



MVWIB
LABOR FORCE
BLUEPRINT UPDATE

PREPARED FOR:

MERRIMACK VALLEY
WORKFORCE INVESTMENT
BOARD

PREPARED BY:

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CHAPTER 1: INTRODUCTION

In 2003, the Merrimack Valley Workforce Investment Board (MVWIB) published a comprehensive Labor Force Blueprint that served two purposes. First, the findings from the Blueprint provided guidance to the MVWIB as it made decisions about what types of investments to make in workforce development in the region. The Blueprint was also a critical resource to the region's residents, secondary schools, institutions of higher education, training providers, and community-based organizations. The Blueprint laid out the key economic trends in the region and the implications of these trends in terms of critical industries, skill deficits affecting employers, and the potential for the development of career ladders that could help the residents of the region advance to a job with wage levels that could support a family.

In the four years since the Blueprint was completed there have been changes in the region's economic base, changes in the region's labor force, and larger economic trends affecting the economy of the Commonwealth. This update of the Blueprint seeks to capture what has changed over the past four years and the implication of these changes for the MVWIB, the region's employers, and the region's residents.

METHODOLOGY

The update of the Blueprint did not involve the level of research that was undertaken for the initial report. The analysis is based on updating the secondary data available for the region, reviewing recent studies on the economy and demographics of the Merrimack Valley region and the Commonwealth of Massachusetts, interviews with key stakeholders involved in workforce development and economic development in the Merrimack Valley, and interviews with human resource professionals and executives at employers in the critical industries in the region.

In the original Blueprint, most of the data on the "labor supply" was based on the 2000 U.S. Census. This data source provides in-depth data on the demographics of the residents of the Merrimack Valley, their occupations, and the labor force characteristics. Unfortunately, more updated Census data on the entire region will not be available until 2012 at the earliest. On the other hand, data on the overall status of the labor force—employment and unemployment—are available for each city and town and provide a good overview of general trends. These data were updated.

Other sources of more up-to-date data on the labor supply included school district data, the U.S. Census American Community Survey (available for the city of Lawrence in 2005), and occupational data that are developed by the state Executive Office of Labor and Workforce Development. Finally, interviews in the region provided some anecdotal evidence of changes in the labor supply.

Data on the labor demand—the industry analysis—were updated using ES-202 data available from the Massachusetts Executive Office of Labor and Workforce

Development. The criteria used to identify critical industries differed slightly from the earlier Blueprint. The three major criteria were:

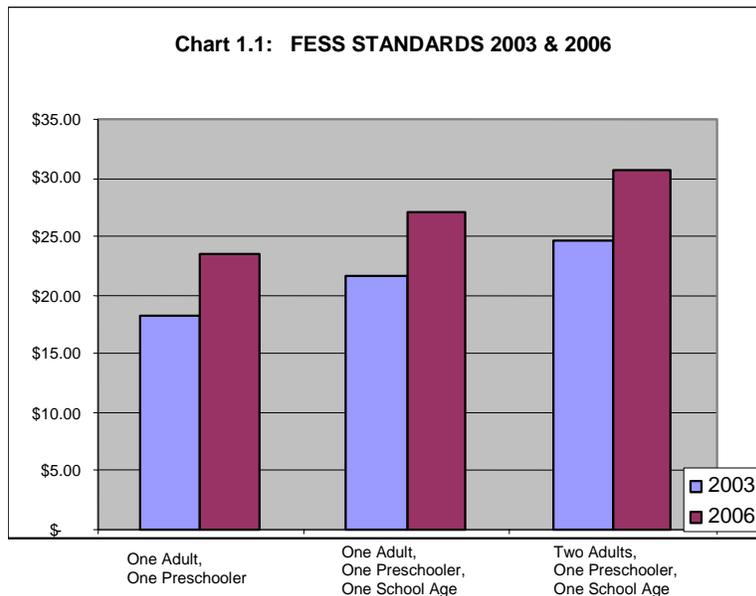
- provides a large number of jobs and is expected to continue to provide a large number of jobs in the future;
- provides a diversity of jobs including a relatively large number of jobs that do not require a bachelor’s degree; and
- provides opportunities for employees to obtain self-sufficiency wages and career advancement.

In addition to critical industries, we also identified critical occupations. Critical occupations were based on recent studies of job vacancy data in Massachusetts by the Commonwealth Corporation and the Northern Center for Labor Market Studies.

Finally, emerging industries were identified. These were industries that:

- experienced employment growth over the past five years; and/or
- had the potential for very strong future growth;
- provided opportunities for employees to obtain self-sufficiency wages and career advancement; and
- were tied to specific regional assets in the Merrimack Valley region.

The framework for measuring self-sufficiency wages, based on the Blueprint, is the Massachusetts Family Economic Self-Sufficiency Standard (MassFESS). Since the previous Blueprint was released, the Crittenden Women’s Union has released an update of the FESS standards in Massachusetts. The average wage needed for a family to be able to achieve self-sufficiency has risen since the last Blueprint. Unfortunately, the average wage in the region for most entry-level jobs has not risen significantly.



CHAPTER 2:

LABOR SUPPLY: MERRIMACK VALLEY RESIDENTS

The necessary starting point for any analysis of the regional labor market is with the supply side, the region's labor force. This chapter includes an analysis of the regional labor market including demographic characteristics and trends, education and skills profiles of the regional labor force, and workforce attachment data.

DEMOGRAPHICS

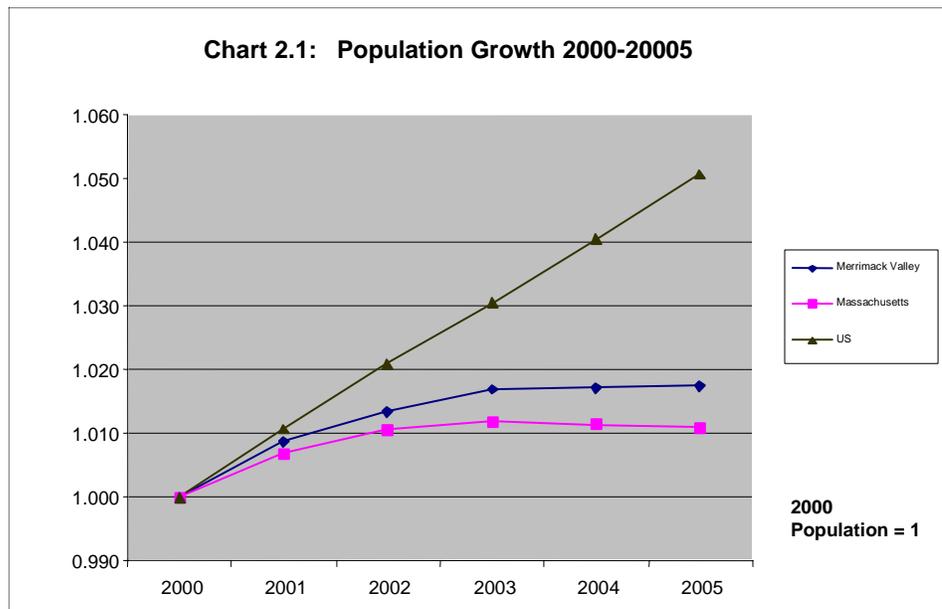
In 2005, there were 325,042 people living in the Merrimack Valley region. The three largest cities in the region by population are Lawrence, with 71,314 residents, Haverhill, with 60,242 residents, and Methuen, with 44,609 residents.

Since 2000, the Merrimack Valley region has grown at a slightly faster rate than the Commonwealth as a whole. From 2000 to 2005, the population of the Merrimack Valley region grew 1.7 percent, while the population of the Commonwealth grew only 1.1 percent.

However, during this period, the population of the U.S. grew by 5 percent. (See Chart 2.1.)

In general, the trend of population declines in the region's core city,

Lawrence, has continued since 2000. The city is estimated to have lost another 729 residents in the last five years. The region's smaller and more suburban communities have seen considerable growth in recent years. Since 2000, Groveland grew by 9.4 percent, Georgetown grew by 9 percent, Rowley grew by 6.3 percent, Andover by 5.7 percent, and Salisbury grew by 5.8 percent. (See Table 2.1.)



Area Name	2000	2005	Difference	% Change
Amesbury	16,450	16,643	193	1.2%
Andover	31,247	33,042	1,795	5.7%
Boxford	7,921	8,177	256	3.2%
Georgetown	7,377	8,041	664	9.0%
Groveland	6,038	6,608	570	9.4%
Haverhill	58,969	60,242	1,273	2.2%
Lawrence	72,043	71,314	-729	-1.0%
Merrimac	6,138	6,360	222	3.6%
Methuen	43,789	44,609	820	1.9%
Newbury	6,717	7,002	285	4.2%
Newburyport	17,189	17,414	225	1.3%
North Andover	27,202	27,155	-47	-0.2%
Rowley	5,500	5,845	345	6.3%
Salisbury	7,827	8,284	457	5.8%
West Newbury	4,149	4,306	157	3.8%

Ethnic and Racial Composition

The 2003 Blueprint provided detailed information on the race and ethnicity of the region’s population based on the 2000 Census. Unfortunately, this type of detailed data will not be available again until the completion of the 2010 Census. Some of the key findings from the 2000 Census data are:

- The Merrimack Valley region contains 17.0 percent persons of Hispanic origin, compared to 6.8 percent statewide. In Lawrence, Latinos make-up the majority of the city’s residents.
- 15.8 percent of the Merrimack Valley’s residents were foreign-born and nearly half (48 percent) of the change in population in the Merrimack Valley between 1990 and 2000 was due to foreign-born immigrants.

While there is no up-to-date data on the entire region, there are estimates of the demographic makeup of the city of Lawrence from the 2005 American Community Survey. While the data are based upon sampling and thus have a margin of error, analysis of this data provides evidence that many of the trends noted in the earlier Blueprint have become more extreme over the last five years:

- The proportion of residents classified as Latino or Hispanic has increased from about 60 percent of the population in 2000 to 68 percent in 2005.
- The per capita income of Lawrence residents has gone down relative to the U.S. as a whole. In 2000, it was about 62 percent of the U.S. average. In 2005, the per capita income, estimated to be \$14,743, was only 59 percent of the U.S. average.

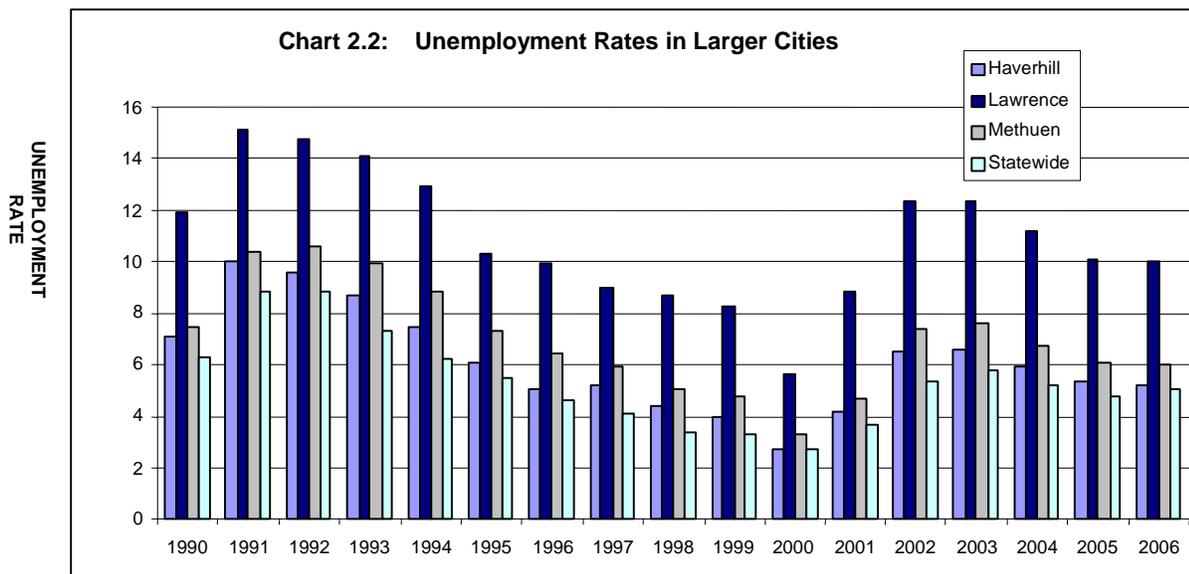
Data on enrollment by race and ethnicity in the region’s schools provide other more recent data on the composition of the region’s residents.

Table 2.2: Public School Districts: Enrollment by Ethnicity 2006-2007		
	% Hispanic	% Asian
Lawrence	87.4	2.7
Methuen	20.9	2.6
Andover	2.7	9.4
Amesbury	3.2	.5
Boxford	0.8	1
Georgetown	2.1	0.6
Haverhill	21.4	1.6
North Andover	3.6	6.5
Newburyport	2.6	1.3

There is some evidence that the Asian population in the region has been growing. Consultants for the Haverhill Master Plan estimated that the Asian population in that community grew by close to one-third between 2000 and 2005. There is also anecdotal evidence that the Southeast Asian population has been growing in the city of Lawrence and the South Asian (Indian) population has been growing in some of the cities and towns in the region. There has been a growth in the number of retail establishments serving this community over the past five years.

WORKFORCE ATTACHMENT

The Merrimack Valley region has traditionally had one of the highest unemployment rates in the state, and the city of Lawrence has often had either the first or second highest unemployment rate of any municipality in the state. The cities of Methuen and Haverhill historically have also had unemployment rates higher than the state average. The most recent labor force data show that this trend has continued. The one additional community in the Valley that shows relatively high unemployment is the small town of Salisbury.

