We put the **North Shore** *to work!*

Labor Market Blueprint

October 2010

by O. Steven Quimby, Economic Development Consultant





Greetings:

On behalf of the North Shore Workforce Investment Board (NSWIB), we are pleased to present this Labor Market Blueprint for the North Shore region.

This regional labor market report capitalizes on three prior reports completed in 2000, 2002 and 2007 and helps us to continually examine the ever changing and dynamic world of work. This blueprint is but a snapshot of our labor market, its strengths, needs and challenges, particularly important in this stressful and challenging economic period. Given these stresses, and our regions strategic and experimental approaches to using labor market information, the WIB reached out to find different types of data and information to inform us in this time of uncertainty.

New with this blue print is the documentation and analysis of two new source of labor market information for our region. These include data from Monster.com—new, real time data that gives us another perspective on the supply- and demand-side of our workforce. As with any new data, we are learning how to translate this into value-added information for our regional system, and expect to learn more when we receive an update from Monster one year from now. Keep your eyes open for the sequel! Second, we have added a section on Economic Development, prepared by the new North Shore Alliance for Economic Development. This section provides insight into non-workforce issues for our critical industries, reinforcing the reality that economic development and workforce development must work in concert for the benefit of the region and its future.

The NSWIB is charged under the Workforce Investment Act with overseeing the workforce development system and investing the region's federal and state workforce funds by forging partnerships that bring together the varied workforce development entities in our region. Research such as this Blueprint will help us build this labor force and ensure a vibrant quality of life for our entire North Shore community. Our challenge and mission is to be alert to the needs of businesses and individual job seekers and address them in a mutually beneficial and efficient manner—examining data in new ways to reflect the change in our local economy and its evolving workforce.

Business, educators, and community leaders from all over the North Shore and the state were generous with their time and insights during the development of this blueprint. The NSWIB is grateful to them for their commitment to making the North Shore and better place to live and work. In addition, we would like to thank O. Steven Quimby for the quality of work performed in developing this blue print and his attention to our thoughts and perspectives.

We invite you to become more involved in the development of our workforce on the North Shore and welcome your feedback as we move forward. For more labor market information as well as information on our programs be sure to visit our website www.northshorewib.com.

Sincerely,

Kimberley Driscoll
Mayor of Salem
Chief Elected Official

William Tinti
Chairman

Mary W. Sarris
Executive Director

Acknowledgements

This labor force blueprint would not have been possible without the cooperation of many people who were generous with their time and expertise. The author would like to thank the business owners and key leaders who were interviewed or participated in focus groups lending their time and expertise to this effort. The staff and members of the North Shore Workforce Investment Board provided leadership to the research process and brought a number of useful insights to bear that improved the early drafts of the blueprint. Finally, Bill Luster of the North Shore Alliance for Economic Development provided an invaluable service in providing the economic development research report summarized in this blueprint.

Table of Contents

List of Figures

Executive Summary

The North Shore Workforce Investment Board (NSWIB) is the entity on the North Shore responsible for setting workforce development policy and overseeing all federal and state funded workforce development programs across the 19 cities and towns in the North Shore area. The mission of the NSWIB is to meet the workforce needs of individuals and employers in the region. One of the key responsibilities of the NSWIB is to serve as an aggregator and disseminator of labor market data. The North Shore Workforce Investment Board commissioned this labor force blueprint to help:

- The WIB and other workforce development funders make investments that will pay off for both workers and businesses.
- Career Center staff hear from employers about the types of skills (both "soft" and "hard" skills), education, and experience desired for successful candidates in critical and emerging industries.
- Training providers have access to detailed information on the skill and education requirements of the region's businesses that are looking to hire, so the providers' programs can be tailored to meet the needs of those businesses.
- Economic development system partners understand the strengths of the region's workforce that can be used as selling points for industries interested in locating to or expanding in the North Shore region.

Labor Market Demand

Labor market demand drove the selection of the critical industries. Specific factors included in the decision-making process included:

- Number of jobs
- Skill and education requirements
- Wage levels of critical occupations
- Career ladder opportunities
- Projections of future employment opportunities

Based on these criteria, four industries continue to stand out as critical drivers of labor market demand:

- Construction
- Financial Services
- Health Care
- Durable Goods Manufacturing

It is important to note that the research for this Blueprint was conducted in the midst of a serious recession, which significantly limited the labor market demand in many industries. Therefore, since there is relatively little employment demand, much of the discussion with industry leaders was about where the demand would be when the recession abated.

The construction industry has long been a staple of employment on the North Shore. One of the strong benefits of this sector to the region is the preponderance of middle skill jobs that offer good pay and benefits, as well as long-term career ladder opportunities. New design and construction methods are creating new opportunities in the industry. The use of integrated design techniques is creating demand for highly trained computer programmers who can make use of the new techniques in building information modeling. There are also good opportunities to build green components into existing jobs and training in the

construction industry, including the expansion of electrical technician training to include clean energy, development of the LEED credentialed maintenance technician, and new elements of Heating, Ventilation, and Air Conditioning that reflect energy conservation changes in the industry.

In 2007, the financial services industry was selected as a critical industry due to the rapid employment growth in the sector on North Shore. While employment has declined only slightly to date, employment growth is hard to project for the near future. However, even during the current time of high unemployment, banks on the North Shore are having difficulty finding applicants that fully meet their increased requirements for entry-level employment. A lack of foundational skills, including basic math, writing, business writing, computer skills, and customer service, is a critical barrier to employment for many applicants. The occupations with the greatest level of current demand on the North Shore include Compliance and Regulation analysts, loan officers, mortgage bankers, and small business lenders. For the most part, these positions are not entry-level and require substantial levels of industry experience.

The health care industry continues to be one of the largest employers on the North Shore. It is also one of the few industries that has continued to grow its employment levels, albeit slowly, through the current recession. Changes in technology are creating increased skill and education demands of the health care workforce. More than 10% of the positions advertised with the North Shore's career centers were in the health care industry, including positions such as nurses, CNAs, scanning coders, and support positions such as van drivers and housekeepers. The skills and education demands of many health care positions have been increasing, with technology being increasingly substituted for hands-on labor. In addition, many new positions are being created, the majority of which use technology in new ways.

The durable goods manufacturing industry has been identified as critical industry by the North Shore Workforce Investment Board since its inception based on the fact that manufacturing jobs represented "good jobs at good wages" for many North Shore residents. The durable goods manufacturing industry was in a state of flux on the North Shore as the research for this labor force blueprint was conducted. While overall employment in the industry was declining and seemed likely to continue to decline in the short-term, there were still some job opportunities available in the industry that were quite difficult to fill. The overall trend of increasing technical complexity of jobs in the industry continues to drive the demand for ever-higher levels of education and specific skills to access jobs in the industry.

Among the critical industries, several common themes emerged. First, the lack of foundational skills was widely seen as a barrier to entry-level employment. Second, when employment demand picks up, the jobs are expected to have higher technology and skill demands. In each industry, there was mention of the need for the education and workforce development systems to increase the skills levels of the education and training being provided. Finally, while many people have delayed retirement for economic reasons in the current recession, there will still be shortages in critical areas in years to come due to the aging workforce.

The life sciences industry was selected as the emerging industry for this Blueprint. The life sciences industry currently has a strong foothold in the North Shore region. However, the region is faced with constant national and international competition for companies in this industry. From a workforce development perspective, the most important thing the North Shore region has going for it is a highly educated workforce. However, the demands of the industry are ever-increasing and there is a sense that the region is not keeping pace. Both foundational skills and specific technical skills must be increased for the region to remain competitive.

Finally, the partnership between workforce and economic development has long been recognized on the North Shore. The North Shore Workforce Investment Board commissioned research from the North Shore Alliance for Economic Development on the economic impact of eight industries in the region and how the economic and workforce development systems can complement each other. Health care, life sciences, manufacturing, and financial services were the top four rated industries from an economic development perspective, matching the NSWIB-identified critical industries. The region's economic and workforce development efforts are built on similar premises, namely that the region can best invest its limited resources by thinking through the benefits achieved from various industry options and can best assist businesses in the region by working with them directly to identify their top priority needs.

The Impact of the Great Recession

The Blueprint has been written in the midst of the deepest recession in more than fifty years. In important ways, this recession is different from previous recessions. Job loss has been broader and deeper than of any previous recession. This recession has seen dramatic job loss across all age groups. Mid-career workers in their 40s and 50s are experiencing job losses like never before. Education and experience levels have not insulated workers from job loss. The population of unemployed workers includes people with bachelor's and master's degrees and many years of productive work experience. In previous recessions, people were generally confident that their previous jobs were going to come back. During the current recession, many of the previous jobs will never come back.

The recession is putting significant new demands on the region's workforce investment system. More people are requiring services from the system at the same time that businesses have fewer job opportunities available. To address these issues, the workforce development system should develop programs aimed at helping people, particularly mature workers, transition to employment in new occupations and industries. This is particularly important for industries where many of the critical occupations will not be available in the post-recession economy. The workforce system should also work with industry to develop new associate's degrees or enhance current programs to meet the needs of the critical and emerging industries, particularly for the middle skill jobs where there is projected to be a skills gap when we come out of the recession. Finally, the region should create an increased focus on foundational skills.

Recommendations

The general recommendations of the Blueprint are:

- Advocate strongly for policies that increase the level of foundational skills in the region's workforce. Four years of high school advanced mathematics along with Microsoft Office skills are required by many of the critical industries.
- Work closely with community colleges to ensure they consistently make available associate's degree training that meets the needs of workers and businesses in the region. New associate's degree training programs serving the manufacturing and enhanced degree programs serving the health care industry are needed.
- Continue to work on the development of soft skills. In every industry, businesses mentioned that they continually see people who lack work ethic and other soft skills.
- Utilize the current recession as an opportunity to make strong investments in educating and training the region's workforce so people will be ready to access the most in-demand jobs when the economy recovers.

Recommendations are also provided for each of the industries discussed.

Chapter 1 | Introduction

Purpose

The North Shore Workforce Investment Board (NSWIB) is the entity on the North Shore responsible for setting workforce development policy and overseeing all federal and state funded workforce development programs across the 19 cities and towns in the North Shore area. The mission of the NSWIB is to meet the workforce needs of individuals and employers in the region. Through partnerships with schools, colleges, training providers, public organizations, and businesses, the NSWIB builds and supports a workforce development system that serves all members of the North Shore community at any point where work-related services are needed.

One of the key responsibilities of the NSWIB is to serve as an aggregator and disseminator of labor market data. Use of accurate information can help a region's workforce and economic development systems make better decisions on the use of their limited resources. Ideally, this labor force blueprint will be used to help:

- The WIB and other workforce development funders make investments that will pay off for both workers and businesses.
- Career Center staff hear from employers about the types of skills (both "soft" and "hard" skills), education, and experience desired for successful candidates in critical and emerging industries.
- Training providers have access to detailed information on the skill and education requirements of the region's businesses that are looking to hire, so the providers' programs can be tailored to meet the needs of those businesses.
- Economic development system partners understand the strengths of the region's workforce that can be used as selling points for industries interested in locating to or expanding in the North Shore region.

This report is a key component of the NSWIB's efforts to provide objective, timely, and relevant labor force information to all partners in the regional workforce system in a time of serious economic uncertainty.

History

The North Shore Workforce Investment Board has a long history of performing a variety of labor market analyses and using the information developed in those analyses in its work. This labor force blueprint is the fourth in the series of detailed labor market blueprints. In addition, the NSWIB has commissioned special reports on the green economy (Quimby, 2009) and a wide variety of regional economy issues.[1]

The development of the labor force blueprints over time has demonstrated significant changes in the North Shore regional economy. For the initial labor force blueprint (Green, et. al., 2000), eight industries of focus were identified.

1 All North Shore Workforce Investment Board publications are available online at http://www.northshorewib.com/resources.html.

2000 Critical Industries	2000 Emerging Industries
Construction	Computer and Data Processing
Health Care	Financial Services, Web-based Banking
Manufacturing	Telecommunications
Personnel Supply Services	
Retail Trade	

In 2002, the original labor force blueprint was updated (Quimby and Green, 2002). This effort focused on changes in the original critical and emerging industries driven by the economic restructuring that occurred between 2000 and 2002. The blueprint update also contained a set of case studies on exemplary career ladder programs serving the manufacturing, telecommunications, and construction industries. In 2007, a new labor force blueprint research project was conducted (Quimby, 2007). As a result of changes in the regional economy that occurred between 2000 and 2007, a revised set of critical and emerging industries were selected.

2007 Critical Industries	2007 Emerging Industry
Construction	Biotechnology
Financial Services	
Health Care	
Manufacturing	

Selection of critical and emerging industries was based on the following factors.

- Number of jobs
- Skill and education requirements
- Wage levels of critical occupations
- Career ladder opportunities
- Projections of future employment opportunities

These criteria were developed to identify industries most relevant to the region's employment needs and with the best job growth opportunities. It is important to note that the critical and emerging industries selected are not the only industries in the region with job opportunities. They should be considered as priorities in a larger regional workforce and economic development strategy that takes into account the full industrial and occupational makeup of the region.

Methodology

This report brings together labor market analyses from a variety of sources to analyze the critical and emerging industries on the North Shore. The critical and emerging industries for this report remain the same as those identified in 2007. However, in our analysis of the impact of the recession and the analysis of economic development communities in the region, some hints as to potential new opportunities for the workforce development system are provided.

Quantitative data on employment in the region was provided by the Massachusetts Executive Office of Labor and Workforce Development (EOLWD) through the Covered Employment and Wages (ES-202) data series. This data series covers all employment, in both the public and private sectors and in every industry, for the North Shore Workforce Investment Area. EOLWD also provided occupational information from the Occupational Employment and Wage Statistics program conducted in partnership with the United States

Department of Labor. This program provides current data as well as ten-year employment projections. Several analytic reports from EOLWD were also consulted.

As a final step in compiling quantitative labor market data, occupational matrices were constructed for the critical industry sectors (see Appendix B) using the methodology developed in the 2000 Labor Force Blueprint. The occupational matrices include information on numbers of workers in each occupation that does not generally require a bachelor's degree, the projected growth rate of the occupation between 2006 and 2016, and the career ladder level of the occupation. This analysis method serves three critical purposes. First, an examination of the wages paid by the most important occupations in an industry gives an indication of whether investment in training programs for these occupations is likely to provide a payoff to workers. Second, the examination of the occupational mix in an industry allows one to focus on the largest and/or fastest-growing occupations when developing programs to meet employer needs. Third, an analysis of the mix of jobs at different skill and training levels provides information on the likelihood of career ladder potential.

Career ladder potential is defined as having a mixture of Level I, II, and III jobs in the occupational matrix. The determination of the number of jobs designated Level I, II, and III is based on the differentiation of jobs into levels—which is, of necessity, partially subjective. All jobs in the three levels included in the matrix generally do not require a bachelor's degree as a condition of hiring, although some incumbent workers in these jobs may have a bachelor's degree. Where this is the case for a particular industry, it is noted in the analysis. The differences between the levels are based on factors that include increasing educational requirements, increasing length of training required to enter the job, and generally increasing wage levels. Information on educational requirements and wages was obtained from employer interviews and focus groups and the Bureau of Labor Statistics' Occupational Employment Statistics.[2] It is important to note that, due to market forces, wages across different occupations are not strictly comparable. The wages provided in the appendices are averages, and the wages paid by specific employers will vary.

The qualitative research for this report involved conducting focus groups with business leaders in each of the critical industries and supplemental interviews with key business and economic development leaders. The qualitative research focused on key industry issues, high priority occupations and their skill and education requirements, and projected employment needs over the next five years. The focus group protocol is provided in Appendix A.

This report breaks new methodological ground for the region's series of labor force blueprints in two ways. First, the North Shore Workforce Investment Board commissioned Monster.com to provide data on both job postings from the North Shore and resumes posted by North Shore residents. These data are incorporated into the analysis of the supply and demand side of the four critical industries on the North Shore. The Monster.com data is a developing data source and has potential value to the workforce system by providing close to real-time data.[3] Over the next year, the NSWIB will be working to identify additional ways in which this data can provide value. This data is further augmented by an analysis of similar

2 This method of employment-level determination carries with it some potential biases. One potential bias is the understatement or overstatement of the numbers of Level I, II, or III jobs in the study area. It seems likely, given the large numbers of jobs we are reporting on, that any differences caused by the data issues described above are likely to be small. The other main issue that arises from this problem is the over-reporting or under-reporting of particular jobs in the North Shore. This problem cannot be directly resolved through analysis of the quantitative data. Therefore, the NSWIB and the programs it funds are advised to work closely with specific employers to determine their occupational mix as part of the program development process.

3 It is important to note the use of the Monster.com data must be taken as a small portion of broader analysis. The Monster.com data is not representative of the North Shore labor market demand or supply. It is also subject to substantial missing data biases where respondents did not enter data is each field offered. This data should be considered for discussion purposes only and cannot be taken as definitive.

data from the North Shore's career center customers. Second, the NSWIB commissioned an economic development report from the North Shore Alliance for Economic Development. This report, which will be published separately in its entirety, is an analysis of interviews with five separate economic development communities on how they see the growth opportunities for different industries on the North Shore. In this report, we discuss these views on the critical and emerging industries on the North Shore and provide recommendations as to how the economic development and workforce development systems can effectively work together for mutual benefit.

The remainder of this report proceeds as follows. Chapter 2 provides an overview of the supply and demand sides of the North Shore's regional labor market. From the demand side, the report utilizes quantitative data to look at historical changes in the North Shore's industrial and occupational mix. In addition, this chapter contains an analysis of the changes to the regional economy that have occurred and are now occurring due to the recession. From the supply side, we look at the workforce demographics of the North Shore. Chapter 3 reviews the critical industries utilizing both qualitative and quantitative data to assess the training and education demands for workers in the critical occupations for each industry and discusses the assessments of business leaders in each industry for growth in the future. Chapter 4 is a special analysis of the life sciences industry on the North Shore with an eye toward critical foundational and technical skill requirements to ensure the industry can continue to grow in the region. Chapter 5 contains a review of how various economic development entities view the critical and emerging industries on the North Shore and a discussion of how the economic and workforce development systems can best work together to mutual advantage. Chapter 6 concludes the report with recommendations for the workforce and education systems on the North Shore.

Chapter 2 | North Shore Labor Market

Through the early years of the twenty-first century, the North Shore labor market has been known for its consistency. While national economic trends certainly impacted the North Shore, there are several factors that have eased economic downturns on the North Shore in the past.

- The North Shore historically has had a highly educated workforce. All things being equal, regions with educated workforces tend to do better in all economic environments than regions with less educated workforces.
- The North Shore region has had a high concentration of relatively stable industries. In particular, Health Care and Education Services have historically employed large numbers of North Shore residents and demonstrated consistent employment patterns in good economic times and bad.
- The North Shore has had a strong set of infrastructure elements to meet the requirements of a diverse set of industries. These include physical properties that can meet the technical requirements of a wide variety of industries, ease of access to central transportation hubs, and a diverse set of investment entities including venture and angel investors, traditional investment banking, and state and regional government support.

The North Shore continues to have many strong workforce elements. However, these elements have not sufficed to insulate the region from the impact of the national and global recession over the past two years. Over the past several years, the education and skill requirements of critical businesses and industries, both on the North Shore and nationally, have increased dramatically and the current skill sets of the workforce have struggled to keep up. While the Health Care and Education services industries continue to be strong employers in the region, other traditionally strong employers are facing challenges. The current recession is different than past recessions, and the North Shore regional response will need to change to ensure the region's workforce is prepared when employment begins to return to pre-recession levels.

