

NORTH CENTRAL MASSACHUSETTS
WORKFORCE DEVELOPMENT STRATEGIES PLAN

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EXECUTIVE SUMMARY

The North Central Massachusetts Economic Development Council is in the process of further strengthening the region's identity and economic viability. The Council partnered with the Karl Seidman's graduate level Economic Development Planning course at the Massachusetts Institute of Technology's Department of Urban Studies and Planning in the spring of 2008 with the goal of researching and exploring North Central Massachusetts' current regional economic conditions and creating some new strategies that the Council could carry forth.

The project produced an economic profile of the North Central Massachusetts region, defined as the 26 town area covered by the North Central Massachusetts Economic Development Council, which highlighted some of its recent prevalent characteristics:

- Overall trend of job losses
- Uneven regional development, with greater economic strength in the more eastern portions of the region compared with slower development in the western towns
- Wages falling or stagnant in region's big cities, with greater job loss occurring in higher paying jobs, and job gain occurring in lower-paying jobs
- Low levels of educational attainment amongst the region's workforce
- Continued importance of manufacturing industry in the region, despite job and firm loss within it

The final characteristic highlights the leading role that manufacturing clearly plays within the region's economy. These initial findings were also supplemented with research based on assessing the region's existing regional cooperation, an assessment of the region's existing regional economic capacity characteristics, and through direct interviews with regional stakeholders and business representatives.

The MIT research team collaborated with the Economic Development Council to further hone the focus of the semester's research project, and in early April, upon presenting a few options of different strategy focuses the region could work on, it was decided that workforce development provided the most immediate resource that the region's economy will need to further establish itself and grow in the upcoming years. Specifically, devising a regionally collaborative workforce development plan is intended to serve as a way to highlight what the region's shared workforce needs are and how the region can work together to improve the training and education systems so that the region's workforce can be one of its strongest economic drivers. The region's workforce is especially an important component of the manufacturing industry, and any future success the manufacturing industry might have in the region is fully dependant on it having the appropriately skilled and trained workforce available.

Research was conducted to understand the region's existing workforce needs and development systems through interviews with firms, research into the area's workforce development initiatives and resources, and research into the workforce needs of some of the area's emerging industries (biotechnology, renewal/alternative energies, medical device manufacturing, health and social services). These three areas of information helped form a framework that highlighted what the region's workforce needs and issues were:

- Lack of coordination amongst the local workforce training programs
- Funding is limited and narrowly targeted
- The region lacks organizational capacity for assessing workforce needs
- Information on training options and services are not easily accessible
- Common training needs exist
- There is an increasing need for higher-skilled workers
- Funding systems are inflexible

The team has created a strategy plan focused on improving the region's workforce development systems through the following:

- #1: Establish a Strong Workforce Development Intermediary
- #2: Expand Awareness of and Information on Training Options
- #3: Organize Industry-Wide Training Initiatives
- #4: Create a Manufacturing Career Ladder Training System
- #5: Secure Immediate and Long-Term Sources of Funding

The recommendations above are not meant to be an exhaustive list of what the Economic Development Council could do to improve the region's workforce development, but it is representative of what should be the region's highest priorities, with the principal component being the establishment of a strong workforce development intermediary. These recommendations were presented to some of the region's representatives as part of the second working meeting held in May, and it was agreed that the workforce development intermediary was a legitimate and viable first step, and might begin as a partnership between the Council and the region's Workforce Intermediary Board.

The strategies recommended in this report can be implemented through the following steps:

- Secure buy-in from important stakeholders in the region
- Appoint staff and provide resources for development of the intermediary
- Develop an organizational structure for the intermediary
- Canvass for in-kind resources
- Identify and pursue long term funding
- Plan initial projects for workforce intermediary:
 - Expand awareness of and information about training opportunities
 - Develop and promote a pre-manufacturing curriculum
 - Create incumbent worker training programs
 - Build manufacturing career ladder
 - Increase funding for employee tuition reimbursement program

The development of a regional workforce development strategy is one of the most important steps towards creating a strong economic development strategy that has not yet been well covered. Successfully implementing this plan will not only bolster the whole region's economic success, but will especially serve to maintain the existing manufacturing industrial base as well as attracting new emerging manufacturing industries and other growing industries into the region.

INTRODUCTION

The North Central Massachusetts Economic Development Council is in the process of further strengthening the region's economic development strategies, and in the spring of 2008 the Council and some of its partners began a relationship with the graduate City Planning program at MIT. Students from the MIT program partnered with the Council to perform a semester-long analysis of the existing economic conditions of the region, creating strategies through which to understand which economic systems might need the most immediate attention to contribute to the region's coordinated growth, and formalizing action items that the Council and its stakeholders could initiate as the basis for a regional economic strategy.

The analysis project evolved throughout the semester to eventually focus on the workforce development needs of the region and how and why workforce skills and education training should be one of the main drivers of the region's economic development strategy. The region can do much more in developing its workforce development strategy, and this report includes a more in-depth analysis of existing firm and industry needs, along with the needs of some emerging industries, as well as ways for the region to best organize a coordinated response to these needs.

The Council

The North Central Massachusetts Economic Development Council ("the Council") was formed in 2006 as a partnership between the North Central Massachusetts Development Corporation (NCMDC) and the community's two higher education institutions, Fitchburg State College and Mount Wachusett Community College. The Council is not a standalone organization, but operates as a policy-guiding council and shares staff within the NCMDC. Their stated mission is to "plan for and implement programs to create jobs and increase economic opportunity in the region."

The Council consists of over a hundred stakeholders, staff from each of the 26 cities and towns that the region encompasses, three mayors, economic development professionals, and more than sixty local business leaders. Key players in the region also include four Chambers of Commerce, the Montachusett Regional Planning Commission (MRPC), State Senator Bob Antonioni's office, and members of the Massachusetts Office of Business Development (MOBD). The Council is housed at the North Central Massachusetts Chamber of Commerce.

The Council, not yet two years old, is working to set an agenda and build a program of services. It is already very active as staff is working on branding and marketing the region's affordability and proximity to Boston and New York economies to firms and workers around the United States and the world. They are focused on marketing available commercial and industrial real estate, identifying priority infrastructure improvements, lending capital to businesses and entrepreneurs, hosting networking events and packaging economic development incentives to attract new firms to the area. They are researching a broad range of subjects, from minority business needs to broadband infrastructure, zoning across municipalities, sewer and water infrastructure to expanding the capacity of the Fitchburg airport.

Not only are they focused on the region's location and financial strengths, but they are also leveraging its industry strengths. The Council recognizes the importance of the manufacturing industry and its workforce to the region and has conducted research to better understand and

communicate the importance of the industry and its needs and issues. The Council is also engaging industry leaders to tackle problems relevant to certain sub-sectors (i.e. paper mills or plastics manufacturers), and doing educational outreach in the form of regular “Manufacturing Matters” seminars. Finally, the Council has also commissioned studies such as this one, which aims to expand their knowledge of workforce development needs in the region and options for strengthening their training system.

Study’s Overall Recommendation: Improve Regional Workforce Development

Workforce development is critical to building North Central Massachusetts’ competitive advantage, particularly in manufacturing. The region should invest strongly in its workforce so that it serves as an asset to retain existing industries and attract new ones, meeting the needs for a flexible and better-educated workforce. A strong manufacturing workforce allows the region to respond more proactively, rather than reactively, to larger economic forces.

It is also important that workforce development be a fully regionally coordinated effort. The workforce development training system that exists in the region right now is extensive but fragmented, and includes about a dozen institutions that offer workforce training, including educational institutions such as technical schools, second-chance training institutions, youth internship programs, CDCs, and hands-on training programs. Along with the two local colleges located within the region, there are two key research universities just outside the region that offer high quality technical degree programs and research capability.

Part of the Council’s challenge moving forward as an organization should be to build an identity for and bring economic development to the 26 towns across the region. Many city officials or firms in the more western towns of the region don’t consider themselves a well integrated part of this region yet. The Council must also work to create a unified regional identity recognized outside of the region. A stronger sense of regional identity and more effective program of services and coordination will help overcome real or perceived territorialism, reduce competition among communities to attract and maintain businesses, while attracting businesses to the region as a whole. The council should focus on convening stakeholders from across the region around workforce development and emphasize a mission addressing the entire region’s goals and needs.

PROCESS AND METHODOLOGY

Research for this report occurred in two phases:

Phase I

The first phase of research focused on compiling a profile of the region's existing economy, capacity, stakeholders, and potential for cooperation. In this first phase, the research team was divided into four groups:

- The **Economic Profile** group researched the region's population demographics, workforce characteristics and workforce participation rate, employment and unemployment statistics, and current regional employers and industry trends. One challenge in developing an economic development strategy for North Central Massachusetts is that there is no cohesive discrete data available for the exact geographic area represented by the Council and information must be pieced together from different sources. Most data in this study are drawn from one of the following approximations: Worcester County, the individual 26 cities and towns in the region, two workforce areas (though most of the region, as defined by the Council, overlaps with the North Central Workforce Area). The U.S. Census Bureau divides the area into two main New England City and Town Areas (NECTA): Leominster-Fitchburg-Gardner (LFG) and Athol-Orange (AO), but some parts of the region are covered by the Worcester NECTA.
- The **Regional Capacity** group engaged in interviews with representatives of local government and a wide variety of service providers in order to produce an assessment of the region's economic development capacity in terms of workforce development, business services, and infrastructure.
- The **Stakeholder Interviews** group performed interviews with a variety of the region's stakeholders in economic development, including business leaders, lenders, job placement specialists, a hospital, and Mount Wachusett Community College, in order to determine the current economic development efforts in the region as well as the unmet economic development wants and needs.
- The **Regional Cooperation** group examined the current status of and precedents for regional cooperation in North Central Massachusetts through interviews with key players in current efforts toward regional cooperation. These included staff from some of the region's local governing bodies, chambers of commerce, the regional planning commission, a state senator's office, and from the state's Office of Business Development. In addition, this group examined several case studies of successful regional cooperation throughout New England.

The results of the first phase of research indicated three overlapping areas in which to potentially focus future recommendations for regional economic development. These were:

- Workforce development
- Regional capacity, and
- Specific infrastructure investment initiatives

In each these focus areas, the research team identified several potential directions that the remainder of the study could take.

On April 3, 2008, members of the research team presented these findings and recommendations to representatives of the NCMEDC and other stakeholders from the region. Those present determined that the most valuable area of focus for the remainder of the study was workforce development.

Some of the highlighted benefits of strengthening the workforce development system were that it can better link residents to existing or growing industries, create mechanisms to ensure that training programs and educational curricula provide residents with skills that employers demand, harness the job creation at Devens into opportunities for local residents, and meet the needs of the employers with a more skilled workforce, which could raise wages and increase employment opportunities for local residents. Workforce training can also be a major component of targeting new industries to the region. Targeting workforce development may also address other needs throughout the region, such as a low level of educational attainment, an aging workforce population, and a decline in average wages.

Phase II

After consulting with the NCMEDC and other stakeholders from the region and determining the course for the remainder of the project duration, the research team then split into three focus groups. These groups each worked on procuring information and preliminary recommendations for different aspects of workforce development:

- **Workforce needs of existing industries:** This focus group conducted 29 interviews with existing industry leaders, business owners and stakeholders to determine the workforce development needs and desires of existing industries and incumbent workers.
- **Workforce needs of emerging industries:** This focus group utilized existing economic data as well as interviews with industry leaders to determine specific emerging industries in the region. The industries identified included the biotechnology, medical device manufacturing, alternative/sustainable energies, and health care and social services industries. The group also examined the workforce development needs of each of these emerging industries.
- **Workforce development capacity:** This focus group researched existing workforce development resources in the region and service gaps in workforce development provision, with particular attention to the workforce development needs of manufacturing sector industries

The results of the second research phase were presented to the NCMEDC and other stakeholders from the region on May 5, 2008. Preliminary recommendations included:

- Establishing a regional workforce development intermediary;
- Developing information resources on regional workforce development options and career opportunities;
- Developing a manufacturing career ladder and related manufacturing curriculum;

- Developing incumbent worker training programs;
- Organizing industry-wide training initiatives around common workforce and training needs; and
- Increasing funding for workforce development activities, such as employee tuition reimbursement and general training.

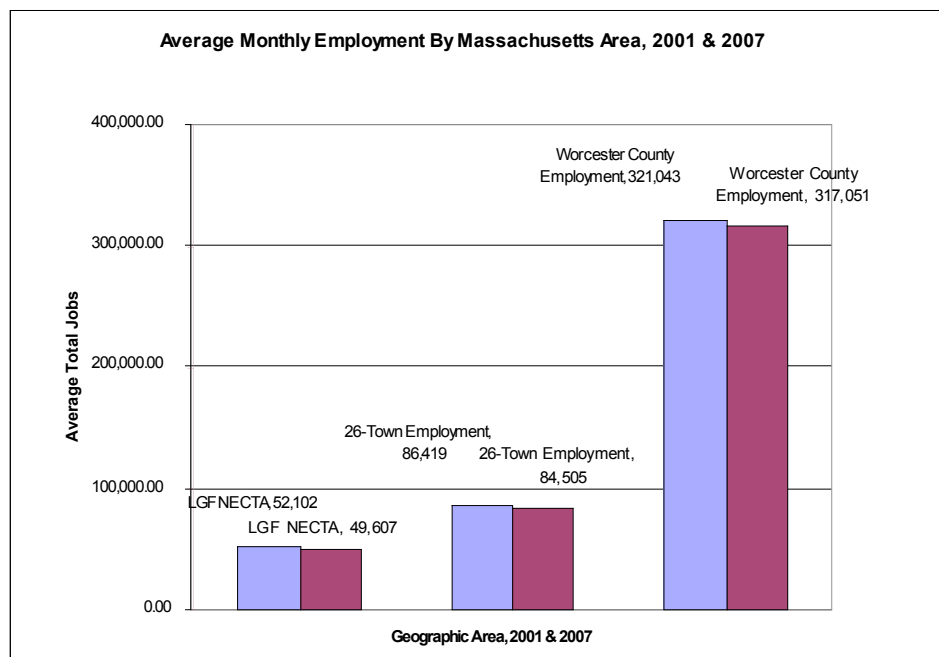
NORTH CENTRAL MASSACHUSETTS ECONOMIC PROFILE

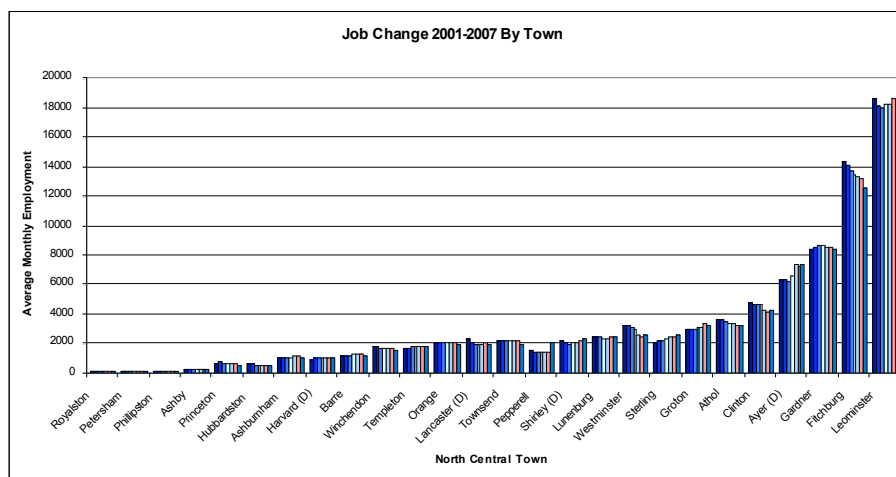
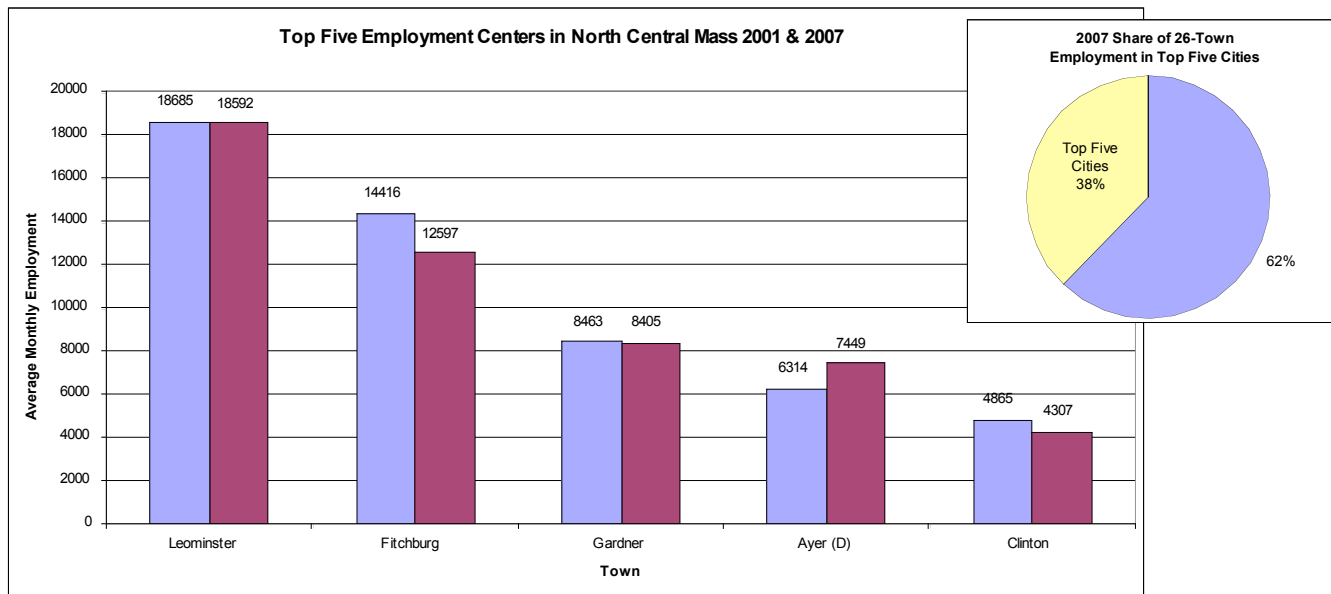
In our analysis of economic and demographic characteristics of the region, five trends stood out and helped frame this project. (A longer discussion of economic and demographic trends is included in the appendices) These five trends are:

1. General trend of job loss, in most of the region's 26 towns;
2. Uneven development of the region;
3. Overall decline in wages;
4. Low average educational attainment;
5. Decline in job losses in the manufacturing industry, specifically, although the industry still shows signs of being important to the region.

Overall Job Losses

Whether looking at the Leominster-Gardner-Fitchburg NECTA, the Worcester County area, or at each of the 26 towns in the region, all of these areas experienced a net job loss in the last six years, although in small proportions relative to their overall job base. Of the 26 towns within the region, more experienced job loss (16) than job gain (9). In addition, four of the five largest employment providing towns in the region, in which 4 out of every 10 jobs in the region are concentrated, experienced stagnant or declining employment. Figures below provide a snapshot for job numbers in the county, NECTA, the top five employment towns, as well as across the 26 towns.





Uneven Regional Development

As the differences in the job charts above show, the region's towns have not all gained or lost jobs at equal rates. This alludes to uneven trends in the overall growth and development of the region, as far less towns in the western half of the region are gaining jobs than compared to the eastern half. Though there are a greater number of towns in the eastern half of the region to build up its overall trends in comparison with the western half, the internal proportions of job growth in each half of the region also reflect this uneven development. In the western half of the

There are also more dramatic job growth rates in the eastern half of the region, with up to 40% in Ashby. The only two towns gaining jobs in the west, Templeton and Barre, did so at a rate of increase of 10% from 2001 – 2007. The higher growth rate trends in the eastern half might in part be attributable to the proximity to Routes 2 and 495, as well as to the redevelopment within Devens.

A bar chart titled "Percent Change in population by Town from 1980 to 2000". The vertical axis (y-axis) is labeled "Percent Change" and ranges from -0.4 to 0.5 in increments of 0.1. The horizontal axis (x-axis) is labeled "Town" and lists 26 towns. Each town has a corresponding red bar representing its percent change in population. The bars are ordered from left to right as they appear in the chart.

Town	Percent Change
Royalston	-0.33
Whitman	-0.20
Milford	-0.20
Worcester	-0.20
Wareham	-0.20
Andover	-0.20
Oxford	-0.20
Peterborough	-0.20
Gardner	-0.01
Templeton	0.09
Barre	0.10
Zionsville	-0.28
Westminster	-0.21
Lancaster (D)	-0.17
Hillsboro	-0.17
Canton	-0.12
Troyesand	-0.12
Ashburnham	-0.12
Lepinster	-0.01
Lunenburg	0.00
Shirley (D)	0.06
Gidson	0.11
Harvard (D)	0.12
Ayer (D)	0.18
Sterling	0.20
Pepperell	0.31
Ashby	0.42

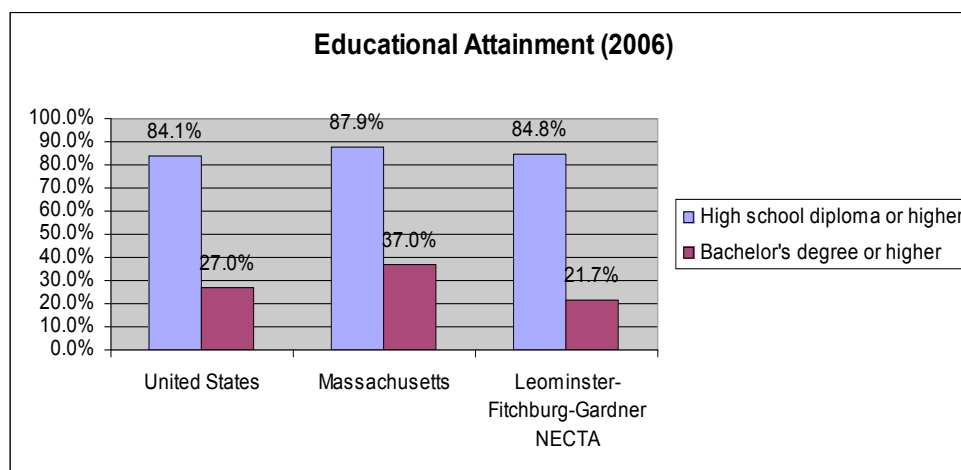
While wages have overall gone up in the local NECTAs, the county, state and Boston area, two of the three largest employment centers in the region have seen real wages decline significantly over the last six years, most dramatically in Fitchburg.² Even in Leominster, which has been experiencing job growth, wages are not increasing overall, which may be a trend consistent with the replacement of manufacturing sector jobs with lower paying retail jobs.

² ES-202

experienced the largest employment growth in the region, arts/entertainment, also pays one of the lowest wages in the area.

Low Levels of Educational Attainment

North Central Massachusetts' rate of high school graduates (84.8 percent) is similar to the state's percentages (87.9 percent) and the nationwide rate (84.1 percent).³ However, a significantly smaller share of residents (21.7 percent) hold a bachelor's degree compared with the state's rate (37%) and nationwide averages (27%). It is also important to highlight that the region's unemployment claimants are disproportionately high school graduates, with nearly 50% of all claimants being high school graduates.⁴



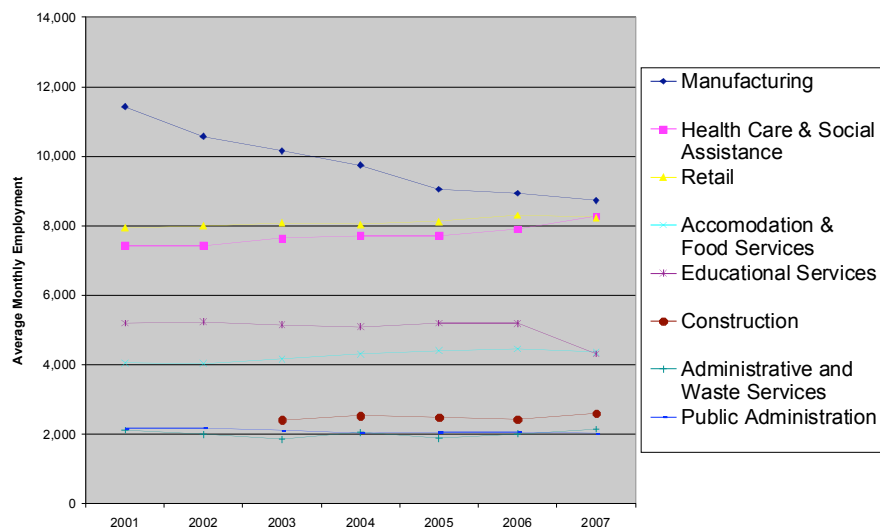
Continued Importance of Manufacturing in Region, Despite Job and Firm Loss

Manufacturing's importance within the region has always been evident, but its role and identity has been changing over the past decade. While the Leominster-Fitchburg-Gardner NECTA lost about 2,500 jobs (20% of its manufacturing base) from 2001 to 2006 there are still 276 manufacturing firms in the LFG NECTA, and manufacturers are consistently among the largest employers in the region, aside from the hospitals and educational institutions.

³ Data on the educational attainment of North Central Massachusetts come from Leominster-Fitchburg-Gardner New England City and Town Areas (NECTA) in 2006.

⁴ US Bureau of Labor Statistics Department of Workforce Development Profile of Unemployment Claimants 2006.

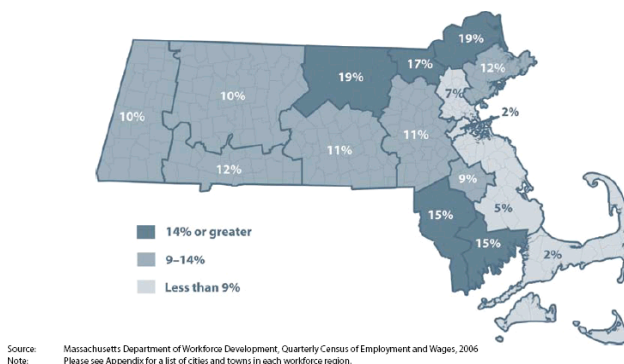
LFG NECTA Job Change by Eight Largest Employing Industries, 2001 – 2007 (ES-202)



Manufacturing is also still the fourth largest sector in the Commonwealth overall, only behind healthcare, education and retail, and accounted for ten percent of the state's revenues. The manufacturing sector is also linked to Massachusetts' other major sectors, such as its knowledge and innovation economies and its emerging clean energy economy, and thus will continue to have an important state and regional economic role.

North Central Massachusetts has about 19% of its employment in the manufacturing sector (15,480 jobs), tied with the Lower Merrimack Valley region (25,000 jobs) for the highest percentage of its regional employment in manufacturing in Massachusetts.⁵ However, the most manufacturing jobs overall in the state are in the Metro South/West area (almost 59,000 jobs).⁶

Concentration of Manufacturing by Massachusetts Region (Source: Commonwealth Corporation)



⁵Ibid. p. 8.

⁶Ibid., 33.

Despite the continued importance of the manufacturing industry for the region, the reality is that job and firm losses in the manufacturing sector, a long and well known trend in the region, have remained pronounced in the last few years. North Central Massachusetts firms are continually instituting layoffs and other firms are overwhelmed with applicants who have lost their jobs. In the past six years the NECTA has had total manufacturing jobs decreased by 25%. There was a 30% decline in durable goods manufacturing, though this has slowed in the last few years. Non-durable manufacturing has not declined as dramatically, as the area lost 55 manufacturing firms (a 17% decline) between 2001 and 2007.

The Commonwealth as a whole has also lost a dramatic number of its manufacturing jobs since 1990, totaling a loss of almost 200,000 jobs.⁷ However, according to the Massachusetts Department of Workforce Development's Quarterly Census of Employment and Wages statistics, North Central Massachusetts' losses weren't as severe as in other parts of the Commonwealth, as the region lost 16% of their manufacturing jobs from 2000 to 2006 (about 3,000 jobs) where as other regions in the state have lost more. The Boston region has seen a loss of 37% of its manufacturing jobs, while the Lower Merrimack lost 28%.

Manufacturing job losses have been slowing down, as losses of around 25% of the jobs from 2001 to 2006 are now at about 4% over the last few years, and are projected to continue at a rate of only 3% over the next five years.⁸

Specific Manufacturing Sub-sectors

Across the LFG NECTA, durable and non durable goods manufacturing fell at largely the same rate, but durable goods manufacturing continues to represent a slightly larger share of the industry's market. The sub-sectors that saw increases in jobs were pulp, paper and paperboard mills, machinery manufacturing, textiles, chemical, electrical equipment and components, medical equipment and supply, wood, and machine shops and threaded products. Those that lost the most jobs are also some of the region's largest and most important sub-sectors, shown below:

Plastics Product Manufacturing	-597
Other Nonferrous Metal Production	-466
Metalworking Machinery Manufacturing	-431
Converted Paper Product Manufacturing	-419
Chemical Manufacturing	-398
Computer and Electronic Product Mfg	-375
Machinery Manufacturing	-311

Largest Employment Centers

Leominster, the largest of the region's five largest employment centers, lost a third of its manufacturing jobs in six years, but still holds about 3,500 jobs in combined sub-sectors. Fitchburg's manufacturing base also lost about 25% of its jobs, mostly in non-durable manufacturing, but has held on to its about 1,900 manufacturing jobs since 2003. In Gardner, overall manufacturing held steady at about 1,500 jobs, though durable manufacturing declined by

⁷ Ibid., 26.

⁸ Ibid., 28.

almost 30%, and non-durable manufacturing actually increased by about 50%. Ayer is the only large employment center with a net job increase and one of two with average wage increase. Ayer had an increase in manufacturing jobs of about 2,250, as manufacturing is by far Ayer's largest employment sector. It was the only town in which manufacturing increased overall, which can likely be explained by the industrial development at Devens. Finally, Clinton currently has about 1,500 manufacturing jobs. Wages in Clinton have tended to be higher in general, likely owing to the presence of the Nypro firm. Clinton lost about a third of its manufacturing jobs, nearly 700 jobs overall, in the last six years, most of them in durable goods. Non-durable goods, which make up a larger proportion of Clinton's manufacturing, also appeared to have a slight increase in jobs in the last year. Manufacturing is also the largest employment sector in Clinton. It is second to health care & social assistance in Fitchburg and Gardner and second to transportation and warehousing in Leominster.

Devens

In North Central Massachusetts, manufacturing has driven the growth of the 4,000-acre Devens Community (formerly Fort Devens Army Base) in the eastern part of the region. A mixed use development, Devens has brought new jobs and industry to the region, and has attracted companies based on affordable per square foot warehousing and plant costs, expedited permitting, strong transportation infrastructure (Route 2 and a heavy freight rail network) as well as close proximity to Boston.

Devens' company directory includes no fewer than thirty manufacturing firms and warehouses, including American Superconductor, Bristol-Myers Squibb, Gillette and Evergreen Solar, and this number is growing.⁹ Devens often serves as the first point of entry for external businesses considering the region. Devens has not yet fully recovered half the jobs lost as a result of the base's redevelopment, though it expects to have close to 5,000 employees within five years.¹⁰ If it adds this projected number of jobs within 5 years, Devens will have more jobs than the city of Clinton. Some stakeholders note that Devens' success has been isolated, and has even come at the expense of growth in other parts of the region. Most agree that there has been a lack of spillover from Devens' development and that the region is not doing enough to capitalize on the advantages of the development at Devens. However, Devens' expedited permitting and strong marketing and branding give the rest of the region a model for business attraction.

Wages and Skill Levels

Manufacturing jobs are high-paying; they accounted for 33% of all earnings in the region,¹¹ while only representing 18% of the jobs in the NECTA. Across the Commonwealth, average yearly manufacturing earnings are 25% higher than the state average.¹² Workers in manufacturing generally make more than the average worker with a similar level of education. In addition, having more education increases earnings within the industry. A high school degree and an associate's degree are each worth an increase of \$7,000 in yearly earnings. Those with a bachelor's degree earned another \$13,000 on average. Most engineering (86%) or management (77%) jobs in manufacturing have college education requirements.

⁹ www.devenscommunity.com

¹⁰ Mass Development Internal Data and ES-202. We had difficulty measuring data for jobs at Devens, though assumed that the increase in jobs in Ayer and Shirley could be partially attributed to Devens.

¹¹ North Central Massachusetts Economic Development Council: 2007. "North Central Massachusetts: A regional snapshot."

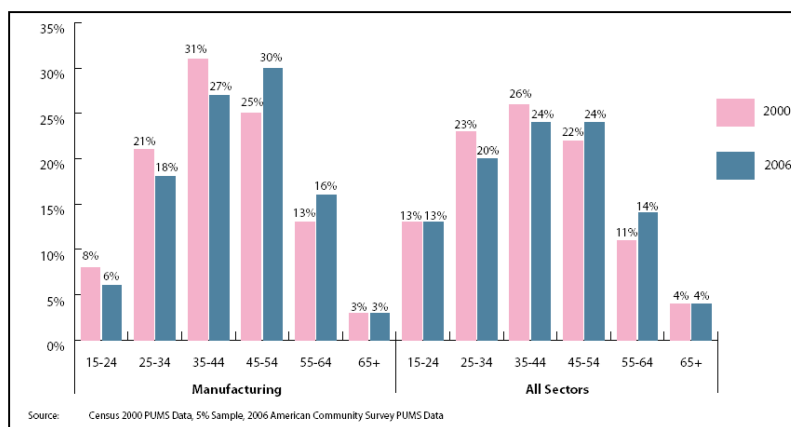
¹² *Ibid.*, 9-10.

Although ninety-five percent of production jobs require no educational credentials, and only require experience and on the job training, these low skill level jobs are the ones most rapidly disappearing through the industry's job loss. Production workers account for 48% of employment across all sub-sectors within the North Central Massachusetts region, but this average tends to be as high as 74% in sub-sectors that are strong in the region, like paper and plastics production.¹³ The production skill level category, still the largest occupational category in the industry, lost 54,000 jobs in Massachusetts from 2001 to 2006.

It can already be noticed, when assessing trends across the Commonwealth, that manufacturing is beginning to employ fewer and more productive workers, have more high school diploma level workers, more associate's and bachelor's degree level workers, and overall better paid positions than compared to previous generations.¹⁴ The Commonwealth Corporation's recent research identified over 5,000 vacancies in the manufacturing sector across Massachusetts, with most being professional and management jobs, but some are also in production.¹⁵ It is clear that the manufacturing workforce of the next generation will have to be more educated and highly skilled.

Finally, another trend that has implications for the region's workforce training strategy is the sector's aging workforce (50% of the workforce was over the age of 45 in 2006).¹⁶ North Central Massachusetts and other regions must rapidly undertake training the next generation of workers for the new and changing industry.

Age Distribution of Manufacturing and Total Workforce, 2000 and 2006
(Source: Commonwealth Corporation)



¹³ Ibid., 36.

¹⁴ Commonwealth Corporation: April 2008. Massachusetts Manufacturing Chartbook. Boston, MA: Executive Office of Labor and Workforce Development. See www.commcop.org/publications/

¹⁵ Ibid., p. 6.

¹⁶ Ibid., p. 31.

REGIONAL WORKFORCE NEEDS

In addition to its strong manufacturing base, the North Central Massachusetts region also has the potential to grow several strong emerging industries. These key industries offer promising new growth opportunities for the region in its strategic planning for future economic growth. In identifying workforce needs, it is important to first focus on the existing manufacturing sector.

EXISTING MANUFACTURING FIRMS

Determining Workforce Needs: Methodology

We conducted thirty-one interviews to identify training needs for new hires and incumbent workers, gaps in workforce development in the region, workforce development barriers faced by employers and employees, and the use of local employment training systems. These interviews covered a cross-section of manufacturers in the region. Senior managers at companies located in Fitchburg, Gardner, and Leominster comprised most of the interviews, but interviews were also conducted with senior managers in companies located in Athol, Orange, Sterling, Clinton, and Devens. The firms came from the following sub-sectors: machine components, biomedical plastics, plastic containers, injection molding, silicon molding, fiber optics, precision tools, medical devices, custom metals, paper/printing, pharmaceuticals, furniture, defense technologies, and performance chemicals. Most of the companies had between 0 and 49 employees or between 50 and 99 employees; however, a handful of larger firms with over 100 employees were also interviewed. Even though the companies are different sizes and manufacture products in various sub-sectors, senior managers identified many common training needs and challenges, which are outlined here.

Training needs for new hires

According to many interviewees, new hires often lack the basic skills required for manufacturing production work such as basic science education and interpersonal communication skills. This is the case even though most employers require at least a GED or high school diploma. For lower-level positions, many employers prefer no additional education beyond high school. When hiring production workers, most employers look for stability, work ethic, and flexibility. Many companies hire temp-to-permanent workers and are less likely to hire straight out of a training program. For machine-specific training, companies prefer to hire based on stable work history and then provide in-house training for more specific skills. Interviewees identified the following common training needs for new hires:

- machinist skills;
- basic computer skills, basic science, basic mathematics and logic, reading, and writing; and
- interpersonal communication skills.

Training needs for incumbent workers

According to employers, incumbent workers have a range of training needs. Most of the production workers are trained by equipment suppliers or experienced mechanics within the company when new equipment arrives. Much of the training for incumbent workers is very industry-specific and completed in-house (e.g. die cutter training, photonics-based applications,

precision device assembly, and peptide production). In addition, many companies send supervisors out of the region for management training courses and train-the-trainer programs. Very few companies provide tuition reimbursement for employees. Interviewees identified the following common training needs for incumbent workers:

- lean manufacturing, efficiency, and quality control training programs;
- computer software training;
- ESL classes;
- management, sales and marketing, strategic planning skills; and
- safety and process training such as high voltage and enclosed spaces.

Workforce development gaps

In general, workforce training is fragmented within the region. Most companies train workers in-house, and the training is very sub-sector specific. Older, experienced workers tend to lack computer skills, while older, unemployed individuals lack basic career development skills such as resume writing and interviewing. Four major gaps arose in the interviews.

- A disconnect exists between companies and local training institutions. For example, many employers said that they would like to work with Mount Wachusett Community College (MWCC) more but have not contacted the school and find it difficult to determine the course offerings.
- There is a lack of public funding available for tuition reimbursement.
- Companies have not had success working with high schools to promote manufacturing and trade courses.
- There is a lack of technical manufacturing training at local community colleges, but there are strong management and office skills trainings.

Barriers faced by employers and employees

All of the barriers identified in the interviews related to a lack of time or money. First, many smaller companies do not know which type of training they need and do not have the time or capacity to assess this. Second, many employers stated that the paperwork for workforce development training grants is complicated and time consuming. Third, employees do not use the local training system because of course fees, the time commitments required, and scheduling difficulties.

Use of the local workforce training system

Occasionally, companies use local community colleges for computer training or they utilize private trainers, such as Change Dynamics, Inc. In addition, a few managers said that they have hired recent graduates from MWCC, but many employers feel that local college graduates are overqualified for production positions.

Senior managers reported a number of positive attributes in the local workforce training system. First, training by suppliers for new equipment has generally been successful. Community colleges and training institutions do not have enough money to buy and maintain the latest equipment, so in-house trainings have become adequate alternatives to meet most of these needs. Second, WIB and MWCC staff members have helped to facilitate the Workforce Investment

Grant application processes. Many employers said that they would not have received the grants without technical help from WIB and MWCC staff. As a result of this support, many companies have applied for and received State Workforce Investment Grants. Most companies have used these grants to implement ambitious lean manufacturing programs. Third, companies have been happy with WIB and MWCC training and are thankful that stable funding sources exist to subsidize the cost of the trainings. Fourth, lean manufacturing programs, when used, have successfully transformed local manufacturers into global competitors. Many companies could not afford to implement these programs without valuable public funding and support.

