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REAL-TIME LABOR MARKET INFORMATION

An Environmental Scan of Vendors and Workforce Development Users



Prepared by Maher & Maher
in Collaboration with Jobs for the
Future and the New York City
Labor Market Information Service



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About this Report

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INTRODUCTION

Over the last several years, there has been increasing interest among labor market analysts in what has come to be called **real-time labor market information** (RT LMI). RT LMI is information gleaned from a large number of on-line job postings. Several private sector entities have developed software that collects online job postings by “scraping” or “spidering” the listings from the Internet and organizing them into standardized data categories, especially the North American Industry Classification System (NAICS) and the Standard Occupational Classification (SOC) system. These private sector entities have also built tools that permit analysis by those looking for more current and detailed information on hiring trends and employer demand (including certifications and skill prerequisites). Diverse users — including state and local governments, workforce boards, educational institutions, and economic development and research organizations — license these RT LMI tools to better understand state, regional, and local labor market conditions. Many view RT LMI as an important new data source, but are unfamiliar with how best to use it and place it within the context of traditional LMI. Although many states and localities already use RT LMI, others have yet to do so.



The U.S. Department of Labor’s Employment and Training Administration (ETA) has for several years supported research on the use of RT LMI. In late 2013, ETA began a technical assistance project to increase knowledge of the RT LMI landscape and support selected states in building their capacity to utilize this data source. ETA awarded a technical assistance contract to Maher & Maher, which is collaborating with Jobs for the Future (JFF) and the New York City Labor Market Information Service (NYCLMIS).

As part of the technical assistance project, this report seeks to inform people in the workforce development system in particular about the most common uses, successes, and challenges of RT LMI. It provides an overview of major RT LMI vendors and their products and services. It also profiles how three states and three regional workforce development knowledge centers are using RT LMI to identify and address labor market issues.

ADVANTAGES AND LIMITATIONS OF REAL-TIME LMI

Traditional labor market information is based on data gathered through Federal and state surveys and administrative data. These surveys typically utilize rigorous sampling criteria and careful sampling frames. These data are screened for confidentiality and measured for error. The primary sources of traditional LMI are the U.S. Department of Labor’s Bureau of Labor Statistics, the Census Bureau, and various states’ Labor Departments.



Traditional LMI provides significant insight into labor market trends and indicators, but the process of gathering the data is time-consuming and results in unavoidable lag-time for publication. The surveys vary greatly in geographical detail, with many providing reliable national data but limited data for local areas.

In contrast, RT LMI — as the name implies — is available quickly and includes local area geographic details. Online postings are scraped from the Internet and are aggregated daily. From each job posting, RT LMI software searches for such information items such as the employer name, job title, salary, education requirements, certifications, skills, and other variables. Each variable can be aggregated for statistical data analysis. This can be a powerful data source for workforce professionals.

However, RT LMI data have several important limitations¹.

- A job ad differs from a job opening, and both differ from hires — although trend data for online job ads strongly correlate with job openings.

¹ Many of these areas are discussed in [Exploring Green in Real-Time: A New Hampshire Perspective](#), issued by New Hampshire Employment Security’s Economic + Labor Market Information Bureau in April 2012. Several of the same points are also raised in [Understanding Online Job Ads Data: A Technical Report](#), issued by Georgetown University’s Center on Education and the Workforce at the McCourt School of Public Policy in April 2014.

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- Weeding out duplicate ads is a major challenge. When a job ad is posted, it frequently appears on more than one website. Removing all duplicated postings is probably not possible, but the de-duplication process undertaken by all major vendors reduces a significant amount of redundant data.
- Online job posting data does not represent the universe of job demand; the data is biased toward industries and occupations that typically post jobs online. Large employers and corporations are more likely to post jobs online. Smaller businesses are more likely to post only executive positions online. Also, some occupations – such as computer and mathematical occupations and healthcare practitioners – are more likely to be posted online, while others, such as construction and extraction occupations, appear much less frequently online.
- Occupations with higher educational requirements tend to be better represented online, while occupations that commonly have lower educational requirements are represented to a lesser degree. RT LMI is derived only from online job postings, so results may undercount any occupation or industry that uses other recruitment methods.
- Many job postings lack the information necessary for analytical software to classify it by industry or geography, and some have little information on the skills required for the job and wages.



