

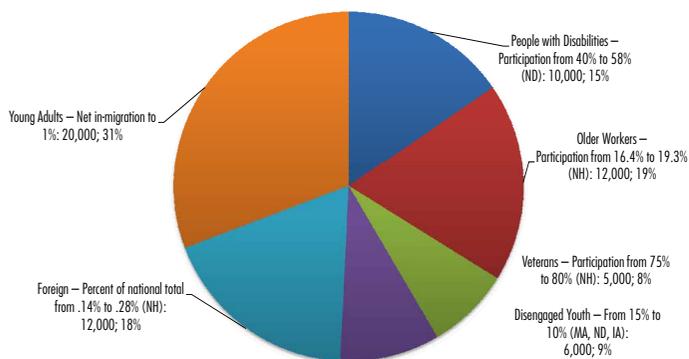
The background of the top half of the page features a series of interlocking gears. Overlaid on these gears are several stylized human figures, created from paper cutouts, walking in a line from left to right. The figures are white and have a simple, blocky design. The overall color palette is a mix of greys, blacks, and whites, with a touch of green from the text and the bottom banner.

**PREPARING
MAINE'S
WORKFORCE**

MAKING MAINE WORK

CRITICAL INVESTMENTS FOR THE MAINE ECONOMY

**CHART 1: Making Maine Work's Workforce Goals
65,000 New Maine Workforce Entrants by 2020**



SOURCE: Maine Development Foundation / Maine State Chamber of Commerce Web Survey with Business Leaders February 2010, n=1,039.

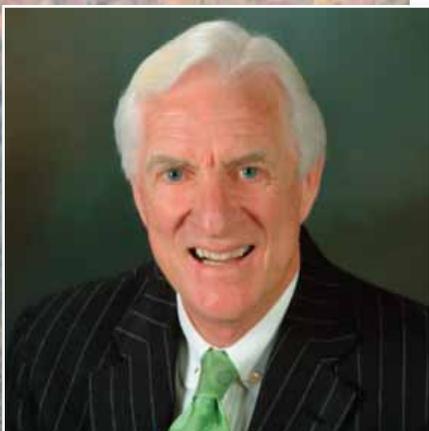
Growing Maine's economy means we need enough workers with the diverse skills, training, and education to meet the current and future needs of employers, and the innovative capacity and entrepreneurial skills to create new opportunities for themselves and others. This is a critical issue and a strategic priority of both the Maine State Chamber of Commerce and the Maine Development Foundation (MDF):

"... in a knowledge-based, technology-driven economy, the education attainment and skill development of the workforce are the major determinants of a region's ability to attract business investment and to increase income, and an individual's ability to secure a decent standard of living and the prospects of upward mobility."¹

Released in November 2013, *Making Maine Work: Growing Maine's Workforce* focused on **improving workforce participation** among people who are already here and improving our net in-migration (see Chart 1). This companion report focuses on the **quality of Maine's workforce**.

The two issues are closely interwoven: **Having enough workers with the appropriate skills is critical to improving productivity, creating new opportunities, and growing our economy.** The New England Policy Center noted that both quantity and quality are crucial, and the mix of skills may be even more important than the overall number."²

Many Mainers remain unemployed, even as employers in a wide range of industries struggle to find employees with the desired skill sets. As the demographic issues underlying workforce quantity have received considerable attention in recent years, so too have the issues around workforce quality. As with *Making Maine Work: Growing Maine's Workforce*, the intent of this report is to focus on solutions to our challenges. And, as with the issues around workforce quantity, **we do not have the luxury of waiting.**



Dana Connors
Maine State Chamber of Commerce



Harold Clossey
Maine Development Foundation

Dana Connors, President
Maine State Chamber of Commerce

Harold Clossey, President and CEO
Maine Development Foundation

1 "Making Maine Work: Investment in Young Children = Real Economic Development," Maine State Chamber of Commerce and Maine Development Foundation, January 2012
2 Modestino, Alicia Sasser, "Mismatch in the Labor Market: Measuring the Supply of and Demand for Skilled Labor in New England," New England Public Policy Center, November 2010

EXECUTIVE SUMMARY

According to the Maine Department of Labor's Center for Workforce Research and Information, "The growth of the Maine economy during the next two decades will rely in large part on the quantity and quality of the workforce ... Enhancing worker productivity through increasing skills and education will help a slowly growing labor force meet the employer needs that arise in the next twenty years."³ The jobs of the future will require higher levels of skill and education. Although particular industries change, providing workers with the education, skills, and training to meet the needs of today and adjust to future changes in the economy is critical to our economic growth.

In addressing these issues, some key themes and recommendations emerge. The challenges are significant, but the potential benefits more so. As two national observers noted, "Today's globalized and technology-driven economy presents serious challenges. But it also offers opportunities and rewards. By strategically investing in people, training them in the skills employers in their communities are looking for, we can help drive down unemployment while building the foundation for the broadly shared prosperity we all seek."⁴

The McKinsey Center for Government reports a telling statistic: nationwide, 72% of college and university leaders believed that graduates were ready for the job market, compared to only 42% of employers.⁵ Closing this gap in Maine is a tremendous opportunity.

The inherent challenges of continually enhancing the quality characteristics of Maine's workforce require a focused effort by all stakeholders. Specifically, higher education and preK-12 education leaders, state government, independent non-profit organizations, and all employers and industry groups must work **individually** and **collaboratively**. Broadly, our recommendations do not call for the creation of new infrastructure and organization, but for tighter alignment and coordination of efforts under five key themes:

- Stakeholder collaboration and integration;
- Targeted marketing;
- Incentives to catalyze individual and institutional behaviors;
- Competencies and workplace readiness; and,
- Metrics and data-driven decision making.

Tangible efforts in the next decade towards goals under each of these themes will assuredly enhance the quality of our workforce, restore our economic competitiveness, and catalyze growth while protecting our values.

3 Maine Department of Labor Center for Workforce Research and Information, "The Maine Labor Force—Aging and Slowly Growing," May 2013

4 Dimon, Jamie and Marlene Seltzer, "Closing the Skills Gap," Politico Magazine, January 2014

5 McKinsey Center for Government, "Education to Employment: Designing a System that Works"



"The economy requires not only available workers to support employment growth, but also an available workforce with the appropriate skills to meet the needs of employers that are in a position to hire new workers."

Ross Gittell

"Skills and People Matching: Where are the Jobs,"
New England Economic Conference, May 2012



THEMES AND RECOMMENDATIONS

INTEGRATION AND COLLABORATION...

There are many entities and efforts engaged in various aspects of preparing Maine's workforce, each with a valuable role to play. We need to ensure that these efforts are coordinated and working cohesively, sharing knowledge and best practices.

- 1** **Educational institutions at all levels, employers, industry associations, and state government must make a commitment to increase and expand a wide range of partnerships and collaborative efforts, including internships, feedback and advisory connections, field experience, and job shadowing.**
- 2** **An annual meeting of leaders from all agencies, commissions, boards, and institutions should be convened to review and report on current tactical plans toward the unified strategy.**
- 3** **Encourage all employers, educational institutions, and government agencies to make a commitment to purposefully engage in a specific collaboration, within the existing framework, that is above and beyond their current activities and efforts.**

TARGETED MARKETING OF OPPORTUNITIES...

