



LABOR MARKET BLUEPRINT 2015

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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 four prior reports completed in 2000, 2002, 2007, and 2010 and helps us to continually examine the ever changing and dynamic world of work. This Blueprint is but a picture 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.

We once again include the Economic Development Snapshot, highlighting non-workforce issues for our critical industries, prepared by the new North Shore Alliance for Economic Development. Feedback from readers/users of the 2010 blueprint made us realize the close connection between economic development and workforce development and the need to understand and cultivate it, for the benefit of the region. New with the Blueprint in 2015 is a section dedicated to innovation and the reality that the North Shore is home to many highly innovative companies that have a significant impact of the labor market and our need to keep an eye on the changes, challenges and opportunities they bring to our region.

The NSWIB is charged under the newly enacted Workforce Innovation and Opportunity Act (WIOA) 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 our 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.

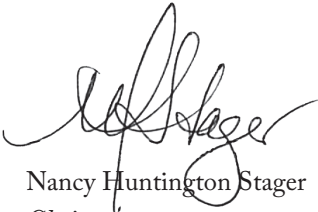
Business, educators, and community leaders from all over the North Shore and the state were generous with their time and insights during the development of this blueprint. The NSWIB is grateful to them for their commitment to making the North Shore a better place to live and work. In addition, we would like to thank O. Steven Quimby and Gary Barrett for the quality of work performed in developing this Blueprint and Snapshot and their attention to our thoughts and perspectives. We also thank Sue Caruso for her graphic design work, helping to make this report user friendly and readable.

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*



Nancy Huntington Stager
Chair



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. Will Sinatra of the North Shore Workforce Investment Board provided excellent assistance in preparing the tables and charts in the blueprint. The staff 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.

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Executive Summary

The North Shore Workforce Investment Board (NSWIB) is 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.

This Labor Market Blueprint is an important component of the NSWIB’s role as aggregator and disseminator of labor market data to the region. Accurate and timely labor market information can help a region’s workforce and economic development systems make better decisions on the use of their limited resources. The Labor Market Blueprint will help:

- The WIB and other workforce development funders make investments that will pay off for both workers and businesses.
- Career Center staff to hear from employers about the types of skills (both “soft” and “hard” skills), education, and experience needed for successful candidates in critical and emerging industries.
- Training providers who will have access to detailed information on the skills and education requirements of the region’s businesses that are looking to hire, so their programs can be tailored to meet the needs of businesses in the critical industries in the region.
- 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.
- Forward the discussion of regional innovation and how workforce and economic development can work together closely to help move the innovation economy forward.

Regional Economic Conditions

The North Shore is facing a number of economic challenges. Like the remainder of the country, the North Shore was rocked by the Great Recession. Many companies have recently begun hiring again. Higher wage jobs have demonstrated the greatest growth and mid-level jobs continue to be the slowest growing in the region. However, since employers are not hiring

at substantial levels, they can be more stringent in demanding highly qualified new hires. At the same time, employers are demanding ever higher skills and education levels, even for entry-level jobs. This “new normal” appears likely to remain in place for the foreseeable future.

This “new normal” condition presents several challenges for the North Shore region. As a high-cost of living region, the North Shore requires industries that offer high-wage jobs. These jobs in turn generally require a high level of skills and education. To support regional employment growth, enhancing the skills and education levels of the region’s population and their connection to the critical industries is essential.

Critical Industries

The North Shore Workforce Investment Board has developed a set of criteria for the selection of critical industries in the region. These criteria include:

- Total private sector employment.
- Wages.
- Career ladder opportunities for workers in the industry.
- Projected growth of the industry and critical occupations within the industry.

Based on these criteria, Construction, Financial Services, Health Care, and Durable Goods Manufacturing have been selected as the region’s critical industries. These industries have demonstrated significant regional employment, the ability to maintain employment levels over time, and strong wages and career opportunities for workers.

Construction has been one of the critical industries in the North Shore region for a long time. In the last ten years, Construction has lost 4.73% of its employment on the North Shore. However,

construction employment is beginning to grow again. One of the key workforce development benefits of the construction industry is that the majority of the positions in the industry do not require a Bachelor's degree. One of the critical elements for supporting construction industry employment is to enhance the recruitment pipelines for the industry. The construction industry would also benefit from a public relations effort to let raise awareness of the good jobs, wages, and benefits that the industry provides.

The Financial Services industry has historically been a large employer in the North Shore region. It has been selected as a critical industry by the North Shore Workforce Investment Board since 2007. The industry has significant employment in jobs that have not required Bachelor's degrees in the past. However, the skills and education requirements for even entry-level positions such as tellers have increased dramatically and are likely to continue to increase. The regulatory environment facing the industry is becoming increasingly complex and reaching down to affect the work of every job, from front-line tellers to senior management. The IT requirements of the industry are also increasing to meet both customer demands for real-time service and regulatory compliance requirements.

The Health Care industry has historically been one of the two largest private sector employers on the North Shore. It was one of the few industries that continued to grow through the Great Recession and it has demonstrated further growth over the past two years. The health care industry is in the midst of a number of dramatic transformations. Passage of the Affordable Care Act has created more customers for the health care industry as well as increased quality requirements. Of particular interest is the requirement that a portion of the reimbursement for services is based on patient satisfaction scores. Re-hospitalizations are also financially penalized. These factors, along with the increasing use of technology in the industry, are dramatically increasing the skills and education demands for all occupations in the industry. Most health care occupations are likely to see increasing numbers of jobs as the health care industry sees increasing demand for services due to the aging population and the increasing patient population.

The Durable Goods Manufacturing industry has seen a dramatic loss of employment over the last ten years. However, it is still a large employer in the

region. Much of the low value-added manufacturing work in the region has disappeared. While this caused some shocks to the labor market, it has resulted in a stronger manufacturing sector in the region. Advanced manufacturing requires higher skill levels for its workers and is also likely to be higher-paying than other components of the manufacturing industry. This is particularly important for a region such as the North Shore that has a relatively high cost of living and therefore requires higher wages to attract workers. These jobs require higher level skills and education. These factors, combined with an aging workforce in key occupations, are likely to increase demand for manufacturing labor in key occupations over the next five to ten years.

There are several overarching issues that cut across all of the critical industries. These overarching themes represent issues that are particularly important for the public workforce investment system, education and training providers, and other economic and workforce development stakeholders to pay attention to and include:

- Across all four critical industries, the vast majority of jobs are requiring increasing level of skills requirements that are being demanded now, with even higher demands likely to come in the future.
- Foundational skills were lacking in many applicants. Foundational skills include English language communication skills, having a strong work ethic, the ability to work as part of a team and accept feedback on performance, and strong technology skills.
- Technology is having an impact on nearly all occupations and the impact of technology on the workforce is only going to increase over time.
- Strong educational foundations, particularly in the STEM fields, are critical to long-term occupational success in each of the critical industries

Innovation

One of the critical factors in the North Shore's economic success is the role of innovation. The North Shore has a long history of developing products on the cutting edge of technology, from shipbuilding products, to internet and productivity firms, to biotechnology. Since 1976, inventors in the North Shore region have received 14,375 individual patents, led by companies such as Osram Sylvania, Varian Semiconductor, and New England Biolabs. Innovative companies in

biotechnology and advanced manufacturing are critical to the region. Emerging innovation industries in the region include cleantech, and biotechnology start-ups. What these innovative industries and companies have in common is that they take advantage of the North Shore and broader eastern Massachusetts workforce, which has traditionally been highly educated.

Recommendations

The general recommendations of this research are:

- The North Shore Workforce Investment Board should consider the further development of ongoing employer partnerships for each of the critical industries. These partnerships should be developed to provide regular feedback on industry demand and to develop programmatic efforts whether or not grant dollars are available.
- The North Shore regional workforce investment system should develop a comprehensive marketing and public relations plan. This plan should focus on the importance and needs of the critical industries in the region, particularly manufacturing which is under-recognized by the public in general.
- The North Shore Workforce Investment Board should continue to be proactive in reaching out to companies with new or changing occupational demand and in identifying such companies using real-time labor market information sources as well as leveraging industry contacts.
- The North Shore Workforce Investment Board and other workforce and economic development stakeholders should develop an enhanced focus on bringing higher wage jobs to the region as well as growing higher wage jobs within existing companies.
- Every training and education program should include foundational skills elements related to interviewing and presentation skills, work ethic, basic communication skills, working with a supervisor, and business etiquette.
- The North Shore Workforce Investment Board should work with all industry clusters to pursue apprenticeship training and external funding opportunities.

The regional workforce system must also enhance the foundational skill development capacity of the region. The importance of foundational skills such as English communication skills, basic math skills, basic and intermediate technology skills, working with supervision, and work ethic was cited by nearly every employer interviewed for this Labor Force Blueprint. Specific recommendations include:

- Work with education and training partners to ensure that foundational skills development is contextualized within all education and training programs so that program graduates have the best possible chance for employment success.
- Support the expansion of math and English language skills training and the connection of these education programs with employers and the NSWIB's industry partnerships.
- Continue to work with K-12 and community college system partners to implement more high quality STEM education programs that are tied directly to industry demand.
- Utilize existing workforce system resources to provide short-term training workshops in areas such as Microsoft Word and Excel, how to write effective email communications, and familiarity with laptops and tablets.
- Work with Adult Education providers to maximize the alignment of their curriculum with the requirements of businesses in the critical industries.
- The NSWIB should work with K-12 systems and educators to better align their work with the demands of businesses and particularly to enhance the availability of vocational and technical schools' educational offerings.

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Specific recommendations are also provided for each of the industries discussed.

CHAPTER I

Introduction

Over the past four years, much has changed in the North Shore labor market. The region has emerged from the Great Recession, yet the regional economy we have now is different than the regional economy that was in place in 2010 when the last labor force blueprint was written. Many of the companies that have successfully emerged from the Great Recession have a different labor force structure than they had previously. The region's workforce investment system needs to adjust with these changes to ensure that the programs provided are in line with the demands of businesses.

Purpose

The North Shore Workforce Investment Board (NSWIB) is 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.

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- Career Center staff to hear from employers about the types of skills (both "soft" and "hard" skills), education, and experience needed for successful candidates in critical and emerging industries.
- Training providers who will have access to detailed information on the skills and education requirements of the region's businesses that are looking to hire, so

their programs can be tailored to meet the needs of businesses in the critical industries in the region.

- 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.
- Forward the discussion of regional innovation and how workforce and economic development can work together closely to help move the innovation economy forward.

History

The North Shore Workforce Investment has a fourteen year history of conducting labor market analyses that inform its own work and that of its stakeholders. The NSWIB has commissioned 4 Labor Market Blueprints (Green, et al., 2000; Quimby & Green, 2002; Quimby, 2007; Quimby, 2009), a green economy report (Quimby, 2009), a youth labor market blueprint, and an economic development companion piece to the most recent labor market blueprint (Luster, 2010). In addition, the NSWIB regularly provides data updates on its website (http://www.northshorewib.com/regional_economy.html).

Throughout this history of labor market data aggregation and analysis, the North Shore industrial composition and its critical and emerging industries has changed substantially. The critical and emerging industries in the previous labor market blueprints were:

	CRITICAL INDUSTRIES	EMERGING INDUSTRIES
2000	Construction Health Care Manufacturing Personnel Supply Services Retail Trade	Computer and Data Processing Financial Services, Web-based Banking Telecommunications
2007	Construction Financial Services Health Care Manufacturing	Biotechnology
2010	Construction Financial Services Health Care Manufacturing	

The 2010 blueprint also included a separate discussion of Life Sciences and the impact this industry played in the North Shore economy.

Throughout the development of labor market blueprints, the NSWIB has consistently used the following criteria to determine the region’s critical and emerging industries. These criteria are:

- 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 the industries that are 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.

Current Economic Environment

The North Shore’s economic environment is very mixed at the time this report was written. Employment is gradually starting to return but many industries are still not making full-time employment opportunities available on a regular basis. Uncertainty about the economy, potential impacts of the Affordable Care Act, and company-specific issues have all contributed to lower employment levels than economic conditions might lead one to expect. Since employers are not hiring at substantial levels, they can be more stringent in demanding highly qualified new hires. Nationally, the average job opening goes unfilled for 25 days (Weber &

Feintzeig, 2014). Skills requirements even for entry-level jobs have risen dramatically.

The current economic environment is largely a response to the recovery from the Great Recession. In most recoveries, the United States has seen growth in employment across all portions of the wage scale in the labor market. However, in this recovery there has been only minimal recovery in lower-skill, low-wage jobs. Higher wage jobs have demonstrated the greatest growth. Since the recovery has been slow, employers have been able to increase their skills and education requirements for all jobs. This condition, often referred to as the “new normal,” appears likely to remain in place for the foreseeable future. The entire workforce investment system will have to adjust to this “new normal” condition to remain relevant to the needs of employers.

Methodology

This report is based on workforce and economic development data from a wide variety of sources. The most important information source is a series of interviews with business leaders and human resources managers in the critical industries. These interviews focused on the critical human resources issues faced by companies in the critical industries today and how the region’s education and training system and the public workforce investment system could best contribute to meeting those needs.

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. Will Sinatra of the North Shore Workforce Investment Board pulled together the worksheets from these datasets and contributed to the analysis of the data.

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 (Quimby, 2010). The occupational matrices

include information on the numbers of workers in each occupation that does not generally require a bachelor's degree, the projected growth rate of the occupation between 2012 and 2022, 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.* 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 remainder of this report proceeds as follows:

- Chapter 2 provides an overview of the demographic characteristics of the North Shore region, with a particular emphasis on the skills and education background of the region's residents.
- Chapter 3 examines the demand side of the North Shore's regional labor market. Quantitative data is used to look at historical changes in the North Shore's industrial and occupational mix.
- Chapter 4 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 5 is a special analysis of innovation and the North Shore, including life sciences and other innovative industries in the region.
- Chapter 6 concludes the report with recommendations for the workforce and education systems on the North Shore on how to best meet the needs of the critical industries in the region.

* 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 other stakeholders are advised to work closely with specific employers to determine their occupational mix as part of the program planning and development process.

CHAPTER 2

Workforce Demographics of the North Shore

Businesses frequently cite the quality of the workforce as one of the top reasons why they decide to locate where they do. The supply side of the economy has become more critical over the past twenty-five years as much of the routine work has been offshored. Massachusetts and particularly the North Shore has become home to more high value added activities in manufacturing, biotechnology, and other parts of the innovation economy discussed in Chapter 5. This is a particularly important issue in a high cost of living region such as the North Shore. It is particularly important that regional workforce and economic development efforts maintain a sustained focus on the supply side of the regional economy.

Population

According to Census 2010, Massachusetts' population was 6,547,629 and the North Shore population was 409,411. The North Shore's population was concentrated in Lynn, Peabody, Salem, and Beverly.

The North Shore's population is predominantly White (84.6%). However, the region's largest city, Lynn, is considerably more diverse, with only 57.6% of the population being White and 32.1% being Hispanic or Latino.

Between 2000 and 2010, the population of the North Shore grew more slowly (1.1%) than the state of Massachusetts as a whole (3.1%). This is particularly critical when considering that Massachusetts grew very slowly compared to the nation as a whole, which grew 9.7% from 2000 to 2010. Slow population growth in a high cost of living region can be a potential problem over the long run in providing growing businesses with the workers they need.

FIGURE 2.1 North Shore Population Demographics by Municipality: 2010

2010 CENSUS	TOTAL POPULATION	WHITE	BLACK OR AFRICAN AMERICAN	AMERICAN INDIAN AND ALASKA NATIVE	ASIAN	NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER	SOME OTHER RACE	TWO OR MORE RACES	% HISPANIC OR LATINO
Massachusetts	6,547,629	80.40%	6.60%	0.30%	5.30%	0.00%	4.70%	2.60%	9.60%
North Shore	409,411	84.60%	4.20%	0.30%	3.10%	0.00%	5.40%	2.40%	11.00%
Beverly	39,502	93.30%	1.60%	0.20%	1.70%	0.10%	1.50%	1.60%	3.50%
Danvers	26,493	95.20%	1.10%	0.10%	1.90%	0.00%	0.70%	1.00%	2.30%
Essex	3,504	97.20%	0.30%	0.10%	1.00%	0.00%	0.20%	1.10%	1.30%
Gloucester	28,789	95.70%	0.80%	0.10%	0.90%	0.10%	1.00%	1.30%	2.70%
Hamilton	7,764	92.40%	0.60%	0.20%	5.40%	0.00%	0.30%	1.10%	1.60%
Ipswich	13,175	95.90%	0.50%	0.20%	1.30%	0.00%	0.70%	1.40%	1.80%
Lynn	90,329	57.60%	12.80%	0.70%	7.00%	0.10%	16.80%	5.00%	32.10%
Lynnfield	11,596	94.70%	0.50%	0.00%	3.30%	0.00%	0.40%	1.00%	1.70%
Manchester	5,136	97.60%	0.10%	0.20%	0.90%	0.00%	0.10%	1.10%	1.50%
Marblehead	19,808	96.40%	0.80%	0.10%	1.00%	0.00%	0.60%	1.20%	2.10%
Middleton	8,987	89.70%	2.30%	0.50%	2.30%	0.00%	3.40%	1.80%	7.10%
Nahant	3,410	96.50%	0.50%	0.10%	1.70%	0.00%	0.60%	0.70%	1.50%
Peabody	51,251	90.40%	2.40%	0.20%	1.90%	0.00%	3.60%	1.60%	6.30%
Rockport	6,952	97.00%	0.60%	0.10%	0.80%	0.10%	0.30%	1.10%	1.60%
Salem	41,340	81.50%	4.90%	0.40%	2.60%	0.10%	7.00%	3.40%	15.60%
Saugus	26,628	91.90%	2.10%	0.10%	2.70%	0.00%	1.60%	1.60%	4.00%
Swampscott	13,787	94.60%	1.20%	0.10%	1.90%	0.00%	0.70%	1.40%	2.60%
Topsfield	6,085	96.80%	0.50%	0.10%	1.30%	0.00%	0.30%	1.10%	1.80%
Wenham	4,875	95.80%	0.60%	0.10%	1.70%	0.10%	0.80%	0.90%	1.90%

Source: U.S. Census Bureau, 2010 Decennial Census.

