



Credentials
That Work



JOBS FOR THE FUTURE

USING REAL-TIME LABOR MARKET INFORMATION ON A NATIONWIDE SCALE

EXPLORING THE RESEARCH TOOL'S POTENTIAL VALUE TO FEDERAL
AGENCIES AND NATIONAL TRADE ASSOCIATIONS

BY ANDREW REAMER
APRIL 2013



JOBS FOR THE FUTURE

Jobs for the Future works with our partners to design and drive the adoption of education and career pathways leading from college readiness to career advancement for those struggling to succeed in today's economy.

Credentials That Work is a JFF initiative that seeks to utilize innovations in the collection and use of real-time labor market information to better align investments in education and training with the needs of the economy. Stronger alignment will ensure that education credentials have high value for both workers and employers.

ABOUT THE AUTHOR

Andrew Reamer is research professor at the George Washington Institute of Public Policy, George Washington University. He focuses on policies that promote U.S. economic competitiveness, including workforce development. Dr. Reamer also is a nonresident senior fellow at the Brookings Institution, a member of the Bureau of Economic Analysis Advisory Committee, a member and past chair of the Bureau of Labor Statistics Data Users Advisory Committee, and former president of the Association of Public Data Users. He received a Ph.D. in economic development and public policy and a Master of City Planning from the Massachusetts Institute of Technology.

This paper was prepared under a contract between JFF and George Washington University.

ACKNOWLEDGMENTS

The author very much appreciates the invitation from John Dorrer, who directs JFF's Credentials That Work initiative, to organize discussions with federal government and national trade association staff about real-time labor market information applications. Myriam Milfort, senior project manager for the initiative, provided a most helpful combination of guidance, flexibility, and patience in the preparation of this brief. Katherine Hartman, research assistant at the George Washington Institute of Public Policy, displayed her usual high level of research and administrative competence. The writing of this brief was made possible by the gracious cooperation of the 38 representatives of 11 federal agencies and national trade organizations, listed in Appendix II.

This report was funded by Lumina Foundation for Education and the Joyce Foundation.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	iv
INTRODUCTION	1
LABOR MARKET RESEARCH	3
OCCUPATIONAL PROFILES	6
STATISTICAL MODELING	7
GRANT PROGRAM MANAGEMENT	8
CONSTITUENT SERVICES	9
INDUSTRY-WIDE CREDENTIALING SYSTEMS	11
CONCLUSION	12
APPENDIX I	
TWO CREDENTIALING SYSTEMS	14
APPENDIX II	
LIST OF INTERVIEWEES	16
ENDNOTES	19

EXECUTIVE SUMMARY

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. Real-time LMI vendors, both for-profit and nonprofit, regularly collect and aggregate job ads and analyze them to extract industry, occupational, skills, certification, wage, and geographic information.

Jobs for the Future's Credentials That Work initiative is testing and evaluating the use of real-time LMI to better align postsecondary education and training programs with current labor market demand, particularly at the community college level. While the initiative focuses on the uses of real-time LMI in local labor markets, it also seeks to understand the potential value of this data source to organizations with missions that are nationwide in scope, particularly federal agencies and national industry trade associations.

This brief examines the potential and limitations of real-time LMI for federal agencies and national trade associations. It finds that real-time LMI offers potential benefits for five activities conducted by these organizations:

- > Labor market research;
- > Preparing occupational profiles;
- > Statistical modeling;
- > Managing grant programs; and
- > Delivering constituent services.

In the small number of industries that have well-defined, widely accepted career ladders built on earning certifications in specific competencies, there appears to be less opportunity for real-time LMI to guide postsecondary education and training program development.

While it is clear that real-time LMI has the potential to be of significant value to both federal agencies and national trade associations, several barriers must be overcome:

- > Federal agencies and national associations need education about how real-time LMI can help them achieve their mission.
- > The real-time LMI industry must demonstrate improvements in the reliability of its information and provide analysts with measures of that reliability.
- > Federal agencies need congressional appropriations that allow them to subscribe to real-time LMI services.