EMERGING INDUSTRIES & THEIR WORKFORCE DEVELOPMENT NEEDS

In addition to growing the existing manufacturing sector, four key emerging industries were identified by the research team which carry economic development potential for the North Central Massachusetts region. These include: biotechnology, medical device manufacturing, alternative and renewable energy, and health care and social assistance.

Identifying Emerging Industries: Methodology

The following industries have been identified as “emerging” through examination of several secondary sources of data and interviews with industry leaders and experts in Massachusetts and the region. This includes analysis of industry sector trends at the levels of the nation, state, Boston area, and North Central Massachusetts region using publicly-available data.

Considerations when looking at industry trends include average employment, growth rate in employment, job vacancy rate, etc. Analysis of new or upcoming funding sources, programs, and services also provides insight about emerging industries in the region. In addition, these emerging industries align well with the existing regional workforce capacity and potential. This report also identifies gaps in workforce development that would need to be addressed in order to prepare the region to fully capitalize on and benefit from the identified emerging industries. The following presents a summary of these four emerging industries, how and why they were identified as “emerging,” and the particular workforce needs of each.

Biotechnology

Why an Emerging Industry?

Biotechnology is a growing industry in Massachusetts from which the North Central Massachusetts region can benefit. This industry has seen 25.6% growth in jobs since 2001 in Massachusetts, a rate that is more than double the national rate of job growth for this industry. 7.27% of the global drug pipeline is in Massachusetts. Furthermore, Massachusetts biotechnology has the highest venture capital and National Institute of Health funding of any state in the U.S. Governor Deval Patrick passed the Massachusetts Life Science Fund in 2007, which provides \$1 billion to the biotech industry, and there are many other related sources of funding (i.e.: Emerging Technologies Fund, Job Creation Incentive Payment, Cooperative Research Solicitation, New Faculty/New Investigators, R&D Tax Credits/Exemptions). There are also many support and advocacy organizations such as the Massachusetts Biotech Council, Massachusetts Technology Collaborative, and BioSpace.

Comparative Advantage: Bio-Manufacturing Workforce

It is important to note that 69.5% (289 firms) of the biotechnology industry is located outside of the Cambridge/Boston core (127 firms) according to the Massachusetts Biotech Council. Additionally, while most jobs in the core areas of this industry are open to individuals with a Bachelor's degree or higher, about 60% of the positions in bio-manufacturing only require high school or an Associate's degree. Of 75 biotech companies surveyed by the University of Massachusetts Donahue Institute, over 25 of them engage in manufacturing (small or large batch). The North Central Massachusetts region must continue to tap into this bio-manufacturing niche, where it has a competitive advantage due to its workforce and infrastructure. Tapping into the bio-manufacturing sector may present a first-mover advantage for the region. It will also help to provide a workforce development career ladder as a result of new opportunities for professional development and career advancement within biotech firms.

Devens and Smaller Biotech Clusters

One way that the region has begun to support this growing industry is by bringing Bristol-Myers Squibb to Devens, which hopes to employ 350 people in bio-manufacturing and drug production in 2011. In addition to the opportunities that Devens provides for large bio-manufacturing firms (such as a lot of space, security including facilities that can be monitored, access to resources such as water, and large-scale processing facilities), it also offers these firms access to strong manufacturing work force in the North Central Massachusetts region.

There are also small growing biotech clusters in Northern Middlesex County/Western Essex County (including firms in nearby in Andover, Lowell, Wilmington, Lexington, etc), and in and around the City of Worcester. North Central residents can prepare to support these growing clusters through their workforce development initiatives and accessible transportation. According to reports, there are over 50 small-mid size biotech companies exist in Central Massachusetts and they range in size (with the largest at 650 employees) and have over 3,200 employees combined. Any of these nearby firms might seek out employees from the North Central region. By supporting workforce development geared toward bio-manufacturing and biotech research and development, the region can pool its resources to be able to tap into these contracting firms.

Workforce Development Needs

While many of the manufacturing skills currently taught in the region are easily translated to the biotech sector, this transition requires some specific training for each individual firm's workforce needs. For instance, some of the bio-manufacturing skills might include: line workers who can do very sterile and clean work, highly organized assemblers, processors, chemical manufacturing, technicians who can calibrate and implement instruments, complex equipment operators for purifying drugs, computer support specialists, mechanical engineering technicians, and more. Large companies such as Bristol-Myers Squibb, Lonza in Hopkinton, Shire Pharmaceuticals in Lexington, and Abbott Bioresearch Center in Worcester have the potential to grow their own in-house bio-manufacturing trainings in conjunction with existing educational institutions.

Partnerships for Training

By partnering with MWCC and a local high school, Bristol-Myers Squibb is one example of a successful large bio-manufacturing firm which is utilizing the existing manufacturing workforce

and training employees for its specific needs. This partnership will prepare workers at least six months before beginning on the job. The program will include the following types of workers: technicians to calibrate and maintain instruments, microbiologists to oversee production environment, chemical and manufacturing engineers to manage the process, and operators to produce and purify drugs. A building at Devens will serve as the classroom training center.

Worcester Polytechnic Institute (WPI) has a five-week training program that includes hands-on laboratory training called “Fundamentals of Biotech Manufacturing”. It is taught by local biotech practitioners and professors using existing facilities at the WPI Bioprocessing Center. This program trains students to become manufacturing operators, while also connecting them with biotech firms’ hiring managers, and it has resulted in 90% work placement soon after completion of the program. It was originally created by four major biotech firms in conjunction with WPI to train displaced Polaroid workers. Some other nearby institutions have become involved in preparing students and employees for the biotech industry, including Middlesex Community College’s Biotechnology Technician and Associate’s Degree programs, UMass Medical School, and Framingham State.

Workforce Development Training

In addition to the effort to enhance manufacturing curricula to meet biotech needs, there are numerous ways that individuals can best prepare for careers in biotech. For instance, there are many opportunities in these growing firms in the functional areas of administration, research, management, legal and regulatory functions, marketing, and sales. Primarily, however, high schools should note that many biotech firms see a need to improve the pipeline of science, technology, engineering, and math (STEM) workers. STEM programs for younger students should promote biotech and pharmaceuticals as exciting and rewarding fields with opportunities for career advancement.

Life sciences companies in Massachusetts have generally been disappointed with the level of preparation their employees have received from two-year colleges or workforce training and corporate education programs. Some ways that programs can increase their success is through cross-disciplinary studies, internship and cooperative education programs, active problem solving and team learning, independent research and development of technical skills, quantitative reasoning using computers to analyze data, encouraging entrepreneurship, supporting the transition from one education level to the next, supporting incumbent worker trainings, and close alignment to the workforce needs of employers.

Medical Device Manufacturing

Why an Emerging Industry?

The medical device manufacturing industry shares many similarities in its characteristics and growth trends with the biotechnology industry, but it is a specific niche on which this section of the report will focus. Overall, the industry is 2.7 times as concentrated within Massachusetts as it is in the nation. The industry also shows signs of being more productive per worker hour than other types of manufacturing industries within the state, with each worker hour producing about \$129 of value versus the \$115 of other manufacturing types. Finally, the emerging strength of the

industry within the state is also evident by noting that its exports represented \$1 of every \$10 of total exports from Massachusetts in 2006.

Heavily Linked Industry within the State

The medical device manufacturing industry has strong linkages with the state's other industries, and many future linkages can be reinforced to give the industry a stronger role in driving the region's economic growth. This industry's primary customer is the vertical industry itself, as most manufacturers are developing medical device *components* to be used in a final medical device product. In addition to this solid internal linkage between medical device manufacturing firms, there is also a strong linkage between these firms and the manufacturers of electronic materials and high precision materials.

The industry also draws from having many firms nearby, with 22% of raw materials coming from in-state. This preference helps ensure that strong relationships between device manufacturers and their component providers can be formed, which enhances trust in the quality of products amongst producers. This ability to understand and control quality is especially important in the production of prototypes, which is an important part of the medical device industry as a whole.

Finally, the geographic distribution of firms throughout the state means that many of them are concentrated in the Boston and Merrimack Valley regions. Thus, the proximity of the North Central region should provide strong opportunities for spillover growth to easily establish itself within the region.

Increasing Need for Medical Devices

The demand for medical device products will likely grow over the next few decades for a number of reasons. The increasing population of retirees as a result of the Baby Boom population in the US is increasing demand for medical treatments. In addition, the medical industry is increasingly focused on improving individuals' quality of life by incorporating the use of complex technological medical devices into its practices. The pharmaceutical industry has also been creating treatment procedures that depend upon medical devices for the delivery of certain medicines to patients.

Workforce Development Needs

The medical device industry shares similarities with some of the region's other emerging industries in that it has a strong need for workers with higher degrees education. This need for higher education training is based on the fact that the proportion of non-production manufacturing jobs within the industry is 51.6%, compared with 38.4% in traditional manufacturing industries. Within the industry 57% have some college education, 9% have associates degree training, 18% have bachelors degree training, and 12% have a different professional degree. These statistics create the basis for understanding that an emphasis on increasing the levels of education in the region is necessary to increase the local population's ability to work within this emerging industry.

However, the skills of the production-based workers within the industry are also an important focus for the region. The skill base for production work within the medical device manufacturing

industry is similar to the skills for existing manufacturing industries. The electrical device and high precision materials manufacturing that exists employs production workers whose skills are comparable to those needed for medical device manufacturing. To adapt these skills to the medical device industry, workers will need the specific training relevant to the unique processes of medical device manufacturing. In addition, these sectors directly contribute to the medical device industry by serving as materials providers the industry.

Workforce Development Training

The region has some existing workforce development training resources focused specifically on the medical device industry, and these programs can be enhanced. Nearby WPI has certificate-based training programs for management and leadership roles within the industry (i.e.: Medical Device Management Certificate Program, Medical Device Emerging Leader Certificate Program).

The state has been investing funds towards increasing the development of high skilled workforce training through the local research universities, including the UMass Polymer Science and Engineering Department and the UMass Medical Device Development Center (MD2C) at the Lowell and Worcester campuses. Along these lines, the region's higher education institutions should be at the center of a workforce development strategy because of this industry's reliance on high-skill managerial, sales, and administrative personnel.

The life sciences industry as a whole, which includes the medical device industry, has been active in working across the state to understand its own workforce development needs. One example of this collaborative work is the Life Science Talent Initiative, a focus group-based effort from the Massachusetts Life Sciences Center, which brought together a group of firms to discuss specific workforce needs. This report highlights the need to be able to select workers with existing specialized skills, increase the collaboration with career preparation services for high school and college programs, increase student internships, increase the industry's input in the development of education and workforce development curricula, and increase training for workers displaced from other industries.

Alternative and Renewable Energy

Why an Emerging Industry?

The clean energy industry will continue to experience significant growth in Massachusetts. Over the course of the next year, several state and federal policies will likely be established that will increase the already significant demand for renewable energy products and services. Most of the job growth in the clean energy sector will be in construction and manufacturing, industries with high levels of unemployment in the North Central region. In addition to an available skilled workforce, the region has one of the largest renewable energy businesses in the state as well as a community college aggressively pursuing expansion in this area. Statewide incentives as well as local capacity make renewable energy an attractive option for North Central Massachusetts investment.

Market Projections

The *Massachusetts Clean Energy Census*, a report commissioned by The Massachusetts Technology Collaborative (MTC) found that the clean energy sector supports 14,000 jobs, and is poised to overtake textiles as the 10th largest cluster in the state. MTC is the state's development agency for renewable energy and the innovation economy, and its leading authority on renewable energy. Following are some highlights from the report:

- Growth Rate: Surveyed executives expect 30% job growth in renewable energy firms and 25% for energy efficiency firms over the next year.
- Fastest Growing Sector: Renewable energy companies are the youngest and fastest growing firms.
- Largest Job Sector: Energy efficiency firms supply almost 6,300 jobs, or 44% of the total 14,400 jobs.
- Company Size: Massachusetts is an incubator for clean energy firms, with 68% of the firms operating below \$10 million in annual revenues, and 41% below \$1 million.
- The clean energy sector has seen a 15% compound growth rate in company formation since 1995.
- The sector will experience an average annual employee growth rate ranging from 11% for universities to 30% for renewable energy companies.
- 77 renewable energy companies were formed between January 2001 and March 2007.

In North Central Massachusetts, trends toward renewable energy are also emerging. For instance, MWCC has been aggressively “greening” its campus by installing energy efficient light bulbs and appliances and cool roofs, and developing a biomass energy generation plant, and in the near future a wind turbine.

Manufacturing Electricity Costs are Increasing

The statewide environment combined with local capacity makes renewable energy an attractive industry for the North Central region to pursue through its workforce development initiatives. North Central Massachusetts has very high electricity costs in a state with some of the most expensive electricity across the nation. Massachusetts receives the vast majority of its electricity generation from gas-fired plants, so rising oil prices will greatly affect the price of electricity. Investing in renewable energy resources to reduce the region's high electricity costs is essential for the vibrancy of the manufacturing industry. Some studies suggest that for every \$1 million dollar savings in electricity to the manufacturing industry, 25.6 jobs are produced. Given the statewide policy environment, job creation potential, and benefits to the manufacturing industry, the North Central region should continue to expand its investments in renewable energy.

Workforce Development Needs

MWCC is in the process of developing curriculum to train students in the skills pertaining to this work that will be responsible for a large part of the job growth in the renewable sector.

Manufacturing

The market for renewable energy generation is poised for substantial growth, and along with it the manufacturing industries that supply component parts. The North Central region can tap into

this growth by ensuring that its existing manufacturing workforce is ready to adapt to this industry. While many states are promoting development of wind-generated electricity, currently the industrial sector that produces wind turbine gearboxes is running at close to full capacity. An increase in demand for wind turbines would immediately produce a shortage of these parts. The Renewable Energy Policy Project states “all renewable technologies face a bottleneck in one or more critical components, and that for wind and photovoltaic components, new demand will greatly exceed available industrial capacity for more than 50% of industrial sectors.” The appendices of this report include a list of the main component parts for wind and solar technologies, and estimations regarding which Massachusetts’ counties are best positioned to take advantage of this opportunity.

Construction

The “weatherization” of buildings to increase their energy efficiency is developing into a major industry. Although the industry provides manufacturing opportunities in insulation, windows and other building materials, the primary source of job growth will be in construction. Building weatherization jobs are largely construction jobs. Both Boston and Cambridge have planned comprehensive weatherization programs for a significant percent of their respective building stock. Cambridge alone plans to weatherize 50% of its buildings, and with rising energy costs this trend will likely continue elsewhere. There is currently a lack of skilled labor that understands how to carry out this weatherization work, and therefore it provides a substantial opportunity for workforce development.

Health Care And Social Assistance

Why an Emerging Industry?

Massachusetts

Health Care and Social Assistance has remained the largest employment sector in Massachusetts for the years 2001-2007, and has grown in average monthly employment by 10% - or more than 40,000 jobs - in that time. In fact, Health Care and Social Assistance is the industry sector that has experienced the third-largest percent change in employment in Massachusetts since 2001 (after Mining and the Arts, which each employs a comparatively small number of people).

In the second quarter of 2007, the Health Care and Social Assistance industry had the greatest number of vacancies in Massachusetts (over 16,000 total). This implies that there are many openings across the state for opportunities in this field, while there may not be enough individuals with the skills to fill these jobs. As the overall population continues to age, there will be even more opportunities to work in this sector.

Boston

The Health Care and Social Assistance industry sector has remained the largest employer in the Boston area in the last decade, and has exhibited over 17% change in average monthly employment (over 15,000 jobs created) since 2001, which is the largest change of any industry. This industry is growing rapidly and the North Central region should continue to tap into this Boston area growth by training workers for these Health Care and Social Assistance opportunities. Moreover, in the second quarter of 2007 this industry exhibited the second-highest

job vacancy rate in Greater Boston (behind Accommodation & Food Service) and the greatest number of overall job vacancies.

NECTA

Within the Central Massachusetts NECTA, the Health Care and Social Assistance industry sector is also the largest employment sector, and exhibited the second-highest rate of growth in overall employment (behind to Arts and Entertainment, which employs a relatively small number of people). This industry also had the greatest number of job vacancies between 2001 and 2007, and the fourth-highest job vacancy rate in the second quarter of 2007.

Workforce Development Needs

Existing Workforce Development Capacity

Most of the current industries in the region in the Health Care and Social Assistance sector are located in Fitchburg and Leominster. This includes Health Alliance Hospital, one of the largest three employers in the region. In addition, several of the region's college and universities have degree programs relating to this sector. WPI has both graduate and undergraduate degrees in Health (i.e.: Medical, Dental, Psychology) and Biological sciences. MWCC offers an extensive list of Associate's Degrees and Certificate programs in Health and Biological sciences and professional programs such as Nursing, Physical Therapy, and Dental Hygiene. Some of these are offered at night and online as well as in standard, daytime programs. Finally, Fitchburg State College offers graduate Master of Science and undergraduate Bachelor of Science degrees in most standard Health and Science fields.

Higher levels of Education

Fifty-three percent of Health Care and Social Assistance job postings in Massachusetts require a bachelor's degree or higher. Therefore, one way to enhance this industry in the region would be to achieve better educational outcomes overall (since the region's rate of bachelor's degree attainment currently lags behind that of both Massachusetts and the US). In addition, most jobs in this sector require in-the-field training and internships, including working a certain number of hours required for certifications. As such, the development of this industry in the North Central region would greatly benefit from a regional workforce development intermediary to coordinate and broker long-term relationships between the industry and the educational institutions.

Common Workforce Needs for Emerging Industries

Upgrade Manufacturing and Construction Training Programs

It is important to note that there are currently several educational and workforce training programs related to these emerging industries that are located in or near North Central Massachusetts, but they are not well-coordinated amongst each other. Existing workforce development resources that could be bolstered or adapted to these emerging industries primarily include manufacturing – especially high-tech – and construction. For instance, workforce development needs for the renewable energy industry include manufacturing and construction training with a focus on these newer technologies. Moreover, construction and manufacturing are two industries that have seen a drop in job vacancies and industry sector employment rates since 2001, leaving many skilled and unskilled workers in these trades currently unemployed. Tapping

into new and emerging industries will help to revive job growth for individuals with these skill sets.

Science Programs and Increased Education Levels

For the most part, the success of these industries as emerging economic development forces for North Central Massachusetts is highly dependent on a strong math and life sciences curriculum at the high school and associate's degree levels. Components of each of these industries are also reliant on strong engineering and biological sciences programming at the college and graduate school levels. Stakeholders and industry leaders in several of the existing and emerging industries reported disappointment with the region's current educational outcomes in these subject areas. Given that many types of jobs in these industries require that employees have at least a bachelor's degree, improved educational outcomes for the region in general – given its lower bachelor's degree achievement rate when compared to both the US and Massachusetts – would improve these emerging industries' overall viability in the region.

Training Linked to Employer Needs

Companies also placed an emphasis on soft skills and management training as ways to advance along the career ladder. Furthermore, several stakeholders within each of these emerging industries indicated that they value workforce training that encompasses internships and hands-on, in-the-field experience. As such, high schools, colleges and universities should seek to partner with local firms in these emerging sectors to provide mutually-beneficial internship and mentorship opportunities for the emerging workforce. Brokering these types of educator-industry relationships may be best accomplished by the regional workforce development intermediary when it is established.

REGIONAL WORKFORCE CAPACITY

In addition to addressing the manufacturing and emerging industry workforce needs, we assessed the existing capacity in the region in regards to workforce development. This includes summarizing some of the major institutions, resources, centers, and programs that are involved in workforce development.

Summary of Regional Workforce Training Capacity

1. There is a lack of coordination amongst the local workforce training programs

Although a strong capacity for workforce training in the North Central Massachusetts region exists at the local level, current programs can benefit from greater funding, better design, and better coordination. While there are a number of organizations in the region that offer varying levels of workforce training, they lack a core set of objectives and strategies that target the manufacturing sector at the regional and state level. In addition, there is no single entity that manages the workforce needs on a regional level. The following is a list of local providers that offer workforce training funding and services along with an analysis of the gaps in their operation.

Existing workforce training providers

- **North Central Massachusetts Workforce Investment Board (WIB).** The WIB's focus has been on addressing the needs of individual employers, rather than adopting a manufacturing sector-wide strategy. The WIB distributes and manages a variety of workforce training funds, offers individual on-site consultations, and directs displaced workers to state-approved training programs. They serve 8,000-10,000 people each year.
- **Montachusett Opportunity Council (MOC).** The MOC's Career Opportunities program offers remedial education and courses designed to prepare people for office and healthcare careers. Though the program does not focus on specific manufacturing skill development, the ESL and remedial training classes remove barriers to entry in the manufacturing jobs. The MOC also addresses a holistic set of worker needs by offering a variety of social support services including Head Start childcare, home ownership classes and assistance, economic literacy classes, and youth programs.
- **Technical and Vocational High Schools.** Currently, there are two technical high schools in the North Central Massachusetts region, Montachusett Technical High School and Leominster Technical High School. Both schools offer a variety of training programs, though some programs are better funded and better coordinated with employer needs than others.

Training programs at Montachusett Technical High School	
Masonry	Welding/Metal fabrication
Industrial technology/plant maintenance	Cabinet making
Graphic communication	Auto body
Electrical	Automotive repair

Plumbing	Culinary
Electronics	Drafting
Office technology	Cosmetology
Information technology	Early child care
Carpentry	Dental assistance
Machine shop	

Training programs at Leominster Technical High School	
Health occupations	Auto collision
Auto technology	HVAC installation/maintenance
Plumbing/pipe fitting	Graphic arts
Carpentry	Electrical
Culinary	Computer automated drafting
Machine technology/manufacturing & robotics	Computer technology
Project lead the way (engineering)	

- **Community Colleges/Universities**

Fitchburg State College

Fitchburg State is an active workforce development entity that provides a variety of services to the North Central Massachusetts region. These include high-quality education and training programs for current and future employees as well as needs assessment services for businesses, industries, nonprofit organizations, schools, and government agencies. In addition to undergraduate and graduate degree programs, Fitchburg State offers a variety of continuing education certificate programs that have been designed to fit the needs of businesses and industries in the region. Certificates can later be used as credit toward higher degree programs.

One example is its collaboration with Nypro Plastics in Clinton. Fitchburg State offers eight courses leading to a certificate in plastics technology focusing in injection molding and plastic technology manufacturing. Classes are offered on site at Nypro to take advantage of the latest plastics technology equipment, but are open to both current employees and interested students.

The Business Administration Department at Fitchburg State College houses the North Central Economic Development Center where students and faculty offer management and marketing services to many local businesses and organizations. The center also offers important regional conferences and workshops for business and industry and publishes the North Central Business Journal. The Business and Economic Research Institute collects the latest economic data for the region and publishes a monthly economic report, a quarterly consumer index, and weekly bank rates. The Business Laboratories program allows students to assist firms in strategic and tactical planning including tracking

economic indicators, which many local economic development organizations such as the Gardner Chamber of Commerce have already benefited from.

Fitchburg State also provides professional development for the K-12 school system in 20 local districts. These include:

- Technology integration in the classroom
- Curriculum design and assessment
- Behavior management and teaching strategies

Current initiatives include:

- A collaboration with the Lowell public schools and Middlesex Community College, part of a 5-year, \$1.2 million grant from the U.S. Department of Education, to prepare a group of Lowell's para-professionals to be teachers.
- A joint effort, with the Massachusetts Department of Education, to recruit and prepare candidates for national certification. The central goal is to increase the number of board certified teachers in the state.
- Regional conferences for licensed teachers with follow-up for professional development points and graduate credit.

The Career Services Center at Fitchburg State:

- Offers job postings/recruitment for employers
- Sponsors job fair on campus and participates in career fairs sponsored by Massachusetts Educational Recruitment and Worcester Consortium coordinates with area Chamber of Commerce and Industrial Development Center
- Makes presentations at local high schools

Mount Wachusett Community College

MWCC offers a wide range of full and part-time degree, certificate, and professional development training for both credit and non-credit to meet the needs of students and employers by providing industry-specific skills. These include computer certification, corporate education and customized training, the Forest and Woods Products Institute among a wide range of professional development trainings and certificate programs with a strong focus in the healthcare industry.

Worcester Polytechnic Institute

WPI provides incumbent worker training mainly in the local bio-engineering and bio-manufacturing industries. WPI offers one and two non-credit workshops to help employees improve their existing skills. WPI also offers a manufacturing engineering certificate program, and a manufacturing engineering MS program. All programs include in-classroom and on-site instruction.

- **Independent/Private companies (Sample List)**

Employers Association of the Northeast

This group provides workforce development programs, namely certificate programs and workshops. Types of training include human resources management, supervisor training,

and legal training for incumbent workers. They also assist employers in writing grants for workforce training funds.

Biomedical Initiative

This initiative provides incubator space for start-up biomedical companies in the region and addresses workforce training needs that biomedical companies face. It currently offers 27 lab spaces and 19 companies are occupying incubation spaces. They also offer resource referrals for these start-up companies, shared equipment, and employer-employee referrals.

The Career Point One Stop Center

This center offers free resume writing, interview skills, computer skills, and career exploration workshops for unemployed, underemployed, and dislocated workers. The customers can then qualify for further training at local colleges and eligibility for these and other advanced programs is determined by WIA criteria. The center also provides job search assistance with a focus in the precision manufacturing industry. Employers will leave applications with the center and ask them to do initial screenings of potential employees. Lastly, the center offers job fairs by industry, for individual companies, and for different constituencies.

2. Funding is limited and narrowly targeted

In FY 2007 NCM received over \$9 million in federal and state funds for workforce development, which accounts for 4% of the \$239 million distributed statewide. Half of the region's funding was for transitional workforce programs, 20% of funding went to training for incumbent workers, and another 20% went to training for emerging workers. The remaining 10% of workforce training funds was used for adult basic education/English language programs (ABE/ESOL).

One of the largest barriers to developing a coordinated funding strategy is that there are at least 30 workforce training funding programs, many of which can only be used to serve specific populations. Each of these funds also comes with its own eligibility requirements, performance measures, and reporting requirements. For example, of the 18 funding sources used for transitional workforce training, there are specific sources that can only be used for seniors, public housing residents, low-income residents, youth, blind trainees, or dislocated workers. Moreover, federal and state funds are very prescriptive and designed to react to problems and do not currently function in a framework designed for proactive workforce development. A more detailed profile of workforce training funds and uses can be found in the appendices.

Takeaways

Based on the above discussed gaps and inconsistencies in the current workforce training system within the region, more coordination is needed between providers, employers, and educational institutions. While there are informal communication networks in the region through which the key workforce training providers and funders currently coordinate, and many providers serve on multiple overlapping boards, there is a need for more formalized and strategic coordination efforts between current providers to promote sustained collaboration.

In addition, more staff time needs to be dedicated to program assessment and coordination in order to conduct accurate assessment of training needs, design appropriate training programs, and to coordinate training efforts. Many providers have outdated needs assessment measures and are basing their current programs on outdated assessment studies, which leads to false starts and decreased effectiveness.

In order for a regional collaboration effort to be successful, comprehensive updated regional data on workforce training needs must be gathered and analyzed. Data on employer needs, skills gaps, emerging industries, and other data used for strategic needs assessment have yet to be aggregated and analyzed, making it difficult for an effective regional strategy to be formed.

Also, there is a lack of supply of training opportunities. There are fewer seats in the region's technical high schools than are currently demanded. Montachusett Technical High School had 652 applications for 350 openings last year. Leominster Technical High School had 230 freshmen who applied for 150 open sophomore slots. While not all students advance to their sophomore year, the school indicated they could benefit from at least 50 more spots for students. As the need for manufacturing jobs increases, workforce development programs at all levels must have the capacity to accommodate increased enrollment.

In addition to staff time, more supply, and updated data, the training programs need to take place at more convenient times and locations. Many people cannot take time out of work to attend additional trainings, especially when the trainings are far from their residence or when there are no stipends provided for compensation. For example, the Commonwealth Corporation would prefer employers who provide incumbent worker training to do it on company time, but often company time is not set aside for these trainings, so trainings either do not occur at all or occur at the expense of employees. In addition, wage support and/or stipends for employees who must reduce their work hours to attend trainings are rare and this is a result of inadequate workforce training funds for employees who want to gain skills for higher-skilled jobs (engineering, etc.).

It is important to note that many companies have common training needs, such as literacy, Math skills, and English proficiency. Employers have also noted that there are universal manufacturing skills that may be integrated into a core training curriculum in order to create a more in-demand and competent workforce. Also, there is an increasing demand for higher-skilled workers in emerging industries that is not currently being met by the existing workforce in North Central Massachusetts.

WORKFORCE DEVELOPMENT BEST PRACTICES AND CASE STUDIES

Many organizations throughout the state and nation have created workforce development systems for areas that faced the same issues North Central Massachusetts is facing with its current workforce development trends. Below are examples of some model case studies that can be instructive. They all use unique tactics and partnerships to deal with their unique context's characteristics, but a shared set of best practices is noticeable amongst the different case studies. Here are a few summary points of those best practices for workforce development:

- **Workforce Intermediaries**
 - Create partnerships and improve communication between educational institutions, social service agencies, labor institutions, the business community, and government
 - Serve to identify workforce development needs among various stakeholders, and coordinate funding around common goals
- **Remedial training to help bridge skills gaps**
 - Focus on incumbent workers' skill needs and increase workers' career mobility
 - Understand special needs and gain the trust of firms and industries
- **Educate young people on potential career paths**
 - Explore innovative approaches and solutions
 - Expand economic opportunity for workers and job-seekers
- **Create education sector that directly supports employers' skill needs**
 - Identify gaps in workforce and determine how higher education can respond with appropriate educational programs
 - Provide skills and training needed for competitiveness and career advancement
- **Increased/Alternative Workforce Development Financing**
 - Inventory existing regional funding sources, and reassess program priorities based on updated regional needs assessment
 - Explore alternative financing options and/or reconfigure existing funding

Workforce Development Model Case Studies

Regional Models

- **WIB: FasTrack Career Center** - The dislocated worker orientation at the career center is recognized as a state best practice. The program is organized so that people can go through all of the basic workshops in 3-4 weeks.
- The state's **Mathematics, Science, Technology and Engineering Grant Fund** (STEM Pipeline Fund) seeks to increase student and qualified teacher participation in programs that support careers in science, technology, engineering and mathematics, and to improve these subject offerings in public and private schools. STEM recently called for proposals for grants of up to \$350,000 to fund regional PreK-16 Networks. These are collaborations among public and private PreK-12, public and independent higher education, business

and industry, not-for-profit organizations, regional competitiveness councils, and workforce investment boards. The fund, created in 2003, was recapitalized this year for an additional \$4 million.

Statewide Models

- **Regional Employment Board of Hampden County (Hampden County WIB) -** The Hampden County WIB's model is derived from the idea that working partnerships are the most critical elements in determining the success for a workforce training strategy. They use this coordinated strategy in their "precision manufacturing" sector.
 - Three Focus Points
 1. Collaboration between different employers
 - Observed that employers could benefit from competing and collaborating on specific regional issues
 2. Collaboration between employers and technical education providers
 - Observed that many of the programs designed did not create high employability for trainees, and so they worked to connect the training systems and the job skill needs.
 3. Collaboration between different technical education providers
 - The Hampden WIB initially applied for and received a \$150k John Adams Innovation grant that funded technical assistance. They used this money to hire a dedicated and motivated staff person to establish relationships with different stakeholders. Dedicating a full-time staff person enabled partnerships to become central to the workforce training, instead of functioning as an afterthought that was not well funded. They also used funds to conduct a survey in 2006 with businesses to assess business needs, which they still use to guide their work today.
 - The Hampden WIB remains very sensitive to how busy employers are and have made sure not to overload them with meetings, and have facilitated collaboration and enabled them to plug into the workforce training system as much as effectively as possible. The WIB also developed a memorandum of understanding (MOU) that mapped what companies were willing to dedicate for collaborative efforts so there was a written agreement that formalized the relationships and built trust.
 - Because they had already established their foundation of a "culture of collaboration" in Hampden County using the John Adams Fund, the Hampden WIB was able to successfully apply for the Workforce Competitiveness Trust Fund. They were also able to leverage their initial success to get an extra line item in the state budget to fund "accelerated worker training" for incumbent workers.
 - Program characteristics
 - Work with over 30 employers.
 - Have 2 community colleges and one CBO providing training for new hires

- Have 6 high schools, one community college, and one private company conducting skills enhancement trainings.
 - Design programs to be timely and geographically convenient for workers
 - Provide remedial skills education, case management, and soft skills (building resumes, interviews, etc.)
- **Commonwealth Information Technology Initiative (CITI).** The **Commonwealth Information Technology Initiative** is a public/private partnership formed in 2000 to increase the number of "information technology-fluent" workers needed for Massachusetts' knowledge-based economy. In the past two years, CITI made available more than \$500,000 in grants to all educational levels.
 - CITI was part of a legislative economic stimulus package where 7 regions within North Central Massachusetts were given pipeline funding to create a curriculum with industry at the secondary education level and STEM (Science Technology Engineering and Mathematics) curriculum at the post-secondary education level. CITI specifically trained teachers, counselors, and students in IT. The goals for CITI are to:
 - Have ITAC (IT across the curriculum) programs available to all public higher education students and produce graduates with technology fluency and skills relevant to their chosen field.
 - Improve Computer Science curricula and recruitment to meet industry needs and reflect the diverse population of Massachusetts.
- **Central Massachusetts Institute for Workforce Development in collaboration with Worcester Technical High School -** The Central Massachusetts Institute for Workforce development is designed to reduce barriers in connecting the dots between potential and incumbent employees, employers, and technical education and training providers, using the resources of the new Worcester Technical High School.
 - The goal of this project is to integrate the Regional Employment Board with the training resources of the technical high schools and work to redefine vocational education to include workforce training. The project aims to provide academic and technical education to high-school students and offer the most advanced equipment and training to help adults advance their careers. Classes are held at the Alden Design and Engineering Academy at Worcester Technical High School.
 - The Massachusetts Manufacturing Extension Partnership will provide basic and advanced classes
 - The Workforce Central and the Regional Employment Board will provide career evaluation, counseling, and assistance for area residents.
 - Private industry employers have donated state-of-the-art equipment to the Worcester Technical High School to be used for students' training during that day and incumbent worker training after school hours.
 - The Skyline Technical Fund, which is a nonprofit organization created to support the high school, has been able to successfully apply for the state's Workforce Competitiveness Trust Fund.

- **Massachusetts Manufacturing Extension Partnership** - The Massachusetts Manufacturing Extension Partnership (MassMEP) facilitates interaction between industry, government and academia to strengthen the global competitiveness of U.S. manufacturers.
 - MassMEP is part of a nationwide network of technical, manufacturing and business specialists linked by the U.S. Department of Commerce and the National Institute of Standards and Technology (NIST).
 - MassMEP works with Massachusetts' manufacturers to identify opportunities to improve business practices and leverage resources for training, and provides performance based training programs in enterprise management, performance based training, supply chain management, and innovation.

National Models

- **Project QUEST** focuses on training low-skilled workers in three sectors of the San Antonio, TX economy: (1) health services, (2) business systems/information technology and (3) maintenance, repair and overhaul. Project QUEST has embraced a strategy that effectively matches employer and employee needs, expands employee skills and capacity, and utilizes the services provided by local training institutions. Because of its comprehensive approach to workforce development, Project QUEST has secured a dedicated line item in the city of San Antonio's budget. QUEST has received national attention as a model for local workforce development efforts and has been replicated in four other cities in the Southwest, three of which are also in Texas.

Origins and Development into an Intermediary

An initiative of two community-based organizations — Communities Organized for Public Service (COPS) and Metro Alliance (affiliates of the Industrial Areas Foundation), QUEST was initially launched as an employment-training program for the economically disadvantaged.

After thoroughly gathering information from both employers and low-income workers, and assessing the city's existing capacity to perform skills training, COPS and Metro Alliance were able to identify the foundations of the city's employment problem and build support for a new approach to training based on four key principles:

- The program must tie in strongly with the occupational demands of local employers.
- The program must be selective and target training only for those careers that offer good pay and advancement opportunities ("demand occupations").
- The program must incorporate intensive client services to help economically disadvantaged participants overcome financial and personal barriers to skill acquisition.
- The program must leverage training resources already in the community.

For a detailed description of ProjectQuest please see attached appendices.

- **WIRE-Net** – Located in Cleveland, Ohio, WIRE-Net is focused on the manufacturing sector and seeks to provide expertise that is responsive to manufacturing related businesses and their employees. As the only organization exclusively serving manufacturers in Northeast Ohio, WIRE-Net’s vision is to connect leaders to each other and provide means for them to better understand the needs of their communities. WIRE-Net was established in 1988 at a time when manufacturing plant closings and downsizing were at their height in the region. Then the objective was to halt the outward flow of manufacturing businesses, and so by extension, manufacturing jobs. By 1995, WIRE-Net was aggressively focusing on building a more comprehensive economic development approach that would help retain and grow Cleveland area manufacturers. What influenced this more strategic approach was the rising concern over the lack of industrial land on which to build, and new opportunities to help existing business leaders. Today WIRE-Net is also an active partner in and advocate for a citywide industrial land assembly strategy for the City of Cleveland.

Origins and Development into an Intermediary

Visiting numerous companies to better understand their challenges, WIRE-Net hoped to identify what local business leaders thought was working and what needed attention. WIRE-Net learned that even though manufacturing companies provided 60 percent of the community’s jobs, they had been overlooked and under-appreciated as community assets. The aim was to help businesses get organized to win attention from state and local government, and build relationships between business leaders and public officials. Among WIRE-Net’s priorities are:

- Offering programs and services that address employers' workforce needs;
- Providing business expansion and redevelopment resources;
- Providing management education on HR issues;
- Raising industry awareness of available resources to help stimulate business and neighborhood investment, foster job creation, and improve business retention;
- Providing engineering services, including continuous improvement strategies;
- Helping businesses navigate City Hall, as a partner in the city funded Cleveland Industrial Retention Initiative;
- Presenting a unified voice of advocacy that puts manufacturing first; and,
- Reducing isolation among the leaders of smaller manufacturing businesses through enhanced learning opportunities and networking programs.

WIRE-Net is an employer-led intermediary that is actively building relationships between industry, education, government, and other resources. WIRE-Net's manufacturing assistance program is at the core of the program’s mission. The manufacturing assistance program provides over five hundred manufacturing firms business assistance services focused on workforce development, innovation, and redevelopment programs. “Outside the Gate” services promote the ease of doing business with the city and acquiring necessary government support, while “Inside the Gate” services are geared towards internal priorities such as organization development, human resource services and support, lean manufacturing, and new market development opportunities.

For a detailed description of WIRE-Net please see attached appendices.

A regional capacity for workforce development currently exists within fragmented informal networks in North Central Massachusetts. A strategy to connect and streamline these fragmented efforts can be enormously effective in concentrating and allocating limited workforce development funding so that efforts are not duplicated and workforce need gaps can be filled. There are several applicable statewide and nationwide models that can be utilized to design an appropriate regional workforce development strategy for North Central Massachusetts.

RECOMMENDATIONS FOR A WORKFORCE DEVELOPMENT STRATEGY

This section details our recommendations for developing a workforce development strategy in North Central Massachusetts.

Key Findings

Based on our detailed findings for workforce development needs, as highlighted in the regional workforce needs, and through the compilation and analysis of our research, we have distilled a number of key findings upon which our recommendations are based.

