	MA	New England	U.S.
High school student	2.8%	2.5%	2.7%	2.4%
High school dropout	8.1%	7.2%	7.3%	10.6%
High school graduate	27.9%	25.9%	27.9%	28.6%
Some college, no degree	17.8%	17.3%	18.5%	22.0%
Associate's degree	8.0%	8.1%	8.4%	8.1%
Bachelor's degree	21.0%	22.8%	21.3%	18.2%
Master's degree or more	14.4%	16.1%	14.0%	10.0%
With any postsecondary education	61.2%	64.4%	62.1%	58.4%
Bachelor's or higher	35.4%	39.0%	35.3%	28.3%

Source: 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

in the state and the New England region (64 percent and 62 percent, respectively), but lower in the nation (58 percent). Labor force participants with a Bachelor's degree or a higher level of education comprised more than 35 percent of the Merrimack Valley residents in the labor force, equal to the proportion in the New England region, but smaller than the share in the state (39 percent) and considerably higher than the share in the nation (28 percent).

This discussion of trends in the resident labor force of the Merrimack Valley area between 2000 and 2005-06 has revealed that, in comparison to the resident labor forces of the state, the New England region and the nation, it has a larger share of immigrants and Hispanics, and comparable shares of males, females, young, middle aged and older residents. Furthermore, while the resident labor force of Merrimack Valley has relatively comparable shares of well educated individuals to the labor forces in Massachusetts and the New England region, it has a higher share than the nation.

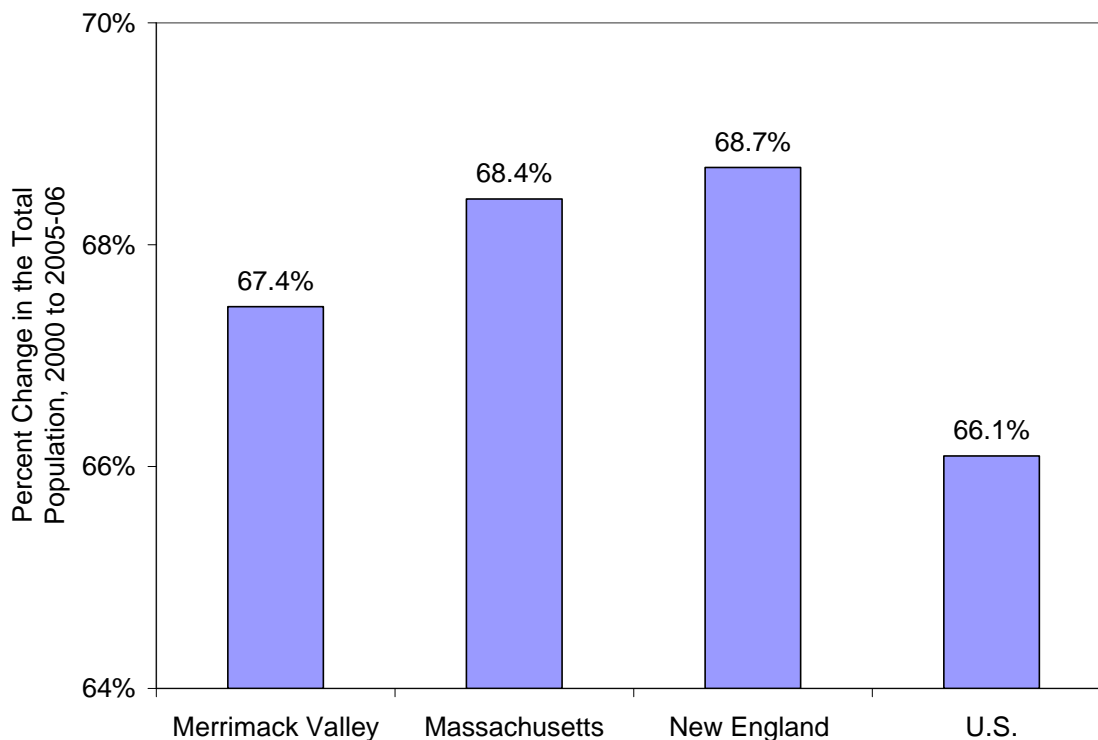
### ***Labor Force Participation Rates of the Residents of the Merrimack Valley Area, 2005-06***

The labor force participation rate is a ratio that measures the proportion of the working population that was in the labor force. It measures the strength of the labor force attachment of the working-age residents of an area. The total working-age population of an area represents the potential labor supply of an area. However, all members of the working age population do not participate in the labor force. The elderly, college students, individuals with severe disabilities, and family caregivers are examples of groups of working-age individuals who participate at very low rates in the labor force. There are also many other groups such as poorly educated individuals who have a weaker attachment to the labor market.

The labor force participation rate among residents of the Merrimack Valley area was one percentage point and 1.3 percentage points lower than that of the working-age residents of the state of Massachusetts and the New England region, but 1.3 percentage points higher than the nation. These differences are actually quite large. For example, one percentage point difference in the labor force participation rate of the entire working-age population represents nearly 2,100 working-age residents in the Merrimack Valley area,



Chart 5:  
Labor Force Participation Rates of the Working-Age Population, 2005-06



Source: 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

49,300 in Massachusetts, 109,500 in the New England region, and 2.242 million in the nation.<sup>4</sup> Each percentage point difference in the labor force participation rate thus represents a sizable number of people.

An examination of the labor force participation rates of male and female residents of the Merrimack Valley area reveals a wide gap in the labor force attachment of the two sexes. Seventy-three percent of the male working-age residents of the Merrimack Valley area were active labor force participants, compared to only 62 percent of their female counterparts. Similar gender-based differences in labor force participation are noted for the state (three quarters of males in the entire state participate in the labor force versus 63

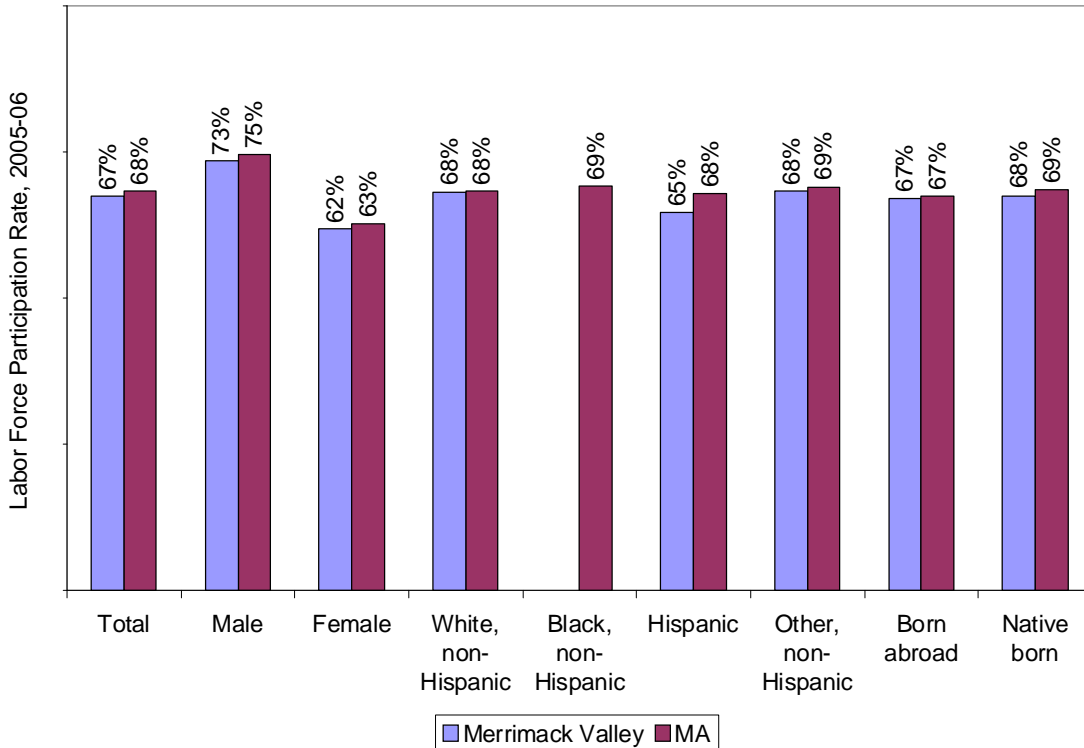
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<sup>4</sup> The number of people that each percentage point of the labor force participation rate represents is determined by the size of the working-age population of the area and/or subgroup. Each percentage point of the labor force participation rate represents 1 percent of the size of the working-age population.

percent of females). Male and female residents of the state also had slightly higher rates of labor force participation than their counterparts in the Merrimack Valley area.

Labor force participation also varied widely across race groups. White and other-non Hispanic residents of the Merrimack Valley area participated in the labor force at the same rate (68 percent). Hispanic residents had a slightly lower rate of engagement in the labor force (65 percent). Across the state, while the White labor force participation rate

Chart 6:  
Labor Force Participation Rates of the Working-Age Population,  
By Gender, Race-Ethnicity, and Nativity Status 2005-06



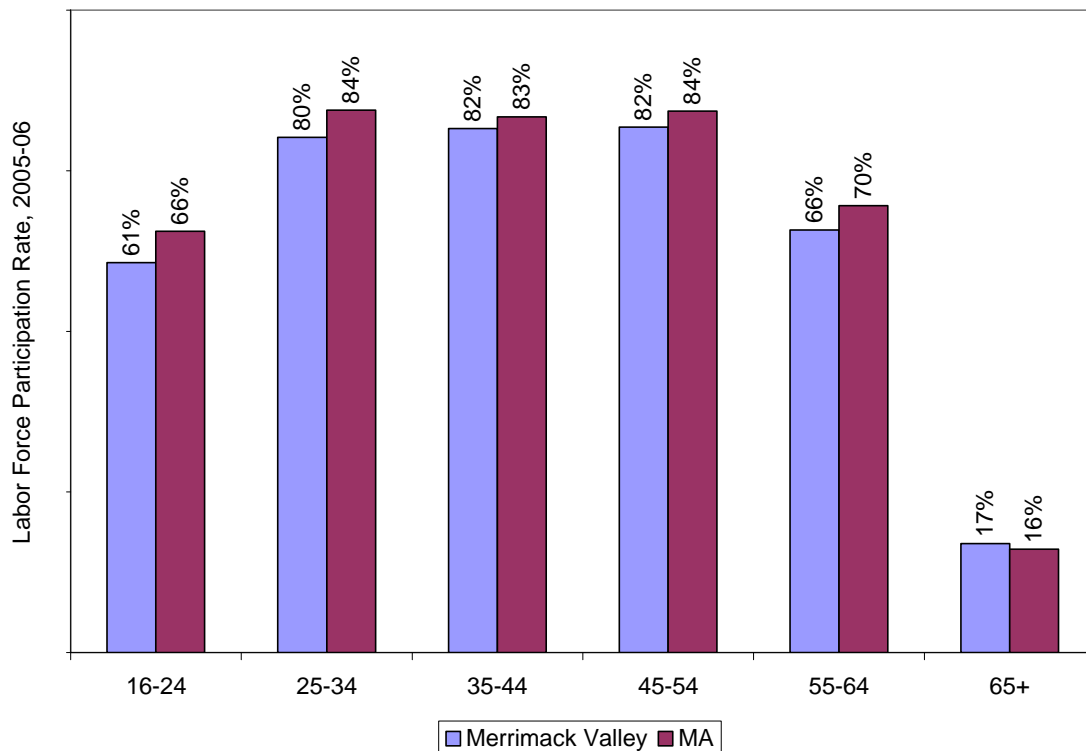
Source: 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

was equal to that in the Merrimack Valley area, the rate of labor force attachment among the state’s Hispanic and other-non Hispanic residents was higher than that of their Merrimack Valley counterparts (by between one and three percentage points). Native born residents of the Merrimack Valley area and the state were slightly more likely than their foreign born counterparts to participate in the labor force. The gap between the labor

force participation rate of native-born and foreign-born residents was marginally smaller in the Merrimack Valley area (one percentage point) than in the state (two percentage points).

If one were to plot the labor force participation rate of the population by age, it would have an inverted-U shape. Participation in the labor force is lower among younger age groups and rises with age until the pre-retirement age (55 to 64) when it begins to fall and continues to fall sharply after the traditional retirement age of 65 years. The labor force attachment of residents of the Merrimack Valley area and the state follow the same inverted-U shape pattern. However, a comparison of the labor force participation rate in the Merrimack Valley area and the state within the same age groups reveals that younger residents and residents in the pre-retirement cohort in the Merrimack Valley area were

**Chart 7:**  
**Labor Force Participation Rates of the Working-Age Population, By Age, 2005-06**



Source: 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

less likely to participate in the labor force compared to their statewide counterparts, while those residents above 64 years of age in Merrimack Valley were slightly more likely to do so than those in the same age group across the state.

Among the youngest working-age residents, those between 16 and 24 years of age, the labor force participation rate was five percentage points lower in the Merrimack Valley area than in the state as a whole. Merrimack Valley residents between the ages of 25 and 34 were also slightly less likely (by four percentage points) to participate in the labor force than the same age group across the state. Older Merrimack Valley residents in the pre-retirement ages of 55 to 64 years were also less likely to participate in the labor force than 55 to 64 year olds in the state (by four percentage points). Thus, not only does the Merrimack Valley region have a smaller share of 55-64 year olds in their working-age population, but Merrimack Valley residents in this age group were less likely to be in the labor force. Although labor force attachment was very weak among the elderly residents aged 65+ in both areas, it was marginally stronger in Merrimack Valley than in the state as a whole (17 percent participated in the labor force in Merrimack Valley compared to 16 percent in the state).

The slow growth in the population of the Merrimack Valley region and the overall slowdown in the population growth across the state and the nation may result in the need to tap into this age group for labor supply, particularly among those under age 70 years. Currently, the transition from work to retirement for most people is akin to turning off a switch. A majority of older workers retire out of their full-time career jobs and exit the labor market entirely.<sup>5</sup> There is a need to provide more transitional employment opportunities to older workers in the form of bridge jobs that provide flexibility, part-time options, and accommodations to older workers with disabilities in order to keep older workers in the labor market even after they quit their full-time career jobs.

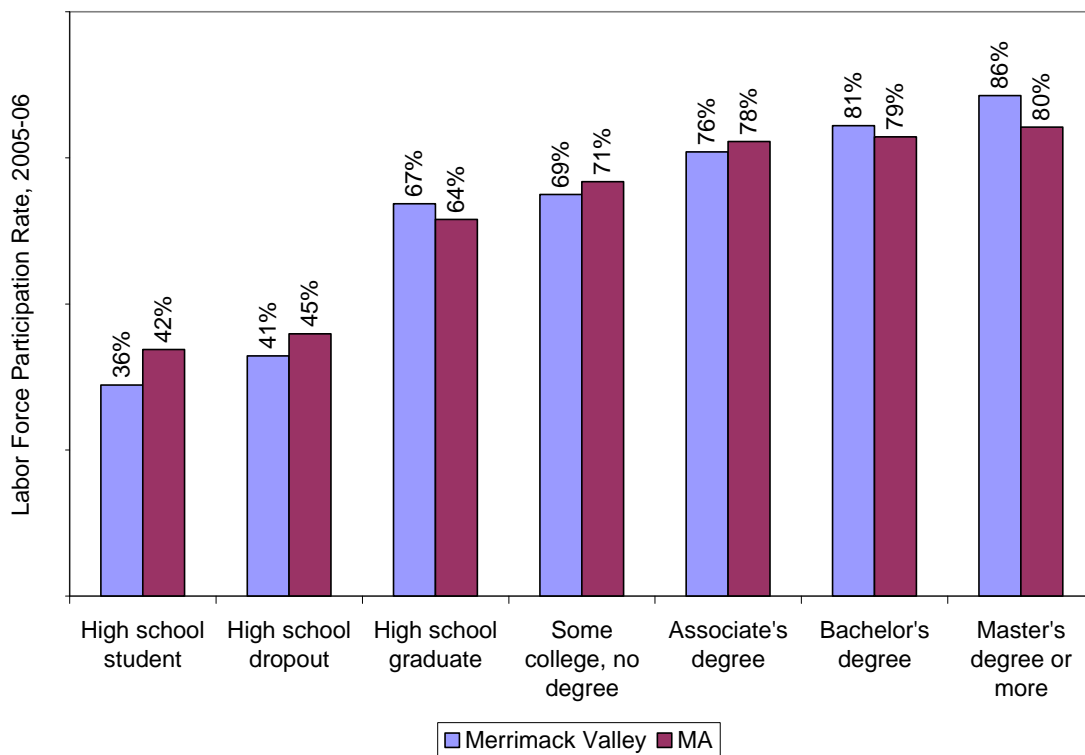
Labor force participation rates rise sharply with educational attainment in the Merrimack Valley area and the state. Only 41 percent of the region's working-age

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<sup>5</sup> For details about the labor force attachment and the incidence of mixing work and retirement among older workers, see: Paul E. Harrington, Neeta P. Fogg, and Alison H. Dickson "Demographic Characteristics and Labor Force Attachment of the 55 Years and Older Population in Eastern Massachusetts," Center for Labor Market Studies, Prepared for The New England Council Commission on the Older Workforce, December 2007.

residents who had failed to complete high school were in the labor market. The labor force participation rate was 26 percentage points higher (67 percent) among high school graduates. Residents who completed some postsecondary education without earning a degree also enjoyed a higher rate of participation in the labor market. 69 percent of the residents of the Merrimack Valley area with some college but no college degree were active labor market participants. Those who had earned an Associate’s degree were seven percentage points more likely to participate in the labor market than their counterparts who completed some college but had not earned a college degree (76 percent versus 69 percent). Between 81 and 86 percent of Merrimack Valley residents with a Bachelor’s or a Master’s or higher degree were members of the region’s labor force in 2005-06.

**Chart 8:**  
Labor Force Participation Rates of the Working-Age Population,  
by Educational Attainment, 2005-06



Source: 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

Residents of Massachusetts had similar trends in the labor force participation rate by educational attainment. A comparison of the rates of labor force participation in each educational group in the Merrimack Valley and the state reveals that for high school dropouts, those who had completed some college without earning a degree and those who had a Associate's degree, working-age residents of the state had slightly higher rates of labor market participation than their counterparts in the Merrimack Valley area (by four percentage points, two percentage points and two percentage points, respectively). Conversely, for those who were high school graduates, who had a Bachelor's degree or had a Master's degree or more, the working-age residents of the state had lower rates of labor market participation than their counterparts in the Merrimack Valley region (by three percentage points, two percentage points and six percentage points, respectively).

Substantial gaps exist between the rates of labor force participation among educational subgroups of the population. Among poorly educated residents of the Merrimack Valley area, large proportions of the potential labor supply are unutilized because of the low rates of labor market participation among these residents. If population growth continues to slow down and the rate of labor market exits increase because of retirement among the aging baby boomers, the region and the state will have to increase the rate of utilization of the potential labor supply among the working-age residents by implementing strategies to increase labor market participation among poorly educated residents and other residents with lower rates of labor force participation such as the elderly and others with a weaker labor market attachment.

### ***Commuting Patterns of the Merrimack Valley Area, 2005-06***

In most areas, a majority of the labor supply is derived from its residents. This is especially true of larger areas like large states and large regions. However, in examining the sources of the workforce employed in a smaller area it is important to gauge the inflows of residents of the surrounding communities to work in the area and outflows of the residents of the area to work in the surrounding communities. The 2005 and 2006 ACS surveys contain information on the place of residence of each respondent and the place of work of respondents who were employed at the time of the ACS survey.

Utilizing these data on the journey to work, we have produced the rate of exchange of

workers between the Merrimack Valley area and the surrounding communities, the remainder of the state of Massachusetts, and areas outside the state.

A total of 117,300 individuals identified their place of work within the Merrimack Valley area. Out of these 117,300 workers employed in the Merrimack Valley area, 61,300 were also residents of the area which means that only one-half (52 percent) of the jobs in the Merrimack Valley area were staffed by residents of the Merrimack Valley area. Out of the remaining Merrimack Valley area jobs, more than 10,100 or nine percent were staffed by residents of the Greater Lowell area, another 9,000 or eight percent were staffed by residents of the North Shore area, 6,400 or six percent were staffed by residents from the Metro North area, while residents of other areas of the state staffed

Table 10:  
The Place of Residence of Individuals Employed in the Merrimack Valley Area and the Place of Work of Employed Merrimack Valley Residents, 2005-06

	Number	Percent of Total
Total number of persons working in the Merrimack Valley area...	117,296	100.0%
...that lived in:		
Merrimack Valley area	61,273	52.2%
Greater Lowell area	10,128	8.6%
North Shore area	9,018	7.7%
Metro North area	6,418	5.5%
Other parts of Massachusetts	6,117	5.2%
Outside Massachusetts	24,343	20.8%
Total Merrimack Valley area residents who were employed...	128,901	100.0%
...that were working in:		
Merrimack Valley area	61,273	47.5%
Greater Lowell area	9,480	7.4%
North Shore area	15,957	12.4%
Metro North area	15,858	12.3%
Other parts of Massachusetts	15,736	12.2%
Outside Massachusetts	10,599	8.2%

Source: 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

more than 6,100 or five percent of these jobs. However, it was commuters from out of state who staffed the largest share of jobs in Merrimack Valley, beside Merrimack Valley residents themselves. Over a fifth of all jobs in Merrimack Valley – or 24,300 jobs – were staffed by commuters from out of state.

The second half of Table 10 presents a distribution of Merrimack Valley area residents who were employed at the time of the 2005-06 ACS surveys by their place of work. A total of 128,900 residents of the Merrimack Valley area were employed at the time of the ACS surveys. Less than half (48 percent) of these employed residents worked within the Merrimack Valley area. Out of the remaining 67,600 or 52 percent of the region’s employed residents, about 12 percent worked in the Metro North area, the North Shore area and other parts of Massachusetts (15,900, 16,000 and 15,700, respectively). Another eight percent or 10,600 held jobs outside the state while the remaining seven percent or 9,500 worked in the Greater Lowell area.

The number of employed residents of the Merrimack Valley communities exceeded the number of jobs or workers who worked in the area by about 11,600 (128,900 employed Merrimack Valley residents versus 117,300 jobs in the Merrimack Valley area). However, not only did a large number of Merrimack Valley residents commute to work outside the boundaries of the Merrimack Valley area (67,600) but a large number of residents of other communities also commuted to work in the Merrimack Valley area (56,023), making the region a net “exporter” of workers to areas outside its boundaries as well as a net “importer” of workers to areas inside its boundaries.



# Measuring Wage and Salary Employment Levels and Trends in the Merrimack Valley Workforce Area

## *Introduction*

Each month the U.S. Bureau of Labor Statistics (BLS), in cooperation with state Labor Market Information Units (LMIU) conducts a survey of business establishments across the nation designed to measure the number of payroll jobs in the non agricultural sector of the nation's labor markets. This cooperative federal/state statistical program, known as the Current Employment Statistics (CES) survey, produces estimates of overall wage and salary employment levels within the nation's private for profit, private non profit and federal, state, and local government organizations (excluding the military) for the nation, each state and for selected metropolitan areas across the nation.<sup>6</sup> The survey also collects information on weekly hours of work and weekly earnings for production and non supervisory workers.<sup>7</sup> The employment estimates include all payroll workers regardless of full-time or part-time status.

The employment data produced through this survey is based on information collected from a large sample of business establishments who regularly report the number of workers who are on the establishments' payrolls during the reference week of the survey. At the national level, monthly estimates are produced for total non agricultural employment level; additionally estimates of employment for a wide range of industries are produced each month. The industry classification of business establishments is determined by state staff who rely on reports by responding firms about the major kinds of products they produce.<sup>8</sup>

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<sup>6</sup> The CES survey includes all workers on government payrolls, including workers in the education and health fields who work in government organizations. The Employment and Wages program discussed later in this section of the monograph classifies government workers in health and education in their respective industries, rather than the public administration classification.

<sup>7</sup> For a more complete review of the CES Survey methods see *BLS Handbook of Methods, Chapter 2*, <http://www.bls.gov/sae/790meth.htm>.

<sup>8</sup> A more detailed discussion of the industry classification of business establishments is provided in a subsequent section of this section on analyzing local wage and salary employment data.

The data derived from the CES program do not measure total employment in either the nation or at the state and local level. The scope of the CES program covers only those workers in regular payroll jobs subject to state unemployment insurance laws. In general, this includes those jobs for which a range of federal and state payroll taxes are withheld and workers receive notification of their annual earnings and earnings tax withholdings on IRS form W-2. The CES excludes all those employed in business establishments who do not have a regular employer-employee relationship. Often referred to informally as ‘consultants,’ contract workers, or contingent workers these workers are not subject to many payroll withholding taxes and receive IRS form 1099 from those firms where they had a consulting relationship over the course of the year. Also excluded are proprietors of businesses. Together, consultants and proprietors make up the self-employed. The CES program also excludes unpaid family workers, domestic workers in private homes (maids and nannies) as well as those who work in illegal labor market segments often informally referred to as ‘under the table’ work where cash or in-kind payments are made to avoid taxes and illegal immigration status issues.<sup>9</sup> A more detailed discussion of overall employment developments in the state is provided in the section of the monograph that examines the industry, occupational and educational requirements of the state and local economy using more comprehensive employment data derived from a survey of households.

The Department of Labor and Workforce Development in Massachusetts releases statewide CES data each month that measure overall trends in payroll employment in the state as well as trends in employment for each major sector of the state economy and for some larger specific industries in the state. The federal and state-wide based data are seasonally adjusted to remove the effects of regular and predictable changes in payroll employment levels associated with seasonal business patterns. The statewide data thus can be compared on a month to month basis to measure growth and change in payroll employment levels within the state. The monthly data produced through the CES program are subject to annual revisions. These revisions are necessary since the CES

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<sup>9</sup> For a detailed discussion of this emerging labor market segment see: Andrew Sum, Paul Harrington and Ishwar Khatiwada, *New Immigrant Workers in the U.S. 2000 to 2005: Their Estimated Numbers, Gender – Age Characteristics, Legal Status and Their Impacts on Native Born Young Workers*. Center for Immigration Studies, New York, May 2006

sample does not include small business establishments. The CES estimates use special adjustment factors to estimate growth in employment among small firms at the national and state level. Each year the CES data are ‘benchmarked’ or reconciled against complete counts of payroll employment in the state. These benchmarks are derived from unemployment insurance tax filings prepared each quarter by virtually all private sector (both for profit and non profit) business organizations in the Commonwealth.<sup>10</sup> The benchmarking process thus eliminates any potential error associated with sampling or response bias. The size of the annual benchmark revisions can be considerable and can revise statewide and industry employment estimates either upward or downward.

### ***Employment Trends during the Current Economic Recovery***

The Massachusetts economy began its job market recovery beginning in the fourth quarter of 2003. Prior to that time the state had experienced considerable losses associated with the bursting of the high tech bubble and the subsequent national economic recession in early 2001. Indeed, between the first quarter of 2001 through the end of 2003 the state led the nation in its rate of payroll employment decline. The findings provided in Table 1 examine overall trends in non agricultural payroll employment in the nation, New England and Massachusetts between the fourth quarter 2003 and the beginning of 2007. The data reveal that nationally payrolls expanded at a considerably more rapid pace in states outside of New England than for the region as a whole. National payroll employment levels rose by just over 7 million jobs or 5.4 percent over the 13 quarter period. In contrast, New England payrolls grew at just half the pace of the nation, rising by 2.6 percent over the same period of time. Massachusetts saw its payroll employment levels increase from 3.185 million payroll jobs to 3.270 million, an increase of about 85,000 jobs over the period. The state’s pace of new job creation was about the same as that of the region, but again only about one half that of the nation.

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<sup>10</sup> The Federal-State *Employment and Wages* program uses these taxes filings to create a very large range of detailed employment estimates at the state and local level that are generally available with a 9 month lag. The data from this program are discussed in greater detail in a subsequent section of this monograph.

Table 1:  
Trends in Total Non Agricultural Wage and Salary Employment Levels in Massachusetts,  
New England and the Nation, 4<sup>th</sup> Quarter, 2003 to First Quarter 2007  
(Seasonally Adjusted, in 000s)

	4th Quarter 2003	1st Quarter 2007	Absolute Change	Relative Change
Connecticut	1,644.0	1,690.7	46.7	2.8%
Maine	610.0	617.1	7.2	1.2%
Massachusetts	3,185.0	3,270.4	85.4	2.7%
New Hampshire	622.0	645.7	23.7	3.8%
Rhode Island	486.3	495.6	9.3	1.9%
Vermont	300.9	307.6	6.7	2.2%
New England	6,848.1	7,027.2	179.1	2.6%
USA	130,181.3	137,183.7	7,002.3	5.4%

Source: U.S. Bureau of Labor Statistics, [www.bls.gov](http://www.bls.gov), tabulations by Center for Labor Market Studies, Northeastern University, April 2008.

Over the past year, the national economic expansion has begun to show signs of a slowdown. The national rate of new job creation over the last year has slowed to just 0.5 percent, with the nation creating just under 750,000 new jobs between the first quarter of 2007 and the first quarter of 2008. The New England region also expanded payroll employment levels by 0.5 percent, while Massachusetts had a similar annual rate of new job creation of 0.6 percent. The major exception to this pattern of slow job growth was Rhode Island, where the state lost 8,300 jobs, nearly wiping out all the new jobs created in the state since the beginning of the job market recovery at the end of 2003. In contrast New Hampshire had an above average rate of new job creation compared to both the other New England states and the nation as a whole, growing by 1.3 percent over the year.

Table 2:  
Trends in Total Non Agricultural Wage and Salary Employment Levels in Massachusetts,  
New England and the Nation, 1<sup>st</sup> Quarter, 2007 to First Quarter 2008  
(Seasonally Adjusted, in 000s)

	1st Quarter 2007	1st Quarter 2008	Absolute Change	Relative Change
Connecticut	1,691	1,702	11.3	0.7%
Maine	617	618	0.8	0.1%
Massachusetts	3,270	3,290	20.0	0.6%
New Hampshire	646	654	8.4	1.3%
Rhode Island	496	487	-8.3	-1.7%
Vermont	308	308	0.4	0.1%
New England	7,027	7,060	32.5	0.5%
USA	137,184	137,925	741.0	0.5%

Source: U.S. Bureau of Labor Statistics, [www.bls.gov](http://www.bls.gov), tabulations by Center for Labor Market Studies, Northeastern University, April 2008.

The findings provided in Table 3 examine trends in payroll employment in the very recent past. The table compares employment levels in the fourth quarter of last year with developments in the first quarter of 2008. Although the CES seasonally adjusted data are available on a monthly basis at the state level we have chosen to present quarterly average data instead of monthly comparisons. We use quarterly mean data because our review of the state data suggests that some of the monthly seasonal adjustments may exaggerate a change in a given month only to reverse that change in the following month. We use quarterly average employment levels as a means of smoothing this monthly ‘noise’ and gaining better insight into the actual economic change that is occurring.

Table 3:  
Trends in Total Non Agricultural Wage and Salary Employment Levels in Massachusetts,  
New England and the Nation, 4<sup>th</sup> Quarter, 2007 to First Quarter 2008  
(Seasonally Adjusted, in 000s)

	4th Quarter 2007	1st Quarter 2008	Absolute Change	Relative Change
Connecticut	1,704.2	1,702.0	-2.2	-0.1%
Maine	618.9	617.9	-1.0	-0.2%
Massachusetts	3,285.3	3,290.4	5.1	0.2%
New Hampshire	653.7	654.1	0.4	0.1%
Rhode Island	490.4	487.2	-3.2	-0.6%
Vermont	308.3	308.0	-0.3	-0.1%
New England	7,060.8	7,059.7	-1.1	0.0%
USA	138,030.7	137,924.7	-106.0	-0.1%

Source: U.S. Bureau of Labor Statistics, [www.bls.gov](http://www.bls.gov), tabulations by Center for Labor Market Studies, Northeastern University, April 2008.

Between the fourth quarter of last year and the first quarter of this year, payroll employment levels fell in the nation for the first time since 2003. Wage and salary employment in the nation fell by 106,000 jobs as fuel and food prices increased while housing prices plummeted downward. Payroll employment levels in New England remained unchanged with four of the six states posting small losses over the period. Massachusetts was able to add about 5,000 jobs even as the nation's labor markets turned down. Rhode Island was especially hard hit by the downturn, losing 3,200 wage and salary jobs over the quarter.

### ***Industry Sources of Employment Change in Massachusetts***

The CES survey not only provides information about overall trends in non agricultural payroll employment; it also provides measures of employment levels and trends among the major industry sectors that exist within the state. Industry groupings used in the CES combine together those economic establishments in the state who produce similar types of products. For example, the wide range of firms engaged in building, improving and repairing commercial, residential, and other types of physical

structures are grouped together to form the construction sector of the state economy.<sup>11</sup> The findings provided in Table 4 examine employment developments in the state from the initial stages of the recovery through the beginning of 2007. The data reveal a wide divergence in employment trends within major industry groups in the state. The overwhelming share of new jobs created in the state over this period of time came from

Table 4:  
Trends in Total Non Agricultural Wage and Salary Employment Levels by Major Industry Sector in Massachusetts, 4<sup>th</sup> Quarter, 2003 to First Quarter 2007  
(Seasonally Adjusted, in 000s)

	4th Quarter 2003	1st Quarter 2007	Absolute Change	Share of Change
All Industries	3,185.0	3,270.4	85.4	2.7%
Construction	136.3	138.4	2.0	1.5%
Manufacturing	316.7	297.6	-19.0	-6.0%
Durable	207.1	196.9	-10.2	-4.9%
Non Durable	109.6	100.7	-8.9	-8.1%
Trade, Transportation, and Utilities	573.4	570.9	-2.5	-0.4%
Wholesale Trade	134.8	137.9	3.1	2.3%
Retail Trade	354.4	348.8	-5.6	-1.6%
Transportation and Utilities	84.2	84.2	0.0	0.0%
Information	89.1	87.4	-1.7	-1.9%
Financial Activities	221.5	225.8	4.3	2.0%
Professional and Business Services	442.0	477.9	35.9	8.1%
Education and Health Services	577.6	618.0	40.4	7.0%
Leisure and Hospitality	289.3	302.7	13.4	4.6%
Other Services	116.8	119.2	2.4	2.0%
Government	420.3	431.2	10.9	2.6%

Source: U.S. Bureau of Labor Statistics, [www.bls.gov](http://www.bls.gov), tabulations by Center for Labor Market Studies, Northeastern University, April 2008.

just two industry sectors: the professional and business services sector and the education and health sector. Together these two industry sectors accounted for 76,000 net new jobs in the state, a number equal to nearly 90 percent of the net job creation produced in the state over that period of time.

<sup>11</sup> The CES program uses the North American Industry Classification System to present data on employment trends by industry. The NAICS classification is discussed in greater detail in the sections examining data derived from the Employment and Wages program.

The professional and business services sector is composed of a variety of different kinds of businesses including temporary help firms and administrative support organizations. However, this sector also includes professional and technical services firms including legal services, accounting services, engineering and computer systems services. The professional services firms in the state had the highest rate of new job creation of any major industry sector, adding about 36,000 new jobs and growing by a robust 8 percent over the period. Gaining insight into which components of the overall business service sector are expanding most rapidly at the state and local level would have important implications for workforce development strategies. However, the monthly and quarterly CES data lack sufficient sample size to produce this data. In the following section we will examine how the data derived from the state's Employment and Wage program can help us gain insight into specific industry employment developments—even at the local level.

Statewide, the education and health industry sector also posted strong employment gains between the fourth quarter of 2003 and the first quarter of 2007. Total payroll employment in this sector increased from 577,600 to 618,000, a rise of more than 40,000 jobs with an over the period increase of 7 percent. Other sectors experiencing more modest net payroll employment increases include construction, wholesale trade, and financial activities. The leisure and hospitality sector, including eating and drinking establishments, posted a payroll employment rise of 4.6 percent, adding 13,400 jobs to their payrolls.

Despite the overall increase in payroll employment in Massachusetts from the fourth quarter 2003 to the first quarter 2007 job losses did occur in some industry sectors. Manufacturing producers saw their payrolls decline by 19,000 jobs over the period, with especially sharp losses among non durable goods producers. Retailers in the state lost 5,600 jobs and the information sector lost 1,700 over the period.

Between the first quarters of 2007 and 2008 both the education and health sectors became the leading source of new job growth in the state, adding nearly 15,000 new payroll jobs and growing at a relatively rapid 2.4 percent annual pace. The education and



health sector accounted for three quarters of all the new jobs created in the state over the past year. The rate of new job creation also accelerated somewhat in the information

Table 5:  
Trends in Total Non Agricultural Wage and Salary Employment Levels by Major Industry Sector in Massachusetts, First Quarter, 2007 to First Quarter 2008  
(Seasonally Adjusted, in 000s)

	1st Quarter 2007	1st Quarter 2008	Absolute Change	Relative Change
All Industries	3,270.4	3,290.4	20.0	0.6%
Construction	138.4	135.5	-2.9	-2.1%
Manufacturing	297.6	292.7	-5.0	-1.7%
Durable	196.9	193.9	-3.0	-1.5%
Non Durable	100.7	98.8	-2.0	-2.0%
Trade, Transportation, and Utilities	570.9	569.4	-1.6	-0.3%
Wholesale Trade	137.9	139.2	1.3	1.0%
Retail Trade	348.8	345.5	-3.3	-1.0%
Transportation and Utilities	84.2	84.6	0.4	0.5%
Information	87.4	89.7	2.4	2.7%
Financial Activities	225.8	224.1	-1.7	-0.8%
Professional and Business Services	477.9	486.6	8.7	1.8%
Education and Health Services	618.0	632.9	14.9	2.4%
Leisure and Hospitality	302.7	304.3	1.6	0.5%
Other Services	119.2	118.3	-0.9	-0.8%
Government	431.2	435.6	4.3	1.0%

Source: U.S. Bureau of Labor Statistics, [www.bls.gov](http://www.bls.gov), tabulations by Center for Labor Market Studies, Northeastern University, April 2008.

industry, which posted a rise of 2.7 percent, adding 2,400 jobs over the year. The professional and business services industry also continued its expansion, adding 8,700 jobs over the year. The leisure and hospitality industry also generated about 1,600 new jobs over the year. Partially offsetting these gains in payroll employment were declines in the state's goods producing industries. Construction payrolls declined by 2,900 jobs over the year, while manufacturing employment declined by an additional 5,000 jobs. The financial services sector also posted modest payroll employment declines.

Between the fourth quarter of last year and the first quarter of 2008 payroll employment levels in the nation and in a number of states have declined while Massachusetts has continued to post modest job increases. The rise in payroll employment in recent months has been primarily associated with increases in employment within the education and health sector. This sector has added 5,700 jobs since the end of last year. Employment growth has also continued in professional and business services and the leisure and hospitality industry sectors. Losses continued to mount in construction where 1,900 jobs were lost since the end of last year as the effects of declining housing prices continue to be felt. Manufacturing producers' losses continued with a decline of 1,100 jobs over the period, while retail trade firms lost an additional 1,800 jobs.

Table 6:  
Trends in Total Non Agricultural Wage and Salary Employment Levels by Major Industry Sector in Massachusetts, Fourth Quarter, 2007 to First Quarter 2008  
(Seasonally Adjusted, in 000s)

	4th Quarter 2007	1st Quarter 2008	Absolute Change	Relative Change
All Industries	3285.3	3290.4	5.1	0.2%
Construction	137.4	135.5	-1.9	-1.4%
Manufacturing	293.8	292.7	-1.1	-0.4%
Durable	194.5	193.9	-0.6	-0.3%
Non Durable	99.3	98.8	-0.5	-0.5%
Trade, Transportation, and Utilities	570.6	569.4	-1.3	-0.2%
Wholesale Trade	138.7	139.2	0.5	0.4%
Retail Trade	347.3	345.5	-1.8	-0.5%
Transportation and Utilities	84.6	84.6	0.1	0.1%
Information	89.7	89.7	0.0	0.0%
Financial Activities	224.4	224.1	-0.3	-0.1%
Professional and Business Services	483.7	486.6	2.9	0.6%
Education and Health Services	627.1	632.9	5.7	0.9%
Leisure and Hospitality	302.1	304.3	2.2	0.7%
Other Services	119.2	118.3	-0.9	-0.7%
Government	435.7	435.6	-0.1	0.0%

Source: U.S. Bureau of Labor Statistics, [www.bls.gov](http://www.bls.gov), tabulations by Center for Labor Market Studies, Northeastern University, April 2008.

## ***Specific Industry Sources of Employment Change***

The analysis of employment data derived from the CES survey program provides us with an up to date overview of broad developments in state labor markets. The advantages of the CES data are that they provide very up to date information on overall payroll employment developments within the state and provide insight into some of the major industry trends in job growth and decline. However, the CES also has some limitations in its use. First, it is generally unable to provide much detailed information on industry employment trends. Very often the highly aggregated industry data produced by the monthly CES survey mask more dynamic growth and change that occurs within an industry sector. A second major limitation of the CES program is its inability to produce useful sub-state data.

While the CES program does produce employment estimates for certain sub state metropolitan areas, these data are often considered suspect by many analysts. We noted earlier that the statewide CES employment data are benchmarked against a complete count of payroll jobs produced as a byproduct of state unemployment insurance quarterly tax findings. This benchmarking eliminates biases that enter into the monthly survey from a variety of sources. In effect, the CES data are ‘corrected’ each year through the benchmarking process. However, the sub state estimates produced by the CES are not subject to the same benchmark adjustment to correct for these biases. As a result, the sub state estimates simply continue to add error over time.<sup>12</sup>

An important data source that can help supplement the insights gained from analyzing statewide CES payroll estimates is the Federal-State Employment and Wages program. Commonly referred to as the ES-202 program (after the form used to collect the information), this program collects information on the number of payroll workers and their total wage compensation each calendar quarter over the course of the year. Virtually every business establishment in the state, including private for profit firms, private non

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<sup>12</sup>Monthly CES estimates are produced for Barnstable, Boston-Cambridge Quincy, New Bedford, Springfield and Worcester metro areas. During February 2008 the CES survey estimated that payroll employment in these five regions was 3.154 million, while statewide (benchmarked) employment was 3.218, suggesting very little payroll employment in the rest of the state...the result, not of real economic activity but of uncorrected bias in the sub state estimates that are not subject to annual benchmark adjustments.

profit firms that are subject to state unemployment insurance laws as well as all civilian federal, state and local organizations with establishments located in Massachusetts are required to report this information each calendar quarter. The data collected through the ES-202 program thus represent a complete enumeration or census of all payroll employment in the state. This massive data collection program is thus not restricted by sample size, size class coverage limitations, or by non response biases and so is capable of producing estimates of payroll employment for very specific industries and for specific sub state areas, including Workforce Board regional service areas.

The ES-202 data also has a number of shortcomings and is therefore used as a complement (and not a substitute) for CES survey findings. Among its limitations are the following:

- First, because of the enormous amount of information collected by the ES-202 program its employment estimates are available with a two to three quarter lag. For example, while first quarter 2008 CES data are currently available, the latest data available from the state ES-202 program are for the third quarter of 2007.
- Second, the ES-202 data are not organized as a continuous time series as is the CES program. This means that the CES sample history is maintained over time. So if a firm was initially improperly coded into the wrong industry (as sometimes happens) or the classification system itself is modified, the CES staff not only correct the current industry coding, but go back over time to recode the establishment into its proper industry.<sup>13</sup> The ES-202 program in contrast does not attempt to maintain a consistent time series. This means that ES-202 data are subject to non economic code change errors when analyzed over time. We might observe one specific local industry grow by 200 jobs in a period while a very similar kind of industry declines by 200 jobs. This may be the product not of real economic growth and decline, but instead the result of a recoding of the firm from one industry to another. Care thus must be taken in analyzing ES-202 data over time.
- Because the ES-202 data are not organized as a time series, the quarterly data cannot be seasonally adjusted. This limits the ES-202's ability to capture recent

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<sup>13</sup> A new modestly revised version of NAICS codes was released during 2007.

changes in employment at the state and local level. Data can be compared only for the same quarters in different years. For example, second quarter 2007 data when compared with third quarter data for Cape Cod would suggest a potential massive increase in employment, but instead of expansion of the productive capacity of the Cape, the employment growth is largely the product of seasonal hiring associated with summer trade that will decline in the fall and winter period. Instead, a comparison of third quarter 2006 data with third quarter 2007—essentially measuring employment during two summers—would shed insight into whether the demand for summer workers had increased or declined in 2007 and in which industries these changes occurred.

A key characteristic of the ES-202 is its use of the NAICS industry classification hierarchy to produce estimates of increasingly detailed industry sectors in the state.<sup>14</sup> Our review of the CES data noted that the Professional and Business Services industry was an important source of net new job creation over the course of the current economic recovery, accounting for about 40 percent of the net new jobs created in the state.

Table 7 presents additional insight into the meaning of job growth within this

Table 7:  
Trends in Non Agricultural Wage and Salary Employment in the Professional and Business Services Industry in Massachusetts, by 2 Digit NAICS Classification, Third Quarter 2004 to Third Quarter 2007

	NAICS Title	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
NAICS Code	Professional and Business Services	463,772	494,541	30,769	6.6%
54	Professional and Technical Services	228,408	252,712	24,304	10.6%
55	Management of Companies	64,989	61,401	-3,588	-5.5%
56	Administrative and Waste Services	170,375	180,429	10,054	5.9%

Source: Massachusetts Department of Labor and Workforce Development, Labor Market Information Unit, April, 2008.

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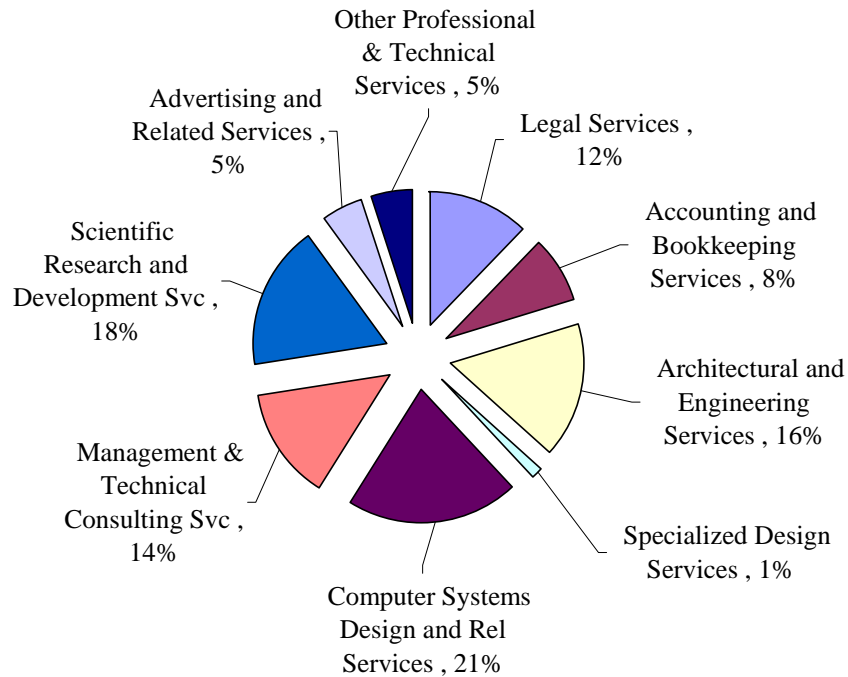
For a complete review of the NAICS classification system as well as definitions of each NAICS industry see the NAICS website at <http://www.census.gov/epcd/www/naics.html>

broad economic sector by sorting professional and business service producers in the Commonwealth into somewhat more homogenous groupings based on the kinds of services these establishments provide. Using the two digit NAICS classification of business establishments we move slightly farther down the hierarchy of professional and business services industries and find that nearly 253,000 jobs (or just over one half of all payroll employment) in this broad industry grouping (often called a super sector) are concentrated in firms that provide professional and technical services. Moreover, the data reveal that the professional and technical services industry (NAICS code 54) grew by more than 10 percent in just three years and accounted for nearly 80 percent of all new payroll jobs in the super sector. The administrative and waste management industry component of the super sector added 10,000 jobs, growing by about 6 percent over the period. Offsetting this increase was a decline in employment levels of firms engaged in providing management services to firms, where despite overall economic expansion in the state and the super sector, employment levels declined by 5.5 percent over the period.