There are numerous opportunities available for workers with the appropriate education, training, and skills. Improving awareness of these opportunities and the paths to them will help meet the needs of employers, create new opportunities, and improve the lives of individuals.

4 Market Maine’s quality of life and professional opportunities beyond our borders, with special attention to entrepreneurs and others who have flexibility in deciding where to live and work.

5 Market career opportunities and career paths, including:

- Expand employer connections and relationships with existing organizations, such as *Junior Achievement*, *Jobs for Maine’s Graduates* (JMG), and *Leadership Maine: Education Leaders Experience*.
- Businesses and industry groups should promote *coordinated open houses*, particularly in growth industries like health care and information technology, and other educational events where citizens can see and experience what working in a specific field is all about. Imagine a week where all manufacturers (or hospitals) *open their doors for tours to offer a first-hand look*, similar to the Maine Department of Agriculture, Conservation and Forestry’s “Maine Maple Days” or the Manufacturers Association of Maine’s “Dream It, Do It Maine.”
- Improve awareness of the *lifetime benefits of higher education*, such as increased earnings and tax revenue and reduced social spending.





INCENTIVES...

Incentives can help to direct individuals toward promising career paths and assist employers in supporting the educational and skill attainment of workers.

6 Bring educational institutions, employers, and career training services together to create and provide incentives for the approximately 200,000 Maine adults with some higher education but without a degree to complete their education.

7 Consider alternative financing mechanisms for students to access higher education and training.

8 Encourage more Maine employers to participate in MDF's Next Step Maine Employers' Initiative, which works with employers and institutions in supporting the educational aspirations of employees, and provides resources for potential students to continue their education.

9 Provide reimbursement to employers for on-the-job training, whether done in-house or in conjunction with educational institutions.

10 Provide resources and connections to build and support a culture that supports innovation and entrepreneurship.

11 Expand existing internship and mentoring efforts to provide learning opportunities for workers and connect potential workers with employers.

EMPLOYEE COMPETENCIES...

Higher education provides a number of benefits, but the opinions of educational institutions and employers differ widely on how well graduates are prepared for the job market. The evaluation of basic competencies is an emerging trend in education and workforce training.

12 Help employers understand and appreciate the importance of competencies and credentials and utilize them in hiring employees.

13 Develop higher education programming with tangible competencies desired by industry, including both specific knowledge and core professional skills.

14 Work with higher education institutions and employers to develop in-house training programs that can be certified by colleges and universities for academic credit.

15 Monitor and look to build on work being done at the national level to improve data on professional licensures and certifications to assist in formulating policies in this area.

METRICS AND DATA...

As the dynamics of the workplace continue to change, so too do the related means of measurement. Ensuring that we have accurate and meaningful data is a key part of guiding our decision making.

16 Support continued use and improvement of the State Longitudinal Data System and Wage and Employment Outcomes Data System to track student performance at all levels and into the workforce to inform programming and policymaking.

17 Support the Maine Department of Labor in establishing and maintaining an ongoing job vacancy survey to provide greater detail and certainty when making policy decisions affecting human capital development and employment.



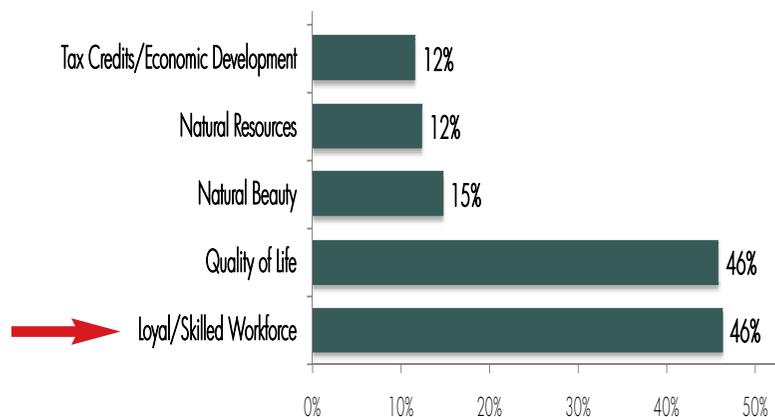


MAKING MAINE WORK:

PREPARING MAINE'S WORKFORCE

Maine's loyal and skilled workforce was cited as a primary factor in our economic growth in a 2010 survey of 1,000 Maine business leaders, that was the foundation of the original *Making Maine Work* report (see Chart 2).⁷ In a survey by MDF and the Maine State Chamber for this report, 49% of Maine employers with operations outside of Maine rated *Maine's work ethic* the same as other areas, 37% rated it better, and 10% rated it much better. An overwhelming majority of respondents ranked Maine's work ethic as either very important or important to the success of businesses (96%) and to attracting other businesses to the state (89%). Work ethic was rated as either excellent or good by 82% of respondents. *Mainers have a well-earned reputation for being hard workers, for dedication, and for loyalty.* Like our rugged mountains and rocky coastline, our work ethic is part of our identity, heritage, and an extreme source of pride. *It is also an important and valuable economic asset.*

CHART 2: Supports to Economic Growth in Maine
by Percentage of All Responses Provided



SOURCE: Maine Development Foundation / Maine State Chamber of Commerce Web Survey with Business Leaders
February 2010, n=1,039.

6 "Making Maine Work: Critical Investments for the Maine Economy," Maine State Chamber of Commerce and Maine Development Foundation, July 2010

THE CHANGING ECONOMY

The changing national economy requires workers with higher skills and education than in years past. A **skilled workforce** is a key element in a region's ability to keep and attract businesses and investment. In 2013, corporate executives rated the availability of skilled workers as the single greatest factor in companies' decisions to plan new facilities, relocate, or expand.⁷ Unfortunately, **the skill sets of available workers do not always correspond with the needs of employers**. According to the U.S. Chamber of Commerce, "In the U.S. today, there are millions of unfilled high-skilled jobs while at the same time tens of millions of people are unemployed."⁸

States with natural resourced-based economies have been particularly impacted by the transition from a production-oriented to a service-oriented economy. Maine's economy continues to shift toward knowledge-driven industries that require educated workers, and higher levels of skill and education are required throughout the economy. From 1990 to 2009, 23 of the 25 occupational groups saw an increase in the share of workers with a bachelor's degree or higher.⁹ Meanwhile, occupations that do not require higher education have lost jobs, and most future growth is expected in occupations that require some higher education.¹⁰ According to the Maine State Board of Education Select Panel on Revisioning Education in Maine, "The days when a high school diploma was the key to successful employment with a reasonable income are long past."¹¹

Unfortunately, the skills of many Mainers who have lost jobs do not transfer easily to growing industries. Many people who have lost jobs live in our rural areas, which account for more than 60% of our total population, while growing industries are concentrated in and around urban areas. We have many long-term unemployed workers and discouraged workers who have given up looking for work.¹² These are significant challenges.