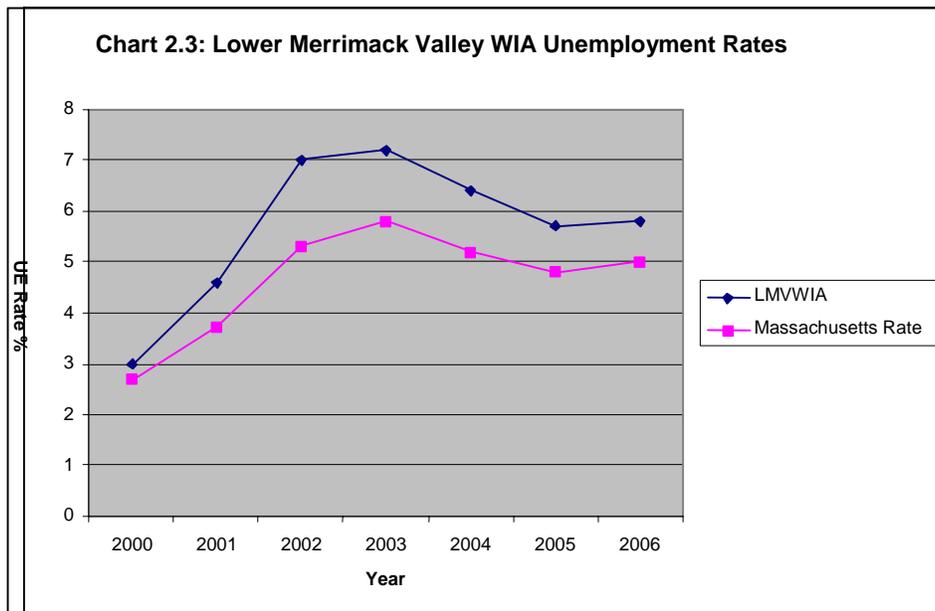


**Table 2.3:
2006 Labor Force Data by Town**

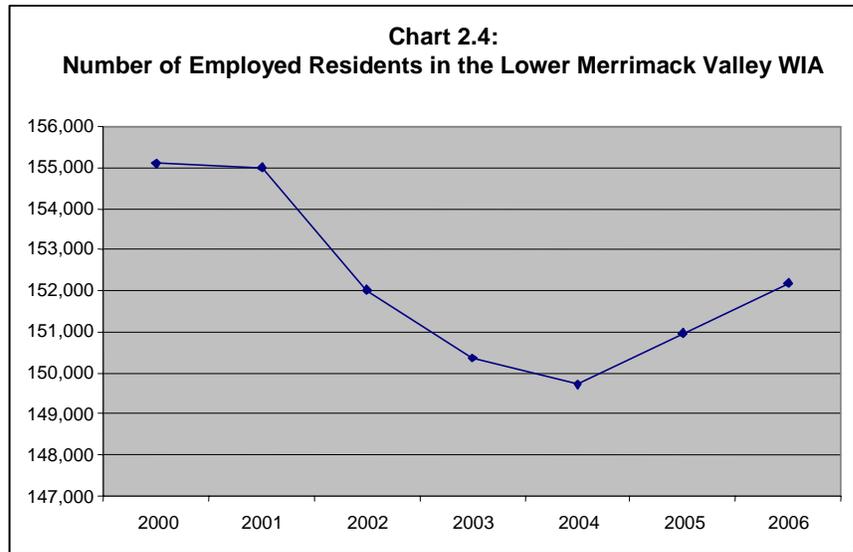
	Labor Force	Employed	Unemployed	UE Rate
Amesbury	8,786	8,362	424	4.8%
Andover	16,931	16,204	727	4.3%
Boxford	4,206	4,051	155	3.7%
Georgetown	4,217	4,058	159	3.8%
Groveland	3,504	3,353	151	4.3%
Haverhill	30,836	29,232	1,604	5.2%
Lawrence	29,046	26,135	2,911	10.0%
Merrimac	3,493	3,350	143	4.1%
Methuen	23,115	21,719	1,396	6.0%
Newbury	3,897	3,741	156	4.0%
Newburyport	9,979	9,573	406	4.1%
North Andover	13,349	12,776	573	4.3%
Rowley	3,404	3,262	142	4.2%
Salisbury	4,398	4,147	251	5.7%
West Newbury	2,289	2,202	87	3.8%
Merrimack Valley	161,450	152,165	9,285	5.8%

The unemployed in the region remain relatively concentrated in Lawrence, Methuen, and Haverhill. While the residents of these communities comprise 51 percent of the region’s labor force, they make up 64 percent of the region’s unemployed.

When the initial Blueprint was released, unemployment rates were nearing the rates that had been experienced during the deep recession in the early 1990s. Over the past five years, the unemployment rate in the Merrimack Valley has been coming down. In addition, the gap between the state’s unemployment rate and the region’s rate has been reduced. (See Chart 2.3.)



The other positive news in the region has been the increase in the number of employed residents in the last three years. There was a sharp drop in the number of employed residents in the region starting in 2001. Between 2001 and 2004, there were 5,000 less residents in the region who were employed. While still well below the 2000 average, the number of employed residents grew by 2,000 since 2004. (See Chart 2.4.)



EDUCATIONAL AND SKILL LEVELS

The previous Blueprint reviewed the 2000 Census data in some detail and concluded that:

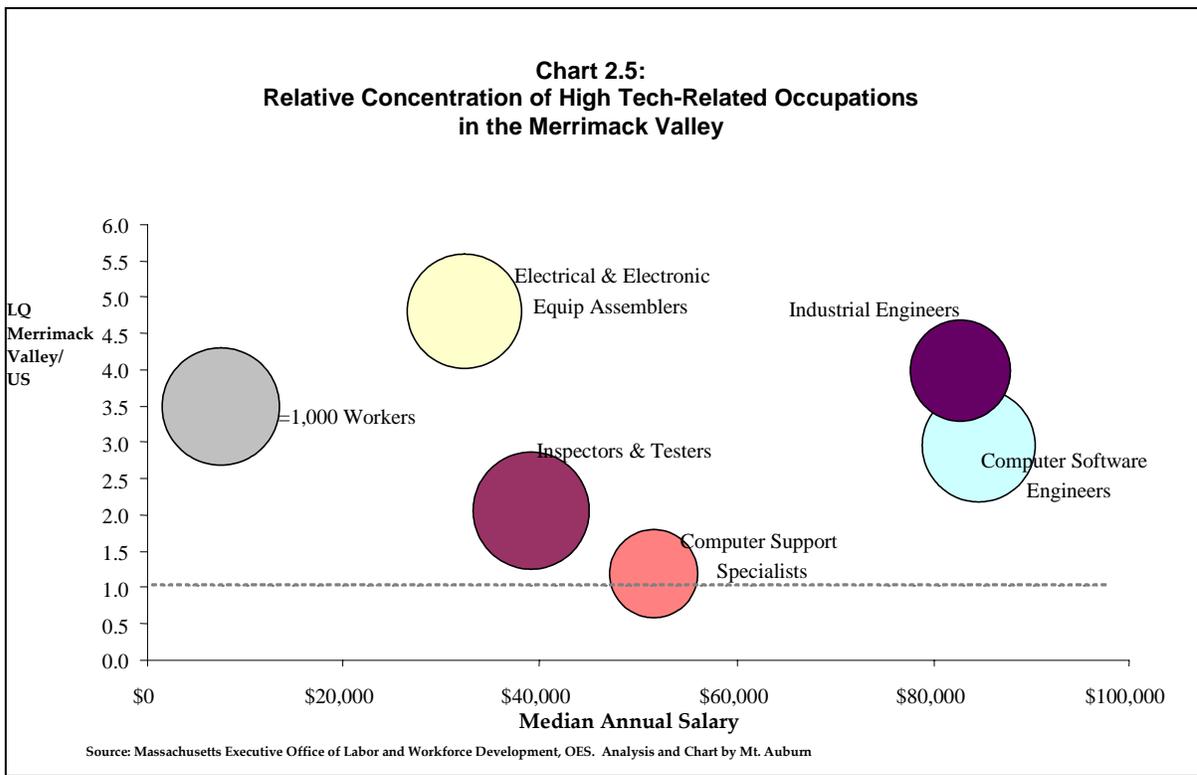
- While, the Merrimack Valley region slightly trails the Commonwealth in educational attainment, there is extreme variation between the region's municipalities. Lawrence had 41.8 percent of its residents ages 25 and over without at least a high school diploma, while neighboring Andover had 29.9 percent of its residents with a graduate or professional degree.
- A significant educational challenge for the region is the significant population for whom poor English speaking skills and linguistic isolation is a problem. 5.8 percent of the region's population ages 18-64 self-identified as having poor English speaking skills in 2000, up from 4.6 percent in 1990. Similarly, 5.8 percent of the region's households were linguistically isolated in 2000. These problems are concentrated in the region's largest city, Lawrence, where 20.1 percent of residents had poor English speaking skills and 19.8 percent of households were linguistically isolated in 2000.

While there is no new data on the residents that provides the details of the 2000 Census, evidence suggests that there remains a serious problem in the region in terms of educational attainment and English language speaking skills.

- The U.S. Census' 2005 American Community Survey for the city of Lawrence found that the proportion of residents who speak a language other than English at home has risen from 59 percent in 2000 to 65 percent in 2005.
- Data from the public schools provide a very concerning picture related to the lack of educational attainment in the region's core city—Lawrence. A recent report by the

Mauricio Gaston Institute reported that the city of Lawrence had the lowest four-year high school graduation rate in the Commonwealth. In 2006, only 41 percent of the public school students graduated in four years as compared to 79.9 percent in the state as a whole. The cohort dropout rate in Lawrence was the highest in the state at 39.5 percent.

The 2005 occupational data from the Merrimack Valley region show another view of the skill levels of the region's workforce.¹ This data reveal that there is actually a very high relative proportion of skilled workers, particularly in the computer- and engineering-related occupations. In particular, the proportion of the employees in the region in industrial and computer engineering occupations is well above national levels. These occupations also pay relatively high wages.



In addition to engineering and technical occupations, the region has a relatively high number of nurses, financial managers, and teachers. (See Table 2.4.) On the lower-skilled end, the region has a high relative proportion of lower-skilled healthcare and production occupations.

¹ The occupational data are based on place of work, not residence.

SOC Code	Occupation Title	Employment	Median Wage	LQ MV/US
Total Employment		128,094		1.00
51-2022	Electrical and Electronic Equipment Assemblers	980	\$32,726	4.81
17-2112	Industrial Engineers	750	\$83,803	3.98
15-1032	Computer Software Engineers, Systems Software	930	\$85,097	2.95
43-6013	Medical Secretaries	990	\$32,141	2.64
25-2011	Preschool Teachers, Except Special Education	790	\$29,309	2.30
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	1,020	\$39,381	2.05
51-2092	Team Assemblers	2,410	\$26,100	1.97
31-1012	Nursing Aides, Orderlies, and Attendants	2,230	\$25,747	1.63
29-2061	Licensed Practical and Licensed Vocational Nurses	1,020	\$45,200	1.46
37-3011	Landscaping and Groundskeeping Workers	1,210	\$29,419	1.37
51-9198	Helpers—Production Workers	710	\$22,534	1.37
11-3031	Financial Managers	630	\$99,024	1.36
51-1011	First-Line Supervisors/Managers of Production Workers	900	\$60,890	1.35
29-1111	Registered Nurses	2,870	\$61,363	1.23
35-2021	Food Preparation Workers	1,060	\$20,174	1.22
25-2021	Elementary School Teachers, Except Special Education	1,750	\$50,665	1.20
15-1041	Computer Support Specialists	580	\$56,299	1.18
25-9041	Teacher Assistants	1,440	\$23,008	1.16
43-3031	Bookkeeping, Accounting, and Auditing Clerks	2,010	\$34,642	1.13

CHARACTERISTICS OF THE UNEMPLOYED

Data on the characteristics of the individuals who are applying for unemployment in the Merrimack Valley provide important insights into which residents are facing particular challenges in the labor market.

The most recent data from April 2007 show that a relatively high percentage of the unemployed are in the construction, business support, and manufacturing industries. These are the three industries in which the proportion of Merrimack Valley unemployed is also higher than the Massachusetts average. The business support industry includes temporary employment agencies—a major source of employment for entry-level workers in the region.

Chart 2.6: Unemployment Insurance Claimants by Industry, April 2007

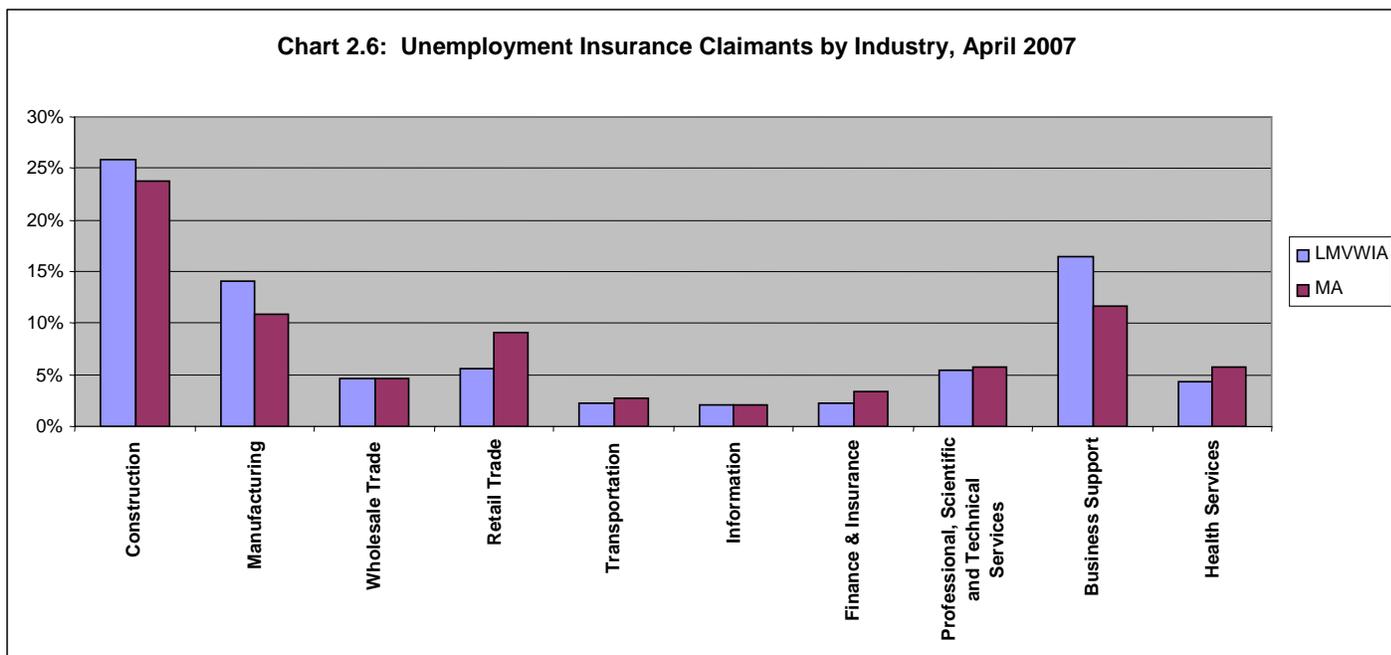
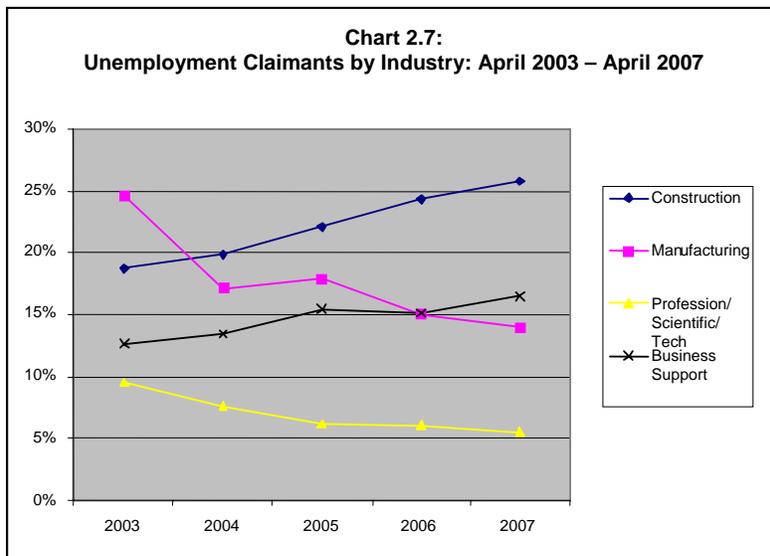


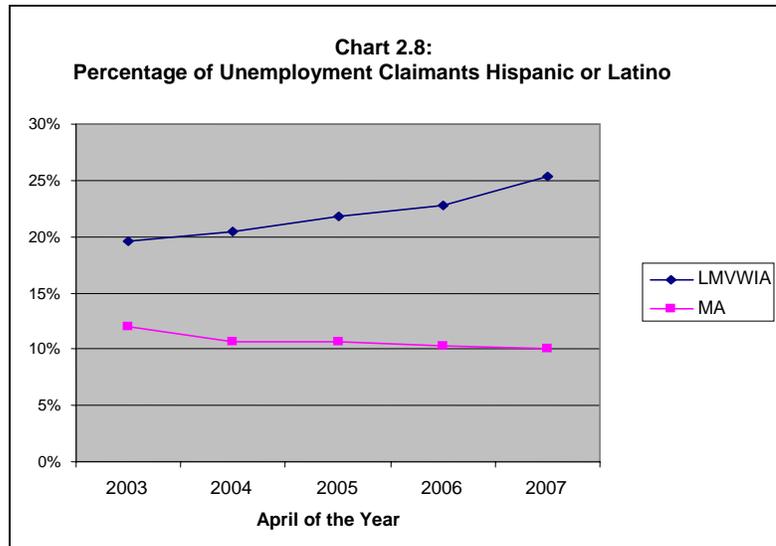
Chart 2.7: Unemployment Claimants by Industry: April 2003 – April 2007



Looking at data on unemployment claimants over the past five years provides some evidence of changing trends in the region’s labor markets. Since 2003, a larger share of claimants are from the construction and business support industries; a smaller share from professional services and manufacturing. Part of this trend is related to the growing use of

temporary employment agencies by employers in the manufacturing sector in the region. Many of the claimants working for temporary agencies are actually being employed by manufacturers who are using the temporary agencies to hire their workforce.