- **The region lacks organizational capacity for assessing workforce needs**
- **Information on training options and services are not easily accessible**
- **Common training needs exist**
- **There is an increasing need for higher-skilled workers**
- **Funding systems are inflexible**

Recommendations

Based on the above key findings, we developed five key recommendations for workforce development in the region. It is important to recognize that these recommendations contain the long term vision for a workforce development strategy in North Central Massachusetts. We do not intend for these recommendations to be fulfilled in the short run. Some of these initiatives may take years. However, it is important to make progress in the short term. Therefore, we are presenting our recommendations on a continuum from shorter term to longer term in order to prioritize some activities. The implementation section that follows will provide more explicit advice in terms of how to sequence activities.

Recommendation #1: Establish a Strong Workforce Development Intermediary

Recommendation #2: Expand Awareness of and Information on Training Options

Recommendation #3: Organize Industry-Wide Training Initiatives

Recommendation #4: Create a Manufacturing Career Ladder Training System

Recommendation #5: Secure Immediate and Long-Term Sources of Funding

Recommendation #1: Establish a Strong Workforce Development Intermediary

Creating a workforce development intermediary is essential for coordinating a regional strategy and carrying out each of the other recommendations. This first recommendation is, therefore, a top priority and should be undertaken as soon as possible. Both the intermediary's structure and functions are important for its success.

- ***Structure:***

Based on our findings and feedback from members of the North Central Massachusetts Economic Development Council (NCMEDC) and the region's Workforce Investment Board (WIB), the best option is for the intermediary to be a collaboration of these two entities. Both the WIB and the NCMEDC have a vested interest in promoting workforce development in the region, and together they have the necessary relationships with key players and access to important sources of funding to make the initiative successful. The

intermediary must have at least one full-time staff person, to be housed either at the NCMEDC or the WIB, based on space availability and other logistical concerns. The intermediary may choose to convene a board of directors or regional commission for oversight of its activities or it may prefer to organize committees around specific projects. Either way, involvement of employers, employees, training/educational institutions, and public sector officials will be critical for the effective functioning of the workforce development intermediary.

▪ ***Functions:***

The intermediary will have various functions depending on the types of activities it chooses to undertake. Its primary function, however, will be to provide the necessary coordination between employers, employees, training/educational institutions, public sector officials, and funding sources. By promoting communication between these various actors, the intermediary will help them to: address common concerns related to globalization and the economy; identify mutually-beneficial opportunities; tap into economies of scale; determine workforce needs; and strengthen regional capacity. The intermediary will spearhead the activities of the regional workforce development strategy, detailed in the following recommendations.

Recommendation #2: Expand Awareness of and Information on Training Options

While there are some gaps in training resources in North Central MA, the region does have many offerings. Unfortunately, a fragmented information system makes it difficult for employers and employees to know what resources exist, let alone take advantage of them. For that reason, employers and employees alike need improved access to information about training providers and opportunities in the region. In order to facilitate increased access, we recommend that the intermediary:

- **Compile a course catalog for workers and managers**
The educational and training institutions in the region have a variety of offerings that would be useful to workers in various positions and sub-sectors, but employers have trouble sorting through existing course catalogs to determine which courses are most appropriate. Typically, college course catalogs are organized by department and semester, which may not be the most accessible classification system for those in the manufacturing sector. Therefore, we recommend that a course catalog be assembled periodically, targeted to manufacturers and their employees. It should:
 - Be organized by industry or occupation for ease of use
 - Show courses in sequence so workers and managers can plan ahead
 - Be updated regularly in order to stay current
- **Create an online one-stop shop for training and employment resources**
The intermediary should create an open-source and continually-updated website for use by employers and workers in the region. Along with the course catalog discussed above, this website could be a place for employers to put up job announcements for open positions, for workers to post resumes and look for job openings, for training institutions to announce new courses, for the WIB to solicit grant applications, etc. As such, it would

be a tool for centralizing important information on workforce issues and make it accessible to a regional audience.

Recommendation #3: Organize Industry-Wide Training Initiatives

The intermediary should coordinate employers to identify and respond to common training needs in the region. Based on our initial research, there seem to be two related needs, one for pre-manufacturing training and another for sector-specific incumbent worker training; the intermediary should conduct further research to elaborate on these needs.

Recommendation #3a: Develop a Pre-Manufacturing Curriculum

The intermediary should facilitate creation of a curriculum for people interested in pursuing a career in the manufacturing sector. It should cover basic skills in reading/writing, computer/software, interpersonal communication, mathematics and logic, elementary science, safety, and machinist training, and be flexible enough to be offered to incumbent workers or to pre-hires. In addition, it should be customizable by sub-sector or firm so that students can participate in modules relevant to specific industries, when necessary. The curriculum could be implemented in vocational technical high schools and/or other training institutions, depending upon interest and capacity.

Recommendation #3b: Create Sub-Sector Specific Incumbent Workers Training Programs

The intermediary should work to identify sub-sector specific training needs that could be centralized and offered locally. Training topics may include lean manufacturing, supervisor training, safety/hazmat, quality control, customer service, sales and marketing. Many companies require certain of these skills for employees, but they either have to send employees out of state or bring consultants in-house to complete the trainings. It would be more efficient, in the case of common training needs, to offer trainings in the region to employees from different companies.

At the same time, many companies state their need and desire to offer some training in-house, particularly for firm- or sub-sector specific issues. In these cases, the intermediary should work to identify regional providers and partners so that firms have flexible options for addressing their training needs.

Recommendation # 4: Create a Manufacturing Career Ladder Training System

Industries in the region are increasingly requiring higher-skilled workers, and workers find it difficult to gain the new skills and credentials necessary to remain competitive in the labor market. For that reason, the region must professionalize manufacturing and help people view it as a legitimate career option. The intermediary should facilitate development of a system whereby employees are able to upgrade their skills throughout the course of their careers. This requires both access to information about careers and a training system that helps workers move up the ladder over time.

- Develop an informational resource for workers about jobs, skill requirements, and career trajectories

The intermediary should bring industry representatives together to discuss what a career ladder would look like in different industries and make that information available to people already involved in or considering employment in manufacturing. This information could be presented as pamphlets or catalogs and organized by sub-sector.

- Develop an integrated set of training modules that allows workers to upgrade their skills over time. This training system will be able to:
 - Address employers' needs for higher skilled workers
 - Incorporate the pre-manufacturing curriculum as a building block
 - Include sub-sector training
 - Take advantage of existing educational programs and create new programs/resources as needed

Recommendation #5: Secure Immediate and Long-Term Sources of Funding

Funding is critical both for the functioning of the intermediary and for the overall functioning of a regional workforce development strategy. Once the intermediary is up and running, it should be able to both improve the use of existing funds and tap into new sources of funding.

- Improve use of existing funds
It is important to ensure that funding is aligned with the regional workforce needs assessments and career ladder initiative. For that reason, the WIB should focus on using its funds not only to address the needs of individual companies, but also industry- and region-wide needs as well. It should simplify the application process in whatever ways possible, and the intermediary could help facilitate the application process for companies that find it difficult to navigate. Additionally, the intermediary could encourage companies to collaborate in the application process.
- Tap into new sources of funding
To begin with, the intermediary will have to access organizational development grants to become fully functional. The stronger this entity is and the more support it has in the region, the better it will be able to access the necessary funds. From there, the intermediary should apply for state and federal grants specific to emerging and existing industries, and also seek out funding for employee tuition reimbursement. While it may be possible to find some funding through the government, it will also be important to look for more flexible grants with which to undertake some of the intermediary's other initiatives.

NEXT STEPS FOR CREATING A NORTH CENTRAL MASSACHUSETTS WORKFORCE INTERMEDIARY

A key recommendation of this report is to create a workforce intermediary that will increase coordination and collaboration between local employers, employees, training institutions, economic development officials and funding organizations. In order to guide the development of this organization, we have developed the following preliminary implementation plan for the creation of a North Central Massachusetts workforce intermediary. It is important to note that this list is not exhaustive; however, it is intended to highlight some key steps, which will be important for creating a successful workforce intermediary for the region.

- **Secure Buy-In from Important Stakeholders in the Region**

Following the presentation of this report, staff leadership within the NCMEDC should continue to build a coalition of support by creating a regional workforce development intermediary. In particular, it will be important for board members of the NCMEDC and North Central Massachusetts WIB to support this intermediary. In addition, it will also be critical to acquire support from other key stakeholders in the region including Mount Wachusett Community College, Montachusett Opportunity Council, Montachusett Regional Vocational Technical School, Fitchburg State College, larger employers, Congressmen, and State Representatives, among others. Securing support from these institutional partners will help establish coordination in the region and will provide access to other critical regional employers, training providers and educational institutions – partners that will eventually be actively engaged in the work of the regional workforce intermediary.

- **Appoint Staff and Provide Resources for Intermediary Development**

Working together, the NCMEDC and WIB should identify an individual who will be responsible for implementing the preliminary stages of the intermediary development. This person will be responsible for conducting outreach to key stakeholders in the region, communicating the goals/vision of the nascent workforce intermediary, pursuing funding opportunities and beginning to catalogue the gaps in workforce development services in the region. It is possible that this person could come from within the EDC or WIB, or new short-term funding for this position could be donated by key stakeholders. Regardless of where the support comes from, it will be critical to allocate at least some staff time and resources to this position to ensure the development of the workforce intermediary as a legitimate entity.

- **Develop an Organizational Structure**

Once the NCMEDC and WIB have received buy-in from key regional stakeholders, the NCMEDC and WIB must consider how to structure a regional workforce intermediary. Will the workforce intermediary be a separate organization governed by its own board? Or, will the intermediary be a long-term partnership between the EDC and WIB, governed by a memorandum of understanding? It will be important for the EDC and WIB to consider these organizational questions early in the process of forming a workforce intermediary, so the WIB, the intermediary, and the EDC's roles and responsibilities are clearly defined. In addition, given that the staffing resources for the workforce intermediary will be limited over the short term, the WIB and EDC should decide how they will collaboratively decide which projects to pursue first.

- **Canvass for In-Kind Resources**

Because there is currently no dedicated funding for the development of a regional workforce intermediary, it will be important for the intermediary development point person to access a broad range of resources from important partners in this effort. For instance, workforce development programs and social service organizations may be able to contribute their grant-writing expertise to help apply for funding. Higher educational institutions may be willing to provide critical research support on the regional economy, or could be tapped to administer and analyze surveys of employer needs. In addition, municipalities' community centers could be used to host organizing meetings nearby local employers.

Types of In-Kind Assistance:

- Grant Writing Assistance
 - Office Space
 - Research Support – Data collection on regional economy, employer survey administration
 - Donated Conference Facilities and Meeting Support Services
- **Identify and Pursue Long Term Funding**
A critical component to achieving sustained, high-level coordination between employers, training providers, and employees is to find a long-term sustainable funding source for the workforce intermediary. Potential sources of funding for the organization are: state and federal grants; foundation support, budget earmarks from the EDC, WIB, or local governments, and contributions from local employers. It is also important to note that David Mackley from the Office of Labor and Workforce Development in the Department for Workforce Development for Massachusetts indicated that he was interested in providing financial support for some of the projects in the strategic workforce development program.
 - **Initial Projects for Workforce Intermediary**
Once long-term funding for the workforce intermediary is secured, it will be necessary for the intermediary to prioritize the initiatives it pursues so that staff time and resources are used efficiently. This report suggests five key initiatives, which we believe should be a high priority of the new workforce intermediary.

Proposed Initiatives

- Expand awareness of and information about training opportunities
- Develop and promote a pre-manufacturing curriculum
- Create incumbent worker training programs
- Build manufacturing career ladder
- Increase funding for employee tuition reimbursement program

a. Expand awareness of and information about training opportunities -

There is a need to expand information about training programs. The first step to improving information dissemination is to interview training institutions and employers about the services that they offer. Based on this information, it will be useful to generate a catalogue of all of the training opportunities in the region. This catalogue could be organized by industry or occupation and should be distributed in a paper or electronic format to employers, employees, and training institutions. In addition to the catalogue, it will also be important to improve communication between employers, training institutions, and the intermediary to ensure that everyone has access to the information they need and can provide feedback on the training programs and the current methods for circulating information. Finally, it will also be very important to ensure that this information is updated regularly.

- b. Develop and promote a pre-manufacturing curriculum** - In addition to expanding information resources, a manufacturing curriculum needs to be established. To establish this course, it will be necessary to examine existing models of pre-manufacturing courses. For example, the Massachusetts Manufacturing Extension Partnership currently offers pre-manufacturing program, which can serve as a model for North Central Massachusetts. After examining other models, it will be critical to interview training institutions, educational institutions, and employers about the services they offer and the modules (i.e. computer software, communication skills, basic science and math skills) that they would like to include in a pre-manufacturing class. It will also be necessary to ensure that there are space, staff, and resources available for the course. It will also be important to reference the literature on these subjects and talk to key people at the training and educational institutions such as Mount Wachusett Community College or Montachusett Regional Vocational Technical School who teach these subjects. In addition, it will then be necessary to recruit students who may have just graduated from high school or students who dropped out of high school. Additionally, dissemination of information on this pre-manufacturing class will also be crucial. On a final note, it will be important for these courses to be easily customizable to meet the different needs of employers and employees.
- c. Create incumbent worker training programs** - While developing and promoting a pre-manufacturing curriculum satisfies the common needs amongst the employers, it will also be important to generate opportunities to train the incumbent workforce. The steps to develop an incumbent worker training program will likely be very similar to the steps to create a pre-manufacturing curriculum. It will require looking at existing models (Massachusetts Manufacturing Extension Partnership), interviewing employers, employees, suppliers, and leaders/teachers at the training institutions about their needs and resources in order to identify common sub-sector specific training needs, ensuring that space, staff, and resources are available, recruiting participants, and disseminating information about the program. Unlike the more general pre-manufacturing course, this incumbent worker training program will be more specific to each industry sub-sector and will likely include courses on lean manufacturing, quality control, safety/hazmat training, and supervisor training, among others.
- d. Build manufacturing career ladder** – In addition to organizing industry-wide training initiatives, it will also be helpful to create a manufacturing career ladder through training modules that address employers' needs for higher skilled workers, incorporate the pre-manufacturing curriculum and sub-sector training, and create new training resources as needed. This ladder will allow participants to upgrade their skills over time. The initial steps to develop career ladder program will be somewhat similar to the steps to create a pre-manufacturing curriculum and incumbent worker training

program. It will require looking at existing models (National Association of Manufacturers), interviewing employers, employees, suppliers, and leaders/teachers at the training institutions about their needs and resources, ensuring that space, staff, and resources are available, recruiting participants, and disseminating information about the program. It is important to note that this program will allow employees to acquire advanced training in more specialized fields through the incremental training modules.

- e. Increase funding for employee tuition reimbursement program -**
Finally, it will also be important to raise funding for an employee tuition reimbursement program. In order to do so, it will be important to examine potential funding opportunities for the program. It will also be critical to refer to other models such as Project Quest that have already established tuition reimbursement initiatives. It will then be necessary to talk to employers to set the guidelines for how an employee qualifies for the program and the process to apply for reimbursement.

This list does not include all of the possible initiatives a regional workforce intermediary could undertake. Indeed, as leadership from the EDC and WIB begin to discuss their vision for a workforce intermediary with key stakeholders, ideas for many new initiatives are likely to arise. At a minimum, the EDC and WIB should develop a one-year work plan to guide the efforts of the staff and its partners, which will ensure that the new initiative makes measurable progress on key goals during its first year. Setting and measuring goals throughout the organization's life will be important, both for internal management and also for raising grant funds for its work.

Potential Strategy Implementation Schedule

Implementation Steps	Year 1												Year 2												Year 3													
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12		
Secure Regional Stakeholder Buy-in																																						
Appoint Staff/ Resources for Intermediary Development																																						
Develop Intermediary Organizational Structure																																						
Secure Short-term Funding																																						
Identify/ Pursue Long-term Project Funding (i.e., tuition reimbursement)																																						
Expand Awareness Of/ Information About Training Opportunities																																						
Develop/ Promote Pre-manufacturing Curriculum																																						
Create Incumbent Worker Training Programs																																						
Design/ Implement Manufacturing Career Ladder																																						

CONCLUSION

The North Central Massachusetts region has the potential to truly augment its economic development efforts by placing a special emphasis on improving its workforce development systems. Its towns, business organizations, and economic institutions have successfully begun working together as a region, but can still capitalize on more collaborative relationships that strategically increase the efficiency of resource expenditures and allocations.

The North Central Massachusetts Economic Development Council has the opportunity to further ensure that business and governmental leaders from throughout the region collaborate on economic development. This strengthened collaboration will help bring the region closer to aligning its workforce development capacity with its workforce needs, thereby fully leveraging the comparative advantage of its regional workforce. Ultimately, this will help to grow the North Central Massachusetts region's strong manufacturing base, while also capitalizing on emerging industries in the area.

The first step toward this end is to create a workforce development intermediary body by drawing upon the strengths, assets, and resources that each institution brings to the table. By contributing support toward this intermediary body, each entity and town in the region will be helping to increase workforce development capacity, job opportunities, educational attainment, and the overall economic vitality of the region.

SOURCES USED

Sources for Regional Economic Profile Analysis

All economic base analyses used Massachusetts Employment and Wage Data, compiled from reports filed by employers subject to unemployment compensation laws. Industry employment and payroll information is produced both quarterly and annually for the state, labor market areas, workforce investment areas, cities and towns, and counties. This data is published by the Executive Office of Labor and Workforce Development, Commonwealth of Massachusetts.

http://lmi2.detma.org/lmi/lmi_es_a.asp

US Bureau of the Census, 2000 and the American Community Survey 2006 data for the NECTA area and for individual towns.

Local Area Unemployment Statistics (LAUS) 2007

Labor Force Data came from US Bureau of Labor Statistics Department of Workforce Development, 1997-2007

Unemployment data came from US Bureau of Labor Statistics Department of Workforce Development Profile of Unemployment Claimants 2006.

Sources for Emerging Industries Analysis

Eckelbecker, Lisa. "Growing workers; State's biotech industry rushes to find and train employees of the future." *Worcester Telegram*, September 9, 2007.

Interview with Rebecca Loveland, Economic and Public Policy Research Manager, UMass Donahue Institute. April 29, 2008.

Interview with Peter Abair, Director for Economic Development, Massachusetts Biotechnology Council. April 24, 2008.

A Life Sciences Talent Strategy for Massachusetts: A Systematic Analysis of Needs and Capabilities; Research Findings from the Life Sciences Talent Initiative. Draft, March 27, 2008. UMass Donahue Institute. Prepared for: Massachusetts Life Sciences Center, Massachusetts Biotechnology Council, University of Massachusetts.

Massachusetts Biotechnology Council members list, 2008 Information Sheets, and Biotech in Massachusetts presentation.

2007 Index of the Massachusetts Innovation Economy. Massachusetts Technology Collaborative, John Adams Innovation Institute.

"Massachusetts Clean Energy Industry Census" Massachusetts Technology Collaborative

"Component Manufacturing: Massachusetts's Future in the Renewable Energy Industry"
Renewable Energy Policy Project

<http://rggi.org/>

<http://www.mass.gov/doer/rps/>

<http://www.apolloalliance.org/>

<http://www.masstech.org/>

<http://www.crest.org/>

<http://www.greenforall.org/>

Sources for Regional Workforce Development Capacity Analysis

WIRE-Net website

<http://www.wire-net.org/>

WIRE-Net 2006 Annual Report

http://www.wire-net.org/www/pdfs/wn_anrpt.pdf

Project QUEST Report on Aspen Institute's Website

<http://www.aspenwsi.org/publicationdetailsdb.asp?pid=2>

Workforce Competitiveness Trust Fund

<http://www.commcorp.org/wctf/projects.html>

Workforce Training Fund

[http://www.mass.gov/?pageID=elwdtopic&L=3&L0=Home&L1=Businesses&L2=Workforce+Training+Fund+\(WTF\)&sid=Elwd](http://www.mass.gov/?pageID=elwdtopic&L=3&L0=Home&L1=Businesses&L2=Workforce+Training+Fund+(WTF)&sid=Elwd)

Round 28 Workforce Training Fund grants

http://www.mass.gov/Elwd/docs/dcs/wtf/wtf_grants_round28.pdf

Massachusetts Manufacturing Chartbook April 2008

http://www.commcorp.org/researchandevaluation/pdf/Manufacturing_Chartbook_web.pdf

APPENDICES

Appendix A.....	Federal, State, and Regional Workforce Investment Resources
Appendix B.....	Workforce Development Funding Sources
Appendix C.....	Regional Economic Profile
Appendix D.....	Preliminary Assessment of Economic Development Capacity
Appendix E.....	Regional Renewable Energy Industry Analysis
Appendix F.....	Regional Stakeholders Analysis
Appendix G.....	Case Studies of Regional Alliances and Cooperation
Appendix H.....	Emerging Industries Data

Appendix A

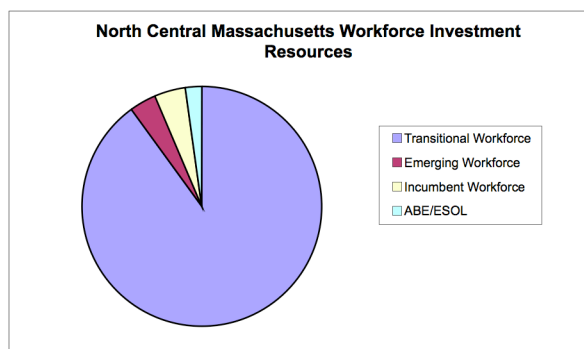
Massachusetts Workforce Investment Resources Summary FY2007

		State Resources	Federal Resources	TOTAL	NC Mass Funds	NC Mass %
	EMERGING WORKFORCE					
Table 2	Career/Vocational Technical Education Grades 9–12		\$10,949,187	\$10,949,187	\$396,952	4%
	Career/Vocational Technical Education Post-Secondary		\$4,778,214	\$4,778,214	\$339,253	7%
	MCAS Work and Learning/ OSCC Pathways	\$1,500,000		\$1,500,000	\$35,000	2%
	Connecting Activities Grades 10–12 Youth	\$6,879,688		\$6,879,688	\$158,319	2%
	WIA Title I Low-Income Program Services		\$13,466,314	\$13,466,314	\$573,665	4%
	Youth Works State Summer Jobs Success	\$3,799,941		\$3,799,941	\$77,711	2%
	Communities and Schools for (CS2)	\$464,500		\$464,500	\$60,500	13%
	Pathways to Success by 21 (P21)		\$840,000	\$840,000	\$60,000	7%
	Emerging Workforce Total	\$12,644,129	\$30,033,715	\$42,677,844	\$1,701,400	4%
	TRANSITIONAL WORKFORCE					
Table 3	Wagner Peyser–10% (OSCC: One-Stop Career Centers)		\$1,173,620	\$1,173,620	\$45,889	4%
	Wagner Peyser–90% (OSCC)		\$10,562,580	\$10,562,580	\$412,997	4%
	Grants to Improve OSCC Service to the Disabled		\$912,000	\$912,000	\$57,000	6%
	One Stop Career Center State Appropriation (OSCC)	\$5,800,000		\$5,800,000	\$158,410	3%
Table 4	WIA Title I Dislocated Workers (OSCC)		\$11,216,539	\$11,216,539	\$569,800	5%
	WIA National Emergency Grants & Rapid Response Set-Aside		\$4,900,629	\$4,900,629	\$22,730	0%
	Trade Adjustment Assistance (OSCC)		\$7,822,644	\$7,822,644	\$269,510	3%
Table 5	WIA Title I Low Income Adults		\$11,370,149	\$11,370,149	\$519,616	5%
	TAFDC (TANF) Employment Services Programs (OSCC)	\$7,753,360	\$5,299,434	\$13,052,794	\$528,611	4%
Table 6	Additional TAFDC (TANF) Employment Service Programs	\$8,342,852	\$5,702,353	\$14,045,205	\$300,940	2%
Table 7	Senior Community Service Employment Program (SCSEP)		\$10,270,108	\$10,270,108	\$381,552	4%
Table 8	Community Service Block Grants (CSBG)		\$1,362,237	\$1,362,237	\$17,607	1%
	Job Links (HUD)		\$1,730,908	\$1,730,908	\$154,040	9%
	Moving to Work (HUD)		\$1,281,000	\$1,281,000		0%
	Public Housing/ Vouchers Family Self-Sufficiency Coordinators (HUD)		\$2,329,670	\$2,329,670	\$95,150	4%
Table 9	Services for Employment and Education (DMH)	\$6,567,636		\$6,567,636	\$261,116	4%
	Vocational Rehabilitation— Mass Commission for the Blind		\$4,161,608	\$4,161,608	\$141,218	3%
	Vocational Rehabilitation— Mass Rehabilitation Commission		\$20,702,545	\$20,702,545	\$502,257	2%
	Transitional Workforce Total	\$28,463,847	\$100,798,024	\$129,261,872	\$4,438,443	3%
	INCUMBENT WORKFORCE					
Table 10	Workforce Training Fund Rounds General Program	\$21,736,841		\$21,736,841	\$1,749,143	8%
	Workforce Training Fund Express Program	\$987,159		\$987,159	\$44,449	5%
	Workforce Training Fund Hiring Incentive Training	\$1,319,373		\$1,319,373	\$79,500	6%
	Lay-Off Aversion Management Assistance (Rapid Response)		\$53,650	\$53,650	\$5,500	10%
	Extended Care Career Ladder Initiative (ECCLI)	\$1,501,497		\$1,501,497	\$0	0%
	Workforce Competitiveness Trust Fund (WCTF)	\$6,877,236		\$6,877,236	\$0	0%
	Incumbent Workforce Total	\$32,422,106	\$53,650	\$32,475,756	\$1,878,592	6%
	ADULT BASIC EDUCATION/ English for Speakers of Other Languages		\$8,159,144	\$34,822,121	\$1,098,316	3%
Table 11	ABE/ESOL Total	\$26,662,977	\$8,159,144	\$34,822,121	\$1,098,316	3%
	TOTAL FY2007 WORK FORCE INVESTMENT RESOURCES	\$100,193,059	\$139,044,533	\$239,237,593	\$9,116,751	4%
	State/Federal Share		41.90%	58.10%		

Commonwealth of Massachusetts Regional Workforce Investment Profiles FY 2007 DRAFT

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	Incumbent Workforce	\$32,422,106	\$53,650	\$32,475,756	13.60%	\$1,878,592	6%
Table 11	ABE/ESOL	\$26,662,977	\$8,159,144	\$34,822,121	14.60%	\$1,098,316	3%
	TOTAL FY2007 WORK FORCE INVESTMENT	\$100,193,059	\$139,044,533	\$239,237,593	100.00%	\$239,237,593	9116751
	State/Federal Share		41.90%	58.10%			



Appendix B

Workforce Development Funding Sources

Sample list of most prominent funds targeted for workforce housing and technical assistance. Refer to the Commonwealth of Massachusetts Regional Workforce Investment Profiles FY 2007 for more funding sources.

Workforce Competitiveness Trust Fund – A competitive fund where workforce training partnerships from a specific sector apply. partnership must have at least 2 private employers, and can contain a combination of community colleges, CBOs, private training groups, employers. All funded projects will be required to leverage at least a 30% match of the WCTF dollars from employers, public, philanthropic and other contributions. Up to \$500k over a period of 3 years. The WCTF has been designed to:

- Improve the competitive stature of Massachusetts businesses by improving the skills of current and future workers, and
- Improve access to well-paying jobs and long-term career success for all residents of Massachusetts, especially those who experience structural, social, and educational barriers to employment success.

- **4 Manufacturing Projects funded for FY 2007**

1. **Regional Employment Board of Hampden County**

Project Synopsis: Precision Manufacturing Training Project (PMTTP). Goal 1: To provide training in Machine Tool Technology to 40 unemployed/underemployed individuals. Goal 2: To establish 40 training slots per year to provide skills enhancement to 60 incumbent workers. This will increase the industry's capacity to penetrate specific market demands in highly specialized and complementary markets.

Amount Awarded: \$409,788

2. **Skyline Technical Fund, Inc.**

Project Synopsis: Manufacturers need better-trained workers with higher skills in order to remain competitive. Workers need better skills to get into good jobs, and to advance their career paths. The goal of this project is to supply employer needs for new hires, improve the skills for incumbent workers, and train under or unemployed persons to fill this gap, thus improving family self-sufficiency and making businesses more productive and competitive. The Central Mass. Institute for Workforce Development is designed to reduce barriers and to connect the dots between potential and incumbent employees, employers, and technical education and training providers, using the resources of Worcester Technical High School. The program implements successful models such as MOST (Machine Operator Skills Training) and builds on existing relationships and strengths to deliver basic workforce education and manufacturing training. Its expected impact will be to improve the economic status of individuals, families, and employers in Central Massachusetts, and to create the Institute to replicate the program to other industries and regions in the Commonwealth.

Amount Awarded: \$500,000

3. **Lead: Merrimack Valley Workforce Investment Board**

Project Synopsis: This partnership initiative is designed to meet the workforce needs of the regions manufacturing industry. The proposed project will provide

education and training services to a minimum of 45 currently unemployed workers and a minimum of 125 currently employed workers. The goal of the project is to work with the regions employers and education providers to develop career pathways, which will meet the stated needs of our industry partners and 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.

The project will have the following impacts:

- Assist area employers in meeting their workforce hiring and training needs
- Enhance the educational and occupational skills of the workforce to meet changing business conditions
- Provide opportunities for employee advancement and/or wage increases
- Create a systemic career training pathway for employers and employees
- Expand training curriculum and availability
- Promote collaborations among businesses and education and training providers
- Develop industry recognized credentials
- Maximize training resources and reduce duplications

Amount Awarded: \$500,000

4. **Lead: Greater New Bedford Workforce Investment Board**

Project Synopsis: As manufactures strive for global competitiveness and specialization in niche markets, they look for solutions to bridge traditional skills of their workers to new, more technical skills, and to train-the-trainer. This project focuses on training over 550 incumbent workers in demand-driven, lean manufacturing concepts that support career ladders within local employers. Participants will receive certificates upon course completion. This will also target 84 potential workers (including DTA clients) to prepare them for an advanced manufacturing environment by embedding lean concepts into work readiness training.

Amount Awarded: \$499,923

Workforce Training Fund – Funds that employers apply directly to in order to receive money for their own training needs. \$1,873,092 of Workforce Training Funds was awarded to firms in the North Central Massachusetts region in FY 2007.

- Money comes from a tax that employers pay, so if the employers don't pay that tax, then they're not eligible to get money from the fund. They can use the money for whatever training needs they target.
- There are three types of funding programs. 1) New Hires 2) Training program for firms with less than 50 employees 3) Training program for firms of any size.

- Applications work on a rolling basis and there are usually 4 approval processes per year for bigger grants.
- Has actually been criticized in the past because some people think it gives too much money to manufacturers

John Adams Innovation Institute – “The *Regional Priority Grant Program* represents a uniquely creative and comprehensive approach to supporting technology-based economic development across the Commonwealth. This program is designed to solicit the most creative ideas from regional leaders and challenge them to work together, raise their region’s economic profile, and capture the growth possibilities that technology can bring to every economic sector and cluster in the Commonwealth.”

- This fund was used by the Regional Employment Board of Hampden County (Hampden County WIB) in order to hire a full-time staff person as well as conduct surveys with businesses in the precision manufacturing industry in order to increase collaboration between the employers as well as to connect the employers to workforce training providers. The outcomes from the work done using this fund help to solidify standing partnerships in the county, and help the Hampden County WIB to successfully apply for the Workforce Competitiveness Trust Fund.

Appendix C

Regional Economic Profile

In order to prepare an economic development strategy for the North Central Massachusetts region, it is important to first understand the region's economic profile. Below, we discuss the economic profile of the North Central Massachusetts region in three sections: demographics, workforce characteristics, and economic base. Throughout this analysis, we have attempted to highlight trends within these areas that display the opportunities and challenges the region faces as it develops a regional economic development strategy.

One challenge of developing an economic development strategy for North Central Massachusetts is that there is limited data available for the defined study area (see map below).



Study Area (North Central Massachusetts Economic Region)

Source: North Central Massachusetts Economic Development Council 2006

The bounds of the above study area were defined by industry leaders working in conjunction with the North Central Massachusetts Economic Development Council (NCMEDC). They are based on political and industry affiliations but do not coincide with other political boundaries (for instance, counties, census tracts, etc.). Because of this discrepancy, most data in this study is drawn from one of the following approximations: it is part of Worcester County, it consists of 26 cities and towns, spans two workforce areas (though most of the Region, as defined by the

A map of Massachusetts showing urban areas shaded in brown. Major cities and towns are labeled, including Boston, Worcester, Springfield, and Fall River. The map includes a scale bar (0 to 8 miles) and a north arrow. The title is 'Urban Areas by Population'.

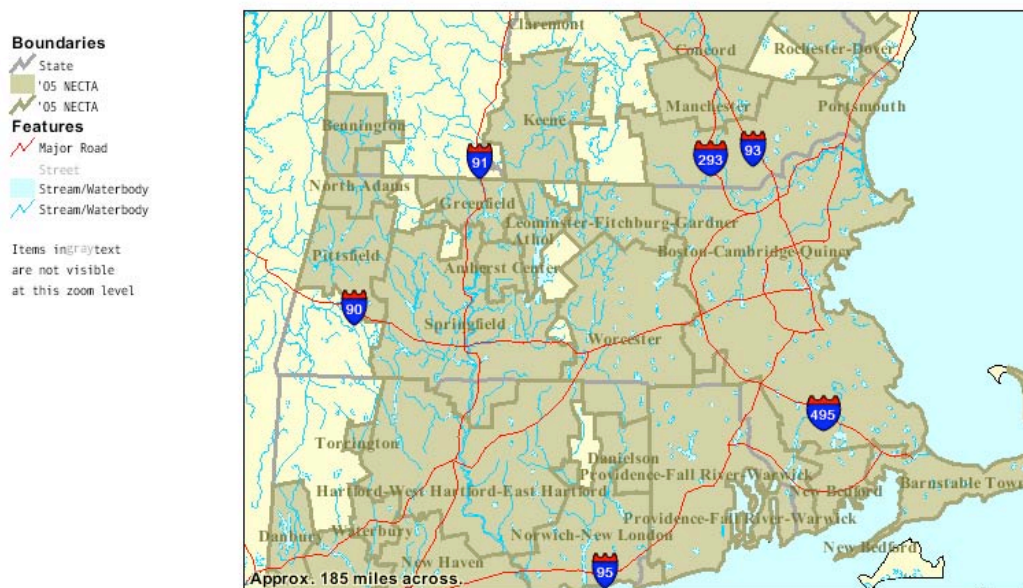
Source: ESRI 2006

Department of Workforce Development
Division of Career Services
Economic Analysis Office/July 2005

Massachusetts Workforce Areas

Source: Local Area Unemployment Statistics (LAUS) 2007

Note: The most comprehensive and representative group of towns and cities that capture our target region is the North Central Workforce Investment Area (WIA). The WIA however does not exactly fit the defined North Central MA Economic Development Council region (representing 26 cities and towns), the primary geographic differences being that the towns of Berlin and Bolton (both in the eastern part of the region) are in the WIA but not in the NCM EDC region. NCMEDC towns missing from the WIA are Orange, Athol, Royalston, Phillipston and Petersham (all in the western part of the region). This difference in geography is interesting to note because the less affluent communities are in the western most part of the EDC region. Growth and prosperity start in the east, particularly in the Devens area, and have not really reached the western part of the region.



“NECTA:” New England City and Town Area

Source: US Census Bureau, 2006

Note: The Leominster-Fitchburg-Gardner NECTA is a smaller region than the North Central Economic Region and the NCMEDC target region. The NECTA includes only the following towns: Ashburnham, Ashby, Fitchburg, Gardner, Leominster, Lunenburg, Phillipston, Templeton, Westminster and Winchendon.

DEMOGRAPHIC TRENDS

1. The population of North Central Massachusetts is growing at a faster rate (4%) than rest of Massachusetts (1.4%), but still below U.S. average. (6%)¹⁷

	Fast Growing	Slow Growing
--	--------------	--------------

Town Name	Templeton	Hubbardston	Groton	Roylston	Leominster	Shirley	Ayer	Gardner
2000-2006 Population Growth	13.2%	13.1%	10.9%	10.0%	0.6%	0.6%	0.4%	0.2%
2006 Population	7,696	4,422	10,585	1,380	41,549	7,661	7,315	20,805
Net Change	897	513	1,038	126	246	45	28	35
Population Rank (Out of 26)	13	21	7	25	1	14	16	3

- The areas of fastest population growth in North Central Massachusetts are smaller towns. Population growth is slowest in two of the three largest municipalities in region: Gardner and Leominster. Population growth in Fitchburg is only 2.4%.¹⁸
- The workforce in North Central Massachusetts is aging, consistent with state and national trends.¹⁹ North Central Massachusetts and the State of Massachusetts are slightly older than the rest of the country.

	United States		Massachusetts		North Central Economic Region	L-F-G NECTA
	2000	2006	2000	2006	2000	2006
Median Age	35.3	36.4	36.5	38.3	37.4	38.0
Percent of Population Ages 15-34	28.10	27.6%	27.50	26.7%	25.0%	26.7%
Percent of Population Ages 35-55	29.4%	29.1%	30.5%	30.5%	32.6%	30.5%
Percent of Population Ages 55 +	34%	37.5%	35.90	39.4%	34.7%	38.2%

- High school graduation rates are similar to the state and nation, but North Central Massachusetts lags behind in its college graduation rates.²⁰ A similar share of North Central Massachusetts residents (84.8 percent) hold a high school diploma as their

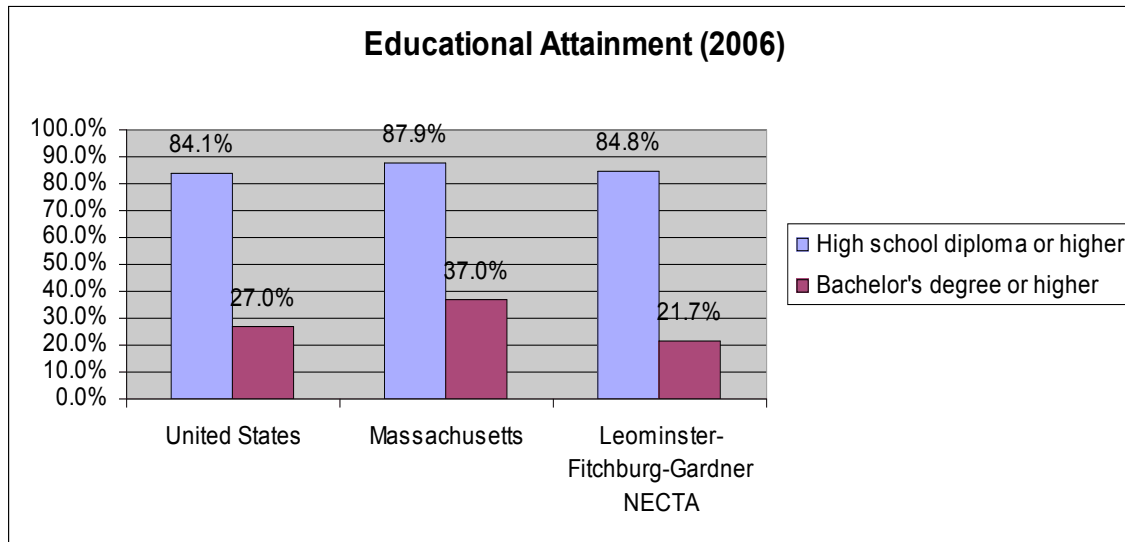
¹⁷ Mass.gov Labor and Workforce Development (data compiled from US Census Data/ACS 2006 estimates)

¹⁸ Mass.gov Labor and Workforce Development (data compiled from US Census Data/ACS 2006 estimates)

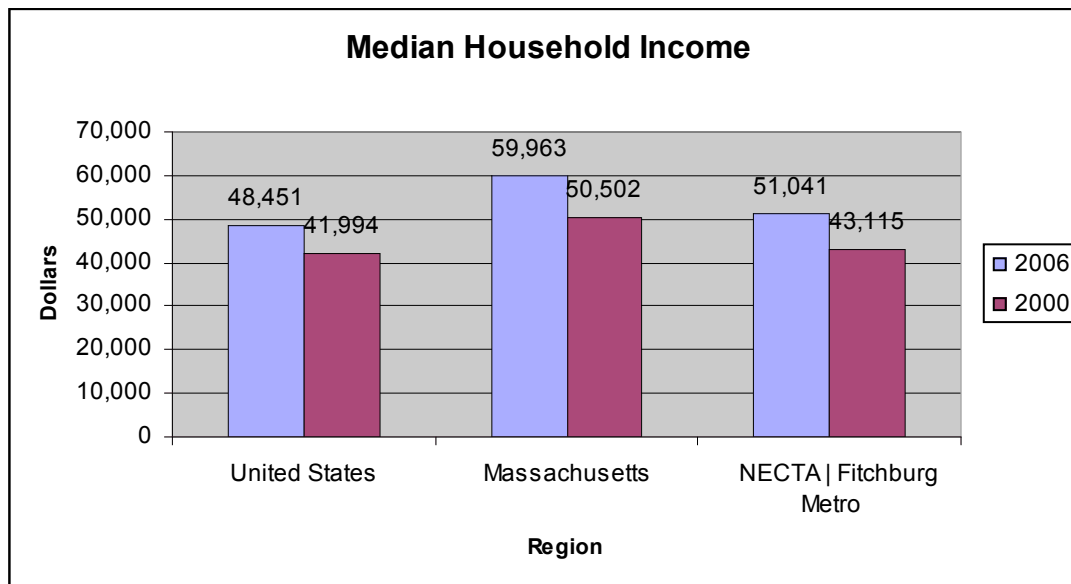
¹⁹ Data for the nation and state of Massachusetts comes from the 2000 U.S. Census and 2006 American Community Survey. Data on North Central Massachusetts comes from the North Central Economic Region in 2000 and the Leominster-Fitchburg-Gardner New England City and Town Areas (NECTA) in 2006.