INTRODUCTION

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. LMI is built on:

- > Advanced capacities for mining data from online job openings; and
- > Artificial intelligence software that aggregates this information across a variety of publicly accessible databases.

The technology makes it possible to draw data from a larger and more recent pool than most traditional sources of labor market information. Real-time LMI vendors, both for-profit and nonprofit, regularly collect and aggregate job ads and analyze them to extract industry, occupational, skills, certification, wage, and geographic information. As a result, labor market actors—including students, workers, educators, employers, and workforce development organizations—can have access to information on demand levels, job content, and education and skill requirements specific to their respective needs.

Jobs for the Future's Credentials That Work initiative is testing and evaluating the use of real-time LMI to better align postsecondary education and training programs with current labor market demand, particularly at the community college level. While the initiative focuses on the uses of real-time LMI in local labor markets, it also seeks to understand the potential value of this data source to organizations with missions that are nationwide in scope, particularly federal agencies and national industry trade associations. This brief explores that potential value based on interviews with staff of a number of these organizations, including the:

- > White House Office of Science and Technology Policy;
- > Federal Reserve Board of Governors;
- > Bureau of Labor Statistics, U.S. Department of Labor;
- > National Center for Education Statistics, U.S. Department of Education;
- > National Center for Science and Engineering Statistics, National Science Foundation;
- > Subcommittee on Research and Science Education, House Science Committee, U.S. House of Representatives;
- > Small Business Administration;
- > Employment and Training Administration, U.S. Department of Labor;

- > Manufacturing Institute, National Association of Manufacturers;
- > Center for Energy Workforce Development; and
- > American Association of Community Colleges.¹

These interviews suggest that real-time LMI offers potential benefits for five activities conducted by federal agencies and industry trade associations:

- > Labor market research;
- > Preparing occupational profiles;
- > Statistical modeling;
- > Managing grant programs; and
- > Delivering constituent services.

In the small number of industries that have well-defined, widely accepted career ladders built on earning certifications in specific competencies, there appears to be less opportunity for real-time LMI to guide postsecondary education and training program development. This was suggested by interviews with staff of two of the trade associations in the study—the Center for Energy Workforce Development and the Manufacturing Institute, the research affiliate of the National Association of Manufacturers.

Among the agencies and organizations in this study, only the Federal Reserve Board currently uses real-time LMI. Among the other seven federal entities, pre-interview awareness of real-time LMI products and methods ranged from none to well informed. Staff at the three trade associations proved to be fairly knowledgeable about the data resource prior to the interviews.

LABOR MARKET RESEARCH

The broadest potential use of real-time LMI by federal agencies and national trade associations is as a tool for conducting labor market research in order to guide policies and programs. Examples of current and potential applications include research on: cyclical labor market trends; long-term trends in the demand for particular occupations; the extent of supply-demand mismatches; and geographic differences in labor market conditions. Research methodologies range from complex statistical analyses to informal, “on-the-fly” explorations.

The following examples of current and potential uses of real-time LMI emerged from the interviews:

At the sophisticated end, the [Federal Reserve Bank of New York](#)'s 2012 report *Mismatch Unemployment* uses real-time LMI to ascertain the extent to which unemployment results from mismatches between job vacancies and jobseekers.² The researchers combined data from the Bureau of Labor Statistics' Job Opportunities and Labor Turnover Survey (JOLTS), which uses a relatively small national sample, with data from the Conference Board's Help Wanted OnLine (HWOL) real-time LMI database, which provides greater granularity regarding industry, occupation, and geography.³ The report concludes that occupational mismatches explain at most one-third of the increase in the U.S. unemployment rate since 2006.

Another banking example comes from the [Federal Reserve Board of Governors](#). Its [Division of Community Affairs](#) is analyzing real-time LMI to help understand the type of training that would increase the likelihood that the chronically unemployed will find a job.

In addition, [Federal Reserve Board](#) economists supplement their analyses of the monthly Bureau of Labor Statistics job and employment numbers with Conference Board HWOL statistics and the quarterly Manpower Employment Outlook Survey as “high frequency indicators” of the level and direction of labor market demand, by occupation and industry.⁴ While the sample-based BLS data describe the prior month's employment conditions, nationwide HWOL data are updated daily and the Manpower survey of employers looks one quarter ahead.⁵ However, at present, the Fed economist interviewed thinks that indicators based on the HWOL and the Manpower survey are only reliable enough to offer a rough approximation of reality.