Even with its limitations, RT LMI is an effective way to *supplement* information available through traditional LMI. Ideally, published analyses or reports based on RT LMI should be reviewed by a person with labor market knowledge. In addition, RT LMI should be used in conjunction with other labor market information to create a more complete picture of job demand.

ABOUT THIS ENVIRONMENTAL SCAN

In consultation with ETA, the Maher & Maher team assembled a list of RT LMI vendors and states and other workforce development entities with experience using RT LMI. The team then developed discussion guides for interviews with both groups (please see the Appendices).

The three major LMI aggregators and five additional LMI vendors that utilize data generated by these aggregators were invited to participate. The NYCLMIS and JFF conducted interviews with them between March and July of 2014. The interviewees were:

- [Burning Glass Technologies](#);
- [The Conference Board \(Help Wanted OnLine\)](#);
- [Economic Modeling Specialists International \(EMSI\)](#);
- [Geographic Solutions](#);
- [Haver Analytics](#);
- [Monster Government Solutions/Monster Insights Group](#); and
- [WANTED Analytics](#).



[Career Builder](#) was invited to be interviewed and declined to provide certain information about their job postings collection and aggregation methodology; information on their products and services is based on online research.

The focus of the interviews was to identify:

- The major RT LMI products offered;
- How workforce development system customers typically use RT LMI products;
- What RT LMI services or offerings are most valued by workforce system customers; and
- Vendor licensing structures.

JFF also conducted interviews with three states and three regional workforce development stakeholders with extensive experience using RT LMI products. These conversations were designed to understand:

- Which RT LMI products and services are used;
- How users incorporate RT LMI data into their products;
- How RT LMI is disseminated to localities and other users; and
- What is most valued about RT LMI.

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VENDORS

As of mid-2014, there were three primary companies that aggregate job listings from hundreds of websites, de-duplicate them, and organize the resulting information by industry, occupation and geography. All vendors use the North American Industry Classification Systems (NAICS) to organize ads by industry, and the Standard Occupational Classification (SOC) system to organize ads by occupation. Some vendors add more detailed occupational categories. All allow “keyword” searches by occupation, and all update their databases daily.

The three major aggregators are Burning Glass Technologies, Geographic Solutions, and WANTED Technologies. Burning Glass and Geographic Solutions market their products directly to the public workforce/education/economic development systems. WANTED Technologies markets directly to these systems, as well as through Monster Government Solutions and The Conference Board. Monster Government Solutions is a reseller of WANTED Analytics for workforce development, education, economic development, and non-profit organizations. The Conference Board is part of a joint venture with WANTED Technologies that produces Help Wanted OnLine (HWOL), which offers access to the WANTED Analytics portal.

In addition, other companies utilize RT LMI from the three aggregators in their online software products marketed to the workforce, education, and economic development communities.

Table 1 describes the products provided by the three major aggregators aimed at servicing the data needs of the workforce system.

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Table 1:
Real-Time LMI Products of Primary Aggregators

Table 1-A: Burning Glass Technologies (www.burning-glass.com)

RT LMI Product	Description	Main Users
Labor/Insight (core real-time LMI product)	Web-based dashboard. Aggregates, extracts, codes, and normalizes job data from job boards, job banks, job search applications.	Workforce providers, state labor exchange services, educational institutions and education providers, private sector clients, others
Focus Suite (secondary product that incorporates and relates to real-time LMI)	Job matching product	State labor exchange services and educational institutions
Resume Parser (secondary product that incorporates and relates to real-time LMI)	Extracts data from free text resumes, codes and makes them searchable	Staffing firms, job boards, Linked-In

Table 1-B: Geographic Solutions (www.geographicsolutions.com)

RT LMI Product	Description	Main Users
America's Labor Market Analyzer (ALMA)	Includes both traditional and RT LMI	Versions for individuals, employers, economic developers, and labor market analysts
Job Aggregation (VOS Jobs)	Aggregates postings from a variety of national and local employer websites to populate the jobs database of a state	State labor exchange services

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Table 1-C: WANTED Technologies (www.wantedanalytics.com)