The ES-202 program, utilizing even more detailed classification structures available through the NAICS system, can provide much greater insight into the specific sources of growth within both the 2 digit professional and technical services industry (NAICS 54) and the administrative and waste management industry (NAICS 56) in the state during the economic recovery. Payroll employment in the professional and technical service industry (NAICS 54) is concentrated in computer and systems design (NAICS 5414), scientific research and development (NAICS 5417), and architectural and engineering services (NAICS 5413). Together, these three specific industries employed about 138,000 workers during the third quarter of 2007, accounting for 55 percent of all employment in the 2 digit professional and technical services industry.

A look at trends in payroll employment levels within the professional and technical services industry reveal especially strong growth in the computer systems and design service industry which increased its statewide payroll employment levels by 21 percent, creating more than 9,000 jobs in three years. Scientific research and development—a critical component of the state's Pharma/Biotech sector, also posted considerable job gains, adding 4,300 payroll jobs and growing by 10 percent over the

Chart 1:  
Four Digit NAICS Industry Composition of the Professional and Technical Services  
Industry in Massachusetts, Third Quarter 2007



Source: Massachusetts Department of Labor and Workforce Development, Labor Market Information Unit, April, 2008.

three year period.<sup>15</sup> Happily, with the exception of legal services, employment levels in the whole array of professional and technical services grew quite rapidly over the period of expansion. But this detailed level of analysis that identifies particular industry sources of growth is important to understand since it is likely that staffing and skill requirements vary considerably across these 4 digit NAICS code industries. For example, we might expect the occupational and skills structure of the architectural and engineering industry to be concentrated in scientific, engineering and information technology related occupations, whereas we might expect to find that the accounting and bookkeeping

<sup>15</sup> Andrew M. Sum et al, *The Economic, Labor Market, and Fiscal Performance and Impacts of the Biopharmaceutical Industries of Massachusetts*, Center for Labor Market Studies, Northeastern University, Boston, August, 2007

services industry employs a considerable share of their staff in finance, accounting and other related business occupations.

Table 8:  
Trends in Non Agricultural Wage and Salary Employment in the Professional and Technical Services Industry in Massachusetts, by 4 Digit NAICS Classification, Third Quarter 2004 to Third Quarter 2007

NAICS Code	NAICS Title	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
54	Professional and Technical Services	228,408	252,712	24,304	10.6%
5411	Legal Services	31,156	31,070	-86	-0.3%
5412	Accounting and Bookkeeping	18,193	20,350	2,157	11.9%
5413	Architectural and Engineering Services	39,252	41,459	2,207	5.6%
5414	Specialized Design Services	3,263	3,636	373	11.4%
5415	Computer Systems Design Services	42,970	52,055	9,085	21.1%
5416	Management & Technical Consulting	31,553	34,703	3,150	10.0%
5417	Scientific Research and Development Svc	40,083	44,406	4,323	10.8%
5418	Advertising and Related Services	11,451	12,677	1,226	10.7%
5419	Other Professional & Technical Services	10,488	12,355	1,867	17.8%

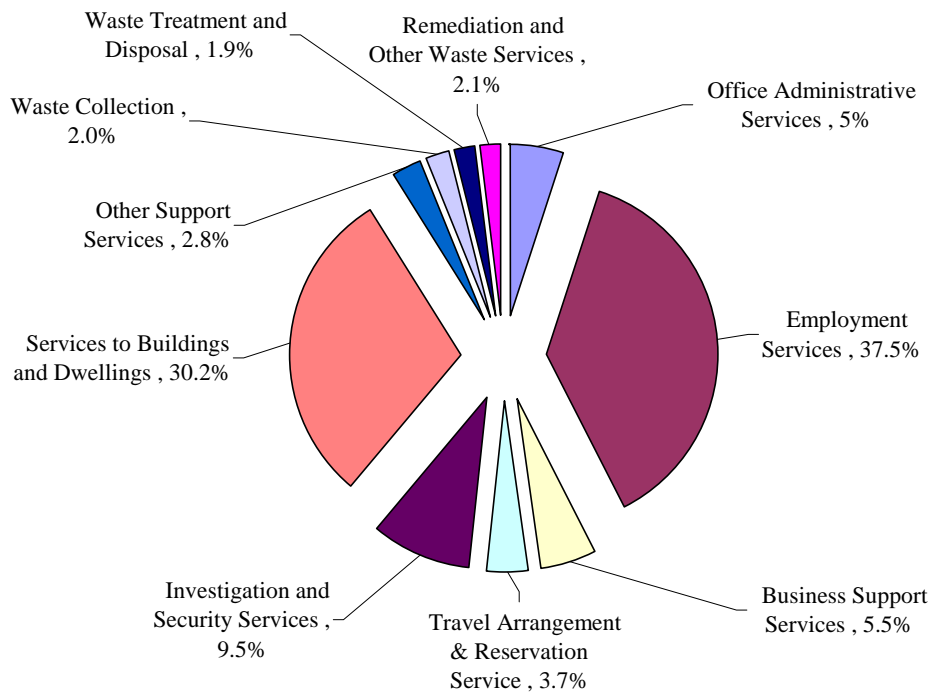
Source: Massachusetts Department of Labor and Workforce Development, Labor Market Information Unit, April, 2008.

The administrative and waste management component (NAICS 56) of the professional and business services sector is composed of a very diverse array of establishments who provide a variety of services to businesses. The two largest components of this 2 digit NAICS industry are quite different from one another and include firms that provide employment services, including temporary help firms and private sector job matching and labor exchange organizations. The employment service businesses accounted for about 38 percent of all employment in the industry during the



third quarter of 2008, employing 67,700 wage and salary workers. Services to buildings businesses including janitorial services, landscaping and pest control services employed about 54,500 workers and accounted for 30 percent of all administrative and waste management. The remaining one third of employment in this industry included about 10 percent of the industry’s employment in investigation and security services, about 6 percent in waste management services of various types including trash collection and remediation services and about 5 percent in business services, including collections

**Chart 2:**  
Four Digit NAICS Industry Composition of the Administrative and Waste Management Service Industry (NAICS 56) in Massachusetts, Third Quarter 2007



Source: Massachusetts Department of Labor and Workforce Development, Labor Market Information Unit, April, 2008.

services and credit bureaus and private mail centers. An additional 5 percent of employment was concentrated in business support services that provide services such as billing, record keeping and personnel on a contract basis to other businesses and government organizations.

As we noted previously, the administrative and waste services industry overall added a total of just over 10,000 jobs between the third quarter of 2004 and the third quarter of 2007. However, a very large share of this increase was concentrated in the employment services industry. A major element of the employment services industry is composed of temporary help firms who supply workers to clients for a limited time, with individual workers employed by the temporary help firm and appearing on their payroll reports. A second major component of the employment services industry is made up of employment placement and executive search firms. These firms list job vacancies and refer clients to jobs and may engage in executive job placement activities. The employment service industry experienced a sharp rise in employment with payroll

Table 9:  
Trends in Non Agricultural Wage and Salary Employment in the Administrative and Waste Management Services Industry in Massachusetts, by 4 Digit NAICS Classification, Third Quarter 2004 to Third Quarter 2007

NAICS 4 digit	NAICS Title	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
56	Administrative and Waste Services	170,375	180,429	10,054	5.9%
5611	Office Administrative Services	9,309	8,900	-409	-4.4%
5613	Employment Services	60,944	67,721	6,777	11.1%
5614	Business Support Services	8,145	9,841	1,696	20.8%
5615	Travel Arrangement & Reservation	6,772	6,678	-94	-1.4%
5616	Investigation and Security Services	17,250	17,163	-87	-0.5%
5617	Services to Buildings and Dwellings	52,789	54,456	1,667	3.2%
5619	Other Support Services	4,815	4,234	-581	-12.1%
5621	Waste Collection	3,128	3,582	454	14.5%
5622	Waste Treatment and Disposal	3,298	3,484	186	5.6%
5629	Remediation and Other Waste Services	3,505	3,738	233	6.6%

Source: Massachusetts Department of Labor and Workforce Development, Labor Market Information Unit, April, 2008.

employment levels rising by about 6,800 or 11 percent over the three year period. The employment service industry utilizes a wide array of skills supplying temporary help in the health professions, information technology, accounting and finance, clerical and

many other positions. In addition to meeting temporary help needs, some firms prefer to employ temporary workers on a try-out basis to judge their work performance and then switch high productivity temps from the employment service firm to the contracting firm's payroll.

The business support industry also posted considerable growth with employment rising by more than one fifth from about 8,100 workers during the third quarter of 2004 to 9,800 employees by the third quarter of 2007. Finally, the services to buildings sector experienced a near 1,700 increase in employment levels during this period of time.

The discussion provided above that examined the industry sources of new job creation in the Professional and Business Service super sector can be replicated for many other sectors in the state economy. Appendix B to this monograph provides statewide ES-202 data for a variety of 2 digit, 3 digit and 4 digit NAICS code industries that can be used to develop a better understanding into the sources of economic growth and change. Because the ES-202 program provides a complete count of jobs across the state it is also a useful source of information to gain insight into employment developments at the sub state regional level. The following section examines key employment trends measured by the ES 202 data in the Merrimack Valley workforce area.

### ***Industry and Employment Trends in the Merrimack Valley Region***

As we noted earlier, the Massachusetts and New England economies were more severely affected than the nation by the economic downturn in the early years of this decade and experienced much slower job growth in the recovery period. The Merrimack Valley region was able to generate net job growth that was similar to that achieved statewide over the period covering the third quarter of 2004 through the third quarter of 2007.

A number of industry sectors in the Merrimack Valley region have posted strong job gains. Indeed, some industries that have continued to experience considerable payroll employment declines statewide have displayed considerable resilience in the region, most notably the area's durable goods manufacturing producers. The regions' professional and technical services providers led the region in absolute and relative increases in wage and

salary employment levels over the period of the third quarter of 2004 through the third quarter of 2007. The employment services industry also posted very strong gains in employment during this time period. Educational and health services are both large industries in the region that posted more modest increases in payroll employment levels.

Despite growth in other elements of the region's high tech sector the information industry experienced considerable losses as telecommunications firms continued to shed jobs during the economic recovery.

### **Recent Employment Trends**

Between the third quarter of 2004 and the third quarter of 2007, the number of jobs in Massachusetts increased by 96,336, a rise of 3.1 percent. During the most recent 12-month period for which data are available (Third Quarter 2006 to Third Quarter 2007), employment increased by 35,964 jobs or 1.1 percent. The Merrimack Valley region performed nearly as well as the entire Commonwealth in its ability to generate payroll jobs over this period. Between the third quarter of 2004 and the third quarter of 2007, the number of payroll jobs in the region increased by more than 3,700 positions or 2.9 percent. During the most recent twelve month period employment increased by nearly 1,900 jobs, suggesting a rising rate of new job creation in the more recent time period. The specific industry results for the Merrimack Valley region are summarized in Table 10 and described below.

### **Professional and Technical Services**

The professional and technical services industry in the Merrimack Valley region is dominated by three specific kinds of firms: Engineering and architectural service providers, computer and system design producers and scientific research and development. Together, these firms employed about 9,800 workers during the third quarter 2007. Collectively these employers expanded their wage and salary payroll by nearly one fifth during the third quarter 2004 to third quarter 2007 period. A large share of the staffing structure of these firms requires workers with post secondary schooling, with particularly intensive use of workers with backgrounds in science, engineering and information technology.

## **Administrative and Waste Services**

Despite the odd title assigned to this set of producers, the Administrative and Waste Services has been an important source of new job creation in the area. First it is important to note that this industry grouping is composed of a hodgepodge of different kinds of business firms engaged in very different economic activities. In the Merrimack Valley region the majority of employment in this sector is concentrated among firms who are engaged in employment services, largely in the temporary help industry. Temp firms provide other businesses with a temporary workforce that can be used to meet short term staffing needs, often in a variety of technical, professional and clerical fields. Frequently, temp firms also provide producers with access to very high skilled, specialized workers in a number of complex technical areas to solve particular business problems. Employment service firms have experienced sharp increases in employment levels over the recovery. Sometimes, firms utilize temp agencies as recruiting tools to find skilled staff and to employ them on a temporary try out basis before moving these new recruits onto the client firm's regular payrolls. Temp payrolls have been among the fastest growing within the Merrimack Valley region.

## **Health Care and Social Assistance**

Health Care and Social Assistance, the region's largest employment sector, experienced modest payroll expansion between the third quarter of 2004 and the third quarter of 2007. During this period, the number of jobs grew by 397 percent or 2.1 percent. Health Care job growth in the Merrimack Valley area was concentrated in ambulatory care facilities, including outpatient care centers and home health care agencies. Hospital employment in the region remained essentially unchanged over the period of recovery. Individual and family social service organizations also posted employment gains over the period.

## **Education**

Between 2004 Third Quarter and 2007 Third Quarter, employment in Educational Services grew by 502 jobs or 5.8%. Although the rate of employment growth is much lower than that observed in the professional and technical industries, the sheer size of the education sector in the region makes this an important source of new job creation. Almost all of the growth took place in Elementary and Secondary Schools

## Manufacturing

The Merrimack region's manufacturing sector experienced little overall employment change between the third quarter 2004 and third quarter 2007, even as overall manufacturing payroll employment levels statewide continued to fall. However, within the region's manufacturing sector we found considerable employment dynamism. Durable goods producers in the region, the second largest source of employment in the area, posted modest employment gains over the recovery even as non durable producers experienced modest payroll employment losses.

Table 10:  
Trend in Non Agricultural Wage and Salary Employment Trends: Merrimack Workforce  
Area Third Quarter 2004 to Third Quarter 2007

	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
Total, All Industries	126,665	130,386	3,721	2.9%
23 - Construction	6,556	6,772	216	3.3%
31-33 - Manufacturing	25,643	25,576	-67	-0.3%
DUR - Durable Goods Manufacturing	16,646	16,905	259	1.6%
NONDUR - Non-Durable Goods Manufacturing	8,997	8,671	-326	-3.6%
22 - Utilities	470	484	14	3.0%
42 - Wholesale Trade	5,059	4,347	-712	-14.1%
44-45 - Retail Trade	11,502	11,484	-18	-0.2%
48-49 - Transportation and Warehousing	2,064	2,051	-13	-0.6%
51 - Information	3,948	3,466	-482	-12.2%
52 - Finance and Insurance	3,289	3,535	246	7.5%
53 - Real Estate and Rental and Leasing	1,591	1,351	-240	-15.1%
54 - Professional and Technical Services	8,308	9,808	1,500	18.1%
55 - Management of Companies and Enterprises	2,193	1,931	-262	-11.9%
56 - Administrative and Waste Services	6,972	8,294	1,322	19.0%
61 - Educational Services	8,716	9,218	502	5.8%
62 - Health Care and Social Assistance	19,082	19,479	397	2.1%
71 - Arts, Entertainment, and Recreation	2,294	2,525	231	10.1%
72 - Accommodation and Food Services	9,188	9,185	-3	0.0%
81 - Other Services, Ex. Public Admin	4,205	4,958	753	17.9%
92 - Public Administration	5,387	5,747	360	6.7%

Source: Massachusetts Department of Labor and Workforce Development, Labor Market Information Unit, April, 2008.

## **Construction**

The Construction sector reported an employment increase of 216 jobs (3.3%) between 2004 Third Quarter and 2007 Third Quarter. This increase was largely concentrated among specialty trade contractors, construction firms that employ large number of workers in trades including plumbing, HVAC, electrician, carpentry, and welding. The entire increase in construction payroll employment levels occurred between the third quarter 2004 and the third quarter of 2006. Construction industry employment levels have declined by 250 jobs in the most recent year.

## **Retail Trade**

Retail Trade experienced essentially no employment change between 2004 Third Quarter and 2007 Third Quarter. Small employment gains did occur in the most recent year, primarily among Food Stores and Department Stores. These gains were offset by job losses in Motor Vehicle Dealers and Building Materials and Supplies retail establishments.

## **Finance and Insurance**

Financial institutions posted payroll employment gains in the Merrimack Valley region between the third quarter of 2004 and the third quarter 2007, with employment levels in this sector rising by about 7.5 percent, adding 246 jobs over the period. This gain occurred both among insurance organizations as well as among lending institutions including mortgage originators.

## **Leisure and Hospitality**

The leisure and hospitality industry posted modest increases in payroll employment levels between the third quarter 2004 and the third quarter 2007. This employment growth occurred in the amusements and recreation industry, with more modest gains in eating and drinking establishments. Employment in the accommodation industry fell over this time period.

## Employment Structure

The following section describes the structure of industry employment in the Merrimack Valley Workforce Area using the most current available data (Third Quarter 2007). In addition, a more detailed review of selected sectors is provided. Finally, we have presented information on employment by the size of employers. The data in this section are intended to offer a deeper understanding of the job content of the Merrimack Valley economy.

Table 11: The Distribution of Non Agricultural Wage and Salary Employment in the Merrimack Valley Region, by Major Industry Group, Third Quarter 2007

Description	2007 III	Percent Distribution
Total, All Industries	130,386	100.0%
23 - Construction	6,772	5.2%
31-33 - Manufacturing	25,576	19.6%
22 - Utilities	484	0.4%
42 - Wholesale Trade	4,347	3.3%
44-45 - Retail Trade	11,484	8.8%
48-49 - Transportation and Warehousing	2,051	1.6%
51 - Information	3,466	2.7%
52 - Finance and Insurance	3,535	2.7%
53 - Real Estate and Rental and Leasing	1,351	1.0%
54 - Professional and Technical Services	9,808	7.5%
55 - Management of Companies and Enterprises	1,931	1.5%
56 - Administrative and Waste Services	8,294	6.4%
61 - Educational Services	9,218	7.1%
62 - Health Care and Social Assistance	19,479	14.9%
71 - Arts, Entertainment, and Recreation	2,525	1.9%
72 - Accommodation and Food Services	9,185	7.0%
81 - Other Services, Ex. Public Admin	4,958	3.8%
92 - Public Administration	5,747	4.4%

Source: Massachusetts Department of Labor and Workforce Development, Labor Market Information Unit, April, 2008.



The four largest payroll employment sectors in the Merrimack Valley region include Manufacturing (19.6%), Health Care and Social Assistance (14.9%), Retail Trade (8.8%) and Professional and Technical Services (7.5%) collectively these four industry sectors account for half the jobs in the Merrimack Valley area. Two major components of the High Tech Sector, Information (2.7%) and Professional and Technical Services (7.5%) are well represented in the Merrimack Valley. These two sectors account for 10.2 percent of total payroll employment in the region.

The manufacturing sector in the Merrimack Valley region is still heavily concentrated in the production of sophisticated technology based equipment. The largest component of the region's manufacturing sector is the Computer and Electronics Products, which accounts for almost one quarter (23.3%) of the jobs in this sector. Food Manufacturing (9.4%), which has been an important source of new job creation, and Fabricated Metals (7.7%) are also important components of the Merrimack Valley Manufacturing base.

As we observed earlier, the Professional and Technical Services is an important sector in the Merrimack Valley. Just over half (52.2%) of the jobs reside in Scientific Research and Development (26.8%) and Computer Systems Design Services (25.4%). Among the remaining components of Professional and Technical Services are Architectural and Engineering Services (10.6%) and Management and Technical Consulting (8.4%).

The second largest sector in the Merrimack Valley, Health and Social Assistance is led by Ambulatory Health Services (35.5%) which includes Physician's Offices and Outpatient Care Centers, Nursing and Residential Facilities (25.1%) and Hospitals (24.0%) The remainder of employment in this broad sector resides in Social Assistance (15.4%).

The largest share of employment found in the region's Retail Trade sector is the Food and Beverage Store industry which accounts for more than one-third (38.4%) of Retail Trade jobs in the Merrimack Valley. In addition, Motor Vehicles and Parts (11.1%), Health and Personal Care Stores (9.4%), Clothing and Accessory Stores (7.8%), General Merchandise Stores (7.4%) and Building Materials and Supplies (7.3%) are important parts of Retail Trade in the Merrimack Valley.

The Administrative and Waste Services industry is relatively small sector in the Merrimack Valley, accounting for just 6 percent of payroll jobs in the region. This sector includes two sub-sectors: Employment Services and Temporary Help Agencies (52.8%) and Services to Buildings (16.2%) that are often looking for entry level personnel. A detailed summary of the industry employment structure for the Merrimack Workforce Area is presented in Table 12.

Table 12: The Distribution of Non Agricultural Wage and Salary Employment in the Merrimack Valley Region, by Share of the Major Industry Group Employment, Third Quarter 2007

NAICS	Description	2007 III	Share of Industry Sector
<b>31-33</b>	<b>Manufacturing</b>	<b>25,576</b>	<b>100.00%</b>
311	Food Manufacturing	2,407	9.40%
323	Printing	1,189	4.60%
325	Chemical Manufacturing	1,501	5.90%
332	Fabricated Metal Product Manufacturing	1,961	7.70%
334	Computer and Electronic Product Mfg	5,958	23.30%
335	Electrical Equipment	1,426	5.60%
339	Miscellaneous Manufacturing	1,804	7.10%
	All Other Manufacturing	9,330	36.40%
<b>44-45</b>	<b>Retail Trade</b>	<b>11,484</b>	<b>100.00%</b>
441	Motor Vehicle and Parts Dealers	1,269	11.10%
444	Building Material & Garden Supply Stores	833	7.30%
445	Food and Beverage Stores	4,407	38.40%
446	Health and Personal Care Stores	1,078	9.40%
448	Clothing and Clothing Accessories Stores	899	7.80%
452	General Merchandise Stores	855	7.40%
	All Other Retail Trade	2,143	18.60%
<b>54</b>	<b>Professional and Technical Services</b>	<b>9,808</b>	<b>100.00%</b>
5411	Legal Services	1,053	10.70%
5412	Accounting and Bookkeeping Services	468	4.80%
5413	Architectural and Engineering Services	1,037	10.60%
5415	Computer Systems Design and Rel Services	2,490	25.40%
5416	Management and Technical Consulting	828	8.40%
5417	Scientific Research and Development Svc	2,631	26.80%

Table12 Continued

	All Other Professional and Technical Services	1,301	13.30%
<b>56</b>	<b>Administrative and Waste Services</b>	<b>8,294</b>	<b>100.00%</b>
5613	Employment Services	4,376	52.80%
5617	Services to Buildings and Dwellings	1,344	16.20%
562	Waste Management	1,007	12.10%
	All Other Administrative and Waste Services	1,567	18.90%
<b>62</b>	<b>Health Care and Social Assistance</b>	<b>19,479</b>	<b>100.00%</b>
621	Ambulatory Health Care Services	6,911	35.50%
622	Hospitals	4,672	24.00%
623	Nursing and Residential Care Facilities	4,883	25.10%
624	Social Assistance	3,012	15.40%
<b>72</b>	<b>Accommodation and Food Services</b>	<b>9,185</b>	<b>100.00%</b>
721	Accommodation	565	6.20%
722	Food Services and Drinking Places	8,620	93.80%

Source: Massachusetts Department of Labor and Workforce Development, Labor Market Information Unit, April, 2008

### ***Employer Size as a Factor in Local Employment***

The distinctive characteristics of business firms are not only associated with the industry in which the organization operates. From a workforce development perspective, the size of the business organization is also a major factor that distinguishes among producers. Many job characteristics, even within the same occupation, can vary systematically by the size of the firm in which the job is found. Characteristics such as work, wages, benefits, employment stability and firm growth rates are thought to be associated with the size of the business establishment.

These data reveal that small employers dominate the Merrimack Valley Workforce Area. Among the 8,616 establishments reporting employment in March 2007, 86.6 percent had fewer than 20 employees. These firms however, accounted for just under 1 in 5 (30,325) of the jobs in the Merrimack Valley. In contrast to the small business employers, 215 establishments (2.5%) reported having at least 100 employees. These firms, however, were responsible for nearly half (61,504) of all jobs in the region.

The share of employment among large employers (47.5%) is slightly below the statewide share of 49.1 percent.

Table 13: Distribution of Business Establishments and Non Agricultural Employment, by Employment Size. Massachusetts and Merrimack Valley, Third Quarter, 2007

	Merrimack Valley		Massachusetts	
Size Class	Number of Employers	Share of Employers	Number of Employers	Share of Employers
0-19	7,464	86.6%	181,048	86.9%
20-99	937	10.9%	22,194	10.7%
100-499	195	2.3%	4,446	2.1%
500+	20	0.2%	584	3.0%
Total	8,616	100.0%	207,272	100.0%
	Merrimack Valley		Massachusetts	
Size Class	Number of Jobs	Share of Jobs	Number of Jobs	Share of Jobs
0-19	30,325	23.3%	724,049	23%
20-99	37,770	29.2%	888,561	28%
100-499	37,310	28.8%	840,129	27%
500+	24,194	18.7%	716,437	23%
Total	125,509	100.0%	3,169,176	100.0%

Source: Massachusetts Department of Labor and Workforce Development, Labor Market Information Unit, April, 2008

# **Occupational Staffing Patterns of Industries and Educational Attainment of Workers by Industries and Occupations in the Merrimack Valley Workforce Area**

## ***Introduction***

The educational attainment and literacy proficiencies required in the workforce are largely determined by the types of jobs that are available in an area. In the previous section, we have presented detailed accounts of recent trends in industry employment and the industry composition of total employment in the Merrimack Valley area as well as the state. The level of employment and the change in employment by industry sector together shed important insights into the total labor demand in an area. However, these measures do not provide estimates of the type of labor that is required to staff these industries. Rather, it is the occupational staffing patterns of industries and the educational attainment of individuals employed in different occupations and industries that provide estimates of the types of workers that are needed (employed) within these industries.

In this section we have presented a description of the occupational staffing patterns of industry sectors in the Merrimack Valley area. We have also examined the educational attainment of workers who were employed in different occupations and industry sectors within the Merrimack Valley area. All data presented in this section are derived from our analysis of the American Community Survey (ACS) data.

The ACS is a nationwide survey conducted by the U.S. Census Bureau that will replace the decennial census long form survey starting in 2010. The ACS began as a demonstration in 1996 and culminated in full implementation in 2005. The 2005 ACS survey and every annual ACS survey thereafter will be implemented in every county of the nation with an annual sample of about three million housing units. The ACS provides data for individuals on their demographic and socioeconomic characteristics, labor market experiences, educational attainment and school enrollment status, and earnings and incomes for all states, as well as for all cities, counties, metropolitan areas, and population groups of 65,000 people or more. Although the ACS sample sizes are quite large, we have combined ACS data files from two years to secure sufficiently large

sample sizes to produce reliable estimates at the level of the Local Workforce Investment Board area. Estimates presented in this section for the Merrimack Valley area are based upon the responses from nearly 2,200 individuals who were employed and working within the boundaries of the Merrimack Valley workforce area at the time of the ACS surveys.

The 2005 and 2006 ACS surveys contain information on the place of residence and the place of work of respondents who were employed at the time of the ACS survey. Utilizing the 2005 and 2006 ACS data files we have identified individuals who listed the Merrimack Valley area as their place of work (regardless of where they identified their place of residence). We refer to these individuals as Merrimack Valley workers in this section. An examination of the industries and occupations in which these Merrimack Valley workers were employed provides the occupational composition or occupational staffing patterns of each industry sector in the Merrimack Valley area. The examination of their educational attainment provides the educational requirements within the industries and occupations in the Merrimack Valley area.

The industry and occupation of workers in the ACS database are self identified. The industry sector in which they are employed is determined from ACS survey respondents' answers to questions that ask respondents to provide the name of their employer and identify the kind of business or industry of their employer by describing the main activity at the place where they were employed, for example, a hospital, a university, a newspaper publishing firm, a restaurant, etc. The occupation of these workers is determined from their responses to the question about the kind of work they were performing (for example, registered nurse, personnel manager, secretary, accountant, secondary school teacher, etc.) and their identification of the most important duties that they performed at work.

### ***Occupational Staffing Patterns of Industries***

A total of 117,300 individuals identified their place of work as within the Merrimack Valley area. These workers were employed in a wide array of industry sectors and occupational groups. The occupational distribution of workers in different industry groups represents the occupational staffing patterns of these industry groups. We have

aggregated industries in the Merrimack Valley area into 8 broad categories. The occupations of these workers have been aggregated into 6 groups of occupations.<sup>16</sup>

The distribution of workers in each of these 8 industry sectors by the occupation in which they were employed is presented in Table 1. The first half of this table contains the occupational staffing patterns of industries in the Merrimack Valley area and the second half contains the same for the state of Massachusetts. The reader should note that all data in this section pertain to the geographic area of the place of work at the time of the ACS surveys. This means that the occupational staffing patterns in the Merrimack Valley area are measured with the occupational distribution by industry of all workers who stated that their place of work was in the Merrimack Valley area. Similarly, the occupational staffing patterns in Massachusetts are measured with the occupational distribution by industry of all workers who stated that their place of work was in Massachusetts.

As noted above, we have classified occupations into 6 broad groups. The components of each of these 6 groups are presented below:

<b>College labor market &amp; high level sales occupations</b>	<b>Service &amp; low level sales occupations</b>
Management occupations Business and financial operations occupations Computer & mathematical occupations Architecture & engineering occupations Life, physical, & social science occupations Community & social services occupations Legal occupations	Healthcare support occupations Protective service occupations Food preparation & serving occupations Building & grounds cleaning occupations Personal care & service occupations Low-level sales occupations
Education, training, & library occupations Arts, design, entertainment, sports, & media occupations High-level sales occupations	<b>High skill blue collar</b>
<b>Healthcare practitioner &amp; technical occupations</b>	Construction & extraction occupations Installation, maintenance, & repair occupations
<b>Office &amp; administrative support occupations</b>	<b>Production, transportation &amp; material moving occupations</b>
	Production occupations Transportation & material moving occupations

Excluded:

Farming, fishing, & forestry occupations

<sup>16</sup> Please see Appendix C for detailed statewide tabulations of all the data presented in this section.

The occupational staffing patterns varied sharply by industry sector. Over 80 percent of the workers employed in the construction industry in the Merrimack Valley area were working in high skill blue-collar jobs in the construction and extraction occupations and installation maintenance and repair occupations. Fewer than 12 percent were employed in college labor market or high level sales occupations and fewer than 4 percent each were employed in administrative support positions and production, transportation and material moving occupations.

The occupational staffing patterns of manufacturing industries indicate a high concentration of production, transportation, and material moving occupations and an equally large share of college labor market occupations. Over 43 percent of the manufacturing sector workers in the Merrimack Valley area were employed in college labor market occupations—12 percent in management occupations, 8 percent in architecture and engineering occupations, 7 percent in computer and mathematical occupations, 6 percent in high level sales and the remaining distributed across business and financial occupations (5 percent), life, physical, and social science occupations (3 percent), and arts and design occupations (2 percent).

Another 40 percent of the manufacturing workforce in the Merrimack Valley held production, transportation and material moving jobs—most (36 percent) were employed in production occupations. High skill blue collar positions were held by a much smaller proportion of manufacturing workers in the area. Only 4 percent held relatively sophisticated blue collar jobs. About 11 percent were employed in office and administrative positions.

Among the remaining six (non-production) industries the highest concentrations in college labor market occupations (including healthcare practitioner occupations) were found among firms that provide professional, scientific, and technical services and educational services. Eighty-four percent of the workers in professional, scientific, and technical service firms were employed in occupations that require high levels of educational attainment including computer and mathematical occupations (23 percent), management occupations (13 percent), architecture and engineering occupations (12 percent), business and finance occupations and legal occupations (11 percent each), and



Table 1: Occupational Staffing Patterns of Selected Industries in the Merrimack Valley Area and Massachusetts, 2005-06

**MERRIMACK VALLEY**

Major Occupations	Constr.	Manufacturing	Retail Trade	Information	Finance, Ins. & Real Estate	Prof., Scientific & Tech. Services	Educ. Services	Healthcare & Social Services	Other Services
Total Workers	6,734	25,469	9,677	SAMPLE TOO SMALL	7,400	8,680	9,743	16,361	23,075
College labor market & high level sales occupations	11.5%	43.2%	22.5%		67.4%	81.6%	75.7%	21.3%	26.3%
Healthcare practitioner & technical Service and low level sales occupations	0.0%	0.0%	1.2%		1.4%	2.4%	2.1%	31.7%	2.0%
Office & administrative support	0.8%	2.6%	34.5%		4.4%	0.3%	13.0%	31.8%	48.9%
High skill blue collar occupations	3.8%	10.5%	16.6%		26.4%	12.6%	7.7%	13.4%	10.6%
Production, transportation & material moving occupations	80.3%	3.5%	5.6%		0.4%	1.4%	1.5%	1.0%	3.0%
	3.5%	40.1%	19.5%		0.0%	1.7%	0.0%	0.9%	9.2%

**MASSACHUSETTS**

Major Occupations	Constr.	Manufacturing	Retail Trade	Information	Finance, Ins. & Real Estate	Prof., Scientific & Tech. Services	Educ. Services	Healthcare & Social Services	Other Services
Total Workers	220,625	347,648	342,566	91,315	260,107	263,118	304,449	460,001	620,202
College labor market & high level sales occupations	15.6%	42.5%	28.0%	64.7%	66.1%	81.8%	75.8%	23.7%	25.1%
Healthcare practitioner & technical Service and low level sales occupations	0.0%	0.2%	2.3%	0.0%	0.5%	1.9%	2.8%	34.9%	1.0%
Office & administrative support	0.6%	1.4%	38.8%	5.1%	7.1%	1.4%	10.9%	26.2%	52.4%
High skill blue collar occupations	4.9%	10.4%	15.8%	16.9%	23.9%	12.6%	8.6%	13.3%	11.3%
Production, transportation & material moving occupations	74.7%	4.1%	4.2%	8.9%	1.5%	0.8%	1.3%	0.6%	4.7%
	4.2%	41.4%	10.9%	4.3%	0.9%	1.4%	0.6%	1.3%	5.5%

Source: 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

life physical, and social science occupations (7 percent). About 13 percent of the workforce in this industry within the Merrimack Valley area consisted of office workers. The professional, scientific, and technical services sector in this region added a considerable number of jobs over the past 4 years. Between the third quarters of 2004 and 2007, the sector added 1,300 jobs representing a 16 percent employment increase over the 3 year period.

The educational services industry, representing another area of job growth in the Merrimack Valley area, had nearly 78 percent of its workers employed in the college labor market occupations of education and training, legal, social services, arts and media, and health care practitioner and technical occupations. Thirteen percent of the workers in this industry were employed in service occupations providing building and grounds, protective, and personal services, and nearly 8 percent worked in administrative support occupations.

Employment in the health care and social assistance industry has also grown in the Merrimack Valley area, albeit not as rapidly as the professional, scientific, and technical services sector or the educational service sector. About one-third (32 percent) of the workers in this sector were employed as healthcare practitioners and healthcare technicians and technologists. Another 32 percent of the workers in these industries were working in service occupations, most of whom were working in healthcare support and personal care occupations. Over one-fifth (21 percent) of the workers in these industries were working in college labor market occupations (excluding healthcare practitioner and technician occupations) and 13 percent performed administrative support duties at their jobs in healthcare or social services firms in the Merrimack Valley area.

The final category of the services sector industry cluster consists of lower level service industries including accommodation and food services, arts, entertainment and recreation services, administrative support and waste management services, and public services. The occupational staffing patterns of these industries were very different from that of the three other service industry sectors discussed above. The industries in this cluster had high concentrations of workers in service occupations and administrative support occupations and much smaller numbers in the two categories of college labor

market occupations. Slightly over one-fourth of the workers in this services sector in the Merrimack Valley region were employed in college labor market occupations while nearly one-half worked in service and low level sales occupations, 12 percent were performing blue-collar work, and 11 percent worked in administrative support positions.

The Merrimack Valley area's finance, insurance, and real estate firms employed nearly two-thirds of their workers in business, management and finance college labor market jobs and in high level sales occupations. Over one-quarter (26 percent) of its workers were employed in office and administrative support occupations.

The information industry in the Merrimack Valley area saw its employment decline by over 12 percent between the third quarters of 2004 and 2007. In 2007, slightly less 3 percent of all workers employed in the Merrimack Valley area worked for a firm in the information industry. This industry accounts for a very small number of workers in the area. The small size of the workforce in the Information industry in the Merrimack Valley area is also reflected in the small samples of Merrimack Valley Information industry workers on the ACS survey. Consequently, we were unable to derive statistically reliable estimates of the occupational staffing patterns of workers in this industry for the area.

Insights into the staffing patterns of the Information industry can be gained from statewide data provided in the second half of Table 1. Statewide, the staffing patterns of this industry were concentrated in the college labor market. Nearly 65 percent of its employees worked in college labor market and high level sales occupations with one-fifth in management occupations, 15 percent in art, design, and media occupations, and 10 percent in computer and mathematical occupations. About 17 percent of the information industry workforce in the state was employed in administrative support positions, and 13 percent worked in blue collar positions, most of whom were performing skilled blue-collar work in installation, maintenance and repair occupations.

The Merrimack Valley area's firms that were engaged in the retail trade business were staffed with middle to lower level occupations. Many workers were employed in sales occupations (35 percent) with a large share in lower level sales positions such as cashiers and other retail salespersons. Less than one-quarter (23 percent) of the retail

trade industry workers were employed in college labor market occupations, mainly in high level sales occupations (15 percent). One quarter were employed in blue collar occupations—most in transportation and material moving occupations (19 percent) and one-sixth held administrative support jobs in clerical and secretarial positions.

The sharp differences in the kinds of occupations that staff the different industries in the Merrimack Valley area (as well as the state) means that changes in employment across industries will have a direct impact on the demand for workers qualified and trained to work in different occupations. For example, if retail trade employment grows, one can expect an increase in the demand for workers in sales occupations. If employment in manufacturing increases, blue collar workers will see an uptick in the demand for their services. Combining the data on the occupational staffing patterns of different industries with the job growth or decline trends in these industries can provide important insights into the changes in the demand for specific types of workers. Occupational staffing patterns do not hold constant over time and are not identical across different areas. Workforce development professionals need to develop and update the occupational staffing patterns information for their area and combine this information with the industry employment trends in their area to assess changes in the demand for specific types of workers.

### ***Educational Attainment of Workers by Occupation***

An examination of the occupational staffing patterns of industries presented in the previous section provides information about the demand for specific types of workers that arises from a change in employment across different industry sectors. The occupational classification is based upon the duties that workers perform on their jobs. The qualifications necessary to perform these job duties are sharply different across different occupations. One of the key measures of worker qualifications is their educational attainment. The actual level of educational attainment of workers who are currently employed in an occupation provides a fairly accurate measure of the level of education, literacy, and skill requirements of that occupation.

An examination of the educational attainment levels of workers employed in the Merrimack Valley area demonstrates the sharp difference in the educational attainment of

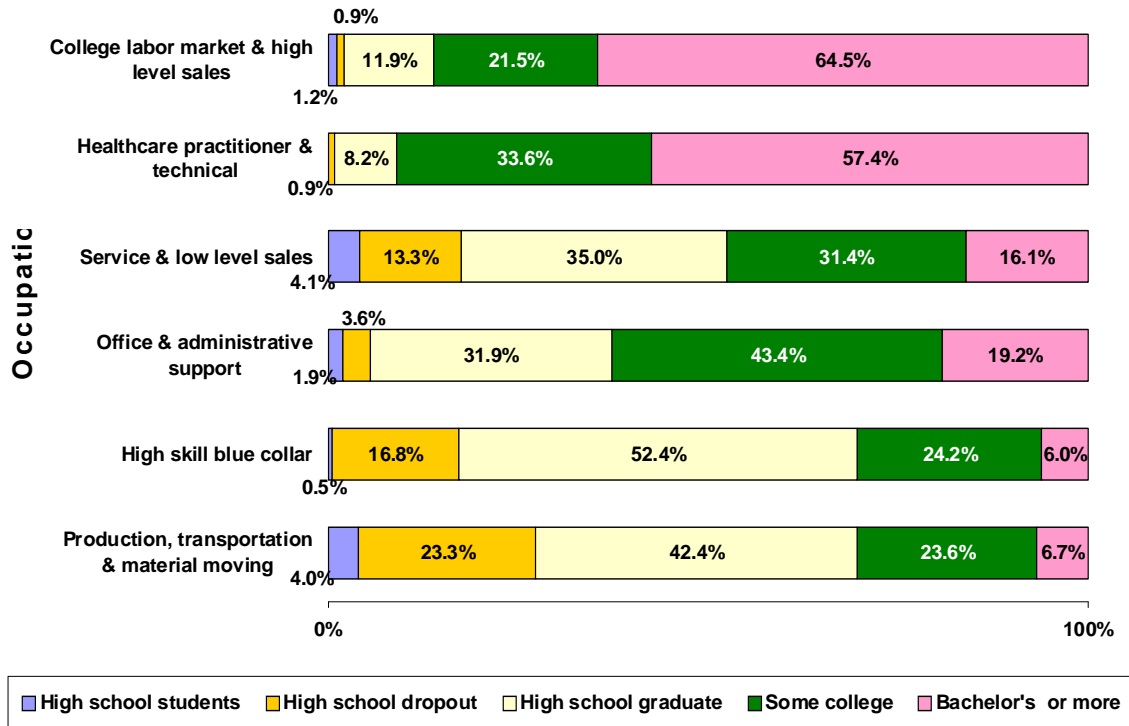
workers employed in different occupations. Workers employed in college labor market occupations had large shares of college graduates with a bachelor's degree or a higher level of education. Nearly 65 percent of Merrimack Valley workers employed in these occupations had a bachelor's degree or higher level of education. Another one-fifth (22 percent) had some postsecondary education below the bachelor's degree level. Thus, 86 percent of the workers in these college labor market occupations had completed some level of postsecondary education—below, at, or above the bachelor's degree level.

The next largest college graduate concentration was among workers employed in healthcare practitioner and technical occupations. Over 57 percent of the workers employed in these occupations in the Merrimack Valley area were college graduates with a bachelor's or higher level of education and another one-third had completed some postsecondary education below the bachelor's degree level. Consequently, 91 percent of the workers in this industry had completed some postsecondary education below the bachelor's degree level or had earned a bachelor's degree or a higher level of education.

Workers in the office and administrative support occupations also were more likely to have some college education, although most had completed a college education below the bachelor's degree level. Over 43 percent of Merrimack Valley workers in this occupation had completed some college education below the bachelor's degree level and 19 percent had a bachelor's degree or higher level of education. Under one-third of the office and administrative support workers (32 percent) had a high school diploma with no postsecondary education.

Blue collar occupations at the lower end of Chart 1 had disproportionately large numbers of high school graduates. More than half of the workers in high skill blue collar jobs and 42 percent of production, transportation and material moving workers had completed only a high school level of education and earned a high school diploma or a GED certificate. About 24 percent of the workers in high skill blue collar occupations and another 24 percent in production and transportation occupations had completed some postsecondary education below the bachelor's degree level. Bachelor's degrees were less common among these workers—about 6 percent among high skill blue collar workers, and 7 percent among production and transportation workers. These occupations had

Chart 1:  
Percentage Distribution by Educational Attainment of Employed Individuals Who  
Worked in the Merrimack Valley Area by Major Occupational Group, 2005-06



Source: 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.

somewhat higher shares of high school dropouts. We have defined high school dropouts as those individuals who did not have a high school diploma or a GED and were not enrolled in school at the time of the ACS surveys. Individuals who did not have a high school diploma or a GED but were enrolled in school at the time of the ACS survey were classified as high school students. Nearly 17 percent of high skill blue collar and 23 percent of production and transportation and material moving workers were high school dropouts.

Low level sales occupations such as cashiers, counter clerks and retail salespersons and service occupation workers are more likely to be staffed by young workers. About 4 percent of the Merrimack Valley area workers who were employed in these occupations were high school students and another 13 percent were high school

dropouts. Thirty-five percent of the workers in this occupation were high school graduates without any postsecondary education, 31 percent had completed postsecondary education below the bachelor's degree level and 16 percent had completed a bachelor's degree or higher level of education.

Growth and decline in occupational employment in a region provides very clear signals regarding the demand for education in the region. Employment growth in the retail trade sector would not place a strong demand for college graduates whereas increases in employment in the healthcare sector or the professional and technical service sector will result in higher employment in college labor market occupations and therefore an increase in the demand for college graduates and workers with high skills and high levels of literacy proficiencies.

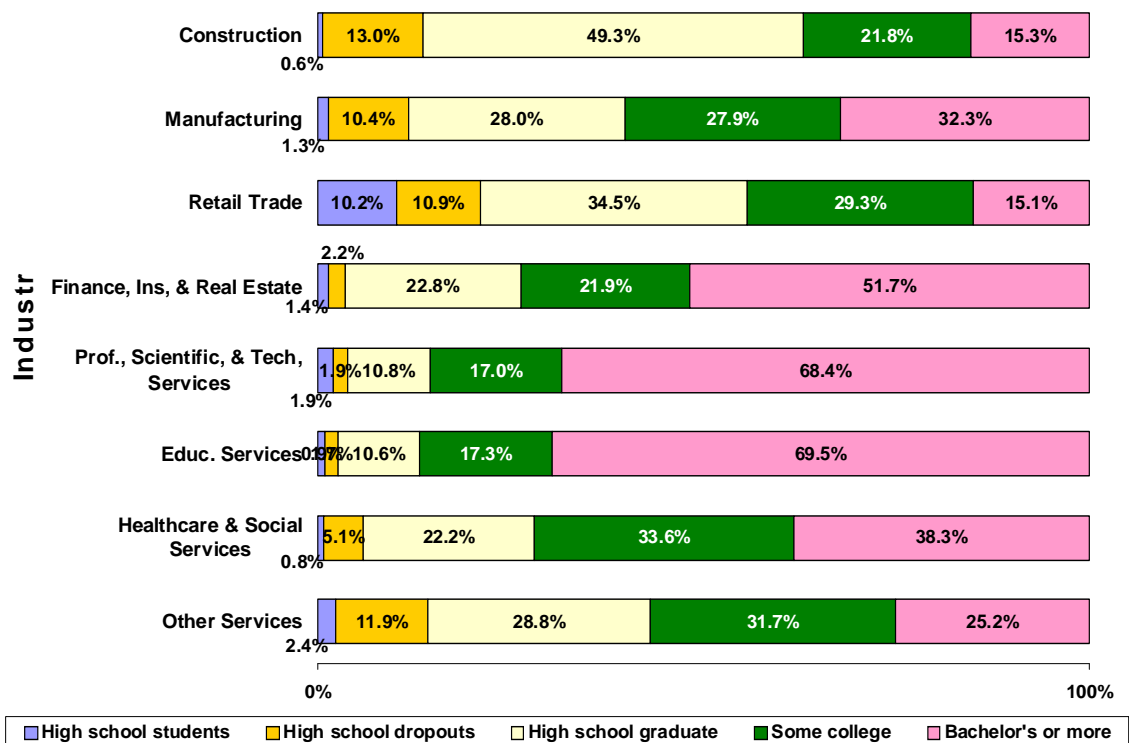
### ***Educational Attainment of Workers by Industry***

Although industries are staffed with workers in several different occupations, there are some occupations that are more dominant in certain industries than in others. For example, blue-collar occupations are more dominant in the construction and manufacturing industries and college labor market occupations are more dominant in the professional, scientific and technical services industries. These differences in the types of jobs across different industries result in different levels of educational attainment among workers in different industries. The education of workers employed in different industries provides a measure of the educational requirements to obtain employment in these industries.

An examination of the educational attainment of workers in the Merrimack Valley area within the eight industry sectors highlights sharp differences across industries. Our discussion starts with the industries with the most college graduates. College graduates account for nearly 70 percent of all workers in the educational services industries, 68 percent in the professional, scientific, and technical services industries, and nearly 52 percent of all Merrimack Valley area workers employed in the finance, insurance, and real estate sectors.

These sectors also had sizable proportions of workers with some college education below the bachelor's degree level. In fact, a majority of the workers in these three industries had completed at least some higher education in the form of some college below the bachelor's degree level or a bachelor's degree or a higher degree. Eighty-seven percent of workers in the education services sector, 85 percent in the professional, scientific and technical services sector, and nearly 74 percent in the financial, insurance, and real estate sector had completed some postsecondary education below, at, or above the bachelor's degree level. These industries employed some high school graduates (11 percent each in the educational service and professional and technical services sectors, and 23 percent in finance, insurance, and real estate sector) but almost no high school dropouts.

**Chart 2:**  
Percentage Distribution by Educational Attainment of Employed Individuals Who Worked in the Merrimack Valley Area by Major Industry, 2005-06



Source: 2005 and 2006 American Community Survey Public Use Microdata Samples (PUMS) data files, tabulations by the Center for Labor Market Studies, Northeastern University.