Staff at the [White House Office of Science and Technology Policy](#) say they can see value in using real-time LMI to track trends in the demand for science, technology, engineering, and math (STEM) jobs and changes in the nature of job content and education, experience, and competency requirements. Improved understanding of STEM labor markets would inform OSTP's workforce policy recommendations.

Employment and Training Administration interviewees believe the agency could better understand local labor market conditions around the country by supplementing BLS regional statistics with place-specific, real-time LMI. A clearer picture of the local labor markets would enable the agency to improve the geographic, occupational, and sectoral targeting of its workforce development grant programs. In addition, the agency could encourage workforce development grant applicants to use real-time LMI data to support proposed plans for use of grant funds.

The **Small Business Administration** interviewees note the potential use of real-time LMI to explore, by location, the extent and nature of demand for particular occupations in small firms compared with larger ones and determine the implications for small business development. Place-specific information could be used by the agency's several small business technical assistance centers, including Small Business Development Centers, SCORE, Women's Business Centers, and Veteran's Business Outreach Centers. Nationwide research by industry could provide insight about the extent to which differences in job content and staff structure affect the competitiveness of small firms relative to larger ones.

The **Manufacturing Institute** plans to use real-time LMI to measure trends in demand for manufacturing workers by industry, occupation, and location. The institute is working with its members to improve the consistency of data collected from online job ads.

The **American Association of Community Colleges** sees value in using real-time LMI to analyze the national and regional trends in the demand for and nature of occupations that rely extensively on community college graduates. Such analyses would help association members identify possible local labor market issues and opportunities worthy of further exploration.

Interviewees at two federal agencies see no immediate use for real-time LMI, given their agency mission and existing official datasets: the **National Center for Education Statistics** and the **National Center for Science and Engineering Statistics**. At the same time, interviewees at both centers say that if they had access to a real-time LMI database, they expect they would periodically use it to informally explore trends—for NCES, in the demand for teachers; for NCSSES, in the demand for STEM workers.

Staff members at the **House Science Committee** also indicate that real-time LMI lacks direct utility for their work, which is legislative in nature. At the same time, they recognize the potential value of real-time LMI to the **National Science Foundation** in its implementation of science and technology workforce development grant programs. NSF could use real-time LMI to monitor the trends in STEM job requirements and content. Further, NSF could encourage grant applicants to use real-time LMI to provide support for claims regarding the extent and nature of STEM labor market demand.

As real-time LMI offers near-universal coverage and highly detailed information by place, occupation, and industry, it has the potential to be a valuable resource in labor market research. However, Credentials That Work research by Myriam Milfort and Jeremy Kelley of JFF identifies a series of perceived shortcomings of real-time LMI data that, for the moment, impede the achievement of this potential. Issues include:

- > Duplication (one job ad posted in multiple places);
- > Lack of coverage for certain occupations, particularly those involving physical labor (e.g., construction);

- > Job postings with vague language and incomplete information; and
- > The inclusion of postings that do not represent actual vacancies (as some firms wish to collect a steady stream of resumes or maintain an online labor market presence).⁶

The twin challenges for the LMI industry are to continue improving data reliability and to provide users with useful current measures of reliability, even if reliability is less than desirable, so that analysts can determine how best to use real-time LMI products.

OCCUPATIONAL PROFILES

Staff at two federal agencies see potential uses of real-time LMI—particularly text analyses of job ads—to inform efforts to describe and classify individual occupations.