Finally, the data on unemployment claimants provide some evidence about the population groups within the region who are facing particular challenges in the labor market. Since 2003, the proportion of unemployment claimants who are Hispanic or Latino has risen in the Merrimack Valley. This is of particular note, since this same group comprises a small proportion of unemployment claimants in the Commonwealth. (See Chart 2.8.)



CONCLUSION: IMPORTANT LABOR SUPPLY POINTS

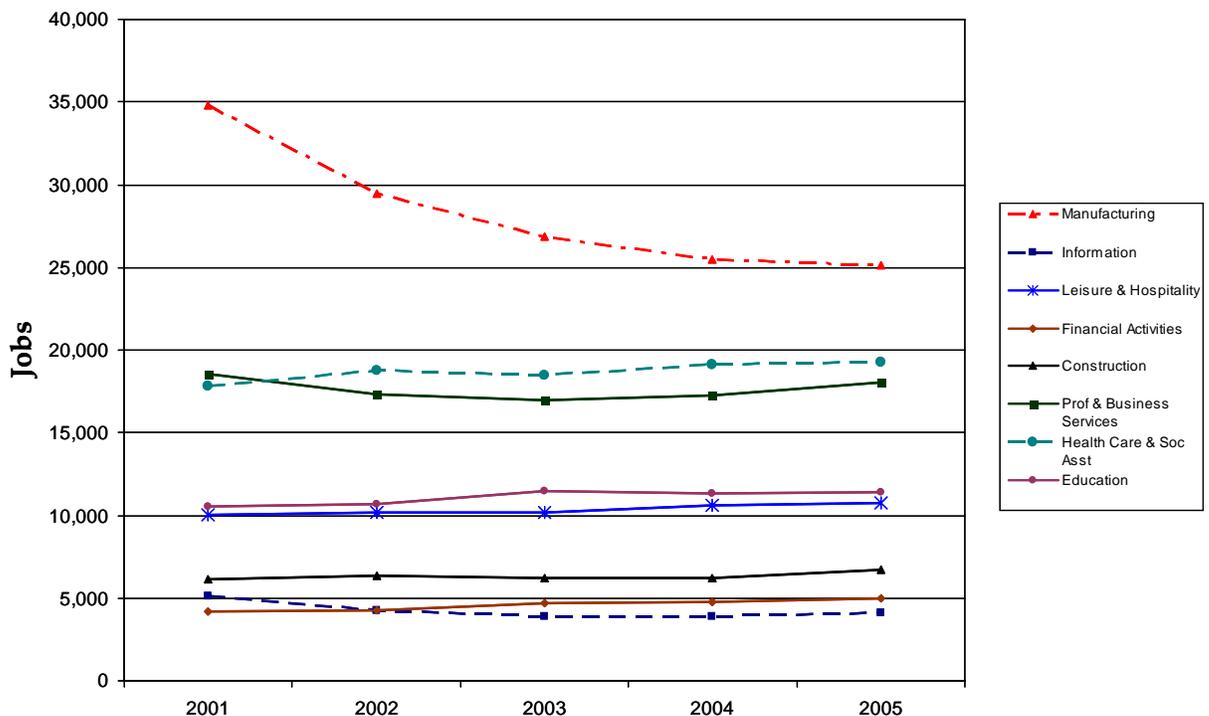
- Population growth since 2000 has slightly exceeded the Massachusetts average; however, it is concentrated primarily in the smaller, more suburban locations. The region's cities are still experiencing declining population (Lawrence) or very limited growth (Methuen and Haverhill).
- The region has a growing population of non-English speaking residents who are facing increasing barriers in the employment market. In particular, the region's Latino residents comprise a growing proportion of unemployment claimants.
- The high proportion of residents who do not speak English is probably the greatest challenge in terms of the region's labor force supply.
- Educational attainment remains a major issue for residents of the Merrimack Valley. The high school dropout rate in the region's largest city, Lawrence, remains one of the most critical long-term issues in terms of labor supply.
- The region does have a concentration of highly-skilled individuals in technology and engineering occupations. There are also skilled manufacturing workers. However, there is some concern that this skilled workforce in the region is aging, and replacing these jobs might prove a challenge.
- Given the high dropout rate in Lawrence, out of school youth should be one of the highest priority populations to target for workforce development services in the region.

CHAPTER 3: WORKFORCE DEMAND

ECONOMIC TRENDS IN THE MERRIMACK VALLEY REGION

The last five years in the Merrimack Valley have been a period of adjustment. The loss of thousands of high quality jobs at Lucent is still being felt as a shock to the region's economy. Since 2001, the Merrimack Valley has lost about 9,700 manufacturing jobs. Some small employment increases have offset these losses, but overall the region still lost 8,600 jobs during this period, a decline of about 6 percent.

Chart 3.1:
Merrimack Valley Employment by Major Sector: 2001-2005



Source: Massachusetts Executive Office of Labor and Workforce Development, ES202 Analysis and Chart by Mt. Auburn Associates.

The trends in the Merrimack Valley during this period for the most part mirror statewide trends. According to a recent study by the Center for Labor Market Studies at Northeastern, the Massachusetts economy lost about 200,000 jobs from the beginning of the recession in early 2001 until the first quarter of 2004. While employment began to rise again in 2004 and 2005, the total jobs by the end of this period were still well below the peak in 2001.

The cities in the Merrimack Valley were hit particularly hard during the recession in the early 2000s. Between the first quarter of 2001 and the first quarter of 2005, Lawrence

lost 1,989 jobs or about 8.24 percent of its employment base, Andover lost 3,120 jobs or 8.9 percent of its employment base, and North Andover lost 5,522, a loss of 29.3 percent of its jobs.²

In order to identify critical industries, we looked first at those industries that have the largest workforce, have average weekly wages that are near or above the average, and provide potential job opportunities for individuals with less than a bachelor’s degree. (See Table 3.1.) Industries that meet these criteria are healthcare, educational services, manufacturing, specialty trade contractors, food processing, and distribution.

NAICS	Industry	Employees	Average Weekly Wage	Number of Establishments
Healthcare		16,036		
621	<i>Ambulatory Health Care Services</i>	6,475	\$895	523
623	<i>Nursing and Residential Care Facilities</i>	4,960	\$584	111
622	<i>Hospitals</i>	4,601	\$772	9
611	Educational Services	11,378	\$778	122
541	Professional and Technical Services	8,929	\$1,384	1,045
722	Food Services and Drinking Places	8,216	\$296	599
561	Administrative and Support Services	6,179	\$581	429
5613	<i>Employment Services</i>	3,568	\$509	73
334	Computer and Electronic Product Mfg	6,146	\$1,463	71
238	Specialty Trade Contractors	4,379	\$909	580
445	Food and Beverage Stores	4,205	\$355	197
624	Social Assistance	3,252	\$435	164
423	Merchant Wholesalers, Durable Goods	2,490	\$1,293	198
311	Food Manufacturing	2,089	\$691	48
551	Management of Companies and Enterprises	2,007	\$918	37
522	Credit Intermediation & Related Activity	1,999	\$926	173
	Total, All Industries	129,348	\$861	8,522

In thinking about the region’s critical industries, there are two additional dynamics that need to be considered. First, is the industry growing and likely to add employees over the next five years. Second, is the industry experiencing a large number of job openings due to staff turnover and retirement.

In terms of growth, the Merrimack Valley has seen growth in the construction industry, healthcare, education and human services, technology services, and financial services. (See Chart 3.2.) While manufacturing has seen dramatic declines, there has been some job growth in food manufacturing in the region. In addition, there is growing demand in the region for highly-skilled manufacturing workers to replace the skilled workers who are at or near retirement age.

² Wage and Salary Employment Trends in Massachusetts, 1982-2005, Center for Labor Market Studies, November 2005.

MANUFACTURING

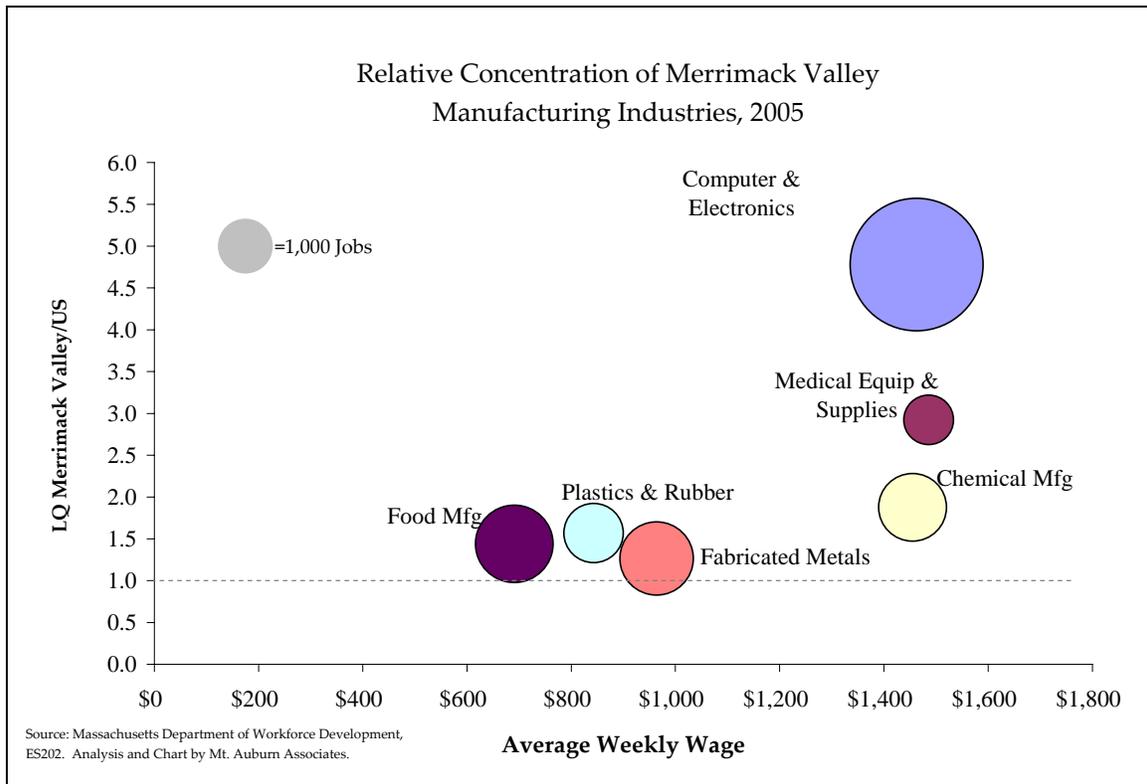
Manufacturing is a significant sector in the region employing 25,154 people. More than 19 percent of all jobs in the region are in the manufacturing sector making it the second largest sector next to education and health services. Manufacturing employment has declined precipitously since 2001. Overall, the manufacturing sector shed almost 10,000 jobs in four years, a 27.8 percent decline. The majority of those losses were in durable goods manufacturing, which lost more than 35 percent of its employment falling from 25,235 to 16,356.

Despite tremendous jobs losses, the region's manufacturing continues to be heavily concentrated in electronic components, communications, and electronic instrument manufacturing. However, the region also has a healthy representation of other manufacturing firms clustered in food, chemicals, plastics, fabricated metals, and medical devices.

Table 3.2: Key Manufacturing Sectors in Merrimack Valley

Description	2005 Establishments	2005 Employment	Employment Change 2001-05	Location Quotient M.V/U.S	Key Companies
Food Manufacturing	48	2,089	18.2%	1.4	Joseph's Pasta Home Made Brand Foods Hans Kissle Alden Merrell Middle East Bakery Bagel Boy Cedar's Mediterranean Foods General Mills Yoplait
Chemical Manufacturing	31	1,609	12.4%	1.9	Wyeth Pharmaceuticals Procter & Gamble A W Chesterton Charm Sciences California Products Samuel Cabot Cambridge Isotope Laboratories
Plastics & Rubber Products Manufacturing	27	1,233	3.7%	1.6	Solo Cup RPP United Plastic Fabricating UFP Technologies
Fabricated Metal Product Manufacturing	109	1,885	-21.2%	1.3	MKS Instruments Crown Cork & Seal Co USA Berkshire Manufactured Cambridgeport Air Systems Foilmark Manufacturing Watts Water Technologies Bodycote International Central Metal Finishing
Communications Equipment Manufacturing	9	962	-84.4%	6.7	Lucent Technologies uReach Technologies Henschel, Inc
Semiconductor and Electronic Components	33	2,109	-25.2%	4.8	Vicor Parlex USA Microsemi Suntron
Electronic Instrument Manufacturing	19	2,231	-35.1%	5.2	Raytheon Schneider Automation Tac, Inc MKS Instruments
Medical Equipment and Supplies Mfg	11	870	19.7%	2.9	Phillips Medical ATC Technologies Smith & Nephew Aurora Imaging Technology Transmedics

Chart 3.2



Growth Sectors

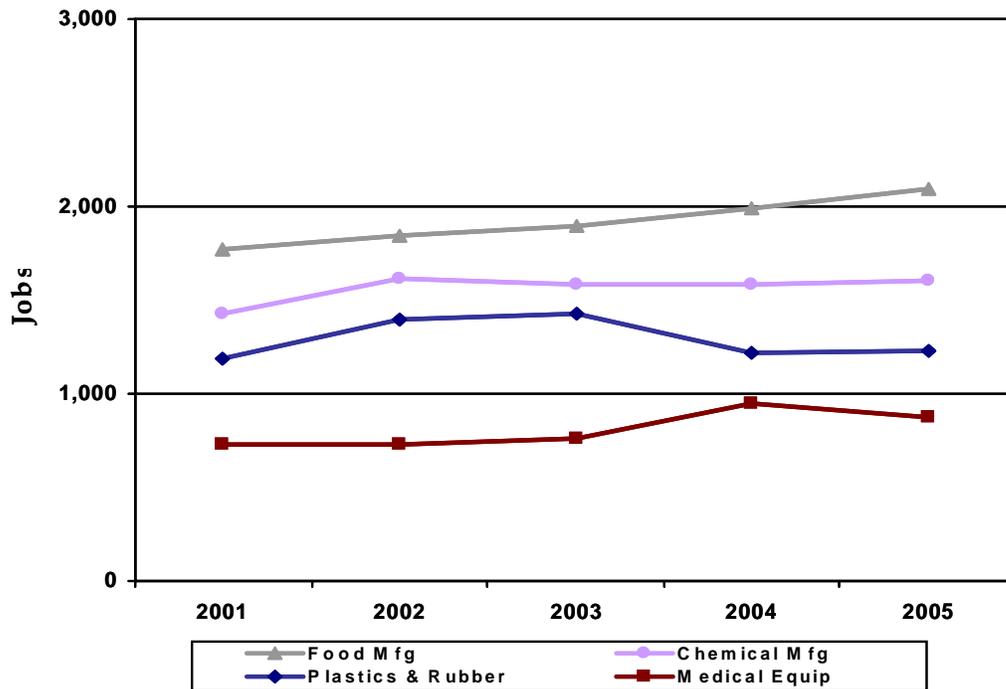
Food. With 48 firms employing a little more than 2,000 people in the region, the food cluster is composed of relatively small businesses focused primarily on perishable and prepared foods and high-end frozen items for consumers or restaurants.