²⁰ Data for the nation and state of Massachusetts come from the 2006 American Community Survey. Data on the educational attainment of North Central Massachusetts come from Leominster-Fitchburg-Gardner New England City and Town Areas (NECTA) in 2006.

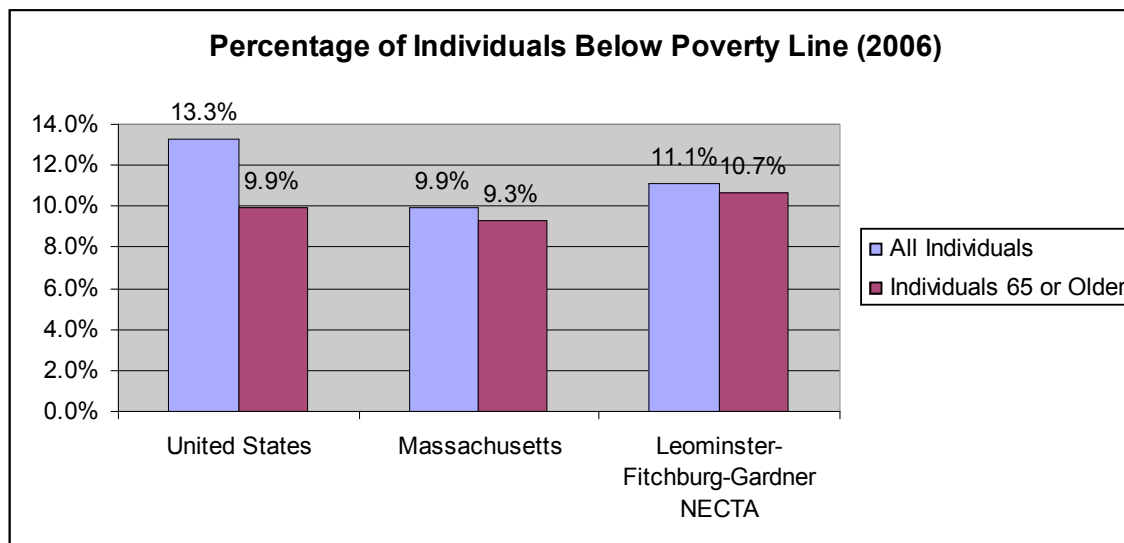
counterparts statewide (87.9 percent) and nationwide (84.1 percent). However, a significantly smaller share (21.7 percent) of residents hold at least a bachelors degree than state and nationwide (37.0 percent and 27.0 percent).



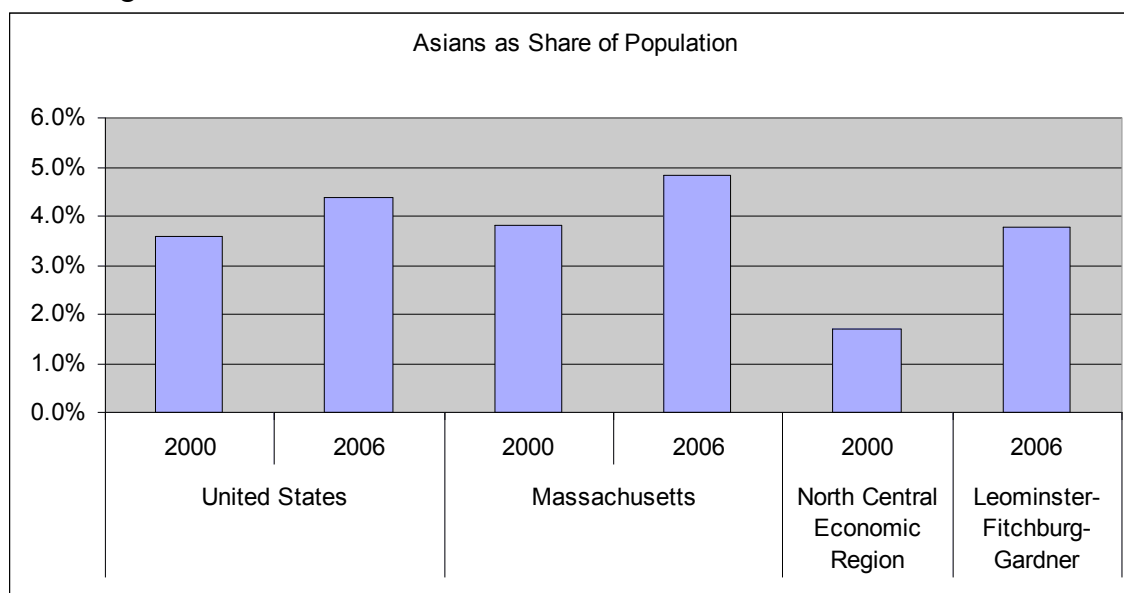
5. While the North Central Massachusetts (L-F-G NECTA) region has outpaced the rest of the state in population growth, residents in this area on average do less well than the rest of the state's residents. Median income in the region is over \$8,000 less than statewide and a higher share of its population lives in poverty (11.1 regionally compared to 9.9 percent statewide). Despite this, the North Central region is still more prosperous than the nation as a whole.²¹



²¹ 2000 U.S. Census and 2006 American Community Survey.



6. While still overwhelmingly Caucasian, there is growing diversity in North Central Massachusetts (L-F-G NECTA), particularly among Latinos and Asians.²² Over 88 percent of the residents in North Central Massachusetts are White; however, diversity in the region is increasing. Between 2000 and 2006, African Americans increased from 2.5 percent of the region's population to 3.4 percent. In addition, Asians more than doubled their share of the regional population, increasing from 1.7 percent in 2000 to 3.8 percent in 2006. Further evidence of the growing racial and ethnic diversity in the region is the Hispanic/Latino (of all races) population, who represented 6.3 percent of the region's population in 2000, and are estimated to have grown in proportion to the state and the nation, by 8.3 percent by 2006. Latinos represent the largest non-white population in the region.

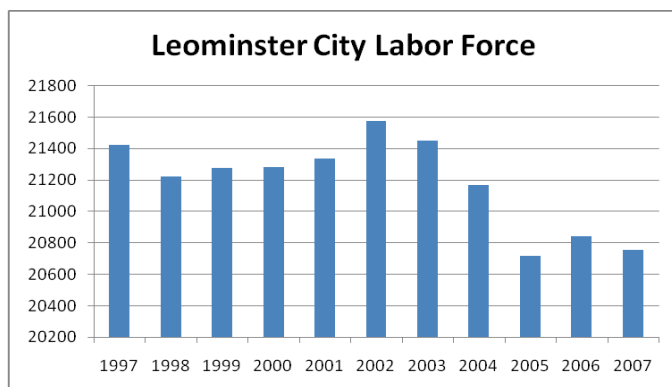
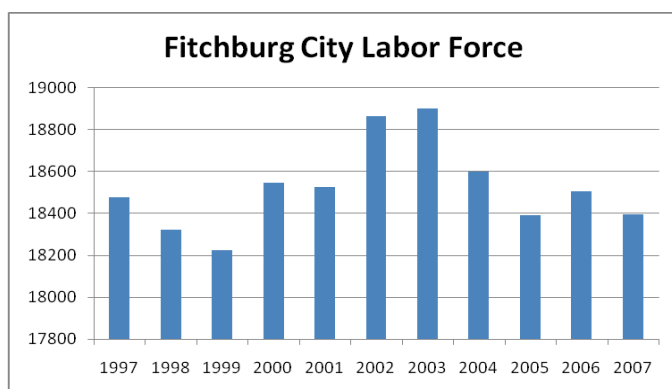


²² 2000 U.S. Census and 2006 American Community Survey

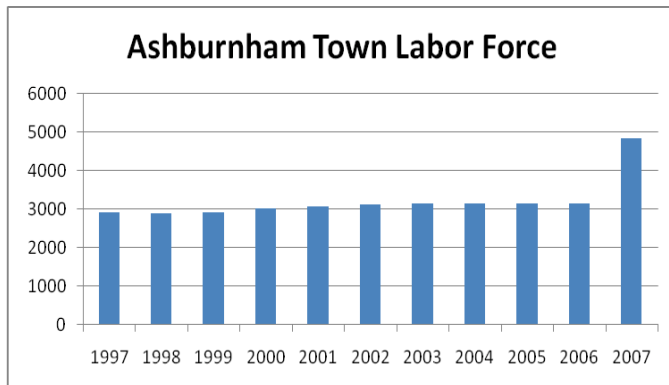
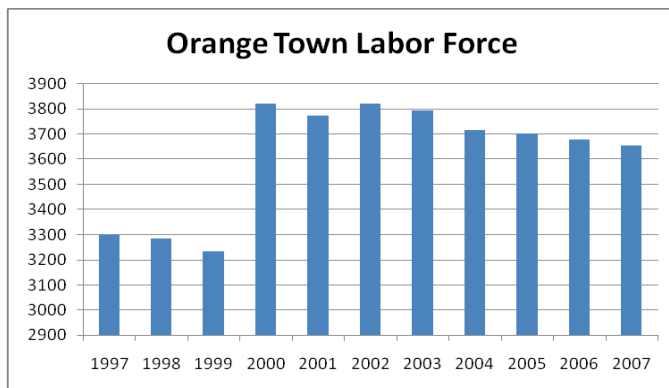
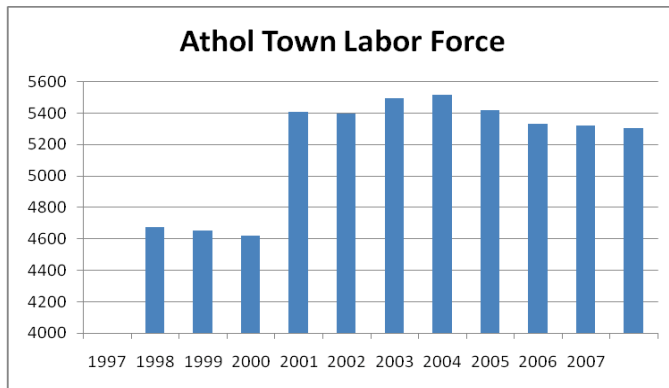
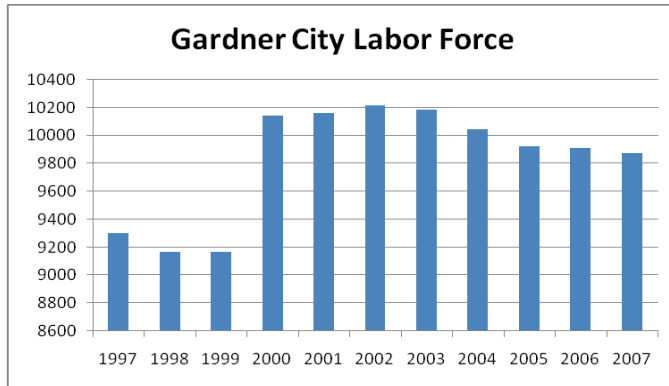
WORKFORCE TRENDS

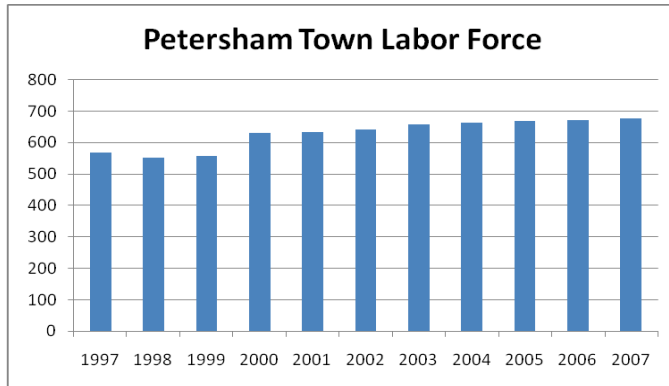
- 1. Labor force declining in size²³** The same seven towns within the study area were examined with respect to labor force trends. The size of the labor force has declined significantly since 2002 in the three largest towns by population (Leominster, Gardner and Fitchburg). In two of the smaller towns, (Petersham, Ashburnam), however, the labor force increased slightly. We guess that the non-wage earning population is increasing in the study area, perhaps attributable to a growth in an aging population and children under the age of 18.

Map: Cities by size of labor force, 2007

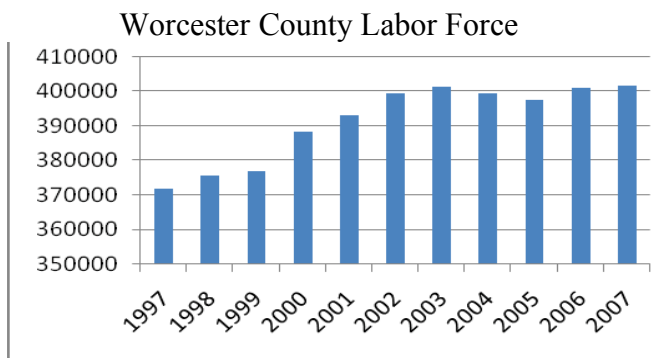
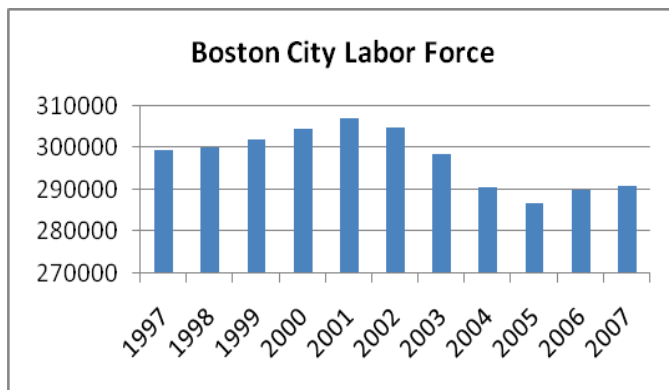


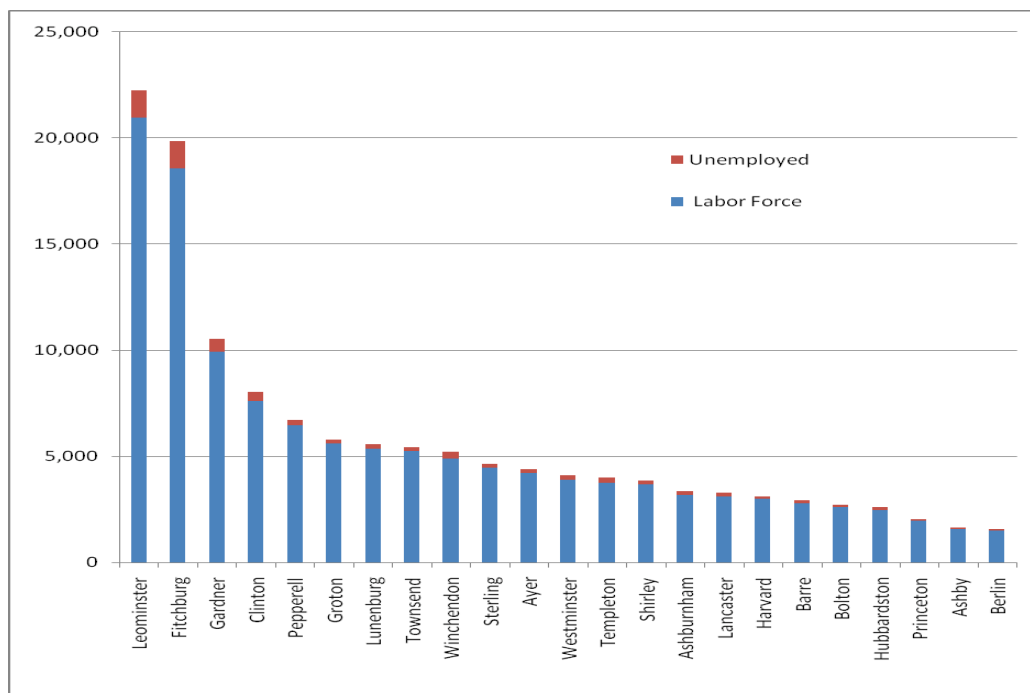
²³ US Bureau of Labor Statistics Department of Workforce Development, 1997-2007. This data covers the seven largest cities and towns by population in the study area.





This trend in declining labor force is true of Boston as well, and is in fact more pronounced in Boston than in the study area examined. For all of Worcester County the size of the labor force has remained steady since 2002.

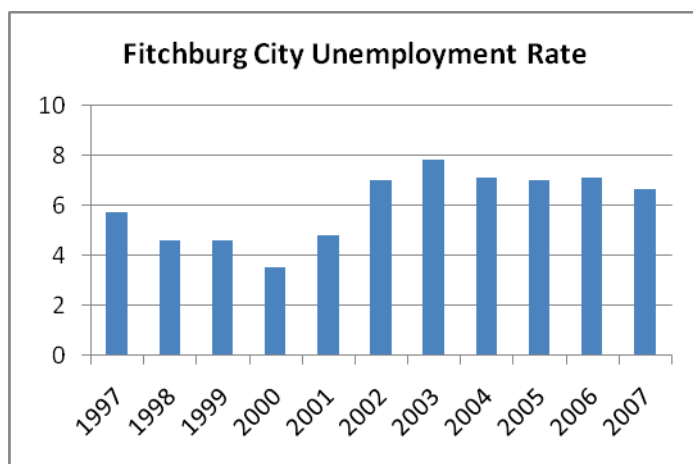




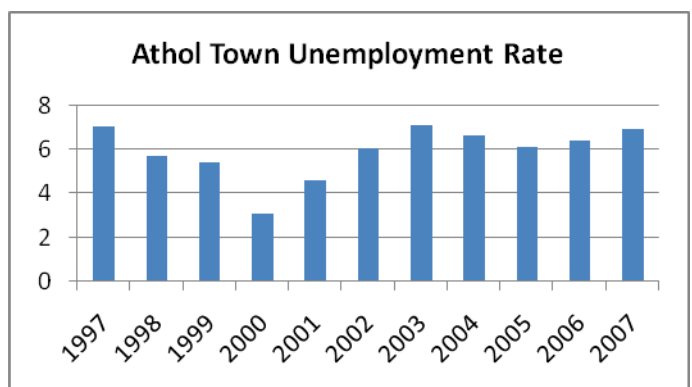
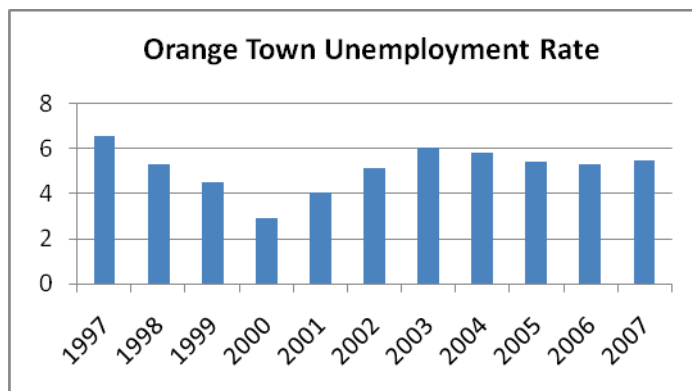
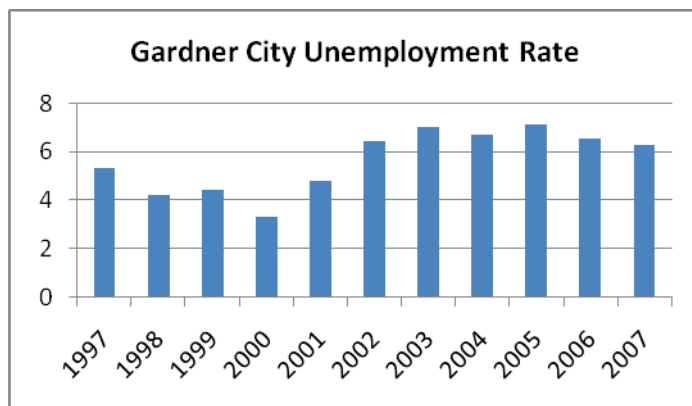
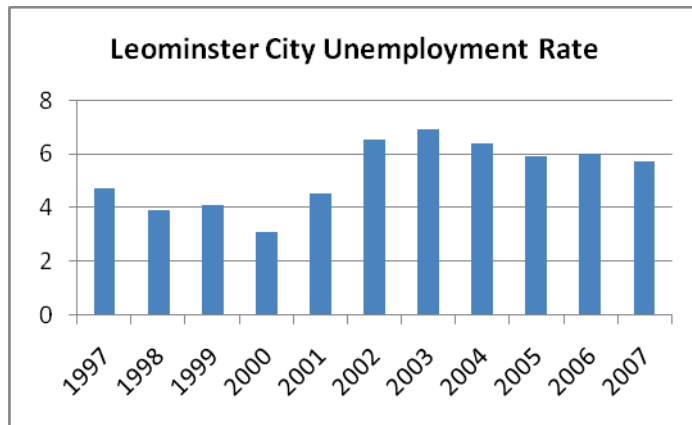
Labor Force Estimates and Unemployment for All Towns within the Study Area, 2006

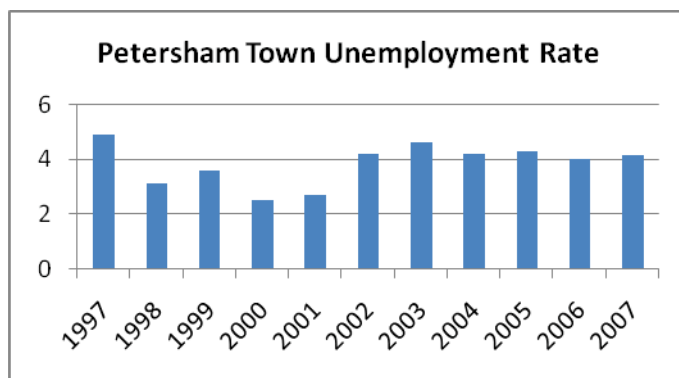
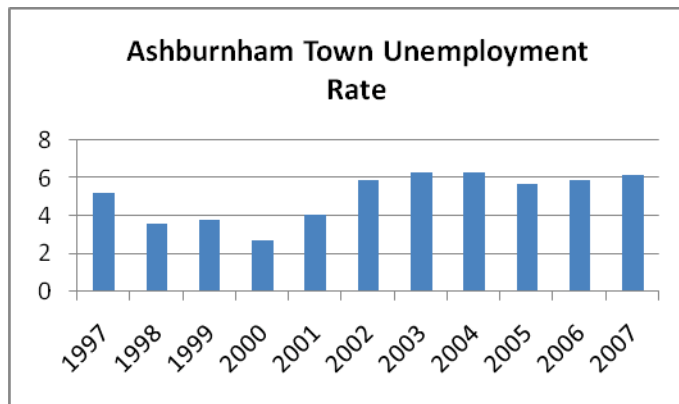
2. **The Region has steady unemployment.**²⁴ Seven towns within the study area were examined with respect to unemployment trends over the past 10 years. Unemployment rates rose significantly in all of the towns studied between 2000 and 2003, but has remained relatively level or decreased slightly since then.

Map: Cities by unemployment



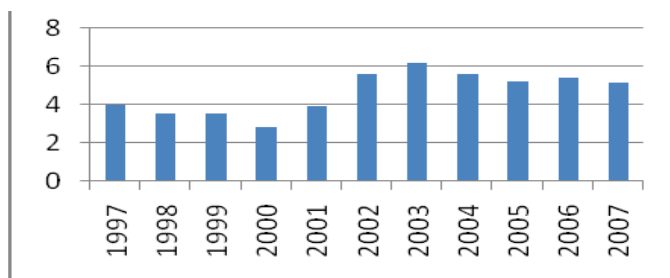
²⁴ US Bureau of Labor Statistics Department of Workforce Development, 1997-2007. This data covers the seven largest cities and towns by population in the study area.





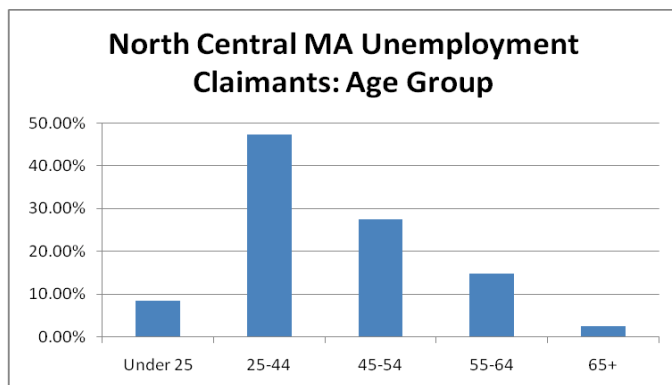
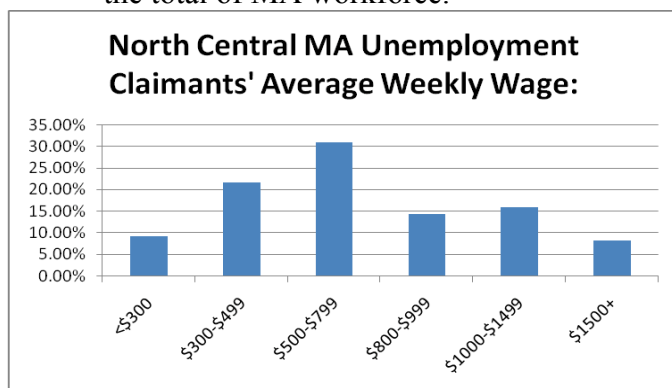
This trend in unemployment is also true of Worcester County and the City of Boston.

Worcester County Unemployment Rate

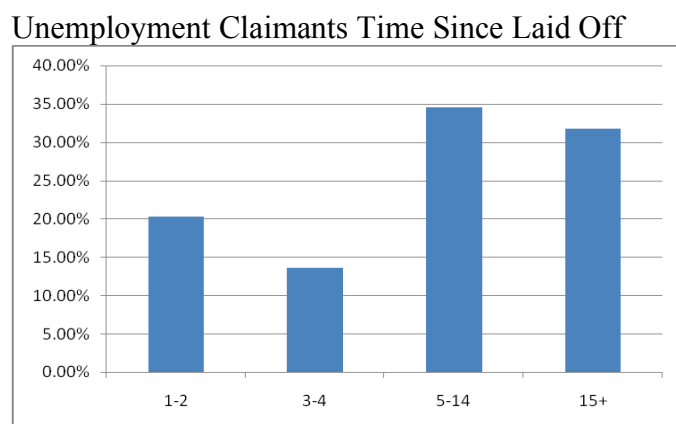
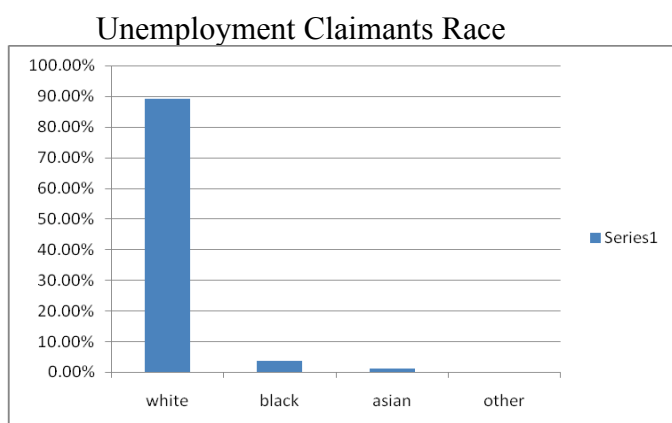
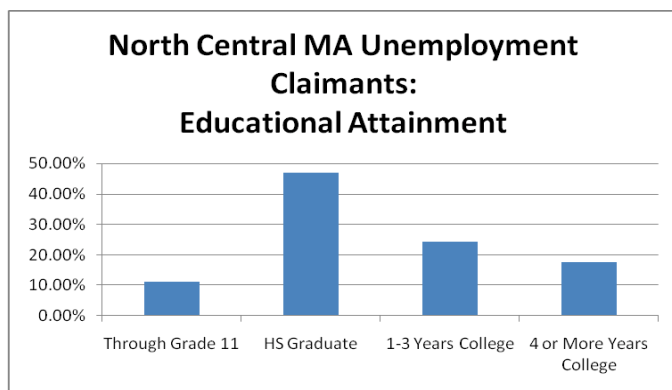




3. Unemployment Claimants in the North Central Massachusetts Workforce Area (see map) are predominantly mid-level wage earners (\$500-\$799 weekly wage before unemployment); predominantly between the ages of 25 and 44 years old (47.3%); high school graduates with no college (46.9%); and overwhelmingly white (89.2%). Over 30 percent have been claimants for more than 15 weeks.²⁵ The North Central Massachusetts Workforce Area is responsible for 4.5% of unemployment for all of Massachusetts. This is slightly more than its share of unemployment by workforce population, which is 4% of the total of MA workforce.



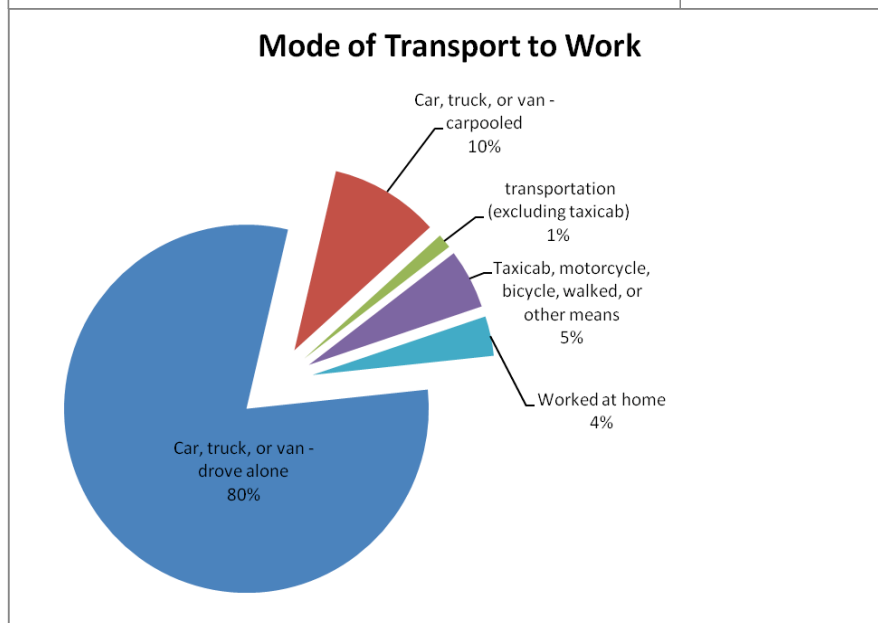
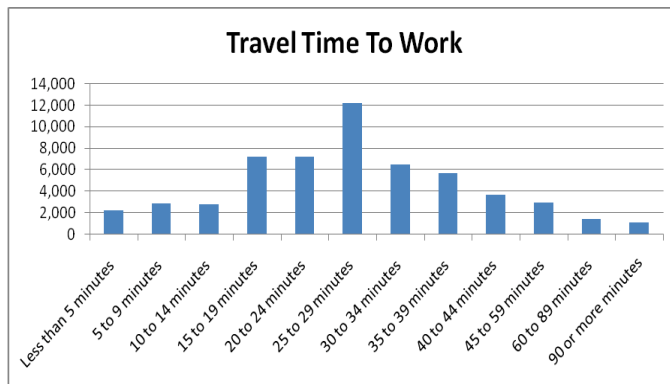
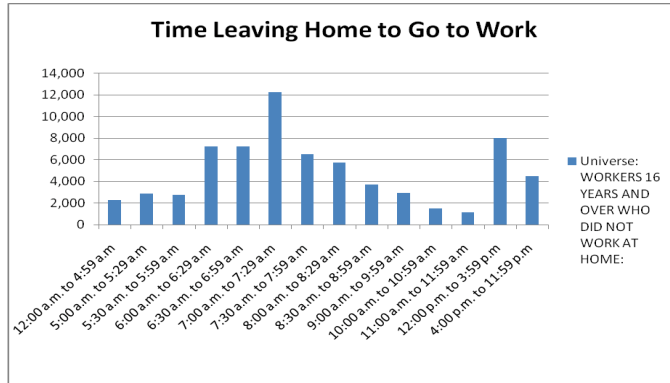
²⁵ US Bureau of Labor Statistics Department of Workforce Development Profile of Unemployment Claimants 2006. The data area closely resembles the study area, though reader should note differences between Workforce Area and Study Area. The data is for the year 2006 (the most recent time frame currently available).



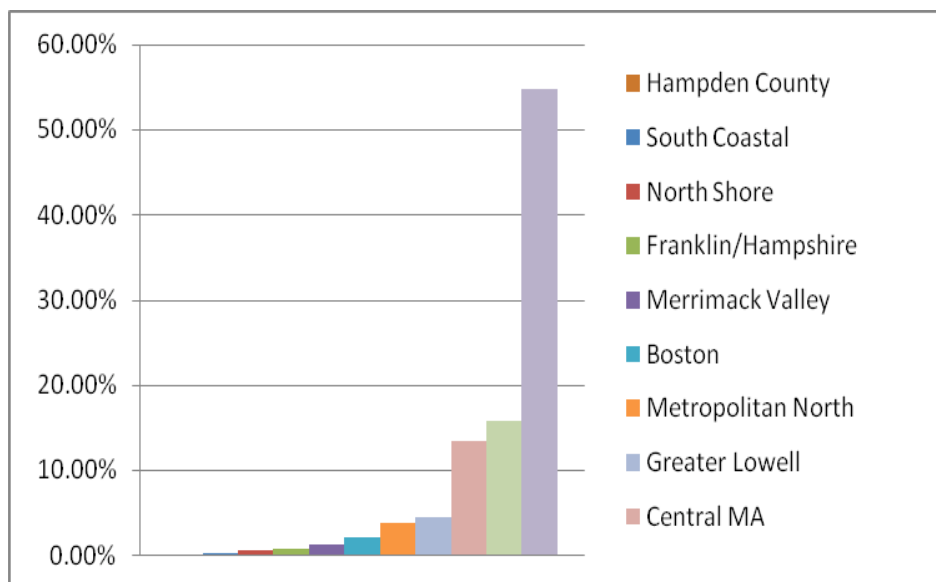
4. **Commuting Patterns**²⁶ The majority of workers in the NECTA leave for work between 7:00 and 7:29 am, suggesting a “nine-to-five” commuting pattern. However, a significant portion (18.2%) also leave for work after 12 pm (including 6.5% who leave after 4 pm), indicating a sizeable population of night and evening workers as well. 62.2 percent travel

²⁶ US Bureau of the Census American Community Survey 2007. Data limited to L-F-G NECTA.

between 15 and 44 minutes to their place of work, and do so overwhelmingly by car, truck or van (90%). Just over 1% used public transportation to go to work.