RT LMI Product	Description	Main Users
The WANTED Analytics™ online dashboard, incorporating The Conference Board's Help Wanted OnLine™ data series	Aggregates postings from job boards, corporate career sites and other sites. Provides analytic tools.	State LMI offices, state and local Workforce Boards and economic development agencies, U.S. Federal Reserve Bank offices in New York and Boston, The Conference Board, corporate human resource departments, staffing firms
Automated daily real-time data feeds		Same as above
Real-time job listings for public-facing job boards, using an automated Application Programming Interface (API)	Aggregates postings from a variety of employer websites to populate the jobs database of the state	Clients that offer consumer-facing job boards, such as state labor exchange services

Table 2 displays the ways primary aggregators collect and sort the information from online job listings.



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Table 2: Methodological Approach of Real-Time LMI Providers²

Table 2-A: Burning Glass Technologies

Number of Sites Spidered	Type of Sites Spidered	Coded Data Elements	Data Update Frequency
38,000+	<ul style="list-style-type: none"> ○ Newspaper ads ○ Internet job boards ○ Corporate sites 	<p>90 data elements, including:</p> <ul style="list-style-type: none"> ○ Geographic ○ Employer ○ Industry ○ Occupation ○ Job title ○ Skills ○ Certifications ○ Education ○ Experience ○ Salary 	Daily

Table 2-B: Geographic Solutions

Number of Sites Spidered	Type of Sites Spidered	Coded Data Elements	Data Update Frequency
16,000+	<ul style="list-style-type: none"> ○ Newspaper ads ○ Internet job boards ○ Government and military sites ○ Education institutions ○ Hospital sites ○ Volunteer sites ○ Recruiter sites ○ Occupation specific boards ○ Chambers of commerce ○ Corporate sites 	<p>50+ data elements, including:</p> <ul style="list-style-type: none"> ○ Geography ○ Industry ○ Occupation ○ Education ○ Experience ○ Employer ○ Wage ○ Job type ○ Certifications ○ Skills 	Daily

² **A Note on De-Duplication:** Job postings aggregators continually adjust their de-duplication methodologies to better ensure accurate posting totals. While validating de-duplication methodologies was not part of the scope of this environmental scan, it should be noted that de-duplication rates among the providers interviewed generally range from 80-90%.



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Table 2-C: WANTED Technologies

Number of Sites Spidered	Type of Sites Spidered	Coded Data Elements	Data Update Frequency
Approximately 25,000	<ul style="list-style-type: none"> ● Newspaper ads ● Internet job boards ● Corporate career sites ● Non-profit sites ● Government job boards ● Craig's List 	<p>66 data elements, including:</p> <ul style="list-style-type: none"> ● Location ● Industry ● Occupation ● Function ● Level of experience ● Skills ● Certifications ● Education level ● Salary ● Source ● Job type ● Employer ● Keyword 	Multiple times daily

In addition to collecting specific data on the offerings, the vendors were asked what their customers value most about their products and services.

Burning Glass said that its customers value:

- The granularity of the data. Burning Glass gives users access to all data points – employer names, actual postings, etc. Burning Glass has software that identifies 14,000 skills and also codes employer-requested certifications.
- The additional occupational coding beyond SOC/O*NET.
- The student and job seeker career exploration tools.

Burning Glass believes that its text analysis function is more robust than that of other vendors.



The Conference Board, which is in a joint venture with WANTED Technologies to deliver WANTED Analytics and its own HWOL time series, believes that its customers value:

- The ability to add a large number of job listings to their own state's job bank, thereby increasing the number of jobs available for job seekers.
- The HWOL time series – an offering unique to HWOL – that allows a user to have accurate historical information.

Geographic Solutions reported that its customers value:

- The software's integration of survey-based national and state labor market information and real-time labor market information into one tool.
- The convenience of comparing information in a specific job posting to broader labor market trends, such as wages and similar job opportunities in the same region.
- The software's supply side information, drawn from its Virtual One-Stop database of actual job candidates.

WANTED Analytics stated that its customers value:

- The strong correlation between WANTED's national-level data and the Job Openings and Labor Turnover Survey (JOLTS) data published monthly by the BLS.
- The comprehensiveness of the data, which allows users to drill down to the most granular level to understand the drivers of economic activity.
- The easy-to-use web-based interface. The web user interface is flexible and offers users the ability to customize queries and reports.
- The only continuously-updated online labor market data series dating back to 2005, which includes a period prior to, during, and after the most recent economic recession.
- WANTED's *The Hiring Scale™*, which measures the number of candidates in a region with a given set of skills and the level of demand by employers for that set of skills (supply and demand measure).