The analysis in this blueprint occurred in the midst of the current recession. When the region will emerge from the recession is unknown. In some cases, this has made the analysis more challenging as it is difficult to project when the region will emerge from the recession and what long-term impacts the recession will produce by the time it ends. However, the effort is worthwhile since the recession offers an opportunity to pursue the education and occupational skill training that will be in demand when the economy recovers.

The remainder of this report is divided into three sections. First, the report examines the demand side of the regional economic equation with a look at the industrial mix on the North Shore, how this mix compares to the industrial mix of the state and nation, and the levels of new and replacement employment demand in these industries as demonstrated by job advertisements placed through Monster.com and the North Shore's career centers. In the second section, the report looks at the occupational mix on the North Shore with a special focus on the fastest growing and highest volume occupations. Finally, the third section concludes with an examination of the impact of the recession on the region's economic prospects and the disproportionate impact the recession has had on various economic and demographic groups on the North Shore.

Demand Side Analysis: Industries on the North Shore

Between 2001 and 2005, the North Shore industrial mix demonstrated a remarkable level of consistency of employment. The same industries dominated the private sector employment mix from year to year. However, over the past several years, much has changed.

Figure 2.1 North Shore Private Sector Employment: 2001-2009

Industry	2001	2002	2003	2004	2005	2006	2007	2008	2009
Agriculture, Forestry, Fishing & Hunting	509	510	506	525	528	481	462	527	471
Construction	5,998	6,560	6,903	6,619	6,688	6,989	7,354	6,768	5,606
Durable Goods Manufacturing	17,778	15,892	15,458	15,145	15,378	14,983	15,249	14,535	12,228
Non-Durable Goods Manufacturing	6,484	5,983	5,732	5,436	5,246	5,063	4,702	4,630	4,285
Retail Trade	27,097	26,652	26,248	26,789	26,866	26,347	25,794	25,368	25,131
Transportation and Warehousing	2,312	2,191	2,187	2,232	2,236	2,134	2,139	2,247	2,248
Information	3,782	3,881	3,435	2,962	2,891	2,554	2,627	3,085	2,946
Finance and Insurance	5,498	6,026	6,523	5,646	5,659	6,406	6,165	5,963	5,727
Professional and Technical Services	7,125	7,004	7,220	7,581	7,780	8,064	8,190	7,847	7,431
Administrative and Waste Services	8,345	7,518	7,301	7,526	6,937	8,227	7,318	7,377	6,620
Educational Services	2,623	2,622	2,669	2,728	2,821	2,827	3,041	3,103	3,158
Health Care and Social Assistance	23,746	24,031	24,101	24,478	24,531	25,704	26,854	27,608	28,357
Arts, Entertainment, and Recreation	3,181	3,535	3,776	3,786	3,507	3,406	3,582	3,710	3,420
Accommodation and Food Services	15,719	16,083	15,435	15,258	15,349	14,856	15,441	15,609	15,939
Other Services, Except Public Administration	6,463	6,891	6,787	6,839	6,797	6,942	7,076	7,354	7,541
Total All Private Sector Employment	**147,862**	**146,011**	**144,601**	**144,211**	**143,853**	**145,076**	**146,352**	**147,547**	**141,138**

Source: Massachusetts Executive Office of Labor and Workforce Development ES-202 data.[4]

Total private sector employment on the North Shore peaked in 2001, declined slightly (2.7%) through 2005, and then gradually recovered until it approximated the 2001 peak in 2008. However, from September 2008 to September 2009, the North Shore's private sector employment declined 4.3% to the lowest levels in the decade. Anecdotally, it appears that this loss of employment is continuing through to the present, mirroring national trends.

Between September 2008 and September 2009, the last year for which data is available, some industries have suffered much more than others. Construction and Durable Goods Manufacturing had the largest job losses, 17.1% and 15.9% respectively. Only three industries demonstrated employment growth exceeding one percent during this period. Health Care and Social Assistance Employment grew 2.7%; Accommodation and Food Service employment grew 2.1%; and private sector Educational Services employment grew 1.7%.

One way to determine which industries are critical to a region is to examine which are present in the region in greater or lesser proportions than expected in comparison to some larger area. In Table 2.2, the Massachusetts location quotients compare the Commonwealth of Massachusetts employment concentration to the nation as a whole, and the North Shore location quotients compare North Shore employment to Massachusetts state employment. Values over 1.0 indicate a higher concentration of employment in that industry, and numbers below 1.0 indicate a lower concentration of employment compared to the reference geographical location. Higher location quotients suggest industries in which the state or region may have a comparative advantage (Maki and Lichty, 2000).

4 Data in Figure 2.1 is for September of each year and is not seasonally adjusted.

Figure 2.2 Location Quotients by Major Industries: 2008

Industry	Massachusetts	North Shore
Agriculture, Forestry, Fishing, and Hunting	0.22	1.37
Construction	0.71	0.97
Manufacturing	0.83	1.31
Utilities	0.73	0.84
Wholesale Trade	0.92	0.87
Retail Trade	0.90	1.44
Transportation and Warehousing	0.67	0.62
Information	1.19	0.65
Finance and Insurance	1.20	0.65
Real Estate and Rental and Leasing	0.79	0.99
Professional and Technical Services	1.36	0.60
Management of Companies and Enterprises	1.35	0.55
Administrative and Waste Services	0.80	0.83
Educational Services	2.22	0.47
Health Care and Social Assistance	1.27	1.12
Arts, Entertainment, and Recreation	1.02	1.27
Accommodation and Food Services	0.91	1.15
Other Services, Except Public Administration	1.17	1.10

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

Massachusetts is overrepresented in the Information, Finance and Insurance, Professional and Technical Services, Management of Companies and Enterprises, Health Care and Social Assistance, and Educational Services industries as compared to the United States as a whole. Not surprisingly, these industries are strongly representative of the industrial mix in the city of Boston, which is sufficiently large to have the greatest influence on the total employment for the state.

Compared to the state as a whole, the North Shore region has strong industrial employment concentrations in Manufacturing; Retail Trade; Health Care and Social Assistance; Arts, Entertainment, and Recreation; and Accommodation and Food Services. The concentrations in the Arts, Entertainment, and Recreation and Accommodation and Food Services industries are testament to the importance of the tourism industry in the region. The North Shore's concentration in Retail Trade is almost entirely due to the presence of the North Shore and Liberty Tree malls. Regions with shopping centers tend to have high location quotients, while those without do not. It is interesting that the Health Care and Social Assistance industry is over-represented on the North Shore despite the concentration of teaching hospitals with their large employment bases in Boston. The high location quotient for the Manufacturing industry in the region is a strong indicator of how important manufacturing continues to be to the region's employment base.

Employment projections are always difficult to make, in large part because of unforeseen issues such as the current recession. The most recent industrial growth projections are for the period 2006-2016 and were made just as the economy was beginning to demonstrate real employment growth, as shown in Figure 2.3.[5]

5 Data provided is for Massachusetts as a whole. Data is not available by industry for the North Shore Workforce Investment Area.

Figure 2.3 Massachusetts Employment Growth Projections by Industry: 2006-2016

Industry	Growth Projection
Natural Resources and Mining	-2.2%
Construction	-3.0%
Manufacturing	-13.8%
Utilities	-7.4%
Wholesale Trade	2.8%
Retail Trade	-1.6%
Transportation and Warehousing	7.4%
Information	8.2%
Finance and Insurance	3.3%
Real Estate and Rental and Leasing	2.6%
Professional and Technical Services	18.1%
Management of Companies and Enterprises	3.2%
Administrative and Waste Services	12.7%
Educational Services, Private	11.8%
Health Care and Social Assistance	18.6%
Arts, Entertainment, and Recreation	15.1%
Accommodation and Food Services	8.0%
Other Services, Except Public Administration	7.2%

Source: Massachusetts Executive Office of Labor and Workforce Development calculations of Current Employment Statistics Program data.

The strongest industrial employment growth was projected for the Health Care and Social Assistance, Professional and Technical Services, and Arts, Entertainment, and Recreation industries. The greatest job losses were projected for the Manufacturing sector. To date, the industries that were projected for the highest growth have generally survived the recession best. However, the current employment growth in those industries is not on track to meet the projections due to the overall status of the economy. In this economy, maintaining employment levels or a slight increase is a major success. As discussed in detail in Chapter 3, the Health Care and Social Assistance industry on the North Shore is following this pattern. The Manufacturing industry is showing declining growth both on the North Shore and statewide, as predicted. However, it is important to note that the Manufacturing industry is a larger part of the North Shore economy than it is for the state as a whole. Therefore, employment in the industry could decline significantly in the North Shore region while the industry remains a major employer as a percentage of all employment in the region. Also, manufacturing employment seems to be showing early signs of stabilization and recovery on the North Shore as detailed in Chapters 3 and 5.

Finally, two new datasets provide a differing look at industrial demand on the North Shore. First, we examine data from Monster.com. Monster.com provided the North Shore Workforce Investment Board with data on their jobs listings for the North of Boston region, which includes the North Shore region as well as portions of Merrimack Valley and Metro North Workforce Investment Areas. It is important to recognize that industry data was not available for all listings.

Figure 2.4 Monster.com Job Listings for the North of Boston Region: Q1 2010

Industry	Job Listings	Percentage of Total
Agriculture, Forestry, Fishing, and Hunting	56	0.1%
Construction	318	0.8%
Manufacturing	3,140	8.1%
Utilities	357	0.9%
Wholesale Trade	81	0.2%
Retail Trade	1,005	2.6%
Transportation and Warehousing	80	0.2%
Information	3,114	8.0%
Finance and Insurance	3,332	8.6%
Real Estate and Rental and Leasing	317	0.8%
Professional and Technical Services	12,324	31.8%
Management of Companies and Enterprises	780	2.0%
Administrative and Waste Services	238	0.6%
Educational Services	1,417	3.7%
Health Care and Social Assistance	3,948	10.2%
Arts, Entertainment, and Recreation	216	0.6%
Accommodation and Food Services	795	2.1%
Other Services, Except Public Administration	4,149	10.7%
Public Administration	475	1.2%
Not Categorized	2,626	6.8%
Total	**38,768**	

Source: Monster.com.

The Professional and Technical Services industry provided 31.8% of the job listings in the first quarter of 2010. In some ways, this is not surprising, since the reputation of online job listings and responses suggests that high tech companies and more technologically sophisticated job seekers are likely to be the base of Monster.com users. The Professional and Technical Services industry is highly over-represented in the Monster.com dataset as compared to the industry's overall representation in the industrial mix of the North Shore region. The Health Care and Social Assistance industry had more than 10% of the jobs listed in the Monster.com dataset. The industry is even more heavily represented in region's industrial mix. Finally, it is interesting that 8.1% of the jobs listed in the Monster.com dataset are in the manufacturing industry. While the manufacturing industry is unquestionably important on the North Shore region, quantitative data sources suggest that employment is declining. In that case, one would expect to see very low levels of job advertisements relative to other industries, but that is not the case here. This may indicate the manufacturing industry is either beginning to regain employment or that the industry has significant skill gaps that need to be addressed. This issue is further addressed in Chapter 3.

Data on job listings placed with the North Shore's career centers offer quite a different perspective than the Monster.com job data.

Figure 2.5 North Shore Career Center Job Listings: July 2009 to June 2010

Industry	Job Listings	Percentage of Total
Agriculture, Forestry, Fishing, and Hunting	46	1.9%
Construction	33	1.3%
Manufacturing	248	10.0%
Utilities	2	0.1%
Wholesale Trade	23	0.9%
Retail Trade	221	8.9%
Transportation and Warehousing	47	1.9%
Information	54	2.2%
Finance and Insurance	32	1.3%
Real Estate and Rental and Leasing	10	0.4%
Professional and Technical Services	71	2.9%
Management of Companies and Enterprises	0	0.0%
Administrative and Waste Services	422	17.1%
Educational Services	134	5.4%
Health Care and Social Assistance	284	11.5%
Arts, Entertainment, and Recreation	136	5.5%
Accommodation and Food Services	227	9.2%
Other Services, Except Public Administration	216	8.7%
Public Administration	224	9.1%
Not Categorized	45	1.8%
Total	**2,475**	

Source: North Shore Career Centers.

The greatest number of job opportunities listed with the North Shore career centers were in the Administrative and Waste Services industry (17.1% of all job listings). Job listings in this industry were driven by a great preponderance of temporary agency job listings. These jobs represent a wide variety of jobs and industries. The temporary nature of these jobs can be worrisome from a workforce development perspective, but some of the jobs may offer temporary-to-permanent opportunities that would improve their viability. Two NSWIB-identified critical industries each had more than ten percent of the total job listings. Health Care and Social Assistance accounted for 11.5% of total job listings. This is certainly reflective of the importance of health care employment in the region, as well as the fact that it is one of the industries that has continued to demonstrate employment growth in the region over the past several years. Manufacturing accounted for 10.0% of the career center's total job listings. This is further testament to importance of manufacturing to the region's industrial employment mix.

It is worth noting the considerable differences between the Monster.com and career centers job listings. The Monster.com job listings are concentrated in positions that require higher levels of education and experience and that generally offer higher wages. The Monster.com job listings were also much more likely to be permanent and/or full-time jobs

than those listed with the career centers. However, both the Monster.com and career center listings had more than ten percent of their job listings in both the Health Care and Social Assistance and Manufacturing industries. Overall, the job listing analysis demonstrates that there is no substitute for regular communication with business leaders in all of the critical and emerging industries to maintain the best handle on employment demand changes in these turbulent times.

Supply Side Analysis: The North Shore Workforce

An examination of the supply side of the North Shore regional labor market must focus on two areas: the skills, education, and experience that the workforce in the region possesses and the jobs that the workforce either possesses or is looking to obtain. The competencies of a region's workforce are key selling points for industrial location and growth in a region from an economic development perspective. In this section, we look at the demographic characteristics of the region and analyze occupational data from both traditional sources and the Monster.com dataset to examine the state of the North Shore regional workforce.

The North Shore workforce is traditionally thought of as notable for a number of positive characteristics. The high level of educational attainment in the region is what one would expect given both the high cost of living in the region and the importance of highly skilled labor to the most important industries in the region.

Figure 2.6 Essex County Educational Attainment: 2008

	Essex County	Massachusetts	United States
Less than 9th Grade	5.7%	4.9%	6.4%
9th to 12th Grade, No Diploma	6.3%	6.4%	8.7%
High School Diploma (includes equivalency)	25.5%	26.7%	28.5%
Some College, No Degree	17.9%	16.4%	21.3%
Associate's Degree	8.1%	7.5%	7.5%
Bachelor's Degree	22.5%	21.7%	17.5%
Graduate or Professional Degree	14.0%	16.4%	10.2%
Percent High School Graduate or Higher	88.0%	88.7%	85.0%
Percent Bachelor's Degree or Higher	36.5%	38.1%	27.7%

Source: U. S. Census Bureau American Community Survey.

In 2008, Essex County residents ages 25 and over had higher education levels than the nation as a whole. The percentage of Essex County residents with a bachelor's degree or higher was 36.5%, compared to 27.7% of United States residents and 38.1% of Massachusetts residents. Compared to Massachusetts, Essex County had higher levels of those with Some College, no degree, Associates degree and Bachelor's degree. Overall, the data on educational attainment suggests that the North Shore region has an above-average education level. Given the educational requirements of the industries and occupations projected to grow in the region, it is important that the region build on this level and increase the percentage of residents prepared with an associate's degree and above.

Figure 2.7 North Shore Workforce Investment Area Top 25 Occupations: May 2009

Rank	Occupation	Jobs	Median Annual Wage	Entry-Level Annual Wage	Experienced Annual Wage
1	Retail Salespersons	7,110	$22,001	$18,130	$31,982
2	Cashiers	6,340	$19,005	$17,647	$22,237
3	Waiters and Waitresses	4,550	$25,243	$18,382	$34,283
4	Registered Nurses	3,950	$71,164	$54,822	$82,789
5	Combined Food Preparation and Serving Workers, Including Fast Food	3,440	$18,919	$18,093	$20,606
6	Customer Service Representatives	3,190	$32,720	$24,081	$39,555
7	Office Clerks, General	3,140	$32,965	$23,027	$37,549
8	Stock Clerks and Order Fillers	2,820	$22,145	$18,460	$29,114
9	Bookkeeping, Accounting, and Auditing Clerks	2,560	$38,820	$26,879	$45,349
10	General and Operations Managers	2,420	$91,856	$59,039	$131,508
11	Teacher Assistants	2,090	$27,322	$19,062	$31,958
12	Home Health Aides	2,080	$24,879	$22,072	$26,607
13	Managers of Office and Administrative Support Workers	1,920	$52,914	$39,477	$62,629
14	Nursing Aides, Orderlies, and Attendants	1,880	$28,555	$24,903	$31,080
15	Executive Secretaries and Administrative Assistants	1,830	$43,898	$32,445	$52,459
16	Elementary School Teachers, Except Special Education	1,810	$59,557	$41,887	$66,483
17	Personal and Home Care Aides	1,630	$27,976	$23,954	$30,635
18	Secondary School Teachers, Except Special and Vocational Education	1,590	$59,805	$43,685	$67,909
19	First-Line Supervisors/Managers of Retail Sales Workers	1,580	$37,198	$25,657	$52,654
20	Cooks, Restaurant	1,570	$24,995	$19,839	$28,862
21	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	1,550	$26,713	$21,042	$33,623
22	Packers and Packagers, Hand	1,500	$22,606	$18,413	$31,214
23	Food Preparation Workers	1,490	$21,031	$18,389	$25,339
24	Bartenders	1,490	$21,927	$17,196	$28,970
25	Secretaries, Except Legal, Medical, and Executive	1,470	$35,818	$26,130	$42,104

Source: Massachusetts Executive Office of Labor and Workforce Development.

In terms of current jobs, Figure 2.7 shows the top 25 occupations by number of jobs in the North Shore region in May, 2009. These occupations are a diverse group spread across a number of industries. Some of the key take-aways from this data include:

- Nine of the top 25 and three of the top five occupations have median annual salaries of less than $25,000. Five of the top 25 occupations have a median annual salary greater than $50,000.
- Ten of the top 25 occupations are concentrated in the Retail Trade and Accommodation and Food Services industries.
- Few of the top 25 occupations require an associate's degree or higher.

When looking at the occupations projected to grow the fastest and to create the greatest number of new job opportunities, the picture looks quite different.

Figure 2.8 Massachusetts Fastest Growing Occupation Projections: 2006-2016

Rank	Occupation	Projected Growth
1	Network Systems and Data Communications Analysts	50%
2	Personal and Home Care Aides	36%
3	Computer Software Engineers, Applications	35%
4	Home Health Aides	34%
5	Veterinary Technicians and Technologists	33%
6	Biochemists and Biophysicists	31%
7	Veterinarians	31%
8	Pharmacy Technicians	29%
9	Skin Care Specialists	28%
10	Social and Human Services Assistants	27%
11	Physical Therapist Assistants	27%
12	Multi-Media Artists and Animators	26%
13	Microbiologists	25%
14	Biological Technicians	25%
15	Health Educators	25%
16	Mental Health and Substance Abuse Social Workers	24%
17	Computer Software Engineers, Systems Software	24%
18	Computer Systems Analysts	24%
19	Medical Assistants	24%
20	Medical Scientists, Except Epidemiologists	24%

Source: Massachusetts Executive Office of Labor and Workforce Development.