Where North Central Massachusetts Residents Worked: 2000
Source: US Census Bureau

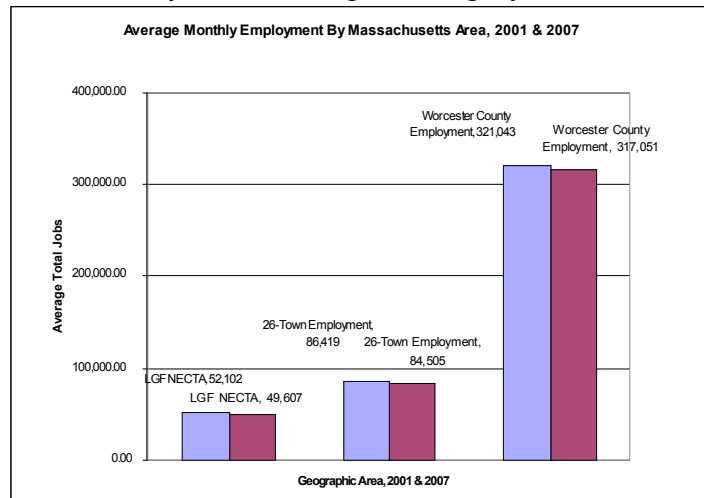


Economic Base Trends

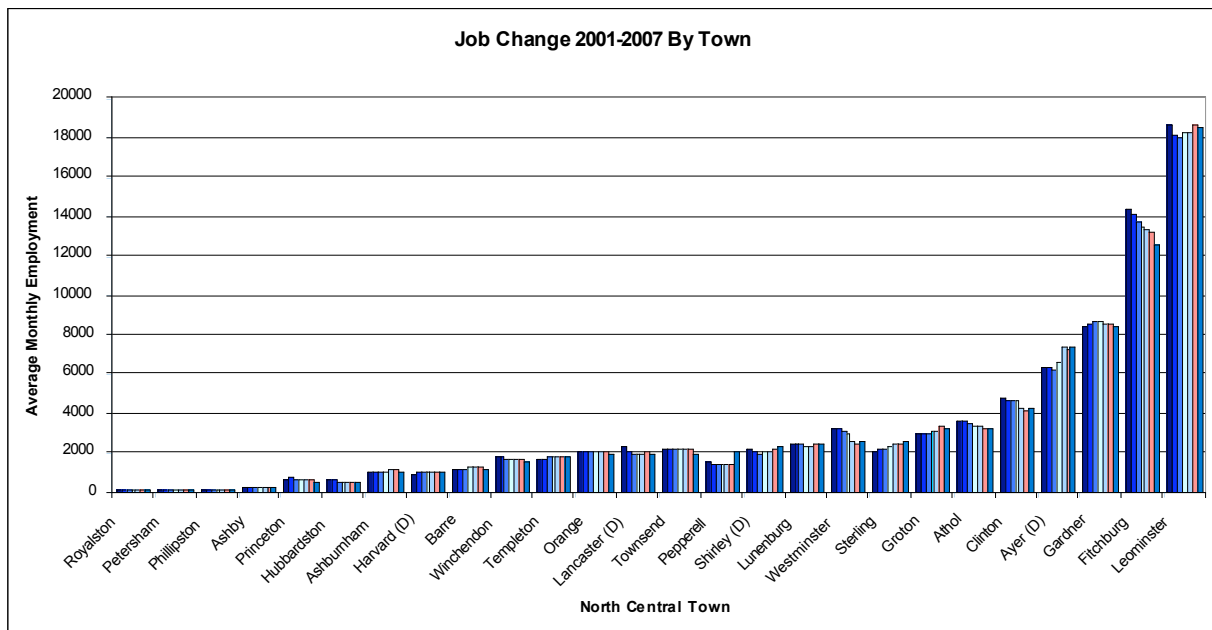
1. **Employment Declines Slightly at Multiple Local Levels**²⁷ Whether looking at the Leominster-Gardner-Fitchburg NECTA, total employment for the 26 towns that comprise the North Central Massachusetts Development Council's region or Worcester County, each region experienced net job loss in the last six years, but in small proportions relative to the overall job base. Of the 26 towns within the region, more experienced job loss (16 towns) than job gain (9). In addition, four of the five largest employment centers in the region (which provide 4 out of every 10 jobs in the region) experienced stagnant or declining employment. The following figures provide a snapshot for trends in the

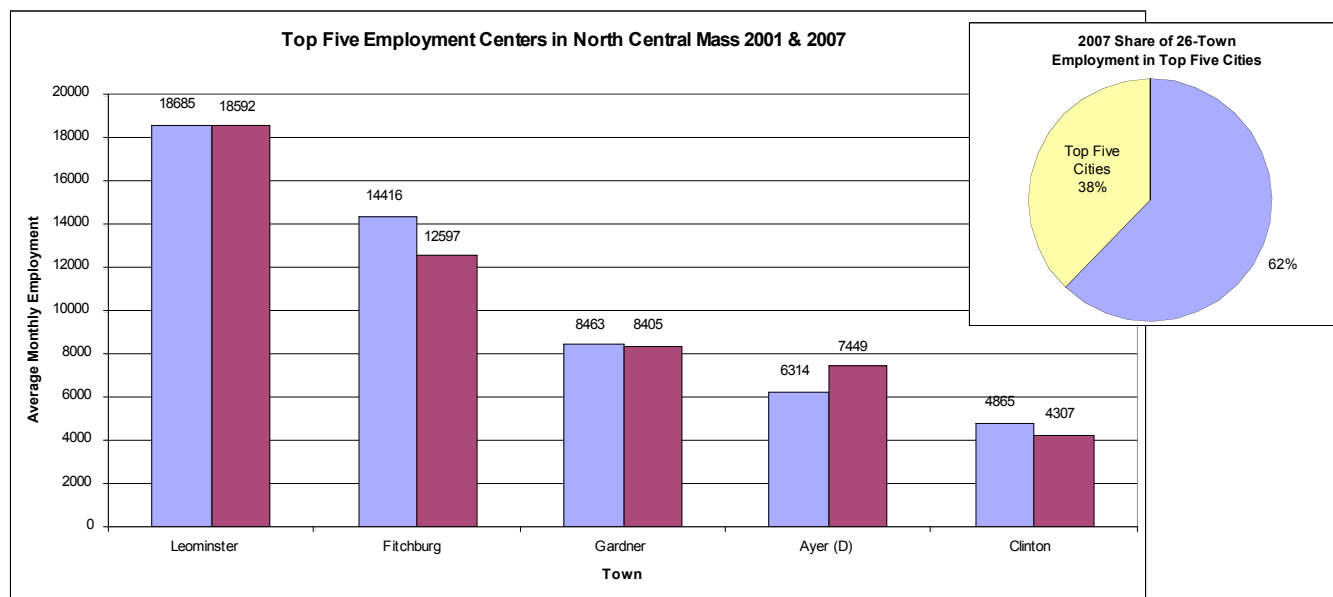
²⁷ Data Source: The data related to Economic Base is all derived from Employment and Wage (ES-202), produced by the Massachusetts Department of Labor & Workforce Development. Disclaimers: ES-202 data are derived from reports filed by all employers subject to unemployment compensation laws. Data are repressed if a threshold number of employers do not exist within an area, thus employment numbers may appear lower than workforce numbers. The data is used to provide general trends within the employers of the study area, and should not be assumed to represent the entire population of employers and employees. Note: 2007 data are based on 3rd quarter averages. Also, the readers should know that data represented as NECTA are measured for two slightly different geographies. ES-202 is measured by the NECTA data from 2004 – 2007. Data from 2001 – 2003 were measured at the MSA level. These areas are relatively similar and data do not reflect any inconsistent changes between 2003 and 2004.

number of jobs in the county, NECTA, top five employment towns, as well as show a 26-



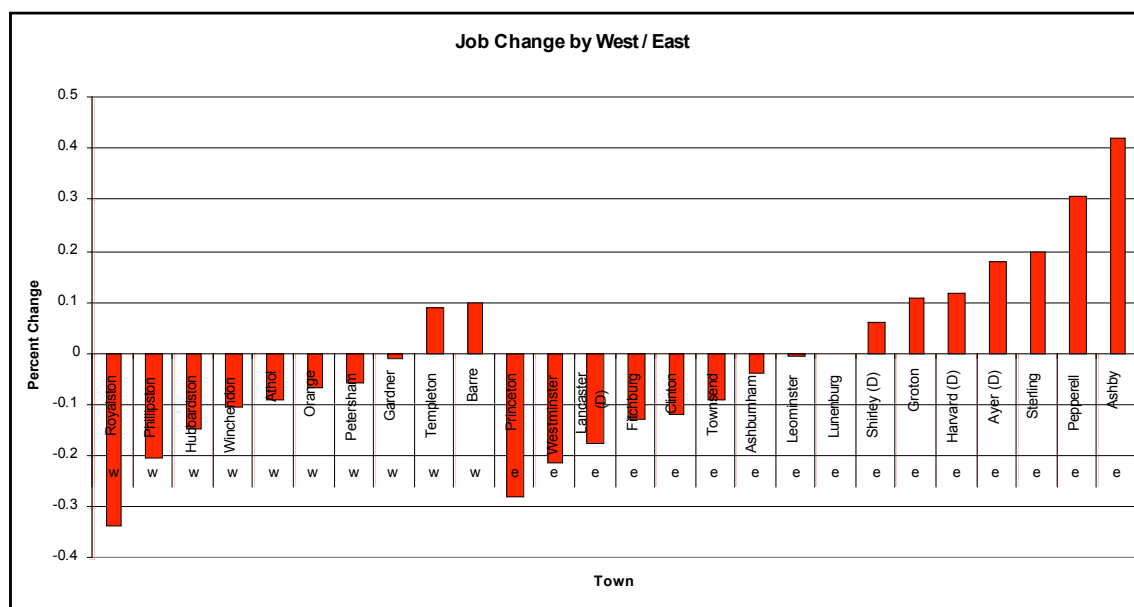
town analysis.



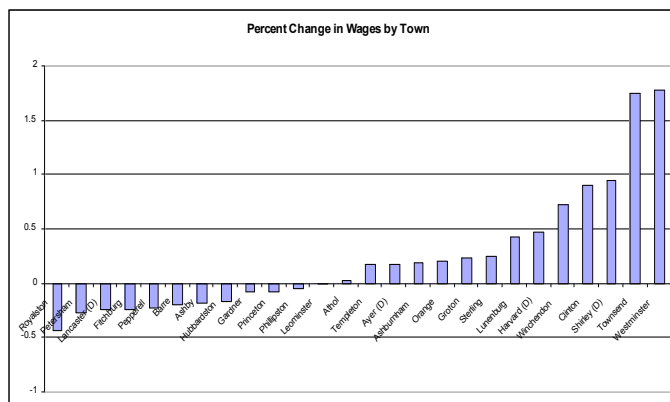


- 2. Job Loss is more prevalent in the western half of the region.²⁸** Though there are a greater number of towns in the eastern half of the region to reflect trends, there are more towns in the western half of the region that are losing jobs than gaining (8:2), than in the eastern half of the region, where there are an equal number of towns gaining and losing (8:8). There are also more dramatic increases in jobs in the eastern half of the region. The only two towns adding jobs in the west, Templeton & Barre, did so at a rate of increase of 10% from 2001 – 2007. Those gaining in the eastern portion did so at higher rates, with up to 40% gains in Ashby. We would expect to see these trends given that elements cited as contributing to regional growth, proximity to Routes 2 and 495, as well as the redevelopment of Devens are located in the eastern portion of the region.

²⁸ ES-202. Job change is measured as the change in average monthly employment relative to the total employment in the town. The east/west distinction was made by the author.



3. **Wages decline in employment centers**²⁹ While wages have gone up in the local NECTA, county, state and Boston area, two of the three largest employment centers in the region have seen real wages decline significantly over the last six years, most dramatically in Fitchburg. Even in Leominster, which has been experiencing growth, has not seen wages keep pace with inflation. Despite Leominster's job growth, its wages are

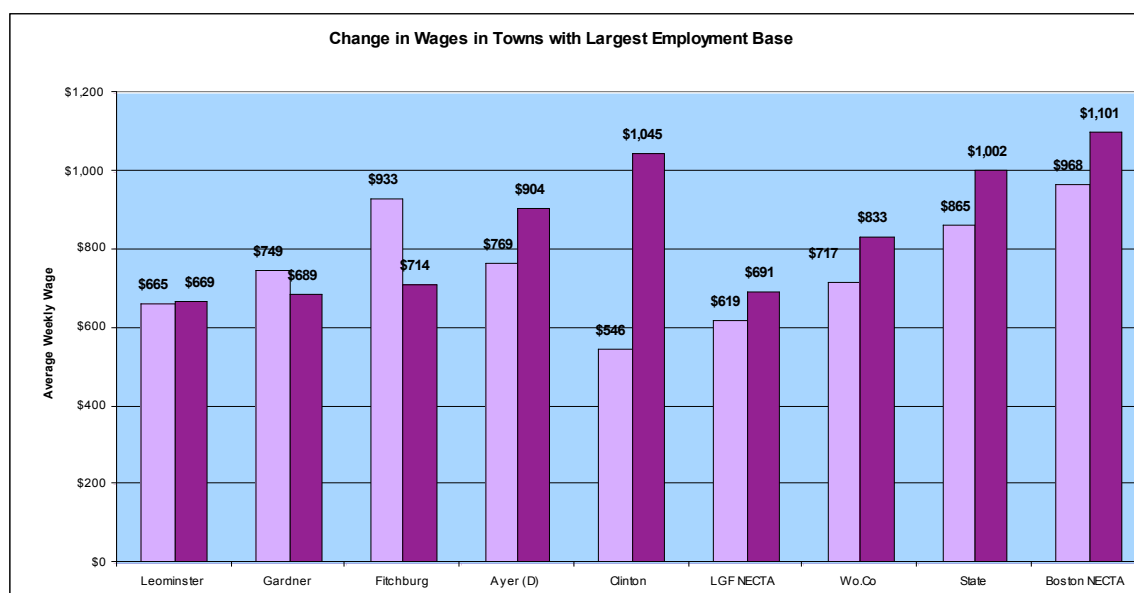


not increasing overall, which may be a trend consistent with its replacement of manufacturing sector jobs with retail jobs. Also, the following graphs show that industries that are experiencing job decline tend to have higher weekly wages. An example of this is manufacturing, which

has one of the highest shares of employment and the highest wages, but the industry is also in decline. Also, two sectors experiencing growth that together constitute almost 40% of the labor force across the NECTA have the two of the lowest wage levels, retail paying an average of just over \$400 per week and accommodation and food services paying under \$300 per week. The sector that experienced the largest growth, arts/entertainment, though it is not a very large employer, pays one of the lowest wages. Though wages across all industries in the last six years have increased, although some more slowly than others, we can assume that the drop in the average weekly wage is a function of the change in types of jobs in the region. It is interesting to note that several

²⁹ ES-202

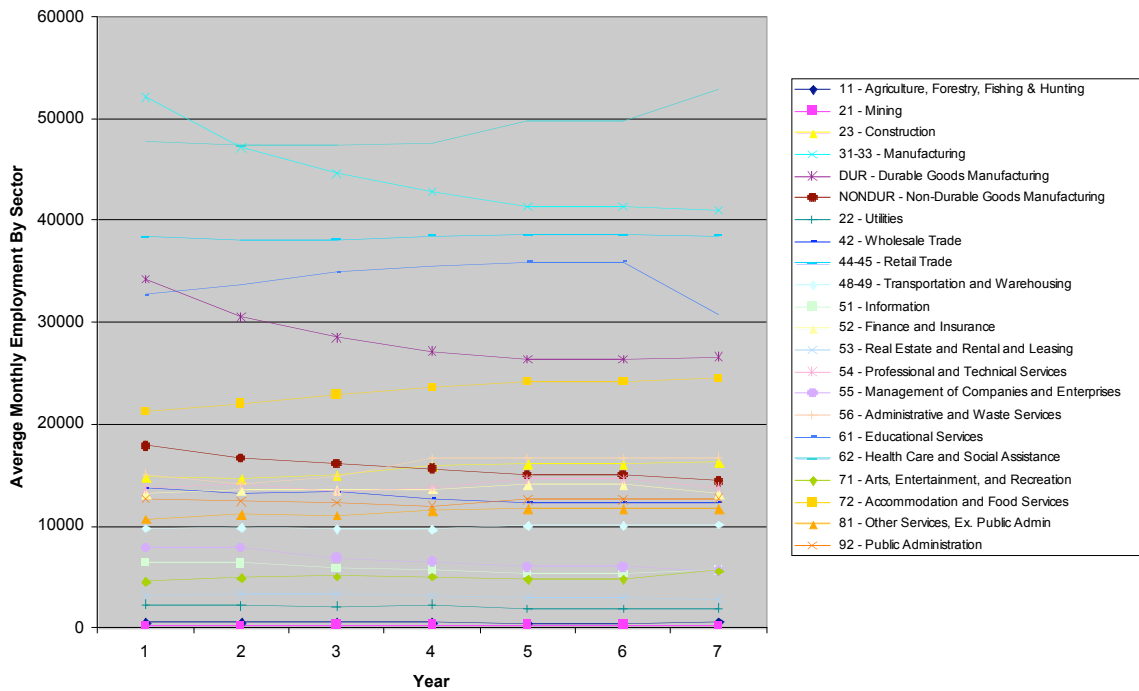
towns, Clinton, Shirley, Townsend and Westminster have seen their average weekly wage nearly double.



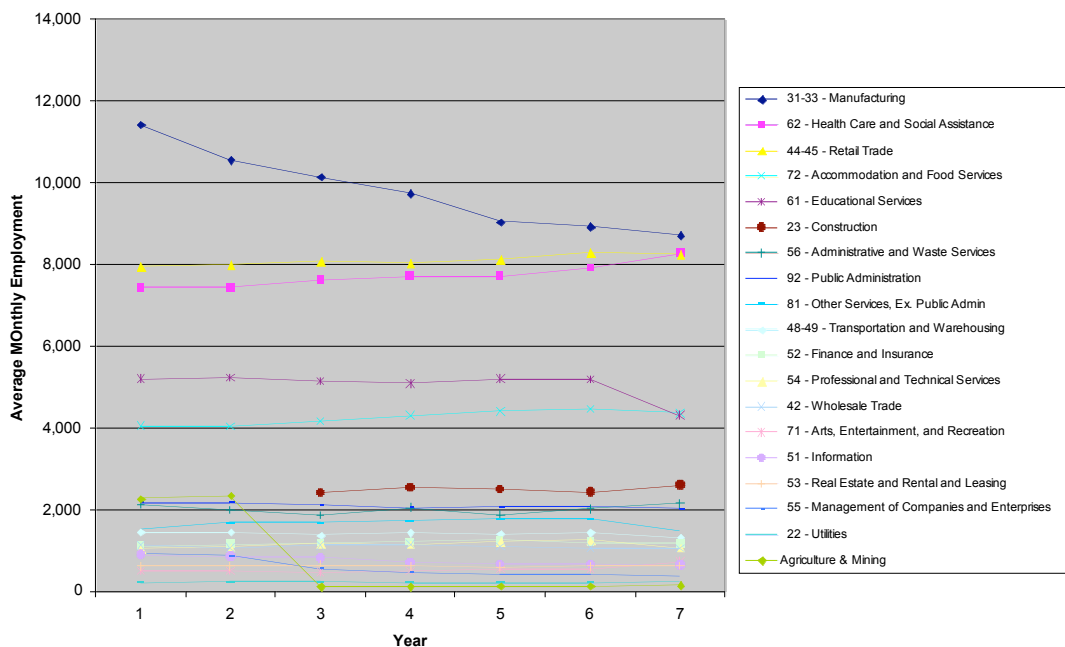
4. Industry- level trends: Job growth in certain industries varies by town. Health care, services are on the rise. Manufacturing trends are mixed: non-durable goods manufacturing has a larger share growing except in Fitchburg and Leominster. Education not growing

In Worcester County between 2001 and 2007, health care and social assistance grew at the fastest rate and replaced manufacturing as the largest employment sector early on in these six years, and has risen sharply in the last three years. Manufacturing, which declined by over 20% was attributed mostly to a 30% decline in durable goods manufacturing, though this has slowed over the last few years. Non-durable manufacturing has not declined all that dramatically. Two sectors that experienced growth were accommodation and food services, and wholesale trade. (Wholesale trade also appears to have dropped off in the last year, but that may be attributed for incomplete data for 2007.) Finance and insurance, construction, administrative services and professional and technical services all experienced slight growth.

Worcester County Employment Change 2001 - 2007

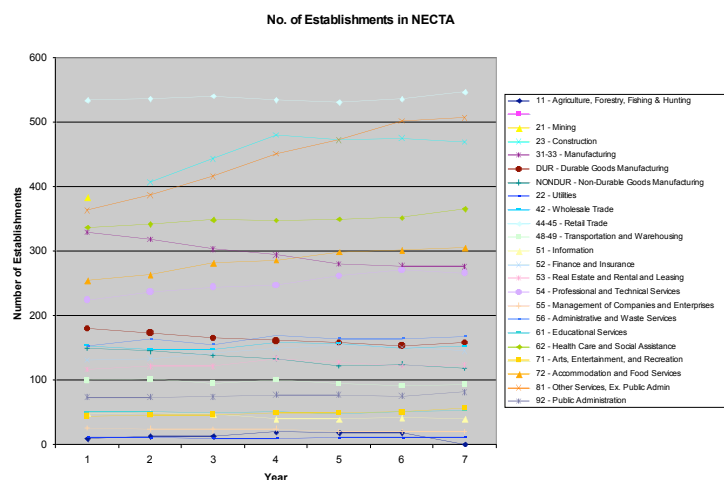


LFG NECTA Job Change by Industry 2001 - 2007

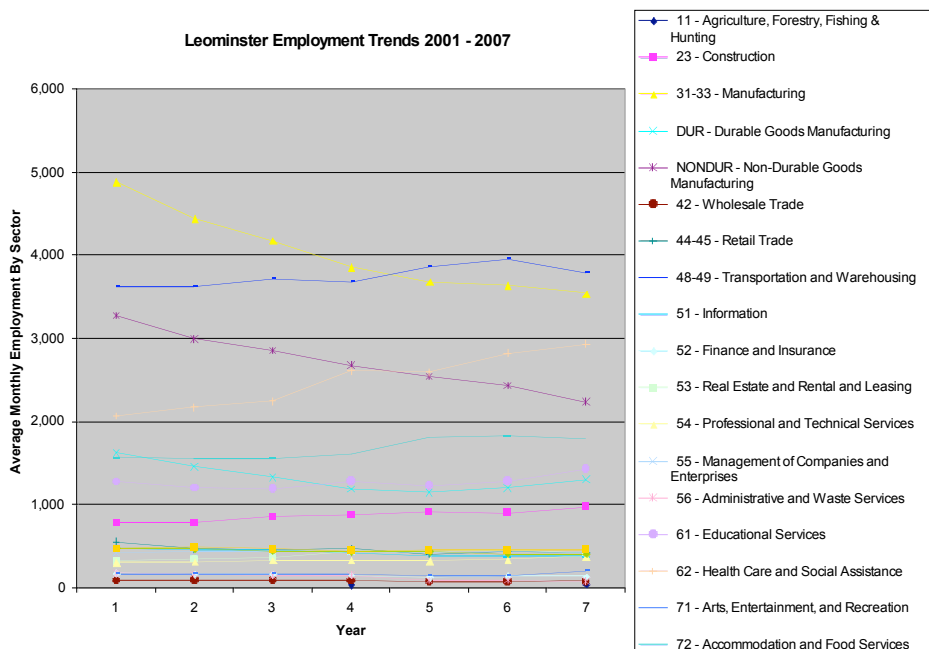


Looking at industries across the NECTA, in just six years, total manufacturing jobs decreased by a third. As with Worcester County, health care and social assistance, and retail grew, but did not overtake manufacturing in the NECTA. In other trends, the number of jobs in accommodation

and services increased in the region by about 10%, and also represent a good proportion of jobs in the county. The below map captures growth in the number of establishments in the NECTA. The largest number of establishments are in the retail sector, though the number has remained steady. This is interesting because one might imagine that as the region has lost better paying jobs, the number of retail establishments, (as a proxy for the spending power) would have declined. However, the growth in retail in Leominster may offset retail declines in places like Fitchburg or Gardener. Another sector that added over 100 businesses in six years in the region was services. Construction seems to have experienced a boom between 2002 and 2004. The area lost 55 manufacturing firms between 2001 and 2007, about a 17% decline. In other large trends, health care and social assistance as well as accommodation and food services grew modestly.

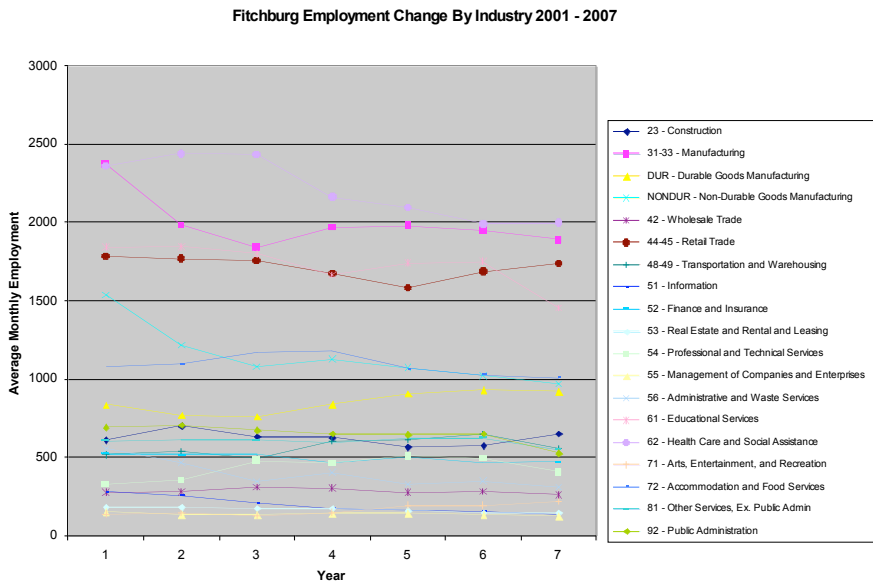


Leominster, the region's largest employment center, lost a third of its manufacturing jobs in six years, but still holds about 3500 jobs in combined manufacturing sectors. In a reversal of trends in the rest of the region, Leominster lost a larger share of its non-durable manufacturing than its durable manufacturing jobs, which, though representing a significantly smaller proportion of its manufacturing jobs appeared to stop declining and actually grow slightly in the last two years. The largest sector in Leominster is now transportation and warehousing, which has growth slowly but steadily in the last six years, with a slight decline in the last year. This is consonant with Leominster's immediate access to Route 2 and its location on the eastern edge of the region. Administrative and waste services increased in Leominster, as did accommodation and food services and construction. Interestingly, retail only seems to employ about 500 people in Leominster and did not appear to register much growth. Since the new Orchard Hills shopping development just opened, this may not yet be reflected in the employment numbers.



As the next largest employment center, Fitchburg has more varied trends. Its manufacturing base also lost about 25% of its jobs, but only in a matter of two years, and mostly in non-durable manufacturing. Since 2003, non durable manufacturing declined at a much slower rate and durable good manufacturing appears to have grown slightly. Health care and social assistance, a sector that is growing for the NECTA and other cities, declined in Fitchburg. Education, as the third largest sector, owing to the presence of Fitchburg State, now employs an average of 1400 people, down from over 1800 six years ago. A large drop off occurred in the last year, but may also be a function of incomplete 2007 data, however in 2006, employment had declined by about a 100 jobs. Retail is the fourth largest employer and appears to be growing over the last two years. It is interesting to note that an average of over 1700 people were employed in retail in Fitchburg in 2007, about three times as many employed in retail in Leominster. This might be owing to the presence of a Home Depot, which alone employs around 400 people. Other sectors,

with much smaller shares of the employment declined slightly or stayed the same.

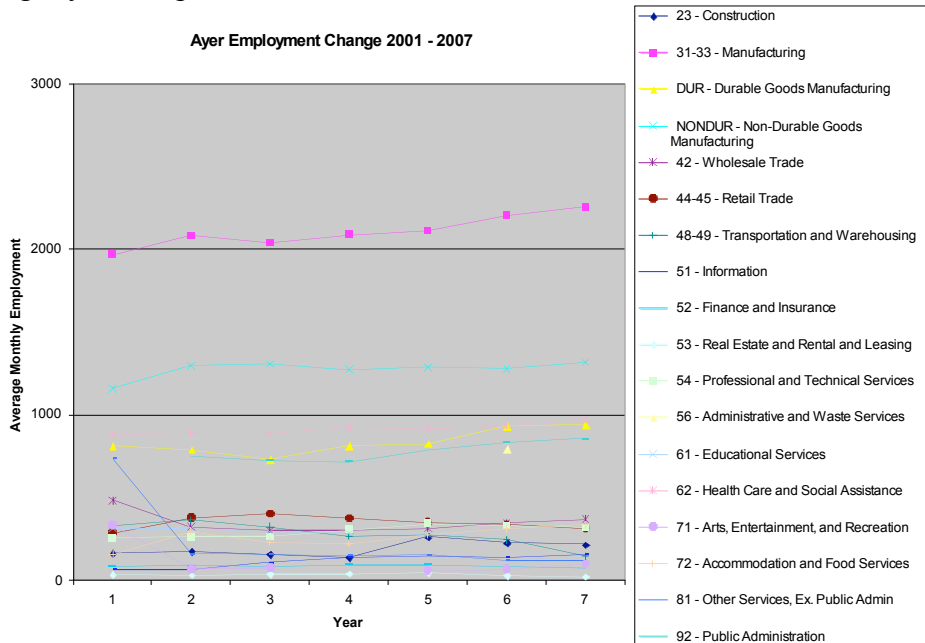


In Gardner, or the more western side of the region, health care and social assistance, the largest employment sector, increased slightly. Manufacturing held steady, though durable manufacturing declined by almost 30%, non-durable manufacturing actually increased by about 50%. Retail and other services gradually increased. Also, education is the fourth largest employer, owing to Mount Wachusett Community College, employment here has remained relatively steady, though it has fluctuated from year to year by about 100 jobs. It also showed a decrease of about 150 jobs between 2006 and 2007, but this, like in Fitchburg, might be a function of incomplete educational sector data for 2007.

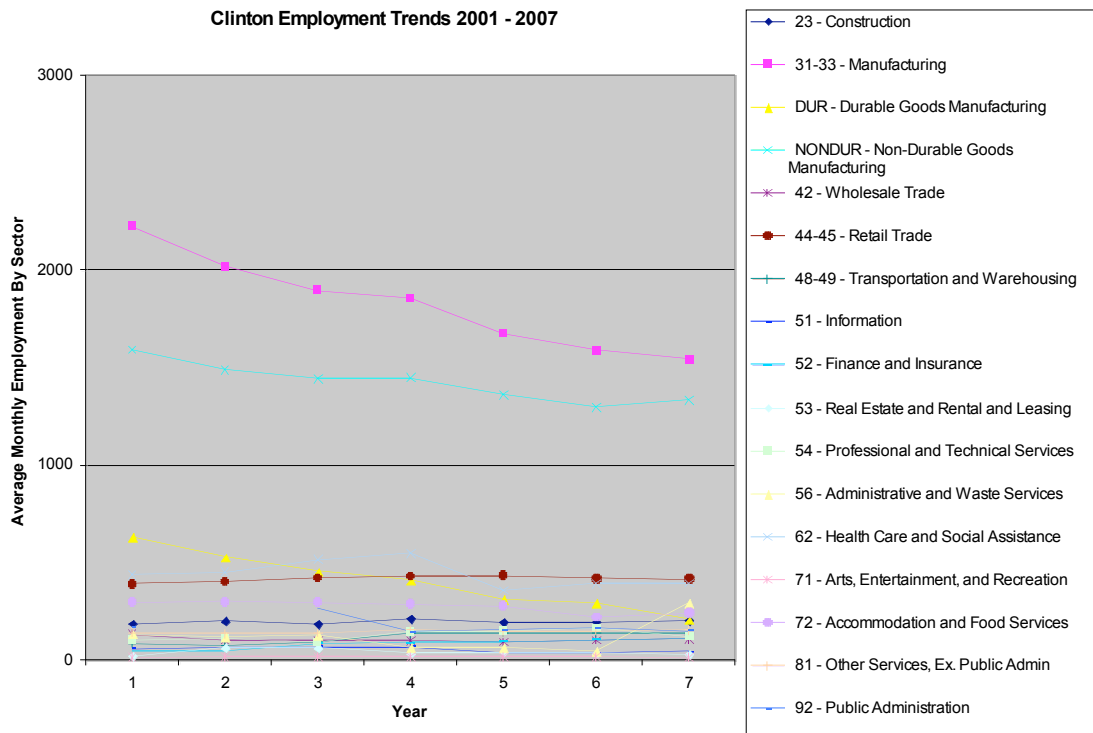


Ayer is the only large employment center with net job increase and one of two with average wage increase. There was an increase in manufacturing jobs, which is by far Ayer's largest

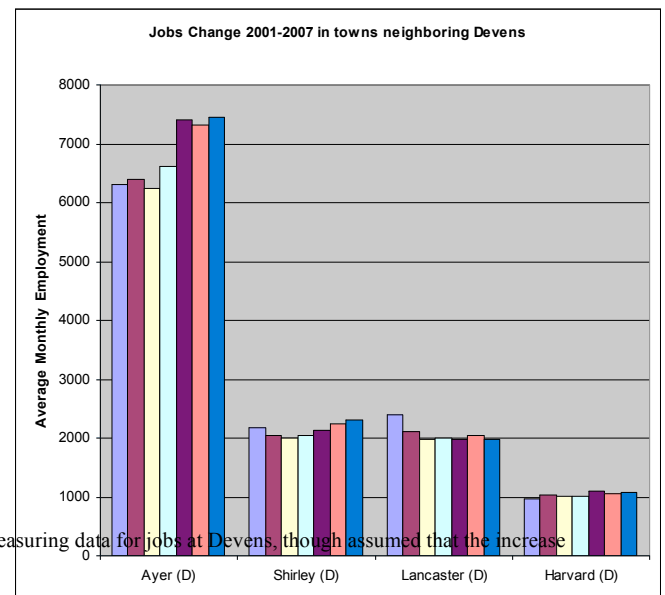
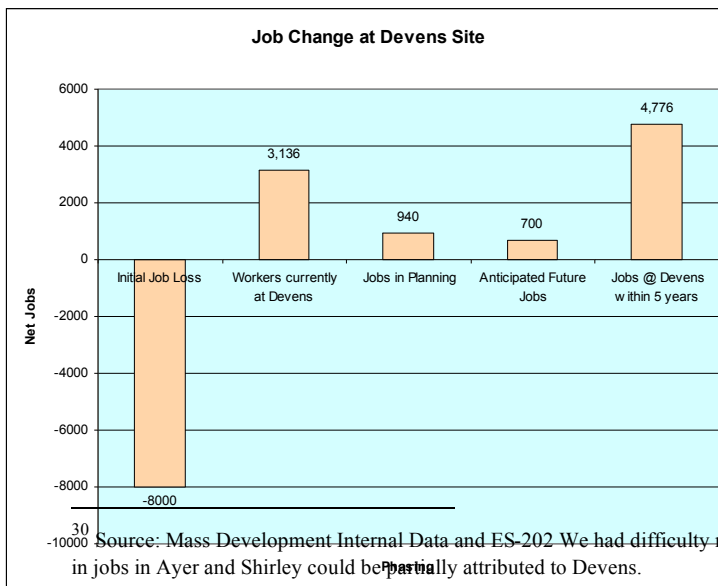
employment sector. It was the only town in which manufacturing increased overall. There were similar rates of increase for durable and non-durable manufacturing, though non-durable has a significantly larger share of the manufacturing employment. Manufacturing increase can likely be explained by industrial development at Devens. Health care and social assistance increased slightly as did public administration. Most other trends remained the same.



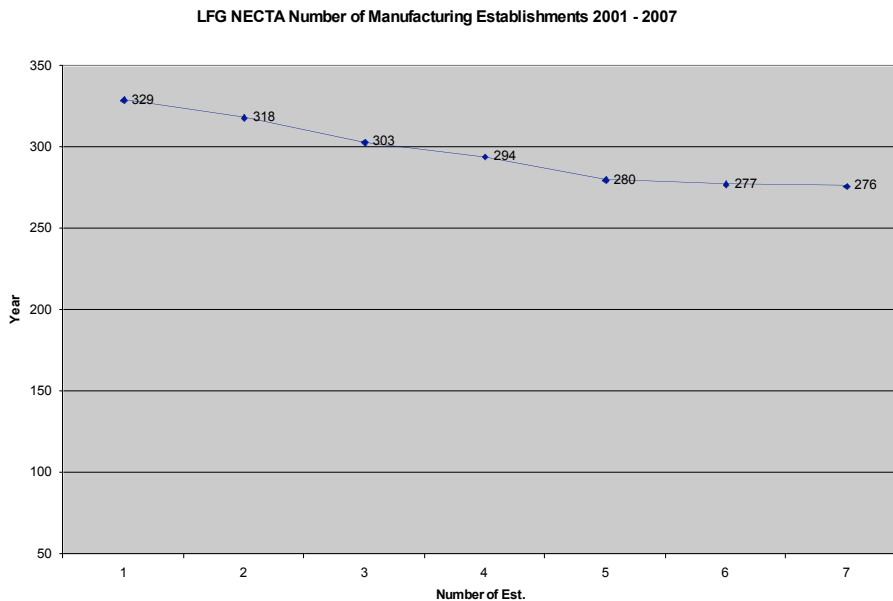
Finally, the town of Clinton currently has about 4,300 jobs. Clinton had the highest weekly wage in 2007 at \$1,045, which represented a jump of over \$150 dollars from 2006 and could be an anomaly, though wages in Clinton have tended to be higher in general. Administrative and waste systems increased employment in 2007 and this could be the reason that average weekly wages are higher. Clinton lost about a third of its manufacturing jobs overall in the last six years, most dramatically in durable goods. Non-durable goods, which make up a larger proportion of its manufacturing, lost less of its jobs over all and also appeared to increase jobs slightly in the last year. Health care and social assistance has a presence though slightly declined. Retail employs about 400 and has remained constant.



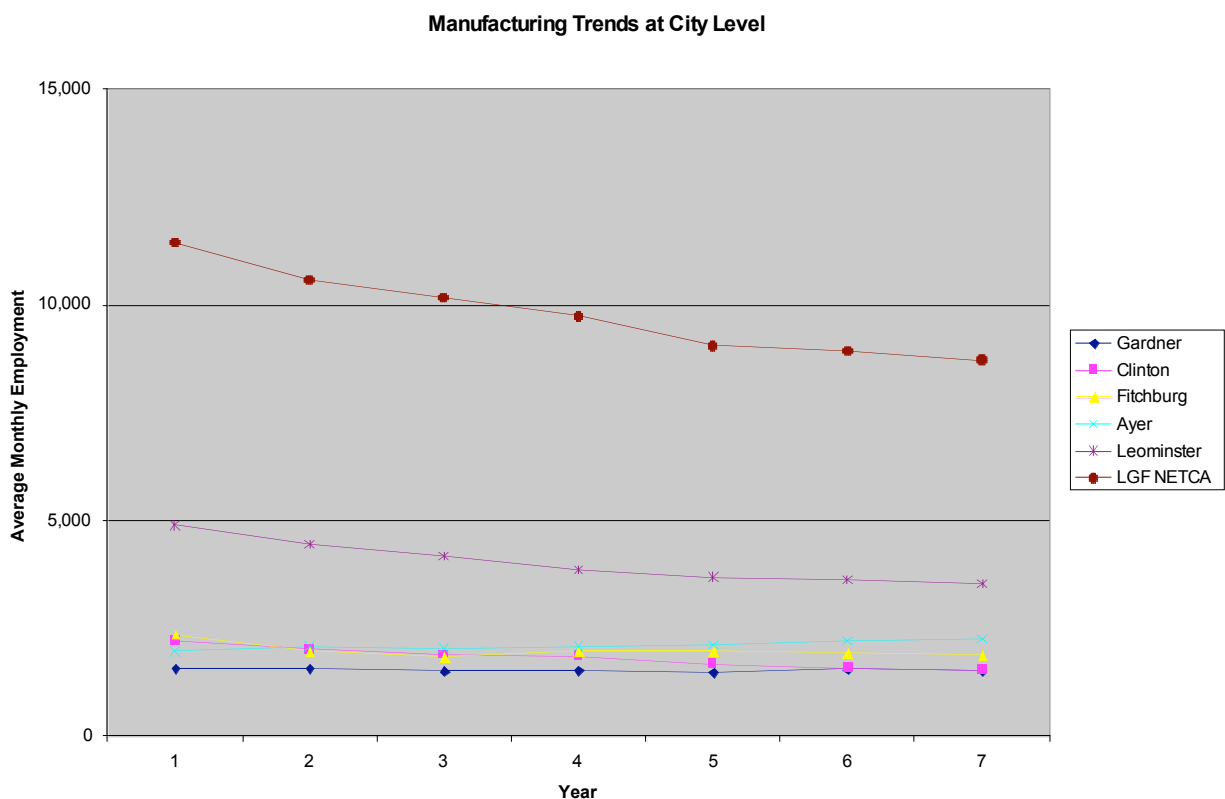
Devens has not yet recovered half the expected jobs in its redevelopment though it expects to have close to 5,000 employees within five years.³⁰ Devens, if it adds the projected number of jobs within in 5 years will have more jobs than the city of Clinton. These jobs, however, are relatively low relative to the land area. There is currently 3.6 million square feet of industrial space there, with 8.5 million to come on line within 5 years. Right now there are 38 jobs per acre, and there will eventually be a projected 24 jobs per acre.



Manufacturing not disappearing. While the Fitchburg-Leominster-Gardner NECTA lost about 2500 jobs or 20% of its manufacturing base (with the largest loss in Leominster) all others appear to be relatively stable, with only slight declines, at the city level.³¹ There are still 276 manufacturing firms in the NECTA, and as the chart of largest employers shows, manufacturers are consistently among the largest employers in the region, along with hospitals and educational institutions.