FIGURE 2.2 North Shore Population Demographics Change: 2000-2010

	TOTAL POPULATION	WHITE	BLACK OR AFRICAN AMERICAN	AMERICAN INDIAN AND ALASKA NATIVE	ASIAN	NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER	SOME OTHER RACE	TWO OR MORE RACES	% HISPANIC OR LATINO
Massachusetts	3.10%	-4.10%	1.20%	0.10%	1.60%	0.00%	0.90%	0.30%	2.80%
North Shore	1.10%	-4.50%	1.20%	0.10%	0.60%	0.00%	2.20%	0.40%	4.70%
Beverly	-0.90%	-2.60%	0.60%	0.00%	0.50%	0.00%	1.00%	0.60%	1.70%
Danvers	5.10%	-2.50%	0.70%	0.00%	0.80%	0.00%	0.50%	0.50%	1.50%
Essex	7.30%	-1.30%	0.20%	0.00%	0.60%	0.00%	0.00%	0.60%	0.40%
Gloucester	-4.90%	-1.30%	0.20%	0.00%	0.20%	0.10%	0.50%	0.30%	1.30%
Hamilton	-6.60%	-1.80%	0.10%	0.00%	1.20%	0.00%	-0.10%	0.60%	0.60%
Ipswich	1.40%	-1.70%	0.10%	0.10%	0.50%	0.00%	0.40%	0.60%	0.70%
Lynn	1.40%	-10.30%	2.20%	0.40%	0.50%	0.00%	7.00%	0.20%	13.70%
Lynnfield	0.50%	-2.00%	0.10%	0.00%	1.30%	0.00%	0.20%	0.30%	1.10%
Manchester	-1.80%	-1.30%	0.10%	0.00%	0.50%	0.00%	0.00%	0.70%	0.70%
Marblehead	-2.80%	-1.20%	0.30%	0.00%	0.00%	0.00%	0.40%	0.40%	1.20%
Middleton	16.10%	-5.70%	0.60%	0.40%	1.20%	0.00%	3.10%	0.40%	0.90%
Nahant	-6.10%	-0.60%	0.10%	0.00%	0.60%	-0.10%	0.10%	-0.10%	0.50%
Peabody	6.50%	-3.50%	1.40%	0.10%	0.50%	0.00%	1.80%	-0.20%	2.80%
Rockport	-10.50%	-0.70%	0.40%	-0.10%	0.40%	0.10%	-0.20%	0.30%	0.50%
Salem	2.30%	-3.90%	1.80%	0.20%	0.70%	0.00%	0.30%	0.90%	4.40%
Saugus	2.10%	-5.40%	1.60%	0.10%	1.50%	0.00%	1.30%	0.90%	3.00%
Swampscott	-4.30%	-2.80%	0.50%	0.00%	1.20%	0.00%	0.40%	0.70%	1.30%
Topsfield	-0.90%	-1.00%	0.10%	0.00%	0.40%	0.00%	-0.10%	0.40%	1.00%
Wenham	9.80%	-2.00%	0.20%	0.10%	0.30%	0.10%	0.70%	0.60%	1.40%

Source: U.S. Census Bureau, 2000 Decennial Census, 2010 Decennial Census.

The fastest growing municipalities in the North Shore region were Middleton (16.6%), Wenham (9.8%), Essex (7.3%), and Peabody (6.6%). The White population declined in every single municipality, whereas the Black, Asian, and Hispanic or Latino population grew in every single municipality. It seems clear where the population growth will be coming from for the North Shore region in the future.

The population characteristic of most interest in a labor force analysis such as this blueprint is the education level of the working age population.

As shown in Figure 2.3,* the North Shore trails Massachusetts while slightly exceeding the education levels of the nation as a whole. The region is particularly strong in terms of the percentage of the population ages 25 and over with a Bachelor's degree or higher and is weaker in the High School diploma or Some College categories.** In order to keep up with the increasing education and skill demands of employers in the critical industries (see Chapter 4), it will be important for regional stakeholders to focus on improving these educational levels.

FIGURE 2.3 Essex County Education Levels: 2012

POPULATION 25 YRS AND OVER	ESSEX COUNTY	MA	UNITED STATES
Less than 9th Grade	5.5%	4.7%	5.8%
9th to 12th Grade, No Diploma	5.6%	5.7%	7.9%
High School Diploma (includes equivalency)	27.2%	25.9%	28.0%
Some College, No Degree	17.5%	16.8%	21.3%
Associate's Degree	8.0%	7.6%	8.0%
Bachelor's Degree	21.2%	22.2%	18.2%
Graduate or Professional Degree	15.0%	17.1%	10.9%
Percent High School Graduate or Higher	88.9%	89.7%	86.4%
Percent Bachelor's Degree or Higher	36.2%	39.3%	29.1%

Source: U.S. Census Bureau, 2012 American Community Survey.

* Note: The data shown is for Essex County, which approximates the North Shore region but is not exactly the same.

** These categories indicate the highest level of education that an individual has attained.

FIGURE 2.4 North Shore Top 25 Occupations: May 2013

RANK	OCCUPATION	JOBS	MEDIAN WAGE	ENTRY WAGE	EXPERIENCED WAGE
1	Retail Salespersons	7,640	\$22,587	\$18,162	\$31,564
2	Waiters and Waitresses	6,890	\$22,891	\$17,954	\$30,713
3	Cashiers	5,540	\$20,562	\$17,976	\$24,430
4	Registered Nurses	4,400	\$71,245	\$57,553	\$82,561
5	Combined Food Preparation and Serving Workers, Including Fast Food	4,100	\$19,163	\$17,873	\$21,529
6	Office Clerks, General	3,460	\$32,160	\$23,883	\$41,178
7	General and Operations Managers	3,240	\$100,957	\$63,941	\$151,909
8	Stock Clerks and Order Fillers	2,910	\$22,854	\$18,182	\$30,806
9	Cooks, Restaurant	2,690	\$29,007	\$21,143	\$32,468
10	Customer Service Representatives	2,620	\$37,494	\$26,518	\$46,105
11	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	2,550	\$30,012	\$20,803	\$36,046
12	Teacher Assistants	2,520	\$27,286	\$19,614	\$32,570
13	Nursing Assistants	2,300	\$29,947	\$26,045	\$33,066
14	Home Health Aides	2,240	\$24,607	\$20,485	\$27,117
15	Personal Care Aides	2,140	\$25,404	\$21,470	\$28,892
16	Bookkeeping, Accounting, and Auditing Clerks	2,070	\$40,989	\$28,574	\$46,955
17	First-Line Supervisors of Retail Sales Workers	2,020	\$41,678	\$30,204	\$52,972
18	Team Assemblers	1,820	\$25,818	\$18,513	\$34,803
19	First-Line Supervisors of Office and Administrative Support Workers	1,730	\$53,956	\$37,937	\$64,619
20	Secondary School Teachers, Except Special and Career/Technical Education	1,710	\$68,348	\$50,143	\$77,269
21	Elementary School Teachers, Except Special Education	1,670	\$67,057	\$48,101	\$75,449
22	First-Line Supervisors of Food Preparation and Serving Workers	1,640	\$36,559	\$24,992	\$46,105
23	Receptionists and Information Clerks	1,580	\$27,748	\$20,270	\$32,476
24	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	1,550	\$37,143	\$29,048	\$42,896
25	Laborers and Freight, Stock, and Material Movers, Hand	1,480	\$27,966	\$20,637	\$36,676

Source: Massachusetts Executive Office of Labor and Workforce Development, Occupational Employment and Wages.

Workforce

The North Shore workforce is quite diversified in terms of industry of employment as discussed in detail in the next chapter. Figure 2.4 shows the top twenty-five occupations of employment in the region.

Four of the top five occupations are relatively low paying jobs that are spread across a variety of occupations.* These occupations include retail sales, waiters and waitresses, cashiers, and food preparation and service workers. For all of the top 25 occupations, there are few high-paying jobs and few that require a Bachelor's degree or higher. While the data does not distinguish between full-time and part-time employment, it can be assumed that many of these jobs are part-time, low-wage, low-skill jobs. The dominance of such jobs in the list of the largest jobs is cause for concern.

Figure 2.5 shows the occupations that are projected to grow the fastest between 2012 and 2022 for Massachusetts and the North Shore region. For the

North Shore, only three of the top twenty jobs that are projected to grow the fastest generally require a Bachelor's degree. By contrast, nine of the top 20 occupations statewide by projected growth generally require a Bachelor's degree. This chart suggests that the North Shore is projected to trail the state in growing high paying jobs. This finding is of particular concern since the North Shore region has relatively high cost housing and other high costs of living. The North Shore needs to grow good jobs that pay good wages in order to succeed. Chapter 4 will show that the region's critical industries offer such potential.

Registered Nurses are projected to have the largest number of new jobs created between 2012 and 2022, both in Massachusetts and in the North Shore region. The majority of the other top 20 jobs by numbers of new jobs projected have relatively low-skill and education requirements and pay low wages. This is true for both the North Shore and the state as a whole.

*The occupational distribution of the critical industries is provided in Appendix B.

FIGURE 2.5 Top 20 Fastest Growing Occupations: 2012-2022

MASSACHUSETTS			NORTH SHORE		
RANK	OCCUPATION	PROJECTED GROWTH	RANK	OCCUPATION	PROJECTED GROWTH
1	Skin Care Specialists	52.6%	1	Home Health Aides	39.3%
2	Helpers – Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	44.0%	2	Taxi Drivers and Chauffeurs	34.3%
3	Interpreters and Translators	42.1%	3	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	32.6%
4	Diagnostic Medical Sonographers	42.1%	4	Fitness Trainers and Aerobics Instructors	31.7%
5	Animal Trainers	42.0%	5	Personal Care Aides	31.3%
6	Home Health Aides	40.4%	6	Market Research Analysts and Marketing Specialists	28.6%
7	Information Security Analysts	39.1%	7	Bartenders	27.1%
8	Personal Care Aides	38.1%	8	Food Servers, Non-restaurant	26.4%
9	Helpers – Electricians	37.7%	9	Cooks, Restaurant	26.2%
10	Brickmasons and Blockmasons	37.0%	10	Physical Therapists	26.0%
11	Meeting, Convention, and Event Planners	35.0%	11	Childcare Workers	24.2%
12	Health Specialties Teachers, Postsecondary	34.8%	12	First-Line Supervisors of Food Preparation and Serving Workers	23.8%
13	Nursing Instructors and Teachers, Postsecondary	34.3%	13	Carpenters	22.7%
14	Statisticians	33.2%	14	Combined Food Preparation and Serving Workers, Including Fast Food	22.7%
15	Operations Research Analysts	31.9%	15	Medical and Health Services Managers	22.6%
16	Market Research Analysts and Marketing Specialists	31.7%	16	Licensed Practical and Licensed Vocational Nurses	21.0%
17	Physical Therapist Aides	30.5%	17	Mental Health Counselors	20.2%
18	Physical Therapist Assistants	30.5%	18	Registered Nurses	19.7%
19	Marriage and Family Therapists	30.0%	19	Healthcare Social Workers	19.1%
20	Cardiovascular Technologists and Technicians	29.9%	20	Hairdressers, Hairstylists, and Cosmetologists	18.8%

Source: Massachusetts Executive Office of Labor and Workforce Development.

FIGURE 2.6 Top 20 Occupations Projected to Grow the Most Jobs: 2012-2022

MASSACHUSETTS			NORTH SHORE		
RANK	OCCUPATION	PROJECTED NUMBER OF NEW JOBS	RANK	OCCUPATION	PROJECTED NUMBER OF NEW JOBS
1	Registered Nurses	14,557	1	Registered Nurses	792
2	Combined Food Preparation and Serving Workers, Including Fast Food	12,492	2	Waiters and Waitresses	754
3	Retail Salespersons	9,336	3	Home Health Aides	729
4	Waiters and Waitresses	8,264	4	Retail Salespersons	704
5	Personal Care Aides	8,255	5	Combined Food Preparation and Serving Workers, Including Fast Food	600
6	Home Health Aides	7,979	6	General and Operations Managers	452
7	Nursing Assistants	6,768	7	Cooks, Restaurant	406
8	General and Operations Managers	6,649	8	Nursing Assistants	394
9	Software Developers, Systems Software	6,261	9	Personal Care Aides	353
10	Management Analysts	5,967	10	Customer Service Representatives	337
11	Cooks, Restaurant	5,659	11	Social and Human Service Assistants	307
12	Customer Service Representatives	5,654	12	Carpenters	305
13	Software Developers, Applications	5,584	13	Bookkeeping, Accounting, and Auditing Clerks	282
14	Medical Secretaries	5,155	14	First-Line Supervisors of Food Preparation and Serving Workers	281
15	Market Research Analysts and Marketing Specialists	4,779	15	Bartenders	270
16	Bookkeeping, Accounting, and Auditing Clerks	4,540	16	Fitness Trainers and Aerobics Instructors	266
17	Hairdressers, Hairstylists, and Cosmetologists	4,464	17	Hairdressers, Hairstylists, and Cosmetologists	261
18	Accountants and Auditors	4,456	18	Licensed Practical and Licensed Vocational Nurses	255
19	Carpenters	4,389	19	Laborers and Freight, Stock, and Material Movers, Hand	252
20	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	4,335	20	Taxi Drivers and Chauffeurs	226

Source: Massachusetts Executive Office of Labor and Workforce Development.

Conclusions

The North Shore region of Massachusetts has several distinctive demographic characteristics that impact the regional workforce. The region is growing more slowly than both the state and the nation as a whole. This may be all right for the region as long as the people who are moving into the region have the education, skills, and experience that critical industry employers are looking for. As these skills requirements are increasing all the time, it will be important to focus on improving the skills and education levels of the region's population to prevent a skills gap from impacting employment growth.

The growth projections for the region are a mixed bag. It is good to see that there are significant areas of occupational growth projected for the region through 2022. It is also good to see that many of these jobs are concentrated in the critical industry areas, particularly in health care. However, it is concerning that many of the occupations that are projected to grow the fastest or to produce the greatest number of new jobs are low-paying, with relatively low skills and education requirements. This suggests that the North Shore Workforce Investment Board and other stakeholders will need to work closely with industry to develop advancement opportunities for workers in these occupations.

CHAPTER 3

North Shore Regional Industrial Demand

Regional industry composition is likely to change over time. Sometimes this change is gradual, the result of small changes in the economy or the impact of specific entrepreneurs. Other times, change may be more dramatic, due to national recessions, large company strategic decisions, or national policy. Over the past ten years, many of these factors have impacted the North Shore. The Great Recession resulted in substantial job losses across all industries. Some of these industries have seen employment rebound and others have not. Overall, the region is in a time of great change.

This chapter will look at North Shore regional industrial demand from a historical perspective, using a number of lenses. By combining multiple perspectives, we hope to better understand which industries are critical to the region and represent the best opportunities for workforce system focus and investment. We also seek to identify potential emerging industries that may offer excellent opportunities in the future.

Regional Employment by Industry

Over the past ten years, the North Shore Labor Market has undergone significant changes. While the largest industries in terms of employment have remained Health Care, Retail Trade, Durable Goods Manufacturing, and Accommodation and Food Services, there have been substantial changes in employment.

FIGURE 3.1 North Shore Private Sector Employment: 2004-2013

INDUSTRY	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	CHANGE 2004-13
Agriculture, Forestry, Fishing and Hunting	525	528	481	462	527	471	431	417	433	441	-16.00%
Construction	6,619	6,688	6,989	7,354	6,768	5,606	5,400	5,512	5,798	6,306	-4.73%
Durable Goods Manufacturing	15,145	15,378	14,983	15,249	14,535	12,228	12,340	13,040	12,510	12,223	-19.29%
Non-Durable Goods Manufacturing	5,436	5,246	5,063	4,702	4,630	4,285	4,190	4,146	4,178	4,167	-23.34%
Retail Trade	26,789	26,866	26,347	25,794	25,368	25,131	25,476	25,459	25,655	25,617	-4.37%
Transportation and Warehousing	2,232	2,236	2,134	2,139	2,247	2,248	2,320	2,235	2,318	2,350	5.29%
Information	2,962	2,891	2,554	2,627	3,085	2,946	2,980	2,941	3,897	3,851	30.01%
Finance and Insurance	5,646	5,659	6,406	6,165	5,963	5,727	5,769	5,634	5,531	5,487	-2.82%
Professional and Technical Services	7,581	7,780	8,064	8,190	7,847	7,431	7,579	7,760	8,068	7,954	4.92%
Administrative and Waste Services	7,526	6,937	8,227	7,318	7,377	6,620	6,528	6,787	7,355	7,592	0.88%
Educational Services	2,728	2,821	2,827	3,041	3,103	3,158	2,984	3,097	3,264	3,306	21.19%
Health Care and Social Assistance	24,478	24,531	25,704	26,854	27,608	28,357	29,567	30,053	30,897	33,195	35.61%
Arts, Entertainment, and Recreation	3,786	3,507	3,406	3,582	3,710	3,420	3,034	3,098	3,168	3,197	-15.56%
Accommodation and Food Services	15,258	15,349	14,856	15,441	15,609	15,939	15,667	15,947	16,454	17,060	11.81%
Other Services, Except Public Admin	6,839	6,797	6,942	7,076	7,354	7,541	7,865	7,973	8,032	7,241	5.88%
Total Private Sector Employment	144,211	143,853	145,076	146,352	147,547	141,138	141,947	144,003	146,496	148,504	2.98%

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

FIGURE 3.2 North Shore Private Sector Establishments: 2004-2013

INDUSTRY	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	CHANGE 2004-13
Agriculture, Forestry, Fishing and Hunting	139	134	128	118	113	105	109	111	112	116	-16.55%
Construction	1,244	1,236	1,245	1,225	1,218	1,162	1,188	1,201	1,129	1,083	-12.94%
Durable Goods Manufacturing	383	352	343	335	333	325	325	312	296	294	-23.24%
Non-Durable Goods Manufacturing	224	197	200	183	170	161	161	160	161	162	-27.68%
Retail Trade	1,705	1,668	1,646	1,636	1,654	1,623	1,650	1,680	1,652	1,659	-2.70%
Transportation and Warehousing	215	195	192	201	202	197	215	220	197	198	-7.91%
Information	212	188	176	173	191	191	185	194	189	188	-11.32%
Finance and Insurance	550	558	564	545	539	519	531	529	506	502	-8.73%
Professional and Technical Services	1,456	1,385	1,394	1,369	1,372	1,364	1,407	1,461	1,421	1,379	-5.29%
Administrative and Waste Services	669	625	640	645	658	648	650	669	651	662	-1.05%
Educational Services	125	125	128	134	138	143	139	153	150	153	22.40%
Health Care and Social Assistance	1,047	1,023	1,017	1,028	1,024	1,024	1,030	1,098	1,082	2,089	99.52%
Arts, Entertainment, and Recreation	244	231	232	226	220	215	222	232	236	243	-0.41%
Accommodation and Food Services	996	977	967	993	1,006	1,002	1,029	1,063	1,046	1,060	6.43%
Other Services, Except Public Admin	1,612	1,594	1,642	1,691	1,758	1,824	1,983	2,026	2,048	1,145	-28.97%
Total Private Sector Establishments	12,008	11,610	11,634	11,641	11,733	11,621	11,944	12,232	11,924	11,951	-0.47%

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

Overall, private sector employment grew 2.98% between 2004 and 2013. 2009 and 2010 had substantial employment declines due to the Great Recession. Only in 2013 has total private sector employment come back to exceed pre-recession levels. Several important regional industries still have not fully recovered. Durable Goods Manufacturing lost over 19% of its employment over the past ten years, while Non-Durable Goods Manufacturing employment is down 23% and Arts, Entertainment, and Recreation private sector employment is down over 15%.