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Monster reported that its customers value:

- The range of data types.
- The ability to mix and match what is appropriate for each customer.
- The ability to be flexible and creative.
- The focus on data quality.

EMSI indicated that its customers value:

- Its data quality and user-friendly tools. In addition, EMSI plans to incorporate RT LMI in a contextualized data set that includes both types of data (traditional and real-time).

In addition to the primary aggregators, there are a number of other firms that use the data produced by these aggregators to offer other products and services to the workforce system. Table 3 summarizes these other products.

Table 3: Firms that Offer Products and Services Using Real-Time LMI

Table 3-A: Career Builder

Product/Service	Primary Data Aggregator	Product / Service Description
Supply and Demand Portal	Until recently, Career Builder utilized WANTED Analytics data. It appears that at present, postings are drawn from Career Builder’s own job boards and perhaps unknown third party aggregators.	Career Builder developed the Supply and Demand Portal by combining its resume data (supply) to WANTED Analytics’ aggregated job postings database (demand). Since they have discontinued its use of WANTED data, the job postings are now derived from new sources.



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Table 3-B: The Conference Board

Product/Service	Primary Data Aggregator	Product / Service Description
Help Wanted OnLine Hiring and Demand	WANTED Technologies	Navigable job postings database that includes a time series tool measuring the number of new, first-time online jobs and jobs reposted from the previous month.

Table 3-C: Haver Analytics

Product/Service	Primary Data Aggregator	Product / Service Description
Data Link Express	WANTED Technologies via Help Wanted OnLine	A set of integrated software for maintaining current data, viewing and manipulating the data for detailed analysis, and tools that allow the data to be used in a variety of user-determined econometric packages.

Table 3-D: Economic Modeling Specialists, Intl. (EMSI)

Product/Service	Primary Data Aggregator	Product / Service Description
Analyst 3.0	Career Builder	A composite of more than 90 federal, state, and private data sources.
Career Coach	Career Builder	Career exploration tool with a user-friendly interface than can be built into existing state or school websites.

Table 3-E: Monster Government Solutions

Product/Service	Primary Data Aggregator	Product / Service Description
Monster Real-Time Labor Market Intelligence	WANTED Technologies Monster (resumes)	Online tools; data extractions/summaries; consulting and technical assistance; talent supply matching analytics.

Licensing Structure

All of the major vendors require a license or subscription to have access to the products described here. Pricing varies widely based upon a number of factors, such as the products desired, geographic scope of the data, size of the state, number of users/licenses, and other factors. Below is a summary of the vendor responses to the question, “What are the different license or product subscription options?”

- **Burning Glass:**

For Labor/Insight, annual licenses are the norm and five seats are included in the base price. The annual fee is determined by a sliding scale that is based on the size of the organization (population, enrollment, etc.) Other products, such as the Focus Suite, have annual prices and access limitations based on the population of the state or other factors unique to its mission.

- **WANTED Technologies:**

WANTED grants access to its data and analytics by subscription. The typical agreement allows an organization a specified number of user logins and a price per user. The standard subscription period is one year. WANTED will customize arrangements for specific subsets of its database. Also, clients have licensed WANTED’s data and services for extended periods from one to three years.

- **Geographic Solutions:**

Access to the America’s Labor Market Analyzer tool is based on an annual per-seat cost, with additional costs for each seat license within an organization.

Other firms that offer products and services that use real-time LMI may offer a combination of subscription services and customized pricing.



STATE-LEVEL IMPLEMENTATION OF REAL-TIME LMI

Pennsylvania, Florida, and New Jersey have invested in RT LMI since the advent of job spidering and aggregation technology and are an integral part of the evolution of RT LMI's applications and capabilities. Some of the states interviewed offer direct access to the real-time job postings as part of their established career counseling resources and labor exchange systems, while others use the data for broader purposes of sector analysis and insight. This section will primarily explore these latter analytical applications.