Chemical. This sector is varied with a mix of consumer products and industrial chemical production. Employment in the sector is led by the large and growing biopharma facility, Wyeth. While 2005 employment figures for the chemical sector report 1,600 jobs total, in 2007 Wyeth employment alone totaled 1,900 after an expansion in 2006. Procter & Gamble's facility focuses on aerosol consumer products. Paint and stain companies are also located in the area. In addition, there are companies serving other manufacturers with chemical test kits (Charm Sciences) or industrial fluids (A.W. Chesterton).

Plastics and Rubber Products. This is a relatively small sector employing roughly 1,200 people spread among 27 firms. There is little commonality of product among the firms in the sector. Merrimack Valley firms in this industry produce everything from plastic cups to rubber seals to firefighting apparatus. The sector experienced slow growth between 2001 and 2005.

Medical Devices. While a relatively small industry in the area employing less than 900 people, the industry experienced rapid growth between 2001 and 2005, expanding close to 20 percent. The closure of a Smith & Nephew manufacturing facility in Andover in 2006, affecting 120 workers, was a major setback to the sector. However, Straumann USA's choice of Andover in 2005 as its North American headquarters is a sign of the continuing strength of the medical devices sector in the region.

**Chart 3.3:
Merrimack Valley Employment by Growing Manufacturing Industries:
2001-2005**



Source: Massachusetts Department of Workforce Development, ES202 Analysis and Chart by Mt. Auburn Associates.

Struggling Sectors

Fabricated Metals. This sector is composed of a few moderately-sized employers and many small firms. In total, 1,800 jobs are spread among 109 firms for an average firm size of less than 18. The sector was no doubt impacted by downsizing in the electronics and communication sectors. Fabricated metal employment dropped 21 percent between 2001 and 2005. The hit was most likely felt at some of the smaller machine shops that depended on other large manufacturers in the region for their business. Many of the larger firms in the sector are less dependent on a local customer base, instead serving a national and international customer base. Some of the fabricated metal products produced locally include hot stamped foil for use in packaging and graphics (ITW

Foilmark), controls and industrial valves (MKS), commercial/industrial HVAC and air filtration systems (Cambridgeport), industrial valves (Watts Water), food cans (Crown Cork & Seal), and electroplating and thermal processing. Despite the decline in fabricated metal manufacturing in the area, there are some success stories. Watts Water Technologies was recently recognized by the *Boston Globe* as one of the 100 best companies in Massachusetts. The growing company is expanding almost entirely abroad, however. Much of its manufacturing is in China. Of the more than 8,000 employees only 150 are in Merrimack Valley with an additional 700 at its New Hampshire factory. Another growing company is Berkshire Manufactured Products in Newburyport. The company, which manufactures precision stamping, machined, and fabricated parts primarily for the aerospace industry, has grown sales by more than 50 percent in the past five years, yet it has not expanded employment as fast as its sales.

Communications Equipment. As of 2005, there were 960 jobs in communications equipment spread among nine firms. It is quite possible that current data, once available, will show a continued decline through 2007. Much of the communications sector in the Merrimack Valley was Lucent Technologies. The demise of Lucent has been well-documented. The region was forced to deal with several years of rapid downsizing as the company shrank from 5,600 employees in 2000 down to its current level of less than 500. Most of the former Lucent employees have been absorbed in other manufacturing jobs, have been retrained for other job opportunities, or have moved to locations where there are more job openings for their skills (anecdotally, New Hampshire and Connecticut have been locations of choice for former Lucent workers). The industry is unlikely to rebound to a significant degree in the region as much of communication equipment manufacturing has shifted overseas.

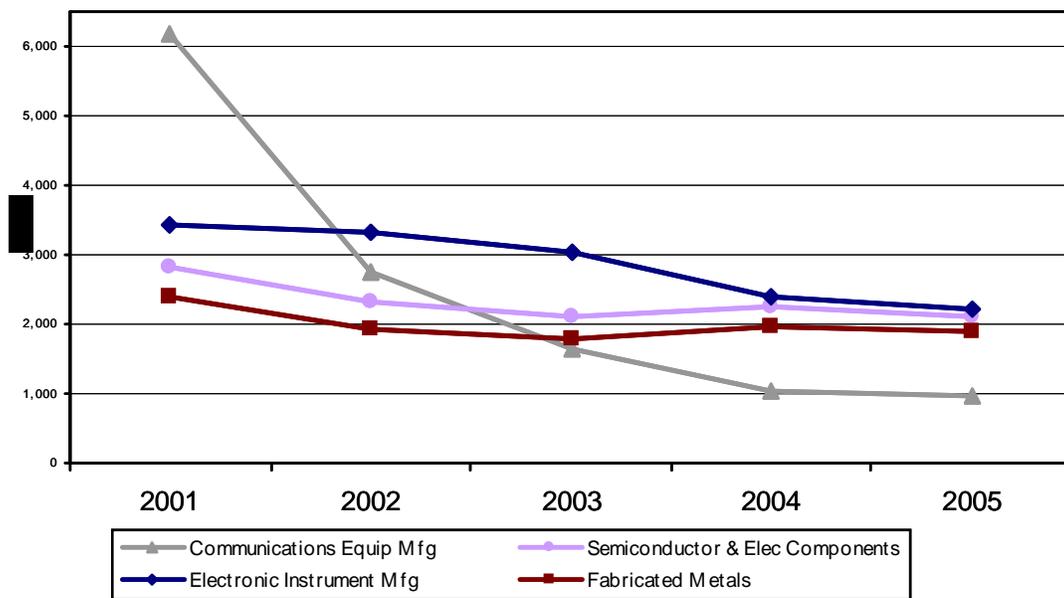
In June 2007, Lucent Technologies announced that it was closing its North Andover facility. It is estimated that 280 workers will lose their jobs and 190 will be transferred to the Alcatel-Lucent plants in Massachusetts. Addressing the needs of the newly displaced Lucent workers should be a high priority.

Electronic Components. There are 2,100 jobs spread across 33 firms in electronic component manufacturing based on the 2005 data. The sector shrank between 2001 and 2005; the number of jobs in the industry dropped by 25 percent. The industry was affected by a national economic downturn and globalization but, in addition, the many suppliers to Lucent saw their sales disappear and either closed up shop or downsized. The number of firms in this industry has dropped by 12, or 27 percent, since the beginning of 2001.

Electronic Instruments. More than 2,200 people are employed at 19 firms in electronic instrument manufacturing. The 2005 data likely understate current employment. The largest instrument manufacturer in the region, Raytheon, has expanded in recent years and currently employs 4,400 people at its two Andover facilities. While not all of Raytheon's employment may be captured in this industry (given the variety of products produced at the massive facilities, some employment may be captured in communications

equipment, electronic components, and fabricated metals), the instruments industry is heavily dominated by Raytheon. Raytheon’s recent expansion comes after a number of years of downsizing. It appears that between 2000 and 2004, Raytheon’s Andover employment shrank from 4,000 to less than 3,000. Overall, the instruments industry lost 35 percent of its jobs between 2001 and 2005. Raytheon’s job levels have fully rebounded and its current health should be a stabilizing force for the industry. In the past month alone, Raytheon has posted openings for 40 positions in manufacturing.

**Chart 3.4:
Merrimack Valley Employment by Traditionally Large Manufacturing
Industries in the Region: 2001-2005**



Source: Massachusetts Department of Workforce Development, ES202 Analysis and Chart by Mt. Auburn Associates.

Key Occupations

Production occupations are the largest broad categories of jobs in manufacturing with 10,970 jobs in the region. The manufacturing sector is slightly more weighted toward production occupations than the state average. Overall, 45.2 percent of all jobs are in production occupations as compared to 43 percent statewide. As compared to the state, the region’s manufacturing sector has a lower concentration of sales jobs, computer and mathematical jobs, and less office and administrative support jobs. As with the state, Merrimack Valley manufacturing is engineering intensive. This emphasis was captured by one regional manufacturer describing its business, “We are an engineering firm that also manufactures products.” There are 2,340 engineering jobs in Merrimack Valley’s manufacturing sector, 9.6 percent of sector employment.

Within production, jobs are more heavily concentrated in assembly than machining. The two largest specific production occupations are team assemblers and electronic equipment assemblers. The region employs 950 electrical and electronic assemblers, 3.9 percent of the manufacturing workforce, significantly higher than the state average of 2.5 percent. The region also employs 1,130 team assemblers, 4.7 percent of the manufacturing workforce compared to 3.7 percent statewide. The region has a notable concentration of inspectors, testers, sorters, and samplers, which total 910 jobs in the region, 3.8 percent of the manufacturing workforce, compared to 2.4 percent statewide. The region is under-represented in machinists relative to the state. The 290 machinists represent 1.2 percent of the manufacturing workforce as compared to 2.3 percent statewide.

**Table 3.3
Merrimack Valley Occupational Breakdown of the Manufacturing Sector**

SOC Title	Employment	Percent of Total Employment (%)	Median Hourly	Median Annual
Total all occupations	24,250	100	19.02	39,567
Management Occupations	1,800	7.4	52.02	108,204
General and Operations Managers	390	1.6	51.3	106,702
Industrial Production Managers	260	1.1	43.74	90,982
Business and Financial Operations Occupations	1,030	4.2	31.1	64,697
Purchasing Agents, Except Wholesale, Retail, and Farm Products	360	1.5	31.66	65,862
Computer and Mathematical Occupations	890	3.7	38.11	79,265
Computer Software Engineers, Systems Software	250	1	41.82	86,989
Architecture and Engineering Occupations	2,340	9.6	33.5	69,686
Industrial Engineers	720	3	39.85	82,886
Mechanical Engineers	260	1.1	33.39	69,458
Electrical and Electronic Engineering Technicians	240	1	24.14	50,219
Arts, Design, Entertainment, Sports, and Media Occupations	250	1	21.01	43,696
Sales and Related Occupations	770	3.2	29.93	62,263
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific	330	1.4	29.8	61,992
Office and Administrative Support Occupations	3,300	13.6	16.95	35,260
Customer Service Representatives	280	1.2	18.18	37,809
Production, Planning, and Expediting Clerks	310	1.3	24.5	50,970
Shipping, Receiving, and Traffic Clerks	510	2.1	14.82	30,831
Stock Clerks and Order Fillers	540	2.2	13.48	28,043
Construction and Extraction Occupations	350	1.4	24.08	50,080
Installation, Maintenance, and Repair Occupations	760	3.1	21.51	44,745
Maintenance and Repair Workers, General	290	1.2	19.47	40,488
Production Occupations	10,970	45.2	15.22	31,653
First-Line Supervisors/Managers of Production and Operating Workers	730	3	28.27	58,795
Electrical and Electronic Equipment Assemblers	950	3.9	15.69	32,640
Team Assemblers	1,130	4.7	12.38	25,745
Bakers	350	1.4	12.75	26,513
Food Batchmakers	240	1	9.49	19,734
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	280	1.2	16.6	34,533
Machinists	290	1.2	21.42	44,559
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	240	1	13.74	28,572
Welders, Cutters, Solderers, and Brazers	250	1	18.18	37,812
Printing Machine Operators	240	1	16.99	35,331
Sewing Machine Operators	440	1.8	11.36	23,626
Inspectors, Testers, Sorters, Samplers, and Weighers	910	3.8	18.93	39,372
Packaging and Filling Machine Operators and Tenders	240	1	15.05	31,302
Helpers--Production Workers	520	2.1	10.94	22,765
Transportation and Material Moving Occupations	1,280	5.3	13.17	27,399
Packers and Packagers, Hand	380	1.6	10.08	20,962

Note: Shading denotes broad occupation categories. Detailed occupations within those categories follow below. Table includes only occupations supplying at least 1% of jobs.

Workforce-related Issues

In addition to some specific training topics, a number of workforce-related issues surfaced that will likely not be addressed through the immediate development of an employment and training program. In some cases, the issues are beyond the scope of the WIB to address alone and will require collaboration with local public schools or higher education along with economic development officials to position Merrimack Valley for future job growth.

Rising use of temporary employment agencies. Temporary employment agencies, also referred to as staffing companies, have become an integral part of the Merrimack Valley's human resource infrastructure. Companies utilize temporary agencies to varying degrees of intensity. While Raytheon reports little use of temp agencies, Phillips Medical Systems has a staffing company on site. Some area firms outsource their human resource function to a staffing company although no firm interviewed for this update fell in that category. Manufacturers most frequently use temporary agencies to manage production volatility. Rather than hire a permanent employee to meet seasonal production peaks or to staff time-delineated projects, companies are turning to temporary agencies. Temporary employment is becoming a key entry point to many area manufacturers. "Temp to perm" employment practices are becoming increasingly popular because they give employers a chance to test the prospective employee's capabilities and work ethic. In some cases, employers have reduced the number of positions they publicly post, instead filling positions from the pool of temporary workers with experience at the firm already. Given the role that staffing agencies are increasingly playing, they are in a strong position to understand any mismatches between the skills manufacturers are requesting versus the skills held by the existing labor force. The WIB will need to systematically tap this information to target employment and training programs in the future.

Demand for engineers. As was mentioned earlier, Merrimack Valley's manufacturing sector employs a high number of engineers. In many cases it is the engineering talent that has allowed manufacturers to maintain a competitive edge despite the higher costs of production in Massachusetts. Merrimack Valley firms are finding it difficult to fill their engineering positions. A scan of job openings at key area manufacturers found few published openings in production positions, but the majority of firms had multiple openings for engineers. As examples, Vicor has eight engineering positions open and no production; five of the ten open positions at 3M are for engineers; the only opening at both Enterasys and Schneider Electric is for an engineer. The shortage of engineers in the region was referenced by temporary agencies, which are often charged with recruitment. The continued success of manufacturing in the region, particularly high technology manufacturing, will depend on the area manufacturers' ability to find engineering talent.

Aging production workforce. A number of manufacturers report that their production workforce is aging, in some cases with an average age above 55. In some instances,

collective bargaining agreements, while providing needed protection for workers impacted by product sales volatility, make it difficult to begin to cultivate a younger workforce. At Raytheon, production workers covered by the IBEW 1505 contract who were laid off any time in the past four years have the first right of refusal to any production job openings. Perhaps a more widely felt barrier to cultivating a younger production workforce is the attitude and perceptions of the young labor force. Interviews suggest that young workers are more concerned about the quality of the work and the quality of life associated with certain positions. Despite potentially attractive wage and benefit packages, the production environment is not drawing a younger generation seeking a “fun” place to work.