Fifteen of the 20 occupations projected to grow the fastest between 2006 and 2016[6] generally require a minimum educational level of a bachelor's degree. Nine of the top twenty occupations were in the Health Care and Social Assistance industry. The next largest industrial representations were from the Professional and Technical Services and Life Sciences industries. The industries in which the projected fastest growing occupations reside are industries well represented in the critical and emerging industries on the North Shore. However, it is important to recognize that some of these occupations will be growing from a small base of employment, so not many new jobs will be created.

6 Projections are not made at the Workforce Investment Area level.

Figure 2.9 Massachusetts Occupations Projected to Create the Most New Jobs: 2006-2016

Rank	Occupation	Projected Number of New Jobs
1	Registered Nurses	16,100
2	Customer Service Representatives	8,390
3	Computer Software Engineers, Applications	8,260
4	Combined Food Preparation and Service Workers, Including Fast Food	7,760
5	Home Health Aides	5,820
6	Nursing Aides, Orderlies, and Attendants	5,590
7	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	5,330
8	Retail Salespersons	5,290
9	Computer Software Engineers, Systems Software	5,160
10	Management Analysts	4,950
11	Social and Human Services Assistants	4,330
12	Accountants and Auditors	4,330
13	Personal and Home Care Aides	4,010
14	Waiters and Waitresses	3,980
15	Executive Secretaries and Administrative Assistants	3,880
16	Network Systems & Data Communications Analysts	3,800
17	Elementary School Teachers, Except Special Education	3,670
18	Computer Systems Analysts	3,560
19	Office Clerks, General	3,540
20	Child Care Workers	3,470

Source: Massachusetts Executive Office of Labor and Workforce Development.

Figure 2.9 presents data on the occupations projected to create the most new jobs in Massachusetts between 2006 and 2016. Far and away the occupation with the most new jobs projected is Registered Nurses, with nearly double the numbers of the industry with the second greatest number of projected jobs, Customer Service Representatives. Overall, six of the occupations projected to produce the greatest number of new jobs are in the Health Care and Social Assistance industry and four are in Professional and Technical Services.

The North Shore region has a very strong workforce with higher levels of education than the nation as a whole and specific expertise that is beneficial to the critical and emerging industries in the region. However, as industry skill requirements change, there will be increased demand for higher levels of skills and education. As the past three years have demonstrated, the workforce of the North Shore has not been insulated from the impacts of the recession. When the region's critical and emerging industries come out of the recession and begin hiring again, the region's workforce will need to be prepared to meet the increasing demands placed on it for the region to be economically successful.

The Impact of the Great Recession

After proceeding for many years with relatively little change in private sector employment levels, in 2007 the North Shore began to be damaged by the same global forces that were, and still are, impacting the remainder of the nation. Despite occasional fits and starts, the region still has not emerged from the economic downturn. The region has previously experienced recessions and other periods of decline in employment. For the most part, the region's workforce strengths at least partially insulate it from the economic impact that other regions experience. Furthermore, past recessions have followed a typical pattern. Job losses in a typical recession tend to be the greatest among the youngest workers who have the least job experience. During the recession, these young workers were able to take on the part-time jobs that were previously held by teenagers. When the economy recovered, they were generally able to slot back into their previous jobs and continue on their career pathways.

It is clear that the current recession is different in many ways from past recessions.

- Job loss has been broader and deeper than of any previous recession. This recession has seen dramatic job loss across all age groups. Mid-career workers in their 40s and 50s are experiencing job losses like never before.
- Education and experience levels have not insulated workers from job loss. The population of unemployed workers includes people with bachelor's and master's degrees and many years of productive work experience.
- The depth of the recession has resulted in layoffs at even deeper occupational and experience levels than previous recessions. Now employers can hire adults with years of experience for part-time jobs. Indeed, there are dozens or even hundreds of adult applicants for part-time or seasonal employment.
- In previous recessions, people were generally confident that their previous jobs were going to come back. During the current recession, there is surety of exactly the opposite—that many of the previous jobs will never come back (Schwartz, 2010; Lahart, 2010).
- In previous recessions, people who were planning to retire generally continued to follow through with those plans. In this recession, people not only are not moving from job to job, but people who are eligible to retire and were planning on retiring are not. There is a feeling that the economic situation even beyond jobs may not turn around for a long time. The possibility of deflation is particularly scary to many who are nearing the retirement stage of their careers.

Looking forward, it is difficult to know when the region will completely emerge from the recession and what the emerging economy will look like. Based on reviews of regional forecasts and the interviews and focus groups conducted for this report, the following are factors that merit consideration by the workforce development system.

- There will be fewer jobs in many industries even when we emerge from the recession, and the jobs that do become available will be increasingly technologically sophisticated. The requirements will be broader at the foundational level and deeper in the specific technical areas. Many more jobs will require at least an associate's degree.
- Many of the jobs likely to lead the economy in recovery will be the middle skill jobs that have been receiving much attention of late (National Skills Coalition, 2010). In 2007, the National Skills Coalition report cited 45% of Massachusetts jobs as middle skill jobs but only 32% of the Massachusetts workforce as having the skills and education necessary to fill those positions.

- For many workers, their previous job will no longer exist. This may cause extreme difficulties for older workers who have spent their entire careers in one industry. The workforce system will have to adapt to helping people who need to transition to new jobs and new industries.
- There will be new jobs that do not currently exist or that are only beginning to emerge at present. An example would be the Health Information Technology (HIT) jobs that are just beginning to come into widespread use at present. The workforce system stakeholders will need to work with industry to develop standards and training programs to meet the skills needs of these emerging occupations.

Specific recommendations for the workforce development system to respond to the current recession include:

- Work with industry to develop new associate's degrees or enhance current programs to meet the needs of the critical and emerging industries, particularly for the middle skill jobs where there is projected to be a skills gap when we come out of the recession.
- Develop programs aimed at helping people, particularly mature workers, transition to employment in new occupations and industries. This is particularly important for industries where many of the critical occupations will not be available in the post-recession economy.
- Create an increased regional focus on foundational skills. From the K-12 system to the community colleges and universities in the region, there is a need to increase the foundational skills of the population. Increasing the foundational skills of the population will have two major benefits. First, as discussed in Chapter 3, the critical industries in the region identified the lack of foundational skills as a barrier to gaining employment in their industry. Second, lack of foundational skills is a frequent barrier to entering the associate's degree and higher level education programs that will be required for access to the fastest growing jobs coming out of the recession.

The recession is putting significant new demands on the region's workforce investment system. More people are requiring services from the system at the same time that businesses have fewer job opportunities available. Businesses are also pointing out the lack of foundational skills in both the existing workforce and in those who are not currently employed. The workforce investment system should use the current period to help develop the regional workforce's skill and education levels so the workforce will match up well with the requirements of the emerging occupations.

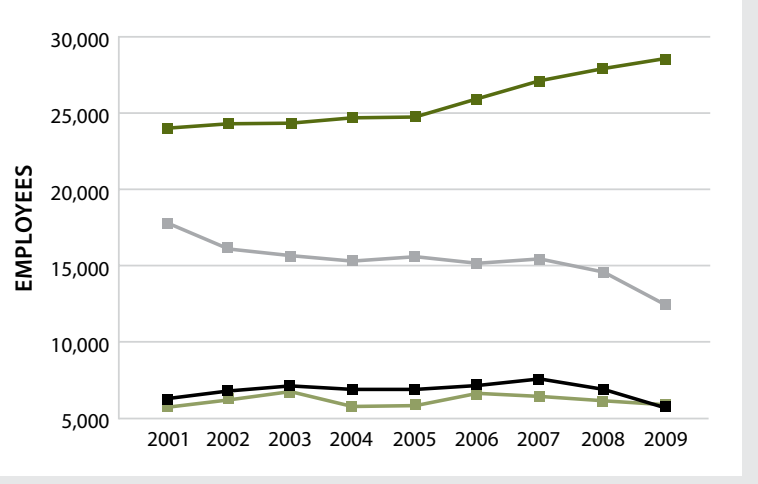
Chapter 3 | Critical Industries

While the North Shore region has a diversified economy, certain industries have traditionally stood out as the critical industries for the North Shore region. The selection of the North Shore region's critical industries builds on past Blueprint efforts with the additional consideration of the data outlined in the previous chapter. Selection criteria for the critical industries include:

- Number of jobs
- Skill and education requirements
- Wage levels of critical occupations
- Career ladder opportunities
- Projections of future employment opportunities

The 2007 set of critical industries included Construction, Financial Services, Health Care, and Durable Goods Manufacturing (Quimby, 2007).

Figure 3.1 North Shore Critical Industry Employment: Q3 2001-2009



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

Each of the 2007 critical industries continue to rank highly in terms of total employment and, to a lesser extent, employment retention. All four industries are among the largest employers on the North Shore and score well on all of the critical industry criteria.

As shown in Figure 3.1, Health Care and Social Assistance is the only one of the critical industries that demonstrated substantial employment gains between 2001 and 2009 (Q3 2009 is the most recent period for which data is available). Finance and Insurance and Construction remained relatively consistent in terms of levels of employment across the 2001-2009 time frame. Durable Goods Manufacturing lost over 5000 jobs between 2001 and 2009, but still remains the second largest employer among the critical industries and one of the largest employers among all industries in the region. In addition, the strong wage levels, skills and education demand, and the presence of large numbers of in-demand middle skill jobs in the industry make a strong case for the inclusion of Durable Goods Manufacturing as a critical industry.

Other candidates for inclusion in the critical industry group were limited. Retail Trade remains a strong employer in the region. However, wages are relatively low for the industry as a whole and there are few career ladder opportunities for advancement. Most projected job opportunities in Retail Trade are for replacement jobs rather than newly created positions, adding relatively little to the economic growth of the region. Similarly, Accommodation and Food Services has high levels of employment, but many of the jobs are low paid and part-time with few career ladder opportunities. The only other industry group that has more than 5,000 private sector employees is Administrative and Waste Services. This industry has lost more than 20% of its total employment since 2001 and is widely dispersed across a number of sub-sectors.

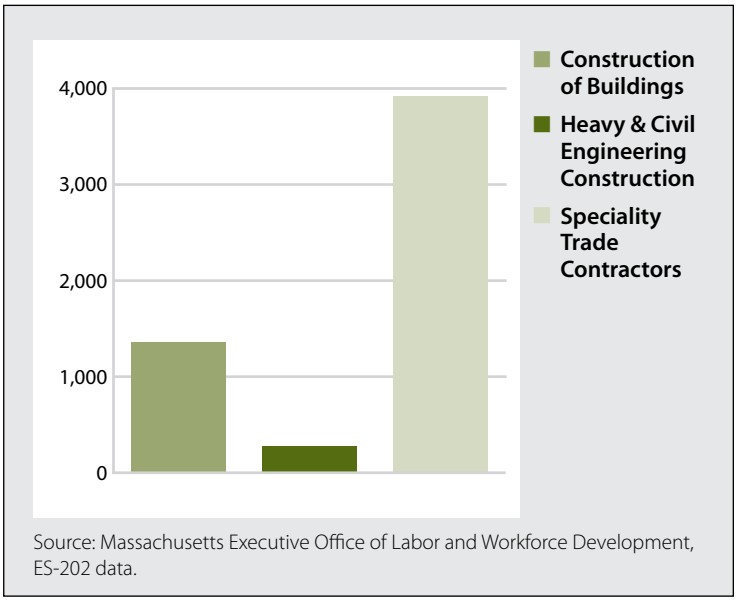
Based on the criteria discussed above, the four critical industries from the 2007 blueprint continue to justify their inclusion as critical industries. No other industries sufficiently meet the critical industry criteria to justify their inclusion as critical industries in this blueprint. It is important to recognize that there are and will continue to be job opportunities in many industries that were not selected and that conditions may change quickly as the economy comes out of the current recession. The workforce development system should continue to monitor the labor force conditions in the region on an ongoing basis to ensure that emerging opportunities are quickly identified and acted upon in any industry.

The remainder of this chapter discusses each of the four critical industries in detail with a review of the critical occupations and advancement opportunities in each.

Construction

The construction industry has long been a staple of employment on the North Shore. Between 2001 and 2007, employment was consistently growing, albeit slowly. However, between 2007 and 2009, the construction industry on the North Shore lost 1,748 jobs or 23.7% of construction employment. In September 2009, there were 1,162 businesses on the North Shore in the construction industry, the vast majority of which (814) were in the Specialty Trade Contractors sector.

Figure 3.2 North Shore Construction Employment by Sector: September 2009



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

Specialty Trade Contractors

As shown in Figure 3.2, the Specialty Trade Contractors sector contains most of the employment in the construction industry. This has remained consistent for at least the past ten years. Companies in the Specialty Trade Contractor sector include building trades companies that specialize in one or more aspect of construction, repair, or maintenance. These range from plumbing and heating and air conditioning to electrical work, roofing, painting, and carpentry. One of the strong benefits of this sector to the region is the preponderance of middle skill jobs that offer good pay and benefits, as well as long-term career ladder opportunities.

The majority of occupations in this industry sector do not require a bachelor's degree. Most occupations are based in the trades. Critical occupations in this sector include painters, paper hangers, sheet rockers, carpenters, electricians, bricklayers, and laborers. Within each trade, each position (within the unionized sector) is further divided among apprentices, journeymen, and foremen.

Voices from the Field: Construction Leaders Speak

"Industry is at 50% capacity due to sluggish economy."

"Older employees need experience with new technology and new employees need technology experience."

"Current work involves roof, windows, insulation, energy efficiency, furnaces and lights."

"We can pick and choose candidates. We get 20 resumes for one job."

Positions in this industry are traditionally accessed through a combination of education and hands-on job experience. Trade knowledge is gained through a combination of trade schools, apprenticeship training, licensure, and on-the-job experience. The predominance of craft knowledge makes the organization of specialty trade labor markets distinctive. Unions (through apprenticeship programs and hiring halls) govern much of the recruitment, training, and placement process. The line between employers and employees can occasionally blur, as craft workers—both union and nonunion—sometimes establish independent contracting businesses.

In considering the workforce implications of the construction industry, one of the key factors is the contingent nature of the work. Tradesmen and tradeswomen only work as long as there are projects to work on. The project-contingent nature of the work notwithstanding, a large number of people who are skilled in the construction sector trades stay at their jobs for a long time, making careers of it, either for another small company or in business for themselves.

Critical Occupations and Human Resources Challenges

The complete listing of pre-baccalaureate positions in the Specialty Trade Contractors sector is provided in Appendix B. One of the important benefits of this sector from a workforce development perspective is the clear career advancement opportunities that are available.

In the focus groups and interviews conducted for this research, business leaders identified the following critical issues.

- Currently, the work on new jobs is slowing dramatically. In the early part of the recession, renovation work was sufficient to support the industry. However, more recently, even that work has begun to dry up. Construction is likely to be a challenging industry for the foreseeable future.
- Despite all the policy conversations about green jobs, there are not a lot of specifically green jobs. However, there are good opportunities to build green components into existing jobs and training in the construction industry. Specific opportunities cited included the expansion of electronic technician training to include clean energy, development of the LEED credentialed maintenance technician, and new elements of Heating, Ventilation, and Air Conditioning that reflect energy conservation changes in the industry.
- New design and construction methods are creating new opportunities in the industry. The use of integrated design techniques is creating demand for highly trained computer programmers who can make use of the new techniques in building information modeling.

Details on some of the key occupations are provided below. These descriptions build on the work conducted for the 2007 labor force blueprint.

Laborers

Duties: Unloading, carrying, and distributing tools and materials; cleaning up job site.

Critical Degrees, Credentials, Skills: No degree required. Need common sense, physical fitness, a strong work ethic, and physical strength. More skilled laborers associated with specific trades may need ability to read blueprints, set up lasers for pipe laying, or attain licensing for lead, asbestos, or other hazardous material abatement. High school degree, math and reading skills needed to enter apprenticeship program.

Advancement Pathways:

- Apprentice Laborer ➧ Journeyman Carpenter Tender, Cement Mason Tender, Environmental Remediation Worker, etc.

Requirements for Advancement: Successful completion of 4,000-hour trade apprenticeships in many of skilled crafts (usually two to five years), positive work history during apprenticeship. Some fields require licensing.

Electricians

Duties: Installing, testing, and repairing electrical power, communication, and security systems.

Critical Degrees, Credentials, Skills: High school degree required for apprenticeship; demonstrated math and reading aptitude; completion of apprenticeship; ability to read and execute blueprints and plans; use of hand and power tools; knowledge of electrical theory, circuitry, and National Electrical Code; attainment of electrician's license. Additional manufacturer training is often provided on specific systems, particularly as green and clean energy systems become more common.

Advancement Pathways:

- Apprentice Electrician ➧ Journeyman Electrician ➧ Master Electrician
- Foreman ➧ General Foreman

Requirements for Advancement: 10,000 hours of on-the-job training (over five years of apprenticeship) and about 1,000 hours of classroom and job site coursework.

Carpenters

Duties: Framing, constructing, and repairing buildings; in dry walling, applying drywall, and performing rough carpentry. Foremen oversee layout/construction and perform paperwork for jobs.

Critical Degrees, Credentials, Skills: On union jobs, serve four-year apprenticeship and pass union-administered examination (including English aptitude). Many programs are beginning to incorporate LEED and other green training elements as these are increasingly needed on many jobs.

Advancement Pathways:

- Apprentice Carpenter ➧ Journeyman Carpenter ➧ Carpenter Foreman

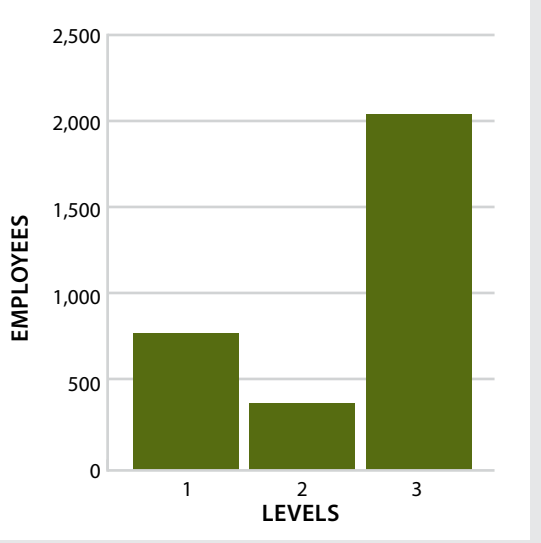
Requirements for Advancement: Complete apprenticeship (on the job) as well as two to three weeks of classroom training per year to attain journeyman status. Contractors select foremen on the basis of demonstrated skill and reliability.

Career Ladder and Advancement Opportunities

As shown in Figure 3.3, there is a smaller amount of occupations in the most entry-level positions, Levels One and Two, but a substantial number of employment opportunities in the highest pre-baccalaureate level, which represents the middle skill jobs discussed in Chapter 2.

The basic career ladders in the industry are clearly laid out, with very transparent requirements for advancement. The steps from apprentice to journeyman to master electrician or plumber, for example, are explicitly stated and covered by state licensing

Figure 3.3 North Shore Specialty Trade Contractors Employment by Levels: September 2009



Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202 data. Analysis by the author.

requirements as well as, in many cases, union training requirements and work rules. The earliest steps for advancement are generally based on successful work experience and on-the-job training. Formal training courses are available to meet licensing requirements. Increasingly, continuing education training courses are required even for experienced workers. Much of this training is provided by the suppliers of specialized equipment.