In a previous segment we found that workers employed in the healthcare and social services industries in the Merrimack Valley area were working in sharply different occupations. A sizable number worked in the college labor market occupations and health practitioner occupations—both occupations characterized by high levels of educational attainment. The industry also had a sizable share of employment in service occupations and office and administrative support positions. The educational attainment of the workers in this industry reflects these differences in its occupational staffing patterns. Although 72 percent of all workers in these industries had some college education, only 38 percent had earned a bachelor's or higher degree. The rest had some college education below the bachelor's degree level. Over one-fifth (22 percent) of all workers in these industries had only a high school level education and about 5 percent were high school dropouts.

The miscellaneous (other) services sector, which contains firms that provide administrative support and waste management, arts, entertainment, recreation, accommodation services, food services, and public services, generally consists of more workers with high school diplomas but fewer with college degrees. Almost 12 percent were high school dropouts and 29 percent had a high school diploma or a GED but no postsecondary education. Workers with some college education below the bachelor's degree level comprised 32 percent of all workers employed in these industries and one-quarter had a college degree.

Retail trade workers had similar levels of educational attainment to workers in the miscellaneous services industries except at the lower end, where the retail trade sector had a much larger a share of high school students (10 percent versus 2 percent). Both sectors had about the same share of high school dropouts (11 percent versus 12 percent). The larger share of high school students in the retail trade industry means that this sector provides employment opportunities to teens and younger workers. In fact, this industry is the entry point to the labor market for many teen workers. Nearly 35 percent of the Merrimack Valley area's retail trade workers had only earned a high school diploma or a GED certificate. Over 29 had completed some college education below the bachelor's degree level and only 15 had earned a bachelor's or a higher level degree.

The construction industry had workers with the lowest educational credentials. Thirteen percent had failed to earn a high school diploma or a GED certificate and nearly one-half had terminated their education after graduating from high school. Nearly 22 percent had completed some college education and 15 percent had earned a bachelor's or a higher degree. Workers in the manufacturing sector of the Merrimack Valley region were somewhat better educated compared to those in the construction sector. Over 10 percent had not graduated from high school, 28 percent had a high school diploma or a GED and another 28 percent had completed some college below the bachelor's degree level. The remaining one-third had earned a bachelor's or a higher degree.

The education of workers in the Merrimack Valley area varied widely by the industry sector and by the occupation in which they were employed. Knowledge of the trends in employment by industry can be combined with the occupational staffing structures of growing and shrinking industry sectors to assess changes in the labor demand for individuals with different skill sets and educational levels. Industry employment trends in the Merrimack Valley area and its occupational staffing patterns and educational requirements point towards a greater demand for better-educated workers.

# Job Vacancy Measurement and Interpretation

## ***Introduction***

Measures of job vacancies are usually designed to shed insight into the size and characteristics of unfilled labor demand in a way that is analogous to the way the measure of unemployment serves to describe available but unutilized labor supply. The household unemployment measure classifies individuals in the working age population as unemployed if they are:

- jobless,
- actively seeking work in the 4 weeks prior to the survey reference week,
- available for work at the time of the survey.<sup>17</sup>

The measure of job vacancies is usually constructed in a parallel fashion. The count of job vacancies includes wage and salary positions for which:

- a specific position exists that is available to workers outside the firm
- the employer is actively seeking workers outside the firm
- and the position could be filled within thirty days of the survey.

Two parallel systems of job vacancy measurement exist in the nation today. At the national level the U.S. Bureau of Labor Statistics (BLS) conducts a monthly survey of business establishments that measures worker accession and separation from payrolls each month as well as the number of jobs remaining unfilled at the end of the month by industry. The Job Openings Labor Turnover Survey (JOLTS) is a nationally representative survey of business establishments conducted on a monthly basis that produces measures of the number of wage and salary jobs vacant at the end of each month and a job vacancy rate measure that provides an estimate of the share of all wage

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<sup>17</sup> The Current Population Survey (CPS) and American Community Survey (ACS) use slightly different unemployment concepts and the population scope of the two surveys is slightly different. The ACS estimate of the unemployment rate in a state or locality is generally higher than that measured by the CPS. See: U.S. Bureau of the Census, *Guidance of Differences in Employment and Unemployment Estimates from Different Sources*, [WWW.census.gov/hhes/laborfor/laborguidance082504.html](http://WWW.census.gov/hhes/laborfor/laborguidance082504.html), August 23, 2004 and Wayne Vroman, *Comparing Labor Market Indicators from the CPS and the ACS*, The Urban Institute, Washington, DC. November, 2003

and salary positions in the American economy that are unfilled at a point in time.<sup>18</sup> BLS publishes monthly estimates of the aggregate number of job vacancies and the aggregate job vacancy rate for the nation and four major geographic regions of the country each month. In addition, BLS produces monthly national estimates of both job vacancies and job vacancy rates by major industry sector.

The JOLTS survey places the job vacancy estimates it produces in the context of overall labor turnover activity that has occurred over a given month. Labor turnover is composed of two distinct measures:

- *Hires*, which includes the total number of additions to a firm's payroll that occurred over a month, including new hires, recalls from lay-off and other rehired employees.
- *Separations*, which are composed of three elements.
  1. Quits, or voluntary separations from the business (except retirements or transfers to other locations),
  2. Involuntary separations including layoffs and fires,
  3. Other separations including retirements, transfers to other locations, separation due to disabling condition or death.

The measure of job vacancies measured at the end of the month is thus placed in the context of the hiring and separation activity that plays a central role in the creation of job vacancies at a point in time and helps shed insight into the underlying sources of job vacancies, growth and turnover.

### ***Trends in Job Vacancies in the Nation***

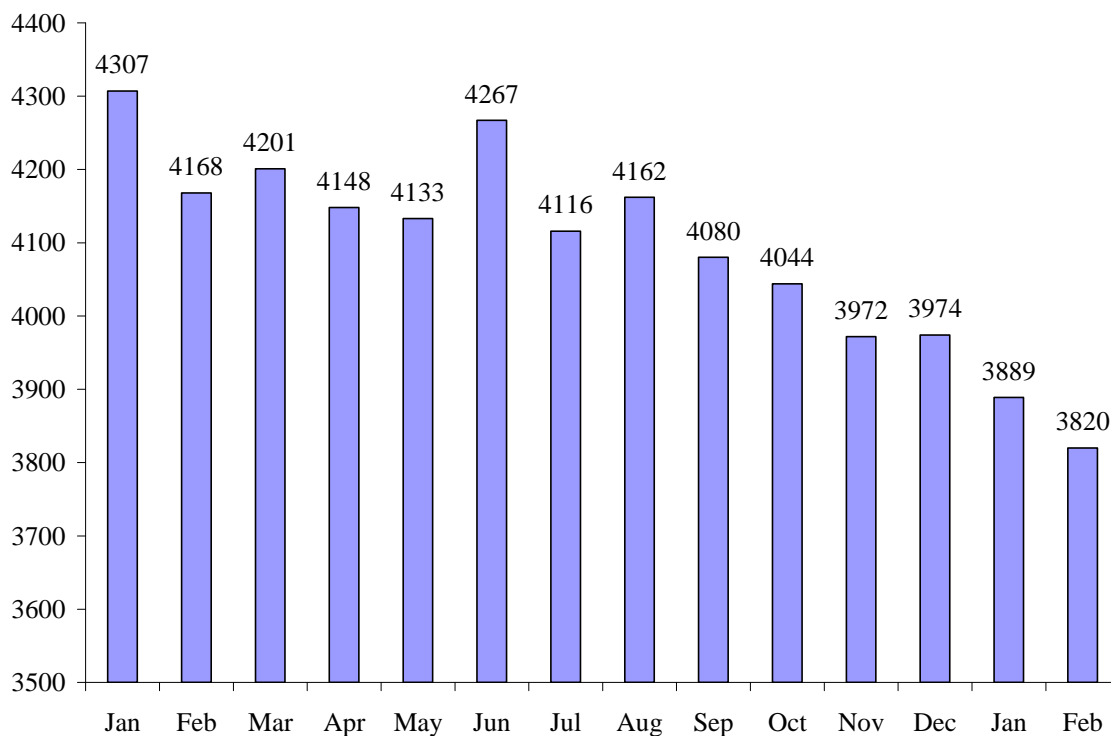
The total number of job vacancies in the nation has declined since the beginning of 2007. The findings provided in Chart 1 reveal that at the end of January 2007 a total of 4.168 million jobs on American payrolls were unfilled and were actively seeking workers. At that time the nation's job vacancy rate stood at 3.0 percent, meaning that 3 percent of all payroll jobs in the nation were unfilled at the time of the survey in January

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<sup>18</sup> The national job vacancy rate is calculated as  $(V/V+E)*100$ , where V=stock of job vacancies and E = wage and salary employment level.

2007. Since then, the number of jobs that were unfilled at the end of the month has trended downward. By the end of February 2008 the number of unfilled payroll jobs among the nation’s employers had declined to 3.820 million, a reduction of 487,000 jobs and a relative decline of more than 11 percent in demand. The job vacancy rate also declined over this period of time falling to 2.7 percent by February 2008, suggesting a slackening of labor demand as the growth in the nation’s economy has slowed and payroll employment levels have declined, as we observed earlier. Nonetheless, despite the context

Chart 1: Trends in the Total Number of Wage and Salary Job Vacancies in the United States, January 2007 to February 2008  
Seasonally Adjusted, (Numbers in 000s)



Source: U.S. Bureau of Labor Statistics, *Job Openings Labor Turnover Survey*, LABSTAT. [www.bls.gov](http://www.bls.gov)

of overall declines in payroll employment in recent months, the JOLTS survey still found 3.8 million unfilled jobs.

Declines in the number of job vacancies were especially severe in the construction and manufacturing industries over the last year. Both of these sectors saw their number of job vacancies fall by more than one quarter over the year, as companies in these

industries began to pare their payrolls. The trade, transportation and utilities sector, along with retail trade producers, also experienced sharp over the year reductions in the number of unfilled jobs available for immediate occupancy. In contrast, the professional and business services industry experienced little reduction in the number of job openings while the health and education sector saw the number of unfilled jobs rise from 714,000 to 748,000, a rise of 5 percent in the level of unfilled openings. This increase is reflective of the continued expansion of payroll employment levels among the nation’s health service producers.

Table 1: Trends in the Number of Wage and Salary Job Vacancies in the United States, January 2007 to February 2008, by Industry Sector (Seasonally Adjusted, Numbers in 000s)

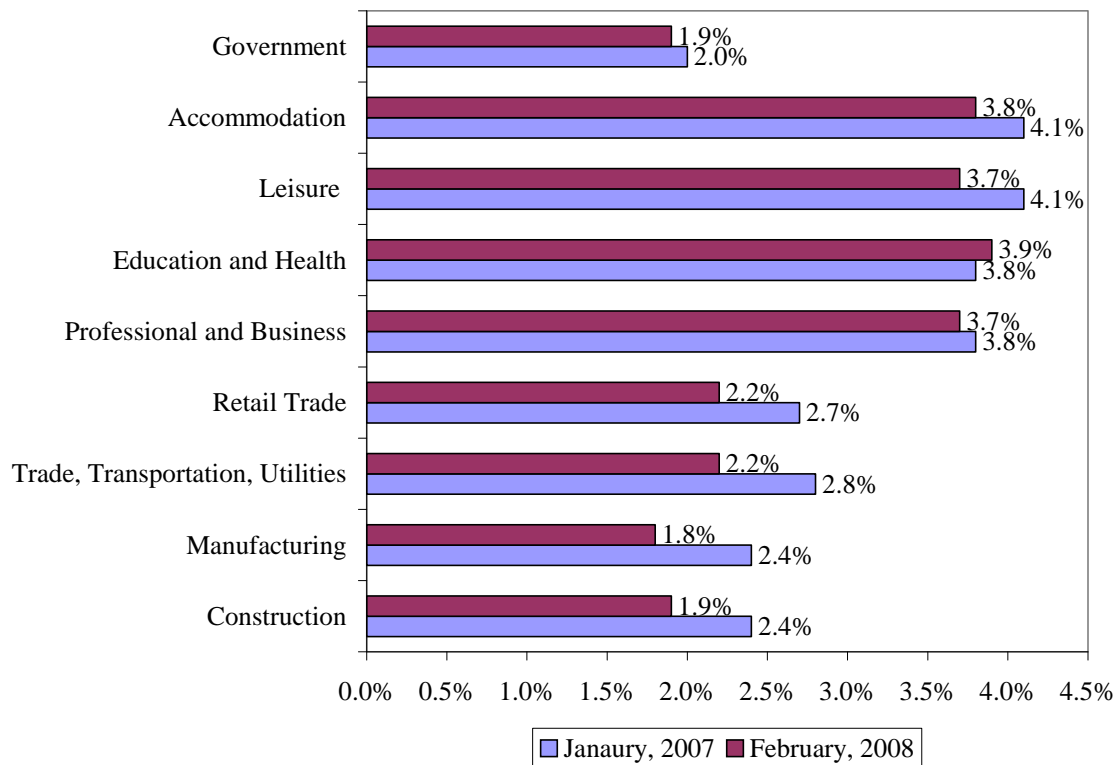
	Jan-07	Feb-08	Absolute Change	Relative Change
Construction	191	140	-51	-27%
Manufacturing	344	246	-98	-28%
Trade, Transportation, Utilities	763	611	-152	-20%
Retail	424	346	-78	-18%
Professional and Business	707	695	-12	-2%
Education and Health	714	748	34	5%
Leisure	566	516	-50	-9%
Accommodation and Food	491	462	-29	-6%
Government	461	441	-20	-4%

Source: U.S. Bureau of Labor Statistics, *Job Openings Labor Turnover Survey*, LABSTAT. [www.bls.gov](http://www.bls.gov)

Not only has the level of job vacancies declined considerably across a number of major industry sectors in the nation, but the job vacancy rate in these industries has declined, providing additional support to the view that labor demand conditions have slackened over the last year as the share of payroll jobs that remained unfilled has declined. The data provided in Chart 2 reveal that job vacancy rates fell considerably in both the construction and manufacturing industries over the year. During January of last year both industry sectors had a job vacancy rate of 2.4 percent, but by February 2008 the job vacancy rate in construction had fallen to 1.9 percent while in manufacturing the rate

had declined to 1.8 percent. The retail trade sector saw its seasonally adjusted job vacancy rate fall from 2.7 percent to 2.2 percent over the year, while wholesale trade, transportation and utilities producers reduced their vacancy rate from 2.8 percent to 2.2 percent. The high end professional and business service industry's vacancy rate remained essentially unchanged over the year - remaining at the 3.7 – 3.8 percent range. Similarly the job vacancy rate in the education and health sector remained stable in the 3.8 to 3.9 percent range.

**Chart 2: Trends in the Number of Wage and Salary Job Vacancy Rates in the United States, January 2007 to February 2008, by Industry Sector (Seasonally Adjusted)**



Source: U.S. Bureau of Labor Statistics, *Job Openings Labor Turnover Survey*, LABSTAT. [www.bls.gov](http://www.bls.gov)

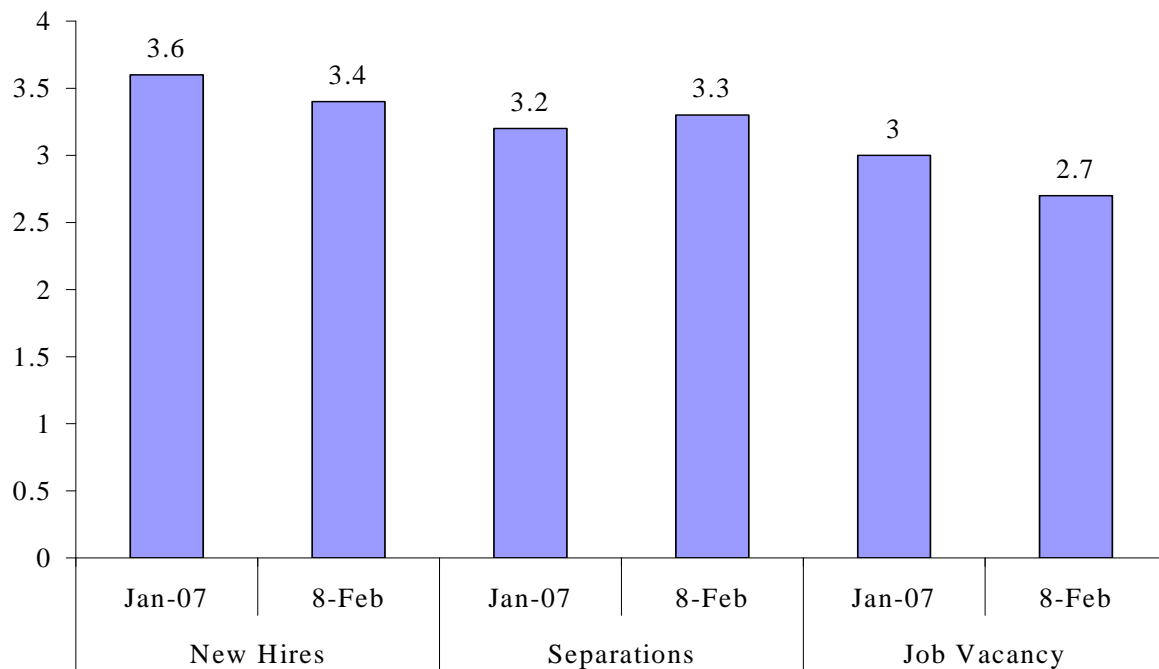
The data reveal that the two major industry sectors with the very high vacancy rates were the accommodation and food industry and leisure and hospitality industry. By February 2008, the accommodation industry had a job vacancy rate of 3.8 percent and the leisure industry's vacancy rate was 3.7 percent; job vacancy rates that were both sharply above the overall vacancy rate of 2.7 percent observed for the labor market as whole

during February of this year. Does this imply that the most severe skill shortage problems exist in these two industries where 3.7 - 3.8 percent of all payroll jobs remained unfilled at the end of February? One way of assessing the underlying causes of high vacancy rates within an industry is to place them in the context of hiring and separation transaction flows—labor turnover—that occurs in the weeks just prior to the measurement of the stock of job vacancies that occur at the end of the month.

### **Hires and Separations**

The findings provided in Chart 3 and Table 2 examine how the flow of new hires and separations has changed over the past year. During January 2007 the nation’s business establishments filled 4.992 million jobs. This does not mean that the number of payroll jobs in the nation grew by this amount since most of these hires were to fill jobs that became open due to replacement needs. Indeed, during the same month 4.485 million jobs saw their incumbents quit, be laid off or otherwise separated from their

Chart 3: Trends in the New Hires Rate, Separation Rate and Job Vacancy Rate in the United States, January 2007 to February 2008 (Seasonally Adjusted)



Source: U.S. Bureau of Labor Statistics, *Job Openings Labor Turnover Survey*, LABSTAT. [www.bls.gov](http://www.bls.gov)



payroll job from the business establishment where they were employed. The new hire rate in the nation's labor market was 3.6 percent, while the separation rate was 3.2 percent.<sup>19</sup> The larger new hire rate relative to the separation rate implies that payroll employment levels were expanding at that time, as in fact they were. However, as the nation's economy has begun to slow the size of the difference between the flow of new hires and separations narrowed. By February 2008 the overall new hire rate had declined to 3.4 percent as slow economic growth led to a slowdown in hiring transactions among the nation's businesses. The economic slowdown also resulted in a slight rise in separations as layoffs began to rise.<sup>20</sup>

We had observed previously that the accommodation and food industry and the leisure and hospitality industry had the highest job vacancy rate of any major industry sector in the American economy and asked what this might suggest about relative labor supply and demand conditions in these sectors of the nation's labor markets and whether high job vacancy rates were always signals of labor shortage problems. An examination of the vacancy rate in these industry sectors in the context of their new hire and separation activities yields some important additional insight into the question of whether shortages might exist in this sector of the economy.

The findings for the accommodation and food industry reveal that this industry sector had a hire rate during February 2008 of 6.1 percent and a separation rate of 6.1 percent as well. When compared to the overall hire rate of 3.4 percent and separation rate this finding suggests a very high relative level of movement of workers in and out of jobs in the industry. Indeed, this data implies that over the course of the year, businesses in this industry will engage in a volume of hiring sufficient to replace 73 percent of its annual average number of workers—suggestive of a 'high turnover' rate industry. When we consider the job vacancy rate of 3.8 percent in the context of an industry with a separation rate of 6.1 percent and a monthly hiring rate of 6.1 percent, it suggests that the

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<sup>19</sup> The new hire rate = new hires per month/ monthly payroll employment and the separation rate = total separations per month/monthly payroll employment

<sup>20</sup> As the new hire rate slows, layoffs begin to mount, however, this increase in layoffs is partially offset by a decrease in quits and other separations (including for retirement purposes) as job incumbents become more cautious in a deteriorating labor market environment.

high job vacancy rate is not the product of an inability to increase payroll employment levels because of a skill shortage, but instead a high vacancy rate that is the product of less stable employment in this industry sector. Similarly, the leisure and hospitality industry had very high new hire and separation rates, both equal to 6.2 percent, with a much lower vacancy rate of 3.7 percent. This again indicates a relatively high vacancy rate that is largely a product of high rates of labor turnover rather than labor shortages. A look at the data on staffing structures and the educational attainment (found in section four of this monograph, reveals that jobs in these sectors are concentrated in occupations that require comparatively low levels of educational attainment, again suggestive that the high vacancy rate is likely not the product of a skill shortage in this sector of the economy.

**Table 2: Number and Rates of Wage and Salary New Hires, Separations and Job Vacancies in the United States, February 2008, by Industry Sector**  
(Seasonally Adjusted, Numbers in 000s)

		New Hires	Separations	Job Vacancies
Total	Number	4638	4485	3820
	Rate	3.4	3.3	2.7
Construction	Number	358	330	140
	Rate	2.1	2.6	1.8
Manufacturing	Number	285	358	246
	Rate	2.1	2.6	1.8
Trade, Transportation, Utilities	Number	901	958	611
	Rate	3.4	3.6	2.2
Retail	Number	617	656	346
	Rate	4.0	4.2	2.2
Professional and Business	Number	821	854	695
	Rate	4.5	4.7	3.7
Education and Health	Number	522	462	748
	Rate	2.8	2.5	2.9
Leisure and Hospitality	Number	850	848	519
	Rate	6.2	6.2	3.7
Accommodation and Food	Number	706	706	462
	Rate	6.1	6.1	3.8
Government	Number	389	283	441
	Rate	1.7	1.3	1.9

Source: U.S. Bureau of Labor Statistics, *Job Openings Labor Turnover Survey*, LABSTAT. [www.bls.gov](http://www.bls.gov)

The education and health sector has a pattern of relationships between new hires, separations and job vacancies that is quite different than that of the other private sector industries in the nation's economy. The education and health sector had a new hire rate that was greater than its separation rate during February 2008. This suggests that payroll employment levels are rising. Moreover, the separation rate in this sector of the labor market is quite low. The February separation rate of 2.5 percent is the lowest rate of separation of any major industry sector among the nation's private employers. The job vacancy rate of 2.9 percent found in this sector of the economy is not primarily the product of simple turnover transactions. Instead, the high job vacancy rate relative to the lower separation rate implies that employers in this sector are creating a much larger share of vacancies by searching for workers in order to grow payroll employment levels. In most other industry sectors it appears that virtually all job openings are the product of recruiting for new workers to fill jobs created by workers leaving the organization—that is, to meet turnover, not growth needs. Employers with high job vacancy rates, but also with high separation and new hire rates are not confronted with a labor supply constraint on growth in output and employment. In contrast, employers with low separation rates compared to new hire rates and especially vacancy rates are likely confronting a labor market situation where insufficient labor supply to key occupations limits growth in output and employment. This would appear to be the case in the nation's education and health sector. Again, a look at the data in section four reveals a staffing structure characterized by occupations that require workers with high levels of educational attainment—further lending credence to the existences of a true set of skill shortages in this sector of the nation's labor market. Data that provided a measure of job vacancies by occupation would shed considerable insight into the existence and magnitude of skill shortages in the education and health sector as well as in other sectors of the labor market. Fortunately, Massachusetts has been conducting a job vacancy survey by occupation that can shed some important insight into some of these issues. The data from this survey are discussed below.

## ***Job Vacancies in Massachusetts***

Several years ago the Massachusetts Department of Labor and Workforce Development began a survey of business establishments in the state designed to measure job vacancies by occupation. Unlike other surveys conducted by DWD's Labor Market Information Unit, the Job Vacancy Survey (JVS) is not part of the broader federal state statistical program conducted jointly by the state and the U.S. Bureau of Labor Statistics. This means that the methods and measures employed at the state level are not the same as those employed by BLS in its national JOLTS program. The greatest differences between the two programs are in three areas: First, the JOLTS program collects information on the flow of hires and separations that occur in business establishments each month as described above. The state JVS program does not measure labor turnover. Second, the JOLTS program produces estimates of job vacancies only on an industry basis. The state JVS program produces estimates of job vacancies by both industry and occupation. Third, the federal JOLTS program is a monthly survey; the state JVS program measures job vacancies twice a year, during the second and fourth quarter. Because of these differences these two survey programs can serve as strong complements to one another. The monthly JOLTS survey provides a measure of labor demand flows that places job vacancies in the context of labor turnover in various industry sectors in the nation. The state JVS program provides insight into the occupational structure of unfilled labor demand and sheds important insight into potential skill shortages in the Commonwealth.<sup>21</sup>

We observed earlier that at the national level the number of job vacancies had declined by 11 percent between January 2007 and February 2008. At the state level the number of job vacancies actually increased between the end of 2006 and the end of 2007. The findings provided in Chart 4 reveal that the number of job vacancies in Massachusetts increased from 89,600 in the fourth quarter of 2006 to 92,000 by the fourth quarter of 2007, a rise of 2.7 percent over the year. In the Northeast region of the state (which included the Merrimack Valley, Greater Lowell and North Shore regions) the number of job vacancies also increased over the year, from 11,400 in the fourth

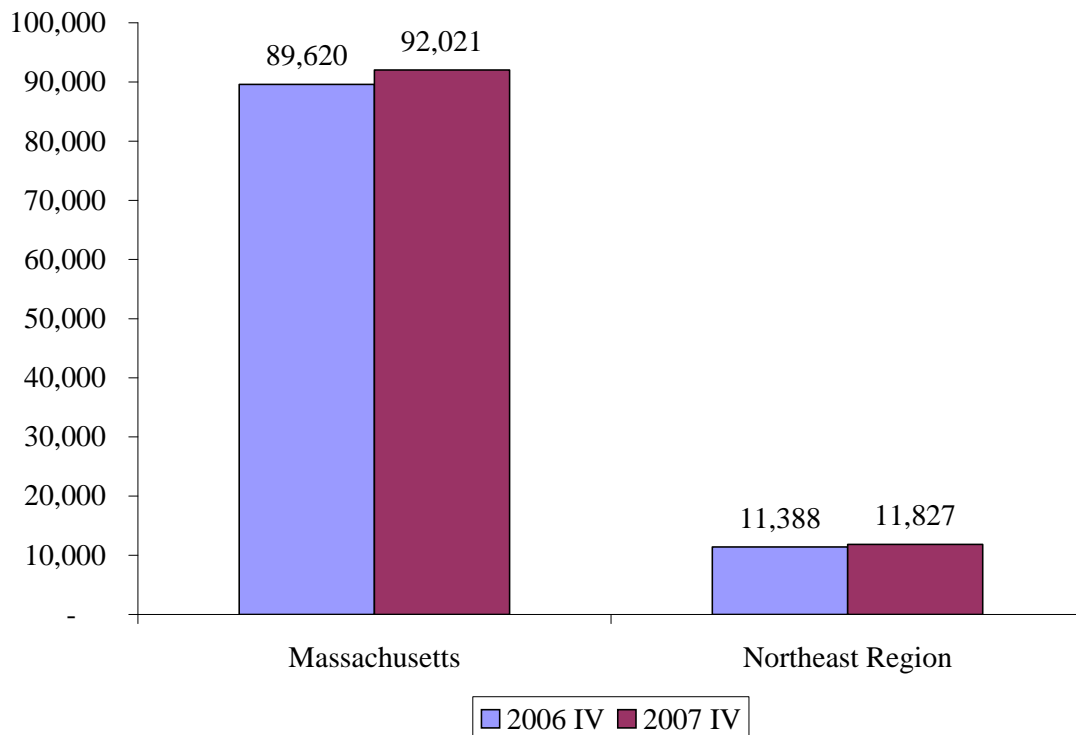
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<sup>21</sup> Other differences exist between the two programs. For more information see: Cathy Foley, *Massachusetts Job Vacancy Survey: Hiring Trends by Industry and Occupation, 2<sup>nd</sup> Quarter 2007* Massachusetts Department of Labor and Workforce Development, Boston, Massachusetts, undated.

quarter of 2006 to 11,800, a rise of 3.9 percent over the period. The job vacancy rate in the state remained essentially unchanged in the 3.1 to 3.2 percent range. In the Northeast region the vacancy rate was 2.9 percent during the fourth quarter of 2006, rising to 3.1 percent by the fourth quarter of 2007.<sup>22</sup> These findings on both the number and rate of job vacancies in the state and the Northeast region are very consistent with our earlier discussion of payroll employment trends. Nationally, we found payroll employment declines in recent months while Massachusetts employers continued their modest pace of payroll employment expansion. Similarly, the national job vacancy rate declined, while the state and Northeast region vacancy rates remained at about the 3 percent level.

As in the nation as a whole, the number of job vacancies and the job vacancy rate varied systematically by industry sector in the state. The largest number of job vacancies

Chart 4: Trends in the number of Job Vacancies in Massachusetts, Fourth Quarter 2006 to Fourth Quarter 2007



Source: Massachusetts Department of Labor and Workforce Development, unpublished data, April, 2008

<sup>22</sup> The state job vacancy rate is calculated as simply the ratio of job vacancies to payroll employment levels or  $JVR = JV / \text{Employment}$ . This measure yields a slightly higher job vacancy rate than the national measure. In practice the difference in the two methods results in a difference in the estimated vacancy rate equal to only about 0.1 percent.

were concentrated in healthcare, where about 20,000 payroll jobs remained unfilled at the end of the fourth quarter of 2007. The health care industry had a vacancy rate at that time of 4.4 percent. While no data on hiring and separation transactions are available at the state level, the national data on the health care industry revealed relatively low rates of labor turnover compared to the job vacancy rate - suggesting that the job vacancy rate is due to an insufficient supply of labor to meet increased demand for workers. The second and fourth largest number of job vacancies were concentrated in retail trade and accommodation and food services industries. Together these two industry sectors had more than 24,000 vacant jobs. However, a review of the national data for both of these industry sectors suggests relatively high rates of separation compared to the job vacancy rate—implying not a labor shortage, but high worker turnover as the primary source of this volume of openings. The professional and technical industry also had a large number of job vacancies and a very high vacancy rate of 5.5 percent. While no comparable national data are available for this industry on job vacancy, new hire or separation rates for the most recent time periods, it is likely that this sector of the state economy has a high vacancy rate because of constraints on skilled labor supply.<sup>23</sup> The strong payroll growth we found in this sector of the economy, along with its very high end staffing structure, which utilizes large shares of workers with college degrees, suggest that skill shortages may be an important reason for a vacancy rate of 5.5 percent in this sector of the state economy.

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<sup>23</sup> The national JOLTS data lumps together both business services and professional services and technical services. The state JVS data provides separate estimates for the professional and technical services industry.

Table 3: The Number of Job Vacancies and the Job Vacancy Rate of Major Industry Sectors in Massachusetts, Fourth Quarter 2007

Industry	Number of Job Vacancies	Job Vacancy Rate	Industry	Number of Job Vacancies	Job Vacancy Rate
Utilities	127	1.0%	Professional & Technical Services	11,527	5.5%
Construction	1,601	1.3%	Management	1,508	2.5%
Manufacturing	5,753	2.1%	Administrative & Waste Services	3,383	3.7%
Wholesale Trade	2,252	2.0%	Educational Services	4,230	1.3%
Retail Trade	13,504	4.2%	Healthcare	20,016	4.4%
Transportation Warehousing	1,727	1.8%	Arts, Entertainment & Recreation	1,598	3.7%
Information	2,885	3.5%	Accommodation & Food Services	10,580	4.6%
Finance & Insurance	5,432	3.3%	Other Services	2,237	2.7%
Real Estate, Rental & Leasing	736	2.1%	Public Administration	2,862	2.6%

Source: Massachusetts Department of Labor and Workforce Development, unpublished data, April, 2008

The Northeast region of the state exhibited an industrial pattern of job vacancies similar to that found in the state as whole. The healthcare industry in the region had a total of 2,500 jobs vacant at the end of 2007, accounting for 21 percent of all jobs that were vacant in the Northeast at the time of the survey. The job vacancy rate in the healthcare industry was 4.3 percent. Together the retail trade and accommodation and food services industry had a total of over 2,300 open positions with vacancy rates of 2.8 percent and 3.7 percent respectively. The professional and technical services industry in the region, like the state, had a very high job vacancy rate. At the end of 2007 professional and technical services employers in the region had 1,300 unfilled jobs with a job vacancy rate that averaged 4.9 percent for this industry. Both the health and professional and technical services sectors in the region are likely experiencing skill shortages that inhibit their ability to hire workers to accommodate their need to expand payroll employment levels.

Table 4: The Number of Job Vacancies and the Job Vacancy Rate of Major Industry Sectors in the Northeast Region, Fourth Quarter 2007

Industry	Number of Job Vacancies	Job Vacancy Rate	Industry	Number of Job Vacancies	Job Vacancy Rate
Utilities	NA	NA	Professional & Technical Services	1,308	4.9%
Construction	270	1.6%	Management	156	3.1%
Manufacturing	1,406	2.4%	Administrative & Support & Waste Services	347	3.3%
Wholesale Trade	240	1.5%	Educational Services	404	1.0%
Retail Trade	1,235	2.8%	Healthcare	2,519	4.3%
Transportation Warehousing	262	2.6%	Arts, Entertainment & Recreation	326	5.5%
Information	361	2.8%	Accommodation & Food Services	1,112	3.7%
Finance & Insurance	383	3.3%	Other Services	222	2.1%
Real Estate, Rental & Leasing	16	0.4%	Public Administration	1,246	8.9%

Source: Massachusetts Department of Labor and Workforce Development, unpublished data, April, 2008

The Massachusetts JVS program also collects information from business establishments about vacant payroll positions by occupation. The findings provided in Table 5 examine the number of job vacancies and the job vacancy rate for major occupational groups in the state. These data, when considered in the context of skill requirements information available through the U.S. Department of Labor’s O\*NET system, provide important insight into the nature of skill requirements and skill shortages in the state economy.<sup>24</sup>

Among those occupations that are considered to be ‘college labor market’ fields, the job vacancy rates tend to be above the overall state average job vacancy rate, especially in the scientific, engineering and information technology specialties (SEIT)

<sup>24</sup> The O\*NET system is composed of a large scale data base that measures a wide range of knowledges, skills, abilities and aptitudes in hundreds of occupations in the nation’s labor market. It provides considerable insight into the education, training and skill needs of employers based on more than 110,000 respondents who were queried about various aspects of their work, including job incumbents, their supervisors and occupational experts. For more information about O\*NET see: <http://online.onetcenter.org/>



and in the health area.<sup>25</sup> Statewide, these SEIT fields accounted for more than one in ten vacant jobs in the Commonwealth at the end of 2007. The vacancy rate in the SEIT occupations ranged from 4.2 percent among engineers to 5.6 percent among life and physical scientists. These fields are characterized by demand for workers with high levels of educational attainment with a concentration in college that develops specific occupational skills. They also require strong mathematics skills for those hired into the field. The relatively high vacancy rates along with high skill needs strongly suggest that unfilled positions are the product of limited labor supply to these fields.

Table 5: The Number of Job Vacancies and the Job Vacancy Rate of Major Occupations in Massachusetts, Fourth Quarter 2007

Occupation	Number of Job Vacancies	Job Vacancy Rate	Occupation	Number of Job Vacancies	Job Vacancy Rate
Total, All Occupations	92,021	3.2%	Healthcare Support	4,220	4.5%
Management Occupations	6,396	3.5%	Protective Service	1,628	2.3%
Business and Financial Operations	5,853	3.5%	Food Preparation and Serving Related	8,965	3.4%
Computer and Mathematical	4,796	4.2%	Building and Grounds Workers	1,703	1.6%
Architecture and Engineering	3,093	4.2%	Personal Care and Service	3,032	4.3%
Life, Physical, and Social Services	2,612	5.6%	Sales and Related	13,134	4.0%
Community and Social Services	2,520	4.3%	Office and Administrative Support	12,174	2.2%
Legal	432	1.8%	Construction and Extraction	880	0.8%
Education, Training and Library	2,972	1.4%	Production	2,354	1.3%
Arts, Design, Entertainment, Sports and Media	962	2.0%	Installation, Maintenance, & Repair	2,045	2.0%
Healthcare Practitioner and Technical	8,654	4.4%	Transportation and Material Moving	3,577	2.2%

Source: Massachusetts Department of Labor and Workforce Development, unpublished data, April, 2008

<sup>25</sup> These are occupations that employ well above average shares of workers with an associate's degree or higher.

The vacancy rate in the health care practitioner occupational area of 4.4 percent is also well above average. The fields that make up this grouping of health jobs cover a wide range of health professions including nursing, various therapeutic fields such as speech language pathology and physical therapy, along with selected health technical specialties. They usually require a college degree of some type with a specialty in the specific health field. Usually to become employed at the professional level workers must not only earn a degree, but must also pass a third party national test of proficiency in the field. The considerable skill requirements in these fields along with the relatively high overall job vacancy rate in the overall health practitioner grouping point to a high likelihood of skill shortages within a number of specialties that make up this group of health positions.

Other college labor market occupations also had vacancy rates that were above the state average vacancy rate including management positions and business and financial operations occupations. These fields both had vacancy rates of 3.5 percent and employ workers with well above average levels of educational attainment.

Blue collar occupations in the construction, production and transportation, and material moving occupations stand in sharp contrast to the SEIT and health practitioner fields. These occupations had job vacancy rates that were well below the state average vacancy rate. In the construction trades the vacancy rate was less than 1 percent at the end of 2007. However, it is important to note that these vacancy data are not seasonally adjusted and may reflect seasonal slowdowns in the demand for these workers.

A number of relatively low skill occupations had job vacancy rates that were also above the state average. These include the healthcare support occupations, food preparation and serving occupations, and personal care and service jobs. These occupations generally (but not always) require workers with fewer years of schooling and relatively little occupational preparation. The relatively high vacancy rates in these areas may be the product of high separation rates rather than a skills shortage.

The Northeast region's vacancy rates in SEIT fields were generally not as high as those observed in the state as a whole. The vacancy rates in the engineering fields average 3.1 percent while the rates in computer and mathematical sciences averaged 3.3

percent, well below the state vacancy rate of 4.2 percent found statewide. Employers in the region who hired life and physical science workers had an average vacancy rate of 5.2 percent. As in the state, these SEIT fields accounted for more than 10 percent of all vacant jobs in the region at the time of the JVS survey. The vacancy rate in the health care practitioner field was well above the average vacancy rate for the region with a vacancy rate of 4.4 percent. More than 1,000 professional health care jobs were vacant at the time of the survey. Again, these data indicate the likelihood of a skill shortage in the area, limiting the growth in the region's health delivery system. Vacancy rates in other college labor market occupations were not entirely consistent with those found in the state as a whole. The management occupational area had a vacancy rate of 3.1 percent, slightly below that of the occupation statewide. However, the regional vacancy rate in the business and financial fields of 4.4 percent was well above the statewide vacancy rate in that occupational area.

The number of unfilled clerical and office support occupations in the area was quite large. Indeed these occupations accounted for nearly one fifth of all vacant positions in the region. These occupations are quite mixed with respect to skill requirements, with some fields requiring specific occupational preparation in office computer skills or in areas such as medical office operations. Other administrative and related support fields rely on on-the-job learning activities to develop specific job skills and require no post secondary schooling.

Table 6: The Number of Job Vacancies and the Job Vacancy Rate of Major Occupations in the Northeast Region, Fourth Quarter 2007

Occupation	Number of Job Vacancies	Job Vacancy Rate	Occupation	Number of Job Vacancies	Job Vacancy Rate
Management Occupations	765	3.1%	Protective Service	174	2.0%
Business and Financial Operations	841	4.4%	Food Preparation and Serving Related	931	2.4%
Computer and Mathematical	615	3.3%	Building and Grounds	174	1.4%
Architecture and Engineering	473	3.1%	Personal Care and Service	469	5.3%
Life, Physical, and Social Services	271	5.2%	Sales and Related	1,222	2.9%
Community and Social Services	273	3.5%	Office and Administrative Support	2,222	3.0%
Education, Training and Library	312	1.1%	Construction and Extraction	32	0.2%
Arts, Design, Entertainment, Sports and Media	150	2.7%	Installation, Maintenance, and Repair	287	2.0%
Healthcare Practitioner and Technical	1,045	4.4%	Production	498	1.4%
Healthcare Support	741	5.6%	Transportation and Material Moving	322	1.4%

Source: Massachusetts Department of Labor and Workforce Development, unpublished data, April, 2008

Job vacancy rates in blue collar occupations including construction, production and transportation jobs in the region were quite low. The vacancy rate for more skilled blue collar workers was somewhat higher. The vacancy rate for installation, maintenance and repair workers was 2.0 percent at the time of the survey.

Both the healthcare support and personal care and service occupational fields had vacancy rates that were in excess of 5 percent—a very high level of job vacancies. While caution should be taken in treating these fields as being characterized by skill shortages, the high job vacancy rate does warrant a more careful scrutiny of the underlying causes of these high job vacancy rates.

# **Associate's Degrees, Bachelor's Degrees and Undergraduate Non Degree Certificates in the Merrimack Valley Workforce Area**

## ***Introduction***

A key component of developing strategies to address state and regional workforce development needs is to understand the flow of students who complete education programs that provide knowledge, skills and abilities required by area employers. These institutional sources of new labor supply represent important workforce education and training resources that many local employers draw upon to meet a variety of skill requirements. Post secondary educational institutions, including local degree granting colleges and universities, make up a very large part of the occupational skills development capacity at the local level. However, other key sources of new hires who have developed specific occupational skills include those who complete non-degree post secondary certificates. These awards, also called certificates, are sometimes offered at degree granting institutions, but are also awarded by non degree granting organizations as well as secondary vocational technical education programs. This section of the monograph examines information about trends in the number and characteristics of post secondary undergraduate degrees and certificates in the Merrimack Valley service area. A separate section of the monograph provides a more detailed discussion about the outputs of the region's secondary vocational technical programs.

The discussion below begins with a review of the sources, uses and limitations of the data we use to measure institutional sources of labor supply at the state and sub state level. It then provides a review of trends in the number of associate's degrees, bachelor's degrees and undergraduate non degree certificates in the Merrimack Valley region relative to the state, New England and the nation.

## ***Institutional Labor Supply Data***

Each year the U.S. Department of Education's National Center for Education Statistics (NCES) collects information from colleges and universities about a wide

variety of issues including finance, student enrollment and student retention, and institutional staffing, to name just a few key areas. The Integrated Post Secondary Data Systems (IPEDS) is a very large scale data collections system operated by NCES that in most instances collects data annually of a range of higher education activities, outcomes and characteristics at the individual institution level. Participation in IPEDS is required for all post secondary institutions that offer students Higher Education Act Title IV financial aid, including such programs as the Pell grant in aid program and the Stafford college loan program.<sup>26</sup> Consequently, virtually all degree granting higher education institutions in the nation submit the complete array of reports required by NCES under the IPEDS system. Because of the complete enumeration of all degree granting colleges and universities in the nation each year, the IPEDS data represent a unique, high quality information source about higher education at both the state and local level.

In addition to the data described above, IPEDS collects information on an annual basis about the number of undergraduate and graduate degrees that are awarded by American colleges and universities, by specific field of study, for each institution in the nation. Data files based on these responses are made available to researchers who can organize and analyze these data in a variety of ways. We have analyzed IPEDS degree completion data at the associate's and bachelor's degree level for the Merrimack Valley region, tracking trends in degree output by degree granting institution located within the communities that comprise the region and comparing these with the state and nation. In addition, we have developed a CD that contains information about the number of annual associate's and bachelor's degrees awarded by colleges and universities located in the Merrimack Valley region each year for the past five years, by specific field of study. We have also included a matrix of fields of study that supports quick identification of the individual schools that have produced graduates in a particular field of study and provides a measure of the flow of graduates in that field over the last five years.

The information about major fields of study is organized by the Classification of Instruction Program (CIP) code, a major field of study classification system that is

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<sup>26</sup> Institutions that fail to file a form are assessed a fine of \$27,500 per violation. During 2006, no schools were fined and only 6 received an out of compliance warning. Correspondence from Barbara Hamilton, April 5, 2008.

closely tied to analogous labor demand classifications including the Standard Occupational Classification and the O\*NET system. This connection facilitates comparisons of labor market skill requirement information with data on the characteristics of institutional sources of undergraduate labor supply at the local level.

In addition to information about the number of undergraduate degrees awarded in the region we have also produced information about the non degree certificates granted by post secondary institutions. Non degree certificates refer to an organized program of study at the post secondary level that requires less than 4 full-time years of study or less than 120 semester hours of coursework in total that does not lead to a degree but instead a non-degree certificate or award wherein the institution recognizes the completion of that course of study.

Unlike associate and bachelor's degree programs, third party educational accrediting agencies do not typically review and certify the academic quality of non degree undergraduate certificate programs. These programs are normally not subject to the oversight of the State Board of Higher Education as is the case with all public college undergraduate degree programs. These programs may lead to an individual eventually becoming eligible to earn a license to practice in a particular occupational field, but certificate programs do not award these licenses. Instead, occupational licenses are awarded by the relevant licensing agency in the state government.

The IPEDS system data on non degree undergraduate certificates is far less comprehensive than the data on undergraduate degrees. Moreover, the number of contact hours is not standardized. We suspect that a considerable number of non degree post secondary education and training programs are in operation in Massachusetts. Many of these organizations likely play an important role in supplying local firms with trained program completers but are not included in the IPEDS certificate data.<sup>27</sup> Instead, the IPEDS non degree certificate data largely include only certificates awarded by colleges and universities that also award undergraduate degrees. Some non degree granting

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<sup>27</sup> These would include many of the training organizations that are included on Workforce Investment Board "Approved Vendor" lists. Indeed, some state higher education and workforce organizations have proposed to NCES that all institutions on these vendor lists be included in the IPEDS completions data reporting system.

institutions do report IPEDS information. Some of these institutions are required to report this information because they are eligible to participate in the federal financial aid program. A few others (about 200 nationally) also report IPEDS information voluntarily even though they are not Title IV eligible.<sup>28</sup>

### ***Institutional Supply at the Associate’s Degree Level***

Over the last ten years trends in the undergraduate post secondary output at the associate’s degree level have varied in Merrimack Valley and wider geographical areas. As the findings in Table 1 reveal, while the output of associate’s degrees from the higher education system in the nation increased between 1996 and 2006, the number of these degrees awarded in the New England region and the state of Massachusetts declined. In further contrast, there was no change in the output of associate’s degrees granted in Merrimack Valley between 1996 and 2006.

Between 1996 and 2006 the number of associate’s degrees awarded by the nation’s system of two and four year colleges increased by almost 173,000 degrees, an increase of 31 percent in just ten years. In contrast, the state posted a 12 percent reduction in the number of associate’s degrees conferred, while the region witnessed a decline of five percent.

Table 1:  
Trends in the Number of Associate’s Degrees Conferred in the U.S.,  
New England, Massachusetts and Merrimack Valley, 1996 to 2006

	1996	2006	Absolute Change	Relative Change
U.S.	557,858	730,643	172,785	31%
New England	28,440	27,023	-1,417	-5%
Massachusetts	12,682	11,139	-1,543	-12%
Merrimack Valley	577	577	0	0%

Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008

<sup>28</sup> These schools report because they wish to be included in the NCES *College Navigator* web tool designed to provide information to those thinking about enrolling in some type of post high school educational program.



In contrast to these trends of noticeable change, in Merrimack Valley the output of associate's degrees has remained constant, as in both 1996 and 2006 577 associate's degrees were awarded by the area's higher education system.

### ***Sources of Associate's Degree Change in the Higher Education Sector***

As the number of associate's degrees conferred by the higher education systems in Merrimack Valley, Massachusetts, New England and the nation has varied over the past ten years, the data provided in Table 2, Chart 1 and Chart 2 examine trends in associate's degrees awarded by sector of the higher education system. These data track the trends in associate's degrees awarded separately for public and private (sometimes called independent) colleges over time.