An important factor to consider in crafting employment and training programs in the manufacturing sector is that the sector is not a monolith in terms of skills and education. Research found tremendous variation in the educational levels required to fill manufacturing positions. While some companies such as Raytheon, Phillips Medical Systems, and Wyeth Pharmaceuticals report that the vast majority of their production workforce has a high school degree, other manufacturers do not see a high school degree as necessary. Food production companies report that a high school degree is not necessary and that while it is preferred that workers speak English it is not a requirement. Similarly, an electronic component manufacturer reported that assembly experience and fine motor skills were more important than a high school degree. In those cases, it is the exception when a production worker holds a high school degree.

While not relevant to every manufacturer, below are some specific education and training topics that surfaced as needs in the region:

- *ESL and literacy.* An ongoing need in the region, given the number of immigrant workers employed in production. As manufacturing processes evolve with increased expectations for cross-training and multi-functional teams, manufacturers will increasingly need employees with functional English skills. In addition to verbal skills, workers will need to be able to read manuals and other instructions.
- *Modern manufacturing practices.* Many area manufacturers are employing techniques of Lean manufacturing and Six Sigma, process management techniques designed to reduce inventory, reduce defects, and increase customer satisfaction. Berkshire Manufactured Products, for example, recently received a grant from the Workforce Training Fund to conduct Six Sigma training.
- *Problem solving.* A necessary foundation for employees to apply the modern manufacturing techniques is an ability to apply problem solving skills. This is a high priority for some area manufacturers that see this skill as lacking in many existing and prospective employees.
- *Math skills.* Manufacturers are looking for a higher level of math capability in their production workers. Comfort with decimals, fractions, trigonometry, geometric dimensioning, and the ability to read blueprints and measurement instruments have all surfaced as sector needs.

- *CNC machinists.* A number of firms have expressed concern at their ability to locate experienced CNC machinists. While the number of machinist positions in Merrimack Valley is relatively low, companies have a difficult time filling vacancies. Temporary agencies report similar difficulties locating experienced CNC machinists. To work around the area shortage, Merrimack Valley positions are being posted on national employment Websites that cater specifically to job listings for CNC machinists.

Merrimack Valley's manufacturing sector weathered a severe economic downturn between 2001 and 2005 that resulted in the loss of more than 9,700 manufacturing jobs. Signs of opportunity are evident among the losses, however. Sectors that showed growth included food, plastics, medical devices, and chemicals. There has been some rebound in some of the electronics industries as well. As area manufacturers work to remain competitive in a global marketplace, firms will look for a new set of skills in their production workforce whether those are highly specific such as Six Sigma, or a broader educational foundation of English, math, and problem solving skills.

HEALTHCARE

The healthcare Industry in the Merrimack Valley, like in Massachusetts as a whole, is one of the largest employers of workers at all levels. In 2005, healthcare and social assistance was second in employment to manufacturing among all major industry sectors, with 19,288 employees compared to 25,154 in manufacturing.³ It comprised almost 15 percent of total regional employment in that year. Moreover, healthcare employment grew modestly between 2001 and 2005, while manufacturing employment declined steeply, introducing the prospect that healthcare may surpass manufacturing as the region's major industry in the not too distant future.

Employment in the healthcare industry is widely distributed across three major industry sub-sectors: 1) hospitals; 2) nursing homes and other long-term care facilities; and 3) ambulatory care facilities, including doctor's offices, clinics, and home healthcare services. Ambulatory care services is the largest of these sub-sectors, with almost 6,500 employees in 2005, followed by long-term care, with almost 5,000, and hospitals with over 4,200.

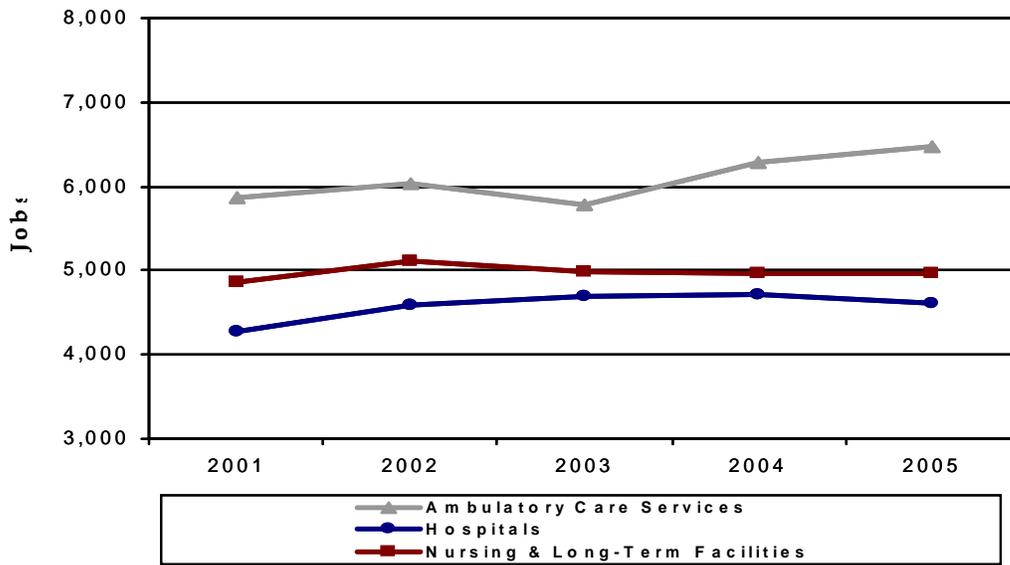
The healthcare industry represents a continuing opportunity for employment in the Merrimack Valley region. Total healthcare and social assistance employment increased by 8.0 percent between 2001 and 2005. This growth is particularly notable taking into account the drop of 6.2 percent in total WIA employment

Ambulatory care services was the source of most of the recent employment growth in healthcare; employment in the other two sub-sectors remained stable. (See Chart 3.5.) Within ambulatory services, the largest source of employment growth was in home healthcare services, with an increase of almost 500, or almost 41 percent, between 2001 and 2005.

³ Massachusetts Executive Office of Labor and Workforce Development, ES202, 2005.

Statewide, healthcare industries are among those projected to generate the greatest number of new jobs during the next several years. According to 2004-2014 industry employment projections prepared by the Massachusetts Executive Office of Labor and Workforce Development, four healthcare industries are among the top 15 projected job generators. These are private hospitals (#2), residential care facilities (#5), offices of health practitioners (#7), and home healthcare services (#14).

**Chart 3.5:
Merrimack Valley Employment by Healthcare Industries: 2001-2005**



Source: Massachusetts Executive Office of Labor and Workforce Development, ES202 Analysis and Chart by Mt. Auburn.

Healthcare employers are spread throughout the Merrimack Valley, providing accessible employment opportunities to all of the region’s residents. Employment is particularly concentrated in the communities of Lawrence, Methuen, Haverhill, and Newburyport. The region’s single largest employers are Holy Caritas Family Hospital in Methuen, Lawrence General Hospital, and Anna Jacques Hospital in Newburyport.

The occupations with the highest employment levels in the Merrimack Valley’s healthcare industry are, in order of size: registered nurses (2,870); nursing aides, orderlies, and attendants (2,230); licensed practical and vocational nurses; and medical secretaries. Other occupations with high employment levels include home health aides, medical and dental assistants, mental health counselors, and pharmacy technicians.

Occupation Title	Employment	%Total Emp	Median Wage	
			Hourly	Annually
TOTAL	128,094	100.0%		
Registered Nurses	2,870	2.2%	\$29.20	\$60,746
Nursing Aides, Orderlies, and Attendants	2,230	1.7%	\$12.31	\$25,603
Licensed Practical and Licensed Vocational Nurses	1,020	0.8%	\$21.36	\$44,428
Medical Secretaries	990	0.8%	\$14.93	\$31,064
Home Health Aides	600	0.5%	\$10.32	\$21,461
Medical Assistants	490	0.4%	\$14.45	\$30,052
Dental Assistants	420	0.3%	\$18.16	\$37,783
Mental Health Counselors	320	0.2%	\$15.96	\$33,191
Pharmacy Technicians	250	0.2%	\$11.96	\$24,878
Pharmacists	210	0.2%	\$39.55	\$82,257
Physical Therapists	200	0.2%	\$30.55	\$63,538
Medical and Clinical Laboratory Technologists	170	0.1%	\$25.57	\$53,179
Medical Records and Health Information Technicians	170	0.1%	\$14.83	\$30,839
Psychiatric Aides	110	0.1%	\$12.68	\$26,381
Respiratory Therapists	90	0.1%	\$24.06	\$50,037
Physical Therapist Assistants	90	0.1%	\$20.62	\$42,880
Dietitians and Nutritionists	70	0.1%	\$19.82	\$41,235
Diagnostic Medical Sonographers	60	0.0%	\$32.23	\$67,038
Veterinary Assistants and Laboratory Animal Caretakers	50	0.0%	\$10.55	\$21,943
Pharmacy Aides	40	0.0%	\$9.04	\$18,794
Veterinarians	30	0.0%	\$43.70	\$90,897
Physician Assistants	20	0.0%	\$31.84	\$66,235
Healthcare Practitioners and Technical Workers, All Other	20	0.0%	\$16.40	\$34,112
Family and General Practitioners	***			
Internists, General	***		\$66.55	\$138,424
Physicians and Surgeons, All Other	***		\$65.42	\$136,068
Audiologists	***		\$30.25	\$62,923
Recreational Therapists	***		\$13.92	\$28,947
Dental Hygienists	***		\$30.27	\$62,953
Cardiovascular Technologists and Technicians	***		\$21.18	\$44,046
Dental Laboratory Technicians	***		\$19.94	\$41,478

The above chart also shows median wages in the MVWIB for some of the industry's key occupations. As the table above indicates, nursing positions pay relatively high wages, while most of the other major occupations pay moderate or low wages. Home health aides are the lowest paid among the industry's major occupations, with annual wages of approximately \$21,500 in 2005.

Workers in these key occupations are distributed in varying proportions among the industry's major segments, as indicated by the following table:

	Hospitals	Long-term	Ambulatory
RNs	69%	10%	21%
LPNs	22%	57%	21%
Nursing Assistants	32%	64%	6%
Medical Secretaries	30%	1%	69%
Home Health Aides	4%	50%	46%
Medical Assistants	22%	***	78%
Dental Assistants	1%	0%	99%

*** less than 1%.
 Note: Data only include workers employed in the healthcare industry—some workers are employed in other industries.
 Source: Massachusetts Executive Office of Labor and Workforce Development, Industry-Occupation Crosswalk.

Statewide, healthcare occupations are among those projected to generate the greatest number of new jobs during the next several years. According to 2004-2014 occupational employment projections prepared by the Massachusetts Executive Office of Labor and Workforce Development, three healthcare occupations are among the top 20 projected job generators. These include registered nurses, the number one projected new job generator, nursing aides, orderlies, and attendants (#8), and home health aides (#11). The strong growth within the LMVWIA of the home health sector, combined with traditionally high turnover rates for home health aides, points to continuing strong demand for these positions in the near-term future.

With registered nurses the single largest occupation across the healthcare industry, the availability of an adequate supply of these workers is a continuing area of concern. Registered nurses are particularly critical to hospitals, where they make up over one-quarter of the workforce statewide. The shortage of registered nurses has been widely reported, not only in the Merrimack Valley region, but across the state and nation, with the limited capacity of postsecondary programs singled out as a major contributing factor. While this shortage continues in the region, there is some evidence that it is easing. One of the region’s major hospitals reports a recent surge in applications for nursing positions, although it also reports difficulty filling certain nursing positions, including critical care and late shifts. A major home healthcare institution reports shortages in experienced nurses while noting that there are many recent nursing graduates who cannot find positions.

The supply of home health aides is another major issue. While employers appear able to fill these positions, they are plagued by high rates of turnover because of low pay and “burnout.” These jobs also hold out very little opportunity for advancement without returning to school and receiving a postsecondary degree in nursing or a medical

specialty. In terms of new hires, two barriers to employment for individuals who might otherwise qualify are poor English language skills and lack of personal transportation.

Aside from these major occupations, shortages exist in some specialty occupations. For example, one hospital reports difficulty finding employees in higher-level radiological specialties, including CT scan, MRI, and ultrasound technologists.

Aside from occupational skills, the “soft skills” of workers, even nurses and other trained professionals, is a concern among some employers. A human resources professional at one major healthcare employer reports much less difficulty finding employees with the right occupational credentials than employees with good work habits, attitudes, and communication skills. She notes the importance within the healthcare field of effective interaction with patients and family members. She points to this as an area where workforce development organizations might work with healthcare providers to improve employee performance and increase job retention.

FOOD PRODUCTION

In 2005, there were 2,089 food production jobs in 48 establishments. Food production represents about 8 percent of all manufacturing employment in the region and approximately 1.6 percent of total employment.

More than half of food production employment is in baking facilities. Baked goods produced in the region include bagels, donuts, pasta, cakes, and breads. The second largest category of employment is “other food production,” which includes perishable prepared foods. Merrimack Valley’s transportation access and proximity to major markets make it a natural locale for perishable food production. Perishable prepared foods produced in the area include prepared salads, pickles, and sauces.

The Haverhill area is the center of food production activity in the region with more than a third of all food production jobs. Newburyport and Lawrence represent an additional 15 percent and 20 percent of regional employment, respectively.

Dunkin’ Donuts central manufacturing plant, Joseph’s Gourmet Pasta and Sauce Company, General Mills Yoplait Brand Yogurt, Hans Kisse Co., Cedar’s Mediterranean Foods, Inc., and Boston Coffee Cake Co. all have food processing plants in the Haverhill/Methuen area. Lawrence is home to some additional food manufacturers such as Middle East Bakery, Bagel Boy, and Agri-Mark. Newburyport also contributes to the food production employment with two of the largest food companies in the region, Home Made Brand Foods and Alden Merrell Desserts.

Key Trends

Food production has continued its steady expansion in the region with the number of jobs increasing by more than 300, or 18 percent, since 2001. The growth comes in spite of a decline in Merrimack Valley’s largest food manufacturing industry, bakeries. Bakery-related employment lost more than 100 jobs between 2001 and 2005, a 9.4 percent

decline. The loss in bakery jobs was offset by an increase in perishable prepared food production (e.g., salads, dips, and dressings) and fruit, vegetable, and specialty foods manufacturing that would include frozen foods (e.g., frozen pasta).

The food sector continues to expand in the region. Sal's Pizza recently announced that it will move its headquarters from New Hampshire to Lawrence where it already owns property, a restaurant, and conference facility. The move will create 30 additional jobs in Lawrence. Silver Spoons Salad Company is moving its production facility, which makes pizza, desserts, and salads, from Chelsea to Haverhill. The company will create 30 new jobs in addition to moving 20 from its current facility in Chelsea.

In addition to new companies moving in, some established companies are expanding. Cedar's Mediterranean Food built a new manufacturing facility in 2005 to accommodate its rapid expansion. More recently, Joseph's Pasta Company doubled its manufacturing space and was acquired by Nestle in 2006. Joseph's anticipates an expansion of as many as 200 jobs in the next few years. General Mills Yoplait is increasing its manufacturing space, but anticipates modest employment gains of roughly five jobs in the coming years.