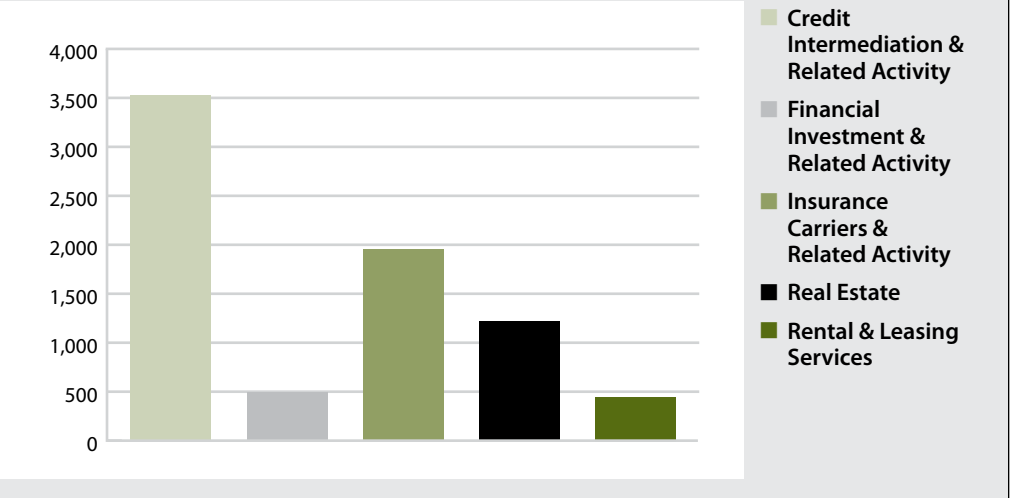
Growth Opportunities and Recovery

Currently, there are relatively few employment opportunities in the construction industry on the North Shore. Only 33 of 2,475 jobs listed with the North Shore Career Centers between July 2009 and June 2010 were in the construction industry. According the Monster.com data for the North of Boston area, only 318 of 37,771 jobs advertised in the first half of 2010 were in construction. In both cases, one needs to consider that these sources may not be fully representative of the jobs that are available in the industry. However, the levels of jobs are low in comparison to other industries listing positions both with Monster.com and with the North Shore's career centers.

Financial Services

Financial Services has historically been a significant employer in the North Shore. Finance and Insurance employed 5,498 in the region in 2001 and 5,727 in 2009. The level of employment in Financial Services has remained remarkably consistent despite substantial changes in the economy. However, over the past three years, the nature of the jobs available and the skill and education requirements have changed quite substantially.

Figure 3.4 North Shore Finance and Insurance Employment by Sector: September 2009



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

In September 2009, as shown in Figure 3.4, nearly half of all employment on the North Shore in the Finance and Insurance industry was in the Credit Intermediation and Related Activities, more commonly referred to as the banking sector. Financial Services employment in the North Shore has historically been over-represented in this sector compared to the state of Massachusetts; 39% of all North Shore Financial Services employment is in Credit

Intermediation, compared to only 29% of Massachusetts employment (Sinatra, 2006). In addition to size, the concentration of jobs that do not require a bachelor's degree and the substantial career ladder opportunities led to a focus on this sector.

The Banking Sector

In 2007, the banking industry was selected as a critical industry due to the rapid employment growth in the sector on North Shore as a result of multiple banks opening new branches in the region. In addition, many banks were branching out into new lines of business and trends of offshoring back office functions were decreasing. All of these factors led industry leaders and workforce data analysts to project strong future employment in banking. Unfortunately, the recession that began in December 2007 resulted in highly significant changes for the industry. While employment has declined only slightly to date, growth is hard to see given changes in the industry discussed below.

Entry into employment in the banking sector can be somewhat different than in other industries. Many people get their start in the industry on a part-time basis, often through teller positions. From this entryway, they can get an inside look at the industry and identify the opportunities that seem a best fit with their skills and desires. The industry as a whole has a strong preference for hiring from within. Many firms in the industry have a further preference for hiring current full- or part-time employees for positions that represent even a small step on the career advancement pathway.

Banking is becoming an increasingly regulated industry, which has a strong impact on employment in the industry. From senior management to part-time tellers, everyone employed in banking is being influenced by, and needs to have a strong understanding of, government regulations and compliance. In looking at the critical occupations, regulation and compliance must always be considered. The workforce development system will need to work closely with the banking industry to ensure training programs aimed at preparing workers for this industry remain up to date with the latest regulatory developments.

Voices from the Field: Banking Leaders Speak

"Part-time seasonal jobs are the way to prove yourself."

"The banking industry takes care of its own." [in relation to career advancement opportunities]

"We have a lack of qualified people. Poor credit reports can bar people from the industry."

"Part-time is the way to get your foot in the door and then options will open up. Banks like to have home grown talent."

Critical Occupations and Human Resources Challenges

In an occupational analysis of the banking sector, one of the critical factors is the wide range of occupations available in the sector. People who are interested in employment in the banking sector have a variety of career pathways from which to choose (see Appendix B for a listing of pre-baccalaureate jobs in this industry).

Over the past five years, the qualifications for entry-level positions have become more demanding. Even during the current time of high unemployment, banks on the North Shore are having difficulty finding applicants that fully meet their requirements. Some of the issues that act as barriers to employment are:

- Lack of foundational skills including basic math, writing, business writing, computer skills, and customer service. Many people stressed that there is a substantial gap between what is being learned in the formal academic setting and what business needs. For example, almost all applicants can operate a computer, but many cannot use basic business applications such as Microsoft Word and Excel.
- At the assistant manager and manager levels, many applicants are lacking in sales experience. This experience is critical as these positions have taken on additional responsibilities as a result of staffing cutbacks in response to the current economic environment.

- The soft skills, such as communications skills and work ethic, are seen as lacking in many younger applicants for entry-level positions. In the current economic environment, this is not a huge problem in hiring since there are so many applicants for every position and more people are willing to work entry-level or part-time positions. However, when the economy recovers, the emerging workforce will need to be better prepared in this area to access the opportunities that will come.

The occupations with the greatest level of current demand on the North Shore include Compliance and Regulation analysts, loan officers, mortgage bankers, and small business lenders. For the most part, these positions are not entry-level and require substantial levels of industry experience.

Teller

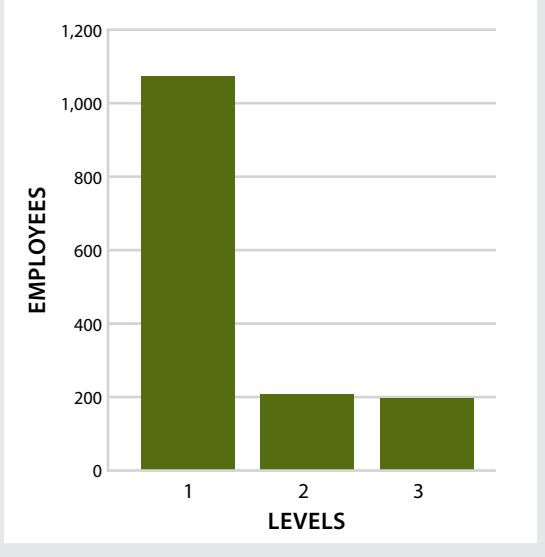
Duties: Processing transactions, interacting with customers person-to-person, adhering to individual company procedures for handling and recording transactions, balancing at the end of the day. Working with customers to interest them in additional banking products and referring customers to assistant managers or managers who complete the sale for these products.

Critical Degrees, Credentials, Skills: High school diploma or GED, prior experience with cash handling and/or customer service generally preferred, excellent communication skills,attention to detail. In the current economic environment, many tellers have bachelor's degrees as well as prior experience as part-time tellers before being hired for a full-time position.

Advancement Pathways:

- Teller ⏵ Senior Teller ⏵ Teller Manager ⏵ Assistant Branch Manager
- Teller ⏵ Customer Service Representative ⏵ Sales
- Teller ⏵ Operations Clerk ⏵ Analyst

Figure 3.5 North Shore Specialty Credit Intermediation Employment by Levels: September 2009



Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202 data. Analysis by the author.

Requirements for Advancement: Positive work experience, company-sponsored training. Some positions prefer associate's or bachelor's degree. The number one requirement for advancement is successful experience in the teller position.

The job of the teller has become more complex over time. In the current economic environment, tellers are taking on many additional job tasks including sales. Some banks use a teller's ability to sell other banking products to customers as one measure of job performance. This sales ability is also a key factor in determining career advancement opportunities. In addition, many banks require tellers to obtain knowledge of government regulations. This is becoming an increasing standard in hiring for tellers at some banks in the region.

Career Ladder and Advancement Opportunities

As shown in Figure 3.5, entry-level opportunities are by far the largest segment of pre-baccalaureate employment. This is due to the predominance of the teller occupation in the industry. However, there are still reasonable levels of opportunities in levels two and three which, combined with the strong preference in the industry for promotion from within, demonstrates the positive career advancement opportunities in the banking industry.

Career advancement opportunities are diverse in the banking industry and there are numerous ways of accessing growth opportunities. Many banking firms offer internal training opportunities on

industry-specific topics such as regulation and compliance, specific banking product sales, or general management and supervision. During the recession, companies are also looking to hire more people with bachelor's degrees. The industry's preference is for people with general business degrees, rather than a banking specialization.

Growth Opportunities and Recovery

Few industries have been as strongly impacted by the recession as the banking industry. Banks are no longer achieving growth through opening new branches as they were in 2007. Growth is now coming through acquisitions, which is more likely to result in a loss of jobs than an increase. The growth by acquisition strategy and the increase in the insurance required by the FDIC is causing banks to have fewer external hires. Also, due to the economic uncertainty, when there is staff turnover, some banks are more likely to replace a full-time staff person with two part-time staff. This gives the bank greater flexibility in deploying its human resources to its best advantage.

Currently, there are relatively few employment opportunities in the financial services industry as a whole on the North Shore. According to the Monster.com data for the North of Boston area, 6,758 of 37,771 jobs advertised in the first half of 2010 were in finance and insurance, but only 821 of those listings were in the banking industry. The majority of the Monster.com listings were in the investment sector of financial services (stockbrokers and investment analysts). Only 32 of 2,475 jobs listed with the North Shore Career Centers between July 2009 and June 2010 were in the financial services industry. Neither of these sources indicates that employment recovery is on the horizon.

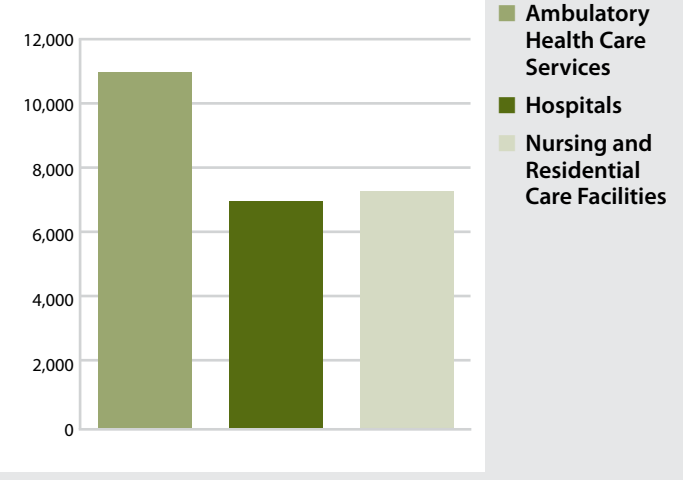
Health Care

The Health Care and Social Assistance industry is the largest private sector employer on the North Shore. It is also one of the few industries that has continued to grow its employment levels, albeit slowly, through the current recession. The Health Care industry on the North Shore is driven by the aging of the population, which creates an increased demand for services, and the emergence of new facilities driven by competition in the industry for the North Shore regional market, a market that is seen as lucrative.

From a workforce development perspective, health care employment can be critical to a region for several reasons. First, because services need to be provided to people on location and in real time, health care jobs are not easily off-shored. Second, because health care is a 24 hours per day, seven days per week industry, more workers are required to cover all shifts than may be the case in other industries. Many of the same factors driving employment in other industries are also driving employment for health care. For example, changes in technology are creating increased skill and education demands of the health care workforce. Fiscal challenges in both the industry and the overall economic environment are challenging businesses in the industry. However, even with these challenges, the industry still shows signs of continuing to be the largest employer on the North Shore.

On the North Shore, Health Care employment is concentrated in three sectors, as shown in Figure 3.6. Ambulatory Health Care Services represents

Figure 3.6 North Shore Health Care Employment by Sector: September 2009



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

Voices from the Field: Health Care Leaders Speak

"[in long-term care] the more challenging sub-acute world needs more experienced RNs."

"In radiology, skill sets change all the time."

"People aren't moving due to the economy."

"In CNA programs, people need some hands on work so they will know what the job is really like."

employment in medical offices and other facilities which provide outpatient care. The Hospital sector is primarily focused in General Medical and Surgical Hospitals. Nursing and Residential Care Facilities include Nursing Care Facilities, Residential Mental Health Facilities, and Community Care Facilities for the Elderly.

Ambulatory Health Care Services is the largest sector on the North Shore, with 11,005 employees in 707 businesses in September 2009 (the most recent period for which data is available). Nursing and Residential Facilities has the next largest sector in the region with 7,304 employees in 125 facilities. The Hospital Sector has 6,980 employees in 11 hospitals.

The greatest focus in the health care industry from a workforce development perspective has historically been on the Hospitals and Nursing and Residential Facilities sectors. These sectors share a number of workforce advantages, including having a relatively modest number of businesses that can work together to provide sufficient demand for workforce development programs, clearly identified sets of hiring and training needs, and a history of engagement with the workforce system. The interviews and focus groups conducted for this report focused on the Hospitals and Nursing and Residential Facilities sectors. Statistical and background data are also provided on the Ambulatory Health Care Services sector for the sake of completeness.

Critical Occupations and Human Resources Challenges

In the focus groups and interviews conducted for this research, business leaders identified the following critical issues.

- The nursing shortage. The anticipated nursing shortage has been delayed by nurses not retiring at the rate anticipated before the recession began. However, the anticipated nursing shortage has only been delayed, not resolved. Eventually, demographics will catch up with the nursing workforce and it will be important that there is a sufficient pool of trained nurses to meet the needs.
- Many of the critical occupations in health care are changing, with significant new responsibilities, skills, and education requirements. For example, nurses are taking on ever increasing management roles and training is required to help the current workforce meet these new requirements. In the Nursing and Residential Care sector, there is a demand for post-graduate programs for LPNs due to the additional responsibilities they are being asked to take on. Even CNAs are being asked to take on new training and job responsibilities, such as EKG and phlebotomy.
- Health Information Technology (HIT) occupations will take on increasing importance, but their exact form and requirements are not well-identified at present. HIT has been identified as a possible new path for people currently in health care who are looking for new opportunities. Working to give the technology skills to people with a health care background was seen as a more viable option than giving the health care skills to people with a technology background, although both options are possible.
- The lack of foundational skills was seen as a barrier to career advancement in the industry. The health care industry has a strong commitment to career advancement and promotion from within. However, many health care employers, as well as education providers, have identified the lack of basic, foundational skills such as math and science as critical barriers.

The health care industry is so diverse that there is a wide variety of critical occupations, some very traditional and some new or emerging. Traditional occupations and their occupational projections were discussed in Chapter 2. Some of the new or emerging

occupations in the health care industry include sterile technicians, surgical technologists, unit secretaries, and health information technologists. The workforce system will need to work closely with the health care industry to identify the skill and training requirements for these emerging occupations.

Medical Assistant (MA)

Duties: Taking medical histories, recording vital signs, processing records, collecting and preparing laboratory specimens.

Critical Degrees, Credentials, Skills: Certificate and/or on-the-job training, interpersonal skills.

Advancement Pathways:
- MA ⏵ Licensed Practical Nurse ⏵ Registered Nurse
- MA ⏵ Medical Technician ⏵ Medical Technologist
- MA ⏵ Radiological Technician

Requirements for Advancement: Certificates or two- or four-year degrees must be obtained for LPN, RN, Medical Technician, and Medical Technologist positions.

Housekeepers (Environmental Service, Unit Service)

Duties: Changing beds and rooms; cleaning floors, walls, and other surfaces; and performing other maintenance tasks as needed. In some cases (Unit Service Aides), these duties are combined with feeding patients and obtaining supplies, among other tasks. In one hospital, these positions were provided by an outside service company on a contractual basis.

Critical Degrees, Credentials, Skills: None; some hospitals do not require English skills for these positions, while others require basic fluency to communicate with patients and family members and read instructions.

Advancement Pathways:
- Housekeeper ⏵ Certified Nursing Assistant

Requirements for Advancement: Complete CNA training (75 hours); English as a Second or Other Language. Obtain skills through in-house courses (computers, medical terminology) or college programs.

Certified Nursing Assistant (CNA)

Duties: Dressing, cleaning, and feeding patients, drawing blood.

Critical Degrees, Credentials, Skills: Certificate (75 hours of outside training); fluency in English; interpersonal skills.

Advancement Pathways:
- CNA ⏵ Licensed Practical Nurse ⏵ Registered Nurse
- CNA ⏵ Medical Technician ⏵ Medical Technologist
- CNA ⏵ Receptionist ⏵ Medical Records Clerk

Requirements for Advancement: Certificates or two- or four-year degrees must be obtained for LPN, RN, Medical Technician, and Medical Technologist positions.

Food Service Worker

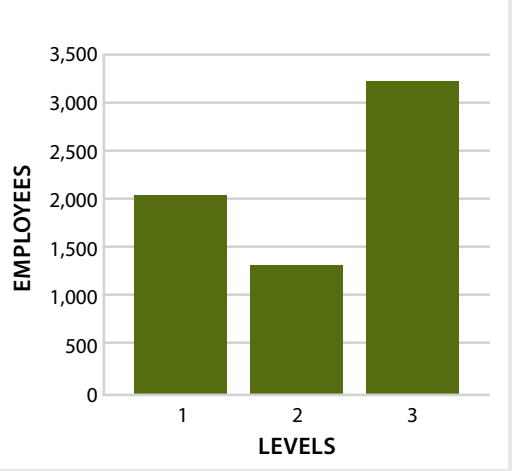
Duties: Preparing and serving meals, cleaning food preparation areas.

Critical Degrees, Credentials, Skills: Fluency in English, multilingual ability often preferred; interpersonal skills.

Advancement Pathways:
- Food Service Worker ⏵ Assistant Cook ⏵ Cook

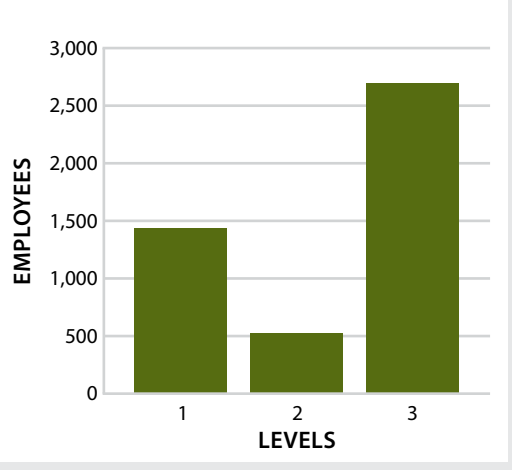
Requirements for Advancement: On-the-job training, positive work history.