Bureau of Labor Statistics staff think that real-time LMI text analysis could help improve the occupational descriptions in the biennial *Occupational Outlook Handbook*. This is the BLS' most popular web product, with 7 million page views a month, plus 500,000 additional views on smartphones.⁷

Similarly, **Employment and Training Administration** staff see potential to use real-time LMI text analysis to update the Occupational Information Network (O*NET), an online database that provides detailed descriptive information for hundreds of occupations.⁸ O*NET is an important resource for career development, human resources management, and labor market research. In addition, O*NET provides the foundation for a number of federal online career tools, such as My Next Move, My Next Move for Veterans, and My Skills My Future.⁹

ETA staff also believe that real-time LMI text analysis has the potential to inform the development of ETA's Competency Model Clearinghouse. According to the ETA website, the clearinghouse builds “dynamic models of the foundation and technical competencies that are necessary in economically vital industries and sectors of the American economy.”¹⁰ In collaboration with representatives from business and education, ETA has developed models for 20 industries, based in part on O*NET.

BLS staff note that real-time LMI text analysis could be a valuable resource in the development of the 2018 Standard Occupational Classification system. In particular, it could aid the interagency **Standard Occupational Classification Policy Committee** in making decisions about new and growing occupations to add to the system, declining occupations to remove, and existing occupations to adjust. The SOC was last revised for 2010, covering 840 occupations. The process for developing the 2018 version will begin in late 2013.¹¹

BLS and ETA interviewees observed that in the current budget environment, their agencies would find it difficult to fund the purchase of seat licenses to use real-time LMI. These typically cost \$5,000 to \$10,000 per year per license.

While real-time LMI data do not appear to be germane to their current efforts, the **National Center for Education Statistics** and the **National Center for Science and Engineering Statistics** could find the resource of use if they became interested in tracking the nature of occupational responsibilities and prerequisites in their respective fields at a level of detail greater than that available through the SOC and O*NET.

STATISTICAL MODELING

A number of federal statistical agencies have found that modeling small area estimates on the basis of a combination of survey data and administrative records can increase statistical reliability above dependence on survey data alone. For example, the Bureau of Labor Statistics model for local area unemployment estimates uses data from two sample surveys and the number of local unemployment insurance claims.

Consequently, **Bureau of Labor Statistics** staff would like to understand whether statistical modeling that incorporates real-time LMI records could enhance the robustness of two of its monthly survey-based estimates—the number of jobs and the number of job openings—particularly at the subnational level. At present, the reliability of state and local estimates often is less than desirable due to small sample size.¹²

However, staff note, many promising independent variables drawn from administrative records have not proved to be helpful in improving the reliability of current job estimates. Consequently, they say they will keep their expectations about the contribution of real-time LMI in check.

The two other statistical agencies interviewed—the **National Center for Education Statistics** and the **National Center for Science and Engineering Statistics**—do not see the potential for using real-time LMI in statistical modeling. NCES and NCSSES do not study labor markets in their respective fields but rather the number and characteristics of people in key occupations (e.g., school staff for NCES and scientists and engineers for NCSSES).

GRANT PROGRAM MANAGEMENT

Numerous federal agencies provide grants to education, training, and workforce development organizations to fund training programs for specific occupations. Such agencies include the **Employment and Training Administration**, the **National Science Foundation**, the **Department of Energy**, and the **Department of Health and Human Services**.

The availability of real-time LMI provides training program managers with the opportunity to better align the use of their scarce resources to actual market demand for specific occupations. Further, as noted by several interviewees, it seems feasible and appropriate for federal grantmakers to require that applicants provide evidence of the market demand for the targeted occupations and to encourage them to use real-time LMI as a data resource in that effort. To the extent that the cost of a real-time LMI seat license is prohibitive for many organizations, federal agencies could work with state LMI agencies and real-time LMI vendors to develop alternative low-cost arrangements for short-term data access.

CONSTITUENT SERVICES

Interviews suggest that federal agencies and trade associations can aid their constituents in obtaining benefits from real-time LMI in two ways.

First, organizations can help constituents build the capacity to productively use real-time LMI. For example, in its Workforce Information Grants to states, the **Employment and Training Administration** could actively encourage state LMI agencies to experiment with uses of this source of information.

They could share their experiences with other states through the Labor Market Information Training Institute, a multistate cooperative effort, to provide an infrastructure for advancing the art and science of LMI among LMI professionals and customers. Twenty-three state and territorial LMI agencies are members of the institute.