Nationally, public colleges accounted for over two thirds of the total rise in associate's degrees conferred between 1996 and 2006, with public colleges expanding their output of associate's degrees by 119,489 degrees over this ten year period (an increase of 26 percent). Private colleges accounted for just under one third of the total

Table 2:  
Trends in the Number of Associate's Degrees Awarded in the U.S., New England, Massachusetts and Merrimack Valley, by Higher Education Sector, 1996 to 2006

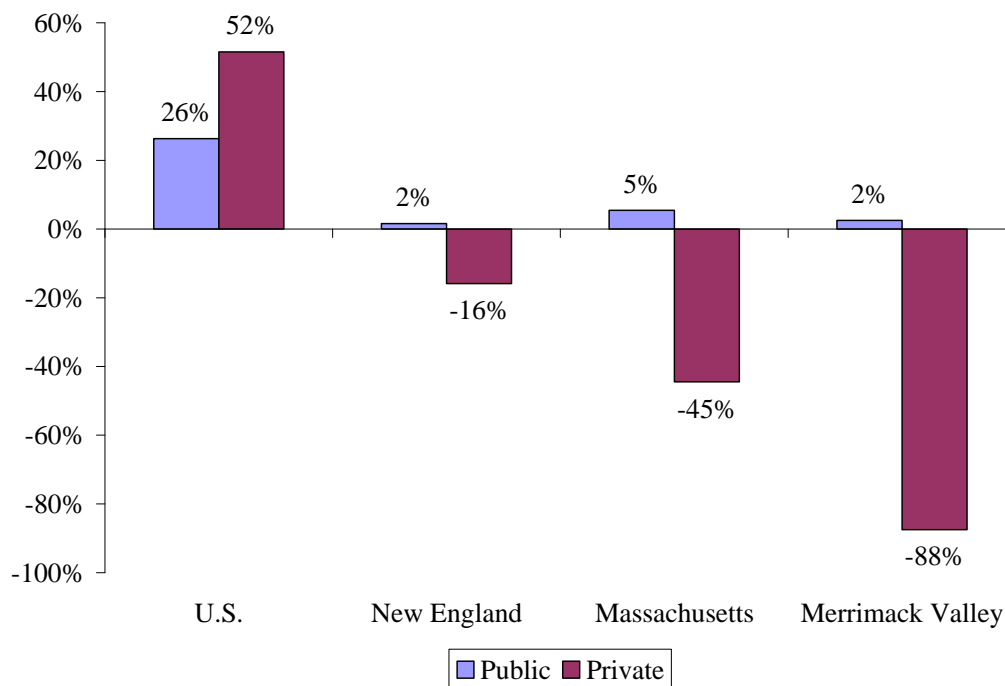
Sector	1996	2006	Absolute Change	Relative Change
<b>U.S.</b>				
Public	454,452	573,941	119,489	26%
Private	103,406	156,702	53,296	52%
<b>New England</b>				
Public	17,746	18,027	281	2%
Private	10,694	8,996	-1,698	-16%
<b>Massachusetts</b>				
Public	8,213	8,659	446	5%
Private	4,469	2,480	-1,989	-45%
<b>Merrimack Valley</b>				
Public	561	575	14	2%
Private	16	2	-14	-88%

Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008.

rise in associate's degrees granted in the nation, increasing the number of associate's degrees they awarded from 103,406 in 1996 to 156,702 in 2006. However, private institutions in the nation increased the number of associate's degrees at twice the rate of public colleges (a 52 percent increase versus a 26 percent increase, respectively).

In stark contrast to the nation, the overall number of associate's degrees awarded by higher education institutions in New England and Massachusetts fell between 1996 and 2006. In both the region and the state all of these declines were concentrated exclusively among private colleges. In New England, although the number of associate's degrees granted by public colleges increased modestly between 1996 and 2006 (a two

Chart 1:  
Rate of Change in the Number of Associate's Degrees Conferred by Higher Education Sector in the U.S., New England, Massachusetts and Merrimack Valley, 1996 to 2006



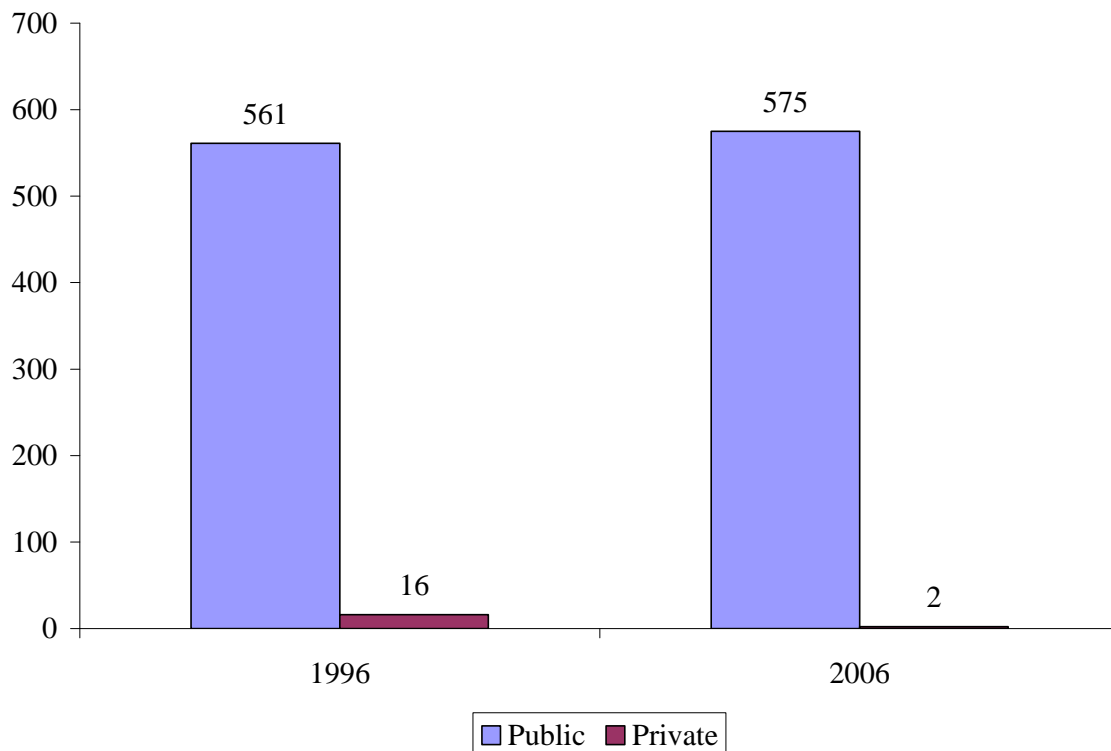
Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008.

percent rise), this increase was counterbalanced by a large reduction of 1,698 associate's degrees conferred by private colleges in the region during this same ten year period.

Similarly, in Massachusetts a small rise of five percent in the number of associate's degrees awarded by public colleges between 1996 and 2006, from 8,213 to 8,659, was sharply offset by a decline of 45 percent in the number of these degrees awarded by private higher education institutions in the state over this same time period. The number of associate's degrees awarded by Massachusetts private colleges fell from 4,469 degrees in 1996 to 2,480 degrees in 2006.

Although there was an increase in the number of associate's degrees awarded by the public higher education sector in Merrimack Valley between 1996 and 2006, the size of this increase was identical to, and was subsequently balanced out by, a decrease in the number of associate's degrees awarded by the area's private higher education sector

Chart 2:  
The Number of Associate's Degrees Conferred in Merrimack Valley, by Higher Education Sector, 1996 to 2006



Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008

during this same ten year period. Between 1996 and 2006 public colleges in Merrimack Valley increased the number of associate's degrees awarded by 14 degrees, from 561 degrees in 1996 to 575 degrees in 2006. However, during the same ten year period private colleges in Merrimack Valley reduced the number of associate's degree awarded by 14 degrees, from 16 degrees in 1996 to 2 degrees in 2006.

As a consequence of these trends the distribution of all conferred associate's degrees in Merrimack Valley has become increasingly dominated by the public higher education sector. Between 1996 and 2006 public colleges increased their share of all associate's degrees awarded in Merrimack Valley from 97 percent to almost 100 percent.

### ***Trends in Fields of Study of Associate's Degree Certificates***

Despite the fact that the overall number of associate's degrees granted by higher education institutions did not change in Merrimack Valley between 1996 and 2006, there have been considerable changes in the number of associate's degrees awarded in all of the broad major fields of study during this period of time (Table 3).

Table 3:  
Trends in Associate's Degrees Awarded by Merrimack Valley  
Colleges, by Broad Major Field of Study, 1996 to 2006

Major Field of Study	1996	2006	Absolute Change	Relative Change
Criminal Justice	32	31	-1	-3%
Health Sciences	156	126	-30	-19%
Business	132	115	-17	-13%
Engineering & Computer Science	81	63	-18	-22%
Education	0	34	34	-
Law	24	16	-8	-33%
Arts & Humanities	135	192	57	42%
Sciences	2	0	-2	-100%
Personal Services	15	0	-15	-100%
Total	577	577	0	0%

Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008

Absolute increases in the number of associate's degrees granted in Merrimack Valley between 1996 and 2006 occurred in arts and humanities, where the number of

associate's degrees conferred increased by 57 degrees, and education, where the number of associate's degrees granted increased by 34 degrees.

However, these increases in the number of associate's degrees granted between 1996 and 2006 in Merrimack Valley were entirely offset by decreases, that in total equaled the same numerical value, in the fields of health sciences (a decrease of 30 degrees), engineering and computer science (a decrease of 18 degrees), business (a decrease of 17 degrees), personal services (a decrease of 15 degrees), law (a decrease of eight degrees), sciences (a decrease of two degrees) and criminal justice (a decrease of one degree).

### ***Current Distribution of Associate's Degrees***

The findings from Table 4 also highlight that the mix of program offerings, as measured by the distribution of associate's degrees awarded in Merrimack Valley during 2006, shares some similarities to those offered by the higher education systems in the nation, the New England region and the state of Massachusetts in the same year.

As in the other geographical areas, the higher education system in Merrimack Valley awarded the biggest share of all associate's degrees in arts and humanities in 2006 (one third of all of these degrees). However, while the shares awarded in arts and humanities in New England and Massachusetts (27 percent and 31 percent, respectively) were smaller than the share awarded in Merrimack Valley, the share awarded in this field of study in the nation was bigger (41 percent).

The second largest share of all associate's degrees was awarded in health sciences by the higher education system in Merrimack Valley in 2006 (22 percent). Not only did the other geographical regions also award the second largest share of all associate's degrees in health sciences, but the shares they awarded were comparable to the share in Merrimack Valley (23 percent in Massachusetts, 21 percent in New England and 19 percent in the nation).

Similarly, all the geographical areas awarded relatively similar shares of all associate's degrees in 2006 in criminal justice and business. Five percent of all associate's degrees in Merrimack Valley were awarded in criminal justice in 2006,

modestly smaller than the shares in Massachusetts and New England (seven percent and six percent, respectively), but slightly bigger than the share in the nation (four percent). Merrimack Valley also awarded a fifth of all associate's degrees in 2006 in business. This was comparable to the shares awarded in this field of study in Massachusetts and New England (19 percent and 21 percent, respectively), although slightly larger than the share awarded in the nation (14 percent).

Table 4:  
Distribution of Associate's Degrees Conferred by Broad Major Fields of Study in Merrimack Valley, Massachusetts, New England and the U.S., 2006

Major Field of Study	Merrimack Valley	Massachusetts	New England	U.S.
Criminal Justice	5%	7%	6%	4%
Health Sciences	22%	23%	21%	19%
Business	20%	19%	21%	14%
Engineering & Computer Science	11%	13%	14%	13%
Education	6%	3%	2%	2%
Law	3%	1%	1%	1%
Arts & Humanities	33%	31%	27%	41%
Sciences	0%	1%	1%	1%
Personal Services	0%	2%	7%	4%
Undesignated Field of Study	0%	0%	0%	0%
Total	100%	100%	100%	100%

Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008

However, the higher education system of Merrimack Valley awarded bigger shares of all associate's degrees than the other geographical areas did in education and law. The six percent share granted by Merrimack Valley in education was double the size of the share conferred in education in Massachusetts (three percent), and three times the size of the shares granted in education in both New England and the nation (two percent). The share of all associate's degrees that Merrimack Valley awarded in law was also three times bigger than the shares awarded in law in each of the other geographical areas (three percent in comparison to one percent in each of the other areas).

Conversely, Merrimack Valley awarded smaller shares of all associate's degrees in engineering and computer science, sciences and personal services than the other

geographical areas did. In 2006 Merrimack Valley awarded 11 percent of all associate's degrees in engineering and computer science, smaller than the shares in Massachusetts, New England and the nation (13 percent, 14 percent and 13 percent, respectively). Merrimack Valley granted zero percent shares of all associate's degrees in sciences and personal services in 2006. These shares were smaller than those awarded by the other geographical areas during the same year. Massachusetts, New England and the nation each awarded one percent of all associate's degrees in sciences, while Massachusetts awarded two percent of all associate's degrees in personal services, New England seven percent and the nation four percent.

### ***Institutional Supply at the Bachelor's Degree Level***

Over the last ten years the undergraduate post secondary output at the bachelor's degree level has changed in Merrimack Valley and the wider geographical areas. As the findings in Table 5 reveal, while the output of bachelor's degrees in the nation, the New England region and the state of Massachusetts increased markedly between 1996 and 2006, the number of bachelor's degrees conferred in Merrimack Valley fell.

Nationally, between 1996 and 2006 the number of bachelor's degrees conferred increased from 1.17 million to 1.49 million, an increase of 27 percent in just ten years. Although in both New England and Massachusetts there was also an increase in the number of bachelor's degrees conferred, the rate of increase in each of these two areas was considerably slower than in the nation. Between 1996 and 2006 the New England region increased the number of students who earned a bachelor's degree by 16 percent, a

Table 5:  
Trends in the Number of Bachelor's Degrees Conferred in the U.S.,  
New England, Massachusetts and Merrimack Valley, 1996 to 2006

	1996	2006	Absolute Change	Relative Change
U.S.	1,166,963	1,486,107	319,144	27%
New England	81,057	94,275	13,218	16%
Massachusetts	40,725	47,024	6,299	15%
Merrimack Valley	504	445	-59	-12%

Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008

rate of increase equal to 59 percent of the rate of growth in bachelor's degree production in the nation. In Massachusetts the rate of increase was even slower, with the number of students who earned a bachelor's degree increasing by only 15 percent over this same ten year period. This is a rate of increase equal to only 56 percent of the rate of growth in bachelor's degree production in the nation.

This upward trend was not reflected in Merrimack Valley where the number of bachelor's degrees granted during this ten year period declined by 12 percent, from 504 degrees in 1996 to 445 degrees in 2006. This negative growth in new bachelor's degree production suggests that Merrimack Valley has a considerable capacity constraint on new labor supply sources at this institutional level, especially relative to the state, the region and the nation as a whole.

### ***Sources of Bachelor's Degree Change in the Higher Education Sector***

As the number of bachelor's degrees granted has changed over the past ten years in Merrimack Valley, Massachusetts, New England and the nation, the data provided in Table 6, Chart 3 and Chart 4 reveals that the sources and rate of this change by sector of the higher education system has varied by geographic area.

Table 6:  
Trends in the Number of Bachelor's Degrees Awarded in the U.S., New England, Massachusetts and Merrimack Valley, by Higher Education Sector, 1996 to 2006

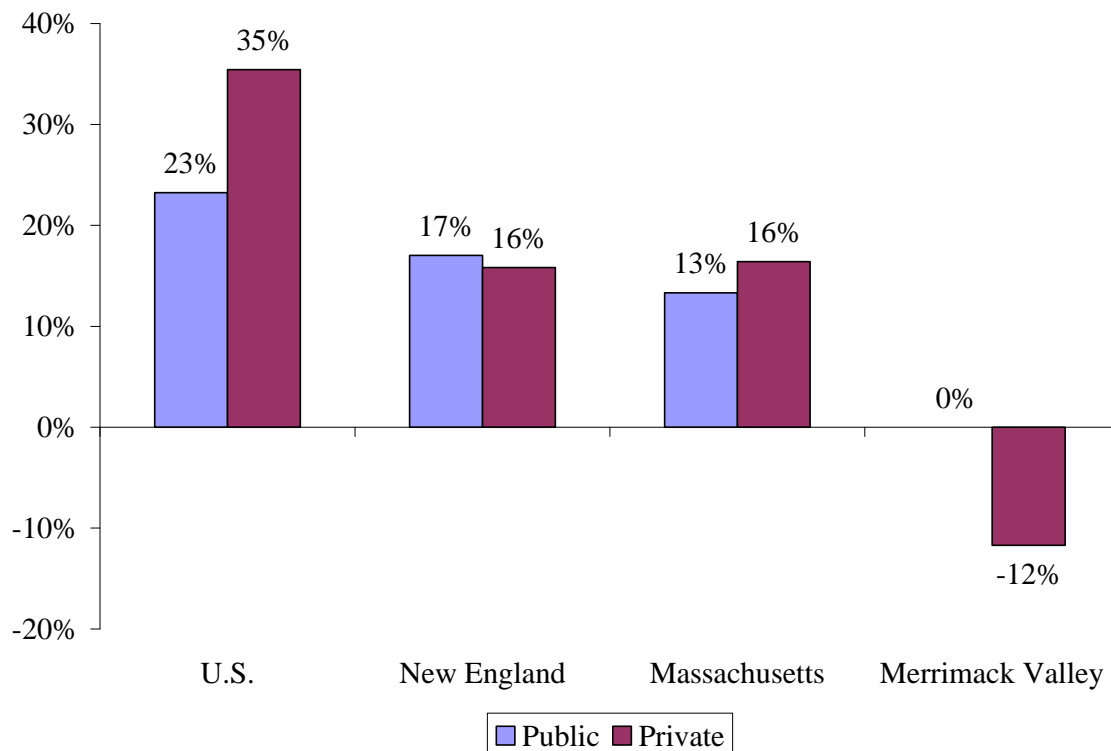
Sector	1996	2006	Absolute Change	Relative Change
<b>U.S.</b>				
Public	774,264	954,254	179,990	23%
Private	392,699	531,853	139,154	35%
<b>New England</b>				
Public	32,224	377,12	5,488	17%
Private	48,833	565,63	7,730	16%
<b>Massachusetts</b>				
Public	12,312	139,50	1,638	13%
Private	28,413	330,74	4,661	16%
<b>Merrimack Valley</b>				
Public	0	0	0	0%
Private	504	445	-59	-12%

Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008



Between 1996 and 2006 public colleges in the nation accounted for the majority of the total increase in the number of bachelor’s degrees awarded. Although private colleges in the nation increased the number of bachelor’s degrees they conferred, from about 393,000 degrees in 1996 to about 532,000 in 2006 (a 35 percent increase), this accounted for less than half of the total increase in the number of bachelor’s degrees granted over this ten year period in the nation (44 percent). During this period of time public colleges in the nation also increased the number of bachelor’s degrees they awarded by about 180,000 degrees, reaching an all time high of nearly 955,000 degrees. However, although these public colleges only increased their production of bachelor’s degrees granted by 23 percent, this accounted for over half of the total increase in bachelor’s degrees granted during this ten year period in the nation (56 percent).

**Chart 3:**  
Rate of Change in the Number of Bachelor’s Degrees Conferred, by Higher Education Sector, in the U.S., New England, Massachusetts and Merrimack Valley, 1996 to 2006

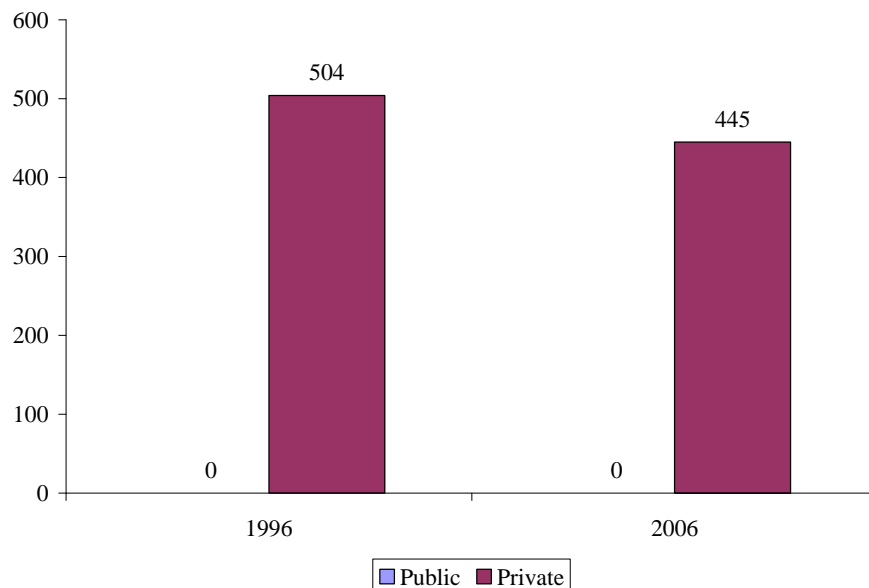


Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008

Both public and private colleges in New England and Massachusetts increased their overall output of bachelor's degrees at a slower pace than their counterparts across the nation. In Massachusetts, private colleges increased the number of bachelor's degrees awarded at a slightly higher pace than their public counterparts (a 16 percent increase between 1996 and 2006 among private colleges, compared to a 13 percent increase among public colleges). In contrast, in New England public institutions increased their output of bachelor's degrees at a slightly higher pace than their private counterparts. Public colleges and universities across New England expanded the number of bachelor's degrees awarded by 17 percent between 1996 and 2006, while private schools in the region increased the number of these degrees awarded by 16 percent.

Furthermore, unlike in the nation, in both Massachusetts and New England the bulk of the increase in the number of bachelor's degrees awarded between 1996 and 2006 was concentrated amongst private colleges and universities. In Massachusetts these

Chart 4:  
The Number of Bachelor's Degrees Conferred by Higher  
Education Sector in Merrimack Valley, 1996 to 2006



Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008

institutions increased the number of conferred bachelor's degrees by 4,661, accounting for 74 percent of the total increase of these degrees in the state over this ten year period. In New England, private colleges and universities increased their bachelor's degree output between 1996 and 2006 by just over 7,700, accounting for 58 percent of the total increase of bachelor's degrees in this region.

The contraction in the number of bachelor's degrees conferred between 1996 and 2006 in Merrimack Valley was solely concentrated in the private higher education sector, which reduced the number of bachelor's degrees awarded by 12 percent, from 504 degrees in 1996 to 445 degrees in 2006. In contrast, the number of bachelor's degrees granted by the public higher education sector in Merrimack Valley remained at zero during this ten year period.

As a consequence of these trends, between 1996 and 2006 the private higher education sector in Merrimack Valley remained the sole provider of bachelor's degrees in this region.

### ***Trends in Fields of Study of Bachelor's Degree Certificates***

Over the last ten years as the output of bachelor's degrees has decreased by a total of 12 percent in Merrimack Valley, there have also been changes in the number of bachelor's degrees awarded in a majority of the major broad fields of study (Table 7).

The largest absolute decrease in the number of bachelor's degrees awarded occurred in business, where the number of bachelor's degrees decreased by 41 degrees, from 208 in 1996 to 167 in 2006. Other – albeit smaller – declines in the number of bachelor's degrees awarded during this ten year period occurred in arts and humanities (a decrease of 18 degrees) and engineering and computer science (a decrease of 17 degrees).

However, partially offsetting these decreases in the number of bachelor's degrees awarded in Merrimack Valley between 1996 and 2006 were small absolute increases in the number of these degrees awarded in health sciences (an increase of 5 degrees) and sciences (an increase of one degree).

Table 7:  
Trends in Bachelor's Degrees Awarded by Merrimack Valley Colleges,  
by Broad Major Field of Study, 1996 to 2006

Major Field of Study	1996	2006	Absolute Change	Relative Change
Criminal Justice	0	0	0	-
Health Sciences	17	22	5	29%
Business	208	167	-41	-20%
Engineering & Computer Science	42	25	-17	-40%
Education	0	0	0	-
Law	0	0	0	-
Arts & Humanities	206	188	-18	-9%
Sciences	31	32	1	3%
Personal Services	0	0	0	-
Total	504	445	-59	-12%

Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008

Meanwhile, there was no change in the number of bachelor's degrees awarded between 1996 and 2006 in criminal justice, education, law and personal services. In each of these fields of study zero bachelor's degrees were granted during this ten year period.

### ***Current Distribution of Bachelor's Degrees***

As highlighted by Table 8, the major field of study structure of bachelor's degree program output in Merrimack Valley in 2006, as measured by the distribution of bachelor's degrees conferred, has some broad similarities to those of the higher education systems in the state of Massachusetts, the New England region and the nation as a whole.

As in Merrimack Valley in 2006, the biggest share of all bachelor's degrees was conferred in arts and humanities in Massachusetts, New England and the nation. 42 percent of all bachelor's degrees were conferred in this field of study in 2006 in Merrimack Valley, slightly bigger than the share in the nation (39 percent), but smaller than the shares in Massachusetts (48 percent) and New England (47 percent).

Also, as in the other geographical areas, the second largest share of all bachelor's degrees was awarded in business in Merrimack Valley in 2006. However, the shares of all bachelor's degrees that were awarded in business in 2006 in Massachusetts, New

England and the nation (19 percent, 19 percent and 22 percent, respectively) were considerably smaller than the share awarded in Merrimack Valley (38 percent).

In contrast, Merrimack Valley awarded smaller shares of all bachelor's degrees than the other geographical areas did in health sciences, engineering and computer science and sciences. The five percent share of all bachelor's degrees awarded by Merrimack Valley in health sciences in 2006 was smaller than the six percent share awarded in Massachusetts, as well as the seven percent and eight percent shares awarded in New England and the nation, respectively. Also, the six percent share that Merrimack Valley awarded in engineering and computer science in 2006 was smaller than the shares in Massachusetts, New England and the nation (nine percent, eight percent and nine percent, respectively). The seven percent share of all bachelor's degrees granted in Merrimack Valley in sciences during 2006 was also marginally smaller than the eight percent shares awarded in sciences in Massachusetts, New England and the nation.

Table 8:  
Distribution of Bachelor's Degrees Conferred by Broad Major Fields of Study in Merrimack Valley, Massachusetts, New England and the U.S., 2006

Major Field of Study	Merrimack Valley	Massachusetts	New England	U.S.
Criminal Justice	0%	3%	2%	2%
Health Sciences	5%	6%	7%	8%
Business	38%	19%	19%	22%
Engineering & Computer Science	6%	9%	8%	9%
Education	0%	3%	4%	7%
Law	0%	0%	0%	0%
Arts & Humanities	42%	48%	47%	39%
Sciences	7%	8%	8%	8%
Personal Services	0%	0%	1%	1%
Undesignated Field of Study	2%	3%	3%	2%
Total	100%	100%	100%	100%

Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008

Merrimack Valley also awarded zero percent shares of all bachelor's degrees during 2006 in criminal justice, education, law and personal services. Although all the other geographical areas also awarded zero percent shares of all bachelor's degrees in

law, as did Massachusetts in personal services, beside these exceptions all the other geographical areas awarded between one percent and seven percent of all bachelor's degrees in criminal justice, education and personal services during 2006.

### ***Institutional Supply at the Undergraduate non Degree Certificate Level***

Over the last ten years the undergraduate output at the non degree certificate level has changed in Merrimack Valley and the wider geographical areas. As the findings in Table 9 reveal, although the output of undergraduate non degree certificates from the higher education systems in the nation, the New England region and the state of Massachusetts increased between 1996 and 2006, the output of these certificates in Merrimack Valley declined markedly during this same ten year period.

The number of undergraduate non degree certificates conferred in the nation increased from about 621,000 to about 720,000 between 1996 and 2006, an increase of 16 percent in just ten years. Although in both New England and Massachusetts there was also an increase in the number of undergraduate non degree certificates granted, the rate of increase in each of these two areas was considerably slower than that observed in the nation. Between 1996 and 2006 New England increased the number of undergraduate

Table 9:  
Trends in the Number of Undergraduate Non Degree Certificates Conferred in the U.S.,  
New England, Massachusetts and Merrimack Valley, 1996 to 2006

	1996	2006	Absolute Change	Relative Change
U.S.	620,669	719,970	99,301	16%
New England	21,904	23,003	1,099	5%
Massachusetts	9,828	10,379	551	6%
Merrimack Valley	388	251	-137	-35%

Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008

students who earned a non degree certificate by five percent (from 21,904 awards to 23,003 awards). This is a rate of growth equal to only 31 percent of the rate of growth in undergraduate non degree certificate production experienced in the nation. In Massachusetts the rate of increase was only slightly higher, with the number of

undergraduate students who earned a non degree certificate increasing by six percent over this same ten year period of time (from 9,828 awards in 1996 to 10,379 awards in 2006). This rate of growth was equal to only 38 percent of the rate of growth in undergraduate non degrees experienced in the nation during these ten years.

This upward trend was not reflected in Merrimack Valley where the number of non degree certificates granted to undergraduate students in the area fell by 35 percent in only ten years, from 388 certificates in 1996 to 251 certificates in 2006. This negative growth in new undergraduate non degree certificates suggests that Merrimack Valley has a considerable capacity constraint on new labor supply sources at this institutional level, especially relative to the state, the region and the nation as a whole.

### ***Sources of Undergraduate Non Degree Certificates Change in the Higher Education Sector***

As the number of undergraduate non degree certificates granted has changed over the past ten years in Merrimack Valley, Massachusetts, New England and the nation, the data provided in Table 10, Chart 5 and Chart 6 reveals that the sources and rate of this change by sector of the higher education system have varied by geographic area.

Table 10:  
Trends in the Number of Undergraduate Non Degree Certificates Awarded in the U.S.,  
New England, Massachusetts and Merrimack Valley,  
by Higher Education Sector, 1996 to 2006

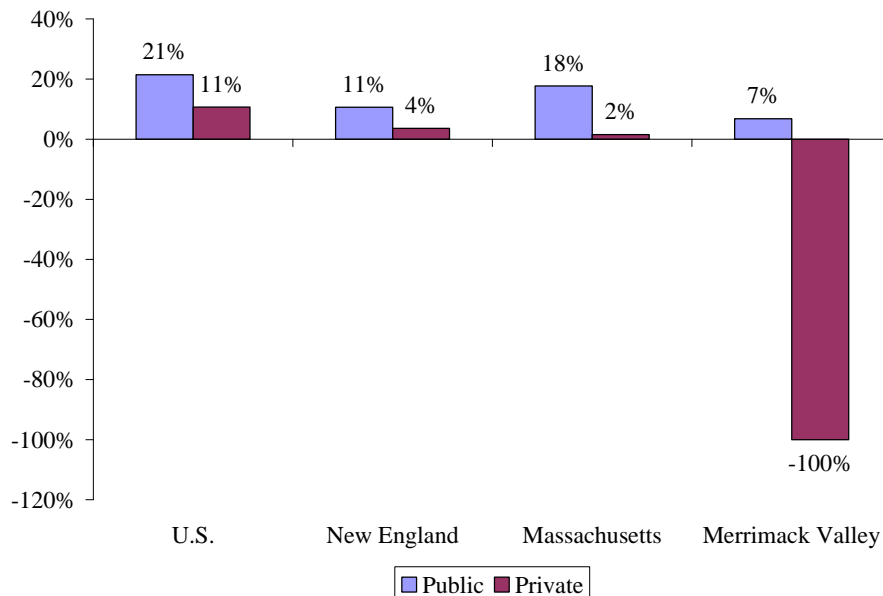
Sector	1996	2006	Absolute Change	Relative Change
<b>U.S.</b>				
Public	307,358	373,218	65,860	21%
Private	313,311	346,752	33,441	11%
<b>New England</b>				
Public	4,451	4,922	471	11%
Private	17,453	18,081	628	4%
<b>Massachusetts</b>				
Public	2,463	2,899	436	18%
Private	7,365	7,480	115	2%
<b>Merrimack Valley</b>				
Public	235	251	16	7%
Private	153	0	-153	-100%

Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008

In the nation as a whole, public colleges accounted for two thirds of the total rise in undergraduate non degree certificates granted between 1996 and 2006, with public colleges expanding their certificates output by almost 66,000 over this ten year period, an increase of 21 percent. In contrast, private colleges accounted for only one third of the total rise in non degree undergraduate certificates granted in the nation. The number of certificates conferred by these institutions increased by over 33,000 between 1996 and 2006, an increase of 11 percent.

In comparison to the nation, the rate of increase in the total number of conferred undergraduate non degree certificates was slower in both New England and Massachusetts. However, just as in the nation, in Massachusetts public colleges accounted for the majority of the total rise in non degree undergraduate certificates (79 percent), expanding their output of certificates by 18 percent over this ten year period,

Chart 5:  
Rate of Change in the Number of Undergraduate Non Degree Certificates Awarded by  
Higher Education Sector in the U.S., New England, Massachusetts and Merrimack  
Valley, 1996 to 2006



Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008



from 2,463 in 1996 to 2,899 in 2006. Private colleges in Massachusetts only accounted for 21 percent of the total rise in undergraduate non degree certificates in the state over this ten year period, increasing the number of certificates they granted by 115 between 1996 and 2006, a two percent rise.

In contrast, in New England private colleges accounted for the majority of the total rise in undergraduate non degree certificates granted over this ten year period. In New England private higher education institutions accounted for 57 percent of the total rise in undergraduate non degree certificates conferred, with the number of certificates that they granted increasing by 628 between 1996 and 2006. Public colleges in New England accounted for less than half of the total rise in undergraduate non degree certificates granted in the region over this ten year period (43 percent), increasing the number of certificates they gave by 471 between 1996 and 2006.

Chart 6:  
The Number of Undergraduate Non Degree Certificates Awarded by  
Higher Education Sector in Merrimack Valley, 1996 to 2006



Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008

In Merrimack Valley the contraction in the number of undergraduate non degree certificates between 1996 and 2006 occurred exclusively in the private higher education sector, which reduced the number of undergraduate non degree certificates granted from 153 certificates in 1996 to zero certificates in 2006. In contrast, the number of undergraduate non degree certificates granted by public colleges in Merrimack Valley increased between 1996 and 2006 – from 235 certificates in 1996 to 251 certificates in 2006. However, this increase was not big enough to compensate for the larger absolute loss in the number of these certificates that were conferred by private colleges in Merrimack Valley during the same period of time.

As a result of these trends the dominance of the public higher education sector in Merrimack Valley, with regards to the distribution of all undergraduate non degree certificates in this area, was greatly extended between 1996 and 2006. During this period of time, the share of all undergraduate non degree certificates conferred in Merrimack Valley that were awarded by public colleges increased from 61 percent in 1996 to 100 percent in 2006.

### ***Trends in Fields of Study of Undergraduate Non Degree Certificates***

Over the last ten years, as the output of undergraduate non degree certificates has decreased markedly by a total of 35 percent in Merrimack Valley, there have also been changes in the composition of the broad fields of study in which students have earned these certificates (Table 11).

Between 1996 and 2006 the largest absolute decline in the number of undergraduate non degree certificates was in business, where the number of certificates granted decreased by 169 certificates, from 176 in 1996 to 7 in 2006. Other – albeit smaller - absolute decreases in the number of undergraduate non degree certificates granted occurred in arts and humanities (a decrease of 15 certificates), health sciences (a decrease of five certificates) and law (a decrease of two certificates).

Partially offsetting these decreases were absolute increases in the number of undergraduate non degree certificates granted between 1996 and 2006 in engineering and

computer science (an increase of 29 certificates), criminal justice (an increase of 23 certificates) and education (an increase of two certificates).

**Table 11:**  
**Trends in Undergraduate Non Degree Certificates Awarded by Merrimack Valley Colleges, by Broad Major Field of Study, 1996 to 2006**

Major Field of Study	1996	2006	Absolute Change	Relative Change
Criminal Justice	0	23	23	-
Health Sciences	131	126	-5	-4%
Business	176	7	-169	-96%
Engineering & Computer Science	49	78	29	59%
Education	0	2	2	-
Law	7	5	-2	-29%
Arts & Humanities	25	10	-15	-60%
Sciences	0	0	0	-
Personal Services	0	0	0	-
Total	388	251	-137	-35%

Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008

Meanwhile, there was no change in the number of undergraduate non degree certificates granted between 1996 and 2006 in sciences and personal services. In both of these fields of study zero certificates were conferred during this ten year period.

### ***Current Distribution of Certificates***

The findings from Table 12 also highlight that the mix of program offerings, as measured by the distribution of undergraduate non degree certificates in Merrimack Valley during 2006, is quite different from those of the higher education systems in Massachusetts, the New England region and the nation as a whole.

As in Merrimack Valley, the other geographical areas granted the biggest share of all undergraduate non degree certificates in health sciences during 2006. Merrimack Valley awarded half of all of these certificates in this field of study in this year, larger than the shares in both New England and the nation (45 percent and 43 percent, respectively), but slightly smaller than the share in Massachusetts (52 percent).

Merrimack Valley awarded the second biggest share of all undergraduate non degree certificates in engineering and computer science during 2006 (31 percent). While New England and the nation also awarded the second highest share of all these certificates in engineering and computer science, the shares that all of the other geographical areas granted in engineering and computer science were smaller than the share in Merrimack Valley, especially in Massachusetts (10 percent), but also in New England and the nation (22 percent and 23 percent, respectively).

Table 12:  
Distribution of Undergraduate Non Degree Certificates Conferred by Broad Major Fields of Study in Merrimack Valley, Massachusetts, New England and the U.S., 2006

Major Field of Study	Merrimack Valley	Massachusetts	New England	U.S.
Criminal Justice	9%	1%	1%	4%
Health Sciences	50%	52%	45%	43%
Business	3%	3%	4%	9%
Engineering & Computer Science	31%	10%	22%	23%
Education	1%	1%	1%	1%
Law	2%	2%	2%	1%
Arts & Humanities	4%	6%	4%	4%
Sciences	0%	2%	1%	0%
Personal Services	0%	23%	20%	15%
Undesignated Field of Study	0%	0%	0%	0%
Total	100%	100%	100%	100%

Source: National Center of Education Statistics, *Integrated Post Secondary Education Data System*, various years, Tabulation by Center for Labor Market Studies, Northeastern University, March 2008

Similarly, Merrimack Valley awarded a higher share of all undergraduate non degree certificates in criminal justice (nine percent) than the other geographical areas did (one percent in both Massachusetts and New England and four percent in the nation).

Conversely, Merrimack Valley granted smaller shares of all undergraduate non degree certificates than the other geographical areas did in business, sciences and personal services. Although Merrimack Valley awarded the same share of all of these certificates in business as Massachusetts did (three percent), this was smaller than the shares in New England and the nation (four percent and nine percent, respectively).

Also, while Merrimack Valley granted the same share of all certificates in sciences as the nation did (zero percent), this was smaller than the shares in Massachusetts (two percent) and New England (one percent). Similarly, while Merrimack Valley awarded a zero percent share of all undergraduate non degree certificates in personal services in 2006, this was significantly smaller than the shares in Massachusetts, New England and the nation (23 percent, 20 percent and 15 percent).

However, in 2006 Merrimack Valley did grant comparable shares of all undergraduate non degree certificates in education, law and arts and humanities to the other geographical areas. All the geographical areas awarded one percent of all undergraduate non degree certificates in education. Also, while Merrimack Valley awarded the same share of all of these certificates in law as Massachusetts and New England did (two percent), this was only marginally bigger than the share in the nation (one percent). Furthermore, while Merrimack Valley also awarded the same share of all undergraduate non degree certificates in arts and humanities as New England and the nation did (four percent), this was only slightly smaller than the share awarded in Massachusetts (six percent).

# Secondary Career and Technical Education Program Completions in the Merrimack Valley Workforce Area

## ***Introduction***

Graduates of career and technical education programs from the state's network of secondary vocational technical education programs represent an important source of newly trained workers to specific occupations in state and local labor markets. Each year the state grants a considerable number of diplomas to graduates who have completed a vocational technical education course of study. Indeed, during 2007 a total of more than 14,700 high school diplomas were awarded to students who had completed a vocational-technical course of study while in high school. Like graduates of comprehensive high school programs, students who complete a vocational-technical program of study must achieve a given level of academic proficiency and must demonstrate their academic skills by passing the 10<sup>th</sup> grade English Language Arts, Mathematics and Science and Engineering Technology MCAS proficiency tests. These students also complete a course of study that meets the program guidelines of both the federal Perkins Reauthorization Act of 2006 and the rigorous Massachusetts Vocational Education standards outlined in Chapter 74 M.G.L and subsequent regulations put out by the Department of Elementary and Secondary Education. Chapter 74 vocational technical program standards are organized with the purpose of ensuring that "...all vocational technical education programs are of the scope and quality necessary to provide students with the knowledge and skills needed to complete in a dynamic, global workplace and in post secondary education including registered apprenticeship programs."<sup>29</sup>

The Chapter 74 standards require strong local vocational technical leadership at the principal and superintendent level, a set of program advisory committees composed of local businesses, organized labor and others who can offer advice, guidance and support around the organization and delivery of educational services (including coop

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<sup>29</sup> Career and Technical Education Unit, *Massachusetts General Law Chapter 74 Selected Sections and Vocational Technical Education Regulations 603 CMR 4.00 and Guidelines* Massachusetts Department of Elementary and Secondary Education, Malden, Massachusetts, undated.

education) in the specific occupational field. In addition, schools must provide equipment and facilities that meet current occupational standards and meet national occupational program approval standards along with state board and accreditation association approvals. All instructors in these programs must meet a range of education license requirements.

Virtually all of the programs offered at the state's network of regional vocational technical high schools meet the Chapter 74 standards. Some comprehensive high schools also offer vocational-technical programs on a smaller scale. In Massachusetts, these programs are also eligible for Perkins funding provided that the institutions complete a detailed 5-year plan and meet both federal and state benchmarks for student performance in both academic and technical areas. Practices in other states differ, where non-vocational programs are able to access Perkins funding to support career preparation, Tech Prep and technical skill training.

Students who complete secondary vocational technical education programs can choose a variety of pathways when they complete high school. About 45 percent of these graduates will enroll at a post secondary educational institution, but a considerable share of these graduates will also directly enter the labor market in a short period of time after graduation. However, about 40 to 45 percent of Chapter 74 graduates find work in fields related to their occupational concentration while in high school.<sup>30</sup> An additional 15 to 20 percent of graduates find work in fields not related to their occupational field of study.

These flows of students from a variety of occupational specialties represent an important new source of entry level labor supply to a variety of occupations in the Merrimack Valley region. Indeed, during 2007 vocational technical programs in the area granted high school diplomas to 697 students. These graduates left high school with a set of occupational skills developed as an integrated component of their high school learning experiences. These individuals have displayed the ability to develop skills in a given occupation, have displayed academic proficiencies consistent with statewide learning

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<sup>30</sup> Unpublished tables, prepared by the Career and Technical Education Unit, Massachusetts Department of Elementary and Secondary Education, Malden, Massachusetts, September 2007

standards and have a high rate of positive outcomes after completing high school as measured by post secondary enrollment and employment outcomes after graduation.

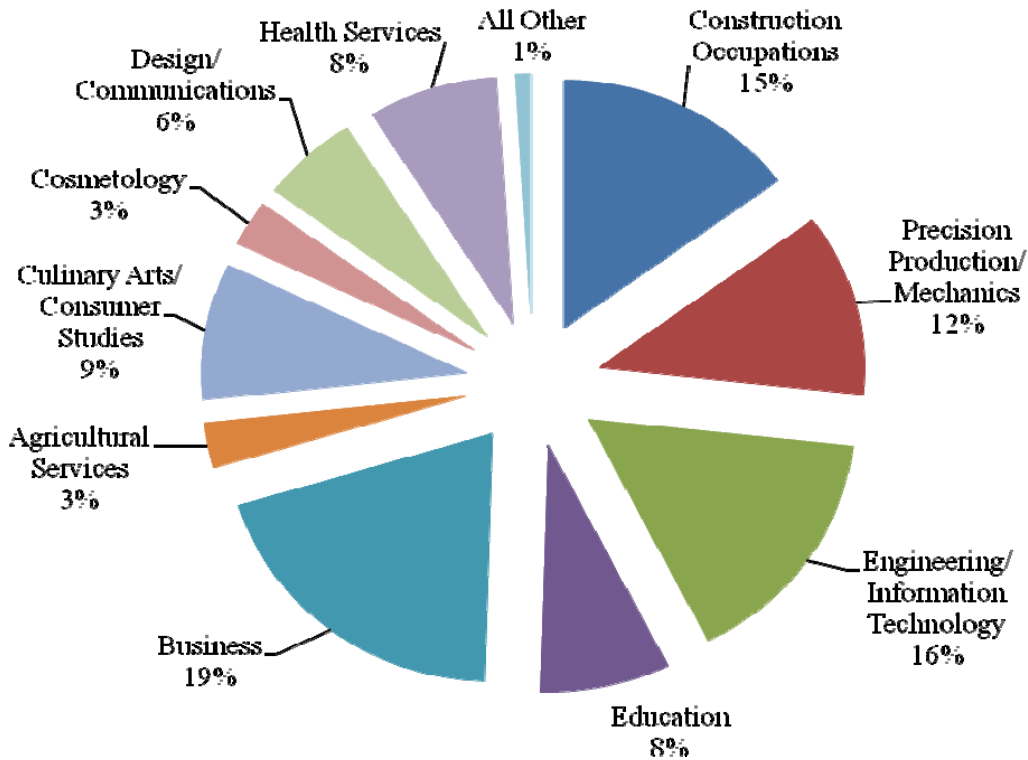
### ***The Occupational Structure of Secondary Career and Technical Education Awards***

The range of fields of study offered by secondary career and technical education institutions in the Massachusetts is quite wide. CLMS found 55 distinct (and well populated) vocational technical education programs in the state. These programs cover an array of occupational fields ranging from precision production fields, to engineering technology related fields to a number of health occupations. In the Merrimack Valley Workforce Area the 5 schools that provided career and technical education program offerings to the region's students covered 30 distinct occupational fields. Career and technical education programs provide different program offerings to their students based on the local nature of labor demand and the post graduate outcomes generated for graduates of their programs. Thus, the occupational structure of program offerings varies with respect to local labor market requirements.

The findings provided in Chart 1 are an aggregation of the entire range of program offerings delivered by secondary vocational education organizations in the state. The data provide insight into the share of the 14,700 career and technical education graduates of the class of 2007 by the occupational field in which they earned their high school diploma. The data reveal that career and technical education programs cover a fairly broad range of jobs from occupations found in the service sector of the economy including health services, design and communications fields and business fields of study to blue collar fields in the construction trades and precision production and machine trade jobs often heavily concentrated among the state's durable goods manufacturing industries.



Chart 1: The Percent Distribution of Class of 2007 Career and Technical Education Secondary Graduates in Massachusetts, by Major Occupational Field of Study



Source: Unpublished data files prepared by the Career and Technical Education Unit, Massachusetts Department of Elementary and Secondary Education. Tabulations by the Center for Labor Market Studies, Northeastern University.

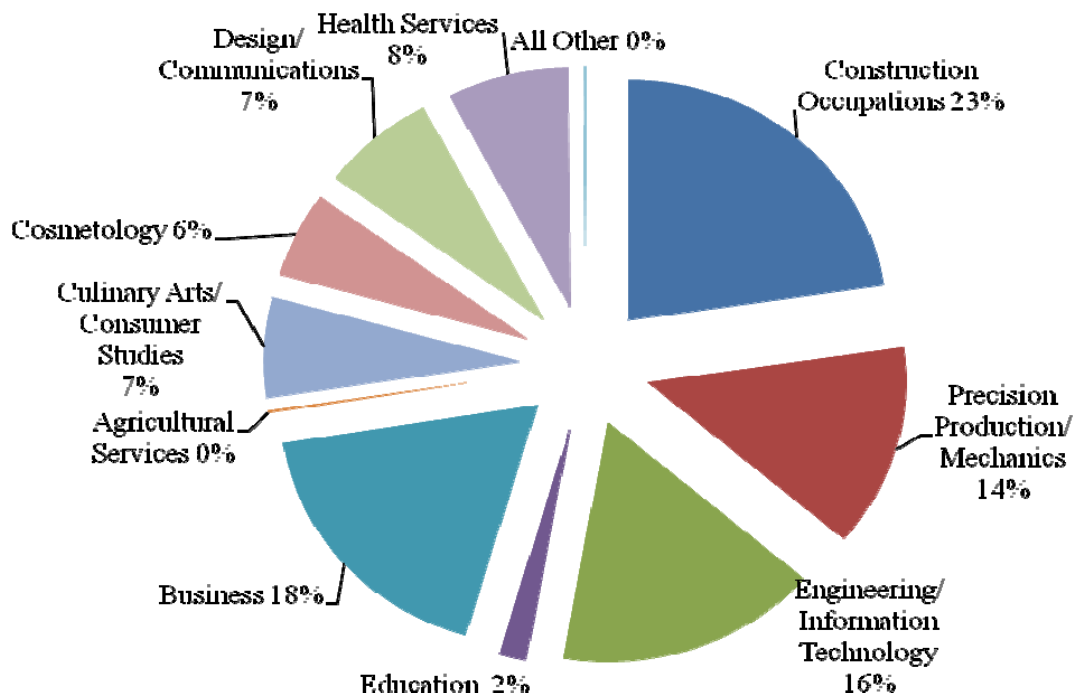
The data reveal that the single largest area in which students earn a diploma is in business. Many of the programs in this field are organized around office technology including instructions in word processing and related office support software. Engineering and information technology accounted for 16 percent of the occupational awards granted by the state's secondary vocational technical institutions. These fields include computer technology, programming and web development and information support services and networking. Construction trades, including carpentry, electrician, plumbing and other areas accounted for about 15 percent of all students who completed a secondary vocational technical program in the state. Precision production and repair accounted for about 12 percent of all awards and include fields such as automotive technology and stationary engineer. Service related fields were somewhat smaller in size.