The states use the data for a variety of purposes and some have licenses from more than one vendor for different products. However, there were several themes that emerged in all of the conversations with states:

- **Reliability of data:**

All states reported strong overall improvement since their RT LMI subscriptions began. In particular, state users have gained confidence in the software's functionality and customization, ability to de-duplicate job postings, "scrape" the data consistently, and code the occupations in the job postings to the correct SOC/ONET code.

- **Limitations of the data:**

Postings data varies across industries and occupations, and also a job posting is not directly synonymous with a job vacancy. As one director put it, "Just because a job is posted doesn't mean it's going to get filled. It's an indication of a potential employer, but not necessarily a reflection of a real vacancy. It potentially overstates hiring in cases where postings are created solely to collect resumes, and it also potentially understates hiring because many companies hire through networks and referrals, not online postings." For this reason, the states acknowledge the value of job postings data as a supplement to more established forms of labor market monitoring, not as a replacement.

- **Need for trained LMI specialists in using the data:**

All of the states recognize the importance of having analysts with training on using labor market data and familiarity with the regional issues to make the best use of RT LMI. Like any tool, it will provide better results when used by

someone who is familiar with its capabilities. Users are also more successful in utilizing the tool when there is strong leadership support for its adoption into the decision making structure or in launching new product or strategy development.

- **Usefulness to stakeholders:**

All the users reported being able to develop new reports and more in-depth analysis for other departments within the state, elected officials, businesses, and state residents. It allows them to provide critical information to job seekers, employers looking to enhance their operations or relocate to their state, elected officials, and others.

Pennsylvania

The Pennsylvania Department of Labor and Industry's Center for Workforce Information and Analysis (CWIA)³ produces reports on Pennsylvania's labor force and provides LMI products and services to a wide range of customers. CWIA was an early subscriber to the Conference Board's Help Wanted OnLine, Geographic Solutions (incorporated into the state's [Job Gateway](#)), and EMSI's Career Coach ([PA Career Coach](#).) CWIA uses RT LMI data in several ways, including:

- **Producing [PA Fast Facts](#), which has several versions:**

- **Statewide Fast Facts.**

CWIA publishes a monthly publication about statewide economic indicators, including information about unemployment rates, job numbers, growing industries, and job postings as a representation of employer demand. The Fast Facts reports are a valuable combination of traditional and real-time LMI. Each report provides information on job posting by volume, industry sector, and county, and also provides a list of the names of employers advertising positions. CWIA also publishes Help Wanted OnLine information on job ad growth, by

³ Sue Mukherjee, Director, and Tim McElhinny, Economic Research and Outreach Manager, were interviewed for this report.

industry and employer, as a source of ideas for business recruitment or expansion.

- **22 WIB-Based Monthly Fast Facts.**

In addition to statewide Fast Facts, a regional analysis of local labor markets is produced and distributed each month for each local WIB area.

- **National Gas Drilling Research.**

Due to the recent boom in natural gas drilling across the state, CWIA produces a monthly Marcellus Shale Fast Facts sheet. Year-over-year changes in job postings are analyzed for groups of industries, classified as “primary” and “ancillary,” to see how employer demand is changing.

- ***Providing HWOL Data and Analysis Directly to Local WIB Directors***

In addition to the WIB Fast Facts, CWIA provides more exhaustive lists of Help Wanted OnLine job postings and industry data to the WIB directors. The reports provide more detailed information about occupations and employers, as well as lists of employers who have had the largest growth measured by job postings. Job postings are listed by industry, occupation, and employer in different parts of the state, and are compared to national industry postings and employer demand to provide ideas for economic development. Like all LMI shops, CWIA’s ultimate goal is to help people get jobs, and to help economic and workforce developers identify potential employers for the state’s Career Center system.

- ***Providing Industry Sector Analyses***

In 2010, CWIA partnered with the Pennsylvania Center for Advanced Manufacturing Careers to publish a [sector development work plan](#) containing one of the earliest examples of job postings information in an industry analysis. In addition to data on geographic demand, local demand, and an outlook for the steel industry/manufacturing sector, CWIA examined the locations where the largest numbers of postings were occurring and also their year-to-year change. Since then, CWIA has used RT LMI to conduct ad-hoc industry sector analyses in

response to requests from workforce development stakeholders and economic development initiatives.