While there has been significant employment decline in some industries, others have seen quite significant expansion. Health Care and Social Assistance saw the greatest employment growth, over 35% over the past ten years. This growth is of particular significance to the region as the industry is the largest private sector employer in the region. Information also saw a very strong percentage employment increase (30%), albeit to a total employment of only 3,851. Two other industries demonstrated employment growth over 10%:

Educational Services (21%) and Accommodation and Food Services (11.8%).

Overall, the region benefits from having several of its largest employment industries also demonstrating significant employment growth. Durable Goods Manufacturing, on the other hand, is a large employer in the region that is seeing a decrease in employment. Information is a relatively small industry in terms of total employment but the rapid growth it has demonstrated over the past ten years suggest that it may be an industry of emerging importance in the region.

Another way of looking at industrial employment in a region is by looking at the number of businesses that are present. Industries with relatively smaller employment but larger numbers of establishments may be in a regional expansion phase, particularly if the number of establishments is increasing. This could make the industry a positive one for workforce investment. However, an industry that is showing declining employment and that is dominated by one or a few large businesses may be more risky to invest in.

Establishment data for the North Shore shows a decline in the number of businesses in most of the critical industries in the region. Over the past ten years, there has been a 12.9% decrease in Construction establishments and a 23.2% decrease in the number of Durable Goods Manufacturing companies. These decreases are likely driven by a shakeout in these industries due to the Great Recession. In manufacturing, there also have been changes in the type of manufacturing industries in the region, as discussed in greater detail in Chapter 4.

Finance and Insurance saw an 8.7% decrease in the number of establishments over the past ten years. This was most likely due to consolidation in the industry through mergers that have reduced the number of individual banking establishments needed in a particular geography. Health Care and Social Assistance saw little change in the number of establishments in the region after taking into account a change in the categorization of a group of establishments in 2013.*

It is also interesting to examine employment by establishment size.

The majority of businesses in the North Shore region, as in most regions, have relatively small numbers of employees. Eighty-eight percent of all businesses in the region have fewer than 20 employees. However, this fact alone does not tell the whole story.

FIGURE 3.3 North Shore Employment by Establishment Size: 2013

NUMBER OF EMPLOYEES	UNITS	%	EMPLOYMENT	%
0	1,828	15	0	0
1 - 4	5,493	45	11,071	7
5 - 9	2,133	17	14,081	8
10 - 19	1,372	11	18,459	11
20 - 49	884	7	26,924	16
50 - 99	329	3	22,461	14
100 - 249	193	2	27,926	17
250 - 499	38	0	13,297	8
500 - 999	24	0	16,375	10
1,000 +	9	0	15,538	9
Totals	12,303	100	166,132	100

Source: Massachusetts Executive Office of Labor and Workforce Development, Establishments and Employment by Size.

Businesses with fewer than 20 employees comprise only 26% of employment in the region. The thirty-three businesses in the region with more than 500 employees make up 19% of the total employment in the region, while business with more than 100 employees comprise 44% of the region's total employment.** This data suggests that while the common mantra of small businesses being the largest employers, one cannot forget the larger establishments which seem to be driving current employment in the North Shore region.

Regional Employment Concentration

Another way to examine the industrial composition of a region is through location quotients. A local quotient demonstrates the relative concentration of an industry in two regions. In Table 3.3, the Massachusetts location quotients compare the Commonwealth of Massachusetts employment concentration to that of

FIGURE 3.4 Location Quotients by Major Industries: 2013

INDUSTRY	MA	NORTH SHORE
Agriculture, Forestry, Fishing, and Hunting	0.23	1.20
Construction	0.83	1.00
Manufacturing	0.82	1.27
Utilities	0.72	0.78
Wholesale Trade	0.84	0.76
Retail Trade	0.90	1.43
Transportation and Warehousing	0.68	0.62
Information	1.25	0.87
Finance and Insurance	1.15	0.64
Real Estate and Rental and Leasing	0.83	0.85
Professional and Technical Services	1.33	0.56
Management of Companies and Enterprises	1.21	0.42
Administrative and Waste Services	0.80	0.87
Educational Services	1.99	0.48
Health Care and Social Assistance	1.26	1.14
Arts, Entertainment, and Recreation	1.01	1.19
Accommodation and Food Services	0.91	1.17
Other Services, Except Public Administration	1.05	1.26

Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202 Annual Data. Analysis by Will Sinatra.

* A group of slightly over 1,000 businesses was moved from the Other Services, Ex. Public Administration category to the Health Care and Social Assistance category in 2013. This resulted in no net change in employment for the region but does serve to make Health Care and Social Assistance employment seem to dramatically increase in 2013, the last year of the series.

** These data include both public and private sector employment.

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 & Lichty, 2000).

Massachusetts has a higher concentration in Information, Professional and Technical Services, Educational Services, and Health Care and Social Assistance as compared to the nation as a whole. Massachusetts has notably lower employment concentrations in Manufacturing, Construction, Utilities, and Transportation and Warehousing. The North Shore region has a higher concentration of Retail Trade, Manufacturing, and Health Care and Social Assistant as compared to Massachusetts as a whole. The North Shore has a lower concentration of information, Finance and Insurance, and Professional

and Technical Services compared to Massachusetts as a whole.

Several of the North Shore’s largest industries are highly concentrated in the region. Health Care and Social Assistance is highly concentrated in Massachusetts, compared to the nation, and even more highly concentrated in the North Shore compared to the state as a whole. This analysis indicates that Health Care and Social Assistance is likely to remain a strong part of the North Shore economy in the future. Manufacturing is a case where the industry is not heavily concentrated in the state but it is concentrated in the region. This concentration suggests that the North Shore may have a comparative advantage in manufacturing that is worthy of support.

FIGURE 3.5 Industry Growth Projects: 2012-2022

INDUSTRY	MASSACHUSETTS GROWTH PROJECTIONS	NORTH SHORE GROWTH PROJECTIONS
Natural Resources and Mining	NOT LISTED	NOT LISTED
Construction	27.60%	27.10%
Manufacturing	-9.20%	-9.30%
Utilities	4.80%	NOT LISTED
Wholesale Trade	6.70%	18.50%
Retail Trade	7.30%	8.60%
Transportation and Warehousing	9.30%	9.60%
Information	8.30%	-10.00%
Finance and Insurance	9.30%	10.30%
Real Estate and Rental and Leasing	9.60%	18.50%
Professional and Technical Services	20.70%	20.50%
Management of Companies and Enterprises	5.70%	9.10%
Administrative and Waste Services	7.40%	2.50%
Educational Services	8.50%	5.90%
Health Care and Social Assistance	21.40%	20.80%
Arts, Entertainment, and Recreation	26.20%	27.50%
Accommodation and Food Services	17.30%	17.90%
Other Services, Except Public Administration	20.60%	23.20%

Source: Massachusetts Executive Office of Labor and Workforce Development, Industry Projections by Area.

Growth Projections

Employment projections are always difficult to make, in large part because of unforeseen issues such as the Great Recession from which the state and the region are still recovering. The most recent industrial growth projections are for the period 2012-2022.

Arts, Entertainment, and Recreation and Construction are projected to be the two fastest growing industries in the North Shore region over the ten year period ending in 2022. Health Care and Social Assistance is also projected to demonstrate a high level of employment growth. Only the Information and Manufacturing industries are projected to have employment declines over through 2022.

Extreme care should be taken in using employment growth projections to drive policy as they are notoriously subject to change over longer periods of time. Many events will occur that will influence employment growth in unforeseen ways. Policymakers are advised to favor direct research and ongoing discussions with employers over long-term projections in determining where to make workforce development and educational investments.

Real Time Labor Market Data

The advent of real time labor market data tools has made it possible for researchers to have much more timely information on jobs that employers are currently advertising and, presumably, hiring for. “Real-time labor market information is an emerging web tool for tracking the extent and nature of employers’ demand for labor by occupation, industry, and geography” (Reamer, 2013). This enables access to information on

demand levels, job content, and education and skills requirements of jobs in very close to real time. One of the key recommendations of this report is that the North Shore Workforce Investment Board and its partners take maximum advantage of this new tool to stay current on employer demand for workers.

Figure 3.5 shows data from Wanted Analytics on job advertisements for the North Shore region for the months of May, June, and July 2014. For job advertisements for which the industry could be identified, Retail Trade was by far the largest advertiser, with 18.5% of all advertisements. Health Care and Social Assistance was the second largest with 11.2% of all advertisements placed.

Caution must be taken in the interpretation and use of real time labor market data. While every effort is made to avoid counting the same job twice, it can still happen. Also, some companies that are hiring do so primarily through referrals rather than job advertisements, so their demand is likely to be under-reported. Other companies run continual

advertisements to make sure they have a pool of resumes to draw from in the event of rapidly increasing employment demand. Their demand may be over-reported in this case.

North Shore Career Center Data

The North Shore Career Centers offer businesses the opportunity to list job openings in an online database for free. This free database offers a different value proposition than most of the job advertisements tracked through the real-time labor market data described in the previous section.

The North Shore Career Centers listed a total of 1,044 individual jobs over the course of twelve months. Three industry sectors had more than 10% of the listings: Manufacturing (22.8%), Health Care and Social Assistance (15.4%), and Retail Trade (13.7%). Other industries with a relatively large number of job postings included: Administrative and Waste Services, and Accommodation and Food Services. The strong representation of Manufacturing

FIGURE 3.6 Wanted Analytics Real Time Labor Market Data: May to July, 2014

INDUSTRY	JOB LISTINGS	PERCENTAGE OF TOTAL
Agriculture, Forestry, Fishing, and Hunting	10	0.1%
Construction	104	0.9%
Manufacturing	845	6.9%
Utilities	1	0.0%
Wholesale Trade	394	3.2%
Retail Trade	2,260	18.5%
Transportation and Warehousing	307	2.5%
Information	297	2.4%
Finance and Insurance	439	3.6%
Real Estate and Rental and Leasing	244	2.0%
Professional and Technical Services	321	2.6%
Management of Companies and Enterprises	63	0.5%
Administrative and Waste Services	590	4.8%
Educational Services	975	8.0%
Health Care and Social Assistance	1,366	11.2%
Arts, Entertainment, and Recreation	34	0.3%
Accommodation and Food Services	571	4.7%
Other Services, Except Public Administration	284	2.3%
Public Administration	188	1.5%
Not Categorized	2,901	23.8%
Total	12,194	100.0%

Source: Wanted Analytics May-July 2014.

FIGURE 3.7 North Shore Career Center Job Postings by Industry: July 2013 to June 2014

INDUSTRY	JOB LISTINGS	PERCENTAGE OF TOTAL
Agriculture, Forestry, Fishing, and Hunting	10	1.0%
Construction	27	2.6%
Manufacturing	238	22.8%
Utilities	3	0.3%
Wholesale Trade	9	0.9%
Retail Trade	143	13.7%
Transportation and Warehousing	47	4.5%
Information	8	0.8%
Finance and Insurance	27	2.6%
Real Estate and Rental and Leasing	12	1.1%
Professional and Technical Services	45	4.3%
Management of Companies and Enterprises	5	0.5%
Administrative and Waste Services	101	9.7%
Educational Services	19	1.8%
Health Care and Social Assistance	161	15.4%
Arts, Entertainment, and Recreation	26	2.5%
Accommodation and Food Services	91	8.7%
Other Services, Except Public Administration	40	3.8%
Public Administration	32	3.1%
Total	1,044	100.0%

Source: North Shore Career Centers.

in the job listing data is particularly impressive. The Construction and Finance and Insurance industries are quite under-represented with only 2.6% of the total job listings for each of these industries. The reasons for these results are beyond the scope of this research but it will be worth the time for the North Shore Workforce Investment Board to take these results into consideration for future program planning.

Conclusions

The North Shore region, like Massachusetts and the nation, was rocked by the Great Recession. Many jobs were lost and many companies either went out of business or were forced to cut back dramatically. Only in the last two years was the regional economy able to begin recovering in a serious way. While the economy has been slow to recover, the North Shore region has several items in its favor to support such a recovery. First, the North Shore region has an educated workforce that can support the high value-added companies that are likely to be most successful in the future. Second, the North Shore region has a strong base of companies and industry sectors that are growing nationally and have the potential to grow even faster as the economy recovers. Finally, the North Shore region has a strong history and present culture of innovation (see Chapter 5) that can drive regional growth over the next 3-5 years.

Two critical questions for this analysis is where will the growth come from and what are the human resources needs of the industries and companies that will drive this growth? The industries that will drive growth in the region appear to remain the critical industries that the North Shore Workforce Investment Board has identified in the past: Construction, Durable Goods Manufacturing, Finance and Insurance, and Health Care and Social Assistance. These industries continue to share the criteria that the NSWIB developed for its critical industries: Being a large employer that offers decent wages, career advancement opportunities, and projections of growth in employment opportunities. These four industries, despite some challenges, continue to offer these opportunities. Chapter 4 will provide a detailed discussion of the human resources needs of each industry.

CHAPTER 4

Critical Industries

Resource constraints necessitate the selection of critical industries on which to focus the efforts of the public workforce investment system and its partners. While the system is available to serve all businesses and job seekers, the North Shore Workforce Investment Board has developed a set of criteria for the selection of critical industries in the region.

These criteria include:

- Total private sector employment.
- Wages.
- Career ladder opportunities for workers in the industry.
- Projected growth of the industry and critical occupations within the industry.

Based on these criteria, Health Care, Durable Goods Manufacturing, Construction, and Financial Services have been selected as the region's critical industries. These industries have demonstrated significant regional employment, the ability to maintain employment levels over time, and strong wages and career opportunities for workers.

Over the past ten years, Health Care and Social Assistance employment demonstrated consistent employment growth over the past ten years and is by far the largest industry in terms of employment of the four critical industries.

The second largest industry, Durable Goods Manufacturing, saw the largest employment decline during the Great Recession but that job loss appears to have leveled off over the past three years. Construction and Finance and Insurance each lost a small amount of their employment over the ten years but for the most part have seen little change in employment.

The remainder of this chapter provides a detailed look at the opportunities and challenges presented by each of these industries on the North Shore.

Construction

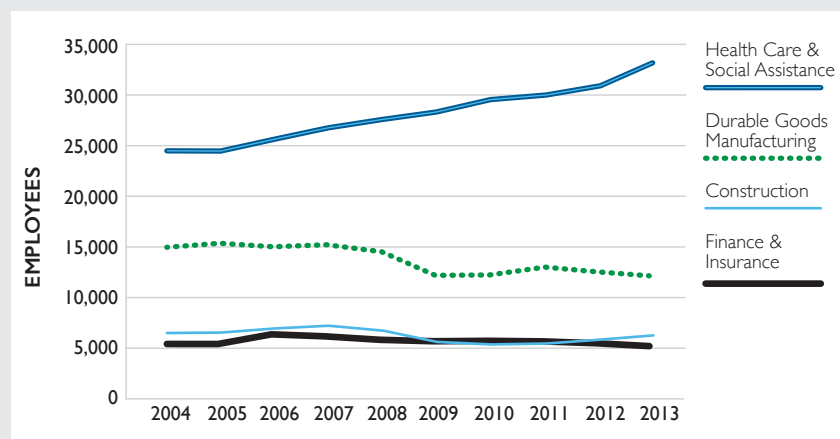
Construction has been one of the critical industries in the North Shore region for a long time. In the last ten years, Construction has lost 4.73% of its employment on the North Shore. The industry was hard hit in 2009 and 2010 but in 2013 construction employment increased and it is projected to increase quite substantially over the next ten years.

Construction employment is concentrated in the Specialty Trade Contractors sector, with 4,254 employees in 2013. Construction of Buildings and Heavy and Civil Engineering Construction sectors have each about one third the employment of the Specialty Trade Contractors sector.

Critical Sectors

The Specialty Trades Contractors sector is very diverse. Companies in the sector focus on one or more aspects of the construction, maintenance, or repair of

FIGURE 4.1 North Shore Critical Industries Annual Employment: 2004-2013



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

buildings and building systems. These companies range from plumbing and heating and air conditioning to electrical work, roofing, painting, and carpentry. The common element is their employment focus on the trades.

One of the key workforce development benefits of the construction industry is that the majority of the positions in the industry do not require a Bachelor's degree. Most of the occupations that employ large numbers of workers (see Appendix B for details) do not require a Bachelor's degree. These occupations are most often part of the trades and 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.

Positions in the construction industry are traditionally accessed through a combination of education and hands-on job experience. One of the critical elements for supporting construction industry employment is to enhance the recruitment pipelines for the industry. Most of the industry representatives interviewed for this research cited a need to inform students and parents about the positive benefits of a trade career. The trades offer good wages, a defined career ladder, and even entrepreneurship opportunities

Voices from the Field: Construction Leaders Speak

“It’s not hard to find people with technical skills. What is harder to find is people with good interpersonal skills and work ethic.”

“Labor is expensive and equipment is cheap.”

“Specialty trades such as glaziers and wood frame carpenters are still hard to find.”

as experience is gained. Providing more opportunities for students to pursue education at vocational technical schools in the trades is seen as an important way to build the construction workforce of the future.

Trade knowledge is gained through a combination of trade schools, apprenticeship training, licensure, and on-the-job experience. The predominance

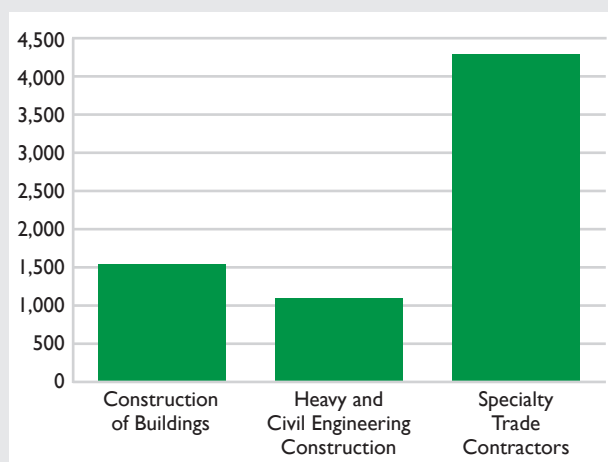
of craft knowledge makes the organization of specialty trade labor markets distinctive. Unions (through apprenticeship programs and hiring halls) govern much of the recruitment, training, and placement process. It is indicative of the increasing skills and education requirements of the industry that the carpenters union has partnered with Wentworth Institute of Technology to provide all apprentices who complete their training with an Associate's degree as well. People who complete this program can go on to complete a Bachelor's degree, which can open up additional opportunities in the future. The line between employers and employees can occasionally blur, as craft workers—both union and nonunion—sometimes establish independent contracting businesses.

The construction industry offers several opportunities and issues that need to be recognized. One key factor is the project-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. A positive benefit of the industry is that it offers the opportunity for many workers to earn a very good living using their hands.

Critical Occupations and Human Resources Challenges

The complete listing of pre-baccalaureate positions in the Specialty Trade Contractors sector is provided in Appendix B. The top five occupations in the Specialty Trade Contractors sector are Electricians, Construction Laborers, Plumbers, Pipefitters, and Steamfitters, Heating, Air Conditioning, and Refrigeration Mechanics and Installers, and Carpenters.