³¹ ES-202 Data



Review of Recent Relevant Economic Development Reports for North Central Massachusetts

Economic Impact Analysis of Fitchburg Municipal Airport, January 2008, RKG Associates

This study analyzes the demographics and economic position of the city of Fitchburg, as well as the users of the airport and the employment and economic activity it supplies. Though Fitchburg is an employment center within the Leominster-Fitchburg-Gardner NECTA, Fitchburg has more persons commuting out of the city for work than commuting into it. The study does conclude that the Fitchburg Airport, as a general aviation airport, supports economic activity (jobs and businesses) within the region. Of the survey respondents, one-third use airport primarily for business. The other two-thirds define themselves primarily as recreational users. Businesses use the airport on a monthly basis mostly for transporting staff, but also for transporting clients, or to deliver products. A third of those that responded operated an aviation-related business. In order to increase the chances of sustainable long-term growth, the plan recommends that airport owners develop a business plan for the Airport that includes objectives and strategic actions needed to maximize the economic and financial return of the facility. Any long-term planning efforts for the facility should coincide with local and regional land use and economic development planning efforts.

Twin Cities CDC, Small Business Program Strategic Plan, July 2007, Karl F. Seidman Consulting

This report was produced to direct the small business program of the Twin Cities CDC, to guide their already highly-rated services for small businesses, currently focused on business counseling and entrepreneurial training.

The report includes an assessment of economic trends in Fitchburg and Leominster between 2001 and 2005. In this period, Fitchburg lost almost 8% of its job base, but gained employment in the following sectors: Transportation and Warehousing, Professional Services, Arts, Entertainment and Recreation and Food Services. In the same time period, Leominster lost about 2% of its job base, a small net loss because of gains in Construction, Retail, Financial, Education and Health and Hospitality. Retail, Education and Health had the most notable job growth. Fitchburg's growth in professional and technical services outpaced Leominster, the county and the state. Leominster however, because of its location on Route 2 is experiencing the majority of the job growth.

Interviews and surveys included recommendations that the CDC mentor more existing businesses and provide technical assistance with bookkeeping and financial needs. Surveys respondents believed that the area's strongest business attributes were transportation, supply and cost of real estate, and public safety. The most negative were utility costs and services and local government permitting. The plan recommends that the CDC expand its outreach strategy and its client base, implement technical assistance programs, including a bookkeeping service, and strengthen relationships among the economic and small business development entities in the region and with financial lenders. Program recommendations include helping small business in Fitchburg achieve job growth in strong industries and helping small businesses take advantage of Leominster's growth.

Fitchburg Economic Development Strategy (1997)

Overall the report attempts to provide an action plan/implementation strategy for Fitchburg.

Given that there exist multiple plans and assessments of Fitchburg, the researchers decided to summarize the data and recommend next steps for acting on past recommendations to the city government.

Issues highlighted include:

- Acknowledging the growing immigrant population (growing concentration of Asian, Latino and African American as a proportion of all minorities)
- Noting the growth in employment opportunities is likely not going to come from within Fitchburg
- The city has assets it needs to promote better to raise its profile and strengthen its self-image

Implementation/Recommendation Focus Areas:

- Creating the Fitchburg Digital Technology Mall (the city needs to embrace the technology age, leverage its strong telecommunications assets and partner with and strengthen capacity of area, public colleges, tapping into their resources)
- Promoting Diversity as an Economic Strength (involving minority communities will go a long way in strengthening their contribution to the city and region)
- Enhancing the Downtown and Commercial Corridors (developing downtown as a destination reminiscent of the once thriving city center)

- Strengthening Land and Infrastructure Capacity (the city faces limited land availability, road congestion and highway access problems posing not only the issue of access to the city's major business areas but also more expensive for businesses to locate there)
- Creating a New Civic "Culture" & Infrastructure (zoning and permitting process is currently a significant obstacle to econ dev and has not been updated in over 30 years, thus does not reflect city's existing development patterns)
- Focusing on Workforce Development (view workforce development in the context of the region, since the city has more labor than available jobs)
- Development of Arts and Cultural Development (arts have the potential to become vibrant b/c there exist numerous arts organizations for such a small geographic area; thus focus on raising the profile)

Stressed the need for regionalism - "Fitchburg, the city is not an economic island. It is very much a part of a larger economic region that includes a host of other smaller communities."

They should find ways to cooperate and collaborate and not compete for the same resources

There is also a need for visibility of progress- the people of the city must be kept abreast of progress. They need to be excited about the process, embrace it and move to act on it.

Strategies to Support the Plastics Industry in North Central Massachusetts (2000)

This report was produced for the City of Leominster by University of Massachusetts-Amherst in order to assess the feasibility of creating a plastics technology center to support the plastics industry in the region. There are 700 plastics and related product companies in Massachusetts, 7th in the nation for intensity, and 176 of these firms are in North Central Massachusetts. To assess the feasibility of an industry support center, the authors conducted interviews with 26 senior executives in North Central Massachusetts plastics industry. These interviews found that:

- 1) There is moderate awareness of services provided to plastics industry by government, industrial associations, and educational institutions
- 2) Utilization of local resources is mixed, with smaller companies having a more difficult time accessing training
- 3) There is good support for the creation of a limited plastics center
- 4) Industry executives suggest that any potential center focus their work on workforce/training issues, as the region's ability to generate skill formation determines industry strategy, by allowing firms with skilled employees to enter new markets.

Montachusett Comprehensive Economic Development Plan (2005)

This report, produced by the Montachusett Regional Planning Commission, discusses several challenges and opportunities facing the Montachusett region. The Montachusett region is very similar to North Central Massachusetts region, including all counties except for Pepperell, Princeton, Barre and Orange municipalities.

The population of the Montachusett region grew at 6.1% through the 1990's, while the supply of jobs grew by only 1.9%. These jobs are concentrated in the following sectors: Services and Public Administration (45.7%), Manufacturing (24.4%), Wholesale and Retail (15.0%),

Construction (5.9%), and Finance, Insurance and Real Estate (5.0%). The population is aging, consistent with national trends

The report highlights the following problems:

- Housing prices in the region are rising and there is insufficient supply of affordable housing.
- Despite commitment from many institutions, the region still struggles to develop the skills needed for its employer base.
- There are a large number of vacant industrial sites and brownfields, which pose significant challenges to redevelop.
- Residents in the Western Montachusett region face greater socioeconomic challenges than those in the Eastern part of the region.

Appendix D

Preliminary Assessment of Economic Development Capacity

Summary

The following is a preliminary assessment of North Central Massachusetts' economic development capacity. Interviews were conducted with representatives of local government and a wide variety of service providers to both residents and businesses. The report has been broken up into four sections:

- Workforce Training
- Social Support Services
- Business Services
- Infrastructure

The sectoral breakdowns are followed by a summary of the region's strengths and weaknesses, and the report concludes with some preliminary recommendations.

Workforce Training

Several institutions including the Montachusett Opportunity Council, the North Central Massachusetts Workforce Investment Board, the Greater Gardner CDC, the Twin Cities CDC, RCAP Solutions, Mount Wachusett Community College, Montachusett Regional Vocational Technical School, and some of the Chambers of Commerce in North Central Massachusetts maintain workforce training programs.

Training the existing workforce

For instance, through the support of the North Central Massachusetts Workforce Investment Board (NCMWIB), businesses can apply for grants to expand the skills of their existing workforce.

Hands on learning experiences and job training

Several workforce training programs that provide hands on experience for students in the region. For example, the NCMWIB coordinates internship programs through the Massachusetts Work-Based Learning Plan that place 900 students in local businesses each summer and provides high school students with the opportunity to learn on the job training skills. In addition, the NCMWIB, along with its Youth Council members, local Chambers of Commerce and local Businesses place between 50 and 75 students annually in summer jobs with work-based learning plans. Similarly, the Montachusett Opportunity Council puts on a program called the Youth Services Program, which provides youth ages fourteen to seventeen with a year round program focused on work experience in the public sector that is coupled with contextual classroom learning and employability skills training.

Training through educational institutions

The educational institutions in the region also play an important role in workforce development. For instance, high school students at the Montachusett Regional Vocational Technical School can receive training in house carpentry, health occupations, automotive technology, and graphic communication, among other fields. At Mount Wachusett Community College, students can graduate with an Associate's degree in nursing, paralegal studies, manufacturing technology, and dental hygiene, among others. The college also offers certificate programs in computer graphic design, business administration, law enforcement, small business management, and massage therapy, among others. Upon completion of their Associate's degree, many of the students at Mount Wachusett Community College apply to four year university and are able to transfer their credits, so that they can then graduate with a Bachelor's degree with just an additional year of course work. It is also important to note that Fitchburg State College also plays a role in workforce development. The college offers both a four year Bachelor's degree in fields like computer science, mathematics, education, and nursing and a Master's degree program in fields like elementary education, special education, and criminal justice.

Other workforce training programs

Several other organizations also offer additional training programs. For instance, the Montachusett Opportunity Council sponsors a program called Career Opportunities, which provides specific skills training in health careers and office careers including comprehensive computer instruction. A strong support network is in place to assist students in successfully completing the program, and attaining and retaining employment.

RCAP Solutions offers assistance through programs like Job Link and Moving to Work. These programs primarily target citizens leaving public assistance, residents fleeing domestic violence or people in entry level jobs that want to upgrade their skills.

In addition, the Twin Cities CDC and the NCMWIB put on programs that teach students about potential career opportunities. They invite speakers including electricians, police officers, lawyers, reporters, musicians, contractors, restaurant managers, nurses, a NASA scientist, among others, to teach students about professional tracks.

Other institutions like the North Central Massachusetts Chamber of Commerce, Mount Wachusett Community College, and Montachusett Opportunity Council also offer English as a Second Language educational opportunities, which make workers more marketable.

Analysis and recommendations

Although several organizations provide workforce training programs, it is not clear how effective these programs are in improving economic conditions in the region. Better assessment mechanisms would be useful to gauge how well workforce training matches employment needs and assists residents gain steady well-paying employment. If the technical school and the colleges work with the NCMWIB, the CDCs, the Montachusett Opportunity Council and the Chambers of Commerce to match the skills that the employers demand with the skills that students acquire, then there is potential to improve employment opportunities in the region.

The internships and hands on learning opportunities for the youth are assets for the region. However, many of these programs target the youth (primarily high school students), but do not

focus on enhancing the skills of the existing workforce. Expanding these opportunities would give youth more chances to experience on the job training skills.

There is some concern that that workforce development services may not be equally available in all of towns and cities in the region. Even though the NCMWIB provides outreach to almost all of the municipalities in the area, other organizations like the Chambers of Commerce and the CDCs do cover the entire region. Ensuring that each town's needs have been assessed and making sure that those needs are met is also an important part of high quality workforce development.

Social Support Services: affordable housing, health care, child care, and elder services

In addition to skills training programs, social support services are also critical for bolstering the workforce in the region.

Housing

Several institutions in the area provide affordable housing, housing for people with special needs and assistance in purchasing a home. Organizations like the Twin Cities CDC, the Greater Gardner CDC, the Montachusett Opportunity Council, Mass Development, and RCAP Solutions provide opportunities for clean, safe, affordable housing for low and middle income resident in the North Central Massachusetts region. The local organizations have developed several partnerships to provide better affordable housing opportunities. For instance, the Greater Gardner CDC collaborates with Montachusett Regional Vocational Technical School to develop affordable housing. The students build the units at a low cost to the builder and they learn on the job training skills. The Twin Cities CDC also partners with the Taking Action Committee, which is a group composed of residents concerned with the lack of quality, affordable rental housing to work toward developing a tenants' association and creating a tenants' rights workshop to engage the community.

In addition, institutions like the Twin Cities CDC and RCAP Solutions offer transitional housing opportunities for residents overcoming drug and alcohol abuse or fleeing physical abuse. For instance, the Leighton Street Transitional Housing program provides twelve apartments for up to twenty four months. RCAP Solutions and the Montachusett Opportunity Council also provide housing for elderly and disabled members of the community.

One of the strongest housing programs in the region is the NeighborWorks Home Ownership Center, which serves as a one stop service center for question/need regarding planning for home ownership and is run by the Montachusett Opportunity Council, the Twin Cities CDC, MRPC, and the Gardner CAC. These organizations recognize their individual strengths and challenges and have come together to secure funding sources. As a result, they have significantly reduced redundant services and consolidated resources.

In addition, through individual counseling and homeownership classes, the Twin Cities CDC helped eighty families achieve homeownership in 2006.

Finally, RCAP Solutions offers a suite of home ownership services including property management, property development, technical assistance, consulting, and advice for securing loans for repairs and home modification.

It is also important to note that the region has faced a very high rate of foreclosures in the last few years. In response to this challenge, the Twin Cities CDC, local lenders and other non-profits, have been working to create a plan for the region to address this issue. However, it is not completely clear what the strategy is for that plan.

Child Care

The Montachusett Opportunity Council offers child care services such as day care and the Head Start preschool program. These services are available to children in Fitchburg, Leominster, Clinton, Gardner, Templeton and Athol.

Health Care

Some of the Chambers of Commerce (Nashoba, Greater Gardner, and North Quabbin) offer advice and provide members with health and dental insurance plans.

The Montachusett Opportunity Council also offers services such as community health education, a women's health network, family planning, a men's clinic, Women, Infants & Children (WIC), CARE services for persons infected with HIV/AIDS, childhood lead poisoning prevention, and a healthy homes program. This organization also works with the Pro Health Division to provide high quality health care while also respecting differences in culture, income, age, and sexual preference.

The United Way is also a provider of public health services including preventative health programs such as health screenings for vision, hearing, and blood pressure.

Elder services

The Montachusett Opportunity Council provides elder care services like home delivered meals, congregate meals, healthy living nutrition services, and elder home repair. The Elder Services Program provides individuals 60 years and older with home and community based services that support independence and reduce institutionalization.

The United Way also offers services to elders such as one-on-one volunteers, support groups and transportation to members of society that are losing their vision.

Analysis and recommendations

Organizations in the region offer substantial support services for employees and residents including affordable housing, home ownership counseling, health care, child care, and elder services. There appear to be fairly strong collaborations between organizations such as the alliance between the Greater Gardner CDC and Montachusett Technical High School for affordable housing and the partnership between Montachusett Opportunity Council, the Twin Cities CDC, MRPC, and the Gardner CAC for the NeighborWorks Home Ownership Center. This home ownership program can serve as an example for other potential collaborations in the region as it had reduced redundancy in services and allowed the partners to secure outside

funding opportunities. It is likely that this collaborative approach will be useful as a strategy to reduce costs and repetitive services.

Despite positive collaborations, it appears that some of services do not reach all of the towns and cities. Some of the poorest regions do not have access to the support services that they need. However, many of the social organizations and the community development organizations indicated that they do not have the capacity to expand their programs. Ideally, they would like to increase the size of their existing programs including affordable housing, but that requires additional staff members and funding.

Another concern is the amount of affordable housing that is currently available as that the region can only construct a certain number of affordable housing units and the redevelopment of the spaces available is difficult to complete due to permitting regulations, zoning rules, and accessibility. Making the permitting process easier or changing the zoning laws could improve access to better affordable housing.

Business Services

Capacity Overview

Many agencies and organizations in the North Central Massachusetts region offer services and programs to encourage new businesses to locate and prosper in the region. Many of these programs are funded through State grant programs, with some additional funding from non-profit and federal grant programs as well as locally generated funds. Town governments, particularly in the smaller towns, are stretched to capacity and have little ability to provide extensive business services. The Chambers of Commerce are member organizations that are funded through membership fees and some grants. They have limited staff capacity, and provide services through the Central Massachusetts Small Business Development Center (SBDC) and member volunteers. Non-profit organizations have more staff working on economic development issues, but they are very reliant on grant funding and their staff is stretched to capacity as well.

The North Central Massachusetts Economic Development Council (EDC) is fostering collaboration and coordination of these efforts; however, there are still many redundancies and gaps. Several interviewees noted that competition for businesses within the region is a major barrier to collaboration efforts.

Current programs and initiatives to attract and support regional businesses are summarized in this section. Weaknesses and gaps in business services that were raised in our interviews are also noted.

Financial Incentives and Assistance

Mass Development, the North Central Massachusetts Economic Development Corporation, Accion, the Greater Gardner and Twin Cities CDCs, and many of the towns in the region offer financial incentives for businesses locating in the region. Using EDA, USDA, CDBG, new market tax credits and other funds, these organizations provide low-interest rates, fee waivers, down payment assistance, tax waivers, infrastructure improvements and other financial

incentives to help businesses finance facilities in the region. Fort Devens is a state designated Economic Target Area and there is no personal property tax within Devens.

The Industrial Development Finance Authority has five targeted loan programs for working capital, gap financing, start-up, façade improvements, and sustainability investments. Small businesses can purchase health insurance through their local Chamber of Commerce. The SBDC has close relationships with banks in the region and assists small businesses in finding necessary loan products.

Lending programs are essential to help the region compete for business regionally and nationally and they are also important sources of revenue streams for the lenders. There is a lot of redundancy in these lending programs, and they are somewhat vulnerable to the availability of state funding. It is not clear whether some coordination between lenders – particularly the non-governmental organizations – might create efficiencies and create a more straightforward process for businesses.

There are not currently sufficient financial incentives to encourage downtown redevelopment and adaptive re-use of historic buildings. A State funding program would be needed to offset the high costs.

Marketing Available Property

Several interviewees noted the need for better market, and there was a sense that working together to market the region will be more successful in attracting economic development on a national and international scale.

In addition to broad marketing of regional assets, detailed and current information is needed about available property. The North Central Massachusetts Economic Development Council (EDC) is putting significant effort into maintaining Costar listings of available commercial and industrial property in the region. Several of the local Chambers and towns also provide information on available properties. Additionally the EDC has just completed an assessment of the availability of Broadband access in the region and is currently working on an Airport Economic Impact Study and a Water and Sewer Assessment. These assessments are state funded and will be valuable resources for marketing available properties. There seems to be general agreement that these are important efforts and that there is need for even better access and marketing of this information.

The local CDCs are involved in some redevelopment projects that bring new properties into leaseable condition. These projects are expensive, require extensive and complicated financing packages, and thus it is a slow process. The Industrial Development Finance Authority is perceived as an underutilized tool for purchasing land, assembling marketable sites, and creating sites that meet industry needs.

Zoning is an influential tool the towns have for providing viable sites for industrial and commercial uses. EDC is working on a Manufacturing Awareness program that will include training programs on zoning for manufacturing.

Devens has considerable advantages for accommodating business siting needs. The large parcels zoned for industrial and commercial development and the provision of affordable utilities make Devens very attractive to businesses. Mass Development and the Devens Enterprise Corporation are authorized to sell and lease land at Devens in accordance with the 1994 Devens Redevelopment Plan and federal environmental authorization. The Massachusetts Office of Business Development markets Devens to businesses throughout the Commonwealth, nationally, and internationally. There is some concern that there has been little effort to create clusters of activity at Devens. The Devens Enterprise Corporation provides expedited 75 day permitting. This is a major incentive for locating at Devens.

Technical Assistance

Many organizations offer technical assistance to businesses within the region. The SBDC offers individualized business counseling and training sessions through several of the local Chamber offices on a regular basis. Services include help with business plans, marketing, financial and operating plans, government procurement, international trade, and human resources. The Greater Gardner CDC has a grant through the Massachusetts Department of Business and Technology to offer technical assistance to start-ups and micro-enterprises. The Twin Cities CDC runs a Small Business Assistance Program that is supported by the City of Fitchburg and the MA Department of Business and Technology that offers accounting services, financial literacy classes, and bookkeeping and accounting seminars. Additionally, there is a state corps of retired entrepreneurs that provide assistance to small business owners, primarily in service businesses.

While we were not able to do detailed assessments of these services, each one is a relatively small program supported by very little staff. Gaps in technical assistance include providing training to businesses with limited English language proficiency, and providing training targeted to various business lifecycle stages. It was noted that the CDCs used to refer clients to the SBDC training, but now are offering their own training programs. Coordinating these efforts to reduce redundancy would allow better specialization and might be able to support a stable group of technical expert consultants to draw on to assist businesses (a cited need).

Marketing Local Businesses

Marketing is a key function of the Chambers of Commerce. Through their websites and publications the Chambers advertise for their members. The Nashoba Chamber sends out a relocation welcome packet to new residents of the area that includes advertisements for its members. The EDC is working on the first issue of its newsletter that will include advertisements as well as articles highlighting certain local business activities. Additional local marketing activities can improve local supplier connections and benefit the region.

Organizations in the region are collaborating to host several small conferences including Mass Plastics, Manufacturing Matters, and Route 2 Business Expo. These seem to be led by the EDC, but all of the local Chambers are involved in these efforts as well. These and other marketing efforts to raise awareness about businesses and industries in the region support existing businesses and help attract new businesses as well.

Many agencies and organizations throughout the region noted a desire to coordinate and better market the tourism industry in the region. The Johnny Appleseed Trail is a seed organization to

coordinate tourism, but its scope and capacity are quite limited. Supporting the tourism industry will not only help businesses in that sector of the economy, but it will also help raise awareness about the region and may indirectly make the region more attractive to other industries interested in the quality of life the region offers.

Filling Job Vacancies

While some of the Chambers provide online job postings, the Workforce Development Board seems to offer the most comprehensive services to link potential employees with job vacancies. The Workforce Development Board's career center runs two career fairs each year, reviews business grant application for funds for in-house job training, and works with potential employees on an individual level to help match them to positions businesses are looking for fill. The two career centers located in Leominster and Gardner provided services to over 8,000 people last year. It is not clear how widely known this resource is and whether businesses throughout the region are taking advantage of it.

Supporting Innovation, Entrepreneurship

The region is working on a few programs to support innovation and entrepreneurship. The EcoStar program at Devens is an innovative voluntary program to business and environmental goals. So far it has 21 members and has resulted in numerous pollution prevention initiatives such as waste and toxics use reduction, water and energy efficiency, recycling, and purchasing of environmentally preferable products.

A Small Business Center is planned as part of the Twin Cities CDC project at 470 Main Street in Fitchburg. One interviewee noted that a regional business incubator would help support start-up businesses.

Networking

The Chambers and EDC have many networking events that seem to be fairly well attended. There are regular meetings of several groups including the womens group, manufacturing CEOs, municipal employees, and human resources. The EDC co-sponsors networking and skill-building events with the Minority Coalition, Latino Business Association, and others. Networking events targeting other businesses sectors (service businesses, downtown business, etc.) could be added.

Analysis and recommendations

There are many organizations working on creating a "business-friendly" environment that will encourage new businesses to locate in the region and provide an array of services to support them once they are located in the region. Competition for businesses is a barrier to regional collaboration on some of these efforts. The financial incentives for locating new businesses in the region are constrained by external funding sources. EDC's work with the Costar database and infrastructure assessments will provide valuable sources of information to help respond quickly to businesses interested in the region.

The services offered to businesses after they are located in the region could be better coordinated to reduce some redundancies and fill gaps in programming. The workforce development board's career centers are the primary organization helping businesses fill job vacancies. Expanding these centers so that they can serve the entire region will provide consistency, enable more

effective job placement, and may help them compete for larger grant funds. The EDC or another organization should act as an umbrella organization to coordinate technical assistance, marketing, support for innovation, and networking. Consolidating technical assistance programs would facilitate more specialized and expert training. Other programs could be coordinated and co-sponsored to avoid redundancy and build regional networks, but don't necessarily need to be consolidated.

Infrastructure

Providing efficient and affordable infrastructure is an important component of economic development as well. Types of necessary infrastructure include:

- Land/Sites for Development—In order to attract businesses to the region, desirable land/sites must be available for them to build on or move into.
- Transportation—Access is a critical issue for the region. Transportation infrastructure facilitates business access to markets and ports, workforce mobility, and tourist attraction.
- Basic Services—Electricity, water, sewer, and waste removal are important for businesses and residents and there are likely to be varying needs depending on location and business type.
- Information and Communication Technology—Telephone and internet access are becoming indispensable for business competitiveness in the globalized economy.

Below is a summary of our findings, which suggest that there is considerable variation in infrastructure development capacity in the region. It seems to be a regional priority, however, and there are a variety of stakeholders working on the issue including the staff at Devens, local governments, the North Central Massachusetts Economic Development Council, and RCAP Solutions.

Devens

The staff of the Devens Enterprise Commission and Mass Development-Devens are focused on infrastructure development for the Devens site. They have a lot of land, which they are cleaning and preparing for development. They are also self-governing in the provision of basic services, doing all of the electricity, water, sewer hook-ups and waste removal on their own. They see these locally owned and operated utilities as an asset in their efforts to attract investment. Their EcoStar Devens initiative has resulted in numerous pollution prevention initiatives such as waste and toxics use reduction, water and energy efficiency, recycling, and purchasing of environmentally preferable products. Additionally, they have commissioned a study by Sasaki and Associates to analyze housing, open space, green construction, and transportation within the site.

Local Governments

Providing basic infrastructure is a primary responsibility of local government. Some of the towns with economic development planners on staff are more proactive about using infrastructure initiatives to attract businesses and facilitate economic growth.

- The Town of Ayer has a grant from the Montachusett Regional Planning Commission to do brownfield remediation and site preparation.
- The City of Gardner has also been working on a 25 acre site, doing brownfield remediation and looking for leasing options. They also receive \$800,000/year in CDBG (Community Development Block Grant) funds, much of which is used for public

infrastructure and facilities projects. The Gardner Redevelopment Authority, which is a quasi-public agency, owns and manages two industrial parks and two cell towers.

- The Town of Clinton is working particularly hard on infrastructure issues. They have a Community Development Action Grant of nearly \$1 million to replace the water lines surrounding the town's largest employer, Nypro, to increase water pressure and improve fire safety. They also received a state Fund More Jobs grant of \$660,000 to create 30 more parking spaces behind Nypro to alleviate parking shortages. The spaces will mostly be used by the company, but will be open to the public. This money is also being used to repair a drainage problem Nypro has onsite. In return, Nypro has committed to creating 100 new jobs and a \$10 million investment in business upgrades. Finally, Clinton received a state-funded self-help grant of \$353,000 to purchase a 61 acre tract of land for open space preservation.
- The Town of Athol receives CDBGs to fund infrastructure repairs. They also have an Economic Development Grant of \$50,000 from the state and \$80,000 from the town which has funded a feasibility analysis for business growth and support on the North Quabbin Business Park development. This will be a retail development, and they already have a developer signed on and 2 stores committed.
- The Town of Ashburnham undertook a study of Industrial Land Use Suitability in collaboration with students at UMass-Amherst. Because the town is close to or at capacity in terms of water and sewer infrastructure, and many of the sites that would be appropriate for industrial development have no service connections, basic infrastructure planning and extension are significant priorities for them.

North Central Massachusetts Economic Development Council

The NCMEDC is committed to building infrastructure development capacity in the region and have begun with a number of important studies. They have conducted or are currently involved in a broadband assessment, an airport economic impact assessment, and a water/sewer systems assessment.

RCAP Solutions

Resources for Communities and People is an organization with offices throughout the US and Puerto Rico. They have a regional office in Gardner, MA, which serves the North Central region. Among their other functions, they undertake infrastructure assessments and assist communities in the region move toward installation and/or improvement of drinking water, wastewater, solid waste management and environmental protection infrastructure. They provide services for:

- Watershed Management and Protection
- Water and Wastewater Facilities Development
- Solid Waste and Brownfields Management
- Facilities and Asset Management
- Compliance Oversight

They also operate the RCAP Revolving Loan Fund (RLF) for communities, which provides short-term financing to eligible applicants for pre-development costs associated with new water and wastewater projects. RLF financing can also be used for short-term costs incurred for replacement equipment, small-scale extension of services, or other small capital projects for existing water or wastewater systems, costs that are not a part of regular operations and maintenance.

Analysis and recommendations

There seems to be capacity in the region for development of land and basic service infrastructure, but there is considerable variation by town. In terms of transportation infrastructure, many interviewees said that the state has been supportive in terms of road maintenance and upgrades, but that there is a lack of capacity in terms of public transportation systems, particularly rail. Few people discussed the issue of information and communications infrastructure, which may suggest another gap in capacity.

Summary and Preliminary Recommendations

The region exhibits several capacity strengths that should be capitalized upon in any economic development plan, but also needs to increase capacity in several areas. The region's two higher education institutions and technical high school are flexible, and seem to possess the capacity to respond to current training demands, and those projected to emerge in the near future. As a corollary, the region's workforce development organizations communicate and collaborate effectively. Other social services provided by multiple organizations are coming together under one umbrella, such as the Neighbor Works Home Ownership Program, to streamline their service provision and collaborate more effectively. The region also has strong transportation capacity in certain areas. Commercial rail access to the region could be further capitalized upon, and the commuter rail line provides easy access to Boston, and the possibility of developing a reverse commuter population.

The region's strengths are not without corresponding weaknesses. Collaboration among the separate cities and towns in the region leaves much to be desired. This plays out most visibly in discussions about retail development, where towns seem keen on attracting investment that is unlikely to add economic output to the region but rather redistribute it internally. Physical infrastructure exemplified by extremely underutilized mill space is an issue the region needs to address. Certain areas of the region also complain of poor road access. Fitchburg for example does not have direct access to Route 2. Unlike some of the other services provided by local non-profits, small business technical assistance services are poorly coordinated among the several organizations that provide them. The region's distance from Boston can also be looked at as a weakness. On a separate front, there is some concern about the depth of the region's commitment to collaboration as many organizations and public sector agents are reluctant to give up control or autonomy.

Collaboration between cities and towns within the region seems to be a critical issue. Tax sharing options may be an effective tool to limit competition within the region. A regional approach to redeveloping old mills and other real estate should also be developed. Marketing these sites for development should be approached regionally as well, possibly utilizing a design competition to promote the real estate, which would have benefits for tourism as well. A concerted effort to carry out more in depth program analysis to better assess performance should be made throughout the region's various organizations. A consortium, or umbrella organization should also be established to facilitate coordination among small business TA programs. Finally,

augmenting professional staff capacity for the smaller towns, potentially through staff sharing arrangements, could be a great opportunity to improve services.

Appendix E

Regional Renewable Energy Industry Analysis

SUMMARY

The clean energy industry will continue to experience significant growth in Massachusetts. Over the course of the next year, several state and federal policies will likely be established that will increase the already significant demand for renewable energy products and services. Most of the job growth in the clean energy sector will be in construction and manufacturing, industries with high levels of unemployment in North Central Massachusetts (NCM). In addition to an available skilled workforce, NCM has one of the largest renewable energy businesses in the region as well as a community college aggressively pursuing expansion in this area. Statewide incentives as well as local capacity make the renewable energy an attractive option for the North Central Economic Development Council to invest in.

WHAT IS RENEWABLE ENERGY

For the purposes of this appendix, renewable energy businesses are those that contribute to the reduction of energy use, or greenhouse gas emissions, as well as their respective supply chains.

MARKET PROJECTIONS

Although growth of a new industry like renewable energy is hard to quantify, the *Massachusetts Clean Energy Census*, a report commissioned by The Massachusetts Technology Collaborative (MTC) found that the clean energy sector supports 14,000 jobs, and is poised to overtake textiles as the 10th largest cluster in the state. MTC is the state's development agency for renewable energy and the innovation economy, and its leading authority on renewable energy.

Following are some highlights from the report:

- Growth Rate: Surveyed executives expect 30% job growth in renewable energy firms and 25% for energy efficiency firms over the next year.
- Fastest Growing Sector: Renewable energy companies are the youngest and fastest growing firms.
- Largest Job Sector: Energy efficiency and demand response firms supply almost 6,300 jobs, or 44% of the total 14,400 jobs.
- Company Size: Massachusetts is an incubator for clean energy firms, with 68% of the firms operating below \$10 million in annual revenues, and 41% below \$1 million.
- The clean energy sector has seen a 15% compound growth rate in company formation since 1995.
- The sector will experience an average annual employee growth rate ranging from 11% for universities to 30% for renewable energy companies.
- 77 renewable energy companies were formed between January 2001 and March 2007.

STATE POLICIES

Several statewide policies have already influenced the evolution of the renewable energy sector, and will continue to do so in the future. These policies make renewable energy more cost

effective, and significantly influence the industry's growth. The following policies influence growth in distinct ways.

The Regional Greenhouse Gas Initiative (RGGI)

RGGI is a carbon cap and trade program that will limit the amount of emissions permitted by electricity generation serving the Massachusetts market. Pollution credits are auctioned to electricity generators for each unit of pollution they emit up until the cap is reached. Proceeds from the auction, -an estimated \$25 million to \$125 million per year, depending on the market price of the allowances - will be used to fund energy efficiency, demand reduction, renewable energy programs, and combined heat and power (CHP) projects. RGGI will increase demand for renewable energy products, as well as provide resources for their financing. Governor Patrick signed RGGI into law in January 2007, and initiative will take effect in January of 2009.

Decoupling

Electric utilities in Massachusetts no longer own the electricity generating plants. The utilities currently make a profit by owning the electricity transmission lines, and charging a certain amount for their use. Utility profits increase in proportion to how much energy runs across the lines. This profit structure creates an incentive for utilities to promote energy consumption, and works in direct opposition to efforts to reduce energy consumption in the commonwealth.

Decoupling utility profits from consumption in combination with a least cost procurement policy (discussed below) could potentially produce a powerful new investor in energy efficiency enterprises such as: building weatherization, cool roof installation, energy auditing etc.

Once decoupling occurs, small scale distributed generation such as geothermal, and rooftop solar and wind, all of which represent significant employment and small business growth potential, lose their main political opposition. The Massachusetts department of Public Utilities is currently investigating the benefits of decoupling, and is likely to make a decision soon.

<http://www.masstech.org/dg/decoupling.htm>

Renewable Portfolio Standard

Massachusetts has enacted legislation called a Renewable Portfolio Standard (RPS) that requires retail electricity suppliers to purchase a certain percentage of their electricity from renewable sources of generation. This provides a guaranteed demand for renewables, and is likely to grow in the future.

Least Cost Procurement

Massachusetts is currently exploring legislation that would require utilities to purchase energy from the cheapest generation source. Energy efficiency investments are currently calculated to generate electricity savings at the equivalent of 3 cents/ Kilowatt hour (KWH), a price that floats around 1/3 of the current price of electricity. A least cost procurement policy would dramatically increase the demand for energy efficiency services until all existing cost effective building stock retrofits had occurred, bringing the price of an energy efficiency investment up to 9 cents/KWH.

TRAINING RESOURCES

In addition to the supportive statewide environment for growth in the clean energy sector, North Central Massachusetts has resources of its own. Mt. Wachusett Community college has been aggressively greening its campus, retrofitting many of its buildings with energy efficient light bulbs and appliances, installing cool roofs, developing a biomass energy generation plant, and in the near future a wind turbine. The college is in the process of developing curriculum to train students in the skills pertaining to this work that will be responsible for a large part of the job growth in the renewable sector.

MANUFACTURING POTENTIAL

The market for renewable energy generation is poised for substantial growth, and along with it the manufacturing industries that supply component parts. While many states are promoting development of wind-generated electricity, currently the industrial sector that produces wind turbine gearboxes is running at close to full capacity. An increase in demand for wind turbines would immediately produce a shortage of these parts. The Renewable Energy Policy Project states “all renewable technologies face a bottleneck in one or more critical components, and that for wind and photovoltaic components, new demand will greatly exceed available industrial capacity for more than 50% of industrial sectors.” This report includes a list of the main component parts for wind and solar technologies, and estimations regarding which Massachusetts’ counties are best positioned to take advantage of this opportunity.
http://www.crest.org/Domestic_Manufac_State_Mass.htm

CONCLUSION

The statewide environment combined with local capacity makes renewable energy an attractive option for the NCMEDC to pursue. North Central Massachusetts has some of the highest electricity costs in a state with some of the most expensive electricity nationally. Massachusetts receives the vast majority of its electricity generation from gas-fired plants, meaning that as oil prices rise, so too will the price of electricity. Investing in renewable energy resources to reduce the regions high electricity costs is essential for the vibrancy of the manufacturing industry. Some studies have suggested that for every \$1 million dollar savings in electricity to the manufacturing industry, 25.6 jobs are produced. Given the statewide policy environment, job creation potential and benefits to the manufacturing industry, investments in renewable energy are a good bet for NCM.

Appendix F

Regional Stakeholders Analysis

List of People Interviewed

Richard Armstrong, Vice President of DRS Power Technologies, Inc (Business)
Joe Firmani, Purchasing Manager of Performance Polymers, Inc (Business)
Jan Cochran, Commercial Sales Manager of Peterborough Oil Company, Inc (Business)
Alan Foster, President of the Foster Company (Appraisal and Real Estate Consulting)
Ray LaFond, Senior Vice President of Commercial Lending at Enterprise Bank (Lender)
Karin Oliveira, Director of Community Builders Program at Mt. Wachusett (College)
Dick Quinlan, Operations Mgr at Qualified Resources International, LLC (Job Placement)
Steven Roach, President of Shoba Valley Medical Center (Hospital)

The following were determined after detailed interviews with the stakeholders listed above:

Challenges

- 1) The region requires a skilled workforce in specific industries and occupations to remain competitive. It requires greater coordination of resources to accomplish this. Specific challenges include:
 - Need for higher technical skills for new emerging manufacturing industries
 - Need for trained nurses and pharmacy physicians
 - Need to market assets in Leominster, Fitchburg, and Gardner so they too can incentivize business growth in their areas like Devens
- 2) The business also point to the high cost of labor. Specific causes include:
 - High cost of housing and living for employees
 - Commuters from further away who want more monetary incentives to work in companies
 - High cost of skilled workforce (engineering, etc.)
- 3) Transportation is expensive and often inaccessible:
 - High cost of fuels adding to shipping costs
 - Fitchburg is suffering from being “land-locked” with Route 12 being a poor connector road to Route 2
 - Area is west of I-495, which is a physical and psychological barrier for investors who think that this is too far from Boston
 - Commuters looking to work in Boston have to account for 1 ½+ hours each way
- 4) Infrastructure, generally speaking, is deteriorating in the area, including:
 - Fitchburg just announced a 5 million operating deficit for the upcoming year
 - Communities cannot fund what exists, much less fund and repair (need additional funding)
 - Companies coming in would provide some financial relief, but not enough to address all infrastructure needs

- Cell reception needed in “radio-free” communities
- In-house water treatment is very expensive

5) Mill buildings are currently under-utilized and very expensive to re-habilitate

- Vacant on the top floors since it’s too costly to move products up and down the building floors in newer types of manufacturing
- Building shape and type make it more expensive and awkward to use than new construction

6) Residential land and properties have lost value due to the current housing market

Assets

1) Business growth and employment assets include:

- University partnerships
- Job placement agencies
- Well-paying jobs in nursing and pharmacy
- Chamber of commerce as a coordinating entity

2) A clustering effect that has come about as a result of the area’s history of manufacturing that has contributed to:

- Knowledge-sharing
- Strong relationships developed with other industries
- Larger scale production
- Larger base of skilled manufacturing workers (especially in the plastics industry)

3) Positive attributes to the location of a few different NC Mass towns are:

- Leominster has benefited from being so close to Route 2, Route 117, and Route 190, and thus becoming an accessible retail destination for the bedroom communities
 - Target store at Orchard hill Park in Leominster has created a lot of spin-off development in neighboring Lancaster (Cluster effect of retailers bringing up residential value)
- Ayer and Shirley have more land available, though have to work harder to get infrastructure built to accommodate
- Westminster business park that is near rail is slowly being developed
- Gardner has access to industrial land and near route 2

4) NC Mass is a desirable bedroom community for the following reasons:

- More affordable housing than areas right around Boston
- More natural settings and less urban quality of life

Conflicts

1) Assessment of skilled workers is mixed

- Some respondents stated that the region had a high amount of skilled workers (manufacturing)

- Others cited a strong lack of a skilled workforce (nursing and technology-based)
- 2) Potential for manufacturing bio-tech/medical industry in the area is speculative
 - Alan Foster, an appraiser, did not think that most companies would be willing to move farther west than I-495 (except to go to Devens).
 - Ray LaFond from Enterprise Bank saw a strong potential for the industry, pointing to the rise in the production of EKG parts in the area as one example
 - 3) High amount of territorialism in the area on part of (Opinions of Foster and LaFond):
 - Public officials
 - Lenders
 - Chambers of Commerce
 - Businesses,
 - 4) Fort Devens does not create enough of a spillover effect to generate growth for the whole area
 - Cost of land is prohibitively high for smaller manufacturing (up to \$150k per acre)
 - Lack of coordination with other economic development projects in NC Massachusetts Area to capitalize on Fort Devens success
 - Ft. Devens still seen as an exception to the area as far as success, not necessarily as a trend-setter

Opportunities

- 1) Coordinate and more invest in more workforce training and business development
 - Expand and specialize workforce training programs, such as in nursing, to meet the region's business employment needs
 - Encourage non-profits to develop workforce training programs through the Community Builders program or similar university programs
 - Establish programs similar to Community Builders that encourages small business entrepreneurship and provides capacity-building and resources for growth in the business sector
 - Engage in basic training for business plans for entrepreneurs since many need to be more educated regarding business practices and how to be financially wise
 - This contributes to both the business and consumer base in the area
- 2) Encourage preservation and growth of manufacturing by making industry-specific investments
 - Create land and tax incentives so that area can stay competitive with places like the Carolinas (which has great incentives packages) locally, and China internationally
 - Create a critical mass of manufacturing activity in a few types of products in order to be competitive and draw investors and companies west of 495
 - Types of industries
 - Packaging industry (plastic containers that hold salads, etc.)
 - Products for the medical industry – lobotomy, valves for heart, pieces inside of EKG patches (growing industry), everything is one use only!!!
 - Sand and gravel excavation (installing new infrastructure)

- Some contractors (just building small homes)
- 3) Invest significantly in infrastructure to make the area more attractive to new investors
- Create a connector road to Fitchburg that works more like the Lowell Connector would help to facilitate growth in the city
 - Over-haul the area's failing infrastructure (water, sewer, roads, etc.) and also add on high-tech infrastructure such as cable and wireless access
- 4) Create a kind of regional fund that banks share, even though contributions will be different according to size so that lenders can be more coordinated and also operate on a larger scale
- Right now, there are many banks and many competitors. Small to large. Would like to see a consortium of banks to share to get something done together instead of competing for businesses.