Nationally, job growth in food processing is expected to be low in the coming decade despite increased demand from population growth. Fierce price competition in the industry is expected to place continuing pressure on manufacturers to automate and reduce labor costs. Merrimack Valley is well positioned to continue to see growth in its food manufacturing sector and will likely buck national trends. National trends within the sector that favor Merrimack Valley include:

- Increased demand for fresh food. Perishable food sales now account for more than one-half of all supermarket sales nationally. Merrimack Valley's food production is concentrated in such production. In addition, Merrimack Valley's transportation access and proximity to Boston, New Hampshire, and southern Maine make the area attractive to other food manufacturers seeking quick, frequent access to major customer markets.
- Consumers are demanding a greater variety of ethnic foods. Home to Cedar's Mediterranean Foods, Joseph's Pastas, and Middle East Bakery, the region will likely benefit from this trend in consumer tastes.
- Demand for home meal replacement. Consumers are increasingly buying ready to eat or semi-cooked meals. This generally puts a greater emphasis on freshness and proximity to market.

Key Occupations

Merrimack Valley has a food manufacturing workforce more heavily oriented toward production than is the average statewide. While 45 percent of all food manufacturing employees statewide are production workers, 52 percent of all food manufacturing employees are involved in production in the Merrimack Valley. Half of all food production occupations are either bakers or food batchmakers.

SOC Title	Employment	% of Total Employment	Median Hourly	Median Annual
Total all occupations	2,250	100.0	\$ 13.07	\$ 27,179
Management Occupations	70	3.1	\$ 35.17	\$ 73,162
General and Operations Managers	30	1.3	\$ 33.32	\$ 69,312
Industrial Production Managers	10	0.4	\$ 37.97	\$ 78,983
Business and Financial Operations Occupations	20	0.9	\$ 30.13	\$ 62,669
Life, Physical, and Social Science Occupations	20	0.9	\$ 19.76	\$ 41,104
Building and Grounds Cleaning and Maintenance Occupations	40	1.8	\$ 10.60	\$ 22,046
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	40	1.8	\$ 10.60	\$ 22,046
Sales and Related Occupations	70	3.1	\$ 10.99	\$ 22,859
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	30	1.3	\$ 33.13	\$ 68,910
Office and Administrative Support Occupations	220	9.8	\$ 17.02	\$ 35,401
First-Line Supervisors/Managers of Office and Administrative Support Workers	40	1.8	\$ 17.84	\$ 37,097
Billing and Posting Clerks and Machine Operators	20	0.9	\$ 14.63	\$ 30,435
Human Resources Assistants, Except Payroll and Timekeeping	20	0.9	\$ 18.56	\$ 38,596
Shipping, Receiving, and Traffic Clerks	60	2.7	\$ 18.25	\$ 37,965
Installation, Maintenance, and Repair Occupations	120	5.3	\$ 20.41	\$ 42,457
Maintenance and Repair Workers, General	80	3.6	\$ 19.85	\$ 41,292
Production Occupations	1,170	52.0	\$ 12.29	\$ 25,569
First-Line Supervisors/Managers of Production and Operating Workers	80	3.6	\$ 28.08	\$ 58,416
Bakers	350	15.6	\$ 12.75	\$ 26,513
Food Batchmakers	240	10.7	\$ 9.49	\$ 19,734
Transportation and Material Moving Occupations	320	14.2	\$ 13.64	\$ 28,362
First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle	20	0.9	\$ 42.10	\$ 87,560
Truck Drivers, Light or Delivery Services	30	1.3	\$ 10.47	\$ 21,775
Cleaners of Vehicles and Equipment	50	2.2	\$ 12.22	\$ 25,419

Bakers. There are 350 bakers in the Merrimack Valley. The concentration of bakers in the Merrimack Valley is more than double the state average. Bakers are widely distributed across specialty retail stops and grocery stores along with high-volume manufacturing facilities. Median wage for bakers is \$12.75 an hour.

Food batchmakers. There are 240 food batchmakers in the Merrimack Valley. The concentration of batchmakers is roughly 30 percent more than the norm statewide. Batchmakers set up and operate equipment that mixes, blends, or cooks ingredients used in the manufacture of food products. Most batchmakers receive on-the-job training to learn their trade. Training will focus on specific tasks along with safety and sanitary practices. Batchmakers are among the lowest paid occupations in an already relatively low paying industry with a median wage of \$9.49 an hour.

In addition to the production occupations directly involved in food production, the industry also employs a significant number of workers that support production, such as material handlers, as well as workers engaged in maintaining the equipment. These occupations are likely to grow in proportion to industry growth. In both cases, the occupations pay better than the jobs directly involved in food production.

Workforce-related Issues

Few immediate workforce-related issues arose at this time. Employers in this industry are generally able to find workers with the relatively low level of skills required make training less of an issue. Based on the research, there are a few workforce issues to bear in mind:

- **ESL.** Many of the workers in food production facilities have limited English abilities. It is not uncommon for employees to communicate in languages other than English on the production floor. ESL may be a service to these employers to facilitate better communication within the workplace. Improved English abilities may help workers access career ladders to better paying jobs within food production or in other manufacturing settings as well.
- **Targeting Merrimack population.** At least one employer interviewed mentioned that a substantial portion of its workforce commuted from Boston. Job openings were often filled by referrals from existing employees perpetuating the supply of workers from outside the region. To the extent that there is an available workforce locally, the Merrimack Valley WIB should ensure that mechanisms are in place for local workers to identify openings.
- **Foster career ladders.** Given the low wage of many food production occupations, the WIB may want to invest in training that will help workers access advancement opportunities. One example of such training was carried out at Boston Coffee Cake, which received a workforce training fund grant for supervisory training to help employees advance.

Food production is a growing industry in the Merrimack Valley. Trends in the food industry favor continued growth in the region despite the fact that nationally the industry is expected to grow quite slowly. The industry is critical to the region as an employer for those with limited skills. Food production jobs can serve as either a starting point for a career in manufacturing or a landing point for lower skilled production workers displaced by the decline in other manufacturing in the region.

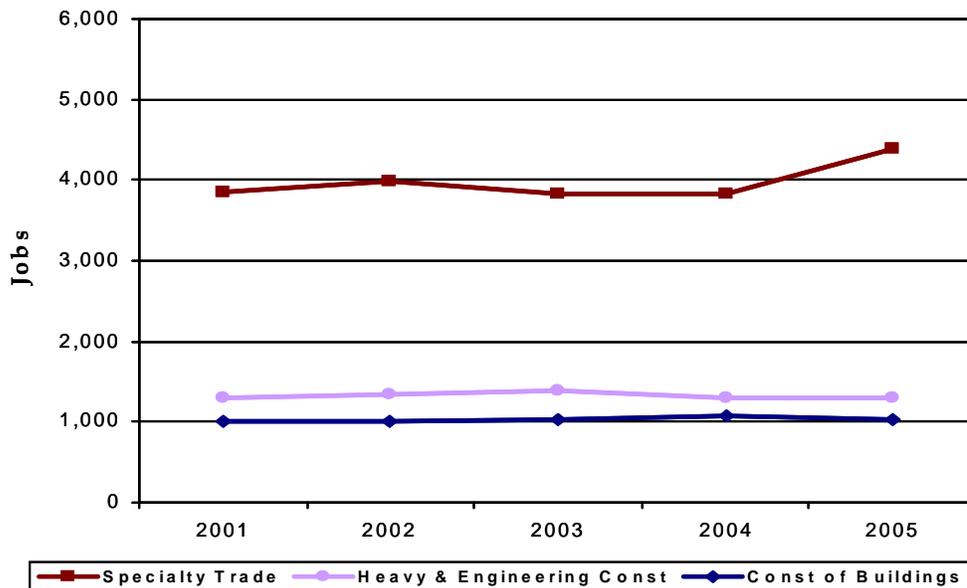
As the industry continues to grow, Merrimack Valley WIB can assist the industry and the worker population with ESL classes and with training to more fully develop career ladders within the industry.

CONSTRUCTION

The construction industry in the Merrimack Valley employed 6,705 workers in 2005, 5.2 percent of total regional employment. The construction industry is divided into three

major sub-sectors, the largest of which is specialty trade contracting, with 4,379 employees, or almost two-thirds of industry employment in 2005. Special contracting includes carpentry, roofing, electrical work, and plumbing. The other two segments are heavy and civil engineering construction (roads, bridges, utilities) with 1,296 employees, or 19 percent of the total, and building construction, with 1,030 employments, 16 percent of the total. (See Chart 3.6.)

**Chart 3.6:
Merrimack Valley Employment by Construction Industries: 2001-2005**



Source: Massachusetts Executive Office of Labor and Workforce Development, ES202. Analysis and Chart by Mt. Auburn.

Most of the region’s construction firms are small. Only about 20 have 50 or more employees, with only a handful having more than 100. Most have fewer than 20 employees, and the average establishment size is 7.3 employees.

Trade unions have a relatively strong presence in the construction industry, but the industry is divided between union shops that hire only unionized workers from the union hall, and non-union shops that hire and train their workers directly or through industry-sponsored training programs.

Construction industry employment in the LMVWIA grew by 543 between 2001 and 2005, or 8.8 percent. This growth was relatively strong, especially in light of the region’s overall employment decline of 6.2 percent during the same period. Virtually all of industry growth was in specialty trade contracting, with the other two sectors almost unchanged.

The general slowdown in residential construction has likely led to a fall-off in construction employment since that time. The most recent quarterly employment data

point to this trend. Construction employment declined by 205, or 2.8 percent, between third quarter 2005 and third quarter 2006.

Firms in the construction industry are distributed throughout the region, with the greatest concentrations in Haverhill, Methuen, Andover, and Rowley. However, since construction workers work on the job site, the business location of the employers is likely less important than the location of the job site, which can be in or outside the region and is constantly changing. In addition, construction workers tend to look farther afield for constantly shifting construction job opportunities. In this vein, union members are called to jobs throughout the metropolitan region in response to the needs of unionized job sites. Conversely, non-local contractors do work in the region that does not show up in regional employment statistics

The construction occupations with the highest levels of employment in the Merrimack Valley region are carpenters, plumbers, general construction laborers, and electricians. Almost all of these workers are employed within the private construction industry, between 80 and 90 percent, depending on the occupation, or by the public sector. Other occupations with significant employment include construction equipment operators, hazardous materials removers, painters, concrete finishers, and sheet metal workers.

As the Table 3.7 indicates, these occupations are relatively high paying, with median annual incomes ranging from roughly \$35,000 to \$60,000.

Table 3.7: Occupational Employment and Wage Statistics: Construction Occupations May 2005				
Occupation Title	Employment	% Total Emp	Median Wage	
			Hourly	Annually
	128,094	100.0%		
Carpenters	920	0.7%	\$23.52	\$48,921
Plumbers, Pipefitters, and Steamfitters	680	0.5%	\$23.64	\$49,162
Construction Laborers	640	0.5%	\$19.08	\$39,676
Electricians	550	0.4%	\$19.19	\$39,925
Operating Engineers and Other Construction Equipment Operators	510	0.4%	\$29.76	\$61,895
First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460	0.4%	\$29.08	\$60,485
Hazardous Materials Removal Workers	360	0.3%	\$17.13	\$35,624
Painters, Construction and Maintenance	260	0.2%	\$21.98	\$45,712
Cement Masons and Concrete Finishers	180	0.1%	\$16.29	\$33,883
Sheet Metal Workers	160	0.1%	\$26.16	\$54,420
Highway Maintenance Workers	70	0.1%	\$18.41	\$38,302
Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	60	0.0%	\$8.49	\$17,654
Paving, Surfacing, and Tamping Equipment Operators	50	0.0%	\$18.34	\$38,140
Roofers	50	0.0%	\$23.46	\$48,789
Construction and Building Inspectors	40	0.0%	\$23.88	\$49,670
Pipelayers	20	0.0%	\$18.99	\$39,495
Glaziers	***		\$22.78	\$47,384
Structural Iron and Steel Workers	***		\$28.56	\$59,406
Helpers—Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	***		\$12.47	\$25,935
Helpers—Carpenters	***		\$11.19	\$23,278

Employment in the construction industry is highly cyclical. Currently, the downturn in the residential housing market and the slowdown in housing construction are likely depressing demand for workers in the employment trade. The completion of the Big Dig has also likely increased the supply of construction workers seeking new work. On the upside, recent strengthening of the metropolitan region's technology sector may fuel construction activity in the commercial real estate market.

The construction industry already has a well developed training system, either through union apprenticeship programs or contractor-sponsored training programs. Community colleges and private trade schools also offer certification programs in occupations such as electrician and plumber. The most critical barrier to entry for many workers is lack of basic reading and math skills. Remedial programs that provide prospective workers with these basic skills, along with financial support to meet tuition expenses, can help to ease entry into this field for those with an interest or aptitude who lack minimum skills required for admission into training programs.

TRUCKING AND WAREHOUSING

The trucking and warehousing industries are minor employers in the Merrimack Valley that have experienced employment declines in recent years. Approximately 700 workers were employed in trucking, courier services, and ground transportation support services in 2005. Another 200 were employed in the warehousing and storage industry. This constitutes less than 1 percent of total regional employment.

Trucking and warehousing activities are also embedded in other industry sectors, most notably wholesale trade. Wholesale sector employment in the Merrimack Valley totaled almost 4,600 in 2005, but only a portion of this, roughly 40 to 50 percent, involved trucking and warehousing. Most of the wholesaling employment in the Merrimack Valley, over 90 percent, is in the merchant wholesaler sub-sector. Merchant wholesaling operations sell and distribute products for their own companies as opposed to acting as agents or brokers for other companies. Some trucking and warehousing employment is also embedded in retailing and manufacturing, as new logistics technologies enable products to be shipped directly from the manufacturer to the retailer without the use of separate warehousing operations.

Some important sources of trucking and warehousing employment do not show up in regional employment statistics. Many graduates of truck driver training programs are reported to take jobs with employers based outside the region and even the state. These workers can be assigned to routes that bring them to or near the Merrimack Valley, so they continue to live in the region even though their employers are based in far-flung locations. Another important source of warehousing and trucking employment just outside the region is UPS in Chelmsford. The Chelmsford facility is a hub for trucking and warehousing in the region, employing over 1,300 people, making it the largest employer in this industry in northeastern Massachusetts. The workforce includes 1,000

part-time warehouse workers and 280 to 300 full-time warehouse workers and truck drivers, about 40 percent of which live in the LMVWIA. Because of the large numbers of employees, commitment from the company, and the fact that it is a union firm, jobs at UPS-Chelmsford offer career ladder opportunities, and relatively high wages.

There are no large or even mid-size trucking and warehousing employers located in the LMVWIA. There are several wholesaling and manufacturing/wholesaling facilities in the 100- to 250-employee range, and a large number of smaller operations.

Recent employment trends in these industries within the LMVWIA have not been favorable. Regional employment in the trucking and warehousing industries declined by almost 20 percent between 2001 and 2005, with declines cutting across both trucking and warehousing. Wholesale industry employment declined by over 13 percent during this period. These declines exceeded the overall drop in regional employment. They were driven, in part, by the weakening of the region's manufacturing sector, a major source of demand for trucking and warehousing services.

Looking to the future, statewide projections do not envisage these industries as major sources of new employment. None is among the top 15 industries in projected new job generation during the 2004-2014 period. The warehousing industry is projected to be among the 20th fastest growing industry between 2004 and 2014, with a growth rate of 18 percent. However, because of the small base of jobs in the region, achieving this growth rate would only generate a handful of new jobs.

Employment in the trucking and warehousing industries is widely distributed across the region. It is most heavily concentrated in Andover, North Andover, Haverhill, and Lawrence, with secondary concentrations in Newburyport, Amesbury, and Methuen.

The trucking and warehousing occupations with the highest employment in the Merrimack Valley are material movers, heavy truck drivers, packers, light truck drivers, and shipping and receiving clerks.