FIGURE 4.2 North Shore Construction Employment by Sector: 2013



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

Details on some of the key occupations are provided below. These descriptions build on the work from past blueprints and from the key informant interviews conducted between May and August 2014.

Electricians

Duties: Installing, testing, and repairing electrical power, telecommunications wiring and equipment, 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.

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 the 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 the skilled crafts (usually two to five years), positive work history during apprenticeship. Some fields require licensing.

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. Specialty training in areas such as hospital construction can also drive more work for people who complete this training.

Regardless of position, the key success factor for employment in the construction industry is work ethic. Construction sites require employees that can get the work done rapidly and in a high quality manner and then move on to the next task. Business profitability counts on it, particularly in an area such as the North Shore that has a limited weather window for a lot of the available construction work. Foundational skills, such as communication skills and the ability to accept supervision and take on new knowledge are also critical.

FIGURE 4.3 Specialty Trade Contractors Employment by Levels: 2013



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

Advancement Opportunities

As shown in Figure 4.3, the majority of Specialty Trade Contractors pre-baccalaureate employment is in the highest level. This reflects the importance of apprenticeships and the career ladder from apprentice to journeyman to master in the trades. It is interesting to note that there appear to be fewer jobs lower down in the pipeline, which is not what one would expect. A more usual pattern would be a pyramid of employment, with quite a few jobs at the lower level and fewer jobs at each progressive level. This issue should be further explored with industry and union representatives.

Advancement opportunities in the construction industry generally come about in one of three ways. The most traditional way is move up the apprenticeship ladder, from apprentice to journeyman to master in one of the trades. The second way to advance is move into ancillary positions such as estimators that require hands-on experience in the trades and offer better wages and more opportunities. Finally, many workers in the construction industry advance through opening their own small businesses.

Conclusion

The construction industry is very cyclical. Currently, there are quite a few openings in construction and the projections over the next eight years are also very good. The time may be right to work with the K-12 educational system and other stakeholders to raise

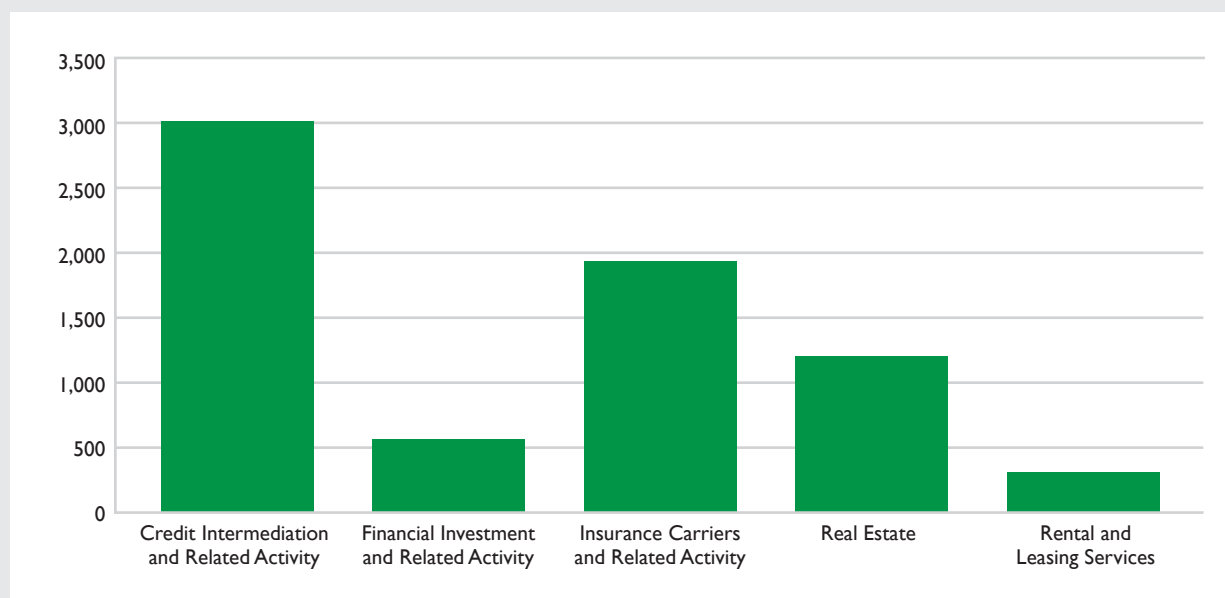
awareness of the opportunities for good jobs and strong wages that the construction industry can provide. The regional workforce development system should develop plans to address both current opportunities and future transitional needs for the construction industry and its workers.

Financial Services

The Financial Services industry has historically been a large employer in the North Shore region. It has been selected as a critical industry by the North Shore Workforce Investment Board since 2007 (Quimby, 2010; Quimby, 2007). Since 2007, Financial Services employment has been slowly decreasing year by year, but it still remains one of the larger employers in the North Shore region.

Several factors are impacting the industry on the North Shore. Consolidation and mergers has likely led to a small loss in total industry employment. This trend appears likely to continue. At the same time, there has been a trend toward more branch locations to ensure that banking options are close to the customers that businesses are trying to reach. Key informant interviews conducted for this project suggest that new location openings may be slowing down in the future as the region appears to be quite well built out in terms of financial services locations. Finally, technology has changed consumer behavior and the requirements of the industry. Consumers are increasingly using mobile

FIGURE 4.4 North Shore Finance and Insurance Employment by Sector: 2013



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

technology to do their banking and come to branches for services far less often than in the past. The industry has not been slow to take advantage of technology to meet customer and regulatory demands, as well as to reduce its costs. These changes have resulted in important changes to the industry's workforce needs.

Critical Sectors

Three sectors make up the bulk of the Financial Services on the North Shore. The largest sector, as shown in Figure 4.4 is Credit Intermediation and Related Activities, more commonly referred to as the banking sector. This sector made up 43% of the employment in the Financial Services industry in 2013. Insurance Carriers and Related Activities (27%) and Real Estate (17%) provided the majority of the remaining employment in the industry. A combination of volume of employment and the concentration of jobs that are projected to grow and do not require a Bachelor's degree led to a focus on the banking sector of the financial services industry.

The banking sector simultaneously faces two main influences on its activities. Like all businesses, banks and credit unions are influenced by customer demand. Customers have more choices than ever in the industry due to the growing influence of technology. One needn't be local to one's bank for either making deposits or obtaining loans, both critical functions for banks and credit unions. Therefore, there is an increasing demand for the capability to use technology on the part of all employees. There is also a need to make the best possible use of the interactions that companies do with their customers in person. Every person in the bank is being required to learn sales techniques in order to maximize business opportunities in every in-person interaction with a customer.

The second critical influence on banks and credit unions is regulatory. Banking has always been a regulated industry, but the volume and complexity of banking regulations have increased dramatically over the past ten years. Every person in the industry, from front-line tellers to senior management, needs to be able to understand their role in the regulatory environment and also to be able to respond quickly

to changes as they occur. The regulatory challenge is also an opportunity as it is opening up new job opportunities, particularly in back-office jobs.

Critical Occupations and Human Resource Challenges

Even as the industry changes, banking remains quite traditional in some ways. Most banks and credit unions take a great deal of pride in the fact that many of their senior management started in the industry on the frontlines. Many people get their start in the industry on a part-time basis, often through teller positions. Recently, many new tellers have been either college

students or recent college graduates.

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.

Historically, the main entry-level position was the Teller position. To some extent that remains true but the position has changed dramatically. The skills and educational requirements for the position have increased dramatically over the last five to seven years. There are also few "pure" teller positions anymore.

Most teller positions have been merged into dual role positions that include customer service and sales, in addition to traditional teller work. One of the main factors driving this change is that there are fewer teller transactions at each branch but the transactions that are handled by a teller tend to be more complex. Excellent foundational skills such as communication and interpersonal skills, sales ability, accuracy, and math ability are required.

Employers are looking for much higher level skills and educational backgrounds on the part of the new teller hires. Most employers interviewed for this research stated that it was harder to get in to the industry than in the past. While having a Bachelor's degree is rarely a requirement, many new tellers do have it. A common entryway to the teller position is for college students to work as part-time tellers during their college years and then enter a full-time teller job upon graduation.

Voices from the Field: Banking Leaders Speak

"Workforce etiquette is one of the keys to success."

"IT and compliance requirements are driving increased education and skill demands."

"Tellers are required to do more and to know more."

"There are fewer 'pure' roles."

Teller

Duties: Processing transactions, interacting with customers person-to-person, adhering to individual company procedures for handling and recording transactions, and 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. Handle increasingly complex transactions within regulatory compliance.

Critical Degrees, Credentials, Skills: High school diploma or GED required, Bachelor's degree often preferred; prior experience with cash handling and/or customer service; excellent communication skills; attention to detail. 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:

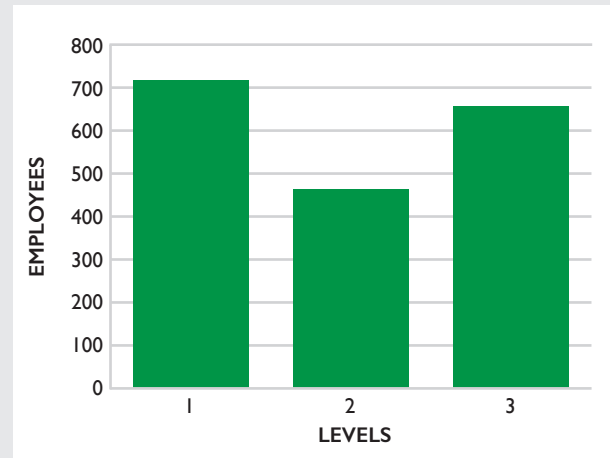
- Teller ▶ Senior Teller ▶ Teller Manager ▶ Assistant Branch Manager
- Teller ▶ Retail Lending Associate ▶ Closer ▶ Underwriter ▶ Commercial Loan Officer
- Teller ▶ Customer Service Representative ▶ Sales
- Teller ▶ Platform Position ▶ Loan Officer ▶ Assistant Manager ▶ Branch Manager

Requirements for Advancement: Positive work experience, company-sponsored training. Some positions require an associate's or bachelor's degree. Information Technology experience at a deep level can also help.

The fastest growing set of occupational opportunities in the banking sector is information technology positions. The volume of these opportunities is being driven by regulations, compliance requirements, and security. These positions generally require deep levels of IT knowledge as well as deep levels of knowledge about banking and the regulatory environment. People in these positions must be capable of developing and overseeing the implementation of customized solutions related to banking and regulatory requirements. Most people in these positions to date have come up from the industry but the high demand for these occupations may drive external hiring in the future.

The most significant human resources challenges being faced by the industry are finding people who can meet the ever-increasing skills and education requirements. For tellers, some of the foundational skills requirements include strong work ethic, math skills, cash handling experience, customer service

FIGURE 4.5 North Shore Credit Intermediation Employment by Levels: 2013



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

skills, the ability to pass a writing test, and sales ability. English language capability is a key requirement. While being bi-lingual can be helpful, having strong written and spoken English language skills is essential. Employers are also looking for a willingness to constantly learn new things in response to the ever changing demands faced by the industry.

Advancement Opportunities

Although the barrier to entry for positions in the banking sectors is increasing, there are career advancement opportunities available once a person gets into her/his first job in the industry.

Figure 4.5 shows that there are still the greatest numbers of positions that do not require a Bachelor's degree at the entry-level. However, the relative distribution of these positions has changed over time, with far more Level II and Level III positions than in 2007, suggesting that the possibilities for career advancement within the industry may be increasing. IT knowledge, sales ability, and knowledge about the regulations and compliance environment of the industry are the most significant drivers of career advancement in the industry at this time.

Conclusion

The Financial Services industry is going through a period of very significant change. The baseline entry-level position, the teller, is seeing increasing complexity in the job and therefore increasing skills and education requirements to get into the job. The

regulatory environment facing the industry is becoming increasingly complex and reaching down to affect the work of every job, from front-line tellers to senior management. The IT requirements of the industry are increasing to meet both customer demands for real-time service and regulatory compliance requirements. The industry is likely to remain a critical employer on the North Shore for the foreseeable future. Therefore, the regional workforce investment system should continue to explore ways to help potential entrants get the enhanced skills the industry requires.

Health Care

The Health Care and Social Assistance industry has historically been one of the two largest private sector employers on the North Shore. It was one of the few industries that continued to grow through the Great Recession and it has demonstrated further growth over the past two years. Drivers of health care employment growth on the North Shore include the aging of the population, the external perception of the quality of health care services available in Massachusetts, and the development of new health care facilities in the region.

The health care industry is in the midst of a number of dramatic transformations. Passage of the Affordable Care Act has created more customers for the health care industry as well as increased quality requirements. Of particular interest is the requirement that a portion of the reimbursement for services is based on patient satisfaction scores. Re-hospitalizations are also financially penalized. In Massachusetts, the enactment of Chapter 224 has placed further pressure on the industry to contain health care costs. These pressures ultimately impact every worker in the industry, not least being the frontline workers who spend the most time with patients receiving services.

Health care is critical to the region from a workforce development perspective for three reasons. First, the industry has one of the highest volumes of employment that does not require a Bachelor's degree of any industry. Second, entry-level health care employment has historically been fairly well compensated and carried with it the possibility of career advancement if a worker pursued the available educational opportunities. Third, the vast majority of health care employment is a hands-on endeavor and cannot be readily off-shored. Also, since health care services need to be available 24 hours a day, 7 days a week, more workers are required than in industries that can close down daily and on weekends. While some of these characteristics are

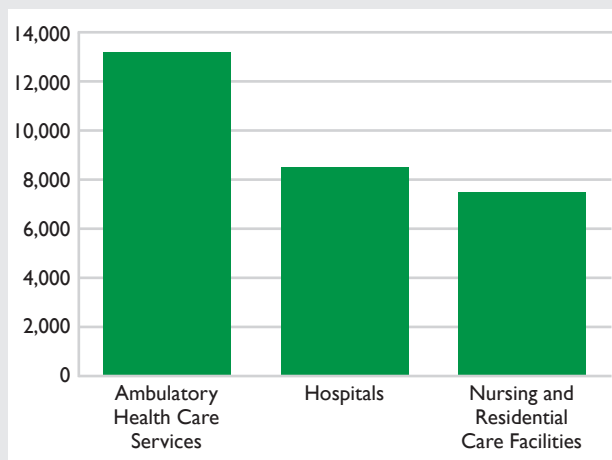
changing, health care is likely to be a critical industry for Massachusetts and the North Shore over the long term.

Critical Sectors

On the North Shore, Health Care employment is concentrated in three sectors, as shown in Figure 4.6. Ambulatory Health Care Services has the largest employment with 13,144 workers in 2013 and represents employment in medical offices and other facilities which provide outpatient care. The Hospital sector is primarily focused in General Medical and Surgical Hospitals and had 8,446 employees in 2013. Nursing and Residential Care Facilities includes Nursing Care Facilities, Residential Mental Health Facilities, and Community Care Facilities for the Elderly and had 7,455 employees in 2013.

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 shared 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. With the dramatic increase in employment in the Ambulatory Health Care Services sector, the workforce development system will need to develop additional ways to work with this sector, as well as the Hospital and Nursing and Residential Care Facilities sectors.

FIGURE 4.6 North Shore Health Care Employment by Sector: 2013



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

Critical Health Care Occupations and Human Resources Challenges

The human resources environment in health care is changing dramatically. Some of the critical changes include increasing education and skills requirements for most positions, the impact of technology, and the impact of new policies and legislation on reimbursements.

The most dramatic human resources challenge in the health care industry is the increasing skill level being required for nearly every position in health care. Examples of this upskilling include:

- The strong preference or requirement for a Bachelor's degree for new nursing hires at many health care organizations.
- Increasing importance of career ladders from the RN position to advanced practice nurse, nurse practitioner, or physician assistant.
- Increasing job tasks being assigned to nursing assistants.
- Requirements for English language skills for every worker, even dietary and environmental positions, in many health care facilities.

These increasing education and skills requirements are affecting nearly every position in the health care industry and across all three sectors.

Health Care is also seeing a dramatic increase in the use of technology. For many years, health care was behind the curve in its use of telecommunications technologies, often still relying on paper files into the twenty-first century. This is no longer the case. In ever growing numbers of health care organizations, every patient interaction must be recorded in an electronic database. Frontline health care workers, nurses, physicians, and supervisors are all using tablets or other hand-held devices to record information and communicate with other members of the patient care team. For many health care employers, the ability to use and understand telecommunications tools is a prerequisite for most jobs in the organization.

Finally, regulatory and reimbursement changes through the Affordable Care Act (ACA), Chapter 224, and other regulations are changing the way costs

are being reimbursed, which in turn is having an impact on workforce policies. Nationally, the ACA is bringing more customers into the health insurance system, which is likely to increase demand for services. Since Massachusetts has had an exchange based insurance system with an individual mandate for quite a few years, the state is likely to see less new business than other states. However, the cost reimbursement mechanisms contained in the ACA are critically important. Of particular note is the inclusion of patient satisfaction scores in the calculation. Since frontline workers such as Nursing Assistants spend the most time with a patient, they play a critical role in how patients perceive the services they receive. Health care businesses are responding to this by increasing

the English language and other communication skills requirements for all staff and include customer service as a critical job requirement for all or most positions. Specific occupations and their skills and education requirements are discussed below.

Nursing

The Registered Nurse (RN) remains the backbone of the health care profession. More nurses are employed than any other occupation in health care and more nursing positions are expected to be created through

2022 than any other position as well. The skills and education requirements are clearly laid out due to the regulations and certifications requirements for nursing. In addition to these, two additional changes have been noted in the course of this research. First, even though the RN position requirements can be met through achieving an Associate's Degree in Nursing (ADN), most hospitals and many employers in the other two sectors are only hiring nurses with Bachelor's degrees in nursing (BSN). This is a marked contrast from the 2010 Blueprint, where we saw a critical nursing shortage in the region. Second, there are additional demands on nurses being driven by regulations, the use of electronic medical records and other technology, and the customer service scoring for reimbursement discussed previously. All of these are combining to make nursing an even more complicated and challenging job than it was previously.

Voices from the Field: Health Care Leaders Speak

"The career ladders that matter to us now don't end with the nurse, they start with the nurse."

"The unit clerk position is becoming more narrow as we move toward electronic medical records."

"Medical Assistants need to get the right training and come from the right training programs."

"Everyone needs to be able to communicate well in English."

One of the most interesting results of the research in health care was the importance of nursing career ladders. This issue was raised most strongly by employers in the hospital sector, but was echoed by other health care employers as well. In the past, health care career ladders have often been focused on helping entry-level workers pursue education and training that would lead to getting the RN certification and gaining employment as a nurse. At this point in time, employers demonstrated little interest in such career ladders. What employers were interested in was the development of career ladders for people who are already nurses to go on to become advanced practice nurses, nurse practitioners, and other higher level occupations. This finding has serious implications for the advancement opportunities for entry-level health care workers as will be discussed in the following section.

Nursing Assistant

The Certified Nursing Assistant (CNA) is the primary entry-level occupation in hospitals and nursing and rehabilitation facilities. Changes in the health care regulatory and reimbursement environments have increased the importance of this position since CNAs often spend more time with a patient than any other person on the care team and can therefore have a great impact on a patient's satisfaction with health care services.