7 Yates, Gary, "Corporate Executive Survey Commentary: Skilled Labor Tops the List," Area Development, First Quarter 2014

8 United States Chamber of Commerce testimony to the Office of Information and Regulatory Affairs, March 2014

9 Maine Department of Labor Center for Workforce Research and Information, "The Labor Market Challenges for Maine Workers," March 2010

10 Maine Department of Labor Center for Workforce Research and Information, "The Changing Need for Educated Maine Workers," July 2011

11 Maine State Board of Education Select Panel on Revisioning Education in Maine, "The Learning State: Maine Schooling for the 21st Century," September 2006

12 Johnson, Joel and Garrett Martin, "Maine's Labor Market Recovery: Far From Complete", Maine Center for Economic Policy, April 2014

"Maine needs to maintain the value and quality of Maine's workforce.

Industries look at the qualities a state's workforce possesses when deciding where to expand. Maine's people are hard and loyal workers and are not afraid of challenges. A quality workforce generates an important relationship between well-trained, dedicated workers and employers who depend upon them to maintain and grow their businesses. The better trained and flexible the workforce, the more companies that come to take advantage of that workforce."

Maine State Workforce Investment Board
www.maine.gov/swib/faqs/workforce_development.html

"Our approach today, going forward is, the companies that have the people get the work. If you don't invest in retention, educational initiatives, then it's going to be very, very difficult to grow as an organization going forward."

Peter Vigue, CEO, Cianbro,
quoted in *Innovation Maine*, April 2014



THE YEARS AHEAD

According to a report by America’s Edge (now ReadyNation), “The anticipated growth rates for occupations for Maine are highly skewed towards jobs that are either highly skilled – needing a bachelor’s degree or above – or middle skilled – requiring more than a high school degree but less than a four-year degree.”¹³ More than 40% of net job growth is expected to come from occupations that require a degree or award. Jobs requiring professional, masters, and associate’s degrees are projected to see the highest percent increase through 2020 (see Chart 3). There will still be many jobs that require a high school diploma or less, but these will have higher performance requirements in the future.¹⁴

CHART 3: Occupational Employment by Educational Requirement in Maine in 2012 and Projected 2022

Educational Requirement	Average Employment		Change in Employment		2013
	2012	2022	Net	Percent	Average Wage
<i>TOTAL</i>	654,770	669,774	15,004	2.3%	\$19.92
Doctoral or professional degree	17,882	18,944	1,062	5.9%	\$58.03
Master's degree	12,278	13,332	1,054	8.6%	\$31.97
Bachelor's degree	103,630	105,893	2,263	2.2%	\$30.98
Associate's degree	28,808	31,324	2,516	8.7%	\$27.14
Postsecondary non-degree award	47,594	49,931	2,337	4.9%	\$16.81
Some college, no degree	9,963	9,745	-218	-2.2%	\$16.06
High school diploma or equivalent	264,331	265,513	1,182	0.5%	\$18.40
Less than high school	170,284	175,092	4,808	2.8%	\$11.39

SOURCE: Maine Department of Labor Center for Workforce Research and Information

13 America’s Edge, “*Keeping Maine Competitive*,” America’s Edge, 2013, p. 2

14 Mills, Glenn, Chief Economist, Maine Department of Labor Center for Workforce Research and Information

The vast majority of the most promising occupations – those offering high wages and in high demand – require education beyond high school. Chart 4 lists the ten occupations with the highest projected growth rates. This information is regularly updated by the Maine Department of Labor’s Center for Workforce Research and Information.

CHART 4: High-Wage In Demand Occupations

Occupation	Percent Change	Employment 2012	Projected Employment 2022	Typical Education
Interpreters and Translators	42.0%	193	274	Bachelor's degree
Diagnostic Medical Sonographers	35.3%	252	341	Associate's degree
Substance Abuse and Behavioral Disorder Counselors	31.5%	790	1,039	High school diploma or equivalent
Nursing Instructors and Teachers, Postsecondary	28.8%	399	514	Master's degree
Skincare Specialists	28.3%	145	186	Postsecondary non-degree award
Health Specialties Teachers, Postsecondary	27.7%	293	374	Doctoral or professional degree
Meeting/Convention/Event Planners	25.2%	314	393	Bachelor's degree
Cardiovascular Technologists and Technicians	24.8%	250	312	Associate's degree
Biochemists and Biophysicists	24.4%	82	102	Doctoral or professional degree
Information Security Analysts	23.4%	235	290	Bachelor's degree

SOURCE: Maine Department of Labor Center for Workforce Research and Information

Another important element is **the ability of Mainers to generate new opportunities for themselves and others**. Approximately 80% of growth in any economy comes from innovation in one form or another. Maine’s history of creativity and ingenuity can help us to grow our economy. All levels of our educational system and society in general must foster innovation and entrepreneurship, providing the tools, connections, and resources for individuals to create opportunities for themselves and others.



EARLY CHILDHOOD AND K-12

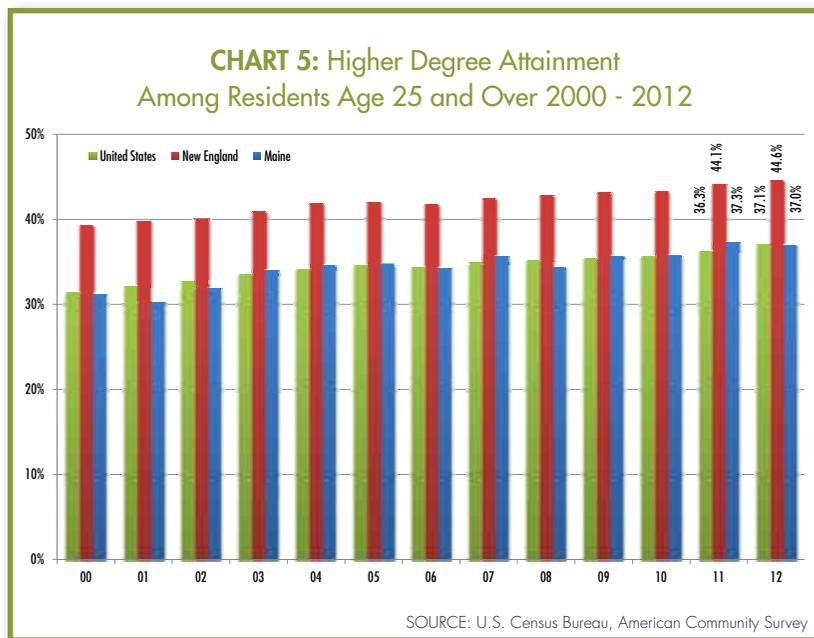
As explored in detail in *Making Maine Work: Investment in Young Children = Real Economic Development*, the foundation for a successful future is laid in the critical formative years of early childhood. From there, it is critical that our K-12 system provide students with the basic knowledge and skills for future success, whether in higher education or the workforce. *Students and their families need to be engaged early on* to understand how their current learning impacts their career paths.