Similar potential exists for the **Small Business Administration** to train its numerous field offices in the uses of real-time LMI to support clients in business startup and expansion.¹³

The **American Association of Community Colleges** recognizes the potential value of real-time LMI in its members' efforts to manage degree programs and develop courses and curricula that reflect local labor market needs. Consequently, the AACC expects to stay abreast of the uses of real-time LMI by early adopter community colleges and to provide opportunities for exchanging information, experiences, and effective practices among its members.

The **Manufacturing Institute** could educate members of the National Association of Manufacturers about methods for using real-time LMI for labor market analysis, workforce training, and business decision making. NAM members include 300 national trade associations and 11,000 manufacturing firms.

The **Bureau of Labor Statistics** does not expect to play a capacity building role with its state LMI grantees. BLS staff say that most states have more knowledge of and experience with real-time LMI than the agency. At the same time, in light of the various opportunities, they wish to stay current regarding real-time LMI developments.

Second, on behalf of their constituents, national organizations could seek to bring about improvements in the quality of the data generated by real-time LMI systems.

For example, interviews with staff of the **Manufacturing Institute** suggest that the value of real-time LMI is significantly diminished by the large number of manufacturing job ads with missing, incomplete, and ambiguous information. Consequently, the institute plans to develop and encourage the industry-wide

adoption of a standard template and vocabulary for manufacturing job ads. It expects that widespread use of a single approach will result in more complete, accurate, and useful real-time LMI for tracking manufacturing job trends. Further, better data and more communicative ads could make it easier for employers to reach jobseekers with the desired skills and knowledge.

In March 2012, the **Office of Science and Technology Policy** launched the Big Data Research and Development Initiative. Six federal departments and agencies committed over \$200 million to improving the tools and techniques for accessing, organizing, and using huge volumes of digital data.¹⁴ However, the initiative allocated all funds to the physical sciences and none to the social sciences. In conversation, OSTP staff indicated interest in understanding the technical challenges of managing and analyzing millions of online job ads and how publicly funded research might help address those challenges, to the benefit of real-time LMI users.

INDUSTRY-WIDE CREDENTIALING SYSTEMS

The premise underlying Credentials That Work is that education and labor markets often fail to provide the information that postsecondary institutions, students, employers, workers, and jobseekers need in order to make good decisions. Perception and experience suggest that:

- > Often, the development of postsecondary programs is hindered because schools know too little about the nature of local labor market demand for specific occupations.
- > Many students have difficulty identifying educational paths to careers that are meaningful and pay well enough.
- > Many incumbent workers are perplexed about how to advance in their careers.
- > As a result, employers frequently have difficulty finding workers with the desired skills, knowledge, and abilities.

While Credentials That Work is exploring the extent to which real-time LMI tools can address these information shortfalls, conversations with the [Center for Energy Workforce Development](#) and the National Association of Manufacturers' [Manufacturing Institute](#) are crafting an alternative solution: an industry-recognized series of well-articulated career ladders, accompanied by a system of stackable, portable credentials that enable workers to climb those ladders. These two associations have been working with their members to develop consensus on job descriptions, ladders, competency standards, and credentials.

In each case, the result is an emerging internal industry market for education and labor in which available jobs are less likely to be advertised (relying on promotions from within), educators understand the labor market demand for particular skills (based on conversations with employers), and students and workers know which credentials they need to get a better job and the likelihood that job openings will exist. As a consequence, the need for and value of real-time LMI in these two industries diminishes to the extent that they have a well-articulated, widely accepted credentialing system. A preliminary review suggests that few U.S. industries have such a system at present or are even developing one.¹⁵

For additional information on the Center for Energy Workforce Development and National Association of Manufacturers credentialing systems, see Appendix I.

CONCLUSION

Conversations with federal agencies and industry trade associations indicate that real-time LMI has the potential to be of significant value in labor market research, the preparation of occupational profiles, statistical modeling, grant program management, and building constituents' capacities to benefit from real-time LMI analysis. The table (on page 13) summarizes findings by organization and type of real-time LMI use.¹⁶

However, for real-time LMI to achieve its potential, several barriers must be overcome. First, federal agencies and national associations need to be educated about the ways in which real-time LMI could help them achieve their mission. Second, the real-time LMI industry must demonstrate improvements in the reliability of its information and provide analysts with measures of that reliability. Finally, federal agencies need congressional appropriations that allow them to subscribe to real-time LMI services.