Health services fields accounted for just 8 percent of awards. The health services area included fields such as medical assistant and dental assistant. Culinary arts, including baker, chef and related food service management fields accounted for about 9 percent of all diploma awards during 2007. Cosmetology and agricultural services programs each accounted for just 3 percent of awards in the state during the year.

Although the programs of the career and technical education system at the secondary level in the Merrimack Valley Workforce Area also cover a fairly broad range of occupations from across different sectors of the economy, the system is structured somewhat differently than that in the entire state, as measured by the occupational composition of fields of study of recent program graduates.

Unlike in the state as a whole, the single largest area in which students in Merrimack Valley earn a vocational technical diploma is construction. Construction specialties account for just less than one quarter of all awards in the Merrimack Valley area among vocational technical program graduates (23 percent), a proportion of graduates in the construction field that is more than 50 percent larger than the state share of vocational technical graduates with concentration in this field. Business accounted for the second largest share of vocational technical awards granted in the region, although the share of graduates in this field was marginally smaller than the share statewide (18 percent in the Merrimack Valley region versus 19 percent in the entire state). Engineering/information technology and precision production/mechanics are also important sources of career and technical education secondary graduates in the Merrimack Valley region. However, while the Merrimack Valley programs graduate the same share of students in the engineering/information technology field as the state's programs (16 percent for both), the region's programs graduate a slightly higher share of students in the precision production/mechanics field than the state's programs (14 percent versus 12 percent, respectively). Although the Merrimack Valley region grants a relatively small share of career and technical education secondary graduates in the field

Chart 2: The Percent Distribution of Class of 2007 Career and Technical Education Secondary Graduates in the Merrimack Valley Workforce Area, by Major Occupational Field of Study



Source: Unpublished data files prepared by the Career and Technical Education Unit, Massachusetts Department of Elementary and Secondary Education. Tabulations by the Center for Labor Market Studies, Northeastern University.

of cosmetology (6 percent), this is double the share granted in this field in the state as a whole. The share of graduates granted by the Merrimack Valley career and technical education system in design/communications is also marginally bigger than the share in the state (7 percent versus 6 percent, respectively). However, somewhat surprisingly the Merrimack Valley region only awarded 2 percent of its 2007 career and technical education secondary graduates in the education field, only equal to a quarter of the share of all such graduates statewide.

Table 1: The Percent Distribution of Class of 2007 Career and Technical Education Secondary Graduates in Massachusetts and the Merrimack Valley, by Occupational Field of Study

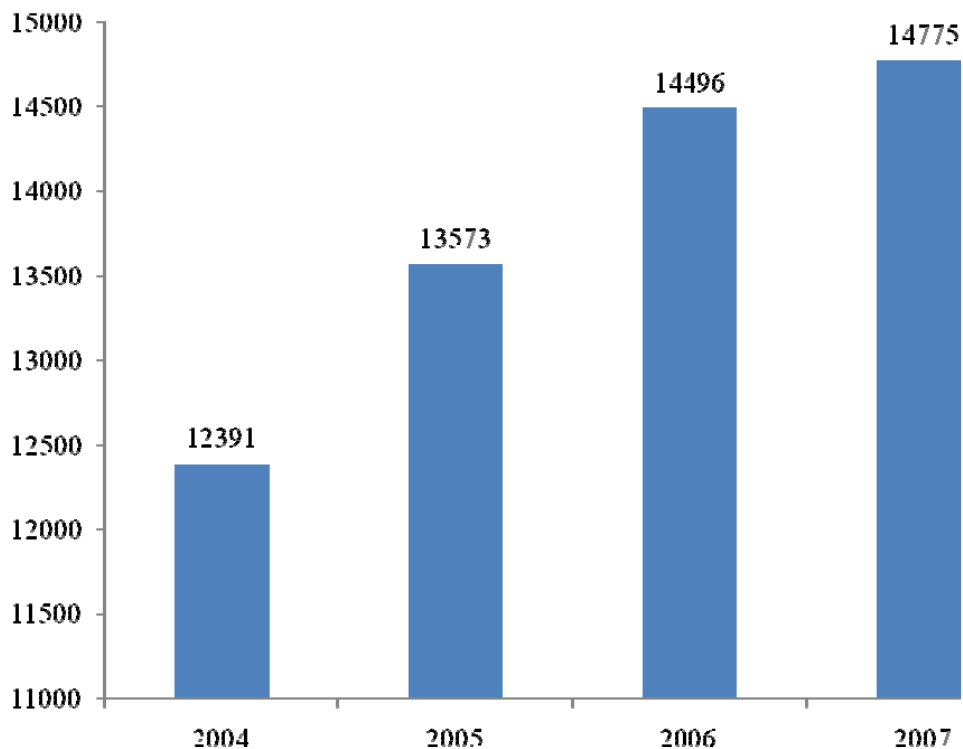
	Massachusetts	Merrimack Valley
Construction Occupations	15%	23%
Precision Production/Mechanics	12%	14%
Engineering/Information Technology	16%	16%
Education	8%	2%
Business	19%	18%
Agricultural Services	3%	0%
Culinary Arts/Consumer Studies	9%	7%
Cosmetology	3%	6%
Design/Communications	6%	7%
Health Services	8%	8%
All Other	1%	0%
Total	100%	100%

Source: Unpublished data files prepared by the Career and Technical Education Unit, Massachusetts Department of Elementary and Secondary Education. Tabulations by the Center for Labor Market Studies, Northeastern University

Also, in comparison to the entire state the region’s career and educational technical system had smaller shares of its 2007 graduates complete a course of study in the agricultural services field (0 percent in the region versus 3 percent in the state) and the culinary arts/consumer studies field (7 percent in the region versus 9 percent in the state). However, the education systems of both the Merrimack Valley area and the entire state granted 8 percent of all vocational awards in the health services field.

The number of secondary school graduates who have earned their diploma in a career and technical education specialty has increased considerably at the statewide level over the past several years. During 2004 the state’s secondary vocational technical education system awarded high school diplomas to just under 12,400 students. In each

Chart 3: Trends in the Total Number of Secondary Career and Technical Education Graduates in Massachusetts, 2004 to 2007



Source: Unpublished data files prepared by the Career and Technical Education Unit, Massachusetts Department of Elementary and Secondary Education. Tabulations by the Center for Labor Market Studies, Northeastern University.

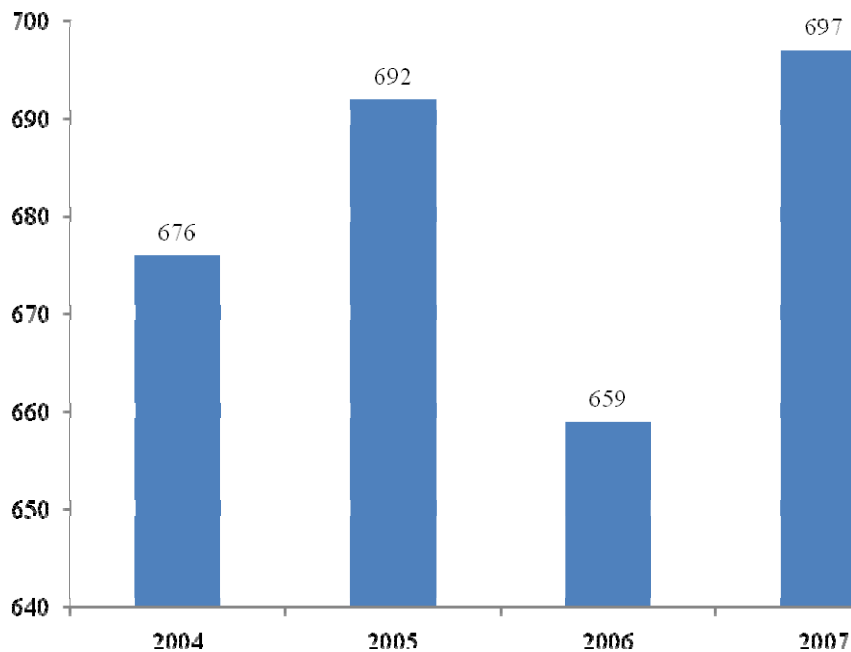
year since then the number of awards granted by these institutions has increased steadily. By 2007 the number of secondary vocational technical diplomas awarded had increased to 14,775, a rise of nearly 20 percent in just four years. This increase in the number of degrees is in part a reflection of the rise in the level of demand among high school students for seats in secondary vocational programs. Indeed, many of the regional vocational schools in the state report that over the past several years the number of students seeking to enroll in their schools has been much higher than the number of available seats<sup>31</sup>

In contrast to the trends statewide, the demand for secondary vocational education programs by students in the Merrimack Valley area has not increased considerably or consistently over the past four years. During 2004 career and technical education

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<sup>31</sup> News articles about the high demand for secondary vocational technical education in the state began appearing as early as 2004. For example See: Meredith Goldstein, "Whittier Admissions Under Fire: Grades Keep Many from Attending" *The Boston Globe*, September 2, 2004

Chart 4: Trends in the Total Number of Secondary Career and Technical Education Graduates in the Merrimack Valley Workforce Area, 2004 to 2007



Source: Unpublished data files prepared by the Career and Technical Education Unit, Massachusetts Department of Elementary and Secondary Education. Tabulations by the Center for Labor Market Studies, Northeastern University.

programs granted a total of 676 high school diplomas to students who had completed a course of study in a specific occupational field. Although the number of diplomas granted by these programs increased slightly in 2005 (up to 692 diplomas) by 2006 the number had declined below the 2004 level, to 659 diplomas. Between 2006 and 2007 the number of diplomas awarded by career and technical education programs in Merrimack Valley increased so that 697 diplomas were awarded in 2007. Although this was higher than the number of diplomas awarded in Merrimack Valley in 2004, the number of diplomas granted in the region in 2007 only represented a 3 percent increase from the number granted in 2004, a markedly slower relative increase than that seen in the entire state during the same four year period of time (almost 20 percent).

The growth in secondary career and technical diplomas in the state varied considerably across occupational fields. Moreover, the increases in awards were across a variety of occupational skill areas. The findings provided in Table 2 examine statewide growth in the number of secondary career and technical education diplomas awarded by the major occupational field in which students concentrated their high school studies.

Strong growth in the number of awards occurred in several skilled blue collar fields. The number of awards in the construction trades areas rose from 1,782 during 2004 to 2,156 by 2007, a rise of 21 percent over the period. Particularly large gains were posted in electrician and plumbing and pipefitting, along with strong growth in carpentry and HVAC programs. The number of students earning awards in precision production and repair fields rose sharply as well, increasing by 24 percent in just four years. This rise occurred because of very strong growth in the number of students who completed some type of auto repair/tech program as well as a sharp increase in the number of students who graduated with a specialty in precision production fields that include the machine trades. The health fields also posted sharp increases in the number of awards statewide. Between 2004 and 2007 the number of diplomas awarded in health related fields increased from 930 to 1,221 diploma awards. This increase represented nearly a one third rise in the number of students who completed a secondary career and technical education program with a concentration in the health field.

Table 2: Trends in the Number of Secondary Career and Technical Education Graduates in Massachusetts, by Major Occupational Field of Study, 2004 to 2007

Aggregate Programs	2004	2005	2006	2007	Absolute Change	Relative Change
Construction Occupations	1782	1880	2024	2156	374	21%
Precision Production/Mechanics	1411	1589	1680	1753	342	24%
Engineering/Information Technology	2193	2262	2344	2320	127	6%
Education	399	548	600	649	250	63%
Business	2723	2907	3144	2915	192	7%
Agricultural Services	421	418	419	464	43	10%
Culinary Arts/Consumer Studies	1003	974	1246	1292	289	29%
Cosmetology	409	461	462	499	90	22%
Design/Communications	694	724	724	875	181	26%
Health Services	930	1176	1224	1221	291	31%
Technology Education	248	404	459	468	220	89%
All Other	178	230	170	163	-15	-8%
Total	12391	13573	14496	14775	2384	19%

Source: Unpublished data files prepared by the Career and Technical Education Unit, Massachusetts Department of Elementary and Secondary Education. Tabulations by the Center for Labor Market Studies, Northeastern University

Technology related programs grew quite rapidly over the 2004 to 2007 period, increasing the number of completers by 220 students. These include “instructional programs that provide individuals with knowledge, learning experiences and competencies pertaining to aspects of industry and technology. The programs are also designed to assist individuals in making informed occupational choices and provide preparation for entry into occupational training or education programs.”<sup>32</sup> Secondary career and technical education programs operate very large engineering and information technology programs. With more than 2,300 awards granted in these occupational specialties during 2007, the number of degrees awarded statewide in these fields increased by 6 percent over the last four years.

Business programs graduated a total of just over 2,900 students from the state’s secondary career and technical education program in 2007. While this represents an overall rise since 2004, the number of business awards began to decline last year and fell by 7 percent over the year. The business field is the only area that has posted an over the year decline in the number of graduates. The education field, fueled by rapid increases in early education and care program graduates, posted very rapid growth in the number of degrees awarded. Between 2004 and 2007 the number of awards increased from about 400 to nearly 650, a near two thirds increase in the number of students who earned their diploma in this field of study.

As in the state, growth in secondary career and technical education diplomas in the Merrimack Valley region varied considerably across occupational fields and across a variety of occupational skill areas.

The biggest program sources of increase in the number of secondary career and technical education diplomas earned in the Merrimack Valley region over the 2004 to 2007 period were in the precision production/mechanics, design/communications and health services fields. Over this four year period the number of graduates increased by 21 in the precision production/mechanics field, 17 in the design/communications field and 18 in the health services field, or relative increases of 28 percent, 52 percent and 51

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<sup>32</sup> Institute for Educational Sciences, U.S. Department of Education, *Classification of Instructional Programs* <http://nces.ed.gov/pubs2002/cip2000/ciplist.asp?CIP2=21>



percent, respectively. These relative rates of growth were above the relative rises in the number of graduates we found in these occupational fields in the entire state over the same time period. The number of students earning vocational technical awards in the culinary arts/consumer studies field in the Merrimack Valley region also rose markedly, increasing by 31 percent in just four years. There was also a small increase of 8 percent in the number of students who graduated from the region's cosmetology secondary career and technical education programs, a rate of increase that was more than three times smaller than that experienced in this occupation field in the state as a whole during this four year time period (22 percent). Also, while no students graduated with a specialty in either the education or the agricultural services fields in 2004, by 2007 12 students earned a technical vocational award in the education field and 1 student in the agricultural services field.

Table 3:

Trends in the Number of Secondary Career and Technical Education Graduates in the Merrimack Valley Workforce Area, by Major Occupational Field of Study, 2004 to 2007

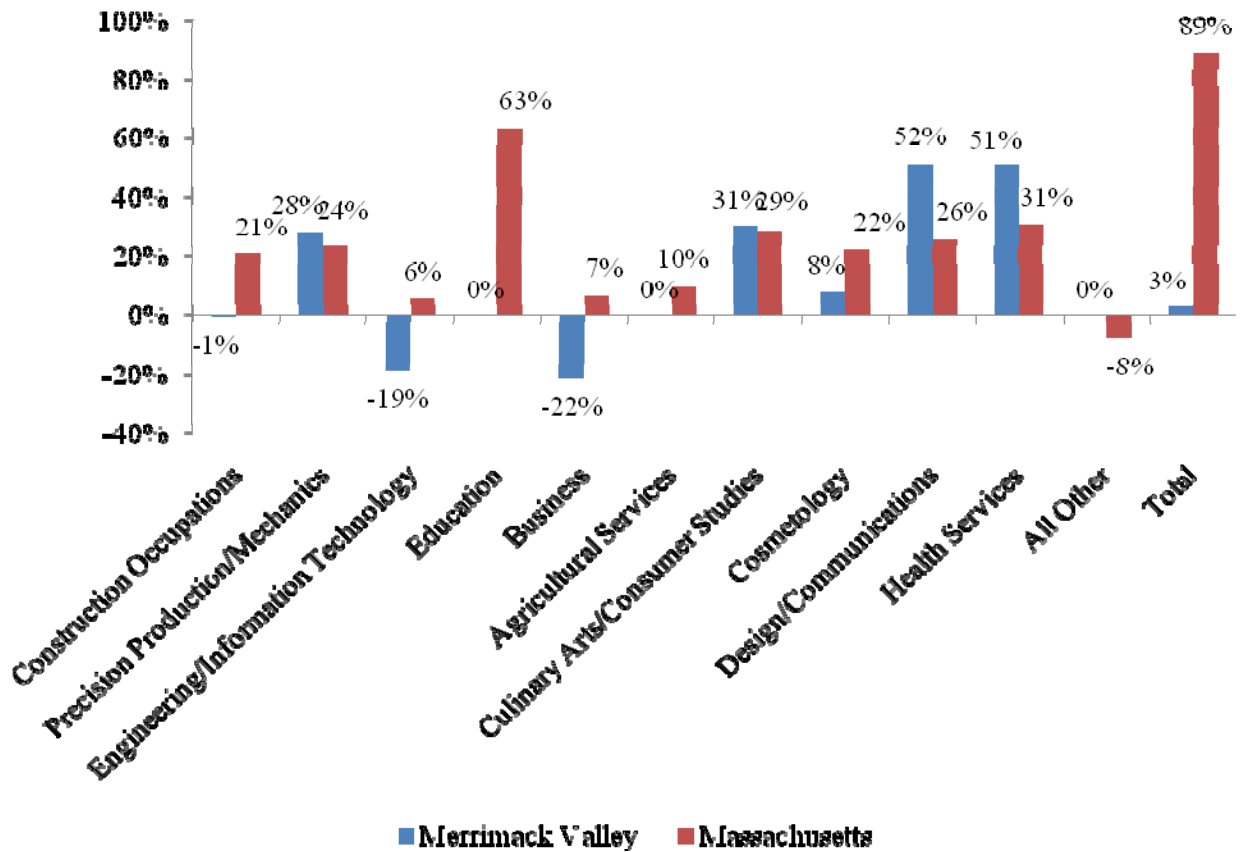
Aggregate Programs	2004	2005	2006	2007	Absolute Change	Relative Change
Construction Occupations	159	125	146	158	-1	-1%
Precision Production/Mechanics	74	90	79	95	21	28%
Engineering/Information Technology	142	210	106	115	-27	-19%
Education	0	0	0	12	12	NA
Business	160	92	164	125	-35	-22%
Agricultural Services	0	0	0	1	1	NA
Culinary Arts/Consumer Studies	36	28	33	47	11	31%
Cosmetology	37	31	40	40	3	8%
Design/Communications	33	62	35	50	17	52%
Health Services	35	50	56	53	18	51%
All Other	0	4	0	1	1	NA
Total	676	692	659	697	21	3%

Source: Unpublished data files prepared by the Career and Technical Education Unit, Massachusetts Department of Elementary and Secondary Education. Tabulations by the Center for Labor Market Studies, Northeastern University

However, unlike in the state between 2004 and 2007 the Merrimack Valley region witnessed decreases in the number of secondary career and technical education diplomas awarded in certain occupational fields. Between 2004 and 2007 the number of students

earning awards in the fields of engineering/information technology and business decreased markedly, by 19 percent and 22 percent, respectively. This stands in sharp contrast to the increases that were seen in these fields in the state as a whole (by 6 and 7 percent, respectively). During this time there was also a marginal decrease of one percent in the number of secondary career and technical education graduates in the Merrimack Valley area in the field of construction, unlike in the state which saw an increase of more than one fifth in the number of graduates in this field of study between 2004 and 2007. However, despite the fact that secondary career and technical educational programs in construction, business and engineering/information technology in the Merrimack Valley region experienced declines in the number of graduates to complete a course of study in these occupational fields, in 2007 (as shown in Table 1) these three occupational fields continued to account for over half of all the vocational technical awards granted in the Merrimack Valley area (57 percent).

Chart 5: Rate of Change in the Number of Secondary Career and Technical Education Graduates in the Merrimack Valley Workforce Area and Massachusetts, by Major Occupational Field of Study, 2004 to 2007



Source: Unpublished data files prepared by the Career and Technical Education Unit, Massachusetts Department of Elementary and Secondary Education. Tabulations by the Center for Labor Market Studies, Northeastern University.

The discussion provided above provides an overview of the structure and trends in the outputs of secondary vocational technical programs at the state and regional area level. More detailed information about trends about completions in specific program areas by individual high schools in the Merrimack Valley region are provided in a CD that is included as part of this monograph.

**Appendix A:**  
**Total Population, Working-Age  
Population, and the Labor Force of the  
Merrimack Valley Workforce Area**

## **Greater Lowell**

<b><u>Total Non-Institutional Population (16+ Year Olds)</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Total	212,573	214,223	1,650	0.8%
<b><u>Gender</u></b>				
Male	102,093	104,489	2,396	2.3%
Female	110,480	109,734	-746	-0.7%
<b><u>Race</u></b>				
White, non-Hispanic	180,741	176,253	-4,488	-2.5%
Black, non-Hispanic	3,237	4,616	1,379	42.6%
Hispanic	10,011	11,249	1,238	12.4%
Other, non-Hispanic	18,584	22,105	3,521	18.9%
<b><u>Citizenship Status</u></b>				
Born abroad	34,780	41,520	6,740	19.4%
Native born	177,793	172,703	-5,090	-2.9%

<b><u>Age Group</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
16-24	29,070	27,433	-1,637	-5.6%
25-34	41,519	34,801	-6,718	-16.2%
35-44	53,458	48,393	-5,065	-10.9%
45-54	36,854	43,217	6,363	17.3%
55-64	24,260	30,758	6,498	26.8%
65+	27,412	29,623	2,211	8.1%

<b><u>Educational Attainment</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Currently Enrolled in Secondary School	9,678	9,590	-88	-0.9%
High school dropout	32,291	26,320	-5,971	-18.5%
High school graduate	60,797	61,373	576	0.9%
Some college, no degree	41,097	36,343	-4,754	-11.6%
Associate's degree	14,184	16,956	2,772	19.5%
Bachelor's degree	34,843	38,090	3,247	9.3%
Master's degree or more	19,683	25,552	5,869	29.8%

## **Greater Lowell**

<b><u>Civilian Labor Force (16+)</u></b>	<b>05-06 Avg Civilian Labor Force</b>	<b>05-06 Avg CLFPR</b>	<b>Composition of the Labor Force</b>
Total	151,112	70.5%	100.0%
<b><u>Gender</u></b>			
Male	78,749	75.4%	52.1%
Female	72,363	65.9%	47.9%
<b><u>Race</u></b>			
White, non-Hispanic	125,775	71.4%	83.2%
Black, non-Hispanic	3,259	70.6%	2.2%
Hispanic	6,452	57.4%	4.3%
Other, non-Hispanic	15,627	70.7%	10.3%
<b><u>Citizenship Status</u></b>			
Born abroad	27,895	67.2%	18.5%
Native born	123,217	71.3%	81.5%

<b><u>Age Group</u></b>	<b>05-06 Avg</b>	<b>05-06 Avg</b>	<b>Composition of the Labor Force</b>
16-24	17,392	63.4%	11.5%
25-34	30,705	88.2%	20.3%
35-44	40,118	82.9%	26.5%
45-54	37,653	87.1%	24.9%
55-64	20,493	66.6%	13.6%
65+	4,752	16.0%	3.1%

<b><u>Educational Attainment</u></b>	<b>05-06 Avg</b>	<b>05-06 Avg</b>	<b>Composition of the Labor Force</b>
Currently Enrolled in Secondary School	3,583	37.4%	2.4%
High school dropout	9,912	37.7%	6.6%
High school graduate	42,843	69.8%	28.4%
Some college, no degree	27,572	75.9%	18.2%
Associate's degree	13,997	82.5%	9.3%
Bachelor's degree	32,183	84.5%	21.3%
Master's degree or more	21,023	82.3%	13.9%

## **Greater Lowell**

<b><u>Total Non-Institutional Population</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Total	284,690	279,503	-5,187	-1.8%
<b><u>Gender</u></b>				
Male	139,718	138,455	-1,263	-0.9%
Female	144,972	141,048	-3,924	-2.7%
<b><u>Race</u></b>				
White, non-Hispanic	236,100	224,996	-11,104	-4.7%
Black, non-Hispanic	4,797	6,299	1,502	31.3%
Hispanic	15,800	16,070	270	1.7%
Other, non-Hispanic	27,993	32,138	4,145	14.8%
<b><u>Citizenship Status</u></b>				
Born abroad	38,268	45,004	6,736	17.6%
Native born	246,422	234,499	-11,923	-4.8%

<b><u>Age Group</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Under 16	72,117	64,982	-7,135	-9.9%
16-24	29,070	27,645	-1,425	-4.9%
25-34	41,519	34,842	-6,677	-16.1%
35-44	53,458	48,393	-5,065	-9.5%
45-54	36,854	43,261	6,407	17.4%
55-64	24,260	30,758	6,498	26.8%
65+	27,412	29,623	2,211	8.1%

<b><u>Educational Attainment (For 3+ Year Olds)</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Currently Enrolled in Secondary School	64,062	57,910	-6,152	-9.6%
High school dropout	50,001	30,711	-19,290	-38.6%
High school graduate	60,820	61,373	553	0.9%
Some college, no degree	41,097	36,545	-4,552	-11.1%
Associate's degree	14,184	16,956	2,772	19.5%
Bachelor's degree	34,843	38,141	3,298	9.5%
Master's degree or more	19,683	25,597	5,914	30.0%

## Massachusetts

<b><u>Total Non-Institutional Population (16+ Year Olds)</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Total	4,788,971	4,925,682	136,711	2.9%
<b><u>Gender</u></b>				
Male	2,260,322	2,350,430	90,108	4.0%
Female	2,528,649	2,575,252	46,603	1.8%
<b><u>Race</u></b>				
White, non-Hispanic	4,017,954	4,003,895	-14,059	-0.3%
Black, non-Hispanic	211,086	250,652	39,566	18.7%
Hispanic	272,020	347,766	75,746	27.8%
Other, non-Hispanic	287,911	323,369	35,458	12.3%
<b><u>Citizenship Status</u></b>				
Born abroad	782,661	933,222	150,561	19.2%
Native born	4,006,310	3,992,460	-13,850	-0.3%

<b><u>Age Group</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
16-24	622,709	684,204	61,495	9.9%
25-34	904,267	820,165	-84,102	-9.3%
35-44	1,052,630	992,032	-60,598	-10.9%
45-54	866,608	949,666	83,058	9.6%
55-64	540,336	678,559	138,223	25.6%
65+	802,421	801,057	-1,364	-0.2%

<b><u>Educational Attainment</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Currently Enrolled in Secondary School	204,830	202,187	-2,643	-1.3%
High school dropout	656,163	538,112	-118,051	-18.0%
High school graduate	1,264,999	1,354,099	89,100	7.0%
Some college, no degree	857,450	824,373	-33,077	-3.9%
Associate's degree	328,013	351,002	22,989	7.0%
Bachelor's degree	895,926	978,931	83,005	9.3%
Master's degree or more	581,590	676,980	95,390	16.4%



## Massachusetts

<u>Civilian Labor Force (16+)</u>	<b>05-06 Avg Civilian Labor Force</b>	<b>05-06 Avg CLFPR</b>	<b>Composition of the Labor Force</b>
Total	3,369,817	68.4%	100.0%
<b><u>Gender</u></b>			
Male	1,753,898	74.6%	52.0%
Female	1,615,919	62.7%	48.0%
<b><u>Race</u></b>			
White, non-Hispanic	2,736,864	68.4%	81.2%
Black, non-Hispanic	173,280	69.1%	5.1%
Hispanic	236,188	67.9%	7.0%
Other, non-Hispanic	223,485	69.1%	6.6%
<b><u>Citizenship Status</u></b>			
Born abroad	629,794	67.5%	18.7%
Native born	2,740,023	68.6%	81.3%

<b><u>Age Group</u></b>	<b>05-06 Avg</b>	<b>05-06 Avg</b>	<b>Composition of the Labor Force</b>
16-24	448,825	65.6%	13.3%
25-34	692,610	84.4%	20.6%
35-44	827,370	83.4%	24.6%
45-54	800,284	84.3%	23.7%
55-64	471,988	69.6%	14.0%
65+	128,741	16.1%	3.8%

<b><u>Educational Attainment</u></b>	<b>05-06 Avg</b>	<b>05-06 Avg</b>	<b>Composition of the Labor Force</b>
Currently Enrolled in Secondary School	85,313	42.2%	2.5%
High school dropout	241,494	44.9%	7.2%
High school graduate	872,791	64.5%	25.9%
Some college, no degree	584,536	70.9%	17.3%
Associate's degree	273,056	77.8%	8.1%
Bachelor's degree	769,239	78.6%	22.8%
Master's degree or more	543,389	80.3%	16.1%

## Massachusetts

<u>Total Non-Institutional Population</u>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Total	6,127,254	6,211,127	83,873	1.4%
<b><u>Gender</u></b>				
Male	2,945,404	3,010,717	65,313	2.2%
Female	3,181,850	3,200,410	18,560	0.6%
<b><u>Race</u></b>				
White, non-Hispanic	5,022,814	4,941,116	-81,698	-1.6%
Black, non-Hispanic	300,461	346,343	45,882	15.3%
Hispanic	412,134	491,911	79,777	19.4%
Other, non-Hispanic	391,845	431,758	39,913	10.2%
<b><u>Citizenship Status</u></b>				
Born abroad	851,578	998,513	146,935	17.3%
Native born	5,275,676	5,212,615	-63,061	-1.2%

<u>Age Group</u>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Under 16	1,338,283	1,280,086	-58,197	-4.3%
16-24	622,709	685,228	62,519	10.0%
25-34	904,267	822,248	-82,019	-9.1%
35-44	1,052,630	993,327	-59,303	-5.6%
45-54	866,608	950,589	83,981	9.7%
55-64	540,336	678,593	138,257	25.6%
65+	802,421	801,057	-1,364	-0.2%

<u>Educational Attainment (For 3+ Year Olds)</u>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Currently Enrolled in Secondary School	1,222,997	1,152,850	-70,147	-5.7%
High school dropout	975,959	632,153	-343,806	-35.2%
High school graduate	1,265,319	1,355,782	90,463	7.1%
Some college, no degree	857,450	826,202	-31,248	-3.6%
Associate's degree	328,013	351,400	23,387	7.1%
Bachelor's degree	895,926	980,445	84,519	9.4%
Master's degree or more	581,590	677,510	95,920	16.5%

## New England

<b><u>Total Non-Institutional Population (16+ Year Olds)</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Total	10,471,904	10,949,262	477,358	4.6%
<b><u>Gender</u></b>				
Male	4,969,159	5,243,037	273,878	5.5%
Female	5,502,745	5,706,225	203,480	3.7%
<b><u>Race</u></b>				
White, non-Hispanic	8,988,002	9,164,262	176,260	2.0%
Black, non-Hispanic	441,994	520,674	78,680	17.8%
Hispanic	557,622	714,984	157,362	28.2%
Other, non-Hispanic	484,286	549,343	65,057	13.4%
<b><u>Citizenship Status</u></b>				
Born abroad	1,413,994	1,662,428	248,434	17.6%
Native born	9,057,910	9,286,834	228,924	2.5%

<b><u>Age Group</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
16-24	1,350,985	1,510,659	159,674	11.8%
25-34	1,847,271	1,703,182	-144,089	-7.8%
35-44	2,335,501	2,191,526	-143,975	-10.9%
45-54	1,955,375	2,185,761	230,386	11.8%
55-64	1,217,568	1,567,670	350,102	28.8%
65+	1,765,204	1,790,465	25,261	1.4%

<b><u>Educational Attainment</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Currently Enrolled in Secondary School	463,319	462,078	-1,241	-0.3%
High school dropout	1,478,090	1,202,765	-275,325	-18.6%
High school graduate	2,936,571	3,192,522	255,951	8.7%
Some college, no degree	1,911,830	1,922,171	10,341	0.5%
Associate's degree	713,994	793,932	79,938	11.2%
Bachelor's degree	1,822,394	2,037,866	215,472	11.8%
Master's degree or more	1,145,706	1,337,928	192,222	16.8%

## New England

<u>Civilian Labor Force (16+)</u>	<b>05-06 Avg Civilian Labor Force</b>	<b>05-06 Avg CLFPR</b>	<b>Composition of the Labor Force</b>
Total	7,521,725	68.7%	100.0%
<b><u>Gender</u></b>			
Male	3,924,171	74.8%	52.2%
Female	3,597,554	63.0%	47.8%
<b><u>Race</u></b>			
White, non-Hispanic	6,270,241	68.4%	83.4%
Black, non-Hispanic	370,039	71.1%	4.9%
Hispanic	499,122	69.8%	6.6%
Other, non-Hispanic	382,324	69.6%	5.1%
<b><u>Citizenship Status</u></b>			
Born abroad	1,126,542	67.8%	15.0%
Native born	6,395,183	68.9%	85.0%

<u>Age Group</u>	<b>05-06 Avg</b>	<b>05-06 Avg</b>	<b>Composition of the Labor Force</b>
16-24	1,014,189	67.1%	13.5%
25-34	1,445,266	84.9%	19.2%
35-44	1,844,539	84.2%	24.5%
45-54	1,842,673	84.3%	24.5%
55-64	1,080,617	68.9%	14.4%
65+	294,442	16.4%	3.9%

<u>Educational Attainment</u>	<b>05-06 Avg</b>	<b>05-06 Avg</b>	<b>Composition of the Labor Force</b>
Currently Enrolled in Secondary School	200,530	43.4%	2.7%
High school dropout	545,735	45.4%	7.3%
High school graduate	2,101,735	65.8%	27.9%
Some college, no degree	1,391,980	72.4%	18.5%
Associate's degree	628,436	79.2%	8.4%
Bachelor's degree	1,599,894	78.5%	21.3%
Master's degree or more	1,053,416	78.7%	14.0%

## New England

<u>Total Non-Institutional Population</u>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Total	13,450,470	13,783,286	332,816	2.5%
<b><u>Gender</u></b>				
Male	6,497,802	6,699,832	202,030	3.1%
Female	6,952,668	7,083,455	130,787	1.9%
<b><u>Race</u></b>				
White, non-Hispanic	11,306,533	11,298,107	-8,426	-0.1%
Black, non-Hispanic	628,948	716,040	87,092	13.8%
Hispanic	844,299	1,024,054	179,755	21.3%
Other, non-Hispanic	670,690	745,087	74,397	11.1%
<b><u>Citizenship Status</u></b>				
Born abroad	1,543,213	1,784,503	241,290	15.6%
Native born	11,907,257	11,998,783	91,526	0.8%

<b><u>Age Group</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Under 16	2,978,566	2,813,360	-165,206	-5.5%
16-24	1,350,985	1,514,542	163,557	12.1%
25-34	1,847,271	1,711,770	-135,501	-7.3%
35-44	2,335,501	2,197,264	-138,237	-5.9%
45-54	1,955,375	2,187,708	232,333	11.9%
55-64	1,217,568	1,568,179	350,611	28.8%
65+	1,765,204	1,790,465	25,261	1.4%

<b><u>Educational Attainment (For 3+ Year Olds)</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Currently Enrolled in Secondary School	2,738,708	2,567,798	-170,910	-6.2%
High school dropout	2,180,733	1,417,552	-763,181	-35.0%
High school graduate	2,937,026	3,198,834	261,808	8.9%
Some college, no degree	1,911,909	1,928,713	16,804	0.9%
Associate's degree	713,994	795,504	81,510	11.4%
Bachelor's degree	1,822,394	2,042,797	220,403	12.1%
Master's degree or more	1,145,706	1,340,599	194,893	17.0%

**U.S.**

<b><u>Total Non-Institutional Population (16+ Year Olds)</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Total	208,782,718	224,204,853	15,422,135	7.4%
<b><u>Gender</u></b>				
Male	99,903,746	108,181,231	8,277,485	8.3%
Female	108,878,972	116,023,623	7,144,651	6.6%
<b><u>Race</u></b>				
White, non-Hispanic	150,017,883	155,178,332	5,160,449	3.4%
Black, non-Hispanic	22,590,821	25,109,271	2,518,450	11.1%
Hispanic	23,411,379	29,348,621	5,937,242	25.4%
Other, non-Hispanic	12,762,635	14,568,630	1,805,995	14.2%
<b><u>Citizenship Status</u></b>				
Born abroad	29,492,950	35,189,909	5,696,959	19.3%
Native born	179,289,768	189,014,945	9,725,177	5.4%

<b><u>Age Group</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
16-24	31,865,744	34,690,717	2,824,973	8.9%
25-34	38,194,285	38,516,867	322,582	0.8%
35-44	44,750,070	43,035,471	-1,714,599	-10.9%
45-54	37,070,498	42,276,254	5,205,756	14.0%
55-64	23,901,672	30,673,755	6,772,083	28.3%
65+	33,000,449	35,011,791	2,011,342	6.1%

<b><u>Educational Attainment</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Currently Enrolled in Secondary School	10,064,532	9,976,708	-87,824	-0.9%
High school dropout	37,616,155	32,627,060	-4,989,095	-13.3%
High school graduate	58,004,033	65,836,206	7,832,173	13.5%
Some college, no degree	44,982,437	46,177,879	1,195,442	2.7%
Associate's degree	12,329,761	15,406,674	3,076,913	25.0%
Bachelor's degree	29,779,256	35,016,648	5,237,392	17.6%
Master's degree or more	16,006,544	19,163,680	3,157,136	19.7%

**U.S.**

<b><u>Civilian Labor Force (16+)</u></b>	<b>05-06 Avg Civilian Labor Force</b>	<b>05-06 Avg CLFPR</b>	<b>Composition of the Labor Force</b>
Total	148,191,267	66.1%	100.0%
<b><u>Gender</u></b>			
Male	79,261,521	73.3%	53.5%
Female	68,929,746	59.4%	46.5%
<b><u>Race</u></b>			
White, non-Hispanic	101,928,834	65.7%	68.8%
Black, non-Hispanic	16,514,763	65.8%	11.1%
Hispanic	20,206,135	68.8%	13.6%
Other, non-Hispanic	9,541,536	65.5%	6.4%
<b><u>Citizenship Status</u></b>			
Born abroad	23,547,389	66.9%	15.9%
Native born	124,643,878	65.9%	84.1%

<b><u>Age Group</u></b>	<b>05-06 Avg</b>	<b>05-06 Avg</b>	<b>Composition of the Labor Force</b>
16-24	22,166,878	63.9%	15.0%
25-34	31,855,587	82.7%	21.5%
35-44	35,649,877	82.8%	24.1%
45-54	34,205,046	80.9%	23.1%
55-64	19,082,514	62.2%	12.9%
65+	5,231,365	14.9%	3.5%

<b><u>Educational Attainment</u></b>	<b>05-06 Avg</b>	<b>05-06 Avg</b>	<b>Composition of the Labor Force</b>
Currently Enrolled in Secondary School	3,613,683	36.2%	2.4%
High school dropout	15,723,608	48.2%	10.6%
High school graduate	42,377,766	64.4%	28.6%
Some college, no degree	32,602,928	70.6%	22.0%
Associate's degree	11,979,651	77.8%	8.1%
Bachelor's degree	27,040,491	77.2%	18.2%
Master's degree or more	14,853,142	77.5%	10.0%

**U.S.**

<b><u>Total Non-Institutional Population</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Total	272,837,866	289,865,830	17,027,964	6.2%
<b><u>Gender</u></b>				
Male	132,687,496	142,041,117	9,353,621	7.0%
Female	140,150,370	147,824,714	7,674,344	5.5%
<b><u>Race</u></b>				
White, non-Hispanic	188,968,575	192,796,561	3,827,986	2.0%
Black, non-Hispanic	31,901,119	34,583,521	2,682,402	8.4%
Hispanic	34,427,589	42,694,008	8,266,419	24.0%
Other, non-Hispanic	17,540,583	19,791,740	2,251,157	12.8%
<b><u>Citizenship Status</u></b>				
Born abroad	32,238,245	37,830,496	5,592,251	17.3%
Native born	240,599,621	252,035,334	11,435,713	4.8%

<b><u>Age Group</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Under 16	64,055,148	64,969,897	914,749	1.4%
16-24	31,865,744	34,839,957	2,974,213	9.3%
25-34	38,194,285	38,791,463	597,178	1.6%
35-44	44,750,070	43,238,672	-1,511,398	-3.4%
45-54	37,070,498	42,331,451	5,260,953	14.2%
55-64	23,901,672	30,682,602	6,780,930	28.4%
65+	33,000,449	35,011,791	2,011,342	6.1%

<b><u>Educational Attainment (For 3+ Year Olds)</u></b>	<b>2000</b>	<b>05-06 Avg</b>	<b>Absolute Change</b>	<b>Relative Change</b>
Currently Enrolled in Secondary School	57,758,839	56,770,826	-988,013	-1.7%
High school dropout	53,961,380	38,715,470	-15,245,910	-28.3%
High school graduate	58,015,697	66,024,442	8,008,745	13.8%
Some college, no degree	44,986,389	46,421,557	1,435,168	3.2%
Associate's degree	12,329,761	15,481,204	3,151,443	25.6%
Bachelor's degree	29,779,256	35,152,652	5,373,396	18.0%
Master's degree or more	16,006,544	19,246,426	3,239,882	20.2%



**Appendix B:**  
**Measuring Wage and Salary Employment  
Levels and Trends in the Merrimack  
Valley Workforce Area**

**Merrimack Valley ES-202 Average Monthly Employment, 2004-2007**

**2 Digit**

Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
Total, All Industries	126,665	130,386	3,721	2.9%
11 - Agriculture, Forestry, Fishing & Hunting	188	169	-19	-10.1%
21 - Mining	10	7	-3	-30.0%
23 - Construction	6,556	6,772	216	3.3%
31-33 - Manufacturing	25,643	25,576	-67	-0.3%
DUR - Durable Goods Manufacturing	16,646	16,905	259	1.6%
NONDUR - Non-Durable Goods Manufacturing	8,997	8,671	-326	-3.6%
22 - Utilities	470	484	14	3.0%
42 - Wholesale Trade	5,059	4,347	-712	-14.1%
44-45 - Retail Trade	11,502	11,484	-18	-0.2%
48-49 - Transportation and Warehousing	2,064	2,051	-13	-0.6%
51 - Information	3,948	3,466	-482	-12.2%
52 - Finance and Insurance	3,289	3,535	246	7.5%
53 - Real Estate and Rental and Leasing	1591	1351	-240	-15.1%
54 - Professional and Technical Services	8,308	9,808	1,500	18.1%
55 - Management of Companies and Enterprises	2193	1931	-262	-11.9%
56 - Administrative and Waste Services	6,972	8,294	1,322	19.0%
61 - Educational Services	8,716	9,218	502	5.8%
62 - Health Care and Social Assistance	19,082	19,479	397	2.1%
71 - Arts, Entertainment, and Recreation	2,294	2,525	231	10.1%
72 - Accommodation and Food Services	9,188	9,185	-3	0.0%
81 - Other Services, Ex. Public Admin	4,205	4,958	753	17.9%
92 - Public Administration	5,387	5,747	360	6.7%

**Massachusetts ES-202 Average Monthly Employment, 2004-2007**

**2 Digit**

Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
<b>Total, All Industries</b>	3,139,881	3,236,217	96,336	3.1%
11 - Agriculture, Forestry, Fishing & Hunting	7,956	7,518	-438	-5.5%
21 - Mining	1,974	1,594	-380	-19.3%
23 - Construction	159,762	158,057	-1,705	-1.1%
31-33 - Manufacturing	313,608	294,964	-18,644	-5.9%
DUR - Durable Goods Manufacturing	205,621	195,180	-10,441	-5.1%
NONDUR - Non-Durable Goods Manufacturing	107,987	99,785	-8,202	-7.6%
22 - Utilities	13,970	13,396	-574	-4.1%
42 - Wholesale Trade	135,538	138,426	2,888	2.1%
44-45 - Retail Trade	355,455	348,784	-6,671	-1.9%
48-49 - Transportation and Warehousing	100,564	100,802	238	0.2%
51 - Information	92,519	94,852	2,333	2.5%
52 - Finance and Insurance	173,224	182,744	9,520	5.5%
53 - Real Estate and Rental and Leasing	46,550	45,094	-1,456	-3.1%
54 - Professional and Technical Services	228,408	252,712	24,304	10.6%
55 - Management of Companies and Enterprises	64,989	61,401	-3,588	-5.5%
56 - Administrative and Waste Services	170,375	180,429	10,054	5.9%
61 - Educational Services	252,159	269,921	17,762	7.0%
62 - Health Care and Social Assistance	451,949	488,020	36,071	8.0%
71 - Arts, Entertainment, and Recreation	62,046	64,971	2,925	4.7%
72 - Accommodation and Food Services	260,673	268,410	7,737	3.0%
81 - Other Services, Ex. Public Admin	117,750	128,741	10,991	9.3%
92 - Public Administration	130,413	135,383	4,970	3.8%

**Merrimack Valley ES-202 Average Monthly Employment, 2006-2007**

**2 Digit**

Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
Total, All Industries	128,517	130,386	1,869	1.5%
11 - Agriculture, Forestry, Fishing & Hunting	170	169	-1	-0.6%
21 - Mining	10	7	-3	-30.0%
23 - Construction	7,022	6,772	-250	-3.6%
31-33 - Manufacturing	25,162	25,576	414	1.6%
DUR - Durable Goods Manufacturing	16,408	16,905	497	3.0%
NONDUR - Non-Durable Goods Manufacturing	8,755	8,671	-84	-1.0%
22 - Utilities	471	484	13	2.8%
42 - Wholesale Trade	4,539	4,347	-192	-4.2%
44-45 - Retail Trade	11,304	11,484	180	1.6%
48-49 - Transportation and Warehousing	1,991	2,051	60	3.0%
51 - Information	4,017	3,466	-551	-13.7%
52 - Finance and Insurance	3,617	3,535	-82	-2.3%
53 - Real Estate and Rental and Leasing	1393	1351	-42	-3.0%
54 - Professional and Technical Services	8,971	9,808	837	9.3%
55 - Management of Companies and Enterprises	1726	1931	205	11.9%
56 - Administrative and Waste Services	8,321	8,294	-27	-0.3%
61 - Educational Services	8,877	9,218	341	3.8%
62 - Health Care and Social Assistance	18,850	19,479	629	3.3%
71 - Arts, Entertainment, and Recreation	2,382	2,525	143	6.0%
72 - Accommodation and Food Services	9,264	9,185	-79	-0.9%
81 - Other Services, Ex. Public Admin	4,786	4,958	172	3.6%
92 - Public Administration	5,642	5,747	105	1.9%