Duties: Dressing, cleaning, and feeding patients, participating as a critical part of the patient care team.

Critical Degrees, Credentials, Skills: Certificate (100 hours of outside training: 75 hours classroom, 25 hours clinical); fluency in written and spoken English; ability to use technology for record keeping and communication; excellent interpersonal and customer service 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 Assistant, and Medical Technologist positions.

It is important to note that the career advancement pathways for the CNA position have been truncated. The Licensed Practical Nurse Position is no longer found in significant numbers in hospitals, which lengthens the distance between rungs on a career

ladder for CNAs. As discussed above, there is less interest in career pathways for entry-level workers and more interest in career ladders for nurses and other higher level employees. Businesses indicated a willingness to invest in their CNA workforce through tuition reimbursement but not through structured programs.

Medical Assistant

The Medical Assistant position is the key direct service health care position in the Ambulatory Health Care Services sector. This position involves:

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.

It is important to note that Ambulatory Health Care Services employers are working with the legislature to expand the scope of practice for Medical Assistants to include the administration of injections. If this expanded scope of practice is implemented, the likely result will be increased hiring for Medical Assistants and decreased hiring for Licensed Practical Nurses, particularly in the Ambulatory Health Care Services sector. This would seriously call into question the long-term viability of the LPN occupation in Massachusetts.

Frontline Service Positions

Positions such as environmental service, housekeepers, and food services workers or dietary technicians are critical in the Hospital and Nursing and Residential Care sectors. These positions require little in the way of formal education or experience. Employers report that these positions are not difficult to fill in the current labor market environment. However, these positions are often requiring higher levels of communication and customer service skills than in the past, as discussed above.

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; English as a Second or Other Language. Obtain skills through in-house courses (computers, medical terminology) or college programs.

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.

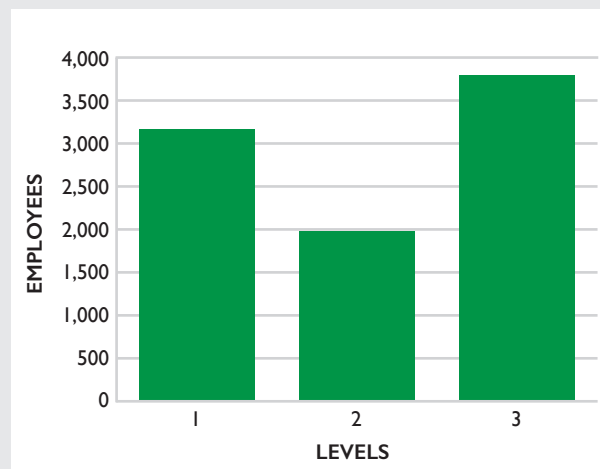
Advancement Opportunities

The career advancement opportunities for workers in positions that do not require a Bachelor's degree vary quite considerably across the sectors.*

Ambulatory Health Care (Figure 4.7) has the most even employment across the three levels, suggesting that there might be good opportunities for career advancement and for career ladder programming in the sector. Hospital employment (Figure 4.8) is skewed toward the highest level. In part, this may be due to the large number of nurses employed in the hospital sector relative to other occupations that do not require a Bachelor's degree. The Nursing and Residential Care sector (Figure 4.9) has the majority of pre-baccalaureate employment concentrated in the first two levels with only a small amount in the third and highest level.

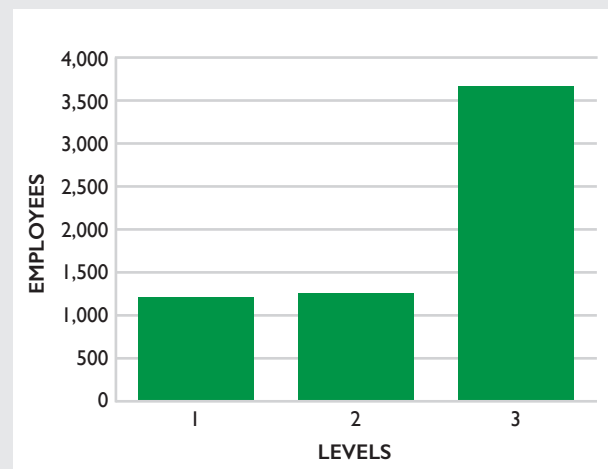
Career ladder opportunities are not as clear and direct in the industry as they once were. Institutions in the health care industry were often eager to develop career ladders to help entry-level employees enter the caregiving occupations, often with an eye toward

FIGURE 4.7 North Shore Ambulatory Health Care Employment by Levels: 2013



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

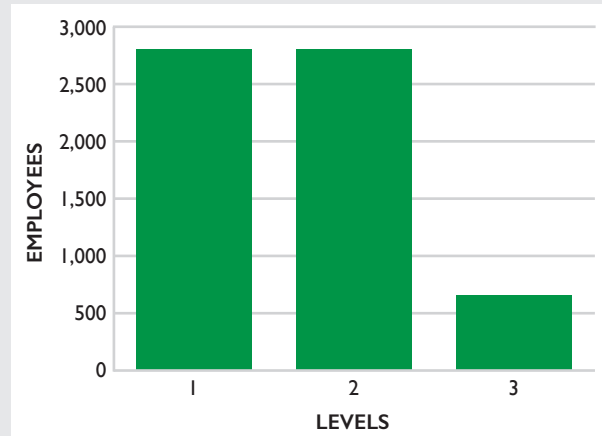
FIGURE 4.8 North Shore Hospital Employment by Levels: 2013



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

*The Nursing occupation is included in this analysis as an occupation that does not require a Bachelor's degree even though many employers interviewed stated that they were currently only hiring nurses with the Bachelor's degree in nursing (BSN).

FIGURE 4.9 North Shore Nursing and Residential Care Employment by Levels: 2013



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

becoming a nurse. Now, there is much less emphasis on the career development of entry-level workers, particularly in the hospital sector, and much greater emphasis on the development of career ladders for nurses and other highly skilled and educated workers. At the same time the skills and education requirements appear likely to continue to increase.

Conclusion

Currently, there is relatively little labor market pressure on the health care industry. Most health care employers interviewed for this report were able to find the employees they need. Even in such a traditionally high-demand occupation as nursing, there is currently a slack labor market. It is one of the strange ironies of the Great Recession that it saved the industry from the impending nursing shortage. However, realistic labor market projections demonstrate that the industry is unlikely to see this situation continue over the medium and longer term. The aging nursing workforce will ultimately see the retirement wave that was projected to occur much sooner. Most health care occupations are likely to see increasing numbers of jobs as the health care industry sees increasing demand for services due to the aging population and the increasing patient population.

Even as demand increases, the skills requirements by industry are also increasing. This increase requires the workforce development system to increase its emphasis on foundational skills. English language skills, both written and spoken, and the use of technology are particularly important. Developing and enhancing

training programs that include these foundational skills along with occupational skills such as CNA or Medical Assistant certifications should be an emphasis. Due to the rapid nature of change in the industry, the North Shore Workforce Investment Board and other workforce stakeholders should continue their efforts to work closely with industry to stay up-to-date on their skills and training requirements.

Durable Goods Manufacturing

The Durable Goods Manufacturing industry has been identified as a critical industry by the North Shore Workforce Investment Board since its inception. Over the past ten years, the industry has lost 19% of its total employment. However, employment in the industry appears to have stabilized over the past five years. The number of businesses has decreased by 23% over the past ten years and appears to be continuing to trend toward more losses.

The Durable Goods Manufacturing industry has been changing over the past ten years. Much of the low value-added manufacturing work in the region has disappeared. While this caused some shocks to the labor market, it has resulted in a stronger manufacturing sector in the region. What has remained is a manufacturing sector that is higher value added, weighted more heavily toward the export sector, and is part of the advanced manufacturing sector that has gained significant notice from both the workforce and economic development systems. Advanced manufacturing requires higher skill levels for its workers and is also likely to be higher-paying than other components of the manufacturing industry. This is particularly important for a region such as the North Shore that has a relatively high cost of living and therefore requires higher wages to attract workers.

The North Shore's Durable Goods Manufacturing industry is also part of the region's innovation economy. The industry takes advantage of the presence of research universities that are developing new technologies in fuel cells, clean energy, and other innovative fields. Regional manufacturing innovation is supported by economic development efforts including start-up incubators, site selection, and efforts to commercialize university discoveries. The workforce development system has expanded and institutionalized its work with the industry to better understand its needs and to be ready to meet hiring needs when they occur. It is important to note that the manufacturing industry represented 23% of the

total job listings with the North Shore Career Centers over the past year. While not as large as some other industries in the region, manufacturing is critical to the North Shore and is likely to remain so for the foreseeable future.

Critical Sectors

Durable Goods Manufacturing employment is broadly distributed across five industry sectors.*

Computer and Electronic Product Manufacturing and Machinery Manufacturing are the two largest sectors by employment with 2,642 and 2,361 employees respectively in 2013. Fabricated Metal Products (1,954 employees), and Electronic Instrument Manufacturing (1,660 employees) have significant numbers of employees in the region as well. 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.

Critical Occupations and Human Resources Challenges

The key theme in looking at Human Resources challenges in the Durable Goods Manufacturing industry is raising the bar. The skills sets required for

every position are increasing. Every entry-level worker in the manufacturing industry currently requires all of the following:

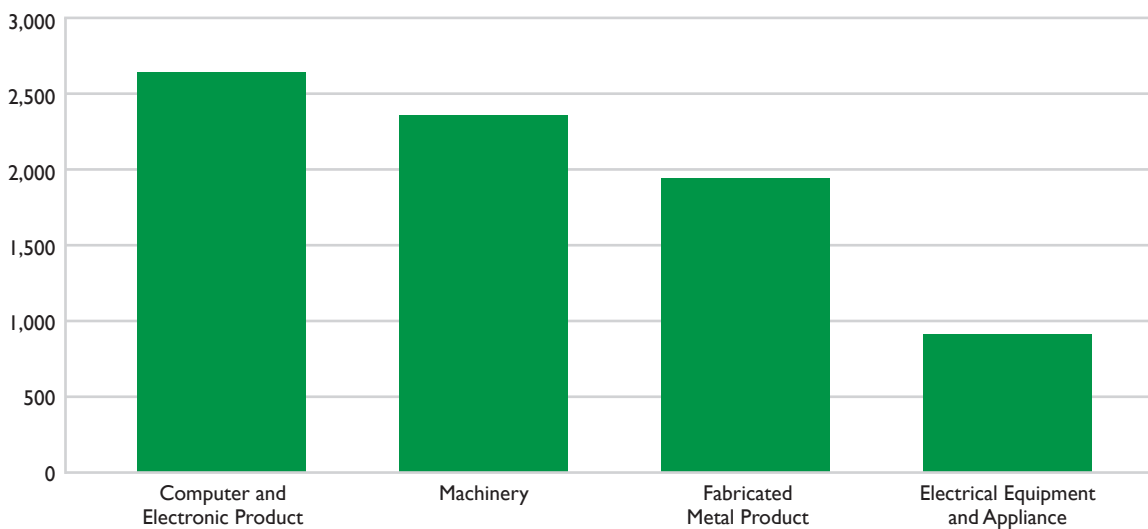
- High quality English language communication skills;
- Good understanding of basic math;
- A strong work ethic;
- Problem-solving ability.

In addition to these foundational skills requirements, an Associate's degree or certificate from a community college is highly valued, even for assembler positions. One reason that the skills requirements are increasing is that the responsibility for quality is becoming dispersed among all staff. There are few workers in stand-alone positions that are responsible only for quality and conversely there are very few workers who do not have responsibility for quality as part of their job. Due to this, the importance of teamwork and communication skills has skyrocketed. Every worker must be able to problem-solve on the job in real time.

Assembler

Duties: Assembling mechanical, electromechanical, and/or electronic equipment; using hand tools, soldering irons, and microscopes. Assuring quality

FIGURE 4.10 North Shore Durable Goods Employment by Sector: 2013



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

*Transportation Equipment Manufacturing sector data is not reported by the state due to its concentration in one company in the region: General Electric. If it were reported, it would be the largest or second largest manufacturing employer in the region.

and communicating problems with other team members and supervisors. Will involve some testing and troubleshooting of components.

Critical Degrees, Credentials, Skills: High school degree; English language communication skills; mechanical ability; familiarity with blueprints and schematics; assembly experience preferred. Associate's degree, certificate, and/or equivalent experience required for complex assembly positions.

Advancement Pathways:

- Assembler 1 ▶ Assembler 2 ▶ Assembler 3 ▶ Machine Operator (involves more electromechanical 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.

Technician (Test Technician, Mechanical or Electrical Technician)

Duties: Testing, troubleshooting, and, in some cases, repairing components; using microscopes and

Voices from the Field: Manufacturing Leaders Speak

“We are ramping up the bar for assemblers.”

“Quality issues are triumphant in this industry.”

“(Lack of) English language skills are a barrier for the low-wage earner.”

“You should make programs more hands-on, with practical laboratory experiences.”

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. Strong writing skills needed to prepare reports.

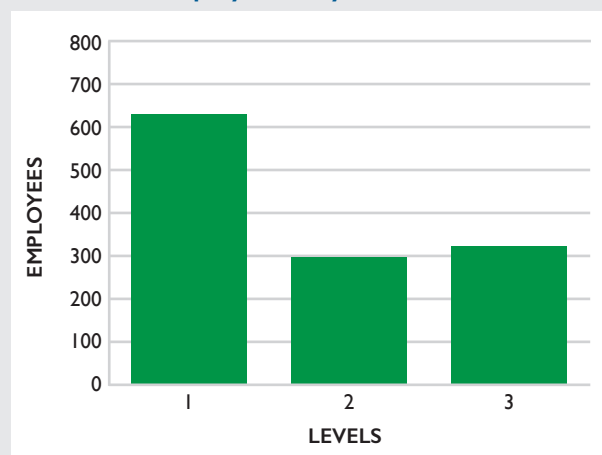
Advancement Pathways:

- 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.

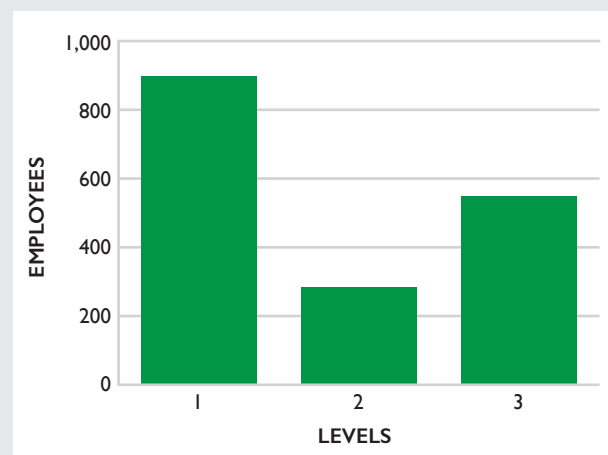
Automation is coming in a big way to many North Shore manufacturing employers. Several spoke of the

FIGURE 4.11 North Shore Computer and Electronic Product Manufacturing Employment by Levels: 2013



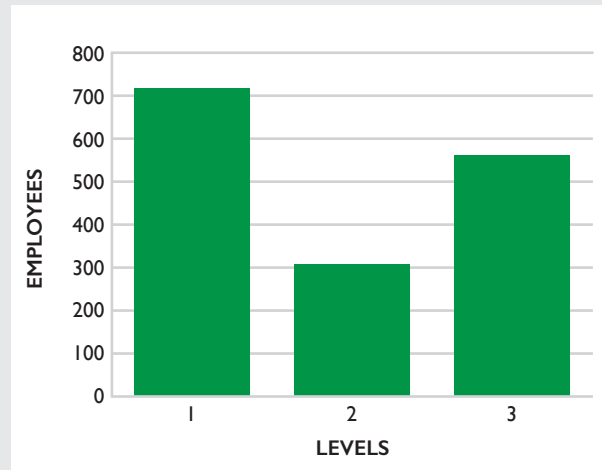
Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202 data. Analysis by the author.

FIGURE 4.12 North Shore Machinery Manufacturing Employment by Levels: 2013



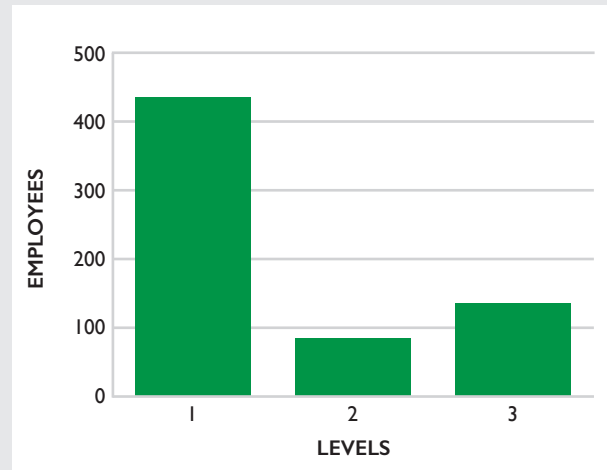
Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202 data. Analysis by the author.

FIGURE 4.13 North Shore Fabricated Metal Product Manufacturing Employment by Levels: 2013



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

FIGURE 4.14 North Shore Electrical Equipment and Appliance Manufacturing Employment by Levels: 2013



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

upcoming need for people to have robotics experience. As the industry undergoes such rapid transformation, it will be important for workforce development stakeholders to continue to work closely with the industry to meet emerging workforce demands as quickly as possible.

Advancement Opportunities

The five Durable Goods Manufacturing industry sectors all demonstrate significant career growth opportunities.

Each of the sectors have the largest number of jobs that do not require a Bachelor's degree in Level I, which generally require the lowest levels of skills and education. The general pattern across the sectors is for the fewest number of jobs to be in Level II and then an amount of jobs in Level III that is more than in Level II but less than in Level I. This pattern suggests that the Durable Goods Manufacturing sectors may offer career ladder opportunities for advancement in jobs that do not require Bachelor's degrees.

Interviews with manufacturing company leaders indicated that career advancement opportunities are widely available in the industry. As one might expect, education and experience are the keys to accessing these opportunities. The career pathways that business leaders were most interested in were those leading to engineering occupations. The competition for engineering talent is fierce and so companies that grow

their own engineers are likely to be more efficient. Other occupations and skill sets that are in high demand and can lead to advancement opportunities include: quality control, robotics, flowcharting and other formal problem analysis methods, and computer sciences.

Conclusion

While most manufacturing employers interviewed for this research are currently able to find the workers they need, they also face human resources challenges now and project additional challenges in the future. Demands for highly skilled labor are likely to increase. In certain positions, such as the CNC machinist, the workforce is aging and it is not clear where the replacement workforce will come from when the incumbents retire. Building the foundations for employment in this industry include more STEM education in the K-12 system as well as general foundational skills such as work ethic, English language communication skills, teamwork, and problem-solving.