Figure 3.7 North Shore Ambulatory Health Care Services Employment by Levels: September 2009



Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202 data. Analysis by the author.

Figure 3.8 North Shore Hospitals Employment by Levels: September 2009



Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202 data. Analysis by the author.

Career Ladder and Advancement Opportunities

Career ladder opportunities differ significantly across the three health care sectors on the North Shore. Opportunities in the Ambulatory Health Care Services sector are somewhat limited. This sector has the highest concentration of jobs in positions that require a bachelor's degree. For pre-baccalaureate positions, the highest concentration of positions are in Level II jobs, followed by Level I, with Level II having the fewest pre-baccalaureate positions. This job structure creates some challenges to the development of career ladders programs and creating career advancement opportunities. However, the greater challenge in this sector is the small size of the typical establishment. On the North Shore the average number of employees in Ambulatory Health Care Services companies is 15.5. Working in a small establishment makes it difficult for a worker to create a career pathway and work to advance along it. It is particularly challenging to pursue a career pathway in a small company in health care where training to advance can take a period of one or more years.

The Hospital sector has seen the greatest amount of change in employment by levels profile of any industry. In 2000, the majority of pre-baccalaureate positions were in level I jobs. Over the past nine years, this concentration has shifted to a strong concentration in level III jobs. This change has been driven by three factors.

- The skills and education demands of many health care positions have been increasing, moving positions that were previously level I to level II or III. An example of such as position is the Medical and Clinical Laboratory Technicians and Technologists (Med Techs).
- Technology has increasingly been substituted for hands-on labor. Therefore, the numbers of many hands-on positions, requiring lower levels of skill and education, have gone down, while the numbers of positions in more advanced, technically skilled occupations such as surgical technologists has increased.
- The new occupations that have been created in the industry are almost all at the higher levels, requiring substantial investments in education and skill development. The leading example here is the development of positions related to Health Information Technology (HIT) positions.

Technology driven changes are observed in all health care sectors, but probably most of all in the hospital sector. This change is creating substantial employment change in the industry and will likely create substantial training opportunities.[7] The public workforce investment system and interested training providers should monitor these developments closely.

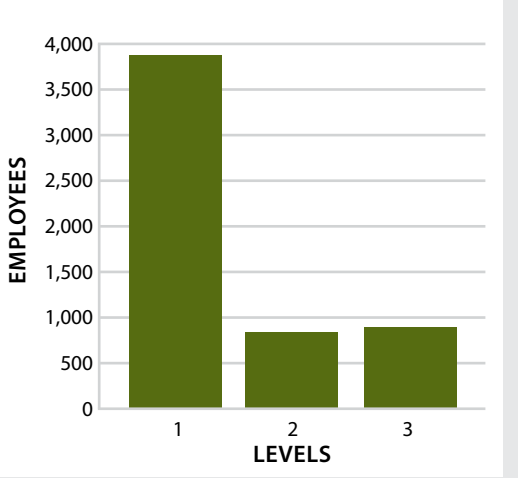
Employment in the Nursing and Residential Care Facilities sector, in sharp contrast to the hospital sector, has remained quite consistent. The vast majority of jobs in the sector have remained in the first level. Entry level jobs that predominate in the region include Nursing Aides and Orderlies (including CNAs), Food

7 Investments are already being made at the federal level by the Department of Health and Human Services. See http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov__hitech_and_funding_opportunities/1310 for details.

Preparation Workers, and Maids and Housekeeping Workers.[8] Businesses in this sector have a strong tradition of providing training to entry-level workers to support their career advancement and to meet their needs for higher level direct care workers such as Licensed Practical Nurses and Registered Nurses. A "grow-your-own" strategy has been in place in partnership with the public workforce investment system through programs such as the Extended Care Career Ladders Initiative (ECCLI) and programs supported by grants from the U. S. Department of Labor and the Massachusetts Workforce Competitiveness Trust Fund.

The changes in the economy have curtailed many previously existing opportunities for advancement in both the hospital and nursing and residential care facilities sectors. Many registered nurses who might have retired have instead continued to work due to the economic uncertainty that the recession has caused. This has created a backlog for those who were in the process of completing nursing training programs and now do not have positions available for their advancement. However, this is most likely a temporary condition. The demographics of the current Registered Nursing workforce have not changed and the current nurses are going to retire in large numbers at some point in the future. If there is not a trained workforce in place when that happens, the result could be dramatic. Therefore, ramping up foundational skills training and RN education should be pursued even while we are in recession so the health care workforce that businesses need will be ready when we come out of the recession.

Figure 3.9 North Shore Nursing and Residential Care Facilities Employment by Levels: September 2009



Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202 data. Analysis by the author.

Growth Opportunities and Recovery

Health care has been one of the few industries that has continued to show employment growth through the recession. Anecdotally, there has been discussion that there may be a small decline in health care employment as the industry on the North Shore adjusts to what some refer to as an overbuilt condition in the industry. However, given the demographics of the residents of the North Shore, it seems unlikely that health care employment will decline noticeably. Health care employment will likely remain one of the largest, if not the largest, sources of employment opportunities on the North Shore.

More than 10% of the positions advertised with the North Shore's career centers (284 out of 2,475) were in the Health Care and Social Assistance sector. These positions run the gamut from CNAs and scanning coders to support positions such as van drivers and housekeepers. The data from Monster.com show health care positions in relatively similar frequencies but with a concentration in management and higher end technology and nursing positions. While the health care industry is in a status of regular change, it appears likely that employment opportunities will continue to grow in the health care industry on the North Shore.

Durable Goods Manufacturing

The Durable Goods Manufacturing industry has been identified as critical industry by the North Shore Workforce Investment Board since its inception. However, the industry has not been without challenges. Between September 2001 and September 2009, the industry lost

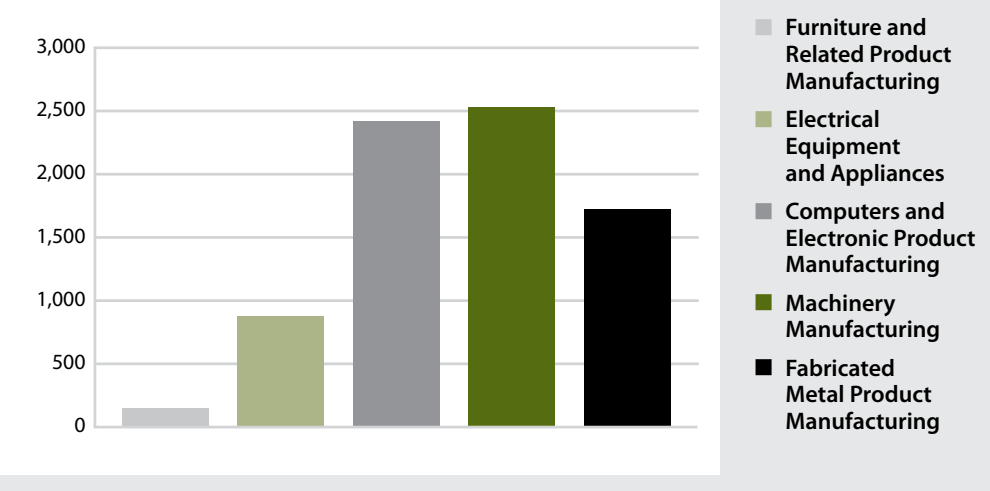
8 A complete listing of pre-baccalaureate positions is provided in Appendix B.

31% of its total employment on the North Shore, 16% in the last year alone. On the positive side, the manufacturing industry is still one of the four largest employers in the North Shore region. Other positive workforce development factors for the manufacturing industry on the North Shore include:

- Strong wage rates. The median weekly wage rate in Manufacturing is nearly 50% higher than the region's median weekly wage rate for all private industry. Furthermore, the overall occupational structure in the industry is weighted toward the middle skill jobs discussed in Chapter 2.
- Concentration in the region. Durable Goods Manufacturing has a location quotient of 1.31, indicating that the industry is more strongly represented on the North Shore than in the state or the nation as a whole. The current and historical concentration of Manufacturing in the North Shore is a further argument for working with this industry.
- Emerging small businesses. There are 324 establishments in the Durable Goods Manufacturing industry. Despite the history of manufacturing employment being dominated by a few large companies, the current situation shows that small companies are an emerging force in the industry. This suggests that an investment in this area need not require relying on the fortunes of any single company.

North Shore employment in Durable Goods Manufacturing is widely dispersed across the Fabricated Metal Product Manufacturing, Machinery Manufacturing, and Computers and Electronics Product Manufacturing sectors.[9]

Figure 3.10 North Shore Durable Goods Manufacturing Employment by Sector: September 2009



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

Machinery Manufacturing and Computers and Electronic Product Manufacturing have the highest employment levels, followed by Fabricated Metal Product Manufacturing and Electrical Equipment and Appliances. It is important to note that the divisions between the sectors can be somewhat artificial as many of the small shops that predominate on the North Shore have the capacity to produce a variety of products. The complementary nature of these sectors was brought home by the degree to which there was agreement on the critical human resource challenges in the industry.

9 Data on NAICS Code 336: Transportation Manufacturing is unavailable for the region due to data suppression.

Critical Occupations and Human Resources Challenges

The durable goods manufacturing industry was in a state of flux on the North Shore as the research for this labor force blueprint was conducted. While overall employment in the industry was declining and seemed likely to continue to decline in the short-term, there were still some job opportunities available in the industry that were quite difficult to fill. The overall trend of increasing technical complexity of jobs in the industry continues to drive the demand for ever-higher levels of education and specific skills to access jobs in the industry. While the lack of demand is dampening job opportunities now, the job requirements when the jobs come back will be higher.

Focus groups with business leaders in the manufacturing industry resulted in the identification of the following critical human resources challenges.

- Foundational skills are frequently lacking in the emerging workforce. Basic math skills including algebra, geometry, and trigonometry are foundational requirements for both entry-level positions and for enabling people to get into training programs essential for career advancement in the industry.
- Computer literacy is an important, and often lacking, competency among workers seeking to enter the industry. A working knowledge of all Microsoft Office applications is now a basic skill. The ability to use Microsoft Project is also an advantage at some companies in the industry.
- The region has a lack of workers with associate's degrees. Many jobs that used to only require a high school diploma now require an associate's degree. The region needs a manufacturing associate's degree with strong math and science requirements.
- The industry as a whole is facing an aging workforce. While many in this position have put off retirement due to the economic uncertainty, at some point they will retire and where their replacements will come from is not clear.

Voices from the Field: Manufacturing Leaders Speak

"We used to be able to forecast two years out but now we are lucky to forecast three months."

"We need a two year manufacturing degree [with] lots of math and science."

"Machinists need more than what they receive from high school."

"There will be a demand for skilled machinists because our workforce is eligible for retirement."

Team Assembler

Duties: Assembling mechanical, electromechanical, and/or electronic equipment; using hand tools, soldering irons, and sometimes microscopes. May involve some testing and troubleshooting of components.

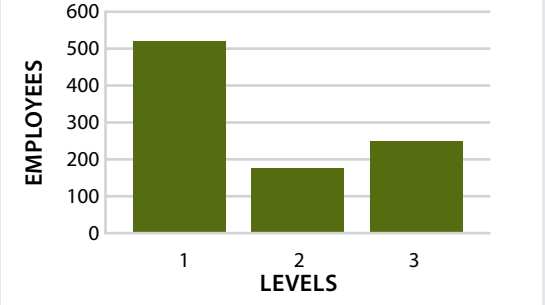
Critical Degrees, Credentials, Skills: High school degree; mechanical ability; familiarity with blueprints and schematics; assembly experience preferred. Associate's degrees and/or equivalent experience, such as military electronics, required for more complex assembly positions.

Advancement Pathways:

- Assembler 1 ⏵ Assembler 2 ⏵ Assembler 3 ⏵ Machine Operator (involves more electro-mechanical assembly and precision work)
- Assembler ⏵ Technician ⏵ Senior Technician ⏵ Engineer
- Assembler ⏵ Machine Operator ⏵ Lead/Foreman ⏵ Supervisor

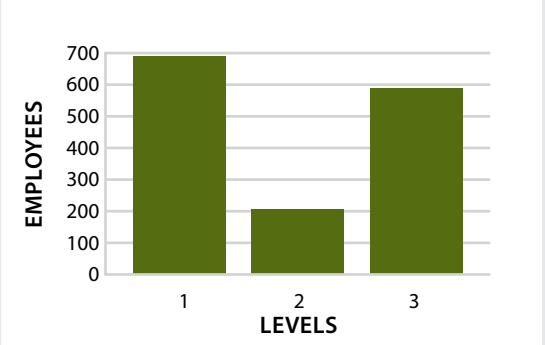
Requirements for Advancement: Demonstrated performance and initiative. For technician positions and above, acquisition of trade school certificate, associate's degree, bachelor's degree, or equivalent training.

Figure 3.11 North Shore Fabricated Metal Product Manufacturing Employment by Levels: September 2009



Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202 data. Analysis by the author.

Figure 3.12 North Shore Machinery Manufacturing Employment by Levels: September 2009



Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202 data. Analysis by the author.

Technician (Test Technician, Mechanical or Electrical Technician)

Duties: Testing, troubleshooting, and, in some cases, repairing components; using microscopes and other precision instruments; working with engineers to rectify problems; in some cases, preparing graphs, charts, and tabulations of data.

Critical Degrees, Credentials, Skills: Associate's degrees, particularly in Electrical Engineering (ASEE) in some cases; demonstrated skills, acquired on the job, in testing and maintaining electronic, mechanical, and/or optic equipment. Specialized knowledge may be required in some positions, including experience with vacuum or lighting systems.

Advancement Pathways:

- Technician ⏵ Senior Technician ⏵ Engineer
- Assembly Technician ⏵ Senior Technician ⏵ Senior Mechanical Technician or Electrical Technician
- Technician ⏵ Senior Technician ⏵ Supervisor

Requirements for Advancement: Acquisition and demonstration of technical skills on the job, through on-site courses, or through acquisition of two- or four-year college degrees.

Career Ladder and Advancement Opportunities

The critical sectors of the Durable Goods Manufacturing industry demonstrate relatively consistent employment across the three levels of pre-baccalaureate employment as shown in Figure 3.11 through 3.14. The greatest numbers of jobs in each sector are in the Level I jobs, with significant and fairly even levels of employment in Level II and Level III jobs. This spread of jobs suggests that career ladder efforts are possible within the manufacturing industry.

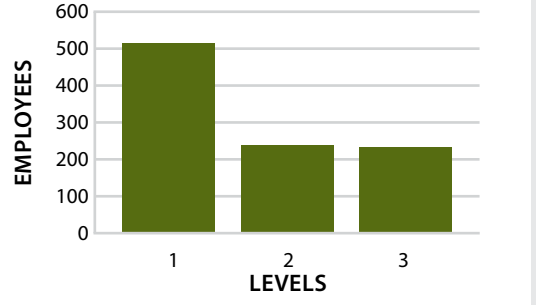
Two factors that surfaced from industry interviews and focus groups must be taken into account when developing career ladder programs. First, the skill and education requirements for nearly all jobs in the industry are increasing all the time. It is likely that over time some of the jobs currently in Level I will require skill and education levels that will move them to Level II or III. The workforce development system will need to work closely with companies in the manufacturing industry to adjust quickly when these changes occur. Second, there is an increasing emphasis in some areas of the manufacturing industry on using the associate's degree as a credential. It will be important that the region's workforce development stakeholders work closely with industry to ensure that associate's degree programs are developed in time to meet the emerging needs of the North Shore's manufacturing workforce.

Growth Opportunities and Recovery

An examination of the growth opportunities and capacity for recovery of the durable goods manufacturing industry on the North Shore requires complex, and sometimes contradictory, analysis. All of the formal industrial projections for the United States, and for Massachusetts as well, predict continuing decline of manufacturing employment in the short and medium term. However, several of our non-traditional data sources indicate that there continue to be significant numbers of job opportunities in the industry. Trying to look forward into the recovery period is more difficult than ever in this industry. The forecasting periods have declined dramatically, according to industry leaders. This makes it difficult to know when we are in recovery. And of course the end (and beginning) of recessions are only identified after the fact.

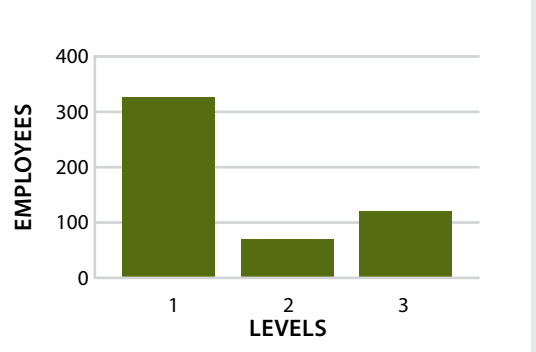
Recently, there have been some indications that the manufacturing industry on the North Shore is beginning to see employment growth again. In the first quarter of 2010, Monster.com listed 3,140 advertisements for manufacturing jobs in its North of Boston region. This represents 8.1% of all job listings for the period. The economic development report detailed in Chapter 5 indicated the recent emergence of a number of small companies looking for new or expanded space in the region, which is likely to translate down the road into additional manufacturing employment. Finally, interview and focus group respondents were generally positive about the future of the manufacturing industry on the North Shore, although they were uncertain as to when employment growth might resume. Overall, Durable Goods Manufacturing appears likely to remain a critical industry in the North Shore region for the foreseeable future.

Figure 3.13 North Shore Computers and Electronic Product Manufacturing Employment by Levels: September 2009



Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202 data. Analysis by the author.

Figure 3.14 North Shore Electrical Equipment and Appliances Employment by Levels: September 2009



Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202 data. Analysis by the author.

Chapter 4 | Life Sciences

The life sciences industry, referred to in previous labor market blueprints as biotechnology, was considered an emerging industry in the previous version of the North Shore Workforce Investment Board's labor market blueprint (Quimby, 2007). In looking at the criteria for emerging industries, the North Shore WIB is looking for industries that may have small employment bases currently but that are projected to grow in the future. Also, emerging industries often have special characteristics of interest to the region. The life sciences industry has a small base of employment that was growing leading into the onset of the recession. The recession resulted in declining employment in the life sciences which has not yet abated. However, the number of life sciences companies in the North Shore region does appear to be growing. The life sciences industry also has the potential to bring strong employment levels in jobs that pay high wages, which is important in a high cost of living region like the North Shore.

Biotechnology has historically been an industry that is difficult to define. The state and federal agencies charged with recording employment do not even have a single category to describe biotechnology. Companies involved in the biotechnology industry are instead distributed across a wide variety of other industries including manufacturing, health sciences, and professional and technical services. This makes it difficult to track trends in employment in the industry over time (Massachusetts Department of Workforce Development, 2007).

A report from the Milliken Institute (DeVol, et. al., 2004) was an early user of the more inclusive term life sciences to describe the industry. Their report included the following sub-sectors in the life sciences industry.