**Massachusetts ES-202 Average Monthly Employment, 2006-2007**

**2 Digit**

Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
<b>Total, All Industries</b>	3,200,233	3,236,217	35,984	1.1%
11 - Agriculture, Forestry, Fishing & Hunting	7,749	7,518	-231	-3.0%
21 - Mining	1,842	1,594	-248	-13.5%
23 - Construction	161,049	158,057	-2,992	-1.9%
31-33 - Manufacturing	298,840	294,964	-3,876	-1.3%
DUR - Durable Goods Manufacturing	196,222	195,180	-1,042	-0.5%
NONDUR - Non-Durable Goods Manufacturing	102,618	99,785	-2,833	-2.8%
22 - Utilities	13,068	13,396	328	2.5%
42 - Wholesale Trade	137,726	138,426	700	0.5%
44-45 - Retail Trade	349,751	348,784	-967	-0.3%
48-49 - Transportation and Warehousing	99,927	100,802	875	0.9%
51 - Information	93,745	94,852	1,107	1.2%
52 - Finance and Insurance	181,868	182,744	876	0.5%
53 - Real Estate and Rental and Leasing	46,161	45,094	-1,067	-2.3%
54 - Professional and Technical Services	246,776	252,712	5,936	2.4%
55 - Management of Companies and Enterprises	61,790	61,401	-389	-0.6%
56 - Administrative and Waste Services	176,723	180,429	3,706	2.1%
61 - Educational Services	264,293	269,921	5,628	2.1%
62 - Health Care and Social Assistance	471,170	488,020	16,850	3.6%
71 - Arts, Entertainment, and Recreation	63,976	64,971	995	1.6%
72 - Accommodation and Food Services	264,944	268,410	3,466	1.3%
81 - Other Services, Ex. Public Admin	124,406	128,741	4,335	3.5%
92 - Public Administration	134,428	135,383	955	0.7%

**Merrimack Valley ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
	<b>Total, all industries</b>	126,665	130,386	3,721	2.9%
	<b>Goods-Producing Domain</b>	32,397	32,524	127	0.4%
	<b>Natural Resources and Mining</b>	198	176	-22	-11.1%
11	Agriculture, Forestry, Fishing & Hunting	188	169	-19	-10.1%
111	Crop Production	120	86	-34	-28.3%
1112	Vegetable and Melon Farming	34	35	1	2.9%
1114	Greenhouse and Nursery Production	43	47	4	9.3%
115	Agriculture & Forestry Support Activity	42	65	23	54.8%
1152	Support Activities for Animal Production	34	51	17	50.0%
21	Mining	10	7	-3	-30.0%
212	Mining (except Oil and Gas)	10	7	-3	-30.0%
2123	Nonmetallic Mineral Mining and Quarrying	10	7	-3	-30.0%
	<b>Construction</b>	6,556	6,772	216	3.3%
23	Construction	6,556	6,772	216	3.3%
236	Construction of Buildings	1,125	1,005	-120	-10.7%
2361	Residential Building Construction	692	714	22	3.2%
2362	Nonresidential Building Construction	433	291	-142	-32.8%
237	Heavy and Civil Engineering Construction	1,358	1,351	-7	-0.5%
2371	Utility System Construction	373	277	-96	-25.7%
2372	Land Subdivision	49	33	-16	-32.7%
2373	Highway, Street, and Bridge Construction	920	978	58	6.3%
2379	Other Heavy Construction	16	63	47	293.8%
238	Specialty Trade Contractors	4,073	4,417	344	8.4%
2381	Building Foundation/Exterior Contractors	960	1,042	82	8.5%
2382	Building Equipment Contractors	1,574	1,609	35	2.2%
2383	Building Finishing Contractors	950	1,148	198	20.8%
2389	Other Specialty Trade Contractors	589	617	28	4.8%
	<b>Manufacturing</b>	25,643	25,576	-67	-0.3%
31-33	Manufacturing	25,643	25,576	-67	-0.3%
DUR	Durable Goods Manufacturing	16,646	16,905	259	1.6%
NONDUR	Non-Durable Goods Manufacturing	8,997	8,671	-326	-3.6%
311	Food Manufacturing	1,973	2,407	434	22.0%
3113	Sugar/Confectionery Product Manufacture	62	90	28	45.2%
3114	Fruit, Vegetable, & Specialty Foods Mfg	259	393	134	51.7%
3118	Bakeries and Tortilla Manufacturing	939	1,066	127	13.5%
3119	Other Food Manufacturing	492	495	3	0.6%
3133	Textile and Fabric Finishing and Fabric	151	125	-26	-17.2%
314	Textile Product Mills	49	60	11	22.4%
3149	Other Textile Product Mills	43	58	15	34.9%
316	Leather and Allied Product Manufacturing	777	0	-777	-100.0%
3162	Footwear Manufacturing	769	0	-769	-100.0%
321	Wood Product Manufacturing	151	160	9	6.0%
3219	Other Wood Product Manufacturing	150	145	-5	-3.3%
322	Paper Manufacturing	961	670	-291	-30.3%
3221	Pulp, Paper, and Paperboard Mills	283	0	-283	-100.0%
3222	Converted Paper Product Manufacturing	678	490	-188	-27.7%
323	Printing and Related Support Activities	1,022	1,189	167	16.3%

**Merrimack Valley ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
3231	Printing and Related Support Activities	1,022	1,189	167	16.3%
324	Petroleum & Coal Products Manufacturing	14	0	-14	-100.0%
3241	Petroleum & Coal Products Manufacturing	14	0	-14	-100.0%
325	Chemical Manufacturing	1,609	1,501	-108	-6.7%
3251	Basic Chemical Manufacturing	98	151	53	54.1%
3252	Resin, Rubber, and Synthetic Fibers	161	0	-161	-100.0%
3254	Pharmaceutical & Medicine Manufacturing	205	245	40	19.5%
3255	Paint, Coating, & Adhesive Manufacturing	494	436	-58	-11.7%
3259	Other Chemical Preparation Manufacturing	210	226	16	7.6%
326	Plastics & Rubber Products Manufacturing	1,213	993	-220	-18.1%
3261	Plastics Product Manufacturing	1,163	993	-170	-14.6%
327	Nonmetallic Mineral Product Mfg	195	198	3	1.5%
3272	Glass and Glass Product Manufacturing	3	0	-3	-100.0%
3273	Cement & Concrete Product Manufacturing	103	82	-21	-20.4%
3279	Other Nonmetallic Mineral Products	41	44	3	7.3%
331	Primary Metal Manufacturing	73	60	-13	-17.8%
3314	Other Nonferrous Metal Production	52	0	-52	-100.0%
332	Fabricated Metal Product Manufacturing	1,969	1,961	-8	-0.4%
3323	Architectural and Structural Metals	552	503	-49	-8.9%
3324	Boilers, Tanks, and Shipping Containers	193	178	-15	-7.8%
3327	Machine Shops and Threaded Products	512	552	40	7.8%
3328	Coating, Engraving & Heat Treating Metal	398	335	-63	-15.8%
333	Machinery Manufacturing	889	808	-81	-9.1%
3332	Industrial Machinery Manufacturing	176	89	-87	-49.4%
3333	Commercial & Service Industry Machinery	65	43	-22	-33.8%
3334	HVAC and Commercial Refrigeration Equip	0	356	356	NA
3335	Metalworking Machinery Manufacturing	27	13	-14	-51.9%
3339	Other General Purpose Machinery Mfg	364	304	-60	-16.5%
334	Computer and Electronic Product Mfg	6,190	5,958	-232	-3.7%
3341	Computers and Peripheral Equipment	483	416	-67	-13.9%
3342	Communications Equipment Manufacturing	1,050	806	-244	-23.2%
3343	Audio and Video Equipment Manufacturing	33	0	-33	-100.0%
3344	Semiconductor and Electronic Components	2,287	1,622	-665	-29.1%
3345	Electronic Instrument Manufacturing	2,326	2,709	383	16.5%
335	Electrical Equipment and Appliances	1,335	1,426	91	6.8%
3351	Electric Lighting Equipment Mfg	29	0	-29	-100.0%
3352	Household Appliance Manufacturing	58	50	-8	-13.8%
3353	Electrical Equipment Manufacturing	0	1,044	1,044	NA
3359	Other Electrical Equipment & Components	80	316	236	295.0%
337	Furniture and Related Product Mfg	264	317	53	20.1%
3371	Household and Institutional Furniture	143	163	20	14.0%
3372	Office Furniture and Fixtures Mfg	73	148	75	102.7%
339	Miscellaneous Manufacturing	1,791	1,804	13	0.7%
3391	Medical Equipment and Supplies Mfg	1,005	1,002	-3	-0.3%
3399	Other Miscellaneous Manufacturing	785	802	17	2.2%
	<b>Service-Providing Domain</b>	94,268	97,862	3,594	3.8%
	<b>Trade, Transportation and Utilities</b>	19,095	18,366	-729	-3.8%
22	Utilities	470	484	14	3.0%
221	Utilities	470	484	14	3.0%
2211	Power Generation and Supply	283	289	6	2.1%

**Merrimack Valley ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
2212	Natural Gas Distribution	116	113	-3	-2.6%
2213	Water, Sewage and Other Systems	71	82	11	15.5%
42	Wholesale Trade	5,059	4,347	-712	-14.1%
423	Merchant Wholesalers, Durable Goods	2,480	2,488	8	0.3%
4231	Motor Vehicle/Part Merchant Wholesalers	70	78	8	11.4%
4232	Furniture & Furnishings Merchant Whsele	94	119	25	26.6%
4233	Lumber and Supply Merchant Wholesalers	491	471	-20	-4.1%
4234	Commercial Goods Merchant Wholesalers	525	626	101	19.2%
4235	Metal and Mineral Merchant Wholesalers	37	46	9	24.3%
4236	Electric Goods Merchant Wholesalers	626	544	-82	-13.1%
4237	Hardware & Plumbing Merchant Wholesalers	36	82	46	127.8%
4238	Machinery & Supply Merchant Wholesalers	447	356	-91	-20.4%
4239	Misc Durable Goods Merchant Wholesalers	154	165	11	7.1%
424	Merchant Wholesalers, Nondurable Goods	1,476	1,264	-212	-14.4%
4241	Paper/Paper Product Merchant Wholesalers	90	101	11	12.2%
4242	Druggists' Goods Merchant Wholesalers	259	86	-173	-66.8%
4243	Apparel/Piece Goods Merchant Wholesalers	219	88	-131	-59.8%
4244	Grocery Product Merchant Wholesalers	546	596	50	9.2%
4246	Chemical Merchant Wholesalers	153	203	50	32.7%
4249	Misc Nondurable Goods Merchant Whsele	111	106	-5	-4.5%
425	Electronic Markets and Agents/Brokers	1,103	595	-508	-46.1%
4251	Electronic Markets and Agents/Brokers	1,103	595	-508	-46.1%
44-45	Retail Trade	11,502	11,484	-18	-0.2%
441	Motor Vehicle and Parts Dealers	1,458	1,269	-189	-13.0%
4411	Automobile Dealers	1,079	900	-179	-16.6%
4412	Other Motor Vehicle Dealers	81	73	-8	-9.9%
4413	Auto Parts, Accessories, and Tire Stores	297	296	-1	-0.3%
442	Furniture and Home Furnishings Stores	323	309	-14	-4.3%
4421	Furniture Stores	200	196	-4	-2.0%
4422	Home Furnishings Stores	123	113	-10	-8.1%
443	Electronics and Appliance Stores	179	210	31	17.3%
4431	Electronics and Appliance Stores	179	210	31	17.3%
444	Building Material & Garden Supply Stores	966	833	-133	-13.8%
4441	Building Material and Supplies Dealers	867	714	-153	-17.6%
4442	Lawn & Garden Equipment/Supplies Stores	99	119	20	20.2%
445	Food and Beverage Stores	4,281	4,407	126	2.9%
4451	Grocery Stores	3,708	3,813	105	2.8%
4452	Specialty Food Stores	324	349	25	7.7%
4453	Beer, Wine, and Liquor Stores	248	245	-3	-1.2%
446	Health and Personal Care Stores	1,124	1,078	-46	-4.1%
4461	Health and Personal Care Stores	1,124	1,078	-46	-4.1%
447	Gasoline Stations	571	503	-68	-11.9%
4471	Gasoline Stations	571	503	-68	-11.9%
448	Clothing and Clothing Accessories Stores	887	899	12	1.4%
4481	Clothing Stores	723	742	19	2.6%
4482	Shoe Stores	97	86	-11	-11.3%
4483	Jewelry, Luggage & Leather Goods Stores	67	71	4	6.0%
451	Sporting Goods/Hobby/Book/Music Stores	339	341	2	0.6%
4511	Sporting Goods/Musical Instrument Stores	207	226	19	9.2%
4512	Book, Periodical, and Music Stores	132	115	-17	-12.9%



**Merrimack Valley ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
452	General Merchandise Stores	562	855	293	52.1%
4521	Department Stores	389	530	141	36.2%
4529	Other General Merchandise Stores	173	325	152	87.9%
453	Miscellaneous Store Retailers	571	456	-115	-20.1%
4531	Florists	187	128	-59	-31.6%
4532	Office Supply, Stationery & Gift Stores	201	173	-28	-13.9%
4533	Used Merchandise Stores	25	20	-5	-20.0%
4539	Other Miscellaneous Store Retailers	158	136	-22	-13.9%
454	Nonstore Retailers	243	324	81	33.3%
4541	Electronic Shopping & Mail-Order Houses	20	0	-20	-100.0%
4542	Vending Machine Operators	55	51	-4	-7.3%
4543	Direct Selling Establishments	168	107	-61	-36.3%
48-49	Transportation and Warehousing	2,064	2,051	-13	-0.6%
481	Air Transportation	10	0	-10	-100.0%
4812	Nonscheduled Air Transportation	10	0	-10	-100.0%
484	Truck Transportation	512	517	5	1.0%
4841	General Freight Trucking	342	311	-31	-9.1%
4842	Specialized Freight Trucking	170	206	36	21.2%
485	Transit and Ground Passenger Transport	514	496	-18	-3.5%
4853	Taxi and Limousine Service	89	122	33	37.1%
4854	School and Employee Bus Transportation	244	214	-30	-12.3%
4859	Other Ground Passenger Transportation	106	40	-66	-62.3%
487	Scenic and Sightseeing Transportation	24	18	-6	-25.0%
4872	Scenic/Sightseeing Transportation, Water	24	18	-6	-25.0%
488	Support Activities for Transportation	200	197	-3	-1.5%
4881	Support Activities for Air Transport	11	13	2	18.2%
4884	Support Activities, Road Transportation	113	89	-24	-21.2%
4889	Other Support Activities for Transport	18	20	2	11.1%
492	Couriers and Messengers	33	24	-9	-27.3%
4921	Couriers	6	15	9	150.0%
4922	Local Messengers and Local Delivery	28	9	-19	-67.9%
493	Warehousing and Storage	220	199	-21	-9.5%
4931	Warehousing and Storage	220	199	-21	-9.5%
	<b>Information</b>	3,948	3,466	-482	-12.2%
51	Information	3,948	3,466	-482	-12.2%
511	Publishing Industries	1,206	1,210	4	0.3%
5111	Newspaper, Book, & Directory Publishers	702	588	-114	-16.2%
5112	Software Publishers	504	622	118	23.4%
512	Motion Picture & Sound Recording Ind	266	237	-29	-10.9%
5121	Motion Picture and Video Industries	266	237	-29	-10.9%
515	Broadcasting (except Internet)	71	61	-10	-14.1%
5151	Radio and Television Broadcasting	68	52	-16	-23.5%
5152	Cable and Other Subscription Programming	0	8	8	NA
516	Internet Publishing and Broadcasting	5	0	-5	-100.0%
5161	Internet Publishing and Broadcasting	5	0	-5	-100.0%
517	Telecommunications	1,790	1,303	-487	-27.2%
5171	Wired Telecommunications Carriers	0	1,287	1,287	NA
5173	Telecommunications Resellers	52	0	-52	-100.0%
5175	Cable and Other Program Distribution	779	0	-779	-100.0%
5179	Other Telecommunications	0	12	12	NA

**Merrimack Valley ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
518	ISPs, Search Portals, & Data Processing	247	261	14	5.7%
5181	ISPs and Web Search Portals	25	0	-25	-100.0%
5182	Data Processing and Related Services	221	261	40	18.1%
519	Other Information Services	363	394	31	8.5%
5191	Other Information Services	363	394	31	8.5%
	<b>Financial Activities</b>	4,880	4,885	5	0.1%
52	Finance and Insurance	3,289	3,535	246	7.5%
522	Credit Intermediation & Related Activity	1,779	1,904	125	7.0%
5221	Depository Credit Intermediation	1,341	1,386	45	3.4%
5222	Nondepository Credit Intermediation	350	450	100	28.6%
5223	Activities Rel to Credit Intermediation	88	68	-20	-22.7%
523	Financial Investment & Related Activity	293	335	42	14.3%
5231	Security & Commodity Investment Activity	100	96	-4	-4.0%
5239	Other Financial Investment Activities	185	233	48	25.9%
524	Insurance Carriers & Related Activities	1,201	1,290	89	7.4%
5241	Insurance Carriers	496	605	109	22.0%
5242	Insurance Agencies, Brokerages & Support	705	685	-20	-2.8%
525	Funds, Trusts & Other Financial Vehicles	17	6	-11	-64.7%
5259	Other Investment Pools and Funds	9	0	-9	-100.0%
53	Real Estate and Rental and Leasing	1,591	1,351	-240	-15.1%
531	Real Estate	1,032	974	-58	-5.6%
5311	Lessors of Real Estate	399	433	34	8.5%
5312	Offices of Real Estate Agents & Brokers	358	257	-101	-28.2%
5313	Activities Related to Real Estate	274	284	10	3.6%
532	Rental and Leasing Services	554	373	-181	-32.7%
5321	Automotive Equipment Rental and Leasing	246	86	-160	-65.0%
5322	Consumer Goods Rental	249	223	-26	-10.4%
5323	General Rental Centers	47	28	-19	-40.4%
5324	Machinery & Equipment Rental & Leasing	11	35	24	218.2%
	<b>Professional and Business Services</b>	17,473	20,033	2,560	14.7%
54	Professional and Technical Services	8,308	9,808	1,500	18.1%
541	Professional and Technical Services	8,308	9,808	1,500	18.1%
5411	Legal Services	891	1,053	162	18.2%
5412	Accounting and Bookkeeping Services	441	468	27	6.1%
5413	Architectural and Engineering Services	912	1,037	125	13.7%
5414	Specialized Design Services	177	201	24	13.6%
5415	Computer Systems Design and Rel Services	1,670	2,490	820	49.1%
5416	Management & Technical Consulting Svc	812	828	16	2.0%
5417	Scientific Research and Development Svc	2,479	2,631	152	6.1%
5418	Advertising and Related Services	193	301	108	56.0%
5419	Other Professional & Technical Services	732	799	67	9.2%
55	Management of Companies and Enterprises	2,193	1,931	-262	-11.9%
551	Management of Companies and Enterprises	2,193	1,931	-262	-11.9%
5511	Management of Companies and Enterprises	2,193	1,931	-262	-11.9%
56	Administrative and Waste Services	6,972	8,294	1,322	19.0%
561	Administrative and Support Services	6,017	7,287	1,270	21.1%
5611	Office Administrative Services	346	379	33	9.5%
5613	Employment Services	3,434	4,376	942	27.4%
5614	Business Support Services	488	638	150	30.7%
5615	Travel Arrangement & Reservation Service	113	99	-14	-12.4%

**Merrimack Valley ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
5616	Investigation and Security Services	249	330	81	32.5%
5617	Services to Buildings and Dwellings	1,215	1,344	129	10.6%
5619	Other Support Services	153	106	-47	-30.7%
562	Waste Management and Remediation Service	955	1,007	52	5.4%
5621	Waste Collection	106	101	-5	-4.7%
5622	Waste Treatment and Disposal	215	275	60	27.9%
5629	Remediation and Other Waste Services	634	631	-3	-0.5%
	<b>Education and Health Services</b>	<b>27,798</b>	<b>28,697</b>	<b>899</b>	<b>3.2%</b>
61	Educational Services	8,716	9,218	502	5.8%
611	Educational Services	8,716	9,218	502	5.8%
6111	Elementary and Secondary Schools	7,534	7,973	439	5.8%
6114	Business, Computer & Management Training	10	0	-10	-100.0%
6115	Technical and Trade Schools	40	37	-3	-7.5%
6116	Other Schools and Instruction	295	281	-14	-4.7%
6117	Educational Support Services	0	8	8	NA
62	Health Care and Social Assistance	19,082	19,479	397	2.1%
621	Ambulatory Health Care Services	6,238	6,911	673	10.8%
6211	Offices of Physicians	2,473	2,604	131	5.3%
6212	Offices of Dentists	998	1,093	95	9.5%
6213	Offices of Other Health Practitioners	473	579	106	22.4%
6214	Outpatient Care Centers	525	668	143	27.2%
6215	Medical and Diagnostic Laboratories	282	310	28	9.9%
6216	Home Health Care Services	1,280	1,436	156	12.2%
6219	Other Ambulatory Health Care Services	206	221	15	7.3%
622	Hospitals	4,755	4,672	-83	-1.7%
6221	General Medical and Surgical Hospitals	4,379	4,249	-130	-3.0%
623	Nursing and Residential Care Facilities	4,985	4,883	-102	-2.0%
6231	Nursing Care Facilities	3,389	3,183	-206	-6.1%
6232	Residential Mental Health Facilities	835	852	17	2.0%
6233	Community Care Facility for the Elderly	407	545	138	33.9%
6239	Other Residential Care Facilities	354	303	-51	-14.4%
624	Social Assistance	3,104	3,012	-92	-3.0%
6241	Individual and Family Services	1,051	1,254	203	19.3%
6242	Emergency and Other Relief Services	251	295	44	17.5%
6243	Vocational Rehabilitation Services	822	493	-329	-40.0%
6244	Child Day Care Services	980	971	-9	-0.9%
	<b>Leisure and Hospitality</b>	<b>11,482</b>	<b>11,710</b>	<b>228</b>	<b>2.0%</b>
71	Arts, Entertainment, and Recreation	2,294	2,525	231	10.1%
711	Performing Arts and Spectator Sports	57	63	6	10.5%
7111	Performing Arts Companies	31	30	-1	-3.2%
7112	Spectator Sports	4	3	-1	-25.0%
7113	Performing Arts and Sports Promoters	12	17	5	41.7%
7115	Independent Artists/Writers/Performers	7	10	3	42.9%
712	Museums, Parks and Historical Sites	54	51	-3	-5.6%
7121	Museums, Parks and Historical Sites	54	51	-3	-5.6%
713	Amusement, Gambling & Recreation Ind	2,182	2,410	228	10.4%
7131	Amusement Parks and Arcades	84	62	-22	-26.2%
7139	Other Amusement & Recreation Industries	2,098	2,348	250	11.9%
72	Accommodation and Food Services	9,188	9,185	-3	0.0%

**Merrimack Valley ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
721	Accommodation	615	565	-50	-8.1%
7211	Traveler Accommodation	552	503	-49	-8.9%
7212	RV Parks and Recreational Camps	58	62	4	6.9%
722	Food Services and Drinking Places	8,573	8,620	47	0.5%
7221	Full-Service Restaurants	4,347	4,350	3	0.1%
7222	Limited-Service Eating Places	3,318	3,517	199	6.0%
7223	Special Food Services	594	462	-132	-22.2%
7224	Drinking Places (Alcoholic Beverages)	314	291	-23	-7.3%
	<b>Other Services</b>	4,205	4,958	753	17.9%
81	Other Services, Ex. Public Admin	4,205	4,958	753	17.9%
811	Repair and Maintenance	861	835	-26	-3.0%
8111	Automotive Repair and Maintenance	637	626	-11	-1.7%
8112	Electronic Equipment Repair/Maintenance	110	114	4	3.6%
8113	Commercial Machinery Repair/Maintenance	73	66	-7	-9.6%
8114	Household Goods Repair and Maintenance	41	29	-12	-29.3%
812	Personal and Laundry Services	1,575	1,579	4	0.3%
8121	Personal Care Services	736	777	41	5.6%
8122	Death Care Services	149	137	-12	-8.1%
8123	Drycleaning and Laundry Services	541	506	-35	-6.5%
8129	Other Personal Services	149	159	10	6.7%
813	Membership Organizations & Associations	1,170	1,512	342	29.2%
8132	Grantmaking and Giving Services	11	26	15	136.4%
8133	Social Advocacy Organizations	73	410	337	461.6%
8134	Civic and Social Organizations	904	888	-16	-1.8%
8139	Professional and Similar Organizations	183	185	2	1.1%
814	Private Households	599	1,032	433	72.3%
8141	Private Households	599	1,032	433	72.3%
	<b>Public Administration</b>	5,387	5,747	360	6.7%
92	Public Administration	5,387	5,747	360	6.7%
921	Executive, Legislative, & Gen Government	2,623	2,651	28	1.1%
9211	Executive, Legislative, & Gen Government	2,623	2,651	28	1.1%
922	Justice, Public Order, and Safety Activi	1,778	1,960	182	10.2%
9221	Justice, Public Order, and Safety Activi	1,778	1,960	182	10.2%
925	Community and Housing Program Admin	229	198	-31	-13.5%
9251	Community and Housing Program Admin	229	198	-31	-13.5%
926	Administration of Economic Programs	47	58	11	23.4%
9261	Administration of Economic Programs	47	58	11	23.4%

**Massachusetts ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
	<b>Total, all industries</b>	3,139,881	3,236,217	96,336	3.1%
	<b>Goods-Producing Domain</b>	483,299	462,133	-21,166	-4.4%
	<b>Natural Resources and Mining</b>	9,929	9,112	-817	-8.2%
11	Agriculture, Forestry, Fishing & Hunting	7,956	7,518	-438	-5.5%
111	Crop Production	4,183	3,806	-377	-9.0%
1112	Vegetable and Melon Farming	940	878	-62	-6.6%
1113	Fruit and Tree Nut Farming	721	856	135	18.7%
1114	Greenhouse and Nursery Production	1,835	1,710	-125	-6.8%
1119	Other Crop Farming	684	358	-326	-47.7%
112	Animal Production	627	648	21	3.3%
1121	Cattle Ranching and Farming	302	316	14	4.6%
1123	Poultry and Egg Production	105	77	-28	-26.7%
1125	Animal Aquaculture	60	100	40	66.7%
1129	Other Animal Production	144	137	-7	-4.9%
113	Forestry and Logging	130	120	-10	-7.7%
1132	Forest Nursery/Gathering Forest Products		11	11	NA
1133	Logging	95	109	14	14.7%
114	Fishing, Hunting and Trapping	1,767	1,625	-142	-8.0%
1141	Fishing	1,767	1,624	-143	-8.1%
115	Agriculture & Forestry Support Activity	1,248	1,318	70	5.6%
1151	Support Activities for Crop Production	64	61	-3	-4.7%
1152	Support Activities for Animal Production	1,168	1,225	57	4.9%
1153	Support Activities for Forestry	16	32	16	100.0%
	<b>Mining</b>	1,974	1,594	-380	-19.3%
212	Mining (except Oil and Gas)	13	1,548	1,535	11807.7%
2111	Oil and Gas Extraction	13		-13	-100.0%
212	Mining (except Oil and Gas)	1,844		-1,844	-100.0%
2123	Nonmetallic Mineral Mining and Quarrying	1,844	1,548	-296	-16.1%
213	Support Activities for Mining	117	37	-80	-68.4%
2131	Support Activities for Mining	117	37	-80	-68.4%
	<b>Construction</b>	159,762	158,057	-1,705	-1.1%
23	Construction	159,762	158,057	-1,705	-1.1%
236	Construction of Buildings	33,730	33,004	-726	-2.2%
2361	Residential Building Construction	20,185	19,142	-1,043	-5.2%
2362	Nonresidential Building Construction	13,545	13,862	317	2.3%
237	Heavy and Civil Engineering Construction	26,550	25,237	-1,313	-4.9%
2371	Utility System Construction	5,122	5,197	75	1.5%
2372	Land Subdivision	1,552	1,550	-2	-0.1%
2373	Highway, Street, and Bridge Construction	18,843	17,299	-1,544	-8.2%
2379	Other Heavy Construction	1,034	1,191	157	15.2%
238	Specialty Trade Contractors	99,482	99,816	334	0.3%
2381	Building Foundation/Exterior Contractors	15,658	15,785	127	0.8%
2382	Building Equipment Contractors	45,697	45,613	-84	-0.2%
2383	Building Finishing Contractors	22,637	22,011	-626	-2.8%
2389	Other Specialty Trade Contractors	15,489	16,406	917	5.9%
	<b>Manufacturing</b>	313,608	294,964	-18,644	-5.9%
31-33	Manufacturing	313,608	294,964	-18,644	-5.9%
DUR	Durable Goods Manufacturing	205,621	195,180	-10,441	-5.1%

**Massachusetts ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
NONDUR	Non-Durable Goods Manufacturing	107,987	99,785	-8,202	-7.6%
311	Food Manufacturing	22,370	22,814	444	2.0%
3112	Grain and Oilseed Milling	463	578	115	24.8%
3113	Sugar/Confectionery Product Manufacture	1,870	1,735	-135	-7.2%
3114	Fruit, Vegetable, & Specialty Foods Mfg	1,675	1,981	306	18.3%
3115	Dairy Product Manufacturing	2,800	2,798	-2	-0.1%
3116	Animal Slaughtering and Processing	2,098	2,061	-37	-1.8%
3117	Seafood Product Preparation & Packaging	2,320	2,512	192	8.3%
3118	Bakeries and Tortilla Manufacturing	8,777	8,297	-480	-5.5%
3119	Other Food Manufacturing	2,199	2,818	619	28.1%
312	Beverage & Tobacco Product Manufacturing	2,809	2,688	-121	-4.3%
3121	Beverage Manufacturing	2,802	2,687	-115	-4.1%
313	Textile Mills	8,637	5,204	-3,433	-39.7%
3131	Fiber, Yarn, and Thread Mills	998	241	-757	-75.9%
3132	Fabric Mills	4,247	2,541	-1,706	-40.2%
3133	Textile and Fabric Finishing and Fabric	3,392	2,423	-969	-28.6%
314	Textile Product Mills	2,759	3,120	361	13.1%
3141	Textile Furnishings Mills	1,352	1,152	-200	-14.8%
3149	Other Textile Product Mills	1,407	1,968	561	39.9%
315	Apparel Manufacturing	4,150	3,013	-1,137	-27.4%
3151	Apparel Knitting Mills		64	64	NA
3152	Cut and Sew Apparel Manufacturing	3,539	2,715	-824	-23.3%
3159	Accessories and Other Apparel Mfg		234	234	NA
316	Leather and Allied Product Manufacturing	2,097	1,698	-399	-19.0%
3161	Leather and Hide Tanning and Finishing	143	69	-74	-51.7%
3162	Footwear Manufacturing	1,348	1,224	-124	-9.2%
3169	Other Leather Product Manufacturing	607	405	-202	-33.3%
321	Wood Product Manufacturing	3,477	3,040	-437	-12.6%
3211	Sawmills and Wood Preservation	306	233	-73	-23.9%
3212	Veneer and Engineered Wood Products	303	323	20	6.6%
3219	Other Wood Product Manufacturing	2,868	2,484	-384	-13.4%
322	Paper Manufacturing	14,101	12,028	-2,073	-14.7%
3221	Pulp, Paper, and Paperboard Mills	3,116	2,923	-193	-6.2%
3222	Converted Paper Product Manufacturing	10,985	9,105	-1,880	-17.1%
323	Printing and Related Support Activities	16,380	15,759	-621	-3.8%
3231	Printing and Related Support Activities	16,380	15,759	-621	-3.8%
324	Petroleum & Coal Products Manufacturing	1,326	1,121	-205	-15.5%
3241	Petroleum & Coal Products Manufacturing	1,326	1,121	-205	-15.5%
325	Chemical Manufacturing	16,451	18,353	1,902	11.6%
3251	Basic Chemical Manufacturing	1,139	1,164	25	2.2%
3252	Resin, Rubber, and Synthetic Fibers	2,074	3,147	1,073	51.7%
3253	Agricultural Chemical Manufacturing	84	116	32	38.1%
3254	Pharmaceutical & Medicine Manufacturing	7,050	9,291	2,241	31.8%
3255	Paint, Coating, & Adhesive Manufacturing	2,169	1,941	-228	-10.5%
3256	Cleaning Compound and Toiletry Mfg	1,350	1,045	-305	-22.6%
3259	Other Chemical Preparation Manufacturing	2,584	1,650	-934	-36.1%
326	Plastics & Rubber Products Manufacturing	16,906	13,986	-2,920	-17.3%
3261	Plastics Product Manufacturing	15,118	12,902	-2,216	-14.7%

**Massachusetts ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
3262	Rubber Product Manufacturing	1,788	1,084	-704	-39.4%
327	Nonmetallic Mineral Product Mfg	6,721	6,829	108	1.6%
3271	Clay Product & Refractory Manufacturing	1,128	1,164	36	3.2%
3272	Glass and Glass Product Manufacturing	1,399	1,569	170	12.2%
3273	Cement & Concrete Product Manufacturing	2,172	2,346	174	8.0%
3279	Other Nonmetallic Mineral Products	2,021	1,733	-288	-14.3%
331	Primary Metal Manufacturing	5,694	4,700	-994	-17.5%
3311	Iron and Steel Mills and Ferroalloys	77	27	-50	-64.9%
3312	Purchased Steel Product Manufacturing	583	743	160	27.4%
3313	Alumina and Aluminum Production	413	316	-97	-23.5%
3314	Other Nonferrous Metal Production	3,228	2,543	-685	-21.2%
3315	Foundries	1,393	1,071	-322	-23.1%
332	Fabricated Metal Product Manufacturing	36,341	34,753	-1,588	-4.4%
3321	Forging and Stamping	2,672	2,312	-360	-13.5%
3322	Cutlery and Handtool Manufacturing	6,195	4,803	-1,392	-22.5%
3323	Architectural and Structural Metals	6,419	6,385	-34	-0.5%
3324	Boilers, Tanks, and Shipping Containers	974	956	-18	-1.8%
3325	Hardware Manufacturing	444	321	-123	-27.7%
3326	Spring and Wire Product Manufacturing	918	738	-180	-19.6%
3327	Machine Shops and Threaded Products	10,475	10,638	163	1.6%
3328	Coating, Engraving & Heat Treating Metal	4,164	4,177	13	0.3%
3329	Other Fabricated Metal Product Mfg	4,080	4,423	343	8.4%
333	Machinery Manufacturing	22,008	20,594	-1,414	-6.4%
3331	Ag., Construction, and Mining Machinery	317	210	-107	-33.8%
3332	Industrial Machinery Manufacturing	6,482	6,012	-470	-7.3%
3333	Commercial & Service Industry Machinery	4,224	3,298	-926	-21.9%
3334	HVAC and Commercial Refrigeration Equip	1,175	1,141	-34	-2.9%
3335	Metalworking Machinery Manufacturing	3,961	3,544	-417	-10.5%
3336	Turbine and Power Transmission Equipment	1,350	1,867	517	38.3%
3339	Other General Purpose Machinery Mfg	4,500	4,521	21	0.5%
334	Computer and Electronic Product Mfg	74,279	71,224	-3,055	-4.1%
3341	Computers and Peripheral Equipment	15,963	14,044	-1,919	-12.0%
3342	Communications Equipment Manufacturing	6,916	5,326	-1,590	-23.0%
3343	Audio and Video Equipment Manufacturing		3,962	3,962	NA
3344	Semiconductor and Electronic Components	19,546	18,976	-570	-2.9%
3345	Electronic Instrument Manufacturing	28,278	28,575	297	1.1%
3346	Magnetic Media Manufacture & Reproducing	559	340	-219	-39.2%
335	Electrical Equipment and Appliances	11,214	11,845	631	5.6%
3351	Electric Lighting Equipment Mfg	2,219	2,565	346	15.6%
3352	Household Appliance Manufacturing	538	596	58	10.8%
3353	Electrical Equipment Manufacturing	4,979	4,307	-672	-13.5%
3359	Other Electrical Equipment & Components	3,478	4,377	899	25.8%
336	Transportation Equipment Manufacturing	14,000	14,407	407	2.9%
3361	Motor Vehicle Manufacturing	204	191	-13	-6.4%
3362	Motor Vehicle Body and Trailer Mfg	461	461	0	0.0%
3363	Motor Vehicle Parts Manufacturing	1,717	1,220	-497	-28.9%
3364	Aerospace Product & Parts Manufacturing	11,100	11,917	817	7.4%
3366	Ship and Boat Building	453	556	103	22.7%

**Massachusetts ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
3369	Other Transportation Equipment Mfg	67	61	-6	-9.0%
337	Furniture and Related Product Mfg	5,623	5,574	-49	-0.9%
3371	Household and Institutional Furniture	3,368	2,737	-631	-18.7%
3372	Office Furniture and Fixtures Mfg	1,488	2,196	708	47.6%
3379	Other Furniture Related Product Mfg	767	641	-126	-16.4%
339	Miscellaneous Manufacturing	26,264	22,214	-4,050	-15.4%
3391	Medical Equipment and Supplies Mfg	13,157	11,210	-1,947	-14.8%
3399	Other Miscellaneous Manufacturing	13,107	11,003	-2,104	-16.1%
	<b>Service-Providing Domain</b>	2,656,582	2,774,084	117,502	4.4%
	<b>Trade, Transportation and Utilities</b>	605,527	601,408	-4,119	-0.7%
22	Utilities	13,970	13,396	-574	-4.1%
221	Utilities	13,970	13,396	-574	-4.1%
2211	Power Generation and Supply	7,856	7,801	-55	-0.7%
2212	Natural Gas Distribution	2,750	2,820	70	2.5%
2213	Water, Sewage and Other Systems	3,365	2,775	-590	-17.5%
42	Wholesale Trade	135,538	138,426	2,888	2.1%
423	Merchant Wholesalers, Durable Goods	63,756	62,417	-1,339	-2.1%
4231	Motor Vehicle/Part Merchant Wholesalers	5,108	4,997	-111	-2.2%
4232	Furniture & Furnishings Merchant Whsle	2,390	2,122	-268	-11.2%
4233	Lumber and Supply Merchant Wholesalers	5,568	5,864	296	5.3%
4234	Commercial Goods Merchant Wholesalers	21,432	20,610	-822	-3.8%
4235	Metal and Mineral Merchant Wholesalers	1,721	1,764	43	2.5%
4236	Electric Goods Merchant Wholesalers	9,689	9,190	-499	-5.2%
4237	Hardware & Plumbing Merchant Wholesalers	4,796	5,003	207	4.3%
4238	Machinery & Supply Merchant Wholesalers	9,244	8,968	-276	-3.0%
4239	Misc Durable Goods Merchant Wholesalers	3,809	3,899	90	2.4%
424	Merchant Wholesalers, Nondurable Goods	47,010	48,735	1,725	3.7%
4241	Paper/Paper Product Merchant Wholesalers	5,061	4,890	-171	-3.4%
4242	Druggists' Goods Merchant Wholesalers	5,490	5,375	-115	-2.1%
4243	Apparel/Piece Goods Merchant Wholesalers	6,023	5,879	-144	-2.4%
4244	Grocery Product Merchant Wholesalers	16,387	18,120	1,733	10.6%
4245	Farm Product Merchant Wholesalers	214	177	-37	-17.3%
4246	Chemical Merchant Wholesalers	2,288	2,168	-120	-5.2%
4247	Petroleum Merchant Wholesalers	1,399	1,526	127	9.1%
4248	Alcoholic Beverage Merchant Wholesalers	3,289	3,805	516	15.7%
4249	Misc Nondurable Goods Merchant Whsle	6,859	6,796	-63	-0.9%
425	Electronic Markets and Agents/Brokers	24,771	27,273	2,502	10.1%
4251	Electronic Markets and Agents/Brokers	24,771	27,273	2,502	10.1%
44-45	Retail Trade	355,455	348,784	-6,671	-1.9%
441	Motor Vehicle and Parts Dealers	38,830	35,839	-2,991	-7.7%
4411	Automobile Dealers	27,389	24,892	-2,497	-9.1%
4412	Other Motor Vehicle Dealers	2,854	2,646	-208	-7.3%
4413	Auto Parts, Accessories, and Tire Stores	8,587	8,301	-286	-3.3%
442	Furniture and Home Furnishings Stores	12,917	12,513	-404	-3.1%
4421	Furniture Stores	5,823	5,212	-611	-10.5%
4422	Home Furnishings Stores	7,094	7,301	207	2.9%
443	Electronics and Appliance Stores	12,061	12,198	137	1.1%
4431	Electronics and Appliance Stores	12,061	12,198	137	1.1%



**Massachusetts ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
444	Building Material & Garden Supply Stores	28,795	27,850	-945	-3.3%
4441	Building Material and Supplies Dealers	25,677	24,510	-1,167	-4.5%
4442	Lawn & Garden Equipment/Supplies Stores	3,119	3,340	221	7.1%
445	Food and Beverage Stores	89,792	89,894	102	0.1%
4451	Grocery Stores	73,800	74,501	701	0.9%
4452	Specialty Food Stores	7,254	6,939	-315	-4.3%
4453	Beer, Wine, and Liquor Stores	8,739	8,453	-286	-3.3%
446	Health and Personal Care Stores	26,630	27,064	434	1.6%
4461	Health and Personal Care Stores	26,630	27,064	434	1.6%
447	Gasoline Stations	12,465	11,817	-648	-5.2%
4471	Gasoline Stations	12,465	11,817	-648	-5.2%
448	Clothing and Clothing Accessories Stores	39,379	40,630	1,251	3.2%
4481	Clothing Stores	31,044	32,147	1,103	3.6%
4482	Shoe Stores	3,994	4,401	407	10.2%
4483	Jewelry, Luggage & Leather Goods Stores	4,341	4,082	-259	-6.0%
451	Sporting Goods/Hobby/Book/Music Stores	17,720	16,906	-814	-4.6%
4511	Sporting Goods/Musical Instrument Stores	11,675	11,410	-265	-2.3%
4512	Book, Periodical, and Music Stores	6,045	5,497	-548	-9.1%
452	General Merchandise Stores	42,317	42,408	91	0.2%
4521	Department Stores	32,514	31,740	-774	-2.4%
4529	Other General Merchandise Stores	9,803	10,667	864	8.8%
453	Miscellaneous Store Retailers	23,355	20,302	-3,053	-13.1%
4531	Florists	2,878	2,249	-629	-21.9%
4532	Office Supply, Stationery & Gift Stores	12,131	10,035	-2,096	-17.3%
4533	Used Merchandise Stores	1,848	1,814	-34	-1.8%
4539	Other Miscellaneous Store Retailers	6,499	6,204	-295	-4.5%
454	Nonstore Retailers	11,193	11,362	169	1.5%
4541	Electronic Shopping & Mail-Order Houses	4,112	5,189	1,077	26.2%
4542	Vending Machine Operators	659	580	-79	-12.0%
4543	Direct Selling Establishments	6,422	5,594	-828	-12.9%
48-49	Transportation and Warehousing	100,564	100,802	238	0.2%
481	Air Transportation	8,895	8,069	-826	-9.3%
4811	Scheduled Air Transportation	8,598	7,662	-936	-10.9%
4812	Nonscheduled Air Transportation	297	407	110	37.0%
483	Water Transportation	1,087	1,238	151	13.9%
4831	Sea, Coastal & Great Lakes Transport	1,044	1,188	144	13.8%
4832	Inland Water Transportation	43	50	7	16.3%
484	Truck Transportation	16,925	16,424	-501	-3.0%
4841	General Freight Trucking	10,356	9,940	-416	-4.0%
4842	Specialized Freight Trucking	6,569	6,484	-85	-1.3%
485	Transit and Ground Passenger Transport	20,538	22,654	2,116	10.3%
4852	Interurban and Rural Bus Transportation	824	773	-51	-6.2%
4853	Taxi and Limousine Service	3,154	3,797	643	20.4%
4854	School and Employee Bus Transportation	6,011	6,572	561	9.3%
4855	Charter Bus Industry	1,206	1,305	99	8.2%
4859	Other Ground Passenger Transportation	2,096	2,239	143	6.8%
486	Pipeline Transportation	115	141	26	22.6%
4862	Pipeline Transportation of Natural Gas	114	123	9	7.9%

**Massachusetts ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
487	Scenic and Sightseeing Transportation	2,063	1,772	-291	-14.1%
4871	Scenic/Sightseeing Transportation, Land	897	681	-216	-24.1%
4872	Scenic/Sightseeing Transportation, Water	1,163	1,083	-80	-6.9%
4879	Scenic/Sightseeing Transportation, Other		7	7	NA
488	Support Activities for Transportation	9,133	9,375	242	2.6%
4881	Support Activities for Air Transport	2,889	2,819	-70	-2.4%
4882	Support Activities for Rail Transport	98	78	-20	-20.4%
4883	Support Activities for Water Transport	451	456	5	1.1%
4884	Support Activities, Road Transportation	3,069	3,064	-5	-0.2%
4885	Freight Transportation Arrangement	2,099	2,345	246	11.7%
4889	Other Support Activities for Transport	526	613	87	16.5%
492	Couriers and Messengers	11,713	11,201	-512	-4.4%
4921	Couriers	11,043	10,619	-424	-3.8%
4922	Local Messengers and Local Delivery	670	582	-88	-13.1%
493	Warehousing and Storage	7,731	9,175	1,444	18.7%
4931	Warehousing and Storage	7,731	9,175	1,444	18.7%
	<b>Information</b>	92,519	94,852	2,333	2.5%
51	Information	92,519	94,852	2,333	2.5%
511	Publishing Industries	41,049	42,926	1,877	4.6%
5111	Newspaper, Book, & Directory Publishers	22,062	20,751	-1,311	-5.9%
5112	Software Publishers	18,988	22,175	3,187	16.8%
512	Motion Picture & Sound Recording Ind	5,261	5,697	436	8.3%
5121	Motion Picture and Video Industries	5,054	5,496	442	8.7%
5122	Sound Recording Industries	208	201	-7	-3.4%
515	Broadcasting (except Internet)	6,005	5,469	-536	-8.9%
5151	Radio and Television Broadcasting	5,196	4,727	-469	-9.0%
5152	Cable and Other Subscription Programming	809	742	-67	-8.3%
516	Internet Publishing and Broadcasting	2,182		-2,182	-100.0%
5161	Internet Publishing and Broadcasting	2,182		-2,182	-100.0%
517	Telecommunications	21,232	21,789	557	2.6%
5171	Wired Telecommunications Carriers	12,852	17,779	4,927	38.3%
5172	Wireless Telecommunications Carriers	2,486	2,365	-121	-4.9%
5173	Telecommunications Resellers	960		-960	-100.0%
5174	Satellite Telecommunications	58	64	6	10.3%
5175	Cable and Other Program Distribution	4,821		-4,821	-100.0%
5179	Other Telecommunications		1,581	1,581	NA
518	ISPs, Search Portals, & Data Processing	9,798	7,421	-2,377	-24.3%
5181	ISPs and Web Search Portals	2,535		-2,535	-100.0%
5182	Data Processing and Related Services	7,262	7,421	159	2.2%
519	Other Information Services	6,991	11,550	4,559	65.2%
5191	Other Information Services	6,991	11,550	4,559	65.2%
	<b>Financial Activities</b>	219,774	227,837	8,063	3.7%
52	Finance and Insurance	173,224	182,744	9,520	5.5%
522	Credit Intermediation & Related Activity	62,196	62,547	351	0.6%
5221	Depository Credit Intermediation	48,693	49,990	1,297	2.7%
5222	Nondepository Credit Intermediation	9,799	8,991	-808	-8.2%
5223	Activities Rel to Credit Intermediation	3,703	3,566	-137	-3.7%
523	Financial Investment & Related Activity	45,584	51,700	6,116	13.4%