According to *America's Edge* (now ReadyNation), “One of the best – and proven – ways to impact the skills gap is to equip high school students for success in both post-secondary training and/or education and their future careers. Students need to understand how education is relevant to a career, understand their options and what is expected in the work place, and develop communication, collaboration and critical-thinking capabilities.”¹⁵

15 *America's Edge "Keeping Maine Competitive," 2013, p. 2*

THE IMPORTANCE OF HIGHER EDUCATION

Higher degree attainment is a key measure of workforce quality. As noted in *Making Maine Work: The Role of Maine's Public University System*, "There is little doubt that a highly educated and trained workforce is a critical component of economic growth. One of the key measures of a skilled workforce is higher degree attainment."¹⁶ In 2012, 37% of Mainers age 25 and older held an associate's, master's, or advanced degree (see Chart 5). Maine's percentage of associate's degree holders was higher than the U.S. and New England, while our percentage of bachelor's and advanced degree holders was lower.¹⁷ Unfortunately, "This gap in educational attainment puts Maine residents at a disadvantage for earnings potential and professional advancement, and limits the state's ability to retain, grow, and attract knowledge-based businesses and jobs."¹⁸



"The jobs of the future will require education and training beyond high school and many of the highest growth and highest wage jobs will require a bachelor's degree or more. Yet, Maine's higher degree attainment rates trail regional rates. Faced with this gap in qualified workers, it is imperative that every Maine person achieve their highest educational potential."

From the Maine Development Foundation, *"Jobs in Maine: Top Industries, Occupations, Skills and Majors,"* June 2013, p. 1

16 Maine State Chamber of Commerce and Maine Development Foundation, *"Making Maine Work: The Role of Maine's Public University System,"* December 2010, p. 1

17 Maine Economic Growth Council and Maine Development Foundation, *"Measures of Growth In Focus 2014"*

18 Maine Development Foundation, *"Jobs in Maine: Top Industries, Occupations, Skills and Majors,"* June 2013

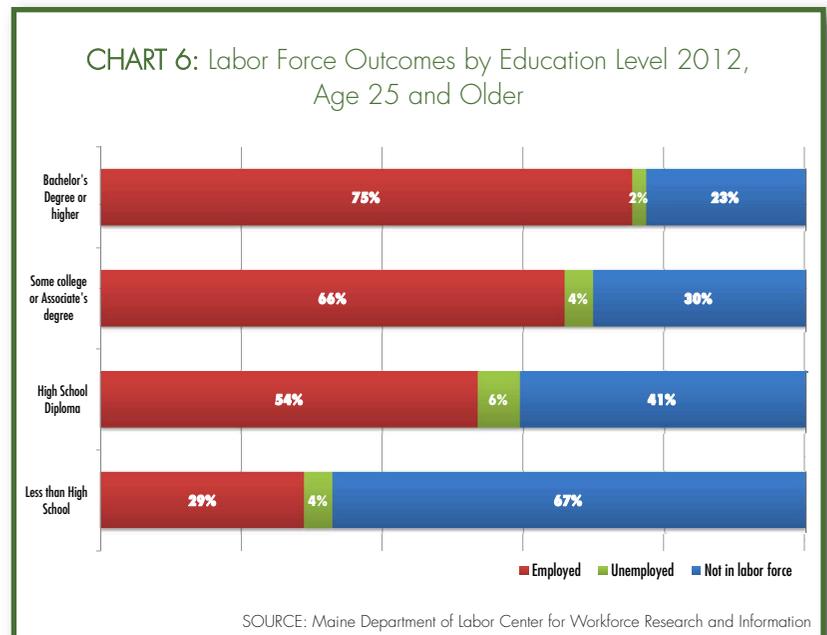


“A strong economy requires a highly educated workforce that can innovate and adapt to change.”

Maine State Chamber of Commerce and Maine Development Foundation, “Making Maine Work: The Role of Maine’s Public University System,” December 2010, p. 1

Higher education is associated with a number of **positive benefits for the individual and society**, including higher earnings, a reflection of employer demand. In 2012, Maine’s median earnings were \$20,950 for those who did not finish high school; \$26,650 for high school graduates; \$30,400 for those with some college, but no degree; \$40,050 for bachelor’s degree holders; and, \$51,050 for graduate or professional degree holders.¹⁹ Mainers with bachelor’s degrees average 75% higher earnings and generate nearly \$45,000 more in tax revenues than high school graduates over the course of their lifetimes. Each bachelor’s degree creates a benefit to Maine taxpayers, in increased earnings and reduced social spending, of about \$74,600 in present value during an average lifetime.²⁰

People with higher education levels are also less likely to be unemployed and more likely to participate in the labor force (either through employment or actively looking for employment).²¹



Among its other recommendations, *Making Maine Work: The Role of Maine’s Public University System* proposed that the University of Maine System focus on graduating more people with the skills and knowledge to meet the current and future needs of Maine’s economy. The system has made progress in this area through campus advisory boards, connections with business partners, incentives for degree completion, and working with the Maine Department of Labor on collecting employment and salary data by degree, discipline, and educational level to inform decision making.²² The same recommendation applies equally well to Maine’s other higher education institutions.

19 Maine Economic Growth Council and Maine Development Foundation, “Measures of Growth In Focus 2014”

20 Maine Development Foundation and University of Maine School of Economics, “The Fiscal Return on Higher Education in Maine,”

21 Glenn Mills, Chief Economist, Maine Department of Labor Center for Workforce Research and Information

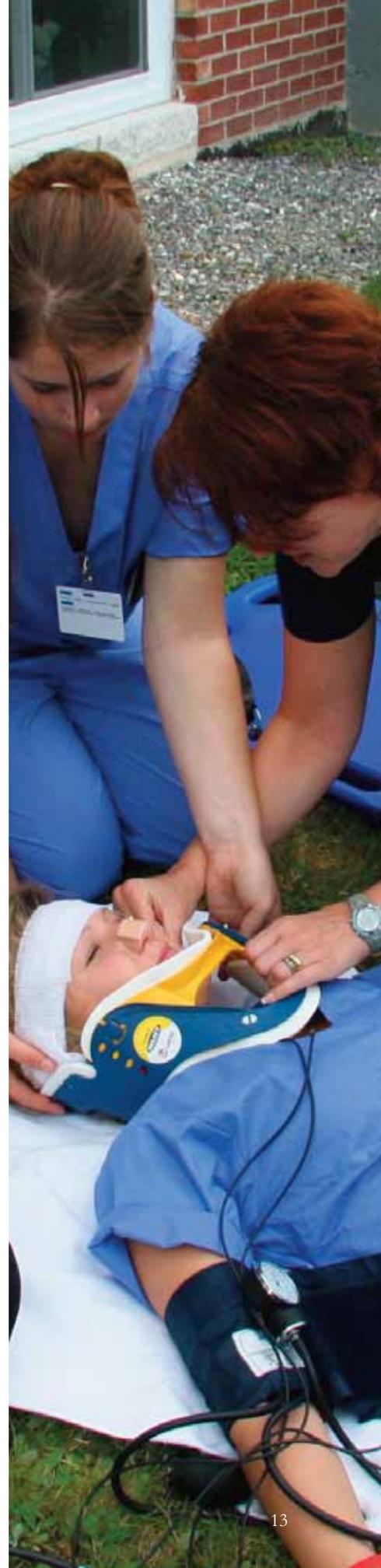
22 University of Maine System Student Affairs Office

However, it is not cost-effective for institutions to offer classes and programs that generate little interest from students, even if they offer promising careers. In the short term, aligning **programming** as closely as possible with industries that offer high wages and are in demand, and encouraging students to pursue these fields, will help to address the skills gap, offer a bright future to more students, and boost our economy. In addition to expertise in a particular field, higher education can help students develop and hone **core skills** that are extremely valuable in the job market.