SUMMARY OF RESEARCH FINDINGS:
POTENTIAL VALUE OF REAL-TIME LMI BY ORGANIZATION AND USE

	LABOR MARKET RESEARCH	OCCUPATIONAL PROFILES	STATISTICAL MODELING OF ESTIMATES	GRANTS MANAGEMENT	CONSTITUENT SERVICES
FEDERAL AGENCIES					
Bureau of Labor Statistics	Weak	Strong	Needs Exploration	NA	Weak
Employment and Training Administration	Strong	Strong	NA	Moderate	Moderate
Small Business Administration	Moderate	Moderate	NA	Needs Exploration	Moderate
Federal Reserve Board of Governors	Strong	NA	NA	NA	NA
Office of Science and Technology Policy	Moderate	NA	NA	Needs Exploration	Moderate
House Science Committee	NA	NA	NA	NA	NA
National Center of Science and Engineering Statistics	Weak	Moderate	Weak	NA	NA
National Center for Education Statistics	Weak	Moderate	Weak	NA	NA
TRADE ASSOCIATIONS					
Manufacturing Institute, National Association of Manufacturers	Strong	Strong	NA	NA	Strong
Center for Energy Workforce Development	Weak	Weak	NA	NA	Weak
American Association of Community Colleges	Strong	NA	NA	NA	Strong

APPENDIX I

TWO CREDENTIALING SYSTEMS

Credentialing systems created by the Center for Energy Workforce Development and the Manufacturing Institute identify a series of portable, stackable, recognized, competency-based credentials that provide the rungs allowing workers to move up well-articulated career ladders. Such credentials include industry-recognized certifications, postsecondary degrees and certificates, and apprenticeships.

Founded in 2006, the **Center for Energy Workforce Development** is a nonprofit consortium of four energy utility associations: the Edison Electric Institute, the American Gas Association, the Nuclear Energy Institute, and the National Rural Electric Cooperative Association. CEWD is implementing Get Into Energy Career Pathways, a model that aims to “build a skilled workforce pipeline that will meet future industry needs.”¹⁷

The **Manufacturing Institute**, a nonprofit affiliate of the National Association of Manufacturers, created the NAM-endorsed Manufacturing Skills Certification System in 2009 as the “benchmark standardized assessment of the critical workplace traits and occupational skills an individual needs to operate in the advanced manufacturing workplace driven by productivity and flexibility.”¹⁸ The program issued nearly 85,000 certificates in 2011 and has a goal to issue over 500,000 certifications by the end of 2016.

The two organizations' credentialing models share a number of characteristics:

- > Both models have three tiers of competencies: basic (personal effectiveness, academic, workplace), industry, and occupation-specific.
- > Each organization worked with the Employment and Training Administration in the design of its competency model.
- > Each organization relies on external organizations to oversee aspects of the certification process—ACT to issue National Career Readiness Certificates and a series of specialized trade associations and societies for certification of higher-level competencies.¹⁹
- > Current and prospective employees earn credentials primarily through taking courses at postsecondary institutions, particularly community colleges. Some postsecondary credential programs are available online.

- > Each industry credential is based on a uniform curriculum. The industry association certifies individual postsecondary institutions as meeting the association's criteria for offering the type and quality of courses that lead to an industry credential. At the same time, students can attend and earn credentials at non-certified schools as long as course content and quality are acceptable.
- > The association encourages schools to accept credits from other educational institutions so students do not lose time and effort in gaining a credential.
- > The approach emphasizes bringing workers into the industry at the entry level, then encouraging them to get the training needed to move up the career ladder.

The CEWD director indicates that the nature of the energy industry's credentialing system and its highly internal labor market, along with the industry's tendency to hire externally primarily at the entry level, means that employers and educational institutions have little use for real-time LMI. Career paths, credentials, and curricula are all well defined. The structure of the utility industry is such that the level of demand for various occupations is readily measured.