**Massachusetts ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
5231	Security & Commodity Investment Activity	25,554	24,424	-1,130	-4.4%
5232	Securities and Commodity Exchanges	21	12	-9	-42.9%
5239	Other Financial Investment Activities	20,010	27,264	7,254	36.3%
524	Insurance Carriers & Related Activities	61,831	65,590	3,759	6.1%
5241	Insurance Carriers	39,094	43,536	4,442	11.4%
5242	Insurance Agencies, Brokerages & Support	22,737	22,054	-683	-3.0%
525	Funds, Trusts & Other Financial Vehicles	2,532	2,008	-524	-20.7%
5251	Insurance and Employee Benefit Funds	511	521	10	2.0%
5259	Other Investment Pools and Funds	2,022	1,487	-535	-26.5%
53	Real Estate and Rental and Leasing	46,550	45,094	-1,456	-3.1%
531	Real Estate	32,067	32,167	100	0.3%
5311	Lessors of Real Estate	9,795	10,125	330	3.4%
5312	Offices of Real Estate Agents & Brokers	10,501	8,734	-1,767	-16.8%
5313	Activities Related to Real Estate	11,771	13,308	1,537	13.1%
532	Rental and Leasing Services	14,045	12,412	-1,633	-11.6%
5321	Automotive Equipment Rental and Leasing	4,364	3,789	-575	-13.2%
5322	Consumer Goods Rental	6,351	5,546	-805	-12.7%
5323	General Rental Centers	1,479	1,113	-366	-24.7%
5324	Machinery & Equipment Rental & Leasing	1,852	1,964	112	6.0%
533	Lessors, Nonfinancial Intangible Assets	438	515	77	17.6%
5331	Lessors, Nonfinancial Intangible Assets	438	515	77	17.6%
	<b>Professional and Business Services</b>	<b>463,772</b>	<b>494,541</b>	<b>30,769</b>	<b>6.6%</b>
54	Professional and Technical Services	228,408	252,712	24,304	10.6%
541	Professional and Technical Services	228,408	252,712	24,304	10.6%
5411	Legal Services	31,156	31,070	-86	-0.3%
5412	Accounting and Bookkeeping Services	18,193	20,350	2,157	11.9%
5413	Architectural and Engineering Services	39,252	41,459	2,207	5.6%
5414	Specialized Design Services	3,263	3,636	373	11.4%
5415	Computer Systems Design and Rel Services	42,970	52,055	9,085	21.1%
5416	Management & Technical Consulting Svc	31,553	34,703	3,150	10.0%
5417	Scientific Research and Development Svc	40,083	44,406	4,323	10.8%
5418	Advertising and Related Services	11,451	12,677	1,226	10.7%
5419	Other Professional & Technical Services	10,488	12,355	1,867	17.8%
55	Management of Companies and Enterprises	64,989	61,401	-3,588	-5.5%
551	Management of Companies and Enterprises	64,989	61,401	-3,588	-5.5%
5511	Management of Companies and Enterprises	64,989	61,401	-3,588	-5.5%
56	Administrative and Waste Services	170,375	180,429	10,054	5.9%
561	Administrative and Support Services	160,444	169,624	9,180	5.7%
5611	Office Administrative Services	9,309	8,900	-409	-4.4%
5612	Facilities Support Services	420	630	210	50.0%
5613	Employment Services	60,944	67,721	6,777	11.1%
5614	Business Support Services	8,145	9,841	1,696	20.8%
5615	Travel Arrangement & Reservation Service	6,772	6,678	-94	-1.4%
5616	Investigation and Security Services	17,250	17,163	-87	-0.5%
5617	Services to Buildings and Dwellings	52,789	54,456	1,667	3.2%
5619	Other Support Services	4,815	4,234	-581	-12.1%
562	Waste Management and Remediation Service	9,931	10,805	874	8.8%
5621	Waste Collection	3,128	3,582	454	14.5%

**Massachusetts ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
5622	Waste Treatment and Disposal	3,298	3,484	186	5.6%
5629	Remediation and Other Waste Services	3,505	3,738	233	6.6%
	<b>Education and Health Services</b>	<b>704,108</b>	<b>757,941</b>	<b>53,833</b>	<b>7.6%</b>
61	Educational Services	252,159	269,921	17,762	7.0%
611	Educational Services	252,159	269,921	17,762	7.0%
6111	Elementary and Secondary Schools	134,875	142,644	7,769	5.8%
6112	Junior Colleges	6,974		-6,974	-100.0%
6113	Colleges and Universities	95,412	103,248	7,836	8.2%
6114	Business, Computer & Management Training	1,992	2,118	126	6.3%
6115	Technical and Trade Schools	1,893	2,362	469	24.8%
6116	Other Schools and Instruction	8,667	9,714	1,047	12.1%
6117	Educational Support Services	2,347	2,673	326	13.9%
62	Health Care and Social Assistance	451,949	488,020	36,071	8.0%
621	Ambulatory Health Care Services	127,191	140,132	12,941	10.2%
6211	Offices of Physicians	46,675	50,649	3,974	8.5%
6212	Offices of Dentists	19,779	20,967	1,188	6.0%
6213	Offices of Other Health Practitioners	11,471	12,507	1,036	9.0%
6214	Outpatient Care Centers	19,024	21,200	2,176	11.4%
6215	Medical and Diagnostic Laboratories	4,228	4,722	494	11.7%
6216	Home Health Care Services	19,346	23,053	3,707	19.2%
6219	Other Ambulatory Health Care Services	6,668	7,035	367	5.5%
622	Hospitals	171,763	185,219	13,456	7.8%
6221	General Medical and Surgical Hospitals	148,260	161,064	12,804	8.6%
6222	Psychiatric & Substance Abuse Hospitals	8,241	8,662	421	5.1%
6223	Other Hospitals	15,262	15,492	230	1.5%
623	Nursing and Residential Care Facilities	91,657	96,281	4,624	5.0%
6231	Nursing Care Facilities	57,413	57,895	482	0.8%
6232	Residential Mental Health Facilities	15,711	18,244	2,533	16.1%
6233	Community Care Facility for the Elderly	12,374	13,872	1,498	12.1%
6239	Other Residential Care Facilities	6,158	6,269	111	1.8%
624	Social Assistance	61,337	66,388	5,051	8.2%
6241	Individual and Family Services	26,064	30,656	4,592	17.6%
6242	Emergency and Other Relief Services	5,538	5,130	-408	-7.4%
6243	Vocational Rehabilitation Services	9,121	9,380	259	2.8%
6244	Child Day Care Services	20,614	21,223	609	3.0%
	<b>Leisure and Hospitality</b>	<b>322,719</b>	<b>333,382</b>	<b>10,663</b>	<b>3.3%</b>
71	Arts, Entertainment, and Recreation	62,046	64,971	2,925	4.7%
711	Performing Arts and Spectator Sports	9,776	11,027	1,251	12.8%
7111	Performing Arts Companies	3,831	3,463	-368	-9.6%
7112	Spectator Sports	2,827	2,723	-104	-3.7%
7113	Performing Arts and Sports Promoters	2,526	4,271	1,745	69.1%
7114	Agents and Managers for Public Figures	139	145	6	4.3%
7115	Independent Artists/Writers/Performers	453	426	-27	-6.0%
712	Museums, Parks and Historical Sites	6,359	6,379	20	0.3%
7121	Museums, Parks and Historical Sites	6,359	6,379	20	0.3%
713	Amusement, Gambling & Recreation Ind	45,912	47,565	1,653	3.6%
7131	Amusement Parks and Arcades	2,060	2,488	428	20.8%
7139	Other Amusement & Recreation Industries	43,662	44,935	1,273	2.9%

**Massachusetts ES-202 Average Monthly Employment, 2004-2007**

**All NAICS**

NAICS	Description	2004 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
72	Accommodation and Food Services	260,673	268,410	7,737	3.0%
721	Accommodation	37,647	38,183	536	1.4%
7211	Traveler Accommodation	34,693	35,611	918	2.6%
7212	RV Parks and Recreational Camps	2,286	2,226	-60	-2.6%
7213	Rooming and Boarding Houses	668	346	-322	-48.2%
722	Food Services and Drinking Places	223,026	230,227	7,201	3.2%
7221	Full-Service Restaurants	112,915	118,979	6,064	5.4%
7222	Limited-Service Eating Places	80,056	84,601	4,545	5.7%
7223	Special Food Services	21,209	19,120	-2,089	-9.8%
7224	Drinking Places (Alcoholic Beverages)	8,847	7,527	-1,320	-14.9%
	<b>Other Services</b>	117,750	128,741	10,991	9.3%
81	Other Services, Ex. Public Admin	117,750	128,741	10,991	9.3%
811	Repair and Maintenance	27,029	26,020	-1,009	-3.7%
8111	Automotive Repair and Maintenance	19,710	18,345	-1,365	-6.9%
8112	Electronic Equipment Repair/Maintenance	3,249	3,516	267	8.2%
8113	Commercial Machinery Repair/Maintenance	2,341	2,504	163	7.0%
8114	Household Goods Repair and Maintenance	1,730	1,654	-76	-4.4%
812	Personal and Laundry Services	35,898	37,735	1,837	5.1%
8121	Personal Care Services	17,892	18,789	897	5.0%
8122	Death Care Services	2,700	2,655	-45	-1.7%
8123	Drycleaning and Laundry Services	8,996	9,437	441	4.9%
8129	Other Personal Services	6,310	6,854	544	8.6%
813	Membership Organizations & Associations	35,741	39,848	4,107	11.5%
8131	Religious Organizations	722	767	45	6.2%
8132	Grantmaking and Giving Services	2,465	2,982	517	21.0%
8133	Social Advocacy Organizations	6,130	8,386	2,256	36.8%
8134	Civic and Social Organizations	19,055	19,762	707	3.7%
8139	Professional and Similar Organizations	7,369	7,951	582	7.9%
814	Private Households	19,083	25,139	6,056	31.7%
8141	Private Households	19,083	25,139	6,056	31.7%
	<b>Public Administration</b>	130,413	135,383	4,970	3.8%
92	Public Administration	130,413	135,383	4,970	3.8%
921	Executive, Legislative, & Gen Government	32,323	32,288	-35	-0.1%
9211	Executive, Legislative, & Gen Government	32,323	32,288	-35	-0.1%
922	Justice, Public Order, and Safety Activi	58,626	61,341	2,715	4.6%
9221	Justice, Public Order, and Safety Activi	58,626	61,341	2,715	4.6%
924	Administration of Environmental Programs	4,676	6,318	1,642	35.1%
9241	Administration of Environmental Programs	4,676	6,318	1,642	35.1%
925	Community and Housing Program Admin	5,698	5,569	-129	-2.3%
9251	Community and Housing Program Admin	5,698	5,569	-129	-2.3%
926	Administration of Economic Programs	7,704	7,928	224	2.9%
9261	Administration of Economic Programs	7,704	7,928	224	2.9%
928	National Security & International Affair	5,353	4,966	-387	-7.2%
9281	National Security & International Affair	5,353	4,966	-387	-7.2%

**Merrimack Valley ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
	<b>Total, all industries</b>	128,517	130,386	1,869	1.5%
	<b>Goods-Producing Domain</b>	32,365	32,524	159	0.5%
	<b>Natural Resources and Mining</b>	180	176	-4	-2.2%
11	Agriculture, Forestry, Fishing & Hunting	170	169	-1	-0.6%
111	Crop Production	94	86	-8	-8.5%
1112	Vegetable and Melon Farming	0	35	35	NA
1114	Greenhouse and Nursery Production	42	47	5	11.9%
115	Agriculture & Forestry Support Activity	56	65	9	16.1%
1152	Support Activities for Animal Production	49	51	2	4.1%
21	Mining	10	7	-3	-30.0%
212	Mining (except Oil and Gas)	10	7	-3	-30.0%
2123	Nonmetallic Mineral Mining and Quarrying	10	7	-3	-30.0%
	<b>Construction</b>	7,022	6,772	-250	-3.6%
23	Construction	7,022	6,772	-250	-3.6%
236	Construction of Buildings	1,119	1,005	-114	-10.2%
2361	Residential Building Construction	802	714	-88	-11.0%
2362	Nonresidential Building Construction	317	291	-26	-8.2%
237	Heavy and Civil Engineering Construction	1,422	1,351	-71	-5.0%
2371	Utility System Construction	328	277	-51	-15.5%
2372	Land Subdivision	65	33	-32	-49.2%
2373	Highway, Street, and Bridge Construction	978	978	0	0.0%
2379	Other Heavy Construction	51	63	12	23.5%
238	Specialty Trade Contractors	4,481	4,417	-64	-1.4%
2381	Building Foundation/Exterior Contractors	900	1,042	142	15.8%
2382	Building Equipment Contractors	1,698	1,609	-89	-5.2%
2383	Building Finishing Contractors	1,345	1,148	-197	-14.6%
2389	Other Specialty Trade Contractors	538	617	79	14.7%
	<b>Manufacturing</b>	25,162	25,576	414	1.6%
31-33	Manufacturing	25,162	25,576	414	1.6%
DUR	Durable Goods Manufacturing	16,408	16,905	497	3.0%
NONDUR	Non-Durable Goods Manufacturing	8,755	8,671	-84	-1.0%
311	Food Manufacturing	2,136	2,407	271	12.7%
3113	Sugar/Confectionery Product Manufacture	60	90	30	50.0%
3114	Fruit, Vegetable, & Specialty Foods Mfg	282	393	111	39.4%
3118	Bakeries and Tortilla Manufacturing	985	1,066	81	8.2%
3119	Other Food Manufacturing	463	495	32	6.9%
3133	Textile and Fabric Finishing and Fabric	81	125	44	54.3%
314	Textile Product Mills	55	60	5	9.1%
3149	Other Textile Product Mills	52	58	6	11.5%
316	Leather and Allied Product Manufacturing	813	0	-813	-100.0%
3162	Footwear Manufacturing	810	0	-810	-100.0%
321	Wood Product Manufacturing	128	160	32	25.0%
3219	Other Wood Product Manufacturing	113	145	32	28.3%
322	Paper Manufacturing	706	670	-36	-5.1%
3222	Converted Paper Product Manufacturing	542	490	-52	-9.6%
323	Printing and Related Support Activities	1,088	1,189	101	9.3%
3231	Printing and Related Support Activities	1,088	1,189	101	9.3%
325	Chemical Manufacturing	1,583	1,501	-82	-5.2%

**Merrimack Valley ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
3251	Basic Chemical Manufacturing	138	151	13	9.4%
3252	Resin, Rubber, and Synthetic Fibers	149	0	-149	-100.0%
3254	Pharmaceutical & Medicine Manufacturing	218	245	27	12.4%
3255	Paint, Coating, & Adhesive Manufacturing	429	436	7	1.6%
3259	Other Chemical Preparation Manufacturing	231	226	-5	-2.2%
326	Plastics & Rubber Products Manufacturing	1,135	993	-142	-12.5%
3261	Plastics Product Manufacturing	1,097	993	-104	-9.5%
327	Nonmetallic Mineral Product Mfg	194	198	4	2.1%
3273	Cement & Concrete Product Manufacturing	91	82	-9	-9.9%
3279	Other Nonmetallic Mineral Products	49	44	-5	-10.2%
331	Primary Metal Manufacturing	74	60	-14	-18.9%
3314	Other Nonferrous Metal Production	52	0	-52	-100.0%
332	Fabricated Metal Product Manufacturing	1,913	1,961	48	2.5%
3323	Architectural and Structural Metals	495	503	8	1.6%
3324	Boilers, Tanks, and Shipping Containers	183	178	-5	-2.7%
3327	Machine Shops and Threaded Products	546	552	6	1.1%
3328	Coating, Engraving & Heat Treating Metal	326	335	9	2.8%
333	Machinery Manufacturing	783	808	25	3.2%
3332	Industrial Machinery Manufacturing	89	89	0	0.0%
3333	Commercial & Service Industry Machinery	66	43	-23	-34.8%
3334	HVAC and Commercial Refrigeration Equip	330	356	26	7.9%
3335	Metalworking Machinery Manufacturing	11	13	2	18.2%
3339	Other General Purpose Machinery Mfg	280	304	24	8.6%
334	Computer and Electronic Product Mfg	5,889	5,958	69	1.2%
3341	Computers and Peripheral Equipment	0	416	416	NA
3342	Communications Equipment Manufacturing	841	806	-35	-4.2%
3344	Semiconductor and Electronic Components	1,769	1,622	-147	-8.3%
3345	Electronic Instrument Manufacturing	2,426	2,709	283	11.7%
335	Electrical Equipment and Appliances	1,355	1,426	71	5.2%
3352	Household Appliance Manufacturing	48	50	2	4.2%
3353	Electrical Equipment Manufacturing	0	1,044	1,044	NA
3359	Other Electrical Equipment & Components	231	316	85	36.8%
337	Furniture and Related Product Mfg	294	317	23	7.8%
3371	Household and Institutional Furniture	151	163	12	7.9%
3372	Office Furniture and Fixtures Mfg	129	148	19	14.7%
339	Miscellaneous Manufacturing	1,723	1,804	81	4.7%
3391	Medical Equipment and Supplies Mfg	924	1,002	78	8.4%
3399	Other Miscellaneous Manufacturing	799	802	3	0.4%
	<b>Service-Providing Domain</b>	<b>96,152</b>	<b>97,862</b>	<b>1,710</b>	<b>1.8%</b>
	<b>Trade, Transportation and Utilities</b>	<b>18,306</b>	<b>18,366</b>	<b>60</b>	<b>0.3%</b>
22	Utilities	471	484	13	2.8%
221	Utilities	471	484	13	2.8%
2211	Power Generation and Supply	287	289	2	0.7%
2212	Natural Gas Distribution	111	113	2	1.8%
2213	Water, Sewage and Other Systems	74	82	8	10.8%
42	Wholesale Trade	4,539	4,347	-192	-4.2%
423	Merchant Wholesalers, Durable Goods	2,492	2,488	-4	-0.2%
4231	Motor Vehicle/Part Merchant Wholesalers	68	78	10	14.7%

**Merrimack Valley ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
4232	Furniture & Furnishings Merchant Whsle	121	119	-2	-1.7%
4233	Lumber and Supply Merchant Wholesalers	551	471	-80	-14.5%
4234	Commercial Goods Merchant Wholesalers	569	626	57	10.0%
4235	Metal and Mineral Merchant Wholesalers	54	46	-8	-14.8%
4236	Electric Goods Merchant Wholesalers	479	544	65	13.6%
4237	Hardware & Plumbing Merchant Wholesalers	81	82	1	1.2%
4238	Machinery & Supply Merchant Wholesalers	410	356	-54	-13.2%
4239	Misc Durable Goods Merchant Wholesalers	160	165	5	3.1%
424	Merchant Wholesalers, Nondurable Goods	1,485	1,264	-221	-14.9%
4241	Paper/Paper Product Merchant Wholesalers	103	101	-2	-1.9%
4242	Druggists' Goods Merchant Wholesalers	145	86	-59	-40.7%
4243	Apparel/Piece Goods Merchant Wholesalers	235	88	-147	-62.6%
4244	Grocery Product Merchant Wholesalers	617	596	-21	-3.4%
4246	Chemical Merchant Wholesalers	192	203	11	5.7%
4249	Misc Nondurable Goods Merchant Whsle	103	106	3	2.9%
425	Electronic Markets and Agents/Brokers	562	595	33	5.9%
4251	Electronic Markets and Agents/Brokers	562	595	33	5.9%
44-45	Retail Trade	11,304	11,484	180	1.6%
441	Motor Vehicle and Parts Dealers	1,358	1,269	-89	-6.6%
4411	Automobile Dealers	986	900	-86	-8.7%
4412	Other Motor Vehicle Dealers	79	73	-6	-7.6%
4413	Auto Parts, Accessories, and Tire Stores	293	296	3	1.0%
442	Furniture and Home Furnishings Stores	297	309	12	4.0%
4421	Furniture Stores	180	196	16	8.9%
4422	Home Furnishings Stores	117	113	-4	-3.4%
443	Electronics and Appliance Stores	194	210	16	8.2%
4431	Electronics and Appliance Stores	194	210	16	8.2%
444	Building Material & Garden Supply Stores	921	833	-88	-9.6%
4441	Building Material and Supplies Dealers	804	714	-90	-11.2%
4442	Lawn & Garden Equipment/Supplies Stores	117	119	2	1.7%
445	Food and Beverage Stores	4,303	4,407	104	2.4%
4451	Grocery Stores	3,750	3,813	63	1.7%
4452	Specialty Food Stores	311	349	38	12.2%
4453	Beer, Wine, and Liquor Stores	242	245	3	1.2%
446	Health and Personal Care Stores	1,197	1,078	-119	-9.9%
4461	Health and Personal Care Stores	1,197	1,078	-119	-9.9%
447	Gasoline Stations	502	503	1	0.2%
4471	Gasoline Stations	502	503	1	0.2%
448	Clothing and Clothing Accessories Stores	926	899	-27	-2.9%
4481	Clothing Stores	774	742	-32	-4.1%
4482	Shoe Stores	88	86	-2	-2.3%
4483	Jewelry, Luggage & Leather Goods Stores	64	71	7	10.9%
451	Sporting Goods/Hobby/Book/Music Stores	327	341	14	4.3%
4511	Sporting Goods/Musical Instrument Stores	222	226	4	1.8%
4512	Book, Periodical, and Music Stores	105	115	10	9.5%
452	General Merchandise Stores	572	855	283	49.5%
4521	Department Stores	395	530	135	34.2%
4529	Other General Merchandise Stores	177	325	148	83.6%
453	Miscellaneous Store Retailers	490	456	-34	-6.9%
4531	Florists	128	128	0	0.0%



**Merrimack Valley ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
4532	Office Supply, Stationery & Gift Stores	212	173	-39	-18.4%
4533	Used Merchandise Stores	22	20	-2	-9.1%
4539	Other Miscellaneous Store Retailers	129	136	7	5.4%
454	Nonstore Retailers	218	324	106	48.6%
4541	Electronic Shopping & Mail-Order Houses	17	0	-17	-100.0%
4542	Vending Machine Operators	54	51	-3	-5.6%
4543	Direct Selling Establishments	147	107	-40	-27.2%
48-49	Transportation and Warehousing	1,991	2,051	60	3.0%
484	Truck Transportation	530	517	-13	-2.5%
4841	General Freight Trucking	359	311	-48	-13.4%
4842	Specialized Freight Trucking	171	206	35	20.5%
485	Transit and Ground Passenger Transport	467	496	29	6.2%
4853	Taxi and Limousine Service	109	122	13	11.9%
4854	School and Employee Bus Transportation	218	214	-4	-1.8%
4859	Other Ground Passenger Transportation	31	40	9	29.0%
487	Scenic and Sightseeing Transportation	24	18	-6	-25.0%
4872	Scenic/Sightseeing Transportation, Water	24	18	-6	-25.0%
488	Support Activities for Transportation	190	197	7	3.7%
4881	Support Activities for Air Transport	14	13	-1	-7.1%
4884	Support Activities, Road Transportation	95	89	-6	-6.3%
4885	Freight Transportation Arrangement	55	0	-55	-100.0%
4889	Other Support Activities for Transport	22	20	-2	-9.1%
492	Couriers and Messengers	37	24	-13	-35.1%
4921	Couriers	18	15	-3	-16.7%
4922	Local Messengers and Local Delivery	19	9	-10	-52.6%
493	Warehousing and Storage	220	199	-21	-9.5%
4931	Warehousing and Storage	220	199	-21	-9.5%
	<b>Information</b>	4,017	3,466	-551	-13.7%
51	Information	4,017	3,466	-551	-13.7%
511	Publishing Industries	1,313	1,210	-103	-7.8%
5111	Newspaper, Book, & Directory Publishers	628	588	-40	-6.4%
5112	Software Publishers	685	622	-63	-9.2%
512	Motion Picture & Sound Recording Ind	258	237	-21	-8.1%
5121	Motion Picture and Video Industries	258	237	-21	-8.1%
515	Broadcasting (except Internet)	67	61	-6	-9.0%
5151	Radio and Television Broadcasting	64	52	-12	-18.8%
5152	Cable and Other Subscription Programming	0	8	8	NA
516	Internet Publishing and Broadcasting	25	0	-25	-100.0%
5161	Internet Publishing and Broadcasting	25	0	-25	-100.0%
517	Telecommunications	1,723	1,303	-420	-24.4%
5171	Wired Telecommunications Carriers	0	1,287	1,287	NA
5173	Telecommunications Resellers	27	0	-27	-100.0%
5179	Other Telecommunications	0	12	12	NA
518	ISPs, Search Portals, & Data Processing	290	261	-29	-10.0%
5181	ISPs and Web Search Portals	28	0	-28	-100.0%
5182	Data Processing and Related Services	262	261	-1	-0.4%

**Merrimack Valley ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
519	Other Information Services	341	394	53	15.5%
5191	Other Information Services	341	394	53	15.5%
	<b>Financial Activities</b>	5,010	4,885	-125	-2.5%
52	Finance and Insurance	3,617	3,535	-82	-2.3%
522	Credit Intermediation & Related Activity	1,968	1,904	-64	-3.3%
5221	Depository Credit Intermediation	1,411	1,386	-25	-1.8%
5222	Nondepository Credit Intermediation	463	450	-13	-2.8%
5223	Activities Rel to Credit Intermediation	94	68	-26	-27.7%
523	Financial Investment & Related Activity	314	335	21	6.7%
5231	Security & Commodity Investment Activity	91	96	5	5.5%
5239	Other Financial Investment Activities	216	233	17	7.9%
524	Insurance Carriers & Related Activities	1,326	1,290	-36	-2.7%
5241	Insurance Carriers	650	605	-45	-6.9%
5242	Insurance Agencies, Brokerages & Support	676	685	9	1.3%
525	Funds, Trusts & Other Financial Vehicles	9	6	-3	-33.3%
5259	Other Investment Pools and Funds	8	0	-8	-100.0%
53	Real Estate and Rental and Leasing	1,393	1,351	-42	-3.0%
531	Real Estate	1,002	974	-28	-2.8%
5311	Lessors of Real Estate	409	433	24	5.9%
5312	Offices of Real Estate Agents & Brokers	310	257	-53	-17.1%
5313	Activities Related to Real Estate	283	284	1	0.4%
532	Rental and Leasing Services	384	373	-11	-2.9%
5321	Automotive Equipment Rental and Leasing	68	86	18	26.5%
5322	Consumer Goods Rental	256	223	-33	-12.9%
5323	General Rental Centers	31	28	-3	-9.7%
5324	Machinery & Equipment Rental & Leasing	28	35	7	25.0%
	<b>Professional and Business Services</b>	19,018	20,033	1,015	5.3%
54	Professional and Technical Services	8,971	9,808	837	9.3%
541	Professional and Technical Services	8,971	9,808	837	9.3%
5411	Legal Services	982	1,053	71	7.2%
5412	Accounting and Bookkeeping Services	434	468	34	7.8%
5413	Architectural and Engineering Services	1,073	1,037	-36	-3.4%
5414	Specialized Design Services	146	201	55	37.7%
5415	Computer Systems Design and Rel Services	2,312	2,490	178	7.7%
5416	Management & Technical Consulting Svc	807	828	21	2.6%
5417	Scientific Research and Development Svc	2,380	2,631	251	10.5%
5418	Advertising and Related Services	185	301	116	62.7%
5419	Other Professional & Technical Services	652	799	147	22.5%
55	Management of Companies and Enterprises	1,726	1,931	205	11.9%
551	Management of Companies and Enterprises	1,726	1,931	205	11.9%
5511	Management of Companies and Enterprises	1,726	1,931	205	11.9%
56	Administrative and Waste Services	8,321	8,294	-27	-0.3%
561	Administrative and Support Services	7,312	7,287	-25	-0.3%
5611	Office Administrative Services	382	379	-3	-0.8%
5613	Employment Services	4,476	4,376	-100	-2.2%
5614	Business Support Services	569	638	69	12.1%
5615	Travel Arrangement & Reservation Service	106	99	-7	-6.6%
5616	Investigation and Security Services	298	330	32	10.7%

**Merrimack Valley ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
5617	Services to Buildings and Dwellings	1,325	1,344	19	1.4%
5619	Other Support Services	141	106	-35	-24.8%
562	Waste Management and Remediation Service	1,009	1,007	-2	-0.2%
5621	Waste Collection	95	101	6	6.3%
5622	Waste Treatment and Disposal	253	275	22	8.7%
5629	Remediation and Other Waste Services	662	631	-31	-4.7%
	<b>Education and Health Services</b>	<b>27,727</b>	<b>28,697</b>	<b>970</b>	<b>3.5%</b>
61	Educational Services	8,877	9,218	341	3.8%
611	Educational Services	8,877	9,218	341	3.8%
6111	Elementary and Secondary Schools	7,600	7,973	373	4.9%
6114	Business, Computer & Management Training	0	0	0	NA
6115	Technical and Trade Schools	43	37	-6	-14.0%
6116	Other Schools and Instruction	304	281	-23	-7.6%
6117	Educational Support Services	9	8	-1	-11.1%
62	Health Care and Social Assistance	18,850	19,479	629	3.3%
621	Ambulatory Health Care Services	6,747	6,911	164	2.4%
6211	Offices of Physicians	2,564	2,604	40	1.6%
6212	Offices of Dentists	1,069	1,093	24	2.2%
6213	Offices of Other Health Practitioners	538	579	41	7.6%
6214	Outpatient Care Centers	676	668	-8	-1.2%
6215	Medical and Diagnostic Laboratories	298	310	12	4.0%
6216	Home Health Care Services	1,353	1,436	83	6.1%
6219	Other Ambulatory Health Care Services	250	221	-29	-11.6%
622	Hospitals	4,550	4,672	122	2.7%
6221	General Medical and Surgical Hospitals	4,156	4,249	93	2.2%
623	Nursing and Residential Care Facilities	4,642	4,883	241	5.2%
6231	Nursing Care Facilities	3,062	3,183	121	4.0%
6232	Residential Mental Health Facilities	805	852	47	5.8%
6233	Community Care Facility for the Elderly	499	545	46	9.2%
6239	Other Residential Care Facilities	277	303	26	9.4%
624	Social Assistance	2,910	3,012	102	3.5%
6241	Individual and Family Services	1,175	1,254	79	6.7%
6242	Emergency and Other Relief Services	281	295	14	5.0%
6243	Vocational Rehabilitation Services	473	493	20	4.2%
6244	Child Day Care Services	981	971	-10	-1.0%
	<b>Leisure and Hospitality</b>	<b>11,646</b>	<b>11,710</b>	<b>64</b>	<b>0.5%</b>
71	Arts, Entertainment, and Recreation	2,382	2,525	143	6.0%
711	Performing Arts and Spectator Sports	50	63	13	26.0%
7111	Performing Arts Companies	28	30	2	7.1%
7112	Spectator Sports	3	3	0	0.0%
7113	Performing Arts and Sports Promoters	10	17	7	70.0%
7115	Independent Artists/Writers/Performers	8	10	2	25.0%
712	Museums, Parks and Historical Sites	48	51	3	6.3%

**Merrimack Valley ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
7121	Museums, Parks and Historical Sites	48	51	3	6.3%
713	Amusement, Gambling & Recreation Ind	2,284	2,410	126	5.5%
7131	Amusement Parks and Arcades	67	62	-5	-7.5%
7139	Other Amusement & Recreation Industries	2,217	2,348	131	5.9%
72	Accommodation and Food Services	9,264	9,185	-79	-0.9%
721	Accommodation	569	565	-4	-0.7%
7211	Traveler Accommodation	508	503	-5	-1.0%
7212	RV Parks and Recreational Camps	61	62	1	1.6%
722	Food Services and Drinking Places	8,695	8,620	-75	-0.9%
7221	Full-Service Restaurants	4,329	4,350	21	0.5%
7222	Limited-Service Eating Places	3,557	3,517	-40	-1.1%
7223	Special Food Services	519	462	-57	-11.0%
7224	Drinking Places (Alcoholic Beverages)	290	291	1	0.3%
	<b>Other Services</b>	4,786	4,958	172	3.6%
81	Other Services, Ex. Public Admin	4,786	4,958	172	3.6%
811	Repair and Maintenance	867	835	-32	-3.7%
8111	Automotive Repair and Maintenance	628	626	-2	-0.3%
8112	Electronic Equipment Repair/Maintenance	133	114	-19	-14.3%
8113	Commercial Machinery Repair/Maintenance	71	66	-5	-7.0%
8114	Household Goods Repair and Maintenance	35	29	-6	-17.1%
812	Personal and Laundry Services	1,590	1,579	-11	-0.7%
8121	Personal Care Services	789	777	-12	-1.5%
8122	Death Care Services	127	137	10	7.9%
8123	Drycleaning and Laundry Services	504	506	2	0.4%
8129	Other Personal Services	170	159	-11	-6.5%
813	Membership Organizations & Associations	1,457	1,512	55	3.8%
8132	Grantmaking and Giving Services	22	26	4	18.2%
8133	Social Advocacy Organizations	0	410	410	NA
8134	Civic and Social Organizations	887	888	1	0.1%
8139	Professional and Similar Organizations	163	185	22	13.5%
814	Private Households	873	1,032	159	18.2%
8141	Private Households	873	1,032	159	18.2%
	<b>Public Administration</b>	5,642	5,747	105	1.9%
92	Public Administration	5,642	5,747	105	1.9%
921	Executive, Legislative, & Gen Government	2,704	2,651	-53	-2.0%
9211	Executive, Legislative, & Gen Government	2,704	2,651	-53	-2.0%
922	Justice, Public Order, and Safety Activi	1,949	1,960	11	0.6%
9221	Justice, Public Order, and Safety Activi	1,949	1,960	11	0.6%
925	Community and Housing Program Admin	201	198	-3	-1.5%
9251	Community and Housing Program Admin	201	198	-3	-1.5%
926	Administration of Economic Programs	48	58	10	20.8%
9261	Administration of Economic Programs	48	58	10	20.8%

**Massachusetts ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
	<b>Total, all industries</b>	3,200,233	3,236,217	35,984	1.1%
	<b>Goods-Producing Domain</b>	469,481	462,133	-7,348	-1.6%
	<b>Natural Resources and Mining</b>	9,592	9,112	-480	-5.0%
11	Agriculture, Forestry, Fishing & Hunting	7,749	7,518	-231	-3.0%
111	Crop Production	3,775	3,806	31	0.8%
1112	Vegetable and Melon Farming	861	878	17	2.0%
1113	Fruit and Tree Nut Farming	802	856	54	6.7%
1114	Greenhouse and Nursery Production	1,681	1,710	29	1.7%
1119	Other Crop Farming	429	358	-71	-16.6%
112	Animal Production	689	648	-41	-6.0%
1121	Cattle Ranching and Farming	327	316	-11	-3.4%
1123	Poultry and Egg Production	91	77	-14	-15.4%
1125	Animal Aquaculture	103	100	-3	-2.9%
1129	Other Animal Production	151	137	-14	-9.3%
113	Forestry and Logging	159	120	-39	-24.5%
1132	Forest Nursery/Gathering Forest Products	45	11	-34	-75.6%
1133	Logging	114	109	-5	-4.4%
114	Fishing, Hunting and Trapping	1,884	1,625	-259	-13.7%
1141	Fishing	1,884	1,624	-260	-13.8%
115	Agriculture & Forestry Support Activity	1,241	1,318	77	6.2%
1151	Support Activities for Crop Production	61	61	0	0.0%
1152	Support Activities for Animal Production	1,149	1,225	76	6.6%
1153	Support Activities for Forestry	31	32	1	3.2%
	<b>Mining</b>	1,842	1,594	-248	-13.5%
212	Mining (except Oil and Gas)	1,803	1,548	-255	-14.1%
2123	Nonmetallic Mineral Mining and Quarrying	1,803	1,548	-255	-14.1%
213	Support Activities for Mining	30	37	7	23.3%
2131	Support Activities for Mining	30	37	7	23.3%
	<b>Construction</b>	161,049	158,057	-2,992	-1.9%
23	Construction	161,049	158,057	-2,992	-1.9%
236	Construction of Buildings	34,208	33,004	-1,204	-3.5%
2361	Residential Building Construction	20,333	19,142	-1,191	-5.9%
2362	Nonresidential Building Construction	13,875	13,862	-13	-0.1%
237	Heavy and Civil Engineering Construction	26,054	25,237	-817	-3.1%
2371	Utility System Construction	5,160	5,197	37	0.7%
2372	Land Subdivision	1,582	1,550	-32	-2.0%
2373	Highway, Street, and Bridge Construction	18,136	17,299	-837	-4.6%
2379	Other Heavy Construction	1,176	1,191	15	1.3%
238	Specialty Trade Contractors	100,787	99,816	-971	-1.0%
2381	Building Foundation/Exterior Contractors	16,327	15,785	-542	-3.3%
2382	Building Equipment Contractors	46,177	45,613	-564	-1.2%
2383	Building Finishing Contractors	22,537	22,011	-526	-2.3%
2389	Other Specialty Trade Contractors	15,747	16,406	659	4.2%
	<b>Manufacturing</b>	298,840	294,964	-3,876	-1.3%
31-33	Manufacturing	298,840	294,964	-3,876	-1.3%
DUR	Durable Goods Manufacturing	196,222	195,180	-1,042	-0.5%
NONDUR	Non-Durable Goods Manufacturing	102,618	99,785	-2,833	-2.8%
311	Food Manufacturing	22,754	22,814	60	0.3%

**Massachusetts ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
3111	Animal Food Manufacturing	95		-95	-100.0%
3112	Grain and Oilseed Milling	614	578	-36	-5.9%
3113	Sugar/Confectionery Product Manufacture	1,619	1,735	116	7.2%
3114	Fruit, Vegetable, & Specialty Foods Mfg	2,122	1,981	-141	-6.6%
3115	Dairy Product Manufacturing	2,910	2,798	-112	-3.8%
3116	Animal Slaughtering and Processing	1,974	2,061	87	4.4%
3117	Seafood Product Preparation & Packaging	2,391	2,512	121	5.1%
3118	Bakeries and Tortilla Manufacturing	8,513	8,297	-216	-2.5%
3119	Other Food Manufacturing	2,517	2,818	301	12.0%
312	Beverage & Tobacco Product Manufacturing	2,733	2,688	-45	-1.6%
3121	Beverage Manufacturing	2,733	2,687	-46	-1.7%
313	Textile Mills	6,051	5,204	-847	-14.0%
3131	Fiber, Yarn, and Thread Mills	406	241	-165	-40.6%
3132	Fabric Mills	2,962	2,541	-421	-14.2%
3133	Textile and Fabric Finishing and Fabric	2,682	2,423	-259	-9.7%
314	Textile Product Mills	2,651	3,120	469	17.7%
3141	Textile Furnishings Mills	1,374	1,152	-222	-16.2%
3149	Other Textile Product Mills	1,277	1,968	691	54.1%
315	Apparel Manufacturing	3,712	3,013	-699	-18.8%
3151	Apparel Knitting Mills	47	64	17	36.2%
3152	Cut and Sew Apparel Manufacturing	3,219	2,715	-504	-15.7%
3159	Accessories and Other Apparel Mfg		234	234	NA
316	Leather and Allied Product Manufacturing	2,478	1,698	-780	-31.5%
3161	Leather and Hide Tanning and Finishing	86	69	-17	-19.8%
3162	Footwear Manufacturing	1,479	1,224	-255	-17.2%
3169	Other Leather Product Manufacturing	913	405	-508	-55.6%
321	Wood Product Manufacturing	3,402	3,040	-362	-10.6%
3211	Sawmills and Wood Preservation	256	233	-23	-9.0%
3212	Veneer and Engineered Wood Products	301	323	22	7.3%
3219	Other Wood Product Manufacturing	2,845	2,484	-361	-12.7%
322	Paper Manufacturing	12,154	12,028	-126	-1.0%
3221	Pulp, Paper, and Paperboard Mills	3,063	2,923	-140	-4.6%
3222	Converted Paper Product Manufacturing	9,091	9,105	14	0.2%
323	Printing and Related Support Activities	16,106	15,759	-347	-2.2%
3231	Printing and Related Support Activities	16,106	15,759	-347	-2.2%
324	Petroleum & Coal Products Manufacturing	1,334	1,121	-213	-16.0%
3241	Petroleum & Coal Products Manufacturing	1,334	1,121	-213	-16.0%
325	Chemical Manufacturing	16,914	18,353	1,439	8.5%
3251	Basic Chemical Manufacturing	1,139	1,164	25	2.2%
3252	Resin, Rubber, and Synthetic Fibers	2,263	3,147	884	39.1%
3253	Agricultural Chemical Manufacturing	117	116	-1	-0.9%
3254	Pharmaceutical & Medicine Manufacturing	7,886	9,291	1,405	17.8%
3255	Paint, Coating, & Adhesive Manufacturing	2,000	1,941	-59	-3.0%
3256	Cleaning Compound and Toiletry Mfg	1,272	1,045	-227	-17.8%
3259	Other Chemical Preparation Manufacturing	2,237	1,650	-587	-26.2%
326	Plastics & Rubber Products Manufacturing	15,732	13,986	-1,746	-11.1%
3261	Plastics Product Manufacturing	14,542	12,902	-1,640	-11.3%
3262	Rubber Product Manufacturing	1,190	1,084	-106	-8.9%

**Massachusetts ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
327	Nonmetallic Mineral Product Mfg	6,805	6,829	24	0.4%
3271	Clay Product & Refractory Manufacturing	1,168	1,164	-4	-0.3%
3272	Glass and Glass Product Manufacturing	1,446	1,569	123	8.5%
3273	Cement & Concrete Product Manufacturing	2,421	2,346	-75	-3.1%
3279	Other Nonmetallic Mineral Products	1,753	1,733	-20	-1.1%
331	Primary Metal Manufacturing	4,965	4,700	-265	-5.3%
3311	Iron and Steel Mills and Ferroalloys	46	27	-19	-41.3%
3312	Purchased Steel Product Manufacturing	624	743	119	19.1%
3313	Alumina and Aluminum Production	290	316	26	9.0%
3314	Other Nonferrous Metal Production	2,842	2,543	-299	-10.5%
3315	Foundries	1,163	1,071	-92	-7.9%
332	Fabricated Metal Product Manufacturing	35,211	34,753	-458	-1.3%
3321	Forging and Stamping	2,450	2,312	-138	-5.6%
3322	Cutlery and Handtool Manufacturing	5,617	4,803	-814	-14.5%
3323	Architectural and Structural Metals	6,279	6,385	106	1.7%
3324	Boilers, Tanks, and Shipping Containers	906	956	50	5.5%
3325	Hardware Manufacturing	361	321	-40	-11.1%
3326	Spring and Wire Product Manufacturing	761	738	-23	-3.0%
3327	Machine Shops and Threaded Products	10,491	10,638	147	1.4%
3328	Coating, Engraving & Heat Treating Metal	4,194	4,177	-17	-0.4%
3329	Other Fabricated Metal Product Mfg	4,154	4,423	269	6.5%
333	Machinery Manufacturing	19,918	20,594	676	3.4%
3331	Ag., Construction, and Mining Machinery	267	210	-57	-21.3%
3332	Industrial Machinery Manufacturing	5,988	6,012	24	0.4%
3333	Commercial & Service Industry Machinery	3,310	3,298	-12	-0.4%
3334	HVAC and Commercial Refrigeration Equip	1,149	1,141	-8	-0.7%
3335	Metalworking Machinery Manufacturing	3,506	3,544	38	1.1%
3336	Turbine and Power Transmission Equipment	1,385	1,867	482	34.8%
3339	Other General Purpose Machinery Mfg	4,313	4,521	208	4.8%
334	Computer and Electronic Product Mfg	71,498	71,224	-274	-0.4%
3341	Computers and Peripheral Equipment	14,682	14,044	-638	-4.3%
3342	Communications Equipment Manufacturing	6,174	5,326	-848	-13.7%
3343	Audio and Video Equipment Manufacturing	3,821	3,962	141	3.7%
3344	Semiconductor and Electronic Components	18,827	18,976	149	0.8%
3345	Electronic Instrument Manufacturing	27,602	28,575	973	3.5%
3346	Magnetic Media Manufacture & Reproducing	393	340	-53	-13.5%
335	Electrical Equipment and Appliances	11,359	11,845	486	4.3%
3351	Electric Lighting Equipment Mfg	2,544	2,565	21	0.8%
3352	Household Appliance Manufacturing	567	596	29	5.1%
3353	Electrical Equipment Manufacturing	4,219	4,307	88	2.1%
3359	Other Electrical Equipment & Components	4,029	4,377	348	8.6%
336	Transportation Equipment Manufacturing	14,379	14,407	28	0.2%
3361	Motor Vehicle Manufacturing	188	191	3	1.6%
3362	Motor Vehicle Body and Trailer Mfg	430	461	31	7.2%
3363	Motor Vehicle Parts Manufacturing	1,524	1,220	-304	-19.9%
3364	Aerospace Product & Parts Manufacturing	11,677	11,917	240	2.1%
3366	Ship and Boat Building	482	556	74	15.4%
3369	Other Transportation Equipment Mfg	78	61	-17	-21.8%

**Massachusetts ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
337	Furniture and Related Product Mfg	5,514	5,574	60	1.1%
3371	Household and Institutional Furniture	2,859	2,737	-122	-4.3%
3372	Office Furniture and Fixtures Mfg	1,959	2,196	237	12.1%
3379	Other Furniture Related Product Mfg	695	641	-54	-7.8%
339	Miscellaneous Manufacturing	23,171	22,214	-957	-4.1%
3391	Medical Equipment and Supplies Mfg	11,888	11,210	-678	-5.7%
3399	Other Miscellaneous Manufacturing	11,283	11,003	-280	-2.5%
	<b>Service-Providing Domain</b>	<b>2,730,752</b>	<b>2,774,084</b>	<b>43,332</b>	<b>1.6%</b>
	<b>Trade, Transportation and Utilities</b>	<b>600,472</b>	<b>601,408</b>	<b>936</b>	<b>0.2%</b>
22	Utilities	13,068	13,396	328	2.5%
221	Utilities	13,068	13,396	328	2.5%
2211	Power Generation and Supply	7,565	7,801	236	3.1%
2212	Natural Gas Distribution	2,831	2,820	-11	-0.4%
2213	Water, Sewage and Other Systems	2,673	2,775	102	3.8%
42	Wholesale Trade	137,726	138,426	700	0.5%
423	Merchant Wholesalers, Durable Goods	63,420	62,417	-1,003	-1.6%
4231	Motor Vehicle/Part Merchant Wholesalers	5,181	4,997	-184	-3.6%
4232	Furniture & Furnishings Merchant Whsle	2,235	2,122	-113	-5.1%
4233	Lumber and Supply Merchant Wholesalers	5,997	5,864	-133	-2.2%
4234	Commercial Goods Merchant Wholesalers	20,906	20,610	-296	-1.4%
4235	Metal and Mineral Merchant Wholesalers	1,777	1,764	-13	-0.7%
4236	Electric Goods Merchant Wholesalers	9,444	9,190	-254	-2.7%
4237	Hardware & Plumbing Merchant Wholesalers	4,926	5,003	77	1.6%
4238	Machinery & Supply Merchant Wholesalers	9,271	8,968	-303	-3.3%
4239	Misc Durable Goods Merchant Wholesalers	3,683	3,899	216	5.9%
424	Merchant Wholesalers, Nondurable Goods	48,561	48,735	174	0.4%
4241	Paper/Paper Product Merchant Wholesalers	4,894	4,890	-4	-0.1%
4242	Druggists' Goods Merchant Wholesalers	4,711	5,375	664	14.1%
4243	Apparel/Piece Goods Merchant Wholesalers	6,835	5,879	-956	-14.0%
4244	Grocery Product Merchant Wholesalers	17,785	18,120	335	1.9%
4245	Farm Product Merchant Wholesalers	182	177	-5	-2.7%
4246	Chemical Merchant Wholesalers	2,205	2,168	-37	-1.7%
4247	Petroleum Merchant Wholesalers	1,522	1,526	4	0.3%
4248	Alcoholic Beverage Merchant Wholesalers	3,577	3,805	228	6.4%
4249	Misc Nondurable Goods Merchant Whsle	6,851	6,796	-55	-0.8%
425	Electronic Markets and Agents/Brokers	25,745	27,273	1,528	5.9%
4251	Electronic Markets and Agents/Brokers	25,745	27,273	1,528	5.9%
44-45	Retail Trade	349,751	348,784	-967	-0.3%
441	Motor Vehicle and Parts Dealers	37,040	35,839	-1,201	-3.2%
4411	Automobile Dealers	25,877	24,892	-985	-3.8%
4412	Other Motor Vehicle Dealers	2,774	2,646	-128	-4.6%
4413	Auto Parts, Accessories, and Tire Stores	8,390	8,301	-89	-1.1%
442	Furniture and Home Furnishings Stores	13,161	12,513	-648	-4.9%
4421	Furniture Stores	5,776	5,212	-564	-9.8%
4422	Home Furnishings Stores	7,385	7,301	-84	-1.1%
443	Electronics and Appliance Stores	12,492	12,198	-294	-2.4%
4431	Electronics and Appliance Stores	12,492	12,198	-294	-2.4%
444	Building Material & Garden Supply Stores	29,078	27,850	-1,228	-4.2%