At the highest level, there is a strong demand for engineering talent. Employers in the region value training programs such as Northeastern University and the University of Massachusetts Lowell engineering programs. The region's workforce system should continue to expand bridge programs for community college students to enter those programs. Community

college manufacturing and pre-engineering programs are benefitting the industry and expansion of those programs should be explored.

Manufacturing in the North Shore region also faces an image problem. The common perception is of an old, dirty industry that pays low wages, requires little in the way of skills and education, and offers few opportunities for advancement. This is not an accurate description of manufacturing in the region today. The jobs require higher level skills and education than in the past and many are better paying than in the past as well. The career advancement opportunities are significant, particularly for those who are interested in pursuing education leading to an engineering degree. The North Shore Workforce Investment Board and other workforce stakeholders should work to publicize the opportunities available in manufacturing in the region, particularly to parents, students, and teachers in the K-12 system.

Overarching Themes

There are several overarching issues that cut across all of the critical industries. These overarching themes represent issues that are particularly important for the public workforce investment system, education and training providers, and other economic and workforce development stakeholders to pay attention to.

The number one theme across all industries is the increasing level of skills requirements that are being demanded now, with even higher demands likely to come in the future. Employers in all industries are demanding ever increasing levels of skills for even entry-level positions. In part this may be due to the relatively large number of unemployed or under-employed workers currently available in the labor pool. These people will eventually either find employment or drop out of the labor pool altogether. Employers interviewed for this research were of the opinion that even when that happens, the skills requirements will remain high and get even higher. Therefore, training and education programs will need to be moving toward ever higher standards for their graduates to become employed.

Employers interviewed for this research found that foundational skills were lacking in many applicants. Even at a time when most occupations are demanding higher levels of technical skills, many employers feel that the skills that are hardest to find are the foundational skills. The common foundational skills found to be lacking were:

- English language communication skills, including written and spoken, and business writing.
- Strong work ethic.
- Ability to work as part of a team and accept feedback on performance.
- Strong technology skills, including Microsoft Word and Excel, internet and email usage, and business etiquette when using technology.

A second overarching theme is the impact of technology on almost all occupations. Even people in environmental services in hospitals or logistics in manufacturing companies need to interact with tablets or laptop computers to track their work. Nearly everyone needs to use email. Familiarity with technology and comfort using it on a regular basis are basic pre-requisites for most jobs. Many people think because they use a cell phone and text message regularly that they are fully capable in this area. Businesses report that this is often not the case and that business skills and particularly business etiquette when using technology is lacking.

Finally, strong educational foundations are critical to long-term occupational success in each of the critical industries. STEM education needs to be emphasized at the K-12 and community college level as there are jobs in each of the critical industries that are impossible to get without STEM skills. Math and basic science are of particular importance.

CHAPTER 5

Innovation

The North Shore region is home to many highly innovative firms. Historically, the region has developed a wide variety of products from shipbuilding products, to internet and productivity firms, to biotechnology. Currently, biotechnology is still strong while manufacturing in areas such as fuel cells and other cleantech companies. What all of these innovative industries and companies have in common is that they take advantage of the North Shore and broader eastern Massachusetts workforce, which has traditionally been highly educated. In addition, the proximity of the region to the educational centers of Boston and Cambridge is also likely to have been an asset.

Developing and maintaining this innovation culture and history is critically important to the North Shore region today. The region will only thrive when it has a strong diversified economy, with a strong export sector. This type of economy that innovates and exports high value added products has the potential to bring strong wages and economic multiplier effects to the region.

It is difficult to conduct a traditional workforce analysis of a region's innovation history and projected future since innovative firms occur across a large number of industries and are hard to distinguish in the empirical data from other firms. For example, biotechnology is generally a first thought as an innovative cluster.

Company and Patent Growth in the Region

One of the top indicators of a regional innovation economy is the level of patents produced by companies in the region. Patents represent the intellectual property that start-up companies use as the foundation for their growth and mature companies use to continue to stay ahead of their competition in innovative industries. When a region has a large number of companies producing high levels of patents, there are likely to be network effects and other competitive benefits to the region.

Since 1976, inventors in the North Shore region have received 14,375 individual patents, roughly ten percent of the Massachusetts total. Osram Sylvania was the largest company in terms of assigned patents with 1,060. Overall, patents were awarded in a broad range of companies from biotechnology (New England Biolabs, Cell Signaling Technology) to technology (Varian Semiconductor, Analogic), and many others.

It is important to note that some of the companies listed in Figure 5.1 have merged or been bought out

by other companies or gone out of business. These transitions are a very important part of the system of economic disruption and innovation that has made the North Shore region successful.

The North Shore region has also demonstrated significant growth in terms of the number of companies. Between January 1, 2004 and September 9, 2014, the North Shore region has seen the creation of 4,454 corporations and 6,579 Limited Liability Companies and Partnerships.

Biotechnology

The biotechnology industry has long been recognized by economic development stakeholders as having many of the characteristics that would be a good fit for the North Shore region. The biotechnology industry requires highly educated and highly skilled labor and has the potential to pay good wages. The biotechnology industry can also take advantage of eastern Massachusetts' research universities and opportunities for commercializing academic work. There are office parks with the specialized facilities that many biotechnology companies require available in the region. There is also excellent access to transportation which is critical to many biotechnology companies as global travel is often required to market their discoveries or to work with international collaborators.

One of the challenges of working with the biotechnology industry is the nature of the company life cycle in the industry. Most biotechnology companies start off as small, one or two person, start-ups. These companies are built on a discovery or an insight that the founders believe offers the opportunity to build up to commercial scale. After getting funding to start their company, these start-up businesses employ few, if any people, beyond the original founders for quite a while. There are many of these small

FIGURE 5.1 Top Twenty Patent Producing Companies on the North Shore since 1976

RANK	COMPANY	PATENTS	TOWN	NAICS
1	OSRAM SYLVANIA Inc	1,060	Danvers	335
2	GTE Products Corporation	530	Danvers	335
3	Varian Semiconductor Equipment Associates	396	Gloucester	334
4	Axcelis	287	Beverly	333
5	Analogic Corporation	238	Peabody	334
6	General Electric Company	150	Lynn	336
7	New England Biolabs	139	Beverly	541
8	GTE Sylvania	90	Danvers	335
9	New England Biolabs	64	Ipswich	541
10	Abiomed	56	Danvers	339
11	Kenner Parker Toys	39	Beverly	339
12	Boston Acoustics, Inc	38	Peabody	334
13	Rose Displays Ltd	36	Salem	423
14	Microline Surgical	32	Beverly	339
15	Auburn International	31	Danvers	334
16	Synventive Molding Solutions, Inc.	31	Peabody	423
17	Gloucester Engineering	29	Gloucester	333
18	Appliance Development Corporation	27	Danvers	811
19	ScanSoft, Inc.	26	Peabody	511
20	McCue Corporation	25	Salem	326

Source: U.S. Patent & Trademark Office, Patent Application Full Text and Image Database.

companies in the North Shore region and together they contribute significantly to the regional economy. However, since many of these companies fail to get a product to commercialization, their workforces often remain small.

Biotechnology companies can be divided into two types, the early stage biotechnology company that is developing a product and generally has few employees and the mature biotechnology company that has one or more products in the marketplace and is likely to employ more workers. The types of workers employed by mature biotechnology companies depend to a large extent on whether or not they have outsourced the manufacturing of their product(s). Those companies that have outsourced their manufacturing employ far fewer workers in positions that do not require a Bachelor’s degree than those companies that do their manufacturing in-house. The mix of types of biotechnology companies in a region is very important from a workforce development perspective.

There are several medium to large size biotechnology companies in the region that are currently performing a mix of research and development and manufacturing tasks. The human resources demand of such companies that were interviewed for this research is skewed toward people with high levels of education. Positions in research, quality assurance, and technical sales and marketing require high levels of skills and education to even obtain an interview. High levels of skills and

education requirements play into the North Shore region’s workforce strengths, as shown in Chapter 2. However, some people are left behind.

There are positions in the biotechnology industry that do not require the highest levels of skills and education. Some job titles mentioned in this research that do not always require a Bachelor’s degree or higher include lab support technicians, inventory and logistics clerks, and process technicians. However, in the current economy, many positions in the industry that do not require a Bachelor’s degree are held by people who have one. As one human resources professional in the biotechnology industry said, “Right now, even our glass washers have Bachelor’s degrees.” Workforce development stakeholders should take the skills and education requirements of the industry into account when considering which training programs to develop and support.

Advanced Manufacturing

Another major industry in the North Shore’s innovation economy is advanced manufacturing. The manufacturing industry covers a wide variety of products and companies, some of which are in advanced manufacturing and others which are focused on more routine work. As discussed in Chapter 4, the Durable Goods Manufacturing industry in the North Shore is heavily weighted toward the advanced manufacturing sector. Advanced manufacturing is generally focused

on higher value-added products and products that are created for the export sector. All of these factors are beneficial to the region and demonstrate the importance of including manufacturing in the innovation economy discussion.

A critical element toward working with the manufacturing industry as part of the innovation economy is to increase public awareness, particularly among jobseekers and youth, about the realities of the industry. Many people still have a 1960s view of manufacturing as being dirty, dangerous, and unskilled. While this may be the case in some regions, manufacturing in the North Shore region is generally high-tech, higher-skilled, and often involves the use of clean rooms to manufacture products that have tight tolerances. Because of these characteristics, it is not an industry that a worker can easily enter with limited skills and experience. Therefore, it is important that the workforce system publicize the benefits and requirements of the industry so that people can consider getting the training and education required to access these jobs.

Another important element of manufacturing on the North Shore is innovation. North Shore companies are involved in the development and manufacturing of products in the areas of clean energy, fuel cells, and biomedical applications, among others. As previously discussed, the North Shore region is an important supplier of new patents and start-up companies for Massachusetts and New England. Manufacturing companies are a big part of creating these innovations.

Regional Supports for Innovation

Regions that have strong innovation economies provide diverse supports for companies looking to develop or locate in the region. The North Shore has a number of such supports but more could be done. Regional supports for innovation must occur across the entire life cycle of innovative companies in the region.

Start-up companies rely on ideas to drive their innovation. Often these ideas come from research conducted by the company founders at universities. Greater efforts to support the commercialization of university research could result in more innovation economy companies being created on the North Shore. Many start-up companies have highly specific physical needs. Start-up incubators, such as those provided by North Shore InnoVentures for clean energy and biotechnology, provide needed physical locations for new companies. Incubators often provide

other service as well, such as access to experienced mentors, opportunities to network with other innovation economy leaders, and assistance with accessing funding.

As innovation economy companies move toward commercialization, their needs often change and this can result in significant challenges to the regional economy. From a workforce development perspective, when companies move from product development to product manufacturing is when the largest employment growth opportunities come about. However, there is no guarantee that maturing companies will manufacture their products in the same region where they were developed. To increase the likelihood of retaining the manufacturing work of start-up companies, regions should ensure that there is a broad-based manufacturing sector in the relevant industries that is closely connected to the region's start-up companies. It is also important to make the transportation and logistics environment cost-efficient and hassle-free. The North Shore region should make sure it is taking all possible steps to support innovation economy companies throughout their entire life cycle.

Conclusions

Supporting and enhancing the innovation economy on the North Shore must be a joint project that includes the workforce development, economic development, and education systems. These systems must join with innovative companies across a variety of industries to identify company needs and develop strategies to meet those needs. It is also important that an ongoing commitment to working with companies in the innovation economy be maintained as the needs of such companies evolve and change rapidly.

From a workforce development perspective, the most important thing the North Shore Workforce Investment Board and other workforce development stakeholders can do is to support more high quality STEM education at the K-12 and community college. So much of the innovation economy relies on basic science and mathematics that increasing both skills and interest in these fields is essential. Further enhancing connections from K-12 to community colleges to colleges and universities in critical areas such as engineering, biology, and chemistry is also important. Since so many jobs in the innovation economy require higher levels of education, it stands to reason that the most successful regions will always be looking for ways to keep the educational pipeline full.

Recommendations

The economy and industry conditions on the North Shore have changed quite substantially over the past four years. Employment now exceeds pre-recession levels, new start-up companies have been formed, and there has been an increase in employment in several critical industries, notably construction. With these positive changes have also come challenges. Employers are demanding ever higher levels of both foundational and technical skills, rungs on career ladders are becoming farther apart, and the pool of available workers provides businesses with the numerous options to select just the workers they deem most qualified. It is a challenging workforce and employment environment.

At the same time, there are important policy changes on the way to the workforce system as well. In July 2014, Congress passed and the President signed the Workforce Innovation and Opportunity Act (WIOA), which replaces the Workforce Investment Act, which has governed federal workforce policy since its passage in 1999. Regulations for WIOA are currently being promulgated by the U.S. Department of Labor but anticipated changes driven by WIOA include an enhanced emphasis on employer engagement, quicker and more flexible access to services for customers, a continuous quality improvement planning function, and greater attention to career pathways development (Gragg, 2014). The recommendations below are offered for the workforce system generally, followed by industry specific recommendations based on the research conducted for this report.

General Recommendations

- The North Shore Workforce Investment Board should consider the further development of ongoing employer partnerships for each of the critical industries. These partnerships should be developed to provide regular feedback on industry demand and to develop programmatic efforts whether or not grant dollars are available.
 - The North Shore regional workforce investment system should develop a comprehensive marketing and public relations plan. This plan should focus on the importance and needs of the critical industries in the region, particularly manufacturing which is under-recognized by the public in general.
 - The North Shore Workforce Investment Board should continue to be proactive in reaching out to companies with new or changing occupational demand and in identifying such companies using real-time labor market information sources as well as leveraging industry contacts.
 - The North Shore Workforce Investment Board and other workforce and economic development stakeholders should develop an enhanced focus on bringing higher wage jobs to the region as well as growing higher wage jobs within existing companies.
 - Every training and education program should include foundational skills elements related to interviewing and presentation skills, work ethic, basic communication skills, working with a supervisor, and business etiquette.
 - The North Shore Workforce Investment Board should work with all industry clusters to pursue apprenticeship training and external funding opportunities.
- The regional workforce system must also enhance the foundational skill development capacity of the region. The importance of foundational skills such as English communication skills, basic math skills, basic and intermediate technology skills, working with supervision, and work ethic was cited by nearly every employer interviewed for this Labor Force Blueprint. Specific recommendations include:
- Work with education and training partners to ensure that foundational skills development is contextualized within all education and training programs so that program graduates have the best possible chance for employment success.

- Support the expansion of math and English language skills training and the connection of these education programs with employers and the NSWIB's industry partnerships.
- Continue to work with K-12 and community college system partners to implement more high quality STEM education programs that are tied directly to industry demand.
- Utilize existing workforce system resources to provide short-term training workshops in areas such as Microsoft Word and Excel, how to write effective email communications, and familiarity with laptops and tablets.
- Work with Adult Education providers to maximize the alignment of their curriculum with the requirements of businesses in the critical industries.
- The NSWIB should work with K-12 systems and educators to better align their work with the demands of businesses and particularly to enhance the availability of vocational and technical schools' educational offerings.
- Work to further support and expand the pipeline from community college pre-engineering programs to Bachelor's degree programs in engineering at the University of Massachusetts Lowell and other local colleges and universities with engineering programs.
- Support efforts to publicize the high quality career opportunities available in the critical industries, particularly in construction and manufacturing where there are significant misperceptions on the quality of opportunities available.
- Improve the quality and quantity of STEM education programs from K-12 through post-baccalaureate.
- Encourage the further development of K-12 efforts supporting the trades, including the development of new training programs and enhanced outreach and recruitment efforts to make students and parents more aware of the career potential of the trades on the North Shore.
- Continue helping students access part-time and summer opportunities in financial services as the experience gained can help set the foundation of a career in the field. Experience in the field is highly important and valued.

Industry Specific Recommendations

- Work with industry partners to develop programs to support incumbent nurses with Associate's Degrees in obtaining their Bachelor's Degrees so they can keep up with the increasing demands of health care employers, particularly hospitals.
- Develop extension or bridge programs to help nurses graduating from community colleges to move directly to obtain their BSN degrees.
- Work closely with industry partners to meet the demand for increased levels of skills for Certified Nursing Assistants and help develop career pathway programming for this occupation where employers are ready to proceed.
- Work to redevelop community college courses supporting the manufacturing industry including courses in robotics, CNC machining, microscopy for manufacturing, and product and logistics management.