Because of the much greater diversity, complexity, and size of the manufacturing industry, the Manufacturing Institute sees high value in using NAM's skills certification system and real-time LMI, as reflected in the institute's intention to promote a standard template for help-wanted advertisements in order to improve real-time LMI data.

APPENDIX II

LIST OF INTERVIEWEES

AMERICAN ASSOCIATION OF COMMUNITY COLLEGES

James Hermes, Associate Vice President, Government Relations

Christopher Mullin, Program Director for Policy Analysis

CENTER FOR ENERGY WORKFORCE DEVELOPMENT

Ann Randazzo, Executive Director

FEDERAL RESERVE BOARD OF GOVERNORS

Bruce Fallick, Senior Economist, Macroeconomic Analysis Section

NATIONAL ASSOCIATION OF MANUFACTURERS, THE MANUFACTURING INSTITUTE

Gardner Carrick, Vice President of Strategic Initiatives

NATIONAL SCIENCE FOUNDATION, NATIONAL CENTER FOR SCIENCE AND ENGINEERING STATISTICS

John Jankowski, Director, Research and Development Statistics Program

Nirmala Kannankutty, Senior Adviser/Senior Social Scientist

Jeri Mulrow, Director, Information and Technology Services Program

Robert Bell, Acting Director, Science and Engineering Indicators Program

SMALL BUSINESS ADMINISTRATION

James Hairston, Policy Advisor, Office of the Administrator

Anie Borja, Executive Director, National Women's Business Council

Emily Bruno, Director of Research and Policy, National Women's Business Council

U.S. DEPARTMENT OF EDUCATION, NATIONAL CENTER FOR EDUCATION STATISTICS

Sharon Boivin, Acting Associate Commissioner, Postsecondary, Adult, and Career Education Division

Stephanie Cronen, Principal Research Scientist, American Institutes for Research (contractor)

Lisa Hudson, Education Statistician

Jon O'Bergh, Special Assistant to the Under Secretary (observer)

Matthew Soldner, Associate Research Scientist

U.S. DEPARTMENT OF LABOR, BUREAU OF LABOR STATISTICS

Thomas Nardone, Associate Commissioner for Employment and Unemployment Statistics

Dixie Sommers, Assistant Commissioner for Occupational Statistics and Employment Projections

George Stamas, Chief, Division of Occupational Employment Statistics

Ken Robertson, Assistant Commissioner for Industry Employment Statistics

Teri Morisi, Branch Chief, Office of Occupational Outlook

U.S. DEPARTMENT OF LABOR, EMPLOYMENT AND TRAINING ADMINISTRATION

Kimberly Vitelli, Chief, Division of National Programs, Tools, and Technical Assistance, Office of Workforce Investment

Anthony Dais, Workforce Information Team Lead, OWI/DNPTTA

Pamela Frugoli, O*NET/Competency Assessment Team Lead, OWI/DNPTTA

Michael Harding, E-tools/Workforce Information Unit Chief, OWI/DNPTTA

Erika Liliedahl, Evaluation Specialist, Chief Evaluation Officer

Demetra Nightingale, Chief Evaluation Officer

Gloria Salas-Kos, Workforce Analyst, Office of Policy Development and Research

Savi Swick, Team Lead, Office of Policy Development and Research

U.S. HOUSE OF REPRESENTATIVES, COMMITTEE ON SCIENCE, SPACE,
AND TECHNOLOGY, SUBCOMMITTEE ON RESEARCH AND SCIENCE
EDUCATION

Mele Williams, Staff Director

Kirsten Duncan, Professional Staff

Dahlia Sokolov, Democratic Staff Director

WHITE HOUSE OFFICE OF SCIENCE AND TECHNOLOGY POLICY

Thomas Kalil, Deputy Director for Policy

Amber Hartman Scholz, Acting Executive Director, President's Council of Advisors on Science and
Technology

Thomas Kurfess, Assistant Director for Advanced Manufacturing

Nicholas Maynard, Senior Advisor to the Deputy Director, Small Business

Paige Shevlin, Policy Advisor, National Economic Council

ENDNOTES

¹ Interviews with staff at these agencies and organizations were conducted in person and lasted 60 to 90 minutes. Typically, each interview began with an introduction to the real-time LMI industry, covering methods, products and services, vendors, and limitations of the data, and then proceeded to open-ended brainstorming about the potential value of real-time LMI to the organization.