**Massachusetts ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
4441	Building Material and Supplies Dealers	25,718	24,510	-1,208	-4.7%
4442	Lawn & Garden Equipment/Supplies Stores	3,360	3,340	-20	-0.6%
445	Food and Beverage Stores	89,974	89,894	-80	-0.1%
4451	Grocery Stores	74,134	74,501	367	0.5%
4452	Specialty Food Stores	7,162	6,939	-223	-3.1%
4453	Beer, Wine, and Liquor Stores	8,679	8,453	-226	-2.6%
446	Health and Personal Care Stores	26,721	27,064	343	1.3%
4461	Health and Personal Care Stores	26,721	27,064	343	1.3%
447	Gasoline Stations	12,029	11,817	-212	-1.8%
4471	Gasoline Stations	12,029	11,817	-212	-1.8%
448	Clothing and Clothing Accessories Stores	39,397	40,630	1,233	3.1%
4481	Clothing Stores	30,949	32,147	1,198	3.9%
4482	Shoe Stores	4,253	4,401	148	3.5%
4483	Jewelry, Luggage & Leather Goods Stores	4,194	4,082	-112	-2.7%
451	Sporting Goods/Hobby/Book/Music Stores	17,549	16,906	-643	-3.7%
4511	Sporting Goods/Musical Instrument Stores	12,003	11,410	-593	-4.9%
4512	Book, Periodical, and Music Stores	5,546	5,497	-49	-0.9%
452	General Merchandise Stores	40,210	42,408	2,198	5.5%
4521	Department Stores	30,406	31,740	1,334	4.4%
4529	Other General Merchandise Stores	9,804	10,667	863	8.8%
453	Miscellaneous Store Retailers	21,302	20,302	-1,000	-4.7%
4531	Florists	2,426	2,249	-177	-7.3%
4532	Office Supply, Stationery & Gift Stores	10,880	10,035	-845	-7.8%
4533	Used Merchandise Stores	1,814	1,814	0	0.0%
4539	Other Miscellaneous Store Retailers	6,181	6,204	23	0.4%
454	Nonstore Retailers	10,798	11,362	564	5.2%
4541	Electronic Shopping & Mail-Order Houses	4,309	5,189	880	20.4%
4542	Vending Machine Operators	566	580	14	2.5%
4543	Direct Selling Establishments	5,923	5,594	-329	-5.6%
48-49	Transportation and Warehousing	99,927	100,802	875	0.9%
481	Air Transportation	7,802	8,069	267	3.4%
4811	Scheduled Air Transportation	7,408	7,662	254	3.4%
4812	Nonscheduled Air Transportation	393	407	14	3.6%
483	Water Transportation	1,043	1,238	195	18.7%
4831	Sea, Coastal & Great Lakes Transport	1,011	1,188	177	17.5%
4832	Inland Water Transportation	31	50	19	61.3%
484	Truck Transportation	16,887	16,424	-463	-2.7%
4841	General Freight Trucking	10,408	9,940	-468	-4.5%
4842	Specialized Freight Trucking	6,479	6,484	5	0.1%
485	Transit and Ground Passenger Transport	21,690	22,654	964	4.4%
4852	Interurban and Rural Bus Transportation	926	773	-153	-16.5%
4853	Taxi and Limousine Service	3,529	3,797	268	7.6%
4854	School and Employee Bus Transportation	6,484	6,572	88	1.4%
4855	Charter Bus Industry	1,183	1,305	122	10.3%
4859	Other Ground Passenger Transportation	2,101	2,239	138	6.6%
486	Pipeline Transportation	130	141	11	8.5%
4862	Pipeline Transportation of Natural Gas	110	123	13	11.8%
487	Scenic and Sightseeing Transportation	1,774	1,772	-2	-0.1%

**Massachusetts ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
4871	Scenic/Sightseeing Transportation, Land	610	681	71	11.6%
4872	Scenic/Sightseeing Transportation, Water	1,160	1,083	-77	-6.6%
4879	Scenic/Sightseeing Transportation, Other		7	7	NA
488	Support Activities for Transportation	9,109	9,375	266	2.9%
4881	Support Activities for Air Transport	2,652	2,819	167	6.3%
4882	Support Activities for Rail Transport	78	78	0	0.0%
4883	Support Activities for Water Transport	446	456	10	2.2%
4884	Support Activities, Road Transportation	3,182	3,064	-118	-3.7%
4885	Freight Transportation Arrangement	2,244	2,345	101	4.5%
4889	Other Support Activities for Transport	508	613	105	20.7%
492	Couriers and Messengers	11,158	11,201	43	0.4%
4921	Couriers	10,558	10,619	61	0.6%
4922	Local Messengers and Local Delivery	600	582	-18	-3.0%
493	Warehousing and Storage	9,069	9,175	106	1.2%
4931	Warehousing and Storage	9,069	9,175	106	1.2%
	<b>Information</b>	93,745	94,852	1,107	1.2%
51	Information	93,745	94,852	1,107	1.2%
511	Publishing Industries	42,254	42,926	672	1.6%
5111	Newspaper, Book, & Directory Publishers	21,041	20,751	-290	-1.4%
5112	Software Publishers	21,213	22,175	962	4.5%
512	Motion Picture & Sound Recording Ind	4,752	5,697	945	19.9%
5121	Motion Picture and Video Industries	4,569	5,496	927	20.3%
5122	Sound Recording Industries	183	201	18	9.8%
515	Broadcasting (except Internet)	5,742	5,469	-273	-4.8%
5151	Radio and Television Broadcasting	5,115	4,727	-388	-7.6%
5152	Cable and Other Subscription Programming	627	742	115	18.3%
516	Internet Publishing and Broadcasting	2,347		-2,347	-100.0%
5161	Internet Publishing and Broadcasting	2,347		-2,347	-100.0%
517	Telecommunications	21,314	21,789	475	2.2%
5171	Wired Telecommunications Carriers	12,049	17,779	5,730	47.6%
5172	Wireless Telecommunications Carriers	2,721	2,365	-356	-13.1%
5173	Telecommunications Resellers	1,252		-1,252	-100.0%
5174	Satellite Telecommunications	53	64	11	20.8%
5175	Cable and Other Program Distribution	5,166		-5,166	-100.0%
5179	Other Telecommunications	74	1,581	1,507	2036.5%
518	ISPs, Search Portals, & Data Processing	10,109	7,421	-2,688	-26.6%
5181	ISPs and Web Search Portals	2,765		-2,765	-100.0%
5182	Data Processing and Related Services	7,345	7,421	76	1.0%
519	Other Information Services	7,227	11,550	4,323	59.8%
5191	Other Information Services	7,227	11,550	4,323	59.8%
	<b>Financial Activities</b>	228,028	227,837	-191	-0.1%
52	Finance and Insurance	181,868	182,744	876	0.5%
522	Credit Intermediation & Related Activity	64,121	62,547	-1,574	-2.5%
5221	Depository Credit Intermediation	50,187	49,990	-197	-0.4%
5222	Nondepository Credit Intermediation	10,228	8,991	-1,237	-12.1%
5223	Activities Rel to Credit Intermediation	3,706	3,566	-140	-3.8%
523	Financial Investment & Related Activity	48,589	51,700	3,111	6.4%
5231	Security & Commodity Investment Activity	24,468	24,424	-44	-0.2%

**Massachusetts ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
5232	Securities and Commodity Exchanges	23	12	-11	-47.8%
5239	Other Financial Investment Activities	24,097	27,264	3,167	13.1%
524	Insurance Carriers & Related Activities	65,497	65,590	93	0.1%
5241	Insurance Carriers	43,695	43,536	-159	-0.4%
5242	Insurance Agencies, Brokerages & Support	21,802	22,054	252	1.2%
525	Funds, Trusts & Other Financial Vehicles	2,776	2,008	-768	-27.7%
5251	Insurance and Employee Benefit Funds	501	521	20	4.0%
5259	Other Investment Pools and Funds	2,275	1,487	-788	-34.6%
53	Real Estate and Rental and Leasing	46,161	45,094	-1,067	-2.3%
531	Real Estate	32,802	32,167	-635	-1.9%
5311	Lessors of Real Estate	9,857	10,125	268	2.7%
5312	Offices of Real Estate Agents & Brokers	9,605	8,734	-871	-9.1%
5313	Activities Related to Real Estate	13,340	13,308	-32	-0.2%
532	Rental and Leasing Services	12,876	12,412	-464	-3.6%
5321	Automotive Equipment Rental and Leasing	4,022	3,789	-233	-5.8%
5322	Consumer Goods Rental	5,766	5,546	-220	-3.8%
5323	General Rental Centers	1,141	1,113	-28	-2.5%
5324	Machinery & Equipment Rental & Leasing	1,947	1,964	17	0.9%
533	Lessors, Nonfinancial Intangible Assets	483	515	32	6.6%
5331	Lessors, Nonfinancial Intangible Assets	483	515	32	6.6%
	<b>Professional and Business Services</b>	<b>485,289</b>	<b>494,541</b>	<b>9,252</b>	<b>1.9%</b>
54	Professional and Technical Services	246,776	252,712	5,936	2.4%
541	Professional and Technical Services	246,776	252,712	5,936	2.4%
5411	Legal Services	30,955	31,070	115	0.4%
5412	Accounting and Bookkeeping Services	19,443	20,350	907	4.7%
5413	Architectural and Engineering Services	41,553	41,459	-94	-0.2%
5414	Specialized Design Services	3,669	3,636	-33	-0.9%
5415	Computer Systems Design and Rel Svc	47,853	52,055	4,202	8.8%
5416	Management & Technical Consulting Svc	35,604	34,703	-901	-2.5%
5417	Scientific Research and Development Svc	43,953	44,406	453	1.0%
5418	Advertising and Related Services	12,015	12,677	662	5.5%
5419	Other Professional & Technical Services	11,732	12,355	623	5.3%
55	Management of Companies and Enterprises	61,790	61,401	-389	-0.6%
551	Management of Companies and Enterprises	61,790	61,401	-389	-0.6%
5511	Management of Companies and Enterprises	61,790	61,401	-389	-0.6%
56	Administrative and Waste Services	176,723	180,429	3,706	2.1%
561	Administrative and Support Services	166,154	169,624	3,470	2.1%
5611	Office Administrative Services	8,644	8,900	256	3.0%
5612	Facilities Support Services	507	630	123	24.3%
5613	Employment Services	65,188	67,721	2,533	3.9%
5614	Business Support Services	9,339	9,841	502	5.4%
5615	Travel Arrangement & Reservation Service	6,721	6,678	-43	-0.6%
5616	Investigation and Security Services	17,076	17,163	87	0.5%
5617	Services to Buildings and Dwellings	54,580	54,456	-124	-0.2%
5619	Other Support Services	4,099	4,234	135	3.3%
562	Waste Management and Remediation Service	10,569	10,805	236	2.2%
5621	Waste Collection	3,416	3,582	166	4.9%
5622	Waste Treatment and Disposal	3,508	3,484	-24	-0.7%

**Massachusetts ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
5629	Remediation and Other Waste Services	3,645	3,738	93	2.6%
	<b>Education and Health Services</b>	<b>735,463</b>	<b>757,941</b>	<b>22,478</b>	<b>3.1%</b>
61	Educational Services	264,293	269,921	5,628	2.1%
611	Educational Services	264,293	269,921	5,628	2.1%
6111	Elementary and Secondary Schools	139,468	142,644	3,176	2.3%
6113	Colleges and Universities	101,163	103,248	2,085	2.1%
6114	Business, Computer & Management Training	2,056	2,118	62	3.0%
6115	Technical and Trade Schools	2,258	2,362	104	4.6%
6116	Other Schools and Instruction	9,421	9,714	293	3.1%
6117	Educational Support Services	2,855	2,673	-182	-6.4%
62	Health Care and Social Assistance	471,170	488,020	16,850	3.6%
621	Ambulatory Health Care Services	134,770	140,132	5,362	4.0%
6211	Offices of Physicians	48,937	50,649	1,712	3.5%
6212	Offices of Dentists	20,724	20,967	243	1.2%
6213	Offices of Other Health Practitioners	12,082	12,507	425	3.5%
6214	Outpatient Care Centers	20,723	21,200	477	2.3%
6215	Medical and Diagnostic Laboratories	4,420	4,722	302	6.8%
6216	Home Health Care Services	21,277	23,053	1,776	8.3%
6219	Other Ambulatory Health Care Services	6,607	7,035	428	6.5%
622	Hospitals	179,771	185,219	5,448	3.0%
6221	General Medical and Surgical Hospitals	156,217	161,064	4,847	3.1%
6222	Psychiatric & Substance Abuse Hospitals	8,771	8,662	-109	-1.2%
6223	Other Hospitals	14,784	15,492	708	4.8%
623	Nursing and Residential Care Facilities	93,825	96,281	2,456	2.6%
6231	Nursing Care Facilities	57,088	57,895	807	1.4%
6232	Residential Mental Health Facilities	17,711	18,244	533	3.0%
6233	Community Care Facility for the Elderly	13,296	13,872	576	4.3%
6239	Other Residential Care Facilities	5,731	6,269	538	9.4%
624	Social Assistance	62,804	66,388	3,584	5.7%
6241	Individual and Family Services	28,530	30,656	2,126	7.5%
6242	Emergency and Other Relief Services	4,935	5,130	195	4.0%
6243	Vocational Rehabilitation Services	8,478	9,380	902	10.6%
6244	Child Day Care Services	20,862	21,223	361	1.7%
	<b>Leisure and Hospitality</b>	<b>328,920</b>	<b>333,382</b>	<b>4,462</b>	<b>1.4%</b>
71	Arts, Entertainment, and Recreation	63,976	64,971	995	1.6%
711	Performing Arts and Spectator Sports	10,348	11,027	679	6.6%
7111	Performing Arts Companies	3,542	3,463	-79	-2.2%
7112	Spectator Sports	2,644	2,723	79	3.0%
7113	Performing Arts and Sports Promoters	3,512	4,271	759	21.6%
7114	Agents and Managers for Public Figures	137	145	8	5.8%
7115	Independent Artists/Writers/Performers	513	426	-87	-17.0%
712	Museums, Parks and Historical Sites	6,290	6,379	89	1.4%
7121	Museums, Parks and Historical Sites	6,290	6,379	89	1.4%
713	Amusement, Gambling & Recreation Ind	47,338	47,565	227	0.5%
7131	Amusement Parks and Arcades	2,174	2,488	314	14.4%
7139	Other Amusement & Recreation Industries	45,032	44,935	-97	-0.2%
72	Accommodation and Food Services	264,944	268,410	3,466	1.3%
721	Accommodation	37,544	38,183	639	1.7%

**Massachusetts ES-202 Average Monthly Employment, 2006-2007**

**All NAICS**

NAICS	Description	2006 Third Quarter	2007 Third Quarter	Absolute Change	Relative Change
7211	Traveler Accommodation	34,874	35,611	737	2.1%
7212	RV Parks and Recreational Camps	2,194	2,226	32	1.5%
7213	Rooming and Boarding Houses	476	346	-130	-27.3%
722	Food Services and Drinking Places	227,400	230,227	2,827	1.2%
7221	Full-Service Restaurants	116,055	118,979	2,924	2.5%
7222	Limited-Service Eating Places	82,804	84,601	1,797	2.2%
7223	Special Food Services	20,367	19,120	-1,247	-6.1%
7224	Drinking Places (Alcoholic Beverages)	8,174	7,527	-647	-7.9%
	<b>Other Services</b>	124,406	128,741	4,335	3.5%
81	Other Services, Ex. Public Admin	124,406	128,741	4,335	3.5%
811	Repair and Maintenance	26,257	26,020	-237	-0.9%
8111	Automotive Repair and Maintenance	18,724	18,345	-379	-2.0%
8112	Electronic Equipment Repair/Maintenance	3,212	3,516	304	9.5%
8113	Commercial Machinery Repair/Maintenance	2,565	2,504	-61	-2.4%
8114	Household Goods Repair and Maintenance	1,756	1,654	-102	-5.8%
812	Personal and Laundry Services	36,825	37,735	910	2.5%
8121	Personal Care Services	18,626	18,789	163	0.9%
8122	Death Care Services	2,642	2,655	13	0.5%
8123	Drycleaning and Laundry Services	8,949	9,437	488	5.5%
8129	Other Personal Services	6,608	6,854	246	3.7%
813	Membership Organizations & Associations	38,873	39,848	975	2.5%
8131	Religious Organizations	772	767	-5	-0.6%
8132	Grantmaking and Giving Services	2,705	2,982	277	10.2%
8133	Social Advocacy Organizations	7,904	8,386	482	6.1%
8134	Civic and Social Organizations	19,805	19,762	-43	-0.2%
8139	Professional and Similar Organizations	7,687	7,951	264	3.4%
814	Private Households	22,451	25,139	2,688	12.0%
8141	Private Households	22,451	25,139	2,688	12.0%
	<b>Public Administration</b>	134,428	135,383	955	0.7%
92	Public Administration	134,428	135,383	955	0.7%
921	Executive, Legislative, & Gen Government	32,643	32,288	-355	-1.1%
9211	Executive, Legislative, & Gen Government	32,643	32,288	-355	-1.1%
922	Justice, Public Order, and Safety Activi	60,619	61,341	722	1.2%
9221	Justice, Public Order, and Safety Activi	60,619	61,341	722	1.2%
924	Administration of Environmental Programs	6,261	6,318	57	0.9%
9241	Administration of Environmental Programs	6,261	6,318	57	0.9%
925	Community and Housing Program Admin	5,480	5,569	89	1.6%
9251	Community and Housing Program Admin	5,480	5,569	89	1.6%
926	Administration of Economic Programs	7,465	7,928	463	6.2%
9261	Administration of Economic Programs	7,465	7,928	463	6.2%
928	National Security & International Affair	5,072	4,966	-106	-2.1%
9281	National Security & International Affair	5,072	4,966	-106	-2.1%

**Appendix C:**  
**Occupational Staffing Patterns of  
Industries and Educational Attainment of  
Workers by Industries and Occupations  
in Massachusetts**

**Employed (16+) in Massachusetts, ACS 2005-2006 Average**

Occupations	Agri,Forestry, Fishing, and Hunting	Mining	Utilities	Construction	Non-Durable Manufacturing	Durable Manufacturing	Wholesale Trade	Retail Trade
Management Occupations	3012	88	2692	24623	13647	33436	10933	12078
Business and Financial Operations Occupations	41	84	939	2740	3970	10951	5398	8188
Computer and Mathematical Occupations	0	28	337	74	1533	16334	2340	5743
Architecture and Engineering Occupations	0	0	1810	4783	3171	32403	1104	601
Life, Physical, and Social Science Occupations	289	102	395	11	6879	2428	422	320
Community and Social Services Occupations	0	0	0	0	28	0	0	0
Legal Occupations	33	0	123	129	175	612	0	511
Education, Training, and Library Occupations	0	0	0	0	342	377	118	594
Arts, Design, Entertainment, Sports, and Media Occupations	0	0	34	504	1594	3051	908	4421
Healthcare Practitioner and Technical Occupations	0	0	0	0	353	187	248	7751
Healthcare Support Occupations	0	0	0	0	0	0	247	221
Protective Service Occupations	30	0	82	120	187	571	176	2188
Food Preparation and Serving Occupations	110	0	0	0	562	110	71	8543
Building and Grounds Cleaning Occupations	80	80	435	1075	1807	848	416	2498
Personal Care and Service Occupations	484	0	0	56	28	31	72	1014
High-Level Sales Occupations	0	0	273	1494	7650	9108	35259	63498
Low-Level Sales Occupations	164	0	0	47	830	46	912	118460
Office and Administrative Support Occupations	329	154	4548	10801	13948	22254	19129	54057
Farming, Fishing, and Forestry Occupations	4531	0	0	0	0	0	501	300
Construction and Extraction Occupations	10	330	1972	156081	359	3416	567	2026
Installations, Maintenance, and Repair Occupations	172	149	2775	8759	3241	7248	4414	12309
Production Occupations	54	231	3425	2328	47668	80666	2402	9584
Transportation and Material Moving Occupations	842	369	892	7005	7090	8519	17886	27665
Total	10178	1612	20729	220623	115056	232590	103519	342564

**Employed (16+) in Massachusetts, ACS 2005-2006 Average**

Occupations	Transportation and Warehousing	Information	Finance and Insurance	Real Estate, Rental and Leasing	Professional Scientific and Technical	Management of Companies and Enterprises	Administrative Support and Waste Management
Management Occupations	6267	17242	35368	15054	38717	1394	9120
Business and Financial Operations Occupations	1166	2944	49602	3614	36973	1408	5148
Computer and Mathematical Occupations	231	8870	15467	394	41706	413	2399
Architecture and Engineering Occupations	735	3901	308	246	26588	34	442
Life, Physical, and Social Science Occupations	123	464	689	126	18053	0	406
Community and Social Services Occupations	0	0	207	65	83	0	114
Legal Occupations	54	555	2099	199	31009	144	610
Education, Training, and Library Occupations	107	4354	623	0	1152	0	347
Arts, Design, Entertainment, Sports, and Media Occupations	0	13705	1338	37	14568	63	1182
Healthcare Practitioner and Technical Occupations	145	0	1301	33	5116	100	1695
Healthcare Support Occupations	0	0	38	0	498	0	1342
Protective Service Occupations	828	693	977	507	308	0	9126
Food Preparation and Serving Occupations	107	369	0	195	69	0	327
Building and Grounds Cleaning Occupations	794	502	487	4932	478	0	40749
Personal Care and Service Occupations	2572	441	0	599	866	38	521
High-Level Sales Occupations	1375	7019	23513	22877	6458	159	3169
Low-Level Sales Occupations	675	2694	8586	2129	1495	0	3946
Office and Administrative Support Occupations	32985	15473	53958	8232	33091	914	17237
Farming, Fishing, and Forestry Occupations	0	0	0	0	42	0	81
Construction and Extraction Occupations	1194	118	71	908	1205	82	1790
Installations, Maintenance, and Repair Occupations	4088	8033	150	2743	1013	182	1938
Production Occupations	1435	2414	586	125	2451	141	3328
Transportation and Material Moving Occupations	45475	1529	288	1443	1184	193	6581
Total	100351	91315	195651	64454	263117	5262	111592



**Employed (16+) in Massachusetts, ACS 2005-2006 Average**

Occupations	Educational	Healthcare and Social	Arts, Entertainment and Recreation	Accommodation and Food Services	Other Services	Public Services	Total
Management Occupations	30596	33796	3134	24222	10036	12966	338414
Business and Financial Operations Occupations	5864	8906	1134	1006	2665	9652	162387
Computer and Mathematical Occupations	5862	3958	162	68	777	2889	109581
Architecture and Engineering Occupations	1277	748	73	101	513	1901	80735
Life, Physical, and Social Science Occupations	7958	13913	228	0	127	2293	55223
Community and Social Services Occupations	7344	28629	214	239	10454	9300	56674
Legal Occupations	491	1300	34	192	522	6056	44842
Education, Training, and Library Occupations	164557	16428	1693	306	1025	1627	193647
Arts, Design, Entertainment, Sports, and Media Occupations	6542	1179	12883	452	1867	816	65141
Healthcare Practitioner and Technical Occupations	8440	160666	235	109	1481	2544	190400
Healthcare Support Occupations	1533	63689	410	41	2896	938	71850
Protective Service Occupations	2843	1896	2464	1108	489	37759	62347
Food Preparation and Serving Occupations	7641	9047	3320	121919	1609	700	154696
Building and Grounds Cleaning Occupations	14206	12681	4298	9982	11333	1966	109641
Personal Care and Service Occupations	4067	31385	11519	2744	36061	1392	93885
High-Level Sales Occupations	139	134	1296	928	5385	0	189730
Low-Level Sales Occupations	2798	1896	1576	11150	2889	223	160513
Office and Administrative Support Occupations	26323	61317	3909	8757	14793	24325	426526
Farming, Fishing, and Forestry Occupations	0	0	28	0	9	200	5691
Construction and Extraction Occupations	1399	1210	99	340	330	1657	175158
Installations, Maintenance, and Repair Occupations	2635	1344	1013	785	18860	1925	83772
Production Occupations	465	3043	403	1995	9160	941	172840
Transportation and Material Moving Occupations	1474	2839	1168	3307	5809	1166	142718
<b>Total</b>	<b>304448</b>	<b>460000</b>	<b>51288</b>	<b>189746</b>	<b>139084</b>	<b>123230</b>	<b>3146406</b>

**Employed (16+) in Massachusetts, ACS 2005-2006 Average**

**Distribution of Industry by Occupation**

Occupations	Agri,Forestry, Fishing, and Hunting	Mining	Utilities	Construction	Non-Durable Manufacturing	Durable Manufacturing	Wholesale Trade	Retail Trade
Management Occupations	1%	0%	1%	7%	4%	10%	3%	4%
Business and Financial Operations Occupations	0%	0%	1%	2%	2%	7%	3%	5%
Computer and Mathematical Occupations	0%	0%	0%	0%	1%	15%	2%	5%
Architecture and Engineering Occupations	0%	0%	2%	6%	4%	40%	1%	1%
Life, Physical, and Social Science Occupations	1%	0%	1%	0%	12%	4%	1%	1%
Community and Social Services Occupations	0%	0%	0%	0%	0%	0%	0%	0%
Legal Occupations	0%	0%	0%	0%	0%	1%	0%	1%
Education, Training, and Library Occupations	0%	0%	0%	0%	0%	0%	0%	0%
Arts, Design, Entertainment, Sports, and Media Occupations	0%	0%	0%	1%	2%	5%	1%	7%
Healthcare Practitioner and Technical Occupations	0%	0%	0%	0%	0%	0%	0%	4%
Healthcare Support Occupations	0%	0%	0%	0%	0%	0%	0%	0%
Protective Service Occupations	0%	0%	0%	0%	0%	1%	0%	4%
Food Preparation and Serving Occupations	0%	0%	0%	0%	0%	0%	0%	6%
Building and Grounds Cleaning Occupations	0%	0%	0%	1%	2%	1%	0%	2%
Personal Care and Service Occupations	1%	0%	0%	0%	0%	0%	0%	1%
High-Level Sales Occupations	0%	0%	0%	1%	4%	5%	19%	33%
Low-Level Sales Occupations	0%	0%	0%	0%	1%	0%	1%	74%
Office and Administrative Support Occupations	0%	0%	1%	3%	3%	5%	4%	13%
Farming, Fishing, and Forestry Occupations	80%	0%	0%	0%	0%	0%	9%	5%
Construction and Extraction Occupations	0%	0%	1%	89%	0%	2%	0%	1%
Installations, Maintenance, and Repair Occupations	0%	0%	3%	10%	4%	9%	5%	15%
Production Occupations	0%	0%	2%	1%	28%	47%	1%	6%
Transportation and Material Moving Occupations	1%	0%	1%	5%	5%	6%	13%	19%
Total	0%	0%	1%	7%	4%	7%	3%	11%

**Employed (16+) in Massachusetts, ACS 2005-2006 Average**

**Distribution of Industry by Occupation**

Occupations	Transportation and Warehousing	Information	Finance and Insurance	Real Estate, Rental and Leasing	Professional Scientific and Technical	Management of Companies and Enterprises	Administrative Support and Waste Management
Management Occupations	2%	5%	10%	4%	11%	0%	3%
Business and Financial Operations Occupations	1%	2%	31%	2%	23%	1%	3%
Computer and Mathematical Occupations	0%	8%	14%	0%	38%	0%	2%
Architecture and Engineering Occupations	1%	5%	0%	0%	33%	0%	1%
Life, Physical, and Social Science Occupations	0%	1%	1%	0%	33%	0%	1%
Community and Social Services Occupations	0%	0%	0%	0%	0%	0%	0%
Legal Occupations	0%	1%	5%	0%	69%	0%	1%
Education, Training, and Library Occupations	0%	2%	0%	0%	1%	0%	0%
Arts, Design, Entertainment, Sports, and Media Occupations	0%	21%	2%	0%	22%	0%	2%
Healthcare Practitioner and Technical Occupations	0%	0%	1%	0%	3%	0%	1%
Healthcare Support Occupations	0%	0%	0%	0%	1%	0%	2%
Protective Service Occupations	1%	1%	2%	1%	0%	0%	15%
Food Preparation and Serving Occupations	0%	0%	0%	0%	0%	0%	0%
Building and Grounds Cleaning Occupations	1%	0%	0%	4%	0%	0%	37%
Personal Care and Service Occupations	3%	0%	0%	1%	1%	0%	1%
High-Level Sales Occupations	1%	4%	12%	12%	3%	0%	2%
Low-Level Sales Occupations	0%	2%	5%	1%	1%	0%	2%
Office and Administrative Support Occupations	8%	4%	13%	2%	8%	0%	4%
Farming, Fishing, and Forestry Occupations	0%	0%	0%	0%	1%	0%	1%
Construction and Extraction Occupations	1%	0%	0%	1%	1%	0%	1%
Installations, Maintenance, and Repair Occupations	5%	10%	0%	3%	1%	0%	2%
Production Occupations	1%	1%	0%	0%	1%	0%	2%
Transportation and Material Moving Occupations	32%	1%	0%	1%	1%	0%	5%
Total	3%	3%	6%	2%	8%	0%	4%

**Employed (16+) in Massachusetts, ACS 2005-2006 Average**

**Distribution of Industry by Occupation**

Occupations	Educational	Healthcare and Social	Arts, Entertainment and Recreation	Accommodation and Food Services	Other Services	Public Services	Total
Management Occupations	9%	10%	1%	7%	3%	4%	100%
Business and Financial Operations Occupations	4%	5%	1%	1%	2%	6%	100%
Computer and Mathematical Occupations	5%	4%	0%	0%	1%	3%	100%
Architecture and Engineering Occupations	2%	1%	0%	0%	1%	2%	100%
Life, Physical, and Social Science Occupations	14%	25%	0%	0%	0%	4%	100%
Community and Social Services Occupations	13%	51%	0%	0%	18%	16%	100%
Legal Occupations	1%	3%	0%	0%	1%	14%	100%
Education, Training, and Library Occupations	85%	8%	1%	0%	1%	1%	100%
Arts, Design, Entertainment, Sports, and Media Occupations	10%	2%	20%	1%	3%	1%	100%
Healthcare Practitioner and Technical Occupations	4%	84%	0%	0%	1%	1%	100%
Healthcare Support Occupations	2%	89%	1%	0%	4%	1%	100%
Protective Service Occupations	5%	3%	4%	2%	1%	61%	100%
Food Preparation and Serving Occupations	5%	6%	2%	79%	1%	0%	100%
Building and Grounds Cleaning Occupations	13%	12%	4%	9%	10%	2%	100%
Personal Care and Service Occupations	4%	33%	12%	3%	38%	1%	100%
High-Level Sales Occupations	0%	0%	1%	0%	3%	0%	100%
Low-Level Sales Occupations	2%	1%	1%	7%	2%	0%	100%
Office and Administrative Support Occupations	6%	14%	1%	2%	3%	6%	100%
Farming, Fishing, and Forestry Occupations	0%	0%	0%	0%	0%	4%	100%
Construction and Extraction Occupations	1%	1%	0%	0%	0%	1%	100%
Installations, Maintenance, and Repair Occupations	3%	2%	1%	1%	23%	2%	100%
Production Occupations	0%	2%	0%	1%	5%	1%	100%
Transportation and Material Moving Occupations	1%	2%	1%	2%	4%	1%	100%
Total	10%	15%	2%	6%	4%	4%	100%

**Employed (16+) in Massachusetts, ACS 2005-2006 Average**

**Distribution of Occupation by Industry**

Occupations	Agri,Forestry, Fishing, and Hunting	Mining	Utilities	Construction	Non-Durable Manufacturing	Durable Manufacturing	Wholesale Trade	Retail Trade
Management Occupations	30%	5%	13%	11%	12%	14%	11%	4%
Business and Financial Operations Occupations	0%	5%	5%	1%	3%	5%	5%	2%
Computer and Mathematical Occupations	0%	2%	2%	0%	1%	7%	2%	2%
Architecture and Engineering Occupations	0%	0%	9%	2%	3%	14%	1%	0%
Life, Physical, and Social Science Occupations	3%	6%	2%	0%	6%	1%	0%	0%
Community and Social Services Occupations	0%	0%	0%	0%	0%	0%	0%	0%
Legal Occupations	0%	0%	1%	0%	0%	0%	0%	0%
Education, Training, and Library Occupations	0%	0%	0%	0%	0%	0%	0%	0%
Arts, Design, Entertainment, Sports, and Media Occupations	0%	0%	0%	0%	1%	1%	1%	1%
Healthcare Practitioner and Technical Occupations	0%	0%	0%	0%	0%	0%	0%	2%
Healthcare Support Occupations	0%	0%	0%	0%	0%	0%	0%	0%
Protective Service Occupations	0%	0%	0%	0%	0%	0%	0%	1%
Food Preparation and Serving Occupations	1%	0%	0%	0%	0%	0%	0%	2%
Building and Grounds Cleaning Occupations	1%	5%	2%	0%	2%	0%	0%	1%
Personal Care and Service Occupations	5%	0%	0%	0%	0%	0%	0%	0%
High-Level Sales Occupations	0%	0%	1%	1%	7%	4%	34%	19%
Low-Level Sales Occupations	2%	0%	0%	0%	1%	0%	1%	35%
Office and Administrative Support Occupations	3%	10%	22%	5%	12%	10%	18%	16%
Farming, Fishing, and Forestry Occupations	45%	0%	0%	0%	0%	0%	0%	0%
Construction and Extraction Occupations	0%	20%	10%	71%	0%	1%	1%	1%
Installations, Maintenance, and Repair Occupations	2%	9%	13%	4%	3%	3%	4%	4%
Production Occupations	1%	14%	17%	1%	41%	35%	2%	3%
Transportation and Material Moving Occupations	8%	23%	4%	3%	6%	4%	17%	8%
Total	100%	100%	100%	100%	100%	100%	100%	100%

**Employed (16+) in Massachusetts, ACS 2005-2006 Average**

**Distribution of Occupation by Industry**

Occupations	Transportation and Warehousing	Information	Finance and Insurance	Real Estate, Rental and Leasing	Professional Scientific and Technical	Management of Companies and Enterprises	Administrative Support and Waste Management
Management Occupations	6%	19%	18%	23%	15%	26%	8%
Business and Financial Operations Occupations	1%	3%	25%	6%	14%	27%	5%
Computer and Mathematical Occupations	0%	10%	8%	1%	16%	8%	2%
Architecture and Engineering Occupations	1%	4%	0%	0%	10%	1%	0%
Life, Physical, and Social Science Occupations	0%	1%	0%	0%	7%	0%	0%
Community and Social Services Occupations	0%	0%	0%	0%	0%	0%	0%
Legal Occupations	0%	1%	1%	0%	12%	3%	1%
Education, Training, and Library Occupations	0%	5%	0%	0%	0%	0%	0%
Arts, Design, Entertainment, Sports, and Media Occupations	0%	15%	1%	0%	6%	1%	1%
Healthcare Practitioner and Technical Occupations	0%	0%	1%	0%	2%	2%	2%
Healthcare Support Occupations	0%	0%	0%	0%	0%	0%	1%
Protective Service Occupations	1%	1%	0%	1%	0%	0%	8%
Food Preparation and Serving Occupations	0%	0%	0%	0%	0%	0%	0%
Building and Grounds Cleaning Occupations	1%	1%	0%	8%	0%	0%	37%
Personal Care and Service Occupations	3%	0%	0%	1%	0%	1%	0%
High-Level Sales Occupations	1%	8%	12%	35%	2%	3%	3%
Low-Level Sales Occupations	1%	3%	4%	3%	1%	0%	4%
Office and Administrative Support Occupations	33%	17%	28%	13%	13%	17%	15%
Farming, Fishing, and Forestry Occupations	0%	0%	0%	0%	0%	0%	0%
Construction and Extraction Occupations	1%	0%	0%	1%	0%	2%	2%
Installations, Maintenance, and Repair Occupations	4%	9%	0%	4%	0%	3%	2%
Production Occupations	1%	3%	0%	0%	1%	3%	3%
Transportation and Material Moving Occupations	45%	2%	0%	2%	0%	4%	6%
Total	100%	100%	100%	100%	100%	100%	100%

**Employed (16+) in Massachusetts, ACS 2005-2006 Average**

**Distribution of Occupation by Industry**

Occupations	Educational	Healthcare and Social	Arts, Entertainment and Recreation	Accommodation and Food Services	Other Services	Public Services	Total
Management Occupations	10%	7%	6%	13%	7%	11%	11%
Business and Financial Operations Occupations	2%	2%	2%	1%	2%	8%	5%
Computer and Mathematical Occupations	2%	1%	0%	0%	1%	2%	3%
Architecture and Engineering Occupations	0%	0%	0%	0%	0%	2%	3%
Life, Physical, and Social Science Occupations	3%	3%	0%	0%	0%	2%	2%
Community and Social Services Occupations	2%	6%	0%	0%	8%	8%	2%
Legal Occupations	0%	0%	0%	0%	0%	5%	1%
Education, Training, and Library Occupations	54%	4%	3%	0%	1%	1%	6%
Arts, Design, Entertainment, Sports, and Media Occupations	2%	0%	25%	0%	1%	1%	2%
Healthcare Practitioner and Technical Occupations	3%	35%	0%	0%	1%	2%	6%
Healthcare Support Occupations	1%	14%	1%	0%	2%	1%	2%
Protective Service Occupations	1%	0%	5%	1%	0%	31%	2%
Food Preparation and Serving Occupations	3%	2%	6%	64%	1%	1%	5%
Building and Grounds Cleaning Occupations	5%	3%	8%	5%	8%	2%	3%
Personal Care and Service Occupations	1%	7%	22%	1%	26%	1%	3%
High-Level Sales Occupations	0%	0%	3%	0%	4%	0%	6%
Low-Level Sales Occupations	1%	0%	3%	6%	2%	0%	5%
Office and Administrative Support Occupations	9%	13%	8%	5%	11%	20%	14%
Farming, Fishing, and Forestry Occupations	0%	0%	0%	0%	0%	0%	0%
Construction and Extraction Occupations	0%	0%	0%	0%	0%	1%	6%
Installations, Maintenance, and Repair Occupations	1%	0%	2%	0%	14%	2%	3%
Production Occupations	0%	1%	1%	1%	7%	1%	5%
Transportation and Material Moving Occupations	0%	1%	2%	2%	4%	1%	5%
Total	100%	100%	100%	100%	100%	100%	100%

**Employed (16+) in Massachusetts, ACS 2005-2006 Average**

Occupations	<12 or 12, No H.S. Diploma	H.S. Diploma/G ED	Some College	Bachelor Degree or More	Total
Management Occupations	6,826	43,398	69,554	218,637	338,414
Business and Financial Operations Occupations	968	14,860	32,855	113,705	162,387
Computer and Mathematical Occupations	607	5,517	18,730	84,729	109,581
Architecture and Engineering Occupations	707	6,159	18,035	55,835	80,735
Life, Physical, and Social Science Occupations	208	1,594	4,406	49,015	55,223
Community and Social Services Occupations	1,560	5,235	9,372	40,509	56,674
Legal Occupations	126	2,052	5,120	37,545	44,842
Education, Training, and Library Occupations	2,737	10,833	22,930	157,147	193,647
Arts, Design, Entertainment, Sports, and Media Occupations	1,649	5,025	13,683	44,785	65,141
Healthcare Practitioner and Technical Occupations	950	11,277	59,647	118,527	190,400
Healthcare Support Occupations	7,422	28,851	28,266	7,312	71,850
Protective Service Occupations	3,660	15,075	23,918	19,695	62,347
Food Preparation and Serving Occupations	39,032	57,997	42,147	15,520	154,696
Building and Grounds Cleaning Occupations	29,196	47,411	24,871	8,163	109,641
Personal Care and Service Occupations	10,668	33,488	32,163	17,566	93,885
High-Level Sales Occupations	7,057	38,467	52,335	91,871	189,730
Low-Level Sales Occupations	26,970	51,179	43,427	38,938	160,513
Office and Administrative Support Occupations	24,970	144,937	165,214	91,406	426,526
Farming, Fishing, and Forestry Occupations	2,090	2,198	673	731	5,691
Construction and Extraction Occupations	28,183	89,622	41,271	16,082	175,158
Installations, Maintenance, and Repair Occupations	8,351	43,555	24,099	7,768	83,772
Production Occupations	37,399	81,852	38,264	15,326	172,840
Transportation and Material Moving Occupations	28,773	69,224	31,873	12,849	142,718
Total	270,103	809,801	802,848	1,263,655	3,146,406



**Employed (16+) in Massachusetts, ACS 2005-2006 Average**  
**Distribution of Occupation by Educational Attainment**

Occupations	<12 or 12, No H.S. Diploma	H.S. Diploma/ GED	Some College	Bachelor Degree or More	Total
Management Occupations	3%	5%	9%	17%	11%
Business and Financial Operations Occupations	0%	2%	4%	9%	5%
Computer and Mathematical Occupations	0%	1%	2%	7%	3%
Architecture and Engineering Occupations	0%	1%	2%	4%	3%
Life, Physical, and Social Science Occupations	0%	0%	1%	4%	2%
Community and Social Services Occupations	1%	1%	1%	3%	2%
Legal Occupations	0%	0%	1%	3%	1%
Education, Training, and Library Occupations	1%	1%	3%	12%	6%
Arts, Design, Entertainment, Sports, and Media Occupations	1%	1%	2%	4%	2%
Healthcare Practitioner and Technical Occupations	0%	1%	7%	9%	6%
Healthcare Support Occupations	3%	4%	4%	1%	2%
Protective Service Occupations	1%	2%	3%	2%	2%
Food Preparation and Serving Occupations	14%	7%	5%	1%	5%
Building and Grounds Cleaning Occupations	11%	6%	3%	1%	3%
Personal Care and Service Occupations	4%	4%	4%	1%	3%
High-Level Sales Occupations	3%	5%	7%	7%	6%
Low-Level Sales Occupations	10%	6%	5%	3%	5%
Office and Administrative Support Occupations	9%	18%	21%	7%	14%
Farming, Fishing, and Forestry Occupations	1%	0%	0%	0%	0%
Construction and Extraction Occupations	10%	11%	5%	1%	6%
Installations, Maintenance, and Repair Occupations	3%	5%	3%	1%	3%
Production Occupations	14%	10%	5%	1%	5%
Transportation and Material Moving Occupations	11%	9%	4%	1%	5%
Total	100%	100%	100%	100%	100%

**Employed (16+) in Massachusetts, ACS 2005-2006 Average**  
**Distribution of Educational Attainment by Occupation**

Occupations	<12 or 12, No H.S. Diploma	H.S. Diploma/ GED	Some College	Bachelor Degree or More	Total
Management Occupations	2%	13%	21%	65%	100%
Business and Financial Operations Occupations	1%	9%	20%	70%	100%
Computer and Mathematical Occupations	1%	5%	17%	77%	100%
Architecture and Engineering Occupations	1%	8%	22%	69%	100%
Life, Physical, and Social Science Occupations	0%	3%	8%	89%	100%
Community and Social Services Occupations	3%	9%	17%	71%	100%
Legal Occupations	0%	5%	11%	84%	100%
Education, Training, and Library Occupations	1%	6%	12%	81%	100%
Arts, Design, Entertainment, Sports, and Media Occupations	3%	8%	21%	69%	100%
Healthcare Practitioner and Technical Occupations	0%	6%	31%	62%	100%
Healthcare Support Occupations	10%	40%	39%	10%	100%
Protective Service Occupations	6%	24%	38%	32%	100%
Food Preparation and Serving Occupations	25%	37%	27%	10%	100%
Building and Grounds Cleaning Occupations	27%	43%	23%	7%	100%
Personal Care and Service Occupations	11%	36%	34%	19%	100%
High-Level Sales Occupations	4%	20%	28%	48%	100%
Low-Level Sales Occupations	17%	32%	27%	24%	100%
Office and Administrative Support Occupations	6%	34%	39%	21%	100%
Farming, Fishing, and Forestry Occupations	37%	39%	12%	13%	100%
Construction and Extraction Occupations	16%	51%	24%	9%	100%
Installations, Maintenance, and Repair Occupations	10%	52%	29%	9%	100%
Production Occupations	22%	47%	22%	9%	100%
Transportation and Material Moving Occupations	20%	49%	22%	9%	100%
Total	9%	26%	26%	40%	100%

**Employed (16+) in Massachusetts, ACS 2005-2006 Average**

Industry	<12 or 12, No H.S. Diploma	H.S. Diploma/ GED	Some College	Bachelor Degree or More	Total
Agri,Forestry, Fishing, and Hunting	2,461	3,710	1,935	2,073	10,178
Mining	428	560	320	305	1,612
Utilities	943	6,938	6,722	6,127	20,729
Construction	30,218	105,087	52,648	32,671	220,623
Non-Durable Manufacturing	18,567	37,973	25,692	32,825	115,056
Durable Manufacturing	21,652	67,577	57,953	85,409	232,590
Wholesale Trade	8,417	33,090	26,885	35,127	103,519
Retail Trade	44,338	119,678	99,740	78,809	342,564
Transportation and Warehousing	9,208	41,679	30,759	18,705	100,351
Information	3,936	15,150	21,713	50,518	91,315
Finanace and Insurance	3,301	26,735	50,147	115,469	195,651
Real Estate, Rental and Leasing	2,981	16,087	19,815	25,573	64,454
Professional, Scientic and Technical	2,185	21,858	43,104	195,970	263,117
Management of Companies and Enterprises	0	964	1,192	3,107	5,262
Administrative Support and Waste Management	16,511	35,642	31,983	27,457	111,592
Educational	8,674	34,019	47,466	214,291	304,448
Healthcare and Social	25,745	88,589	146,502	199,164	460,000
Arts, Entertainment and Recreation	5,757	9,872	13,581	22,078	51,288
Accomodation and Food Services	43,422	66,141	51,625	28,559	189,746
Other Services	18,689	51,488	36,789	32,119	139,084
Public Services	2,675	26,970	36,282	57,304	123,230
Total	270,103	809,801	802,848	1,263,655	3,146,406

**Employed (16+) in Massachusetts, ACS 2005-2006 Average**

**Distribution of Industry by Educational Attainment**

Industry	<12 or 12, No H.S. Diploma	H.S. Diploma/ GED	Some College	Bachelor Degree or More	Total
Agri,Forestry, Fishing, and Hunting	1%	0%	0%	0%	0%
Mining	0%	0%	0%	0%	0%
Utilities	0%	1%	1%	0%	1%
Construction	11%	13%	7%	3%	7%
Non-Durable Manufacturing	7%	5%	3%	3%	4%
Durable Manufacturing	8%	8%	7%	7%	7%
Wholesale Trade	3%	4%	3%	3%	3%
Retail Trade	16%	15%	12%	6%	11%
Transportation and Warehousing	3%	5%	4%	1%	3%
Information	1%	2%	3%	4%	3%
Finanace and Insurance	1%	3%	6%	9%	6%
Real Estate, Rental and Leasing	1%	2%	2%	2%	2%
Professional, Scientic and Technical	1%	3%	5%	16%	8%
Management of Companies and Enterprises	0%	0%	0%	0%	0%
Administrative Support and Waste Management	6%	4%	4%	2%	4%
Educational	3%	4%	6%	17%	10%
Healthcare and Social	10%	11%	18%	16%	15%
Arts, Entertainment and Recreation	2%	1%	2%	2%	2%
Accomodation and Food Services	16%	8%	6%	2%	6%
Other Services	7%	6%	5%	3%	4%
Public Services	1%	3%	5%	5%	4%
Total	100%	100%	100%	100%	100%

**Employed (16+) in Massachusetts, ACS 2005-2006 Average**

**Distribution of Educational Attainment by Industry**

Industry	<12 or 12, No H.S. Diploma	H.S. Diploma/ GED	Some College	Bachelor Degree or More	Total
Agri,Forestry, Fishing, and Hunting	24%	36%	19%	20%	100%
Mining	27%	35%	20%	19%	100%
Utilities	5%	33%	32%	30%	100%
Construction	14%	48%	24%	15%	100%
Non-Durable Manufacturing	16%	33%	22%	29%	100%
Durable Manufacturing	9%	29%	25%	37%	100%
Wholesale Trade	8%	32%	26%	34%	100%
Retail Trade	13%	35%	29%	23%	100%
Transportation and Warehousing	9%	42%	31%	19%	100%
Information	4%	17%	24%	55%	100%
Finanace and Insurance	2%	14%	26%	59%	100%
Real Estate, Rental and Leasing	5%	25%	31%	40%	100%
Professional, Scientic and Technical	1%	8%	16%	74%	100%
Management of Companies and Enterprises	0%	18%	23%	59%	100%
Administrative Support and Waste Management	15%	32%	29%	25%	100%
Educational	3%	11%	16%	70%	100%
Healthcare and Social	6%	19%	32%	43%	100%
Arts, Entertainment and Recreation	11%	19%	26%	43%	100%
Accomodation and Food Services	23%	35%	27%	15%	100%
Other Services	13%	37%	26%	23%	100%
Public Services	2%	22%	29%	47%	100%
Total	9%	26%	26%	40%	100%