Appendix G

Case Studies of Regional Alliances and Cooperation

The Merrimack Valley Economic Development Council

The Merrimack Valley Economic Development Council (MVEDC) was founded in 2000 with a lot of media attention and legislative funding and public support. The MVEDC quickly attracted members and became an independent 501c(3) nonprofit organization, and now has 105 dues-paying members. One-third are from the public sector, one-third from the private sector, and one-third from major institutions such as local colleges and professional associations. Its annual budget is \$500,000; half from the state legislature and half from private sector contributions.

The MVEDC concentrates its efforts on building networks and creating relationships, crafting a regional vision, and reaching out to industries that might locate in the region. In its networking role, it acts as a neutral convener for stakeholders redeveloping sites in transition, convenes meetings around transportation planning opportunities, and works with local colleges and training centers to coordinate workforce development programs focused on life science industry skills. The MVEDC hosts monthly meetings with a twenty-five person executive committee to identify priorities and craft a proactive regional vision. The MVEDC also holds membership meetings every three months that focus on networking and learning about topics of interest.

Over the last eight years the MVEDC has focused its strategies on identifying the most cooperative stakeholder groups and winning them over through a grassroots, collaborative approach. The MVEDC also focuses on finding tangible projects to work on. The biggest impact they have had is in creating strong networks and fostering receptivity for cooperation. They have found that solutions to development challenges are best achieved through interactive collaborations as opposed to funding and legislative solutions.

Western Massachusetts Economic Development Council

In the late 1980s and early 1990s the towns and cities in Western Massachusetts would often compete with each other to attract companies and economic development opportunities. Regional leaders were inspired to encourage regional cooperation to halt this practice and competitive culture.

In 1995 the business community of Western Massachusetts created a new model for regional cooperation in the area. At the time there were six existing organizations providing key economic development services for the region, including the Chambers of Commerce, three development corporations, a convention and visitors' bureau, and more. The new regional model involved creating an umbrella economic development council (WMEDC), under which existing organizations could keep their culture, staff, and boards of directors.

After the first 18 months of getting all of the business and community stakeholders to buy-in, the WMEDC began providing a strategic regional direction. The WMEDC's Board of Directors includes leaders of major companies, presidents of universities, and mayors of the region's nine cities. The WMEDC is funded by contributions and an annual state grant.

The organization sees potential companies as customers and works to understand their needs. The underlying goal is to align the region's infrastructure and land assets with prospective companies' needs. The WMEDC provides new companies with leads, including accurate information about facilities, workforce availabilities, infrastructure, local regulatory environments, etc. The WMEDC also runs a "Homefield Advantage Program" whereby they assign a point-person to any new business lead. This individual learns about the company's needs and convenes all appropriate decision-makers within a day.

The WMEDC works closely with the state, in addition to the various municipalities in the region. They are trusted by the state to have the capacity to follow through with any leads they pass on.

Bradley Development League

The Bradley Development League (BDL) represents the four towns surrounding Bradley International Airport in Windsor Locks, Connecticut. The BDL formed under the direction of the Town of Windsor Locks in 1995 in response to the recognition that despite the airport's commercial attraction, many businesses passed the region over after finding their needs to be incompatible within one of the towns. The BDL now markets of the region's development assets, while strategically aligning specific development needs and opportunities with specific towns. Its mission is directly coordinated with that of other regional organizations, ensuring that no overlap occurs. The BDL's success can be attributed to its clearly defined mission, its avoidance of unnecessary bureaucratic structures and coordination of public and private efforts, and its effective use of its web site.

The BDL's mission has a clear and focused area-specific directive, and when neighboring towns have asked to join the BDL, they have not been accepted because the BDL wants to maintain an objective strongly based on the airport's immediate neighboring towns. The BDL coordinates roadway improvements that directly benefit the circulation around the airport. The BDL also coordinates new real estate developments in the area. It works with developers to find sites that best fit their needs, as each of the four towns has a unique composition and development potential.

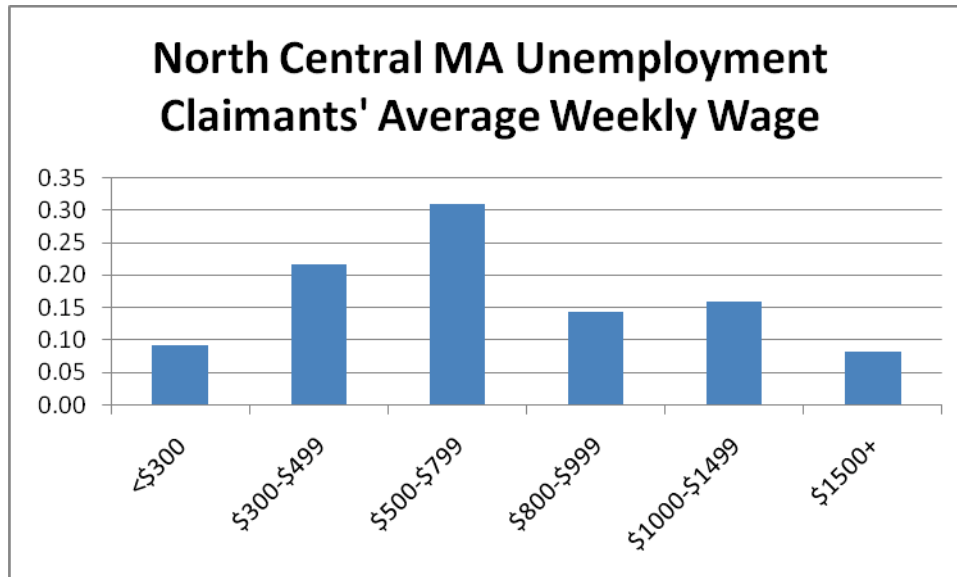
The organizational structure of the BDL does not have a complicated hierarchy. A board of directors, consisting of town and business leaders, meets four times a year and coordinates the policy-level focus of the BDL. An operating committee, made up of the economic development directors in the area, provides the League with its day to day management and coordination. The BDL has no dedicated staff and operates with a \$10,000 annual budget comprised of equal contributions from the four towns and the airport. Each town contributes town staff time and meeting space on their own budgets. Private businesses provide a great deal of donated time and services and help fund unique initiatives with the understanding that the BDL's work directly impacts the success of their firm in the region.

The BDL's website is one of the most important components of their operations. It provides an introduction to the region and its assets by summarizing the assets and development approval/permitting processes for each town. It acts as a gateway to the region by describing the area's potential, serving as a site finding resources for interested developers, and providing important networking and resource links. Its overall professional look, efficient coordination of information, and role as a one-stop-resource supports and enhances the effectiveness of the BDL's objectives.

Appendix H

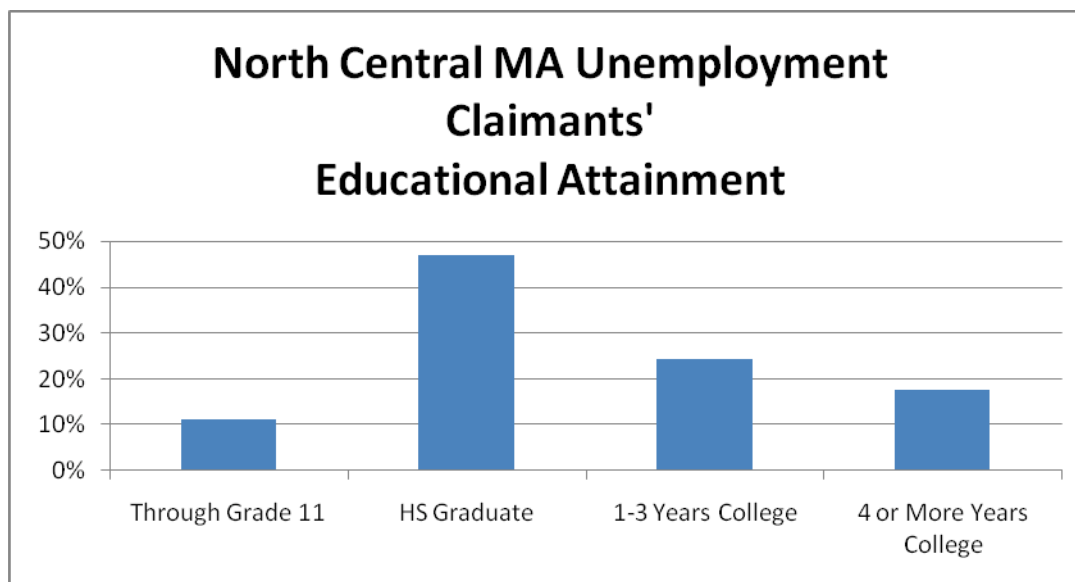
Emerging Industries Data

UNEMPLOYMENT IN NORTH CENTRAL MA:



Average weekly wage of unemployment claimants in Nov. 2006: \$500-799

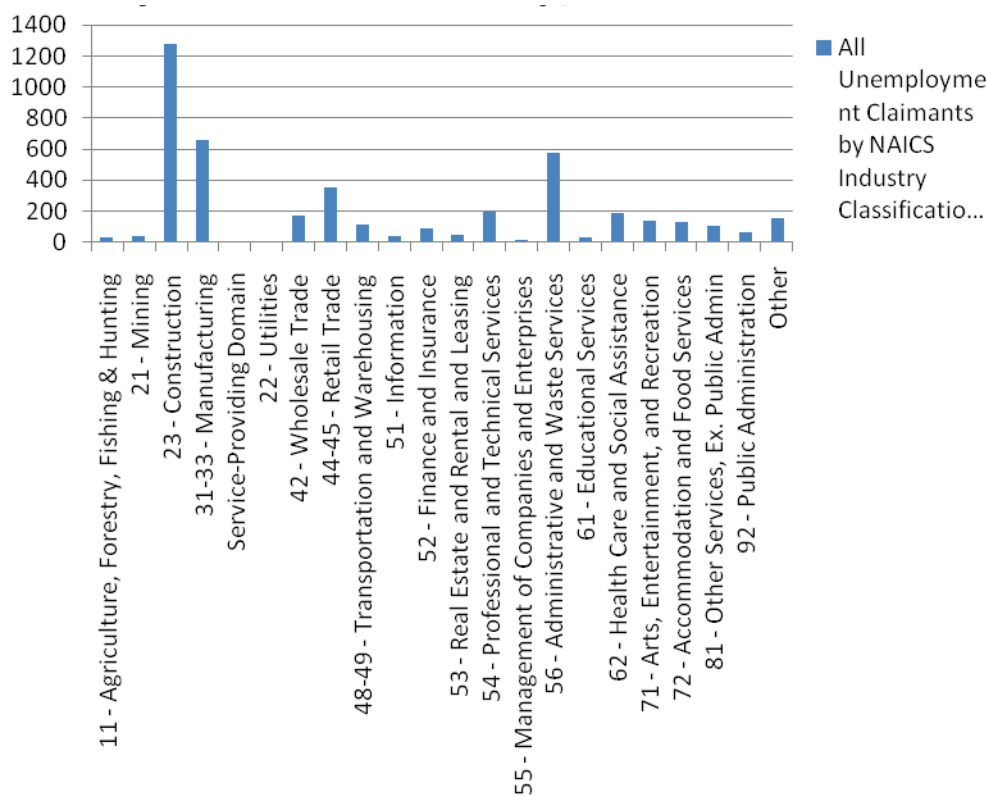
Source: Profile of Massachusetts Unemployment Claimants
Massachusetts Department of Workforce Development
Division of Career Services, Economic Analysis Office 8
*Data based on a sample of all claimants signing for the Survey Week.



Average educational attainment of unemployment claimants in Nov. 2006: 47.9% HS Grad, 24.4% 1-3 Years of College; so 71% are HS grads with no college degree.

Source: Profile of Massachusetts Unemployment Claimants
Massachusetts Department of Workforce Development
Division of Career Services, Economic Analysis Office 8
*Data based on a sample of all claimants signing for the Survey Week.

North Worcester WIB Unemployment Claimants by Industry Sector, March 2008:



Top 5 Sectors of Unemployment in March, 2008:

- **Construction (27%)**
- **Manufacturing (14%)**
- **Administrative & Waste Services (12%)**
- **Retail Trade (8%)**
- **Professional & Technical (4%)**

Source: Profile of Massachusetts Unemployment Claimants
Massachusetts Department of Workforce Development
Division of Career Services, Economic Analysis Office 8
*Data based on a sample of all claimants signing for the Survey Week.



Unemployment in North Central MA is more chronic than short-term and therefore a long-term strategy to attract new employment sources is needed.)

Source: Profile of Massachusetts Unemployment Claimants
Massachusetts Department of Workforce Development
Division of Career Services, Economic Analysis Office 8
*Data based on a sample of all claimants signing for the Survey Week.

Unemployment summary for NCMA:

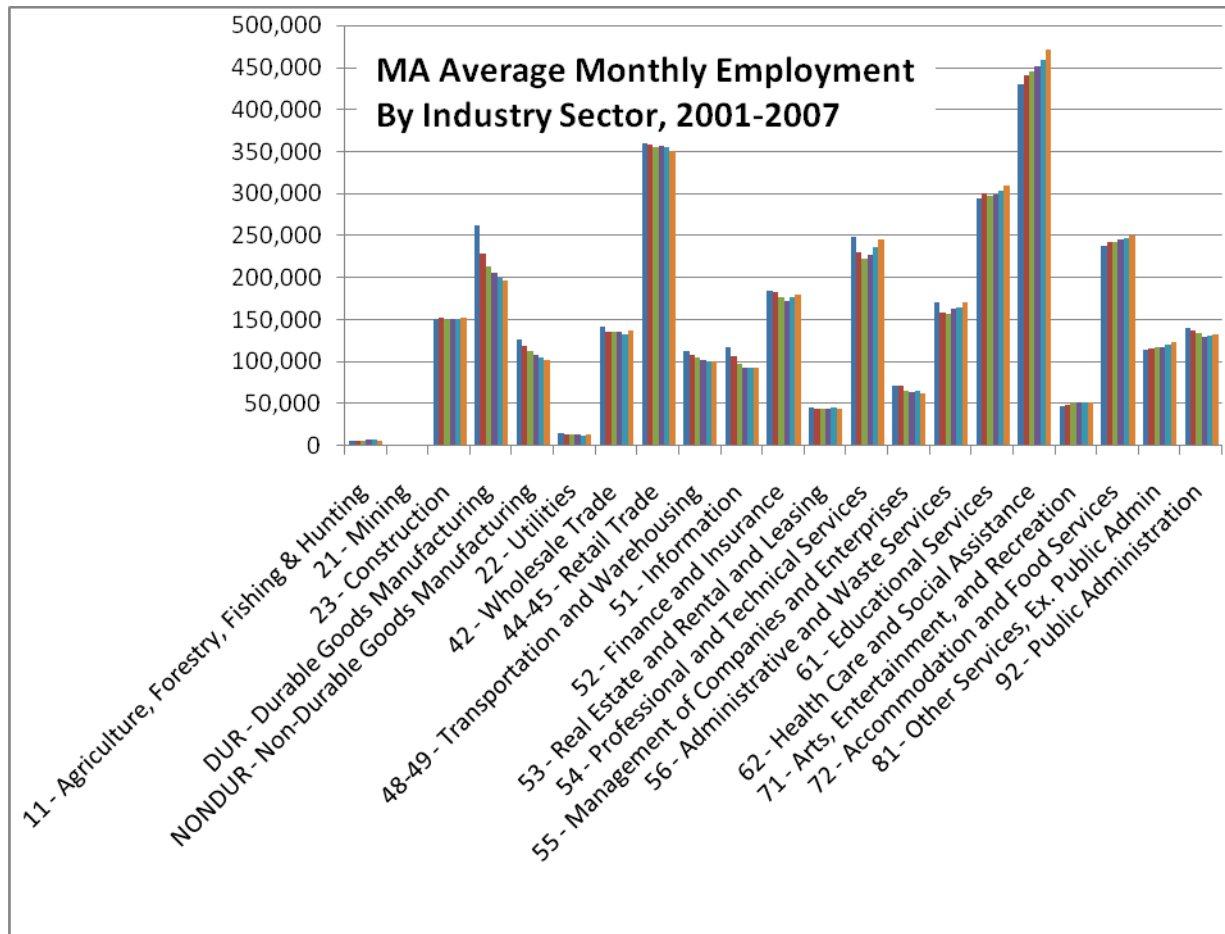
- **Average unemployment wage: \$500-799.**
- **Average educational attainment of unemployment claimants in Nov. 2006: 47.9% HS Grad, 24.4% 1-3 Years of College**
- **Top 5 Sectors of Unemployment in March, 2008:**
 - Construction (27%)
 - Manufacturing (14%)
 - Administrative & Waste Services (12%)
 - Retail Trade (8%)
 - Professional & Technical (4%)
- **Most claimants were unemployed for more than 5 weeks (60%) and more than a third were unemployed for more than 15 weeks.**

The following industry sectors have increased employment within the NECTA from 2001-2007:

- 56 - Administrative and Waste Services (1%)
- 53 - Real Estate and Rental and Leasing (2%)
- 54 - Professional and Technical Services (2%)
- 44-45 - Retail Trade (4%)
- 52 - Finance and Insurance (5%)
- 72 - Accommodation and Food Services (8%)
- 62 - Health Care and Social Assistance (11%)
- 22 - Utilities (12%)
- 23 - Construction (19%)

71 - Arts, Entertainment, and Recreation (45%)

EMERGING INDUSTRIES IN MA:

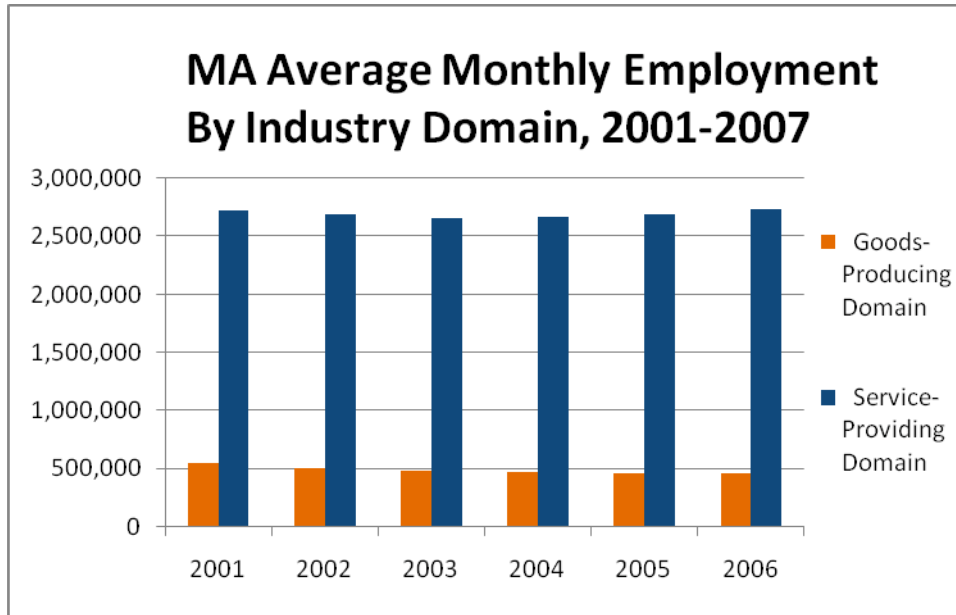


Source: MA Office of Labor and Workforce Development

Top 5 largest employment sectors in MA, 2001-2007:

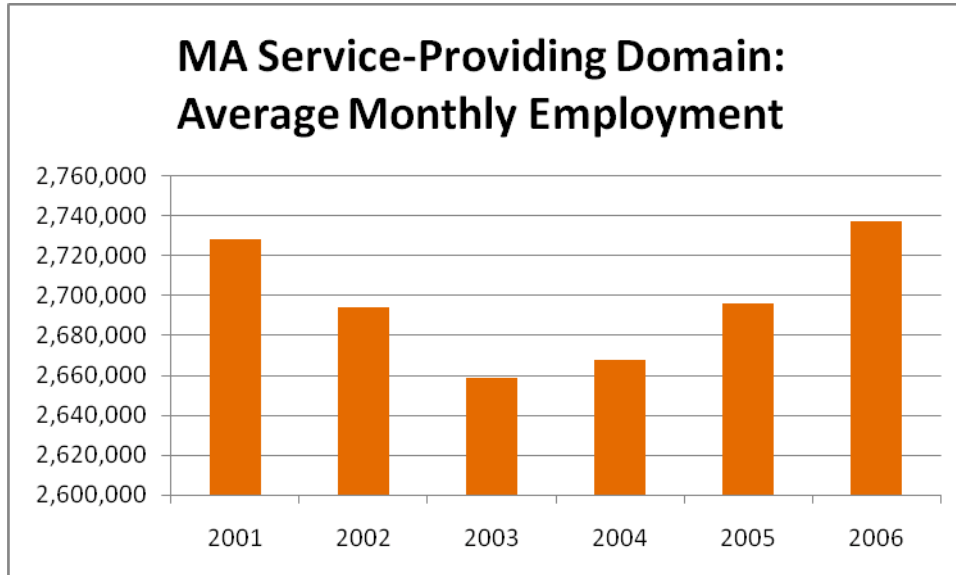
- I. Health Care & Social Assistance
- II. Retail Trade
- III. Education
- IV. Accommodation & Food Services
- V. Professional & Technical Services

Service-Producing vs. Goods-Producing Industries, 2001-2007:

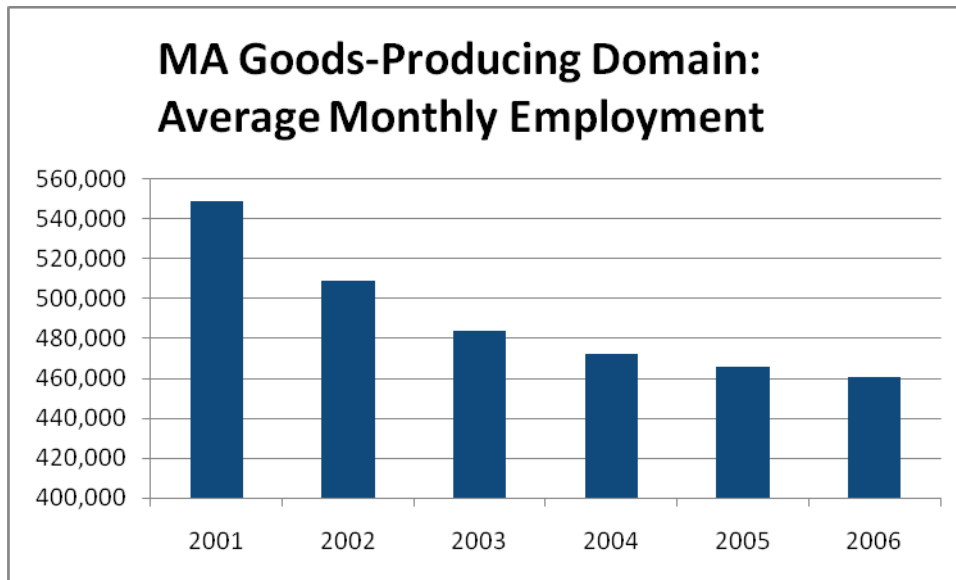


Source: MA Office of Labor and Workforce Development

(Goods-Producing industries: Agriculture, Mining, Construction, Manufacturing.)
The service-producing domain in MA remains about 5 times as large as the service-producing domain.

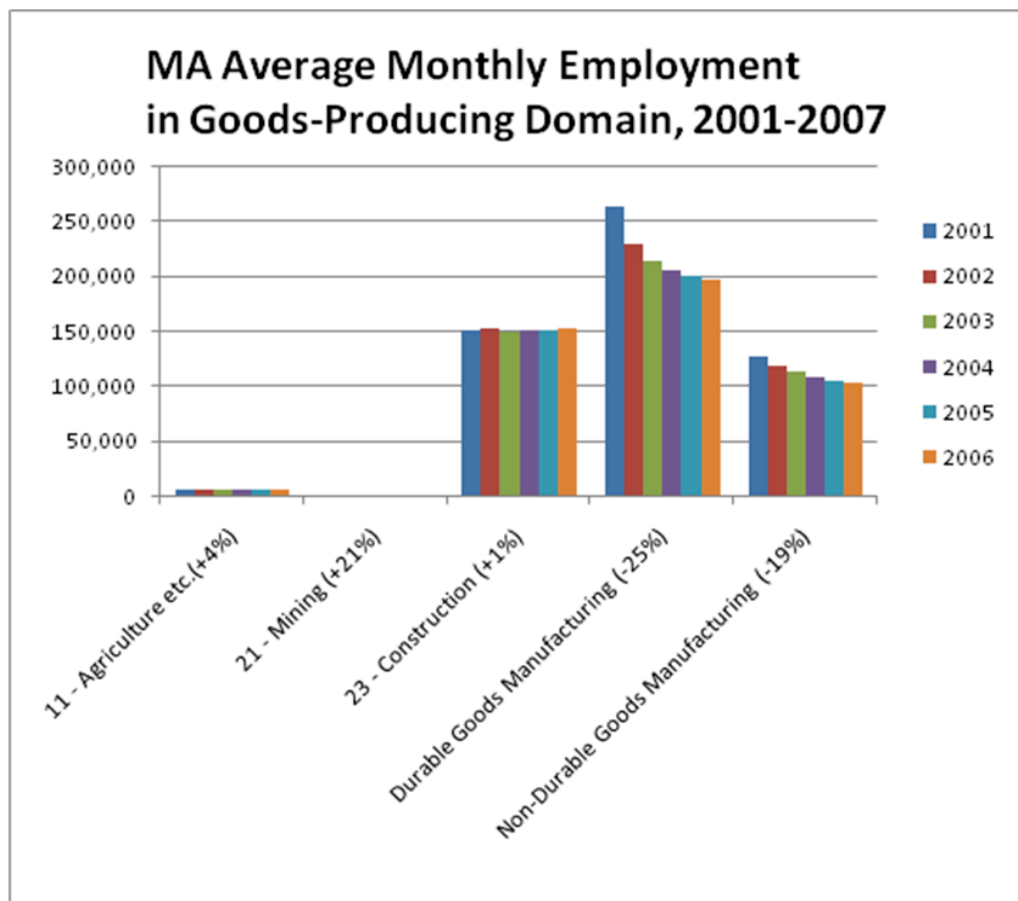


Source: MA Office of Labor and Workforce Development



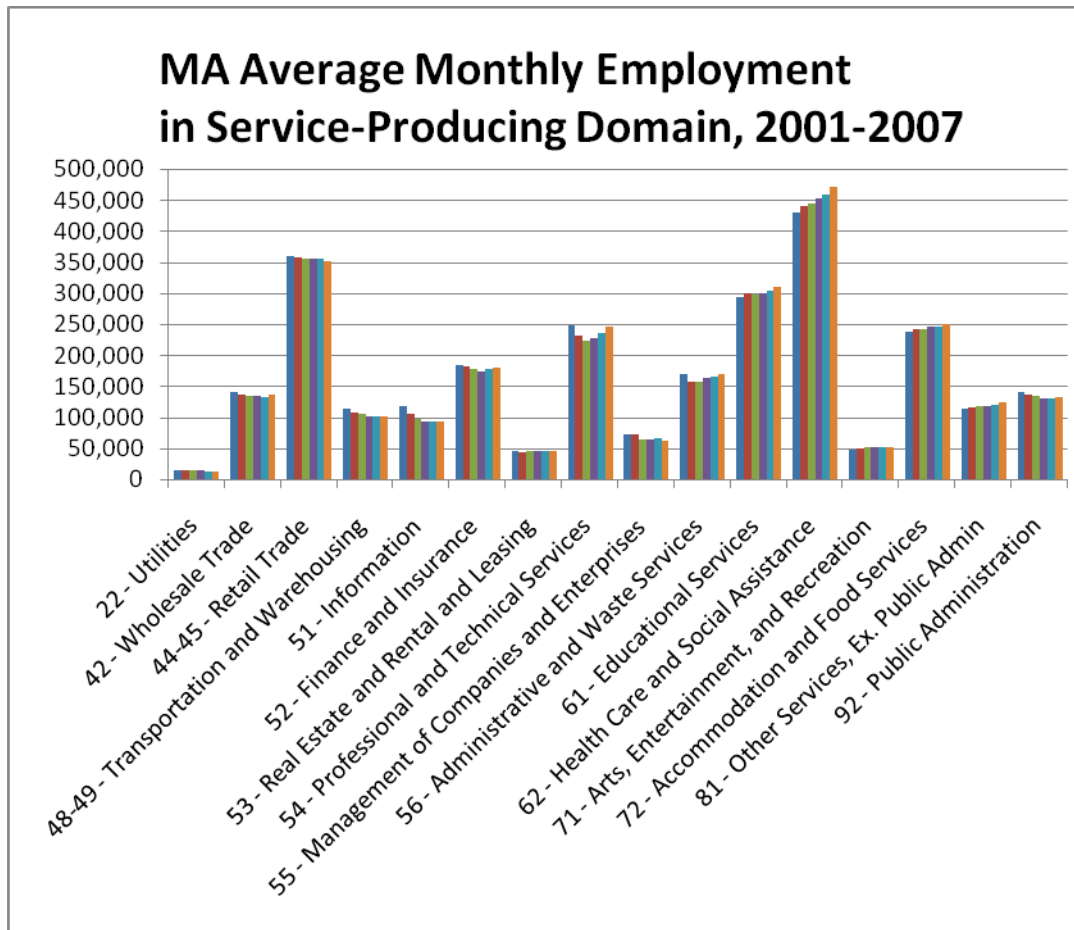
Source: MA Office of Labor and Workforce Development

The service-producing domain has been growing in average monthly employment since 2003, whereas the goods-producing domain has decreased in size.



Source: MA Office of Labor and Workforce Development

The decline in Goods-Producing industries is ALL due to manufacturing decline. Agriculture, Mining and Construction have all GROWN since 2001.

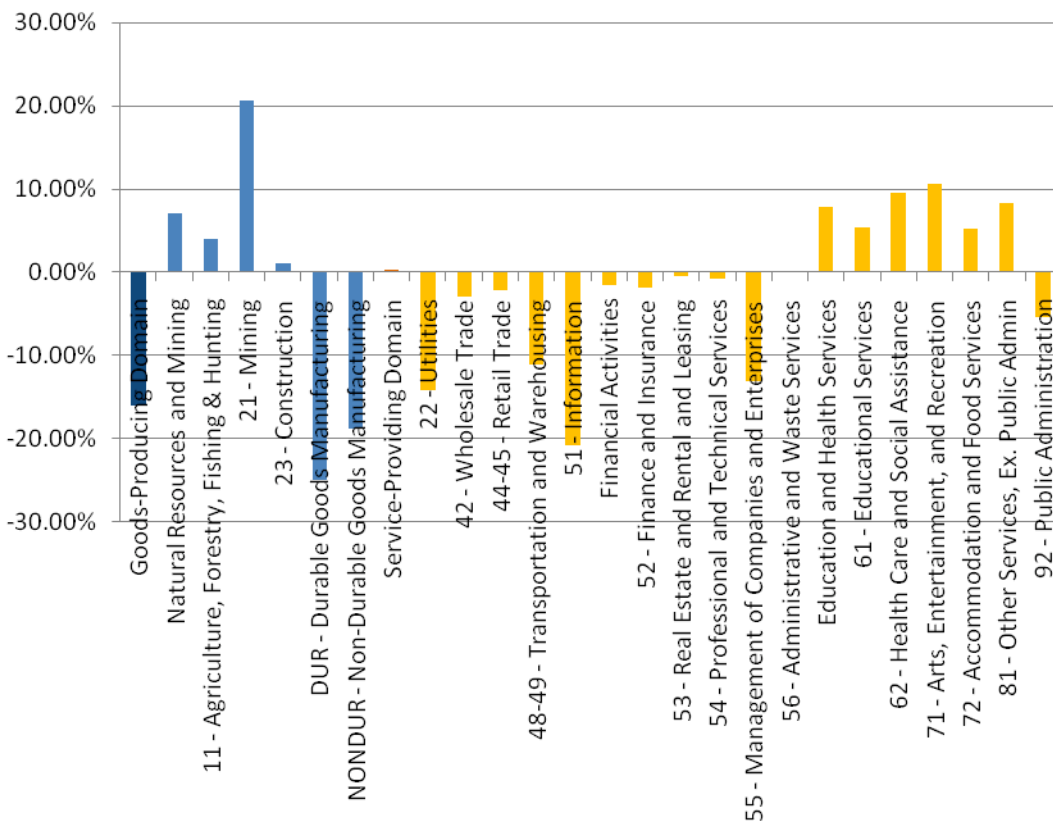


Source: MA Office of Labor and Workforce Development

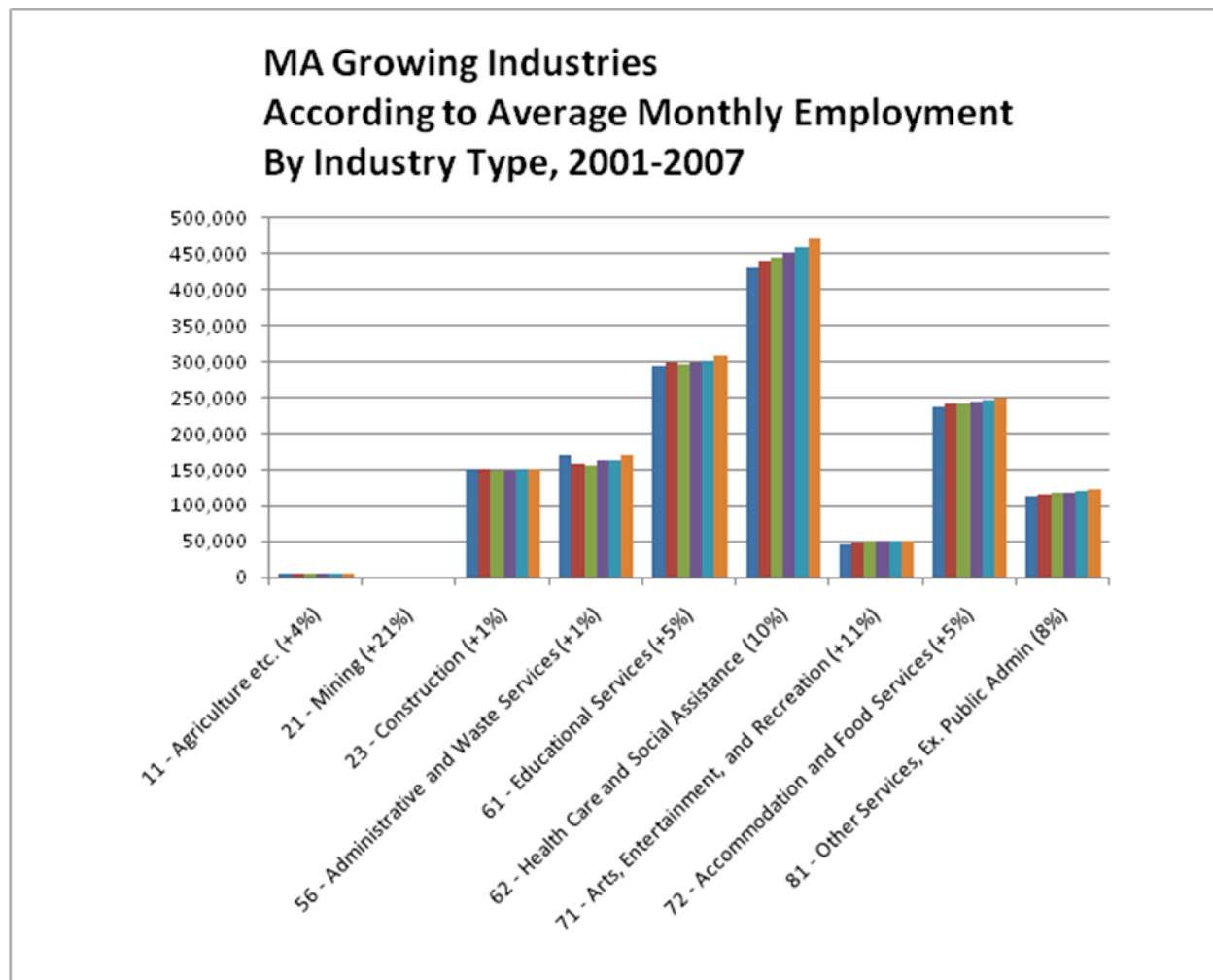
Growth in Service-Producing Industry is due largely to Health Care and Social Assistance (62) and Educational Services (61) and Accommodation and Food Services (72).