Unfortunately, there is a considerable disconnect between how well institutions believe they are preparing students for the job market and how well employers think graduates are prepared. Nationwide, 72% of colleges and universities believed graduates were ready for the job market, compared to only 42% of employers.²³

Addressing this disconnect is **critical** to improving the quality of our workforce and growing the economy. As noted by the Federal Reserve Bank of Boston, “In the long run, strengthening partnerships between academic institutions and private industry groups can help ensure that programs of study lead to employment and possibly provide relevant work experience through structured internship and cooperative opportunities.”²⁴

For the long term, **students and potential workers at all levels need the knowledge and aptitude to adapt to the ever-changing demands of a constantly evolving economy.** Maine employers place a high value on core skills and are seeking employees who can demonstrate them. Chart 7 on the following page lists the core skills most frequently sought by Maine employers in job postings. While there are limitations to this data (online job postings are not synonymous with job vacancies, as the number, composition, and distribution of postings by occupation or industry do not necessarily represent the marketplace of job openings), it can be used as one of multiple indicators to evaluate large trends, provide insights into demand for certain occupations, and the skills and qualifications in demand.

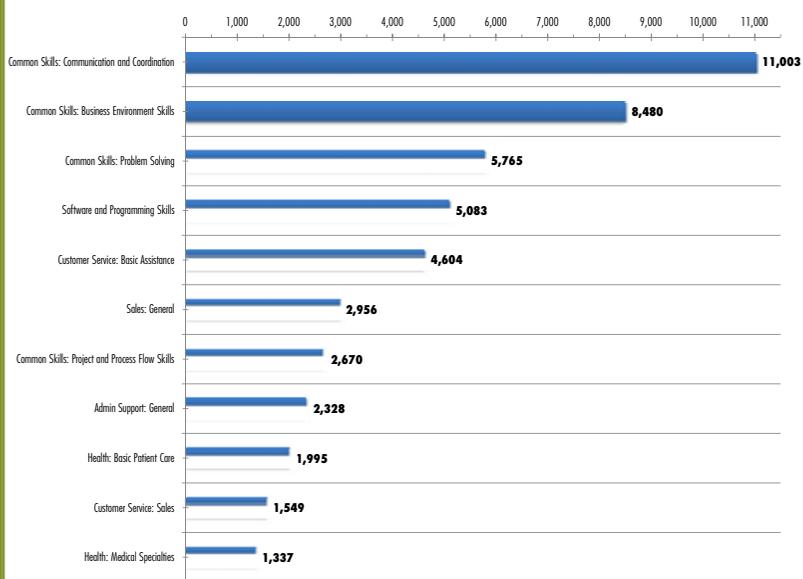


23 McKinsey Center for Government, “Education to Employment: Designing a System that Works”

24 Dennett, Julia and Alicia Sasser Modestino, “Uncertain Futures? Youth Attachment to the Labor Market in the United States and New England,” Federal Reserve Bank of Boston, December 2013



CHART 7: Skill Clusters in Greatest Demand in Online Job Postings, August to November 2014



SOURCE: Labor/Insight Jobs (Burning Glass Technologies)

As noted in MDF’s *Jobs in Maine: Online Job Postings by Industry, Occupation, Skills and Education* (December 2013), “The modern workplace demands a high degree of interaction, requiring communication and coordination skills. Maine employers consistently call for these skills in the jobs they post. Also, most job postings include an emphasis on business environment skills that stress fundamental behaviors in the workplace, such as compliance with work rules, timeliness, and proper attire.”²⁵ Kaplan University’s Workplace Readiness Program focuses specifically on ten core workplace skills (professional presentation, “coachability,” writing effectiveness, ethical behavior, teamwork, attendance and reliability, communication, independent thinking, problem solving, and positive employee engagement), which are assessed by every faculty member for every student, helping to ensure that students meet employer expectations.²⁶ Similarly, the Council for Aid to Education’s Collegiate Learning Assessment evaluates college students’ abilities in real-world skills like critical thinking, problem solving, scientific and quantitative reasoning, writing, and making and critiquing arguments.²⁷

25 Maine Development Foundation, “Jobs in Maine: Online Job Postings by Industry, Occupation, Skills and Education,” December 2013, p. 1

26 Kaplan University

27 Belkin, Douglas, “Are You Ready for the Post-College SAT?,” Wall Street Journal, August 25, 2013

COMPETENCIES AND CERTIFICATIONS

Competency-based learning, professional development, and certifications play an important role in improving the quality of the workforce. Digital badging initiatives, which leverage comprehensive ecosystems of learning to design effective and efficient digital means of demonstrating mastery of a particular skill or set of skills, are making strides in other states, helping to create a shared language around competencies and their relation to career pathways. Many employers do not require degrees, instead seeking employees with a particular skill set applicable to the task at hand. These range from specialized certifications or trainings to fundamental workplace competencies such as project management, communication, or basic organizational and time management skills that apply across industries. Prior Learning Assessment, the process of assigning college credit for an individual's learning gained outside of the classroom, is particularly important for adult learners in validating current knowledge, enhancing existing skills, and learning new skills. According to Politico Magazine, "The job opportunities that are opening up do not necessarily require college degrees, nor do they demand an educational background beyond the reach of most job seekers. But they do require specialized skills that can only be attained through focused and effective training. The challenge is giving workers the chance to acquire the right skills for the jobs in their communities."²⁸

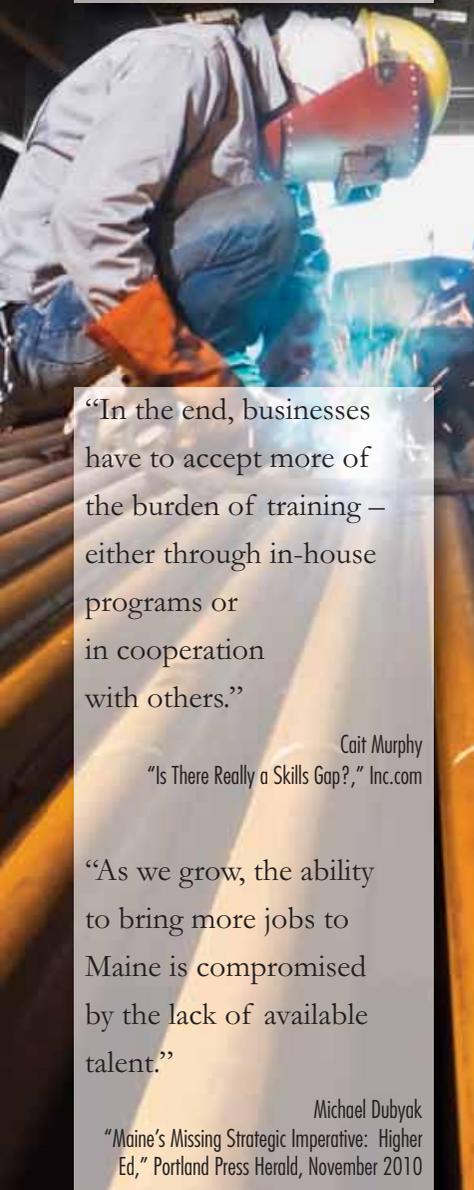
Professional certifications prove that a potential employee has the desired skills and competencies for a job. Numerous certifications exist, each with their own particular requirements. Some require a certain amount of training simply to be eligible for the certification. Health care related service certifications are most often listed in Maine's online job postings. The chart on the following page shows other top certifications sought by employers. The importance of certifications in the labor market is growing, yet reliable data on their numbers and types is lacking at the state and federal level.