APPENDIX A Survey Protocol

Date: ___ / ___ / ___ Length of Interview: _____ Name of Interviewer: _____
Name of Interviewee(s): _____ Title(s): _____
Company: _____
Address: _____
Phone: _____ Email: _____

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 December. 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
47-2111	Electricians	\$72,249	\$71,743	\$45,212	NS	442	III	21.7%
47-2061	Construction laborers	\$37,546	\$43,066	\$33,501	NS	319	I	20.8%
47-2152	Plumbers, pipefitters, and steamfitters	\$63,085	\$66,107	\$36,328	NS	289	III	22.9%
49-9021	Heating, air conditioning, and refrigeration mechanics and installers	\$55,594	\$57,435	\$41,925	NS	204	II	18.9%
47-2031	Carpenters	\$45,489	\$47,919	\$34,445	NS	200	III	19.7%
47-1011	First-line supervisors of construction trades and extraction workers	\$70,630	\$73,000	\$50,640	MA	191	III	21.6%
47-2141	Painters, construction and maintenance	\$27,835	\$30,838	\$23,948	NS	153	I	19.0%
43-9061	Office clerks, general	\$32,160	\$35,413	\$23,883	NS	136	I	4.6%
47-2181	Roofers	\$41,354	\$41,786	\$33,186	NS	111	II	10.8%
47-2051	Cement masons and concrete finishers	\$44,040	\$46,900	\$33,000	MA	106	II	25.1%
47-2073	Operating engineers and other construction equipment operators	\$55,832	\$62,164	\$49,282	NS	106	III	21.6%
43-6014	Secretaries and administrative assistants, except legal, medical, and executive	\$37,143	\$38,280	\$29,048	NS	102	I	9.4%
11-1021	General and operations managers	\$100,957	\$122,586	\$63,941	NS	98	III	11.9%
47-2211	Sheet metal workers	\$54,099	\$63,565	\$43,339	NS	94	II	12.9%
13-1051	Cost estimators	\$68,232	\$69,291	\$44,369	NS	89	III	23.7%
43-3031	Bookkeeping, accounting, and auditing clerks	\$40,989	\$40,828	\$28,574	NS	81	III	11.0%
47-2081	Drywall and ceiling tile installers	\$52,290	\$52,810	\$35,420	MA	77	II	14.0%
11-9021	Construction managers	\$111,052	\$121,344	\$72,961	NS	72	III	11.7%
47-3013	Helpers – electricians	\$28,416	\$32,098	\$24,451	NS	64	I	37.7%
47-2021	Brickmasons and blockmasons	\$51,083	\$52,161	\$42,838	NS	55	III	37.0%
53-3032	Heavy and tractor-trailer truck drivers	\$47,644	\$52,950	\$38,246	NS	51	III	10.6%
41-4012	Sales representatives, wholesale and manufacturing, except technical and scientific products	\$51,164	\$89,269	\$38,350	NS	47	III	7.6%
47-3015	Helpers – pipelayers, plumbers, pipefitters, and steamfitters	\$31,516	\$36,884	\$27,566	NS	43	I	26.7%
47-2121	Glaziers	\$46,730	\$51,360	\$34,700	MA	38	II	15.5%
47-2221	Structural iron and steel workers	\$76,480	\$70,370	\$48,710	MA	38	III	20.6%
49-2022	Telecommunications equipment installers and repairers, except line installers	\$59,416	\$60,925	\$41,576	NS	34	III	3.6%
47-2132	Insulation workers, mechanical	\$44,823	\$49,894	\$42,817	NS	30	II	49.4%
49-9052	Telecommunications line installers and repairers	\$59,416	\$60,925	\$41,576	NS	30	II	1.5%
49-1011	First-line supervisors of mechanics, installers, and repairers	\$59,251	\$65,805	\$40,992	NS	30	III	7.7%
47-3011	Helpers – brickmasons, blockmasons, stonemasons, and tile and marble setters	\$34,380	\$34,465	\$28,880	NS	26	I	44.0%

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
47-2131	Insulation workers, floor, ceiling, and wall	\$34,468	\$35,983	\$26,766	NS	26	II	26.5%
47-2044	Tile and marble setters	\$84,150	\$78,390	\$53,710	MA	26	II	13.7%
51-4121	Welders, cutters, solderers, and brazers	\$48,292	\$56,330	\$39,087	NS	26	II	-1.3%
47-4031	Fence erectors	\$33,537	\$33,841	\$27,713	NS	21	I	33.8%
49-9098	Helpers – installation, maintenance, and repair workers	\$28,416	\$32,098	\$24,451	NS	21	I	14.0%
53-7062	Laborers and freight, stock, and material movers, hand	\$27,966	\$31,330	\$20,637	NS	21	I	9.1%
47-2071	Paving, surfacing, and tamping equipment operators	\$62,169	\$59,260	\$45,989	NS	21	II	25.8%
47-2161	Plasterers and stucco masons	\$58,880	\$60,990	\$42,200	MA	21	II	16.7%
47-4021	Elevator installers and repairers	\$100,250	\$95,350	\$73,120	MA	21	III	27.1%
43-1011	First-line supervisors of office and administrative support workers	\$53,956	\$55,725	\$37,937	NS	21	III	11.5%

Credit Intermediation & Related Activity – NAICS 522

SOC CODE	OCCUPATIONAL TITLE	MEDIAN WAGE	MEAN WAGE	ENTRY WAGE	AREA FOR WAGE DATA	NORTH SHORE EMPLOYMENT	LEVEL	PROJECTED GROWTH
43-3071	Tellers	\$28,574	\$29,721	\$23,479	NS	276	I	7.7%
43-4051	Customer service representatives	\$37,494	\$39,576	\$26,518	NS	270	I	11.3%
41-3021	Insurance sales agents	\$53,766	\$66,182	\$26,130	NS	180	II	7.8%
41-3031	Securities, commodities, and financial services sales agents	\$123,132	\$131,982	\$77,693	NS	162	III	6.5%
13-2072	Loan officers	\$74,636	\$94,149	\$42,326	NS	132	III	13.5%
43-1011	First-line supervisors of office and administrative support workers	\$53,956	\$55,725	\$37,937	NS	126	III	11.5%
43-9041	Insurance claims and policy processing clerks	\$43,212	\$43,979	\$34,469	NS	120	II	5.7%
43-4131	Loan interviewers and clerks	\$44,256	\$43,891	\$34,050	NS	87	II	14.4%
43-9061	Office clerks, general	\$32,160	\$35,413	\$23,883	NS	84	I	4.6%
43-6014	Secretaries and administrative assistants, except legal, medical, and executive	\$37,143	\$38,280	\$29,048	NS	66	I	9.4%
43-3031	Bookkeeping, accounting, and auditing clerks	\$40,989	\$40,828	\$28,574	NS	63	III	11.0%
11-1021	General and operations managers	\$100,957	\$122,586	\$63,941	NS	57	III	11.9%
43-3011	Bill and account collectors	\$42,999	\$45,916	\$33,171	NS	45	II	11.1%
43-6011	Executive secretaries and executive administrative assistants	\$50,530	\$51,427	\$34,713	NS	45	III	-2.3%
43-4011	Brokerage clerks	\$58,336	\$59,985	\$55,533	NS	30	III	-4.6%
43-4141	New accounts clerks	\$41,782	\$41,117	\$36,794	NS	27	II	1.0%
41-1012	First-line supervisors of non-retail sales workers	\$62,291	\$75,896	\$40,592	NS	21	III	-1.6%
43-4171	Receptionists and information clerks	\$27,748	\$28,407	\$20,270	NS	18	I	8.5%
15-1151	Computer user support specialists	\$53,518	\$54,434	\$34,761	NS	18	III	19.4%

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
29-1141	Registered nurses	\$71,245	\$74,225	\$57,553	NS	960	III	18.5%
31-9092	Medical assistants	\$34,223	\$34,600	\$29,224	NS	907	II	18.5%
43-4171	Receptionists and information clerks	\$27,748	\$28,407	\$20,270	NS	723	I	8.5%
43-6013	Medical secretaries	\$37,200	\$38,650	\$29,895	NS	710	III	27.1%
31-1011	Home health aides	\$24,607	\$24,906	\$20,485	NS	683	I	40.4%
39-9021	Personal care aides	\$25,404	\$26,418	\$21,470	NS	644	I	38.1%
31-9091	Dental assistants	\$39,905	\$41,747	\$34,502	NS	591	III	12.5%
29-2061	Licensed practical and licensed vocational nurses	\$56,976	\$57,392	\$50,653	NS	407	II	20.3%
43-9061	Office clerks, general	\$32,160	\$35,413	\$23,883	NS	394	I	4.6%
29-2021	Dental hygienists	\$73,550	\$73,802	\$65,342	NS	394	III	19.9%
43-3021	Billing and posting clerks	\$38,234	\$38,549	\$29,803	NS	302	I	11.1%
43-1011	First-line supervisors of office and administrative support workers	\$53,956	\$55,725	\$37,937	NS	276	III	11.5%
29-2041	Emergency medical technicians and paramedics	\$55,999	\$55,119	\$46,335	NS	250	III	18.4%
43-6014	Secretaries and administrative assistants, except legal, medical, and executive	\$37,143	\$38,280	\$29,048	NS	237	I	9.4%
31-1014	Nursing assistants	\$29,947	\$30,726	\$26,045	NS	210	II	17.3%
29-2012	Medical and clinical laboratory technicians	\$36,810	\$38,712	\$30,573	NS	131	II	24.0%
43-3031	Bookkeeping, accounting, and auditing clerks	\$40,989	\$40,828	\$28,574	NS	131	III	11.0%
29-2034	Radiologic technologists	\$64,379	\$65,809	\$50,914	NS	131	III	18.2%
29-2071	Medical records and health information technicians	\$37,066	\$40,659	\$28,572	NS	118	II	18.5%
31-9097	Phlebotomists	\$36,086	\$37,120	\$30,882	NS	118	III	19.6%
43-4051	Customer service representatives	\$37,494	\$39,576	\$26,518	NS	105	I	11.3%
29-2011	Medical and clinical laboratory technologists	\$69,365	\$68,919	\$55,056	NS	92	III	11.6%
43-3011	Bill and account collectors	\$42,999	\$45,916	\$33,171	NS	79	II	11.1%
31-2021	Physical therapist assistants	\$54,158	\$54,041	\$44,706	NS	79	II	30.5%
43-6011	Executive secretaries and executive administrative assistants	\$50,530	\$51,427	\$34,713	NS	79	III	-2.3%
43-4071	File clerks	\$29,503	\$31,025	\$20,230	NS	66	I	-4.8%
31-2022	Physical therapist aides	\$29,841	\$33,837	\$22,884	NS	66	II	30.5%
29-2081	Opticians, dispensing	\$60,359	\$56,307	\$41,326	NS	66	III	11.8%

Hospitals – NAICS Code 622

SOC CODE	OCCUPATIONAL TITLE	MEDIAN WAGE	MEAN WAGE	ENTRY WAGE	AREA FOR WAGE DATA	NORTH SHORE EMPLOYMENT	LEVEL	PROJECTED GROWTH
29-1141	Registered nurses	\$71,245	\$74,225	\$57,553	NS	2421	III	18.5%
31-1014	Nursing assistants	\$29,947	\$30,726	\$26,045	NS	550	II	17.3%
29-2061	Licensed practical and licensed vocational nurses	\$56,976	\$57,392	\$50,653	NS	212	II	20.3%
43-6013	Medical secretaries	\$37,200	\$38,650	\$29,895	NS	212	III	27.1%
37-2012	Maids and housekeeping cleaners	\$22,224	\$23,521	\$17,870	NS	178	I	18.0%
29-2034	Radiologic technologists	\$64,379	\$65,809	\$50,914	NS	178	III	18.2%
29-2011	Medical and clinical laboratory technologists	\$69,365	\$68,919	\$55,056	NS	144	III	11.6%
29-1126	Respiratory therapists	\$67,326	\$66,917	\$54,886	NS	144	III	19.6%
43-9061	Office clerks, general	\$32,160	\$35,413	\$23,883	NS	135	I	4.6%
43-4111	Interviewers, except eligibility and loan	\$32,128	\$31,752	\$19,575	NS	119	I	8.1%
31-9092	Medical assistants	\$34,223	\$34,600	\$29,224	NS	119	II	18.5%
29-2071	Medical records and health information technicians	\$37,066	\$40,659	\$28,572	NS	110	II	18.5%
43-6014	Secretaries and administrative assistants, except legal, medical, and executive	\$37,143	\$38,280	\$29,048	NS	102	I	9.4%
29-2012	Medical and clinical laboratory technicians	\$36,810	\$38,712	\$30,573	NS	102	II	24.0%
29-2055	Surgical technologists	\$47,386	\$50,828	\$42,664	NS	102	III	28.7%
37-2011	Janitors and cleaners, except maids and housekeeping cleaners	\$30,012	\$30,965	\$20,803	NS	93	I	7.4%
29-2052	Pharmacy technicians	\$30,105	\$31,407	\$26,093	NS	85	II	15.2%
43-3021	Billing and posting clerks	\$38,234	\$38,549	\$29,803	NS	76	I	11.1%
35-3041	Food servers, nonrestaurant	\$22,555	\$24,709	\$18,651	NS	68	I	22.0%
43-1011	First-line supervisors of office and administrative support workers	\$53,956	\$55,725	\$37,937	NS	68	III	11.5%
43-4051	Customer service representatives	\$37,494	\$39,576	\$26,518	NS	59	I	11.3%
43-4171	Receptionists and information clerks	\$27,748	\$28,407	\$20,270	NS	59	I	8.5%
33-9032	Security guards	\$29,012	\$30,137	\$22,864	NS	59	I	6.5%
49-9071	Maintenance and repair workers, general	\$42,621	\$43,904	\$28,674	NS	59	II	11.1%
29-2031	Cardiovascular technologists and technicians	\$76,312	\$70,664	\$49,696	NS	59	III	29.9%
29-2041	Emergency medical technicians and paramedics	\$55,999	\$55,119	\$46,335	NS	59	III	18.4%
31-9097	Phlebotomists	\$36,086	\$37,120	\$30,882	NS	59	III	19.6%
29-2053	Psychiatric technicians	***	***	***	***	59	III	***
35-2012	Cooks, institution and cafeteria	\$32,547	\$32,934	\$24,668	NS	51	I	16.2%
31-9093	Medical equipment preparers	\$36,591	\$39,474	\$32,744	NS	51	I	17.3%
31-1013	Psychiatric aides	\$36,970	\$38,280	\$24,100	MA	51	I	9.0%
43-6011	Executive secretaries and executive administrative assistants	\$50,530	\$51,427	\$34,713	NS	51	III	-2.3%
29-2032	Diagnostic medical sonographers	\$85,348	\$84,346	\$73,455	NS	51	III	42.1%
35-2021	Food preparation workers	\$22,915	\$24,264	\$18,324	NS	42	I	7.3%
43-5081	Stock clerks and order fillers	\$22,854	\$26,598	\$18,182	NS	42	I	-2.1%
31-9094	Medical transcriptionists	\$43,152	\$46,133	\$36,279	NS	42	III	0.5%

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
31-1014	Nursing assistants	\$29,947	\$30,726	\$26,045	NS	1923	II	17.3%
31-1011	Home health aides	\$24,607	\$24,906	\$20,485	NS	708	I	40.4%
29-2061	Licensed practical and licensed vocational nurses	\$56,976	\$57,392	\$50,653	NS	626	II	20.3%
29-1141	Registered nurses	\$71,245	\$74,225	\$57,553	NS	432	III	18.5%
39-9021	Personal care aides	\$25,404	\$26,418	\$21,470	NS	388	I	38.1%
37-2012	Maids and housekeeping cleaners	\$22,224	\$23,521	\$17,870	NS	291	I	18.0%
35-3041	Food servers, nonrestaurant	\$22,555	\$24,709	\$18,651	NS	216	I	22.0%
35-2012	Cooks, institution and cafeteria	\$32,547	\$32,934	\$24,668	NS	209	I	16.2%
21-1093	Social and human service assistants	\$27,101	\$29,661	\$21,976	NS	149	I	18.7%
39-9032	Recreation workers	\$24,377	\$27,807	\$20,033	NS	134	I	18.1%
35-2021	Food preparation workers	\$22,915	\$24,264	\$18,324	NS	104	I	7.3%
49-9071	Maintenance and repair workers, general	\$42,621	\$43,904	\$28,674	NS	104	II	11.1%
39-9041	Residential advisors	\$29,233	\$33,382	\$24,766	NS	97	II	15.1%
39-9011	Childcare workers	\$22,122	\$23,525	\$17,834	NS	89	I	18.6%
51-6011	Laundry and dry-cleaning workers	\$25,161	\$24,383	\$19,264	NS	82	I	15.9%
37-2011	Janitors and cleaners, except maids and housekeeping cleaners	\$30,012	\$30,965	\$20,803	NS	67	I	7.4%
43-4171	Receptionists and information clerks	\$27,748	\$28,407	\$20,270	NS	67	I	8.5%
43-9061	Office clerks, general	\$32,160	\$35,413	\$23,883	NS	60	I	4.6%
11-1021	General and operations managers	\$100,957	\$122,586	\$63,941	NS	60	III	11.9%
35-3021	Combined food preparation and serving workers, including fast food	\$19,163	\$20,310	\$17,873	NS	52	I	21.4%
35-9021	Dishwashers	\$20,163	\$20,561	\$17,785	NS	52	I	14.0%
35-1012	First-line supervisors of food preparation and serving workers	\$36,559	\$39,067	\$24,992	NS	52	III	21.3%
43-6014	Secretaries and administrative assistants, except legal, medical, and executive	\$37,143	\$38,280	\$29,048	NS	45	I	9.4%
39-1021	First-line supervisors of personal service workers	\$33,882	\$39,041	\$26,144	NS	45	III	***
31-1013	Psychiatric aides	\$36,970	\$38,280	\$24,100	MA	37	I	9.0%
35-3031	Waiters and waitresses	\$22,891	\$26,460	\$17,954	NS	37	I	14.1%
29-2071	Medical records and health information technicians	\$37,066	\$40,659	\$28,572	NS	37	II	18.5%
43-3031	Bookkeeping, accounting, and auditing clerks	\$40,989	\$40,828	\$28,574	NS	37	III	11.0%

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
51-4041	Machinists	\$55,289	\$54,014	\$36,072	NS	188	III	-0.2%
51-4121	Welders, cutters, solderers, and brazers	\$48,292	\$56,330	\$39,087	NS	115	II	-1.3%
51-2092	Team assemblers	\$25,818	\$29,373	\$18,513	NS	104	I	-0.5%
51-1011	First-line supervisors of production and operating workers	\$64,622	\$66,005	\$45,523	NS	84	III	-4.3%
51-4031	Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	\$35,996	\$38,729	\$22,300	NS	78	I	-13.1%
51-4011	Computer-controlled machine tool operators, metal and plastic	\$43,470	\$44,663	\$33,335	NS	74	III	4.4%
51-9061	Inspectors, testers, sorters, samplers, and weighers	\$50,966	\$51,760	\$35,339	NS	59	II	1.1%
51-9198	Helpers – production workers	\$26,012	\$27,666	\$19,394	NS	51	I	1.1%
51-2041	Structural metal fabricators and fitters	\$38,800	\$40,970	\$26,160	MA	51	II	-2.6%
11-1021	General and operations managers	\$100,957	\$122,586	\$63,941	NS	47	III	11.9%
41-4012	Sales representatives, wholesale and manufacturing, except technical and scientific products	\$51,164	\$89,269	\$38,350	NS	41	III	7.6%
51-9121	Coating, painting, and spraying machine setters, operators, and tenders	\$40,255	\$39,353	\$33,569	NS	37	I	-10.2%
51-4033	Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic	\$56,520	\$52,911	\$30,947	NS	37	I	-22.5%
43-9061	Office clerks, general	\$32,160	\$35,413	\$23,883	NS	37	I	4.6%
43-5071	Shipping, receiving, and traffic clerks	\$35,919	\$36,217	\$22,064	NS	37	I	1.3%
53-7062	Laborers and freight, stock, and material movers, hand	\$27,966	\$31,330	\$20,637	NS	35	I	9.1%
51-4193	Plating and coating machine setters, operators, and tenders, metal and plastic	\$42,698	\$41,110	\$29,185	NS	33	I	-19.5%
51-4081	Multiple machine tool setters, operators, and tenders, metal and plastic	\$35,646	\$39,976	\$29,030	NS	31	I	-21.7%
47-2211	Sheet metal workers	\$54,099	\$63,565	\$43,339	NS	31	II	12.9%
49-9071	Maintenance and repair workers, general	\$42,621	\$43,904	\$28,674	NS	27	II	11.1%
51-4034	Lathe and turning machine tool setters, operators, and tenders, metal and plastic	\$65,051	\$60,428	\$42,320	NS	23	I	-24.3%
43-3031	Bookkeeping, accounting, and auditing clerks	\$40,989	\$40,828	\$28,574	NS	23	III	11.0%
51-4111	Tool and die makers	\$58,724	\$59,004	\$50,757	NS	21	I	-9.2%
43-6014	Secretaries and administrative assistants, except legal, medical, and executive	\$37,143	\$38,280	\$29,048	NS	20	I	9.4%
51-4122	Welding, soldering, and brazing machine setters, operators, and tenders	\$50,448	\$46,231	\$30,843	NS	20	I	6.5%
49-9041	Industrial machinery mechanics	\$60,494	\$59,130	\$44,151	NS	20	III	-4.6%
51-2099	Assemblers and fabricators, all other	\$21,197	\$32,068	\$17,833	NS	18	I	8.6%
43-4051	Customer service representatives	\$37,494	\$39,576	\$26,518	NS	18	I	11.3%