Occupation Title	Employment	% of Total Employment	Median Wage	
			Hourly	Annually
Laborers and Freight, Stock, and Material Movers, Hand	1,390	1.1%	\$13.42	\$27,917
Truck Drivers, Heavy and Tractor-Trailer	1,210	0.9%	\$19.66	\$40,900
Packers and Packagers, Hand	1,060	0.8%	\$9.35	\$19,454
Truck Drivers, Light or Delivery Services	780	0.6%	\$14.86	\$30,901
Shipping, Receiving, and Traffic Clerks	750	0.6%	\$14.30	\$29,737
Industrial Truck and Tractor Operators	350	0.3%	\$13.24	\$27,549
Driver/Sales Workers	300	0.2%	\$11.71	\$24,366
First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	160	0.1%	\$19.88	\$41,340
Logisticians	110	0.1%	\$36.09	\$75,065
Transportation, Storage, and Distribution Managers	80	0.1%	\$37.40	\$77,796
First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle Operators	70	0.1%	\$24.03	\$49,975

The above table also shows median wages in the LMVWIA for some of the industry's key occupations. These jobs pay low to moderate wages, with the warehousing occupations on the lower end of the scale and the truck driving positions on the higher end of the scale.

As the table below indicates, trucking and warehousing should be considered more of an occupational cluster than an industry cluster. Based on state-level data, trucking and warehousing occupations are distributed broadly among several industries, most notably transportation and warehousing, wholesale trade, retail trade, and manufacturing.

	Transportation & Warehousing	Wholesale Trade	Manufacturing	Retail Trade	Administrative/Support/Waste Management	Other
Material Movers	17%	19%	10%	18%	20%*	16%
Heavy Truck Drivers	33%	17%	9%	11%	12%	18%**
Packers	8%	14%	26%	36%	13%	3%
Light Truck Drivers	24%	23%	6%	24%	3%	20%
Shipping/Receiving Clerks	10%	20%	32%	26%	3%	9%
Industrial Truck & Tractor Operators	24%	21%	32%	19%	2%	2%
*Primarily employment services.						
**About half of this in the construction industry.						
Source: Massachusetts Executive Office of Labor and Workforce Development, Industry-Occupation Crosswalk .						

Recent employment trends in the region indicate strong future growth in employment, although turnover, particularly in warehousing operations, will continue to provide employment opportunities. Moreover, truck driver training programs report very high demand for truck drivers, although a good deal of this comes from trucking firms based outside the Merrimack Valley.

Statewide, occupations that are concentrated in these industries are not among those projected to generate the most new jobs from 2004-2014.

The characterization of trucking and warehousing as more of an occupational than an industry cluster means that efforts to train and place workers in these occupations must involve engagement with employers cutting across at least four industries. Workforce development organizations must take into account this more complex industry landscape when focusing on these occupations.

The most promising opportunity remains in the trucking field, with relatively high wages and high demand indicated by the high placement rates from truck driver training schools. The director of one program estimates he could double the slots of his program and still not meet the demand of the trucking industry. These jobs have relatively low entry barriers, requiring only a commercial driver's license, a good driving record, good health, and no felony convictions. Training programs can be completed in as little as four weeks. At the same time, these jobs have some disadvantages that must be taken into account, notably long hours and time away from home for long-haul drivers.

EDUCATION AND HUMAN SERVICES

Education is one of the largest industries in the Merrimack Valley. Currently, the region's schools and colleges have a total of 11,378 jobs. Since 2001, the region has added about 800 jobs in this industry, a growth rate of about 8 percent. At present, about 88 percent of these jobs are in elementary and secondary schools. During this same period, the number of jobs in social assistance-related organizations grew from 2,850 to 3,250, a rate of growth of about 14 percent. Childcare is another industry that has grown in recent years.

Most efforts to identify growth industries often do not consider the public and nonprofit sector jobs. Yet, in the Merrimack Valley, education and human services comprise a significant proportion of the region's employment base. Moreover, these industries have the potential of providing employment opportunities for residents of the region.

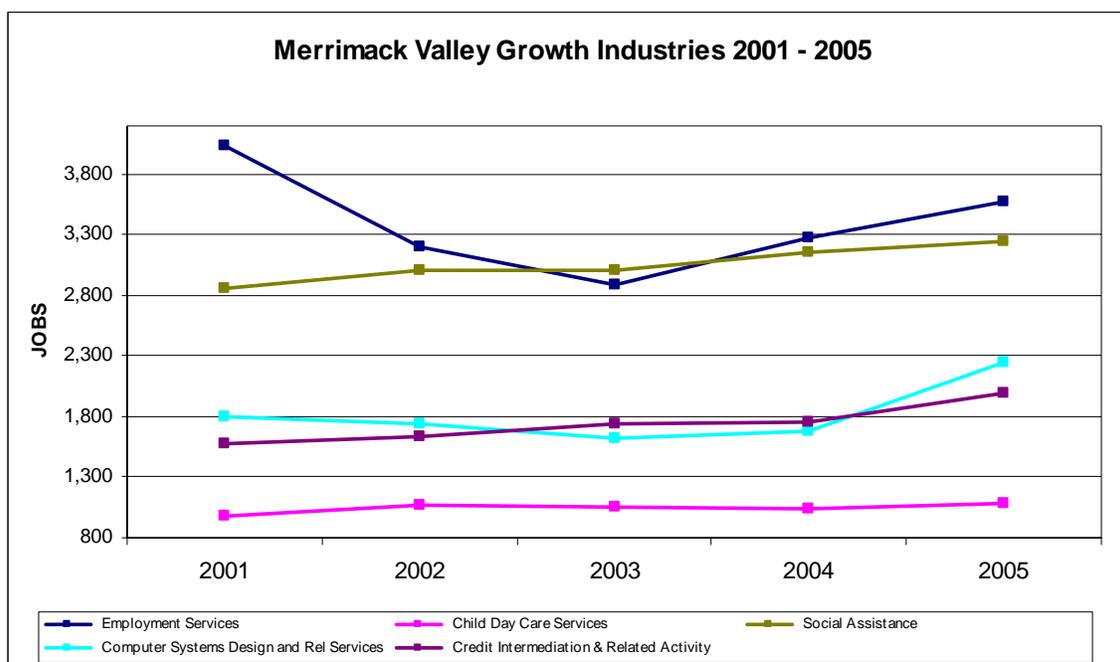
Table 3.10 provides an overview of the range of occupations within the primary and secondary schools in the region. In addition to the teaching staff, there are a relatively large number of occupations that do not require a four-year degree and yet pay a self-sustaining wage. These include cleaning and maintenance occupations and clerical and administrative occupations.

OES code	OES Title	Number of Workers	% of Industry	Average Hourly Wage
11-0000	Management Occupations	360	3.8	40.11
13-0000	Business and Financial Operations Occupations	20	0.2	34.91
15-0000	Computer and Mathematical Occupations	100	1.1	24.71
19-0000	Life, Physical, and Social Science Occupations	50	0.5	27.32
21-0000	Community and Social Services Occupations	290	3.1	26.05
21-1012	Educational, Vocational, and School Counselors	260	2.7	27.13
21-1021	Child, Family, and School Social Workers	10	0.1	24.91
25-0000	Education, Training, and Library Occupations	6,600	69.6	22.19
25-9031	Instructional Coordinators	100	1.1	30.07
25-9041	Teacher Assistants	1210	12.8	N/A
29-0000	Healthcare Practitioners and Technical Occupations	260	2.7	25.12
33-0000	Protective Service Occupations	100	1.1	14.39
35-0000	Food Preparation and Serving-Related Occupations	360	3.8	10.47
35-1012	First-Line Supervisors/Managers of Food Preparation and Serving Workers	20	0.2	14.15
35-2012	Cooks, Institution and Cafeteria	80	0.8	11.85
37-0000	Building and Grounds Cleaning and Maintenance Occupations	500	5.3	16.42
37-1011	First-Line Supervisors/Managers of Housekeeping and Janitorial Workers	30	0.3	23.56
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	440	4.6	15.76
43-0000	Office and Administrative Support Occupations	770	8.1	14.98
43-3031	Bookkeeping, Accounting, and Auditing Clerks	60	0.6	16.87
43-6011	Executive Secretaries and Administrative Assistants	110	1.2	17.4
43-6014	Secretaries, Except Legal, Medical, and Executive	310	3.3	14.94
43-9061	Office Clerks, General	160	1.7	11.6
53-0000	Transportation and Material Moving Occupations	80	0.8	13.35
53-3022	Bus Drivers, School	80	0.8	13.1

EMERGING INDUSTRIES AND OCCUPATIONS

In the previous Blueprint, three industries were identified as “emerging”—food products, medical instruments and supplies, and trucking and warehousing. These three industries remain important to the region. However, we have included medical instruments as part of a broader set of “life science”-related companies that are growing in the region. We see trucking as a critical occupation. Finally, we think that food products should now be considered a critical industry in the region, given its size and stability over the past five years. It was discussed in the previous section. In addition to these three areas, we have identified one additional emerging industry in the region—financial services. Chart 3.7 illustrates the scale and growth of some of these emerging industries.

Chart 3.7



Financial Services

Since 2001, the financial services industry in the region has been growing. This industry includes commercial banking along with credit card issuing, consumer lending, sales financing, and mortgage lending. In addition to the region's commercial banks, savings banks, and credit unions, there are a number of mortgage brokers that have been growing in the region.

This industry fits the criteria for an emerging industry. It currently has over 1,000 jobs in the region, it has been growing in recent years, and its occupational makeup includes a relatively large number of jobs that pay family-supporting wages and yet do not necessarily require a four-year college degree. (See Table 3.11.)

MORTGAGE COMPANIES IN THE LMVWIA	
GNA Mortgage Group Inc	North Andover
Mobility Financial, LLC	Newburyport
Broker 1 Mortgage	Andover
Metwest Commercial Lenders, Inc.	North Andover
Mortgage Workouts, Inc.	Methuen
Multi-State Mortgage, Inc.	Groveland
Aastar Mortgage, Corp.	Andover
Northland Mortgage Co., Inc.	Methuen
J W Macara, Inc.	Andover
Epic Mortgage, Inc.	Amesbury
Action Mortgage Corp.	Methuen
Mortgage Finders of New England	Methuen

OES code	OES Title	Number of Workers	% of Industry	Average Hourly Wage
00-0000	Total all Occupations	1,850	100.0	26.97
11-0000	Management Occupations	240	13.0	50.72
11-1021	General and Operations Managers	40	2.2	55.62
13-0000	Business and Financial Operations Occupations	490	26.5	42.13
13-2072	Loan Officers	240	13.0	47.33
41-0000	Sales and Related Occupations	170	9.2	18.42
41-1012	First-Line Supervisors/Managers of Non-Retail Sales Workers	20	1.1	29.47
43-0000	Office and Administrative Support Occupations	850	45.9	16.09
43-1011	First-Line Supervisors/Managers of Office and Administrative Support Workers	110	5.9	20.39
43-3071	Tellers	280	15.1	12.84
43-4051	Customer Service Representatives	110	5.9	15.72
43-4131	Loan Interviewers and Clerks	100	5.4	17.16
43-6011	Executive Secretaries and Administrative Assistants	80	4.3	22.54

It is important to note, however, that while there will be jobs in the banking industry, the growth in the mortgage industry in the region is tied to the growth in the real estate market. The downturn in that market is likely to lead to a reduction in the jobs in the mortgage industry.

Life Sciences

Life sciences is a broader definition than medical instruments and includes both manufacturing and services that include businesses in the fields of biotechnology, pharmaceuticals, biomedical technologies, life systems technologies, nutraceuticals, cosmeceuticals, environmental, and biomedical devices.

The region has seen the growth in medical instruments and supplied manufacturing from 727 jobs in 2001 to 870 jobs in 2005. In addition to manufacturing are companies involved in selling and repairing medical equipment, and companies involved in research and development. (See Table 3.12.)

Straumann	Dental Equipment	Andover
Eisai Research Institute	Pharmaceutical Research	Andover
Diomed	Medical Equipment Wholesalers	Andover
Aurora Imaging Technology	Medical Diagnostic Equipment	North Andover
Associated X-Ray Imaging Corp	Medical Equipment Wholesalers	Haverhill
Tissue Science Laboratories	Medical Equipment Wholesalers	Andover
Hydrocision	Medical Equipment Manufacturing	Andover
Dynamics Research Corp	Medical Equipment Manufacturing	Andover
ATC Technologies	Medical Equipment Manufacturing	Haverhill
Bach Pharma	Pharmaceuticals	North Andover
Morgan Scientific	Medical Equipment Wholesalers	Haverhill
Bradford Labs	Life Science Research	Haverhill
Nasky & Goldfinger Medical	Medical Equipment Wholesalers	Lawrence
MRP Group	Medical Equipment Manufacturing	Lawrence
Racine Medical Electronics	Medical Equipment Wholesalers	Lawrence
Park Bio Services	Medical Equipment Manufacturing	Haverhill
E-Trolz	Medical Equipment Manufacturing	North Andover
Edward Winters	Medical Equipment Manufacturing	Andover
MKS Systems	Medical Instruments	Andover/Methuen

In addition to these companies, there is some indication that some of the region's companies that have been producing high precision instruments for the computer and telecommunications industry are beginning to look to the life science area as a potential new market for their products.

Andover, in particular, has been developing a small cluster of medical-related companies over the past five years. This community is an attractive location in terms of distances from Boston and access to a highly-skilled labor force. Further growth in life science-related companies is anticipated.

In terms of occupations, over 50 percent of the jobs in the medical equipment industry are manufacturing production jobs that involve the same set of skills as the other technology-related manufacturers in the region. (See previous section on manufacturing.)

With the increase in medical device and pharmaceutical manufacturing in the area, there is an increased need for life sciences training. In particular, certification from a biotech vocational training program will be useful for production employment in pharmaceuticals.

To better understand the employment needs of this sector, the Northern Essex Community College is beginning to interview companies to understand their workforce needs, where it is lacking, and what the region can do better. This effort is something that the MVWIB should be aware of and track.

Nanotechnology

Nanotechnology involves the building of devices on the scale of atoms and molecules. Currently, nanotechnology primarily involves basic research and development (R&D) sponsored and supported by corporate, university, and federal collaborations. While nanotechnology has just begun to have commercial applications in healthcare, information technology, manufacturing, and national defense, the National Science Foundation (NSF) estimates that the worldwide need for nanotechnology workers will rise from the current 20,000 to two million.⁴

A recent study by the Washington-based Project on Emerging Nanotechnologies named Greater Lowell as one of the five top “Nano Metro” areas in the U.S. The company is home to Konarka Technologies, a spinoff of UMass Lowell's incubator, and considered to be among the more commercially advanced nanotech companies. In addition, UMass Lowell is planning an \$80 million bio- and nanomanufacturing center on campus.⁵

In the LMVWIA there are two companies classified as nanotechnology—Advance Reproductions Corporation in North Andover and Strem Chemicals in Newburyport.

Today, nanotechnology is mostly seen as the province of Ph.D. scientists and engineers. But, as the industry grows, it will need people at all education and skill levels to meet needs that range from cutting-edge research to maintenance of manufacturing equipment, from laboratory to manufacturing. However, recent studies provide evidence that the development of the nanotech industry in the region will have a major workforce impact on other industries requiring mid- to high-level skilled workers. The U.S. Department of Labor’s list of occupations in this industry shows a close match with the existing occupational makeup of the LMVWIA. (See Table 3.13.)

⁴ US Department of Labor Career Voyages.

⁵ *Lowell Sun*.