- Life Science Core Industry Group
- Biotech Industry
- Pharmaceutical Industry
- Research and Development in the Life Sciences Industry
- Medical Devices Industry
- Life Sciences Supporting Industries Group

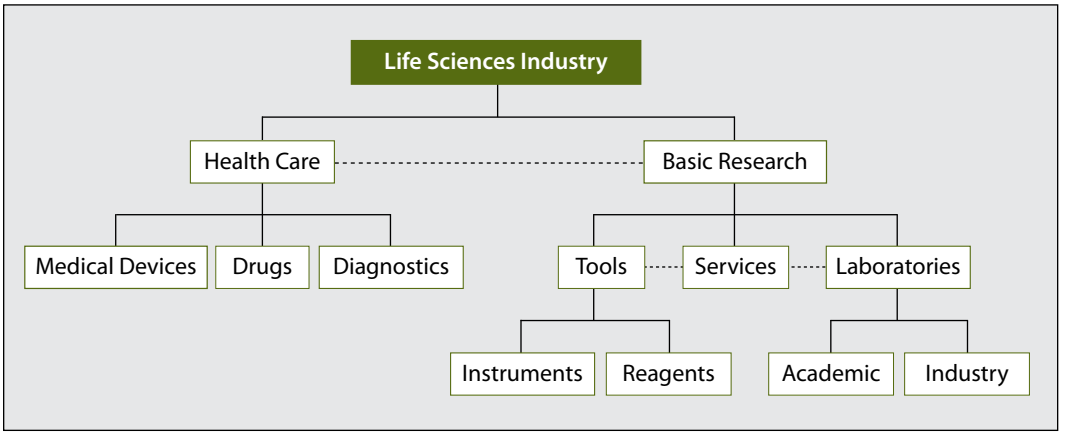
Each of these industry sectors has a different occupational profile. Therefore, the first step in developing a workforce development strategy for the life sciences is to understand which sectors predominate in one's region. The second step is to determine the key occupations in the industry in the region, what their skill and education requirements are, and where the gaps are that prevent people from accessing job opportunities in the industry. Finally, once the information has been gathered, it is time to develop a strategy for the workforce development system to respond. The remainder of this chapter follows these steps.

The Face of Life Sciences on the North Shore

One key to understanding the life sciences industry is that it takes on different characteristics in different regions, based on the unique workforce and company demographics of the region. On the North Shore, the Life Sciences industry is split into two main categories: health care related and basic research related.

The health care component of life sciences on the North Shore is further divided into three sub-sectors: medical devices, drugs, and diagnostics. Medical devices have long been a staple on the North Shore and in other north of Boston workforce investment areas. This

Figure 4.1 The Life Sciences Industry on the North Shore



industry sector is uniquely poised to take advantage of the region's pool of highly skilled manufacturing workers. Another advantage of the medical device sector is that it is an area where small and mid-size firms can compete successfully. This also reflects the overall character of industry on the North Shore which is focused on many small and medium sized firms rather than a small number of larger firms. Key companies on the North Shore in the medical device sector include Medtronic and Analogic Corporation.

The drug sector of the life sciences industry on the North Shore is primarily concentrated in firms that are focusing on the early stage development of life-saving or enhancing drugs. This sector is the core of what has traditionally been termed biotechnology. Nationally and internationally, the drug sector contains two sub-sectors: development and manufacturing. On the development side, companies are focused on creating new drugs and getting them through the approval processes of various countries so they can be taken to market. On the manufacturing side is the large-scale manufacturing of drugs that have been approved for sale. Many companies in the sector outsource their manufacturing of drugs with large markets, so there is a further sector division between companies which only develop new drugs, companies which are solely focused on manufacturing, and companies which do both, having made the decision to retain some or all of their manufacturing in-house. Which of these strategies is chosen by the majority of companies in a region will have a dramatic effect on the workforce needs of the sector in that particular region.

Within the drug sector on the North Shore, the majority of companies are smaller, with fewer than 100 employees. This reflects the nature of the industry on the North Shore which is focused on the development and regulatory approval of drugs rather than on their large-scale manufacture. The larger-scale manufacturing firms tend to have more employees than those focused on development. It is worth noting that there are wide variations in the types of drugs being developed by companies in this sector and the industry specialization in a region is important. The North Shore region has a higher than average concentration in the development of small molecule and biological drugs and drugs based on stem cells. The region also has a concentration of contract research organizations which take on specific research tasks on a contractual basis from firms that are developing the intellectual property for drug development. A concentration in the contract research sub-sector can help insulate a region from the risk of becoming too concentrated in one drug area.

The final health care related life sciences sector on the North Shore is diagnostics. Companies in this sector are focused on the development of tests, including chemical and physical tests, aimed at diagnosing disease and injury.

It is instructive that the life sciences industry on the North Shore has such a high concentration in the health care area. Health care, as noted in Chapter 3, is one of the critical industries in the region and is likely mutually reinforcing with critical components of the life sciences industry on the North Shore. In addition to the obvious product level connection, there are also significant workforce interconnections. Both health care and life sciences are highly regulated industries. Many of the critical jobs in both industries demand high levels of foundational skills in mathematics and sciences and require demanding technical training that must be completed using the latest technology. Finally, both health care and life sciences based on health care can be significantly impacted by changes in public policy. All of these factors combine to show an industry that has strong benefits for the North Shore region, but one that will require frequent monitoring to ensure that the region's workforce can continue to benefit.

The basic research component of the life sciences industry on the North Shore is divided into two sectors: tools and labs. Overall, the basic research sector of the life sciences industry is seen as one of the key strengths of the North Shore region. The tools component is further divided into instruments (hardware) and reagents (wetware). Both of these sub-sectors are quite vibrant in the region. In the instruments sub-sector, some of the key companies include Millipore (recently acquired by Merck KGaA), Perkin Elmer, Thermo Fisher, and Sage Science, Inc. Like the medical device sub-sector, the instruments sub-sector of life sciences takes advantage of the North Shore region's skilled manufacturing and engineering workforce. Companies in the reagent sub-sector include New England Biolabs and Cell Signaling Technologies. Companies in this sub-sector tend to have occupations that are more closely aligned with those in the drugs and diagnostics sectors in that they require bench science backgrounds and are often both biologically and chemically based.

The second sub-sector of the basic research sector is laboratories. Both academic and commercial laboratories make up a critical component of the life sciences industry on the North Shore. Companies in this sub-sector perform tests and analyses for both the health care and life sciences sectors. It is also worth noting that companies in this sub-sector are complementary to companies in the tools sub-sector as those companies produce supplies that companies in the laboratory sector use on a daily basis. Given the rapid changes in technology, it is extremely useful to have a strong base of companies in both sub-sectors located in close proximity to one another as is the case on the North Shore.

It is important to recognize that the sector and sub-sector categories described above are both fluid and permeable. A company may begin in development of diagnostics and then be led by market forces to transition into drugs or medical devices as its capabilities and proprietary intellectual property are further developed. On the basic research side, a company that produces tools may also provide services, particularly in cases where its tools are highly specialized and the services needed to make effective use of the tools are highly technical in nature. In terms of workforce development practice, it is therefore extremely important to work closely with the industry and specific companies to design effective education and training strategies to meet their workforce needs.

Employment Picture of Life Sciences on the North Shore

There is a vast diversity of occupations represented in the life sciences industry on the North Shore. Occupations range from Ph.D. level scientists and bachelor's and master's degree prepared bench scientists and technicians to a myriad of support level personnel. In the instruments sub-sector of life sciences basic research, there are many engineers and engineering technicians. Across the board, one of the key findings is that the life sciences industry has a higher skill demand than almost any other industry in the region. Even

where the jobs are the same, performing the job in the life sciences industry often requires additional training and/or hands-on experience.

For positions that do not require a bachelor's degree, there are positions such as Testers, Quality Assurance Technicians, and Inspectors. Even these positions require significant levels of education beyond high school and also generally require industry experience. During the recession there appears to have been a fair amount of uptake in these jobs by people with bachelor's or even master's degrees and it is likely that opportunities for people without a bachelor's degree will be limited for the foreseeable future. Few industries require more very high levels of education than the life sciences industry.

Support for the Development of the Life Sciences Industry on the North Shore

The life sciences industry currently has a strong foothold in the North Shore region. However, the region is faced with constant national and international competition for companies in this industry. Indeed, the life sciences industry is one of the key industries of focus in many regional economic development strategies across the country. For the North Shore, a high cost of living area, to remain competitive for this critical industry, the region will need to bolster some of its characteristics viewed as more attractive for the industry and improve those currently seen as less attractive.

From a workforce development perspective, the most important thing the region has going for it is a highly educated workforce. However, the demands of the industry are ever-increasing and there is a sense that the region is not keeping pace. Both foundational and specific technical skills are required to meet the needs of the life sciences industry. In terms of foundational skills, the following merit consideration:

- At the high school level, students should have four years of math as a basic requirement. The classes need to be high level math, including at least two years of algebra. Without these courses, students will be at a strong disadvantage when trying to enter post-secondary education for the life sciences industry, whether at the community college, college, or university levels.
- At the post-secondary level, the industry needs students who graduate with experience using the latest equipment. Historically, the equipment used by most colleges and universities has not been kept up to date with that used in industry. Therefore, students can graduate with degrees and good knowledge, but lack the technical skills to do the jobs that are in demand by the industry.
- In addition to the technology, instructors and faculty at both the secondary and post-secondary levels need to be familiar with the latest technologies and techniques used in the life sciences industry. Without this knowledge, it is difficult for teachers to develop students who will be in demand by industry. Teacher externships at the leading edge life science companies on the North Shore can help to address this issue.

There are other factors that support the development of the life sciences industry. Economic development efforts in the region can support the industry's development in a wide variety of ways. The state of Massachusetts has a very strong venture capital community that focuses on the life sciences. For venture capital supported start-up companies, the North Shore can be a cost effective area to get started since facility costs in the region are often considerably lower than in Boston or Cambridge. There are also a number of facilities that have the capacity to support both life sciences incubator sites and larger space appropriate for growing companies. A key example of such a site is Cummings Park in Beverly. A unique

facility option on the North Shore is the Biotech InnoVenture Center hosted by North Shore InnoVentures, which provides incubator space for start-up companies.

Key economic development entities serving the North Shore region differ in their view of life sciences on the North Shore. A recent economic development report (Luster, 2010) surveyed five sets of economic development communities: banking, non-traditional investors, real estate, construction, and government/non-profit. The real estate and construction communities gave the life sciences industry a high relative strength rating (on an aggregated high, moderate, low relative strength scale). However, the banking, non-traditional investment, and government/non-profit communities only gave the industry a moderate relative strength ranking. This study identified the key factors supporting the life sciences on the North Shore as quality of life in the region, access to Boston and Cambridge, and ease of access to transportation options at Logan International Airport. Access to the innovations being developed at Boston's teaching hospitals and research universities were also cited as key strengths for the region. Interestingly, even while the recession is still in place, there has been an increase in life sciences and biotechnology start-ups looking for space on the North Shore (Luster, 2010).

Finally, a key strength of the life sciences industry on the North Shore is the presence of a vibrant set of companies in the industry itself. It has long been demonstrated that knowledge based economies and companies do best in the long run when they are part of a community. In much the same way, Silicon Valley succeeded in large part based on the informal connections among companies and entrepreneurs and support by industry associations, educational institutions, and others (Saxenian, 1994), life science companies can enjoy significant collaboration and networking on the North Shore. Organizations such as the North Shore Technology Council and the Massachusetts Biotech Council offer networking and educational opportunities that are valuable in developing cross-company connections that can lead to new ideas and innovations. A continually developing pipeline of new ideas and innovations is needed to support and grow the life sciences industry on the North Shore.

Chapter 5 | Partnerships with Economic Development

It has long been a truism in the workforce world that workforce development is economic development. Nowhere is that more true than in a high cost-of-living area such as the North Shore. Workforce development and economic development entities need to work hand-in-hand to attract and retain companies that offer the jobs needed to support the cost of living on the North Shore. In this spirit, the North Shore Workforce Investment Board commissioned a report from the North Shore Alliance for Economic Development (Luster, 2010). This report, to be published separately by the NSWIB, has been referenced in previous chapters and is summarized more fully in this chapter. Following the economic development report summary, this chapter concludes with a discussion of ways in which the economic and workforce development systems on the North Shore can work together effectively to meet their mutually reinforcing goals.

North Shore Investment Snapshot: The North Shore Economic Development Community Speaks

To compile the economic development report, the author undertook a series of interviews with representatives of five economic development communities: banking, non-traditional investment, real estate, construction, and government/non-profit. In each interview, the author sought respondent's opinions of eight industries: health care, life sciences/biotechnology, manufacturing, financial services, tourism, the creative economy, green jobs/clean energy, and construction. The interviews consisted of a series of open-ended questions focusing on identifying industry clusters that were particularly strong, which of those clusters were seen as having the best opportunities for growth in the short and medium terms on the North Shore, and how the economic development prospects of the various sectors were likely to relate to employment growth on the North Shore.

Luster created a scoring metric based on the results of the interviews and the perceived relative strength of the each of the eight industries studied. This scoring metric awarded five points for a High relative strength rating, three points for Moderate, and one point for Minimal. The results of this assessment are:

Figure 5.1 Scoring Metric

	Banking Community	Non-Traditional Investors	Real Estate Community	Construction Community	Government/ Non-Profit	Total
Health Care	High	High	High	High	High	25
Life Sciences/Bio-Tech	Moderate	Moderate	High	High	Moderate	19
Manufacturing	High	Minimal	High	High	Moderate	19
Financial Services	High	Moderate	Moderate	High	Moderate	19
Creative Economy	High	Moderate	Moderate	Moderate	Moderate	17
Tourism	High	Minimal	Minimal	Minimal	High	13
Green/Clean	Minimal	Minimal	Moderate	Moderate	Minimal	9
Construction	Minimal	Minimal	Minimal	Minimal	Moderate	7

The following is a brief synopsis of the key points raised for each of the North Shore Workforce Investment Board critical and emerging industries studied in the economic development report (Luster, 2010). For a comprehensive discussion, the reader is referred to the full report, soon to be published by the North Shore Workforce Investment Board.[10]

Health Care

- In terms of regional expansion and the development or expansion of new health care facilities in the region, it was noted that while the recession has had an impact on the industry, some build-out has continued and additional plans are in place for when the economy recovers. All available information leads one to believe the health care industry will continue to be one of the leading industries on the North Shore for the foreseeable future.
- In addition to the traditionally recognizable health care sectors such as hospitals and physician's offices, the health care industry has less well-recognized areas including record storage, physical therapy and rehabilitation centers, and residential care facilities that are very strong components of the health care market on the North Shore.
- There is a strong infrastructure supporting health care growth in the region. Specific elements mentioned in the interviews included a state university with an impressive nursing program and a community college with a wide range of degrees, certificates, and continuing education courses.
- There was a noticeable concern for the intense level of competition in the hospital sector of health care on the North Shore.

Life Sciences/Bio-Tech

- Life sciences was generally seen as a strong industry in the region. One North Shore property manager offered that 8% of the tenants and 25% of the space at his facility was being leased by Life Sciences/Bio-Tech companies. Given the technical demands for space that many life sciences companies have, the North Shore's availability of appropriate space is a strong advantage.
- The investment community remains bullish on this industry. In 2009, angel and venture capital investment trended more toward funding second rounds of capital to companies they had previously funded, rather than funding new start-ups. Though this could bode well for Life Sciences growth, it may raise concerns about the development of new North Shore Life Science start-up companies.
- While the impact of the recession may have slowed down the rate of growth of new life sciences companies, the economic development research indicates this may be turning around. A North Shore office park manager stated "Over the past few months I have met with a number of potential bio-tech start-ups about space. This was not the case in 2008 and 2009; it started to pick up about 6 months ago. We are expecting strong growth."

10 All North Shore Workforce Investment Board Publications are available online at http://www.northshorewib.com/resources.html

Manufacturing

- General Electric's (GE) long history is a critical driver of manufacturing in the region. The 3,500 manufacturing jobs at GE Riverworks remain the largest concentration of manufacturing jobs in our region. GE is also one of causes for the growth of small, family-run manufacturing plants and machine shops across the breadth of the North Shore.
- Machine shops and small-sized companies that manufacture other durable goods were each seen as active and viable on the North Shore. The region has a number of small to medium-sized machine shops along the Route 1 and Route 114 corridors that are continuing to succeed even in the face of national trends showing the overall loss of manufacturing jobs.
- The availability of a skilled workforce was seen as the number one factor keeping the manufacturing industry in the region. The industry requires ever-increasing skill sets for its workers. One challenge noted was the lack of strong training programs, particularly in engineering and engineering technology.

Financial Services

- The North Shore banking community remained strong throughout the recent recession, particularly when compared to trends outside of the North Shore region.
- The banking sector has a strong tradition of growth from within. One North Shore banker said, "I have any number of examples in the building that we are sitting in right now of bank managers and administrators who began their career on the teller line, went through our in-house training programs, and now have significant and well-paid careers in banking."
- Both internal and external training programs are critical for the success of the industry in the region. Critical academic partners include North Shore Community College, Salem State University, Endicott College, and Marion Court. In addition, an entry-level position in banking offers a clearly defined, achievable, and upwardly mobile career path that is achieved in large part through internal educational programs offered by the financial services companies.

Construction

- The economic development stakeholders demonstrated widespread agreement that the construction industry was one of the two weakest industries in terms of growth prospects on the North Shore. While the positive impact of the 2001-2007 housing boom of small to medium-sized contractors was recognized, the current poor state of the North Shore housing market was seen as a reason a number of small construction companies downsized significantly to stay in business. Commercial build-outs were also seen as slow.
- The construction sector seen as having the best opportunity in the region was civil construction. There was some optimism around road construction and public buildings, but much of this was seen as unnaturally high due to construction of a dormitory at Salem State, a new courthouse, and the new building at North Shore Community College.
- The slow status of work in the construction industry is having a critical impact on the employment picture in the industry. Even when construction companies have work, it may not result in an increase in employment. One respondent from the industry said, "Before 2007 when my company got more work, I hired more trades people. Now? When I get new work, I do everything I can to schedule it so that I can get it done without hiring."

Analysis and Recommendations

It is encouraging to note that the top four rated industries from the economic development perspective are all critical (Health Care, Manufacturing, and Financial Services) or Emerging (Life Sciences) industries as identified by the North Shore Workforce Investment Board. Clearly, economic and workforce development efforts are converging on the North Shore. It is also interesting to note that the region's economic and workforce development efforts are built on similar premises, namely that the region can best invest its limited resources by thinking through the benefits achieved from various industry options and can best assist businesses in the region by working with them directly to identify their top priority needs.

An important concept to note is the interconnectedness of some of the key regional industries. For example, a respondent noted that the financial services industry is most successful when other industries in the region are employing people, who then need the region's banking services. Large numbers of well-paid workers in the health care industry in the region was cited as critical to the bank's success. The construction industry is another example of a strongly interconnected industry. One of the key elements of the construction industry in fact, is its flexibility to respond to the building and renovation needs of any industry in the region. The interconnectedness of important industries in the region is a key regional economic development concept (Mills, Reynolds, and Reamer, 2008) and should be a key factor for consideration in the development of strategic plans for both the workforce and economic development systems.

Across a variety of industries, the importance of a highly skilled workforce was mentioned by a number of economic development stakeholders. Whether it was the presence of strong academic training programs in health care, critical internal training programs in the financial services industry, or critical training program gaps in the manufacturing industry, there was widespread agreement that workforce development is a critical element in regional economic development. In addition to the formal skills training for specific industries, there was widespread agreement that foundational skills are critical to accessing good jobs in the identified industries. Comments from the economic development community identified math, communication skills, writing skills, and computer skills as critical needs that the workforce and economic development systems need to pay close attention to going forward.