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
51-4191	Heat treating equipment setters, operators, and tenders, metal and plastic	\$33,720	\$35,280	\$26,210	MA	16	I	-10.8%
53-7064	Packers and packagers, hand	\$21,462	\$22,905	\$18,139	NS	16	I	3.4%
43-5061	Production, planning, and expediting clerks	\$54,942	\$54,493	\$41,125	NS	16	I	2.7%
53-7051	Industrial truck and tractor operators	\$37,376	\$38,009	\$27,160	NS	16	III	0.7%
51-4022	Forging machine setters, operators, and tenders, metal and plastic	\$40,730	\$44,090	\$25,590	MA	14	II	-21.7%
51-4012	Computer numerically controlled machine tool programmers, metal and plastic	\$39,179	\$45,814	\$34,862	NS	14	III	15.8%
13-1051	Cost estimators	\$68,232	\$69,291	\$44,369	NS	14	III	23.7%
17-3013	Mechanical drafters	\$79,130	\$73,322	\$52,655	NS	14	III	-12.0%
51-4035	Milling and planing machine setters, operators, and tenders, metal and plastic	\$45,910	\$48,730	\$33,620	MA	12	I	-20.8%
51-4023	Rolling machine setters, operators, and tenders, metal and plastic	\$39,570	\$38,320	\$30,280	MA	12	I	-7.4%
51-4032	Drilling and boring machine tool setters, operators, and tenders, metal and plastic	\$40,390	\$48,430	\$27,860	MA	10	I	-29.6%
51-4021	Extruding and drawing machine setters, operators, and tenders, metal and plastic	\$37,224	\$42,484	\$33,122	NS	10	I	-15.6%
37-2011	Janitors and cleaners, except maids and housekeeping cleaners	\$30,012	\$30,965	\$20,803	NS	10	I	7.4%
43-5081	Stock clerks and order fillers	\$22,854	\$26,598	\$18,182	NS	10	I	-2.1%
51-9022	Grinding and polishing workers, hand	\$30,569	\$32,341	\$24,736	NS	10	I	-8.3%
49-9043	Maintenance workers, machinery	\$40,682	\$41,053	\$30,439	NS	10	II	10.8%
43-1011	First-line supervisors of office and administrative support workers	\$53,956	\$55,725	\$37,937	NS	10	III	11.5%
53-3032	Heavy and tractor-trailer truck drivers	\$47,644	\$52,950	\$38,246	NS	10	III	10.6%
53-3033	Light truck or delivery services drivers	\$39,279	\$41,398	\$26,710	NS	10	III	6.8%

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	\$25,818	\$29,373	\$18,513	NS	250	I	-0.5%
51-4041	Machinists	\$55,289	\$54,014	\$36,072	NS	156	III	-0.2%
51-4121	Welders, cutters, solderers, and brazers	\$48,292	\$56,330	\$39,087	NS	116	II	-1.3%
51-1011	First-line supervisors of production and operating workers	\$64,622	\$66,005	\$45,523	NS	78	III	-4.3%
51-4011	Computer-controlled machine tool operators, metal and plastic	\$43,470	\$44,663	\$33,335	NS	59	III	4.4%
51-9061	Inspectors, testers, sorters, samplers, and weighers	\$50,966	\$51,760	\$35,339	NS	54	II	1.1%
41-4012	Sales representatives, wholesale and manufacturing, except technical and scientific products	\$51,164	\$89,269	\$38,350	NS	54	III	7.6%
51-4111	Tool and die makers	\$58,724	\$59,004	\$50,757	NS	50	I	-9.2%
51-2031	Engine and other machine assemblers	\$42,370	\$45,290	\$28,260	MA	47	I	5.2%
11-1021	General and operations managers	\$100,957	\$122,586	\$63,941	NS	45	III	11.9%
51-4031	Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	\$35,996	\$38,729	\$22,300	NS	42	I	-13.1%
53-7062	Laborers and freight, stock, and material movers, hand	\$27,966	\$31,330	\$20,637	NS	40	I	9.1%
43-5071	Shipping, receiving, and traffic clerks	\$35,919	\$36,217	\$22,064	NS	40	I	1.3%
49-9041	Industrial machinery mechanics	\$60,494	\$59,130	\$44,151	NS	38	III	-4.6%
51-9198	Helpers – production workers	\$26,012	\$27,666	\$19,394	NS	31	I	1.1%
51-4081	Multiple machine tool setters, operators, and tenders, metal and plastic	\$35,646	\$39,976	\$29,030	NS	31	I	-21.7%
43-9061	Office clerks, general	\$32,160	\$35,413	\$23,883	NS	31	I	4.6%
49-9071	Maintenance and repair workers, general	\$42,621	\$43,904	\$28,674	NS	31	II	11.1%
51-2099	Assemblers and fabricators, all other	\$21,197	\$32,068	\$17,833	NS	28	I	8.6%
51-2023	Electromechanical equipment assemblers	\$33,962	\$35,130	\$26,641	NS	28	I	-8.2%
51-4033	Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic	\$56,520	\$52,911	\$30,947	NS	28	I	-22.5%
43-4051	Customer service representatives	\$37,494	\$39,576	\$26,518	NS	26	I	11.3%
51-2022	Electrical and electronic equipment assemblers	\$34,050	\$35,031	\$25,543	NS	26	I	-14.8%
51-4122	Welding, soldering, and brazing machine setters, operators, and tenders	\$50,448	\$46,231	\$30,843	NS	26	I	6.5%
51-2041	Structural metal fabricators and fitters	\$38,800	\$40,970	\$26,160	MA	26	II	-2.6%
43-3031	Bookkeeping, accounting, and auditing clerks	\$40,989	\$40,828	\$28,574	NS	26	III	11.0%
17-3013	Mechanical drafters	\$79,130	\$73,322	\$52,655	NS	26	III	-12.0%
51-9121	Coating, painting, and spraying machine setters, operators, and tenders	\$40,255	\$39,353	\$33,569	NS	24	I	-10.2%
51-4034	Lathe and turning machine tool setters, operators, and tenders, metal and plastic	\$65,051	\$60,428	\$42,320	NS	24	I	-24.3%

Machinery Manufacturing (continued)

SOC CODE	OCCUPATIONAL TITLE	MEDIAN WAGE	MEAN WAGE	ENTRY WAGE	AREA FOR WAGE DATA	NORTH SHORE EMPLOYMENT	LEVEL	PROJECTED GROWTH
43-5061	Production, planning, and expediting clerks	\$54,942	\$54,493	\$41,125	NS	24	I	2.7%
51-4072	Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic	\$33,360	\$34,610	\$24,460	MA	21	I	-15.3%
43-6014	Secretaries and administrative assistants, except legal, medical, and executive	\$37,143	\$38,280	\$29,048	NS	19	I	9.4%
43-5081	Stock clerks and order fillers	\$22,854	\$26,598	\$18,182	NS	19	I	-2.1%
51-4012	Computer numerically controlled machine tool programmers, metal and plastic	\$39,179	\$45,814	\$34,862	NS	17	III	15.8%
53-7051	Industrial truck and tractor operators	\$37,376	\$38,009	\$27,160	NS	17	III	0.7%
41-4011	Sales representatives, wholesale and manufacturing, technical and scientific products	\$51,164	\$89,269	\$38,350	NS	17	III	11.5%
17-3026	Industrial engineering technicians	\$60,877	\$62,230	\$45,872	NS	14	II	-6.3%
17-3027	Mechanical engineering technicians	\$52,977	\$54,295	\$40,945	NS	14	II	-0.8%
47-2211	Sheet metal workers	\$54,099	\$63,565	\$43,339	NS	14	II	12.9%
43-1011	First-line supervisors of office and administrative support workers	\$53,956	\$55,725	\$37,937	NS	14	III	11.5%
51-4032	Drilling and boring machine tool setters, operators, and tenders, metal and plastic	\$40,390	\$48,430	\$27,860	MA	12	I	-29.6%
37-2011	Janitors and cleaners, except maids and housekeeping cleaners	\$30,012	\$30,965	\$20,803	NS	12	I	7.4%
51-4035	Milling and planing machine setters, operators, and tenders, metal and plastic	\$45,910	\$48,730	\$33,620	MA	12	I	-20.8%
17-3023	Electrical and electronics engineering technicians	\$58,940	\$61,567	\$47,094	NS	12	II	-4.8%

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	\$34,050	\$35,031	\$25,543	NS	235	I	-14.8%
51-2092	Team assemblers	\$25,818	\$29,373	\$18,513	NS	108	I	-0.5%
17-3023	Electrical and electronics engineering technicians	\$58,940	\$61,567	\$47,094	NS	90	II	-4.8%
51-9061	Inspectors, testers, sorters, samplers, and weighers	\$50,966	\$51,760	\$35,339	NS	74	II	1.1%
11-1021	General and operations managers	\$100,957	\$122,586	\$63,941	NS	53	III	11.9%
51-1011	First-line supervisors of production and operating workers	\$64,622	\$66,005	\$45,523	NS	50	III	-4.3%
51-9141	Semiconductor processors	\$33,940	\$33,990	\$25,410	MA	48	II	-28.0%
41-4011	Sales representatives, wholesale and manufacturing, technical and scientific products	\$51,164	\$89,269	\$38,350	NS	48	III	11.5%
51-2023	Electromechanical equipment assemblers	\$33,962	\$35,130	\$26,641	NS	40	I	-8.2%
17-3026	Industrial engineering technicians	\$60,877	\$62,230	\$45,872	NS	37	II	-6.3%
43-4051	Customer service representatives	\$37,494	\$39,576	\$26,518	NS	34	I	11.3%
51-4041	Machinists	\$55,289	\$54,014	\$36,072	NS	32	III	-0.2%
53-7062	Laborers and freight, stock, and material movers, hand	\$27,966	\$31,330	\$20,637	NS	29	I	9.1%
43-5061	Production, planning, and expediting clerks	\$54,942	\$54,493	\$41,125	NS	29	I	2.7%
43-5071	Shipping, receiving, and traffic clerks	\$35,919	\$36,217	\$22,064	NS	29	I	1.3%
15-1151	Computer user support specialists	\$53,518	\$54,434	\$34,761	NS	29	III	19.4%
41-4012	Sales representatives, wholesale and manufacturing, except technical and scientific products	\$51,164	\$89,269	\$38,350	NS	26	III	7.6%
43-9061	Office clerks, general	\$32,160	\$35,413	\$23,883	NS	24	I	4.6%
43-3031	Bookkeeping, accounting, and auditing clerks	\$40,989	\$40,828	\$28,574	NS	21	III	11.0%
51-9198	Helpers – production workers	\$26,012	\$27,666	\$19,394	NS	18	I	1.1%
43-6014	Secretaries and administrative assistants, except legal, medical, and executive	\$37,143	\$38,280	\$29,048	NS	18	I	9.4%
43-5081	Stock clerks and order fillers	\$22,854	\$26,598	\$18,182	NS	18	I	-2.1%
49-9071	Maintenance and repair workers, general	\$42,621	\$43,904	\$28,674	NS	18	II	11.1%
51-4011	Computer-controlled machine tool operators, metal and plastic	\$43,470	\$44,663	\$33,335	NS	18	III	4.4%
51-2099	Assemblers and fabricators, all other	\$21,197	\$32,068	\$17,833	NS	16	I	8.6%
51-4072	Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic	\$33,360	\$34,610	\$24,460	MA	16	I	-15.3%
51-4121	Welders, cutters, solderers, and brazers	\$48,292	\$56,330	\$39,087	NS	16	II	-1.3%
43-6011	Executive secretaries and executive administrative assistants	\$50,530	\$51,427	\$34,713	NS	16	III	-2.3%
43-1011	First-line supervisors of office and administrative support workers	\$53,956	\$55,725	\$37,937	NS	16	III	11.5%
51-4031	Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	\$35,996	\$38,729	\$22,300	NS	13	I	-13.1%
17-3027	Mechanical engineering technicians	\$52,977	\$54,295	\$40,945	NS	13	II	-0.8%
49-2094	Electrical and electronics repairers, commercial and industrial equipment	\$57,035	\$60,383	\$40,751	NS	13	III	0.8%

Electrical Equipment and Appliance Manufacturing – NAICS Code 335

SOC CODE	OCCUPATIONAL TITLE	MEDIAN WAGE	MEAN WAGE	ENTRY WAGE	AREA FOR WAGE DATA	NORTH SHORE EMPLOYMENT	LEVEL	PROJECTED GROWTH
51-2092	Team assemblers	\$25,818	\$29,373	\$18,513	NS	115	I	-0.5%
51-2022	Electrical and electronic equipment assemblers	\$34,050	\$35,031	\$25,543	NS	93	I	-14.8%
51-1011	First-line supervisors of production and operating workers	\$64,622	\$66,005	\$45,523	NS	29	III	-4.3%
51-9061	Inspectors, testers, sorters, samplers, and weighers	\$50,966	\$51,760	\$35,339	NS	27	II	1.1%
53-7062	Laborers and freight, stock, and material movers, hand	\$27,966	\$31,330	\$20,637	NS	19	I	9.1%
51-2021	Coil winders, tapers, and finishers	\$32,200	\$32,730	\$24,280	MA	18	I	-20.6%
51-4041	Machinists	\$55,289	\$54,014	\$36,072	NS	18	III	-0.2%
53-7051	Industrial truck and tractor operators	\$37,376	\$38,009	\$27,160	NS	17	III	0.7%
51-4031	Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	\$35,996	\$38,729	\$22,300	NS	16	I	-13.1%
51-2023	Electromechanical equipment assemblers	\$33,962	\$35,130	\$26,641	NS	16	I	-8.2%
43-5071	Shipping, receiving, and traffic clerks	\$35,919	\$36,217	\$22,064	NS	16	I	1.3%
49-9071	Maintenance and repair workers, general	\$42,621	\$43,904	\$28,674	NS	15	II	11.1%
41-4012	Sales representatives, wholesale and manufacturing, except technical and scientific products	\$51,164	\$89,269	\$38,350	NS	15	III	7.6%
51-4011	Computer-controlled machine tool operators, metal and plastic	\$43,470	\$44,663	\$33,335	NS	14	III	4.4%
11-1021	General and operations managers	\$100,957	\$122,586	\$63,941	NS	14	III	11.9%
43-4051	Customer service representatives	\$37,494	\$39,576	\$26,518	NS	13	I	11.3%
51-4021	Extruding and drawing machine setters, operators, and tenders, metal and plastic	\$37,224	\$42,484	\$33,122	NS	13	I	-15.6%
51-4081	Multiple machine tool setters, operators, and tenders, metal and plastic	\$35,646	\$39,976	\$29,030	NS	13	I	-21.7%
51-2099	Assemblers and fabricators, all other	\$21,197	\$32,068	\$17,833	NS	12	I	8.6%
17-3023	Electrical and electronics engineering technicians	\$58,940	\$61,567	\$47,094	NS	12	II	-4.8%
51-4121	Welders, cutters, solderers, and brazers	\$48,292	\$56,330	\$39,087	NS	12	II	-1.3%
51-4072	Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic	\$33,360	\$34,610	\$24,460	MA	11	I	-15.3%
43-9061	Office clerks, general	\$32,160	\$35,413	\$23,883	NS	9	I	4.6%
43-5061	Production, planning, and expediting clerks	\$54,942	\$54,493	\$41,125	NS	9	I	2.7%
43-3031	Bookkeeping, accounting, and auditing clerks	\$40,989	\$40,828	\$28,574	NS	9	III	11.0%
51-2031	Engine and other machine assemblers	\$42,370	\$45,290	\$28,260	MA	8	I	5.2%
51-9198	Helpers – production workers	\$26,012	\$27,666	\$19,394	NS	8	I	1.1%
43-5081	Stock clerks and order fillers	\$22,854	\$26,598	\$18,182	NS	7	I	-2.1%
51-9121	Coating, painting, and spraying machine setters, operators, and tenders	\$40,255	\$39,353	\$33,569	NS	6	I	-10.2%

Electrical Equipment and Appliance 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	\$38,800	\$40,970	\$26,160	MA	6	II	-2.6%
41-4011	Sales representatives, wholesale and manufacturing, technical and scientific products	\$51,164	\$89,269	\$38,350	NS	6	III	11.5%
53-7063	Machine feeders and offbearers	\$30,914	\$32,238	\$25,781	NS	5	I	-6.0%
53-7064	Packers and packagers, hand	\$21,462	\$22,905	\$18,139	NS	5	I	3.4%
43-6014	Secretaries and administrative assistants, except legal, medical, and executive	\$37,143	\$38,280	\$29,048	NS	5	I	9.4%
51-4111	Tool and die makers	\$58,724	\$59,004	\$50,757	NS	5	I	-9.2%
49-9043	Maintenance workers, machinery	\$40,682	\$41,053	\$30,439	NS	5	II	10.8%
49-9041	Industrial machinery mechanics	\$60,494	\$59,130	\$44,151	NS	5	III	-4.6%
51-9111	Packaging and filling machine operators and tenders	\$28,611	\$29,644	\$22,986	NS	5	I	5.5%
51-4122	Welding, soldering, and brazing machine setters, operators, and tenders	\$50,448	\$46,231	\$30,843	NS	5	I	6.5%
17-3026	Industrial engineering technicians	\$60,877	\$62,230	\$45,872	NS	5	II	-4.6%
49-2094	Electrical and electronics repairers, commercial and industrial equipment	\$57,035	\$60,383	\$40,751	NS	5	III	0.8%

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 2013, 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 (Annual 2013) 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 2012 to 2022. These estimates are provided by the Massachusetts Executive Office of Labor and Workforce Development.

APPENDIX C References

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North Shore Workforce Investment Board

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Stephen Falvey, <i>Treasurer</i>	Carpenter's Union
Sarah Stanton, <i>Clerk/Secretary</i>	City of Salem
Joe Bourgeois	General Electric Aviation
Robert Bradford	North Shore Chamber of Commerce
Brian Cranney	Cranney Electric
Timothy Doggett	Thermal Circuits
Tony Dunn	North Shore Labor Council
Patricia Gentile	North Shore Community College
Marcia Griesdorf	Beverly Hospital
Peggy Hegarty-Steck	Action, Inc.
Susan Jepson	National Senior Network
Joyce Kilroy	Analogic Corporation
Catherine Latham	Lynn Public Schools
Stan Usovicz	Verizon
Tom Lemons	TLA Lighting Consultants
David Manning	Division of Career Services
Paul Mahoney	BaneCare Management, LLC
Mike McCarthy	Bomco
Patricia Maguire Meservey	Salem State University
Doris Murphy	Salem Five
Mickey Northcutt	North Shore Community Development Coalition
Paula Reynolds	Cell Signaling Technology
Laurie Roberto	Revera Living
	Glen Ridge Nursing Care Center
Steve Shea	MassMutual (representing the Lynn Area Chamber of Commerce)
Andrew Shapiro	City of Salem
	Department of Planning and Community Development
Tracey Sherman	Microline Surgical
Jocelyn Tiberii	TJX
Bill Tinti	Tinti, Quinn, Grover & Frey
Edward Tirrell	Operation Bootstrap
Thelma Williams	Mass Commission for the Blind

North Shore Workforce Investment Area



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