Growing Industries in MA, 2001-2007:

Percent Change in MA Average Monthly Employment by Industry Sector, 2001-2007



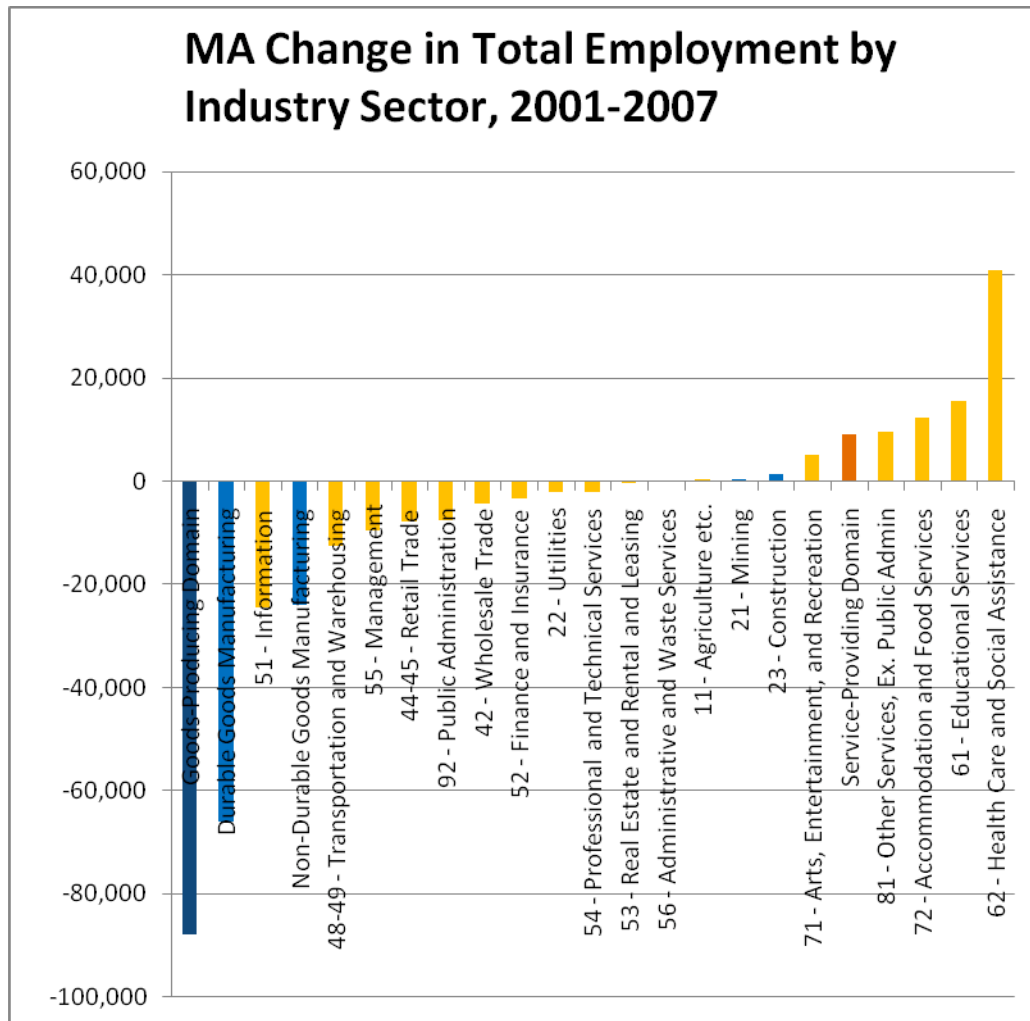
Source: MA Office of Labor and Workforce Development
Blue = Goods Producing; Orange = Service Producing



Source: MA Office of Labor and Workforce Development

Industries with positive percent change 2001-2007, in order of total size of industry:

- 62 - Health Care and Social Assistance (10%)
- 61 - Educational Services (+5%)
- 72 - Accommodation and Food Services (+5%)
- 56 - Administrative and Waste Services (+1%)
- 23 - Construction (+1%)
- 81 - Other Services, Ex. Public Admin (8%)
- 71 - Arts, Entertainment, and Recreation (+11%)
- 11 - Agriculture etc. (+4%)
- 21 - Mining (+21%)

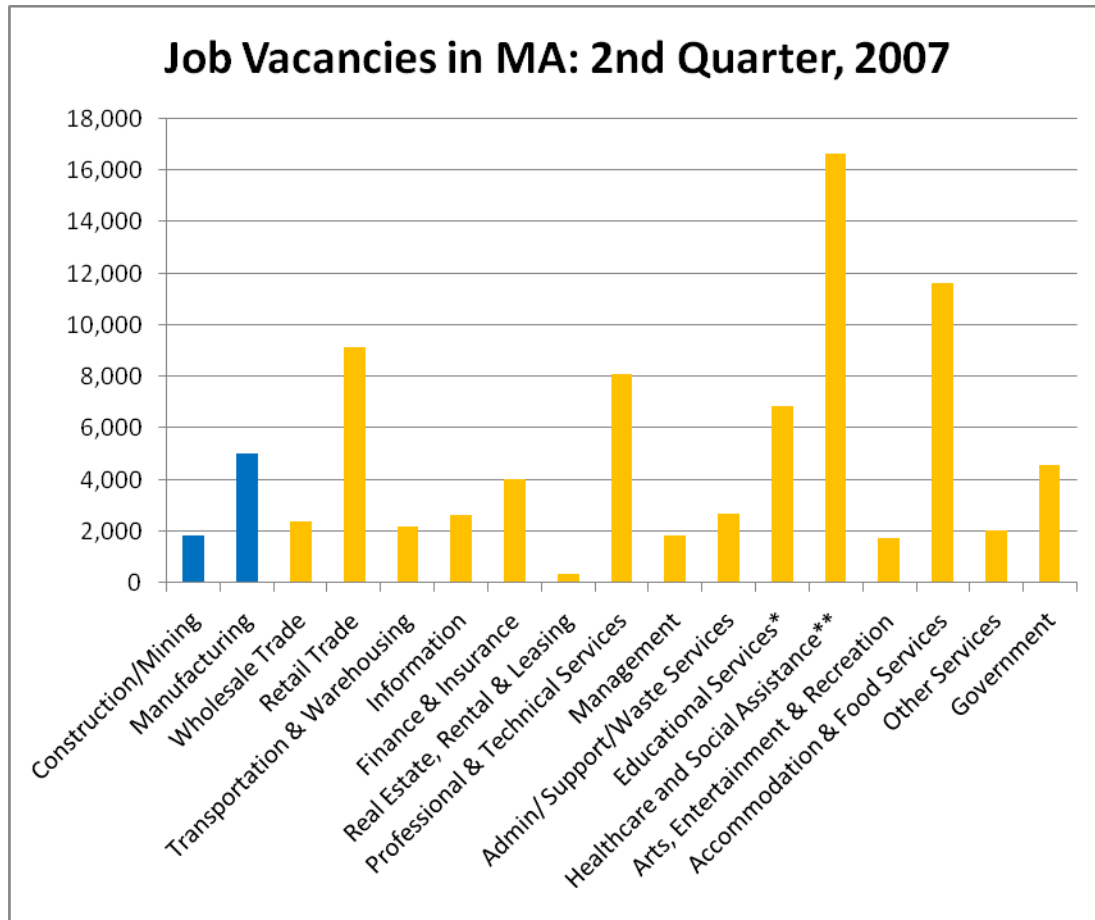


Source: MA Office of Labor and Workforce Development

MA growing industries, in order of size of growth:

- **Health Care and Social Assistance**
- **Educational Services**
- **Accommodation & Food Services**
- **Other Services (ex. Public Administration)**
- **Arts, Entertainment and recreation**

*** Notice that there has been about 88,000 jobs lost in manufacturing alone, as compared to about 94,000 jobs added in *all sectors combined*.**



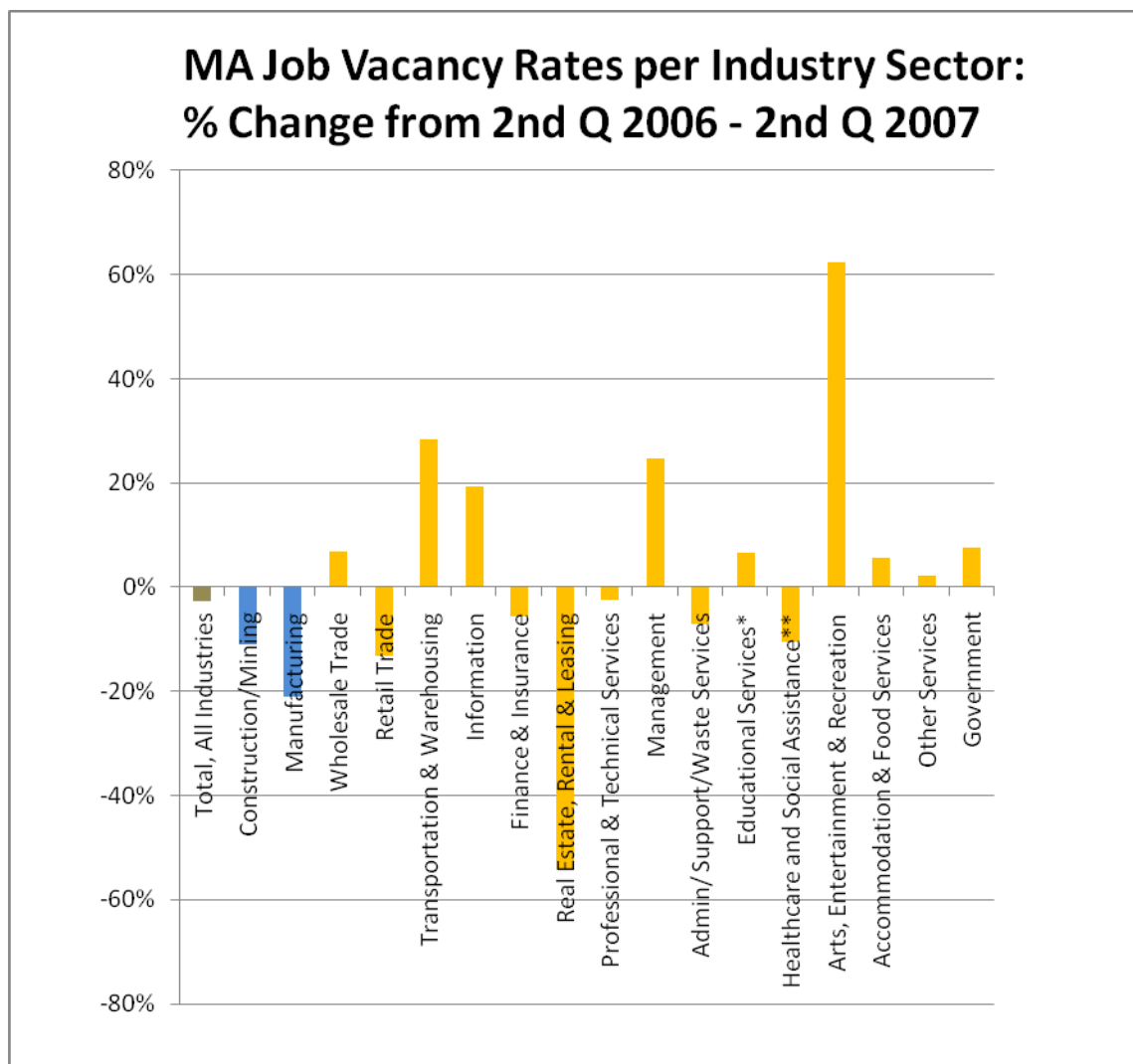
Source: MA Office of Labor and Workforce Development

Job vacancy rate = total number of job vacancies by the total number employed in the industry.

The greatest number of job vacancies in Massachusetts in the second quarter of 2007 were in:

- **Healthcare and Social Assistance**
- **Accommodation & Food Services**
- **Retail Trade**
- **Professional and Technical Services**
- **Educational Services.**

These 5 industries accounted for more than 62% of job vacancies in MA.



Source: MA Office of Labor and Workforce Development

The five industries with the greatest increase in job vacancy rates from second quarter 2006- second quarter 2007:

- Arts, Entertainment & Recreation
- Transportation & Warehousing
- Management
- Information
- Government

Other industries with positive growth in job vacancy rates include:

- Wholesale Trade
- Educational Services
- Accommodation & Food Service
- Other Services

MA Industry Trends: Summary

Top 5 largest employment sectors in MA, 2001-2007:

- Health Care & Social Assistance
- Retail Trade
- Education
- Accommodation & Food Services
- Professional & Technical Services

Industries with positive percent change in employment in 2001-2007, in size of change:

- 21 - Mining (+21%)
- 71 - Arts, Entertainment, and Recreation (+11%)
- 62 - Health Care and Social Assistance (10%)
- 81 - Other Services, Ex. Public Admin (8%)
- 61 - Educational Services (+5%)
- 72 - Accommodation and Food Services (+5%)
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- Educational Services
- Accommodation & Food Services
- Other Services (ex. Public Administration)
- Arts, Entertainment and recreation

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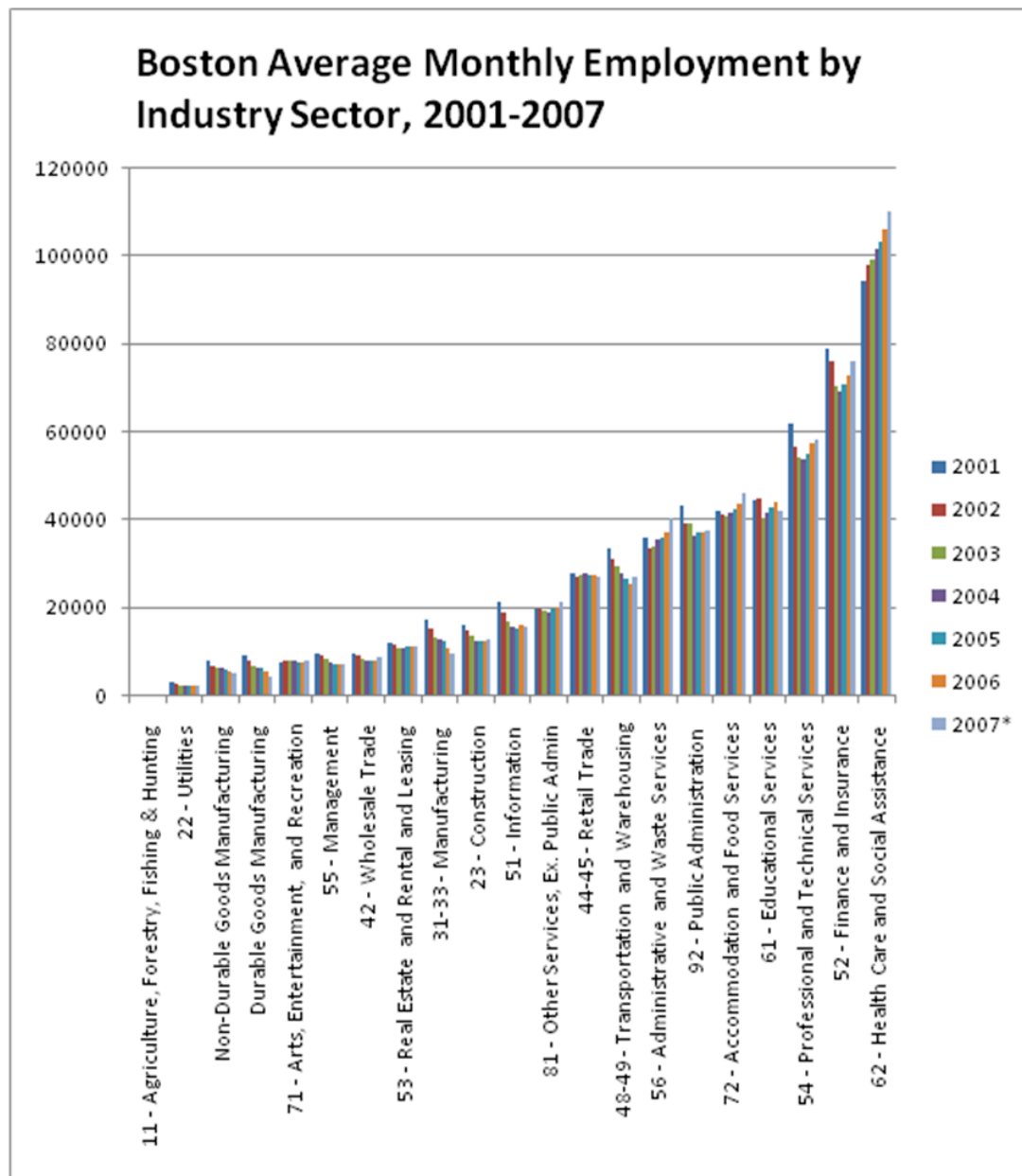
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- Other Services

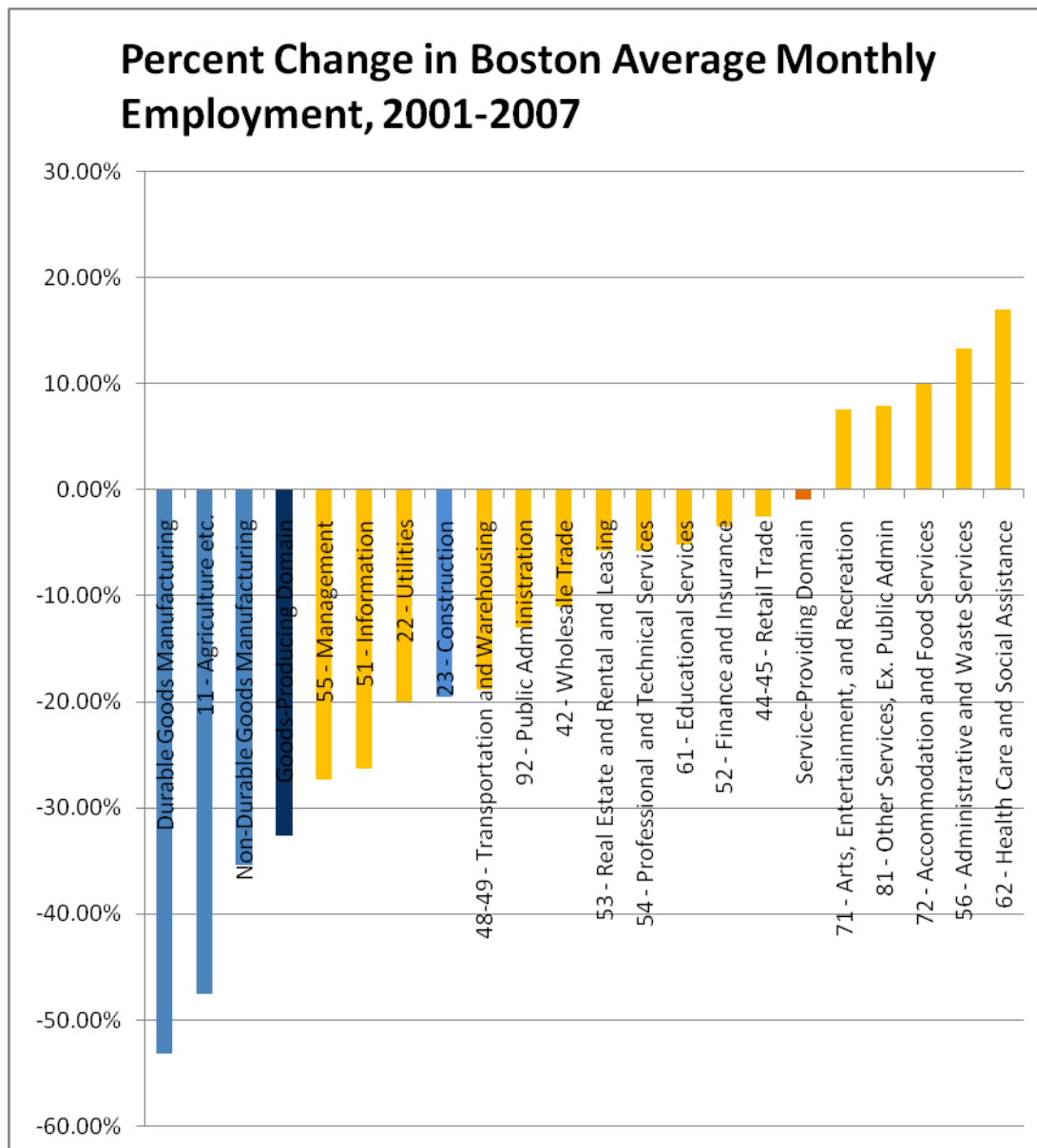
Emerging Industries, Boston



Source: MA Office of Labor and Workforce Development

Top 5 largest employment sectors in Boston, 2001-2007:

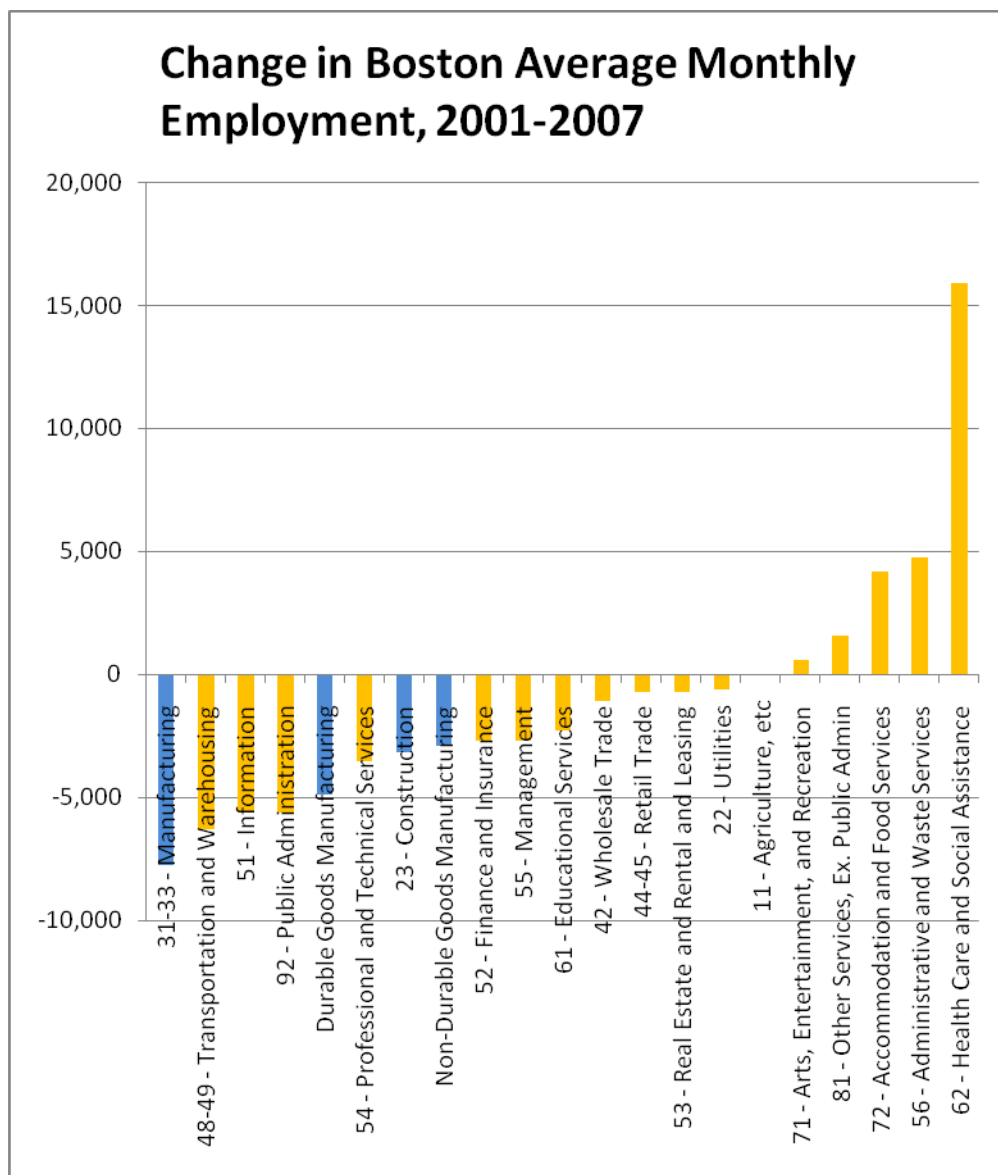
- Health Care & Social Assistance
- Finance & Insurance
- Professional and Technical Services
- Educational Services
- Accommodation & Food Services



Source: MA Office of Labor and Workforce Development
Blue = Goods Producing, Orange = Service Producing

Boston industry sectors with positive change in Average Monthly Employment, 2001-2007:

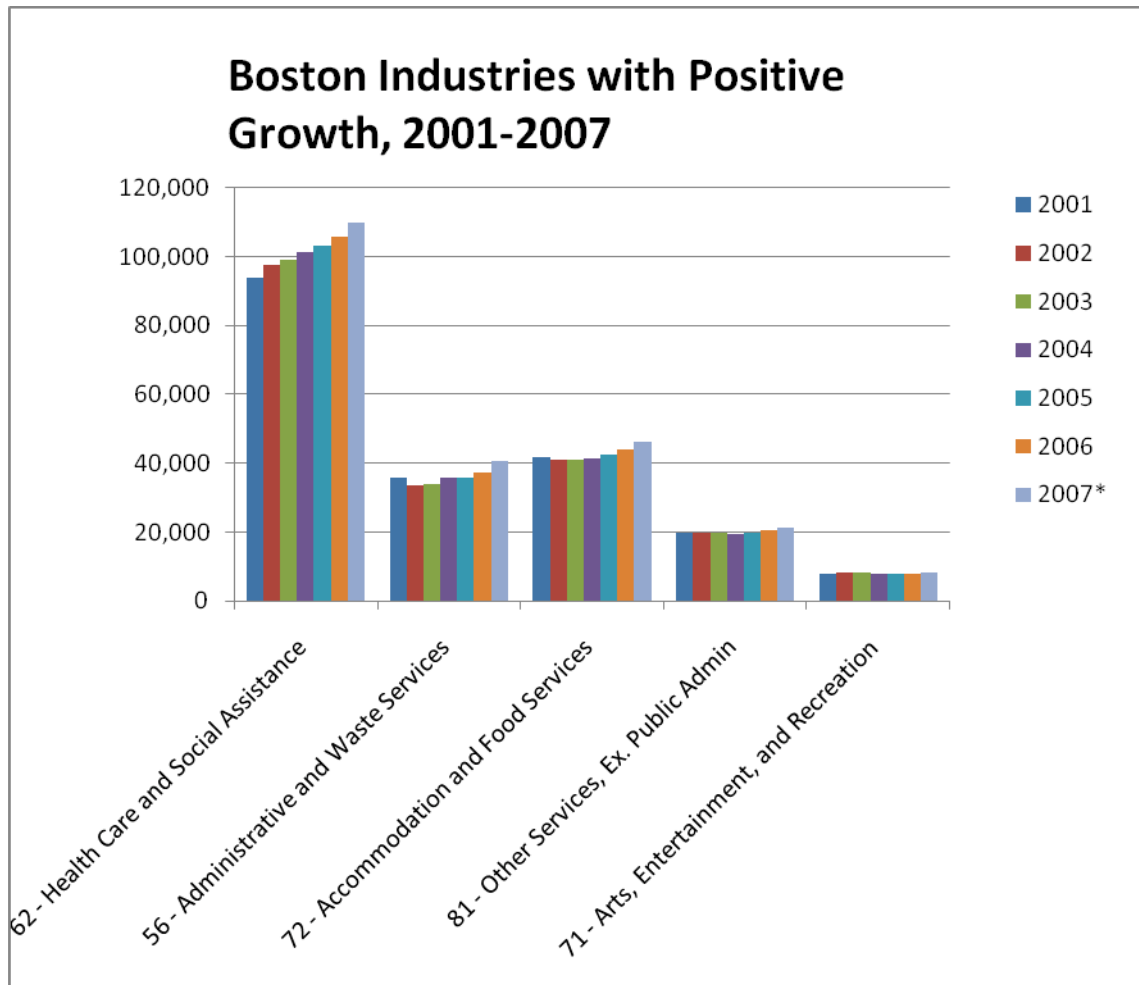
- **Health Care and Social Assistance**
- **Administrative and Waste Services**
- **Accommodation and Food Services**
- **Other Services**
- **Arts, Entertainment and Recreation**



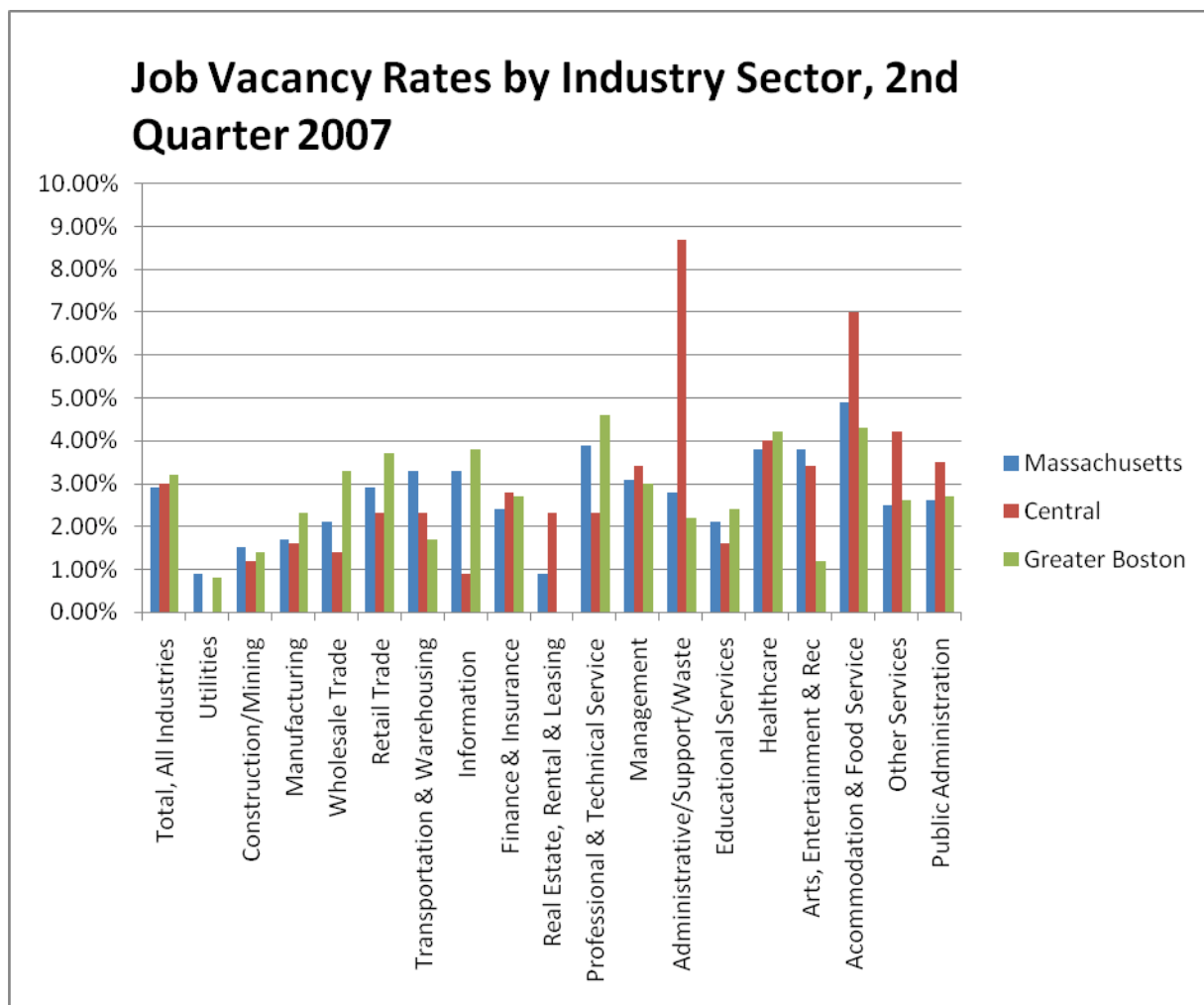
Source: MA Office of Labor and Workforce Development
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Boston Industries with positive percent change 2001-2007, in order of total size of industry:

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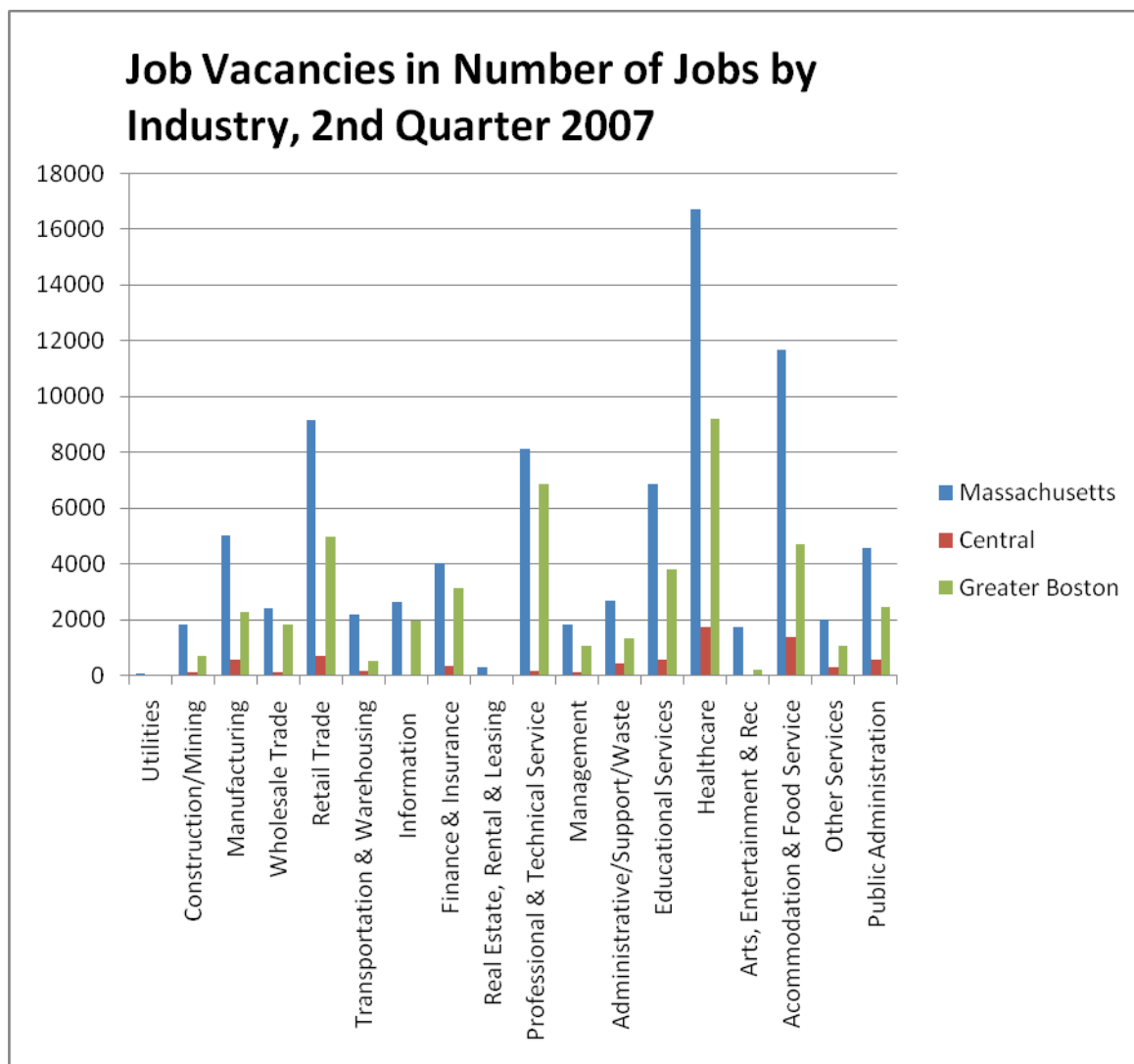


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- **Accommodation & Food Services**
- **Finance & Insurance**

The greatest number of job vacancies in Central MA:

- **Healthcare & Social Assistance**
- **Accommodation & Food Service**
- **Public Administration**
- **Retail Trade**
- **Manufacturing**
- **Educational Services**
- **Admin/Support/Waste**

Boston: Summary of Trends

Top 5 largest employment sectors in Boston, 2001-2007:

- Health Care & Social Assistance
- Finance & Insurance
- Professional and Technical Services
- Educational Services
- Accommodation & Food Services

Boston industry sectors with positive change in Average Monthly Employment, 2001-2007:

- Health Care and Social Assistance
- Administrative and Waste Services
- Accommodation and Food Services
- Other Services
- Arts, Entertainment and Recreation

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NECTA/Central MA: Summary of Trends

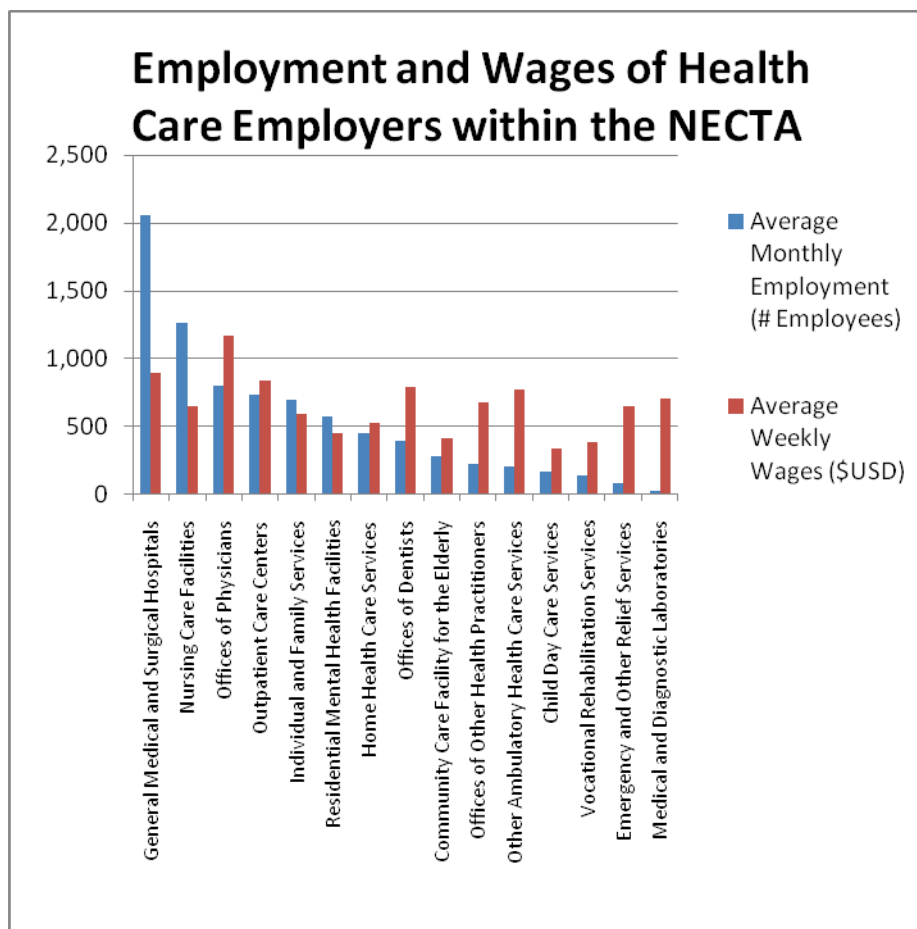
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- 22 - Utilities (12%)
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Healthcare Industry Subsectors:



Source: MA Office of Labor and Workforce Development

53% of Healthcare & Social Assistance job postings in MA require a bachelor's degree or higher.

Source: MA Office of Labor and Workforce Development