The economic and workforce development systems have much to offer each other, as pointed out in the economic development report. The three most important factors that include workforce development are:

- The critical role of the skilled workforce in the region. The workforce development system has information on the skills of the region as well as tools that can be used to help businesses considering coming to the region get the workforce with the skills they need. Examples of these tools include on-the-job training funds, assistance with applications to the Workforce Competitiveness Trust Fund, and applicant screening services available from the North Shore's Career Centers. In many regions, representatives of the region's workforce development system are part of the region's "sales team" in new business attraction.
- As technology change affects the critical industries, the workforce development system can provide resources for training to help workers obtain the skills required by the new technologies. Particularly in health care and manufacturing, the ability to successfully transition to new technologies is a requirement for the industry to continue to grow in the region.

- Many of the long-term workforce issues that impact a region's ability to compete successfully require a long-term educational orientation. In both the economic development report and the research for the blueprint, many respondents identified poor foundational skills as a critical workforce challenge. The public workforce system works across educational systems serving the entire lifecycle of the workforce from the K-12 system to local community colleges, four-year colleges and universities, and specialized adult skills training. Working across the entire education and training continuum, the workforce system has a strong contribution to make to the economic development success in the region.

Chapter 6 | Recommendations

This labor force blueprint was written in challenging times. The regional, state, and national economies are in recession and immediate employment growth is not on the horizon. In such times, some people may question the wisdom of workforce system investments. The overarching recommendation of this report, however, is that now is precisely the time to make targeted and wise workforce system investments so the region's workforce will be well-aligned with the needs of the critical and emerging industries as employment demand increases again. Specific recommendations based on the research for this report are below.

Construction

- Provide information on the benefits of the Construction industry to Career Center customers as well as high schools and other audiences that might not traditionally consider the industry attractive.
- Ensure that training participants and all others who are looking for Construction employment understand what the work is like and that there is "no free lunch" in the Construction trades.
- Continue to monitor the emerging green elements of the construction industry and incorporate certifications such as LEED Green Associate into training programs as required by the industry.
- Encourage the use of internships and other hands-on models of training that are recognized by unions and businesses in the Construction industry to help workers get into the trades and other fast-growing occupations.

Financial Services

- Help potential applicants for financial services jobs understand the critical role of entry-level, part-time jobs in starting a banking a career and the importance of "getting your foot in the door."
- Include the development of sales skills in training efforts that are aimed at the Financial Services industry.
- Closely monitor this industry's employment outlook on the North Shore, because industry consolidation and government regulatory requirements are driving rapid changes in the demand for workers in the industry.

Health Care

- Develop and implement programs that are focused on addressing the future nursing shortage that will be seem coming out of the recession and the increasing skills requirements of the nursing occupation.
- Consider the development of cross-sector career pathways to provide opportunities for talented workers to advance and for all types of Health Care businesses to obtain the skilled workers they need.

- Encourage the presence of internship or job-shadowing components in all Health Care training so participants will get a better understanding of the nature of the work for which they are training.
- Continue to work with the health care industry to identify the technology requirements of in-demand health care occupations and develop training new or enhanced programs that meet those needs.

Manufacturing

- Work with local community colleges, universities, and other training providers to develop an associate's degree program for pre-engineering/manufacturing technology that meets the increasing demands of the Manufacturing industry.
- Develop training programs that are more inclusive. For example, in engineering positions both mechanical and electrical skills are necessary. The industry is hiring fewer people to do more diverse work. Narrow skill sets will be less in demand.
- Ensure that all training efforts include enhanced basic computer skills. Microsoft Office applications are now a basic skill. The industry often requires Microsoft Project as well.

Life Sciences

- Work to ensure the infusion of higher levels of math and science education in the K-12 system.
- The region's colleges and universities need to utilize the most up-to-date equipment to ensure graduates are able to step into jobs in the life sciences industry ready to work.
- Continue to provide faculty externships so that faculty can more readily translate the needs of the life sciences industry into their courses.

General

- Advocate strongly for policies that increase the level of foundational skills in the region's workforce. Four years of high school advanced mathematics is required by many of the critical industries.
- Work closely with community colleges to ensure they consistently make available associate's degree training that meets the needs of workers and businesses in the region. New associate's degree training programs serving the manufacturing and enhanced degree programs serving the health care industry are needed.
- Continue to work on the development of soft skills. In every industry, businesses mentioned that they continually see people who lack work ethic and other soft skills.
- Utilize the current recession as an opportunity to make strong investments in educating and training the region's workforce so people will be ready to access the most in-demand jobs when the economy recovers.

Appendix A | Survey Protocol

Date: __ / __ / __ Length of Interview: _____ Name of Interviewer: _____

Name of Interviewee(s):_____ Title(s):_____

Company: _____

Address: _____

Phone: _____ e-mail: _____

* * * * *

1. Introductions and Purpose

2. What are the current issues facing your industry in terms of workforce on the North Shore?

_____

_____

_____

3. What are the critical jobs and skills you are looking for now and over the next two years?

_____

_____

_____

4. What are your projected employment needs five years from now?

_____

_____

_____

5. What positions/skills are most difficult to fill or find when looking for qualified employees?

_____

_____

_____

6. What are the gaps between skills/education of employees you hire and what your firms need?

_____

_____

_____

7. What generic business skills do you need and are you able to find them in the North Shore labor pool?

_____

_____

_____

8. What are the most important factors for recruiting employees to the North Shore?

_____

_____

_____

9. What is your company doing to become more sustainable or "green?"

_____

_____

_____

Thank you very much for your time.

If you'd like, I can request that the WIB send you a copy of the report when we're done in July.
_____ Yes _____ No_____

Thank you again.

Appendix B | Occupational Matrices

Construction: Specialty Trade Contractors—NAICS Code 238

SOC Code	Occupational Title	Median Wage	Mean Wage	Entry Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
47-2031	Carpenters	$23.60	$24.49	$17.68	NS	667	III	3.6%
47-2061	Construction Laborers	$18.57	$19.30	$11.82	NS	370	I	-5.9%
47-1011	First Line Supervisors/Managers of Construction Trades and Extraction Workers	$32.27	$33.60	$25.32	NS	165	III	2.6%
47-2111	Electricians	$28.93	$28.63	$19.47	NS	137	III	0.5%
47-2152	Plumbers, Pipefitters, and Steamfitters	$25.66	$26.29	$17.30	NS	133	III	3.0%
47-2073	Operating Engineers and Other Construction Equipment Operators	$24.27	$24.92	$19.00	NS	129	III	1.6%
47-2221	Structural Iron and Steel Workers	$34.56	$33.36	$23.02	MA	125	III	0.7%
43-9061	Office Clerks, General	$14.86	$14.99	$9.75	NS	108	I	0.3%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	$17.74	$18.11	$12.50	NS	88	III	0.6%
47-2021	Brickmasons and Blockmasons	$39.26	$36.97	$26.62	MA	88	III	3.2%
11-9021	Construction Managers	$50.39	$57.43	$34.68	NS	84	III	5.8%
43-6014	Secretaries, except Legal, Medical, and Executive	$17.05	$17.29	$12.55	NS	80	I	-8.2%
53-3032	Truck Drivers, Heavy and Tractor-Trailer	$18.15	$18.29	$15.22	NS	80	III	8.5%
13-1051	Cost Estimators	$35.63	$47.68	$22.86	NS	76	III	5.4%
47-3012	Helpers-Carpenters	$16.80	$16.58	$14.23	NS	68	I	-0.7%
47-2211	Sheet Metal Workers	$14.86	$18.72	$13.56	NS	64	II	-0.5%
47-2141	Painters, Construction and Maintenance	$18.87	$19.16	$14.73	NS	60	I	3.8%
53-7032	Excavating and Loading Machine and Dragline Operators	$21.15	$21.46	$15.79	NS	60	III	2.5%
49-9044	Millwrights	$20.23	$20.47	$15.44	NS	52	III	-1.3%
47-2041	Carpet Installers	$29.90	$27.74	$14.93	MA	48	II	N/A
47-2171	Reinforcing Iron and Rebar Workers	$27.80	$25.33	$13.92	MA	48	II	0.0%
47-2043	Floor Sanders and Finishers	N/A	N/A	N/A	N/A	40	II	2.4%
47-2151	Pipelayers	$21.96	$22.77	$17.56	NS	40	II	-1.4%
47-3013	Helpers-Electricians	$14.92	$15.81	$11.60	NS	40	I	-10.2%
43-1011	First Line Supervisors/Managers of Office and Administrative Support Workers	$24.63	$25.94	$18.24	NS	32	III	0.3%
43-6011	Executive Secretaries and Administrative Assistants	$20.93	$21.68	$15.53	NS	32	III	6.0%
41-4012	Sales Representatives, Wholesale and Manufacturing	$29.70	$36.65	$19.14	NS	28	III	8.7%

Construction: Specialty Trade Contractors (continued)

SOC Code	Occupational Title	Median Wage	Mean Wage	Entry Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
47-5021	Earth Drillers, except Oil and Gas	$18.99	$20.47	$14.48	MA	28	III	-4.6%
47-2051	Cement Masons and Concrete Finishers	$22.52	$25.16	$17.81	NS	24	II	7.0%
47-2081	Drywall and Ceiling Tile Installers	$25.13	$25.23	$17.82	MA	24	II	-3.8%
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	$26.78	$25.44	$17.47	NS	24	II	7.8%
51-4121	Welders, Cutters, Solderers, and Brazers	$22.93	$23.24	$18.70	NS	24	II	-5.0%
53-3033	Truck Drivers, Light or Delivery Service	$14.00	$15.24	$9.88	NS	24	III	9.8%
37-3011	Landscaping and Groundskeeping Workers	$14.30	$15.23	$10.81	NS	20	I	16.6%
47-4031	Fence Erectors	$16.60	$16.71	$11.28	MA	20	I	3.8%
49-9011	Mechanical Door Repairers	$20.85	$20.33	$14.98	MA	20	II	3.7.%
49-9042	Maintenance and Repair Workers, General	$18.30	$18.91	$13.63	NS	20	II	8.4%
51-7011	Cabinetmakers and Bench Carpenters	$18.22	$18.44	$14.49	NS	20	III	1.6%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	$12.31	$13.12	$9.44	NS	20	I	1.8%

Credit Intermediation & Related Activity—NAICS Code 522

SOC Code	Occupational Title	Median Wage	Mean Wage	Entry Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
43-0371	Tellers	$12.45	$12.78	$10.39	NS	689	I	3.5%
43-4051	Customer Service Representatives	$15.63	$16.55	$11.79	NS	181	I	12.9%
43-9061	Office Clerks, General	$14.86	$14.99	$9.75	NS	89	I	0.3%
43-4131	Loan Interviewers and Clerks	$17.68	$18.06	$12.93	NS	82	II	-5.3%
41-3031	Securities, Commodities, and Financial Services Sales Agents	$29.77	$42.87	$18.63	NS	79	III	8.2%
43-6011	Executive Secretaries and Administrative Assistants	$20.93	$21.68	$15.53	NS	76	II	6.0%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	$17.74	$18.11	$12.50	NS	73	III	0.6%
43-3021	Billing and Posting Clerks and Machine Operators	$15.94	$16.44	$12.13	NS	56	I	-4.6%
43-1011	First-line Supervisors of Office and Administrative Support Workers	$24.63	$25.94	$18.24	NS	49	III	0.3%
43-3011	Bill and Account Collectors	$18.89	$20.10	$15.30	NS	33	II	11.4%
43-6014	Secretaries, except Legal, Medical, and Executive	$17.05	$17.29	$12.55	NS	23	I	-8.2%
41-9041	Telemarketers	$18.97	$22.26	$13.08	NS	20	I	-13.9%
43-4141	New Accounts Clerks	$21.65	$20.18	$14.90	NS	20	II	1.4%
43-9021	Data Entry Keyers	$14.69	$15.10	$12.09	NS	20	I	-8.0%

Ambulatory Health Care Services—NAICS Code 621

SOC Code	Occupational Title	Median Wage	Mean Wage	Entry Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
29-1111	Registered Nurses	$35.45	$36.37	$26.57	NS	1432	III	20.6%
43-6013	Medical Secretaries	$16.78	$17.76	$13.28	NS	1152	III	9.1%
29-2012	Medical and Clinical Laboratory Technicians	$16.24	$17.78	$12.54	NS	495	II	13.3%
31-1011	Home Health Aides	$11.67	$12.07	$10.93	NS	495	I	33.6%
29-2061	Licensed Practical Nurses	$23.90	$23.14	$16.80	NS	312	II	11.7%
31-9092	Medical Assistants	$15.93	$16.64	$13.58	NS	312	II	23.9%
43-4171	Receptionists and Information Clerks	$14.04	$14.16	$10.46	NS	301	I	11.6%
31-1012	Nursing Aides, Orderlies, and Attendants	$13.97	$13.93	$11.84	NS	237	I	13.4%
43-6014	Secretaries, except Legal, Medical, and Executive	$17.05	$17.29	$12.55	NS	226	I	-8.2%
43-3021	Billing and Posting Clerks and Machine Operators	$15.94	$16.44	$12.13	NS	215	I	-4.6%
29-2071	Medical Records and Health Information Technicians	$15.46	$16.17	$11.56	NS	183	II	13.5%
43-9061	Office Clerks, General	$14.86	$14.99	$9.75	NS	183	I	0.3%
39-9021	Personal and Home Care Aides	$13.52	$13.69	$11.29	NS	161	I	29.6%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	$17.74	$18.11	$12.50	NS	151	III	0.6%
43-1011	First Line Supervisors/Managers of Office and Administrative Support Workers	$24.63	$25.94	$18.24	NS	140	III	0.3%
29-2034	Radiologic Technologists and Technicians	$31.98	$31.47	$23.16	NS	129	III	11.9%
29-2011	Medical and Clinical Laboratory Technologists	$29.39	$27.88	$19.51	NS	97	III	6.9%
43-6011	Executive Secretaries and Administrative Assistants	$20.93	$21.68	$15.53	NS	86	III	6.0%
43-4071	File Clerks	$11.79	$12.02	$9.50	NS	75	I	-40.0%
37-2012	Maids and Housekeeping Cleaners	$10.44	$10.80	$8.89	NS	65	I	13.0%
37-2011	Janitors and Cleaners	$13.00	$13.69	$9.86	NS	54	I	13.0%

Hospitals—NAICS Code 622

SOC Code	Occupational Title	Median Wage	Mean Wage	Entry Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
29-1111	Registered Nurses	$35.45	$36.37	$26.57	NS	1954	III	21.9%
31-1012	Nursing Aides, Orderlies, and Attendants	$13.97	$13.93	$11.84	NS	552	I	14.9%
43-6013	Medical Secretaries	$16.78	$17.76	$13.28	NS	212	III	4.3%
29-2061	Licensed Practical Nurses	$23.90	$23.14	$16.80	NS	149	II	9.8%
29-2011	Medical and Clinical Laboratory Technologists	$29.39	$27.88	$19.51	NS	142	III	15.8%
29-2012	Medical and Clinical Laboratory Technicians	$16.24	$17.78	$12.54	NS	134	II	17.2%
29-2034	Radiologic Technologists and Technicians	$31.98	$31.47	$23.16	NS	134	III	18.3%
37-2012	Maids and Housekeeping Cleaners	$10.44	$10.80	$8.89	NS	134	I	13.0%
43-6014	Secretaries, except Legal, Medical, and Executive	$17.05	$17.29	$12.55	NS	113	I	-8.2%
37-2011	Janitors and Cleaners	$13.00	$13.69	$9.86	NS	99	I	13.0%
43-4111	Interviewers, except Eligibility and Loan	$14.41	$14.79	$10.89	NS	99	I	16.2%
29-2071	Medical Records and Health Information Technicians	$15.46	$16.17	$11.56	NS	78	II	19.3%
31-9092	Medical Assistants	$15.93	$16.64	$13.58	NS	71	II	31.7%
43-3021	Billing and Posting Clerks and Machine Operators	$15.94	$16.44	$12.13	NS	71	I	-4.6%
35-3041	Food Servers, Non-restaurant	$10.80	$10.86	$8.94	NS	64	I	2.3%
43-6011	Executive Secretaries and Administrative Assistants	$20.93	$21.68	$15.53	NS	64	III	6.0%
29-2055	Surgical Technologists	$21.09	$21.63	$15.36	NS	57	III	21.3%
31-1013	Psychiatric Aides	$14.86	$15.14	$12.90	MA	57	I	-1.2%
33-9032	Security Guards	$12.19	$12.88	$10.13	NS	57	I	4.5%
29-2031	Cardiovascular Technologists and Technicians	$17.95	$22.37	$12.75	NS	50	III	21.6%
29-2052	Pharmacy Technicians	$12.37	$13.28	$10.54	NS	50	II	14.3%
31-9094	Medical Transcriptionists	$17.63	$17.03	$13.06	NS	50	III	16.4%
43-1011	First Line Supervisors/Managers of Office and Administrative Support Workers	$24.63	$25.94	$18.24	NS	50	III	0.3%
35-2021	Food Preparation Workers	$10.05	$10.77	$8.63	NS	42	I	15.4%
43-2011	Switchboard Operators, Including Answering Service	$12.71	$13.60	$10.66	NS	42	I	-16.9%
49-9042	Maintenance and Repair Workers, General	$18.30	$18.91	$13.63	NS	42	II	8.4%
31-9093	Medical Equipment Preparers	$15.86	$16.37	$12.99	MA	35	I	16.8%
35-2012	Cooks, Institution and Cafeteria	$15.10	$15.12	$12.38	NS	35	I	1.4%
43-5081	Stock Clerks and Order Fillers	$10.93	$12.39	$8.76	NS	35	I	-12.8%

Nursing and Residential Care Facilities—NAICS Code 623

SOC Code	Occupational Title	Median Wage	Mean Wage	Entry Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
31-1012	Nursing Aides, Orderlies, and Attendants	$13.97	$13.93	$11.84	NS	2083	I	14.9%
29-1111	Registered Nurses	$35.45	$36.37	$26.57	NS	800	III	21.9%
29-2061	Licensed Practical Nurses	$23.90	$23.14	$16.80	NS	596	II	9.8%
35-2021	Food Preparation Workers	$10.05	$10.77	$8.63	NS	287	I	15.4%
37-2012	Maids and Housekeeping Cleaners	$10.44	$10.80	$8.89	NS	272	I	13.0%
35-2012	Cooks, Institution and Cafeteria	$15.10	$15.12	$12.38	NS	211	I	1.4%
39-9032	Recreation Workers	$10.26	$11.60	$8.88	NS	151	I	13.6%
37-2011	Janitors and Cleaners	$13.00	$13.69	$9.86	NS	136	I	13.0%
31-1011	Home Health Aides	$11.67	$12.07	$10.93	NS	128	I	38.3%
39-9041	Residential Advisors	$16.69	$18.72	$10.44	NS	113	II	15.0%
43-4171	Receptionists and Information Clerks	$14.04	$14.16	$10.46	NS	106	I	11.6%
21-1093	Social and Human Services Assistant	$12.72	$15.37	$11.33	NS	98	I	19.1%
51-6011	Laundry and Dry Cleaning Workers	$9.36	$10.31	$8.83	NS	91	I	6.7%
39-9021	Personal and Home Care Aides	$13.52	$13.69	$11.29	NS	75	I	29.6%
43-6013	Medical Secretaries	$16.78	$17.76	$13.28	NS	68	III	4.3%
35-3031	Waiters and Waitresses	$10.98	$12.84	$8.24	NS	60	I	11.2%
29-2071	Medical Records and Health Information Technicians	$15.46	$16.17	$11.56	NS	53	II	19.3%
35-9021	Dishwashers	$9.19	$9.47	$8.80	NS	53	I	10.1%
43-9061	Office Clerks, General	$14.86	$14.99	$9.75	NS	53	I	0.3%
49-9042	Maintenance and Repair Workers, General	$18.30	$18.91	$13.63	NS	53	II	8.4%
35-3021	Combined Food Preparation and Serving Workers, Including Fast Food	$9.10	$9.58	$8.58	NS	45	I	11.2%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	$17.74	$18.11	$12.50	NS	45	III	0.6%
31-2021	Physical Therapist Assistants	$22.95	$23.15	$17.47	NS	38	II	25.7%
35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers	$9.11	$10.45	$8.37	NS	38	I	8.4%
39-9011	Child Care Workers	$10.66	$10.98	$8.85	NS	38	I	14.1%
43-6014	Secretaries, Except Legal, Medical, and Executive	$17.05	$17.29	$12.55	NS	38	I	-8.2%