28 Dimon, Jamie and Marlene Seltzer, "Closing the Skills Gap," Politico Magazine, January 2014

“A well-educated workforce with access to research, development and commercialization expertise is essential to maintaining Maine’s current high-tech industries and growing new ones. This need will become even greater in the years ahead.”

Dana Humphrey, Dean,
University of Maine College of Engineering,
University of Maine College of Engineering blog



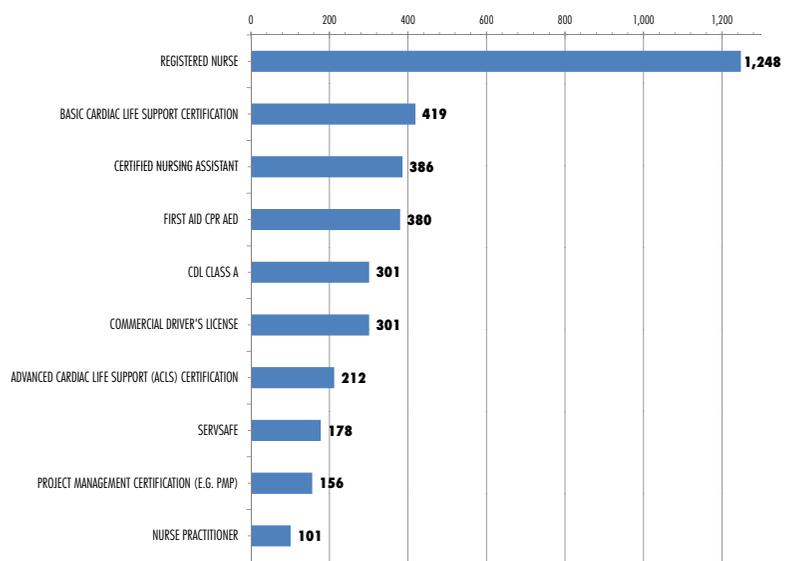
“In the end, businesses have to accept more of the burden of training – either through in-house programs or in cooperation with others.”

Cait Murphy
“Is There Really a Skills Gap?,” Inc.com

“As we grow, the ability to bring more jobs to Maine is compromised by the lack of available talent.”

Michael Dubyak
“Maine’s Missing Strategic Imperative: Higher Ed,” Portland Press Herald, November 2010

CHART 8: Certifications Listed in Online Job Postings, August to November 2014



SOURCE: Labor/Insight Jobs (Burning Glass Technologies)

EMPLOYER TRAINING

On-the-job training is a comparatively **efficient and cost-effective** means of providing employees with specific skills and has traditionally been an important part of workforce training. On average, however, U.S. employers today are investing less time and energy in on-the-job training than in years past.²⁹ Those that do provide on-the-job training generally expect potential employees to have a basic knowledge base from which they can learn specific skills. In the survey of Maine employers for this report, 84% of respondents offer on-the-job training, and 93% of these said it was either very important or important in providing employees with needed job skills.

Internships are also important in providing potential workers with necessary skills and provide a positive return on investment for employers. **Apprenticeships** have played an important role in providing training for new workers, particularly in the trades. Internships and apprenticeships also reduce the level of uncertainty for both employers and employees. Facilitating these essential connections between individuals, institutions, and employers is an important part of workforce training.

29 Murphy, Cait, “Is There Really a Skills Gap?,” Inc.com, and Renn, Aaron, “The Great Skills Gap Myth,” newgeography.com

THE MANUFACTURING SECTOR

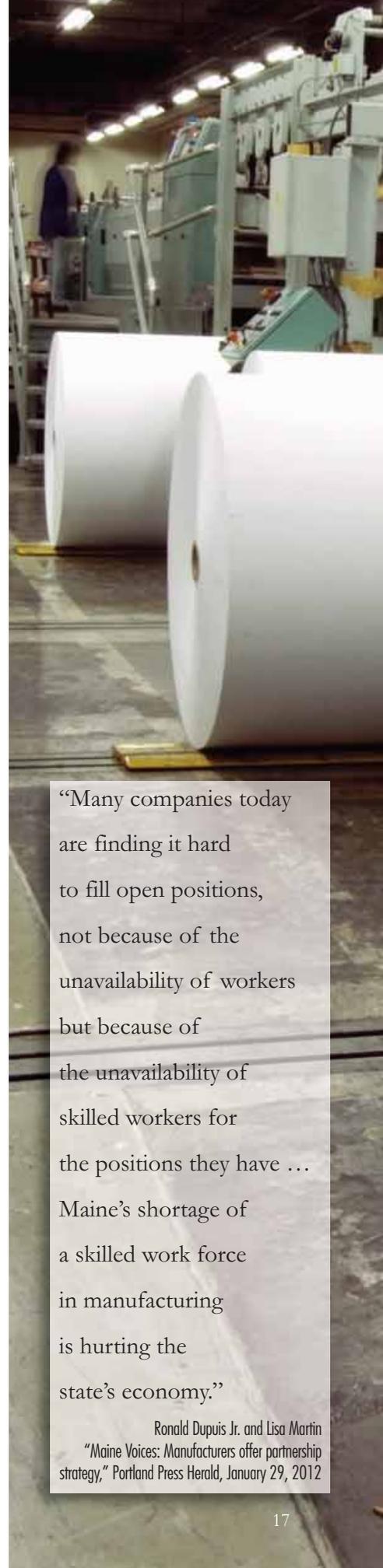
The manufacturing sector, which to a large extent built Maine's economy, offers an example of the changes in the larger economy. *Manufacturing productivity has increased in recent decades.* Maine's manufacturing jobs declined by 15% from 2007 to 2012, while real manufacturing gross domestic product was largely unchanged. By percentage, more of Maine's manufacturing employees have some college than in recent years (many Maine manufacturers require two-year degrees as a baseline for specific training),³⁰ and the industry offers comparatively high wages.

As technology has improved, manufacturing work has evolved from repetitive tasks and rigid procedures to operation of sophisticated equipment with a high degree of independence, flexibility, and problem solving. Yet, manufacturers struggle to find workers due in large part to an *outdated perception* of the nature of manufacturing work. According to the Connecticut Center for Advanced Technology Inc., "Although advanced manufacturing is creating opportunities for a well-educated workforce, one of the main reasons companies struggle to find employees is that public perception has not evolved at the same rate that the field has."³¹ A report by the Maine Department of Labor's Center for Workforce Research and Information concluded that "A successful future for manufacturing will depend, in part, on how well we *bridge the divide* between the talent employers need and job seekers offer."³²

30 Manufacturers Association of Maine "Maine's Industry Partnership/Sector Strategy," December 2011

31 Palisano, Susan H. "Science, Technology, Engineering, and Math: Reaching Target Audiences in Middle School," Communities & Banking, Federal Reserve Bank of Boston, Winter 2014

32 Maine Department of Labor Center for Workforce Research and Information, "Manufacturing Jobs: Trends, Issues, and Outlook," July 2012



"Many companies today are finding it hard to fill open positions, not because of the unavailability of workers but because of the unavailability of skilled workers for the positions they have ... Maine's shortage of a skilled work force in manufacturing is hurting the state's economy."