² Aysegul Sahin, Joseph Song, Giorgio Topa, & Giovanni L. Violante. 2012. *Mismatch Unemployment*. New York, NY: Federal Reserve Bank of New York. September.

³ JOLTS estimates are based on a sample of about 16,000 business establishments. For information on the JOLTS program, see: <http://www.bls.gov/jlt/>. The HWOL website is <http://www.conference-board.org/data/helpwantedonline.cfm>.

⁴ On the first workday of each month, the Conference Board publishes a detailed HWOL news release for the prior month.

⁵ For comparison purposes, the monthly Current Population Survey (the source of the BLS unemployment numbers) is based on interviews with about 60,000 households, representing about 110,000 individuals; the monthly Current Employment Statistics survey (the source of the BLS job numbers) covers about 140,000 businesses and government agencies operating about 440,000 individual work sites. HWOL seeks to count every unique online job ad (identifying 4.72 million in November 2012) from over 16,000 online job boards; the sample size of the Manpower survey is over 18,000 employers.

⁶ Myriam Milfort & Jeremy Kelley. 2012. *Innovations in Labor Market Information and Their Application: Applications for Workforce Programs*. Boston, MA: Jobs for the Future.

⁷ See: <http://www.bls.gov/ooh/>

⁸ For the template of occupational information, see the O*NET Content Model at <http://www.onetcenter.org/content.html>

⁹ See: <http://www.mynextmove.org/>, <http://www.mynextmove.org/vets/>, and <http://www.myskillsmyfuture.org/>

¹⁰ See: <http://www.careeronestop.org/competencymodel/default.aspx>

¹¹ For information on the SOC, see: <http://www.bls.gov/soc/>

¹² Job openings estimates are produced through the Job Openings and Labor Turnover Survey (JOLTS), which is based on a sample of about 16,000 business establishments. Current job estimates are drawn from the Current Employment Statistics survey of about 140,000 businesses and government agencies operating about 440,000 establishments.

¹³ These affiliates include SBA District Offices, Small Business Development Centers, SCORE Chapters, Women's Business Centers, U.S. Export Assistance Centers, and Veterans' Business Outreach Centers.

¹⁴ “Obama Administration Unveils ‘Big Data’ Initiative: Announces \$200 Million in New R&D Investments.” Office of Science and Technology Policy. March 29, 2012. Available at: http://www.whitehouse.gov/sites/default/files/microsites/ostp/big_data_press_release_final_2.pdf.

¹⁵ The construction industry has implemented a similar approach through the National Center for Construction Education and Research, founded in 1996. See: <http://www.nccer.org/>

¹⁶ This table’s content reflects the author’s interpretation of interviewee statements and his perceptions about additional potential uses.

¹⁷ For a graphic of the CEWD Energy Industry Competency Model, see: <http://www.cewd.org/Documents/EnergyCompModel.pdf>. For a detailed listing of competencies, see: <http://www.cewd.org/documents/energymodel.pdf>

¹⁸ See: <http://www.themanufacturinginstitute.org/Skills-Certification/Background/Competency-Model/Competency-Model.aspx>

¹⁹ For information on the NCRC, see: <http://www.act.org/products/workforce-act-national-career-readiness-certificate/>. CEWD works with the IEEE Power and Energy Society. The NAM system has certifications in 12 technical areas, with one or more external partners for each. Examples of NAM partners include the Manufacturing Skills Standards Council, the National Institute of Metalworking Skills, the American Welding Society, the International Fluid Power Society, and the Society of Manufacturing Engineers.





JOBS FOR THE FUTURE

TEL 617.728.4446 FAX 617.728.4857 info@jff.org

88 Broad Street, 8th Floor, Boston, MA 02110
122 C Street, NW, Suite 650, Washington, DC 20001

WWW.JFF.ORG