Fabricated Metal Product Manufacturing—NAICS Code 332

SOC Code	Occupational Title	Median Wage	Mean Wage	Entry Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
51-2092	Team Assemblers	$12.13	$13.06	$9.47	NS	94	I	2.1%
51-1011	First Line Supervisors/Managers of Production and Operating Workers	$27.52	$28.76	$16.86	NS	59	III	-4.3%
51-4121	Welders, Cutters, Solderers, and Brazers	$22.93	$23.24	$18.70	NS	47	II	-5.0%
51-4041	Machinists	$22.56	$22.34	$15.77	NS	45	III	-6.2%
51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	$15.79	$16.01	$10.73	MA	45	I	-12.2%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	$19.07	$19.34	$13.57	NS	45	II	-12.6%
43-5071	Shipping, Receiving, and Traffic Clerks	$15.60	$16.17	$10.90	NS	38	I	-3.3%
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	$15.44	$16.24	$12.46	MA	31	I	-8.2%
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$15.14	$18.95	$12.64	NS	31	I	-10.4%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	$12.31	$13.12	$9.44	NS	31	I	1.8%
47-2211	Sheet Metal Workers	$14.86	$18.72	$13.56	NS	29	II	-0.5%
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$14.85	$16.27	$12.03	NS	29	I	-18.0%
49-9042	Maintenance and Repair Workers, General	$18.30	$18.91	$13.63	NS	28	II	8.4%
51-9198	Helpers-Production Workers	$14.50	$13.82	$9.71	NS	26	I	-2.3%
43-9061	Office Clerks, General	$14.86	$14.99	$9.75	NS	24	I	0.3%
41-4012	Sales Representatives, Wholesale and Manufacturing, except Technical and Scientific Products	$29.70	$36.65	$19.14	NS	23	III	8.7%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	$17.74	$18.11	$12.50	NS	23	III	0.6%
51-4111	Tool and Die Makers	$22.69	$22.38	$18.16	NS	23	III	-12.5%
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	$17.24	$17.42	$12.83	NS	23	I	-10.5%
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	$19.50	$19.47	$13.93	NS	21	III	-10.3%
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	$20.42	$20.37	$17.74	NS	21	I	-5.9%
53-7064	Packers and Packagers, Hand	$10.31	$12.33	$8.69	NS	21	I	4.0%

Fabricated Metal Product Manufacturing (continued)

SOC Code	Occupational Title	Median Wage	Mean Wage	Entry Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
51-2041	Structural Metal Fabricators and Fitters	$21.09	$20.66	$15.08	NS	17	II	-4.7%
43-4051	Customer Service Representatives	$15.63	$16.55	$11.79	NS	16	I	12.9%
43-5061	Production, Planning, and Expediting Clerks	$20.59	$22.09	$15.23	NS	16	I	1.4%
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$21.33	$20.87	$15.33	NS	16	I	-19.5%
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	$15.40	$16.53	$11.77	MA	16	I	-8.6%
53-7063	Machine Feeders and Offbearers	$14.09	$14.07	$10.18	NS	16	I	-24.0%
17-3013	Mechanical Drafters	$28.89	$29.50	$18.75	NS	12	III	2.3%
43-5081	Stock Clerks and Order Fillers	$10.93	$12.39	$8.76	NS	12	I	-12.8%
43-6011	Executive Secretaries and Administrative Assistants	$20.93	$21.68	$15.53	NS	12	III	6.0%
17-3023	Electrical and Electronic Engineering Technicians	$23.75	$25.71	$18.28	NS	10	II	2.6%
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	$34.40	$37.66	$24.82	NS	10	III	11.0%
43-1011	First Line Supervisors/Managers of Office and Administrative Support Workers	$24.63	$25.94	$18.24	NS	10	III	0.3%
43-6014	Secretaries, except Legal, Medical, and Executive	$17.05	$17.29	$12.55	NS	10	I	-8.2%
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$19.02	$18.27	$12.76	MA	10	I	-17.2%
53-3033	Truck Drivers, Light or Delivery Service	$14.00	$15.24	$9.88	NS	10	III	9.8%
37-2011	Janitors and Cleaners	$13.00	$13.69	$9.86	NS	9	I	13.0%
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	$16.27	$16.52	$12.85	NS	9	I	-25.7%
51-4035	Milling and Planing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$20.85	$20.15	$15.39	NS	9	I	-11.7%

Machinery Manufacturing—NAICS Code 333

SOC Code	Occupational Title	Median Wage	Mean Wage	Entry Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
51-2092	Team Assemblers	$12.13	$13.06	$9.47	NS	126	I	2.1%
51-4041	Machinists	$22.56	$22.34	$15.77	NS	126	III	-6.2%
51-4111	Tool and Die Makers	$25.25	$24.74	$17.66	NS	108	III	-12.5%
51-1011	First Line Supervisors/Managers of Production and Operating Workers	$27.52	$28.76	$16.86	NS	83	III	-4.3%
51-2023	Electromechanical Equipment Assemblers	$17.98	$17.87	$13.42	NS	67	I	-19.5%
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	$19.50	$19.47	$13.93	NS	65	III	-10.3%
43-5071	Shipping, Receiving, and Traffic Clerks	$15.60	$16.17	$10.90	NS	54	I	-3.3%
51-2022	Electrical and Electronic Equipment Assemblers	$15.54	$15.74	$11.27	NS	54	I	-11.9%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	$22.93	$23.24	$18.70	NS	49	II	-10.6%
17-3013	Mechanical Drafters	$28.89	$29.50	$18.75	NS	44	III	2.3%
51-4121	Welders, Cutters, Solderers, and Brazers	$22.69	$22.38	$18.16	NS	41	II	-5.0%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	$17.74	$18.11	$12.50	NS	39	III	0.6%
41-4012	Sales Representatives, Wholesale and Manufacturing, except Technical and Scientific Products	$29.70	$36.65	$19.14	NS	34	III	8.7%
43-9061	Office Clerks, General	$14.86	$14.99	$9.75	NS	34	I	0.3%
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$14.85	$16.27	$12.03	NS	34	I	-18.0%
43-5061	Production, Planning, and Expediting Clerks	$20.59	$22.09	$15.23	NS	31	I	1.4%
17-3023	Electrical and Electronic Engineering Technicians	$23.75	$25.71	$18.28	NS	28	II	2.6%
43-6011	Executive Secretaries and Administrative Assistants	$20.93	$21.68	$15.53	NS	28	III	6.0%
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	$20.13	$19.83	$12.96	NS	28	I	-24.7%
43-4051	Customer Service Representatives	$15.63	$16.55	$11.79	NS	26	I	12.9%
43-5081	Stock Clerks and Order Fillers	$10.93	$12.39	$8.76	NS	26	I	-12.8%
43-6014	Secretaries, except Legal, Medical, and Executive	$17.05	$17.29	$12.55	NS	26	I	-8.2%
51-2031	Engine and Other Machine Assemblers	$16.71	$17.48	$11.70	MA	26	I	-9.8%
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	$34.40	$37.66	$24.82	NS	23	III	11.0%

Machinery Manufacturing (continued)

SOC Code	Occupational Title	Median Wage	Mean Wage	Entry Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
53-7064	Packers and Packagers, Hand	$10.31	$12.33	$8.69	NS	23	I	4.0%
17-3024	Electro-mechanical Technicians	$20.70	$20.78	$17.10	NS	21	II	9.4%
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$21.33	$20.87	$15.33	NS	21	I	-19.5%
17-3026	Industrial Engineering Technicians	$22.64	$22.93	$19.02	NS	18	II	5.9%
43-1011	First Line Supervisors/Managers of Office and Administrative Support Workers	$24.63	$25.94	$18.24	NS	18	III	0.3%
49-9041	Industrial Machinery Mechanics	$24.53	$24.63	$20.53	NS	18	III	-5.7%
49-9042	Maintenance and Repair Workers, General	$18.30	$18.91	$13.63	NS	18	II	8.4%
37-2011	Janitors and Cleaners	$13.00	$13.69	$9.86	NS	15	I	13.0%
43-4151	Order Clerks	$15.97	$16.71	$12.40	NS	15	I	-29.2%
51-2041	Structural Metal Fabricators and Fitters	$21.09	$20.66	$15.08	NS	15	II	-4.7%
51-2099	Assemblers and Fabricators, All Others	$9.30	$10.87	$8.79	NS	15	I	-3.6%
17-3027	Mechanical Engineering Technicians	$22.55	$23.15	$19.83	NS	13	II	
51-4035	Milling and Planing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$20.85	$20.15	$15.59	NS	13	I	-11.7%
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	$17.27	$18.74	$11.96	NS	13	I	-13.4%
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$15.14	$18.95	$12.64	NS	13	I	-10.4%
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	$17.24	$17.42	$12.83	NS	13	I	-10.5%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	$12.31	$13.12	$9.44	NS	13	I	1.8%

Computer and Electronic Product Manufacturing—NAICS Code 334

SOC Code	Occupational Title	Median Wage	Mean Wage	Entry Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
51-2022	Electrical and Electronic Equipment Assemblers	$15.54	$15.74	$11.27	NS	177	I	-11.9%
17-3023	Electrical and Electronic Engineering Technicians	$23.75	$25.71	$18.28	NS	96	II	2.6%
51-2092	Team Assemblers	$12.13	$13.06	$9.47	NS	74	I	2.1%
51-2023	Electromechanical Equipment Assemblers	$17.98	$17.87	$13.42	NS	66	I	-19.5%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	$19.07	$19.34	$13.57	NS	66	II	-10.6%
51-1011	First Line Supervisors/Managers of Production and Operating Workers	$27.52	$28.76	$16.86	NS	49	III	-4.3%
43-6011	Executive Secretaries and Administrative Assistants	$20.93	$21.68	$15.53	NS	44	III	6.0%
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	$34.40	$37.66	$24.82	NS	39	III	11.0%
51-9141	Semiconductor Processors	$18.73	$19.13	$13.45	NS	37	II	-14.3%
43-4051	Customer Service Representatives	$15.63	$16.55	$11.79	NS	32	I	12.9%
43-5061	Production, Planning, and Expediting Clerks	$20.59	$22.09	$15.23	NS	32	I	1.4%
43-5071	Shipping, Receiving, and Traffic Clerks	$15.60	$16.17	$10.90	NS	30	I	-3.3%
43-5081	Stock Clerks and Order Fillers	$10.93	$12.39	$8.76	NS	27	I	-12.8%
43-6014	Secretaries, except Legal, Medical, and Executive	$17.05	$17.29	$12.55	NS	25	I	-8.2%
51-4041	Machinists	$22.56	$22.34	$15.77	NS	25	III	-6.2%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	$17.74	$18.11	$12.50	NS	22	III	0.6%
17-3024	Electro-mechanical Technicians	$20.70	$20.78	$17.10	MA	20	II	9.4%
49-9042	Maintenance and Repair Workers, General	$18.30	$18.91	$13.63	NS	20	II	8.4%
43-1011	First Line Supervisors/Managers of Office and Administrative Support Workers	$24.63	$25.94	$18.24	NS	15	III	0.3%
51-2099	Assemblers and Fabricators, All Others	$9.30	$10.87	$8.79	NS	15	I	-3.6%
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	$20.13	$19.83	$12.96	NS	15	I	-24.7%
27-3042	Technical Writers	$41.14	$47.21	$32.30	NS	12	III	15.6%
43-9061	Office Clerks, General	$14.86	$14.99	$9.75	NS	12	I	0.3%
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	$25.69	$25.95	$20.82	NS	12	III	6.5%
51-2021	Coil Winders, Tapers, and Finishers	$13.59	$14.84	$10.18	MA	12	I	-27.1%
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	$19.50	$19.47	$13.93	NS	12	III	-10.3%

Electrical Equipment and Appliances Manufacturing—NAICS Code 335

SOC Code	Occupational Title	Median Wage	Mean Wage	Entry Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
51-2022	Electrical and Electronic Equipment Assemblers	$15.54	$15.74	$11.27	NS	105	I	-11.9%
51-2092	Team Assemblers	$12.13	$13.06	$9.47	NS	72	I	2.1%
51-1011	First Line Supervisors/Managers of Production and Operating Workers	$27.52	$28.76	$16.86	NS	36	III	-4.3%
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	$20.13	$19.83	$12.96	NS	31	I	-24.7%
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	$25.69	$25.95	$20.82	NS	27	III	6.5%
49-9042	Maintenance and Repair Workers, General	$18.30	$18.91	$13.63	NS	20	II	8.4%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	$19.07	$19.34	$13.57	NS	20	II	-10.6%
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	$16.27	$16.52	$12.85	NS	19	I	-25.7%
51-9111	Packaging and Filling Machine Operators and Tenders	$14.49	$14.72	$10.28	NS	19	I	-4.4%
17-3023	Electrical and Electronic Engineering Technicians	$23.75	$25.71	$18.28	NS	16	II	2.6%
43-4051	Customer Service Representatives	$15.63	$16.55	$11.79	NS	16	I	12.9%
43-5071	Shipping, Receiving, and Traffic Clerks	$15.60	$16.17	$10.90	NS	14	I	-3.3%
51-4111	Tool and Die Makers	$22.69	$22.38	$18.16	NS	13	III	-12.5%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	$17.74	$18.11	$12.50	NS	12	III	0.6%
43-5081	Stock Clerks and Order Fillers	$10.93	$12.39	$8.76	NS	12	I	-12.8%
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$14.85	$16.27	$12.03	NS	12	I	-18.0%
51-4041	Machinists	$22.56	$22.34	$15.77	NS	12	III	-6.2%
43-5061	Production, Planning, and Expediting Clerks	$20.59	$22.09	$15.23	MA	11	I	1.4%
49-9043	Maintenance Workers, Machinery	$23.33	$23.85	$18.11	NS	11	II	-2.5%
53-7051	Industrial Truck and Tractor Operators	$17.89	$17.72	$13.20	NS	11	III	2.4%
43-9061	Office Clerks, General	$14.86	$14.99	$9.75	NS	9	I	0.3%
43-6011	Executive Secretaries and Administrative Assistants	$20.93	$21.68	$15.53	NS	8	III	6.0%
43-6014	Secretaries, except Legal, Medical, and Executive	$17.05	$17.29	$12.55	NS	8	I	-8.2%

Data Descriptions for Appendix B

SOC Code: Standard Occupational Code

Occupational Title: Formal title of the occupation from the Standard Occupational Code.

Mean, Median, and Entry Wages: As of May 2008, these are most recent data available at the time this report was prepared.

Area for Wage Data: In most cases, the wage data provided is for the North Shore (NS) WIB region. However, in some cases data is not available at the local level, so statewide (MA) data is utilized.

North Shore Employment: An estimate of North Shore regional employment (3rd Quarter 2009) in each occupation in the industry, based on occupational matrices developed by the U. S. Department of Labor.

Level: An estimate of the skills and educational requirements for each occupation, ranging from level 1 (lowest skill and educational requirements) to level 3 (highest skill and educational requirements).

Projected Growth: An estimated growth rate of each occupation for the Commonwealth of Massachusetts from 2006 to 2016. These estimates are provided by the Massachusetts Executive Office of Labor and Workforce Development.

Appendix C | Bibliography

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North Shore Workforce Investment Area

Teller Financial Services Accountant Data Entry Clerk Loan Officer Carpenter Electrician Plumber Construction Trades Truck Drivers Building Analyst Nurse Certified Nurse Assistant Medical Assistant Dental Hygienist Health Care Medical Technologist Radiological Technician Machinist Engineer Foreman Durable Goods Manufacturing Assembler Sheet Metal Worker Life Sciences Quality Control Worker Laboratory Technician Entrepreneur Graphic Designer Creative Economy Teller Accountant Data Entry Clerk Financial Services Loan Officer Carpenter Electrician Plumber Truck Drivers Construction Trades Building Analyst Nurse Certified Nurse Assistant Health Care Medical Assistant Dental Hygienist Medical Technologist Radiological Technician Durable Goods Manufacturing Machinist Engineer Foreman Assembler Sheet Metal Worker Life Sciences Quality Control Worker Laboratory Technician Creative Economy Entrepreneur Graphic Designer Financial Services Teller Accountant Data Entry Clerk Loan Officer Carpenter Construction Trades Electrician Plumber Truck Drivers Building Analyst Nurse Health Care Certified Nurse Assistant Medical Assistant Dental Hygienist Medical Technologist Radiological Technician Machinist Engineer Foreman Assembler Durable Goods Manufacturing Sheet Metal Worker Life Sciences Quality Control Worker Laboratory Technician Entrepreneur Creative Economy Graphic Designer Teller Financial Services Accountant Data Entry Clerk Loan Officer Construction Trades Carpenter Electrician Plumber Truck Drivers Building Analyst Nurse Certified Nurse Assistant Medical Assistant Dental Hygienist Health Care Medical Technologist Radiological Technician Machinist Engineer Foreman Assembler Sheet Metal Worker Durable Goods Manufacturing Quality Control Worker Life Sciences Laboratory Technician Creative Economy Entrepreneur Graphic Designer Teller Accountant Data Entry Clerk Financial Services Loan Officer Carpenter Electrician Plumber Construction Trades Truck Drivers Building Analyst Nurse Certified Nurse Assistant Medical Assistant Dental Hygienist Health Care Medical Technologist Radiological Technician Machinist Engineer Foreman Assembler Durable Goods Manufacturing Sheet Metal Worker Life Sciences Quality Control Worker Laboratory Technician Creative Economy Entrepreneur Graphic Designer Teller Accountant Financial Services Data Entry Clerk Loan Officer Construction Trades Carpenter Electrician Plumber Truck Drivers Building Analyst Nurse Certified Nurse Assistant Medical Assistant Health Care Dental Hygienist Medical Technologist Radiological Technician Machinist Engineer Foreman Assembler Durable Goods Manufacturing Sheet Metal Worker Quality Control Worker Life Sciences Laboratory Technician Creative Economy Entrepreneur Graphic Designer Financial Services Teller Accountant Data Entry Clerk Loan Officer Construction Trades Carpenter Electrician Plumber Truck Drivers Building Analyst Nurse Certified Nurse Assistant Health Care Medical Assistant Dental Hygienist Medical Technologist Radiological Technician Machinist Engineer Durable Goods Manufacturing Foreman Assembler Sheet Metal Worker Life Sciences Quality Control Worker Laboratory Technician Creative Economy Entrepreneur

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