Ronald Dupuis Jr. and Lisa Martin
"Maine Voices: Manufacturers offer partnership strategy," Portland Press Herald, January 29, 2012



IMPROVED AWARENESS

In our past, a high school diploma or simple hard work were often enough to secure a quality job. These days that generally is not the case. In looking at research by the McKinsey Institute, the Maine Department of Labor's Center for Workforce Research and Information concluded that, in today's economy, "Having the appropriate education or training is the ticket to higher earnings."³³

With the changes in Maine's economy, people face both greater opportunities and greater challenges. Yet many people do not have all of the **pertinent information** to make **informed decisions** about their educational and career choices – on which sectors are growing, on the jobs that are in demand and offer high wages, and the path to achieve them, and on expected earnings and employment for various education and training and associated occupations. The choices they make may not be consistent with desired outcomes, such as living in Maine, living in a particular region of the state, and finding a promising career with a desired income. Encouraging students and others to think first about their life and career goals and then about the path to get them there should help bring more workers with the appropriate skills into the jobs that employers are struggling to fill. As a society, we need to do a better job of improving the awareness of the opportunities that are available in today's economy.

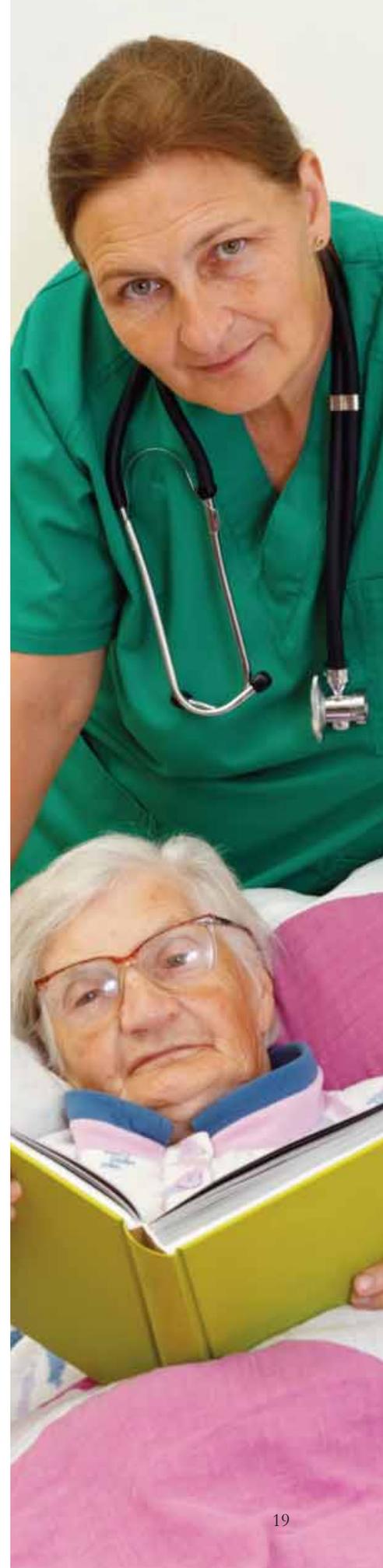
The 126th Maine Legislature passed legislation to address some of these issues, establishing a task force to facilitate informed planning for higher education and careers. The Maine Departments of Labor and Education, working with the University of Maine System and Maine Community College System, have developed an online wage and employment outcomes data system to link educational choices with employment outcomes. These are important steps in informing the decisions of policymakers, educational institutions, and students and potential students to help alleviate the skills gap and boost Maine's economy.

33 Maine Department of Labor Center for Workforce Research and Information, *Labor Market Digest*, January 2010, "Changing the Fortunes of America's Workforce: A Human Capital Challenge"

CONCLUSION

In the knowledge-driven economy, human capital is an indisputable key to economic growth. Just as there is no single strategy that will sufficiently **expand our workforce**, there is no single action or entity that can **improve the quality** of our workforce. There are, however, many promising and successful efforts underway in Maine and elsewhere. We need to build on what works, change what is not working, and address the gaps that exist now and going forward. We need to improve the **connections between businesses, industry partnerships, educational institutions, and workforce training at all levels** to ensure that our efforts are coordinated and cohesive. According to America's Edge (now ReadyNation), "To meet the future demands of a more skilled and educated workforce, policymakers should make sure we invest in what really works and include promising and evidence-based approaches that will ensure young people enter the workforce with the skills Maine businesses need."³⁴

Addressing the issues around Maine's workforce is vital if we hope to grow Maine's economy and achieve the high quality of life for all Maine people that we aspire to. We owe it to ourselves and future generations to make this happen.



34 America's Edge (now ReadyNation), "Keeping Maine Competitive", 2013, p. 9

EXISTING MAINE PROGRAMS

The following is a partial list of existing Maine programs that could serve as models for expanded efforts throughout the state.

FOCUSING ON K-12...

The [Maine Department of Education](http://www.maine.gov/doe/earlycollege/programs.html) lists some of the programs that enable high school students to earn credit toward two- and four-year degrees at www.maine.gov/doe/earlycollege/programs.html.

Some of these include: The Bridge Year Program, Lake Region High School Career Academies, Lewiston Regional Technical Center, Maine Career and Technical Education (CTE) Schools, and Maine Vocational Region 1's United Technologies Center. A number of other high schools in Maine are also considering the career academy model.

The [Manufacturers Association of Maine's "Dream It, Do It Maine"](#) program is a statewide campaign that engages the public and private sectors and works with students, educators, and parents to build an awareness of manufacturing as a high-tech, high-demand, high-paying industry.

FOCUSING ON COLLEGE STUDENTS...

The [Maine Community Foundation](#) invests in a number of fields and has made a special commitment to supporting an educated workforce by increasing the number of Mainers attending college, technical school, and other educational programs.

[Educate Maine's Project>Login](#) is focused on increasing the number of information technology professionals by educating, engaging, and offering internships to more people by collaborating with businesses and educational institutions.

The [Maine Advanced Technology and Engineering Center \(MATEC\)](#) is a partnership of the [University of Maine](#) and [Southern Maine Community College](#), in cooperation with the [University of Southern Maine](#), that offers associate's pre-engineering degrees and includes associate's to bachelor's articulation agreements in growth areas like advanced energy technology, precision manufacturing, and composites.

[InternHelpME.com](#), a program of the [Maine State Chamber of Commerce](#), offers college and graduate students the opportunity to connect with Maine employers for valuable internship experiences.

[University of Maine Innovation Engineering](#), [University of Maine Foster Center for Student Innovation](#), and [Blackstone Charitable Foundation Partnership](#) connect college students with new and growing companies to encourage and provide skills to Maine entrepreneurs.



Southern New Hampshire University's College for America is focused on employer partnerships and offers fast-paced, competency-based associate's degrees and stackable bachelor's degrees.

FOCUSING ON INCUMBENT WORKERS AND NON-TRADITIONAL STUDENTS...