**Table 3.13:
Nanotechnology: Project Demand for Occupations**

Code	Occupation	Projected Growth (2004-2014)	Projected Need (2004-2014)
15-1041	Computer Support Specialists	Faster than Average	183,000
29-2012	Medical and Clinical Laboratory Technicians	Faster than Average	76,000
29-2011	Medical and Clinical Laboratory Technologists	Faster than Average	74,000
17-3025	Environmental Engineering Technicians	Faster than Average	9,000
49-1011	Supervisors/Managers of Mechanics, Installers, and Repairers	Average	175,000
49-9098	Helpers--Installation, Maintenance, and Repair Workers	Average	82,000
17-3023	Electrical and Electronic Engineering Technicians	Average	56,000
49-2094	Electrical and Electronics Repairers, Comm & Indl Equipment	Average	23,000
19-4021	Biological Technicians	Average	22,000
17-3026	Industrial Engineering Technicians	Average	22,000
17-3027	Mechanical Engineering Technicians	Average	16,000
17-2041	Chemical Engineers	Average	12,000
17-2131	Materials Engineers	Average	8,000
19-4011	Agricultural and Food Science Technicians	Average	7,000
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	Average	7,000
51-2092	Team Assemblers	Slower than Average	410,000
51-9198	Helpers--Production Workers	Slower than Average	174,000
51-1011	Supervisors/Managers of Production and Operating Workers	Slower than Average	173,000
51-4121	Welders, Cutters, Solderers, and Brazers	Slower than Average	125,000
51-4041	Machinists	Slower than Average	102,000
49-9041	Industrial Machinery Mechanics	Slower than Average	44,000
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	Slower than Average	34,000
19-2031	Chemists	Slower than Average	33,000
11-3051	Industrial Production Managers	Slower than Average	32,000
17-3013	Mechanical Drafters	Slower than Average	28,000
51-4081	Machine Tool Setters, Operators, and Tenders, Metal and Plastic	Slower than Average	27,000
51-2041	Structural Metal Fabricators and Fitters	Slower than Average	24,000
49-9043	Maintenance Workers, Machinery	Slower than Average	22,000
19-4031	Chemical Technicians	Slower than Average	18,000
51-4122	Welding, Soldering, & Brazing Machine Setters, Opers,& Tenders	Slower than Average	15,000
51-2031	Engine and Other Machine Assemblers	Slower than Average	13,000
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	Slower than Average	13,000
49-9012	Control and Valve Installers & Repairers, Exc Mechanical Door	Slower than Average	11,000
17-3012	Electrical and Electronics Drafters	Slower than Average	11,000
51-2091	Fiberglass Laminators and Fabricators	Slower than Average	9,000
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	Slower than Average	7,000

Source: U.S. Department of Labor

High Demand Occupations

The state of Massachusetts has been undertaking a Job Vacancy survey for the past few years. The Northeastern Center of Labor Market Studies has used this data and its own analysis to identify high demand occupations in other regions. In a report prepared for the Workforce Solutions Group, the Center for Labor Market Studies identified the following

occupations that met its job vacancy and potential wage screening criteria for training consideration. The Commonwealth Corporation developed a similar set of criteria to identify “hot jobs” for the Crittenden Women’s Union. Table 3.14 provides a list of the high definition occupations in the Commonwealth from both of these reports.

Table 3.14: High Demand Occupations in the Commonwealth		
	Center for Labor Market Studies	Crittenden Women's Union "Hot Jobs"
Cardiovascular Technologists		x
Dental Hygienists		x
Diagnostic Medical Sonographers		x
Radiological Technologists and Technicians		x
Respiratory Therapists		x
Physical Therapists	x	
RNs	x	x
LPNs	x	x
Nurses Aides and Orderlies	x	
Receptionists	x	
Frontline Supervisors & Admin Workers		x
Legal Secretaries		x
Postal Service Workers		x
Secretaries and Administrative Assistants	x	x
Bank Tellers	x	
Medical Secretaries	x	
Social Service and Community Service Specialists	x	
Food Service Managers		x
Short Order Cooks	x	
Fitness Trainer	x	
Carpenter	x	x
Plumbers	x	x
Supervisors/Mgrs of Production Workers		x
Tool and Die Makers	x	x
Automotive Service Technicians	x	
Heating, Air Conditioning, and Refrigeration	x	x
Bus Drivers	x	
Heavy Truck Drivers	x	
Welders, Cutters, and Solderers		
Computer Support Specialists		x
Mgrs of Non Retail Sales Workers		x
Sales Reps		x
Correctional Officers		x
Firefighters		x
Police Officers		x

This list conforms very closely to the occupations in the industries that are targeted as critical or emerging in the Merrimack Valley.

CONCLUSION: IMPORTANT LABOR DEMAND ISSUES

- The loss of the many high paying jobs in the technology sector and in manufacturing has had a significant impact on the region's economy. Many of the skilled employees from Lucent have either left the labor market, moved, or are underemployed.
- As the economy restructures, the region's companies in the technology area may turn to new markets, such as medical devices and nanotechnology. The continued availability of a very highly-skilled manufacturing workforce will remain critical to keeping and growing the technology-based manufacturing sector, whether they are making products for the medical industry or the telecommunications industry.
- There has been a continued growth in the food products industry with a number of companies moving to the region since the last Blueprint. While these companies are providing jobs for the region residents, they tend to be lower wage production jobs than the jobs that were lost.
- Healthcare continues to be the industry with the greatest demand for workers. Many of the more highly-skilled occupations remain hard to fill. However, there is some evidence that the depth of the shortage seems to be easing.
- While many of the local employers report that finding skilled workers is a major challenge, very few of them are aware of the workforce development services available in the region. And, those that are aware have not applied for or pursued funding for training. In addition, many of the employers that have a high demand for workers do not use the Career Center. For example, Career Center staff noted that the region's hospitals are not presently working with the Career Center.

CHAPTER 4: WORKFORCE DEVELOPMENT PRIORITIES

THE REGIONAL TRAINING SYSTEM

The Merrimack Valley Workforce Investment Board provides policy governance and oversight to a regional training system that includes institutions of higher education, vocational schools, and community-based basic education and occupational skills training programs. The goal of the regional training system is to ensure that residents of the region are able to get the skills, education, and certifications necessary to access jobs in the critical and emerging industries where there is current and projected future demand for workers. The system is designed to support the development of the workforce in the region and also to support economic development efforts to grow businesses in the area. In conducting research for the update to the Blueprint, we interviewed some key stakeholders involved in the region's workforce development system. While there have not been significant changes within the system over the past five years, there have been some new programs and approaches to meet the needs of the region's residents and businesses.

Higher Education

There are currently three institutions of higher education in the region:

- Merrimack College is a liberal arts university offering degree programs in liberal arts, science and engineering, and business. Certificate programs are offered in supply chain management, project management, game design and programming, Web certification programs, information technology, human resource management, Lean Sigma, and software quality assurance. Merrimack College also offers space to Suffolk University to provide the Masters of Business Administration program at its campus in North Andover. It has also recently developed new Associate's programs in human services and electrical engineering.
- Cambridge College, a college designed for working adults, has a branch campus in downtown Lawrence. Its Lawrence campus provides Bachelor's degrees in psychology, multidisciplinary studies, human services, and management studies. Of more relevance, it also offers training programs in the following areas: medical interpreter, mental health interpreter, human service interpreter and case manager, human service assistant and case manager, medical administrative assistant, mental health counseling, medical coding, and early education care. It also has some Master's level degree programs, primarily in education.
- Northern Essex Community College operates branches in Lawrence and Haverhill. The curriculum offerings of Northern Essex are quite broad ranging from traditional Associate's Degree programs in the liberal arts to technical Associate's Degrees in areas including nursing, medical technologists, electronics engineering, and computer science. Northern Essex Community College also offers a number of technical certificate programs that meet the needs of critical and emerging industries in the region. Since the last Blueprint was completed, Northern Essex Community College has developed new capacity. The college consolidated its workforce development

activities under the Corporate and Community Education Center of Northern Essex Community College. In 2006, it moved into the facility that had housed the Lucent Training Center. The new center has 22 classrooms, five computer labs, and two conference areas. The college has also developed a 27-credit certificate program for commercial driver license preparation in partnership with the New England Tractor Trainer Training School.

ESOL and ABE

As reported in the previous Blueprint, while there are a large number of providers of ABE and ESOL services in the region, there are large waiting lists for nearly every program. This situation has not changed in the years since the Blueprint was published. According to staff involved in providing ESOL and ABE services, while the region has received increased state funding as a result of the 2006 Economic Stimulus Bill, the waiting list for ESOL and ABE services has not been reduced.

A 2005 report by Lawrence Literacy Works on the region's literacy capacity found that there were 23 organizations in Lawrence that provided literacy services. It estimated that organizations funded by the Department of Education had a total of 981 seats available. According to its estimates, these organizations can service approximately 2,000 students a year, only 11 percent of the ESOL need and 6 percent of the ABE/ESOL need. This report also noted that the Massachusetts Department of Education estimated the local waitlist to be 817.

In Haverhill, there are roughly 11 organizations providing ABE and ESOL services. Since the last Blueprint, ValleyWorks Career Center has developed a MOA with the Methuen Adult Learning Center to deliver services at the Career Center and to bring Career Center services to the Learning Center. The collaboration is an important model of integrating workforce services with ESOL and ABE services. It is particularly important given the growing number of unemployment claimants in the region who are Hispanic or Latino.

In general, the key issues reported in the Blueprint remain true today:

- There is a need for ESOL training to be contextualized to the workplace, meaning that the training utilizes the vocabulary that a worker would encounter during an average day on the job.
- The capacity and effectiveness of the Merrimack Valley region's ESOL and ABE system needs to be enhanced.
- The mathematics component of ABE should be enhanced and, like ESOL, contextualized to the needs of businesses in the critical and emerging industries.
- There is increased demand by employers for English writing as well as English speaking skills.

Occupational Skills Training

As noted in the previous Blueprint, the Merrimack Valley region is fortunate to have a vibrant community of occupational skills training providers in the form of community-based organizations, for-profit training firms, community colleges, and other institutions of higher education. Table 4.1 provides an overview of the categories of occupational training being provided by the Merrimack Valley region's approved provider list. General findings related to occupational skills training include:

- There are a large number of program opportunities in *healthcare*, mostly at lower levels, including certified nursing associates, phlebotomists, and medical office receptionists.
- There are no specialized training programs in the region that meet the needs of the *construction* industry with the exception of union-sponsored apprenticeship programs.
- For *manufacturing*, there are a number of general training programs. However, as the manufacturing industry has become more technically complex, and with increased reliance upon certification standards, there are few training programs that meet these needs in the region. With many manufacturing workers nearing retirement age, a large gap between the needs of employers and the skills of the workforce was feared. In response, the MVWIB applied for and received a \$500,000 Workforce Competitiveness Trust Fund grant from the Commonwealth Corporation. The MVWIB is the lead partner in the project that will provide education and training services to a minimum of 45 currently unemployed workers and a minimum of 125 currently employed workers. Course offerings will range from entry-level to highly-skilled, giving employees opportunities for advancement by upgrading skills and giving companies a more educated, market responsive workforce. This project will provide the region with a new and critical resource to offer training in manufacturing occupations.
- In the *trucking and warehousing* industry, there is a strong need for drivers with a commercial driver license (CDL). Since identified as a gap in the last Blueprint, a new training program was developed by the New England Tractor Trailer Training School in conjunction with Northern Essex Community College. In addition, the Allied Career School runs a training program in Methuen.
- There are a number of programs in general *clerical* and *computer skills*. Training in this area includes training for use of the Microsoft Office suite of applications, computer networking, and other specialized software usage.

Access to training for residents without strong English speaking skills is limited. However, LARE Training Center provides many classes that combine ESOL and occupational skills training. However, few of the other training providers are able to serve residents with limited English speaking skills. This remains an area of significant demand.

**Table 4.1
Education and Training Providers in the Merrimack Valley**

	Healthcare	Cosmetology	Trucking	Clerical	Social Services	Mgmt.	Pre-College & ABE	Computer Programming and Applications	Electronic Assembly/Technology	Education
LARE Training Center	x			x			x	x	x	
Northern Essex Community College	x		x		x	x		x	x	
Northeast Technical Institute	x			x						
Merrimack College						x		x		x
Training Unlimited				x				x		
Community Action Inc	x									
American Red Cross	x									
First Choice Training Institute	x			x						
Merrimack Valley School of Hair Design		x								
Emmaus Inc.				x			x			
Amesbury Center for Healing		x								
Cambridge College	x			x	x	x				x
Ksaria									x	
William George Ass.						x				
Allied Career School			x							

The Role of the ValleyWorks Career Center

The Merrimack Valley Workforce Investment Board charters and oversees the ValleyWorks Career Center (VWCC) with two locations, one in Lawrence and one in Haverhill. The VWCC plays a pivotal role in the regional training system. One of its key functions is to provide core and intensive services to the region’s residents. Core services are those that are available to any person seeking services, and include:

- initial assessment of skill levels, aptitudes, abilities, and support services needs;
- job search and placement assistance and career counseling;
- follow-up services including counseling regarding the workplace for participants in training programs who have been placed in unsubsidized employment.

Making the Match—Key Workforce Challenges and Recommendations

Analysis of the data and interviews with key stakeholders revealed the following major challenges in the region’s workforce development system.

1. *ESOL Capacity and Structure:* Clearly with a growing immigrant community and the growing importance of English speaking skills to the region’s employers, the adequacy of the region’s ESOL services is of major concern.
2. *Intergenerational Issues:* Another issue that has arisen in the workplace relates to different approaches and attitudes towards work amongst different generations. A number of the employers brought this issue up.
3. *Workforce Pipeline Issues:* The large number of high school dropouts and adults with limited educational skills creates a problem in terms of the workforce training pipeline. A large number of residents in the region lack the basic skills needed to qualify for a training program in some of the high demand occupations, such as those in healthcare.
4. *Employment Agencies:* Temporary employment agencies are playing an increasingly important role in the region’s labor market. To some extent, they have become the most important intermediary in terms of the labor market for entry level workers and employees in the region’s manufacturing sector. Many of the region’s employers actually house agencies in their facilities where they hire and supervise many of the workers. The employees actually are employed by the agency, not by the manufacturer. This is also the case in the distribution and warehousing sector. There are many critical implications of this trend for the residents of the region, for the employers, and for the MVWIB as it develops workforce development priorities in the region.
5. *Small Businesses:* One trend in the region that crosses industries and occupations has been the growth of small, innovative companies in the region. In the past, the economy was dominated by very large employers such as Lucent. As the economy of the LMVWIA restructures, there are a growing number of small, startup and entrepreneurial companies making their home in the region. One need only look at the tenants of some of the large mill buildings in Lawrence to see this trend. The workforce needs and training capacities of small businesses are very different. Often, they do not have their own human resource departments and are able to devote very little time to workforce issues.
6. *Employer Engagement:* While many employers report that they have significant needs for workers with appropriate skills, few of them are involved in the workforce system. In many ways, there is a significant disconnect between the concerns that employers voice and their willingness to become involved in efforts to build the skills of the local workforce. In addition, many employers do not work with or post jobs with the ValleyWorks Career Center.

7. *Increased Focus on Certification:* In the past year, some of the training providers and job placement staff have realized that employers are increasingly demanding workers with some type of certificate. At one time, individuals could go through a short occupational training program and go onto to a job without passing a certification exam. This is no longer the case. Even for some of the entry-level positions, employers like to see that the individual has passed some type of exam at the end of training.