Next Step Maine Employers' Initiative, a program of MDF, works with partners and employers to engage working adults and other non-traditional students to continue their educational and career goals. The website compiles resources and information for more than 340 educational programs from 12 institutions with offerings preferred by adult students to help inform their educational and career choices.

The University of Maine System's Adult Baccalaureate Completion/Distance Education (ABCDE) initiative focuses on adults with some college, but no degree. The initiative is designed to increase adult degree completion through innovative programs, enhanced distance education opportunities, improved access, and the removal of barriers, and includes an annual scholarship fund of \$375,000.

The State Workforce Investment Board works with industries to design and implement strategies to provide the skills needed to succeed in in-demand jobs. Committees include Apprenticeship, Older Workers, Program Policy, Veterans' Employment, Women's Employment Issues, Younger Workers, and the Commission on Disability and Employment.

Local Workforce Investment Boards, made up of representatives of business, labor, public, and nonprofit organizations, collaborate with the Maine Department of Labor to establish 12 full-service Career Centers and 18 satellite offices that provide services to employers and job seekers.

The Maine Department of Education's Career Pathways provides education and training that allows students to advance to progressively higher levels of education and employment in a specific industry or occupational sector. The approach works to connect adult education, training, and higher education to the needs of Maine employers.

Maine's Industry Partnership/Sector Strategy works with stakeholders to build and retain a manufacturing workforce that can adapt to changes in the sector. According to the Industry Partnership/Sector Strategy report, "The Industry Partnership concept is not just about worker training; it is about constantly evaluating labor-market data and information to stay competitive on the local, state, national and global levels."³⁵

WorkReady is a state-run program in partnership with local adult education programs that provides training to people who are new to the workplace or need help in getting the skills to find work. Programs are based on a statewide curriculum and supervised by the Maine Department of Education and the regional Workforce Investment Board to provide the specific skills sought by employers.



35 Manufacturers Association of Maine, "Maine's Industry Partnership/Sector Strategy," December 2011



Husson University's agreements with [Hollywood Casino](#) and [The Jackson Laboratory](#) are flexible models with a combination of onsite and online offerings that allow employees to complete business education degree requirements in two or three years.

The [Cianbro Institute](#) is an in-house educational facility partnering with educational institutions to attract, develop, and retain workers. A partnership with higher education institutions launched in 2009 allows workers to earn college credit by participating in certain training programs.

The [Maine Apprenticeship Program](#) provides structured, flexible, on-the-job training for job seekers in both traditional and emerging industries. Programs are sponsored by employers, employer associations, or labor associations, and are eligible for reimbursement of up to 50% of tuition costs.

[Mobilize Maine's](#) short-term training model is credentialed and stackable and provides training for high demand jobs. The program leverages funding from [Maine Quality Centers](#), includes a number of private sector employers, and is in its second round at [York County Community College](#). A key element is up-front input from employers on the design of the program.

The [Maine Department of Labor's Competitive Skills Scholarship Program](#) offers assistance to low-income Maine residents for tuition and other expenses for degrees or credentials in high-demand fields.

[CEI Workforce Solutions'](#) program works to achieve positive employment outcomes for economically disadvantaged job seekers through four strategies: Employment Training Agreements, as an intermediary between businesses and employees, as a broker, and through innovative projects.

The [Educational Opportunity Tax Credit](#) reimburses student loan payments for people with an associate's or bachelor's degree from a Maine institution who live and work in the state after graduation. Alternatively, businesses that pay employees' student loans as an employee benefit can claim the tax credit.

FOCUSING ON EMPLOYERS...

[Building Bridges](#) is a business-education partnership through which employers host on-site tours for educators to explore the skills students need to succeed in the modern workplace. The first program was run by the [Bangor Region Chamber of Commerce](#) and sponsored by [Cianbro](#). There are now more than 30 similar programs in the state.

The [Community College System's Maine Quality Centers](#) provide free customized workforce training to qualified new and expanding businesses. Training can be delivered before or after hiring and where it best suits a company's needs. The program allows two or more small businesses with similar training needs to participate.

DATA...

The [Maine Department of Labor's Center for Workforce Research and Information \(CWRI\)](#) offers the latest data and analysis on a wide variety of labor and employment topics, including job and industry projections and high-wage, in-demand jobs. CWRI has also developed a new data system that measures the employment outcomes of college graduates by credential, area of study, and school. The data can help students make more informed career choices; allow college administrators and educators to better evaluate programs and more efficiently allocate resources; and, help economic developers, employers, and policymakers to better understand the pipeline of graduates in particular sectors.

OTHER PROGRAMS AND RESOURCES...

Maine should carefully evaluate other programs to determine which, if any, could be helpful and offer a high return on investment. There are also a number of resources which can help inform our efforts.

[Ohio Means Jobs](#), operated by the state's Workforce Investment Boards with support from the Ohio Office of Workforce Development, provides a single location to access employment and support services from federal, state, and local partners. The website provides information on a wide range of topics, from information on in-demand careers to services to assist K-12 students in planning for their future education and careers.

The [Massachusetts Vision Project](#) involves all 29 public university campuses, offering both two- and four-year programs, in promoting their role in the state's economy. A key outcome is aligning occupationally-oriented degree and certificate programs with the needs of statewide, regional, and local employers.

[Apprenticeship Carolina](#) is a program run by the state and the state chamber of commerce, which includes a tax credit of \$1,000 per position for four years. The number of participating companies has grown from 90 to more than 630, with the goal of 2,000 by 2020.

[Youth CareerConnect](#) is a cooperative effort between the U.S. Department of Labor and U.S. Department of Education that provides \$100 million in grants to high school students with industry-relevant education and skills for future careers through apprenticeships, internships, and career tech programs.

[Connecticut Center for Advanced Technology, Inc.'s Young Manufacturers Summer Academy](#) is a two-week experiential-learning opportunity in which middle school students participate in realistic manufacturing activities that build industry-related skills. Students also connect with current manufacturing employees and visit local companies, with the goal of building the manufacturing workforce pipeline in the middle grades.





Monroe Community College's (Rochester, New York) **Economic Development and Innovative Workforce Services Division** regularly assesses regional demand and supply for specific occupation clusters to inform programming. The college created an accelerated program for machinists and is working with employers to finance an additional facility in response to regional demand.

The Badge Alliance is a network of individuals and organizations working to build and support an open badging system with a focus on shared values including openness, learner agency, and innovation.

The **Council for Adult and Experiential Learning (CAEL)** is a nonprofit that works at all levels within the higher education, public, and private sectors to help people get needed education and training. CAEL offers **Prior Learning Assessment Resources** at www.cael.org/pla.htm.

The **American Council on Education (ACE)** helps adults gain academic credit for formal courses and examinations taken outside the traditional classroom. ACE has reviewed and provided academic credit recommendations for more than 35,000 courses, examinations, and certifications offered by employers, federal agencies, professional associations, apprenticeship programs, online education providers, and other organizations.

The **Adult College Completion Network** brings together organizations and agencies working to increase college degree attainment by adults who have some higher education credits but no degree. The network shares promising ideas and proven practices that help identify those who are not currently enrolled and build pathways to help them reenroll and complete a certificate or degree.

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We would like to thank the following people for generously providing their time and expertise to the development of this report:

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