○ *Disseminating Data to a Variety of Workforce Development Stakeholders*

CWIA reports containing RT LMI are distributed to local Workforce Investment Boards, PA CareerLink offices, the PA Office of Vocational Rehabilitation, and the PA Department of Aging to help people find jobs, determine training needs, and identify employers as possible partners. Through its online PA CareerLink and PA Career Coach portal, CWIA provides students and job seekers direct access to a large number of jobs through job spidering capabilities (Geographic Solutions) within the state website, so that users can perform their own searches. CWIA data is disseminated to community colleges and occupational trainers, through workforce development initiatives or WIB-led activities.

Florida

Florida's Department of Economic Opportunity's Bureau of Labor Market Statistics (LMS) has subscribed to job postings software from Geographic Solutions and the Conference Board's Help Wanted OnLine since 2010⁴. LMS uses RT LMI data in several ways, including:

○ *Identifying Occupational Supply and Demand*

LMS produces [occupational supply and demand reports](#) to aid prospective businesses inquiring about labor supply and to Workforce Investment Boards analyzing regional job training efforts. LMS created a comprehensive model using job postings in conjunction with data on occupational employment, training program enrollees and completers, and job seeker information from the state's labor exchange database to produce a snapshot of occupational supply and demand. Before LMS began producing this information upon request, it was not available as a single, comprehensive report. While the reports are not explicitly released to the public, LMS is planning to adapt its model into an online labor supply and demand dashboard.

⁴ Rebecca Rust, Chief and Chief Economist, was interviewed for this report.

○ *Creating Monthly Summaries on Job Ad Volume and Occupational Trends*

Florida's LMS also publishes [monthly summaries](#) of key data from Help Wanted OnLine on its website and distributes electronic copies to regional workforce boards and other clients. The summaries contain job ad volume trends, the occupations and occupational groups with the most job posting activity, employers with the most ads, and staffing firms or job recruiters looking to fill placement opportunities. These monthly summaries are targeted at career counselors, but are available to anyone seeking information about current labor market trends in their region or the state as a whole.

○ *Delivering Industry-Specific Demand Profiles*

LMS responds to ad-hoc requests for industry data by creating demand profiles on specific sectors such as healthcare, information technology, and aviation/aerospace. For example, the business-led Florida Council on 100 wanted to create a statewide occupational definition of STEM based on levels of employment demand. LMS used job postings data to determine the number of unfilled STEM occupations in Florida by examining the number of job ads that had gone unfilled for 30 days, for 60 days, and for 90+ days, using the search options in HWOL. The results enabled the Council to help formulate its economic development and recovery strategy.

○ *Customized LMI Staff Training for Workforce Development Organizations*

In addition to producing reports, the LMS offers customized LMI training for regional workforce boards, American Job Centers, and economic development organizations. Training sessions range from half-day to multiple days and covers traditional LMI tools, real-time LMI tools, U.S. Census Bureau products, and case studies. The training sessions involve hands-on learning with online tools available on the state website to highlight products and services that assist businesses with hiring needs and help workforce boards' customers with reemployment.

New Jersey

New Jersey's Department of Labor and Workforce Development (NJDLWD) was one of the first state-level subscribers to the Burning Glass Labor/Insight software⁵. NJDOL uses RT LMI data in several ways, including:

- ***Publishing [Regional Focus: Local Labor Market Area Information](#)***

The New Jersey Department of Labor produces a quarterly regional analysis for the state's northern, central, and southern areas. One report section provides traditional labor market indicators on population, employment changes, unemployment, and unemployment insurance claimant data by occupation. The second section is a regional job outlook based on RT LMI data points, including job listings by occupation and industry; skills in demand; and a list of employers advertising jobs. The third section is reserved for a "newsletter" that includes individual employers opening headquarters in the region and expected economic development projects. These reports demonstrate how combining multiple sources of data allows for a nuanced and contextualized picture of a regional labor market.

- ***Creating a Labor/Demand Occupation List***

New Jersey pioneered a [labor demand occupation list](#) to identify occupations where there is an undersupply of workers. This information is used to determine where the state Department of Labor should spend workforce dollars to train job seekers. The list compiles Occupational Employment Statistics data on the number of people working in each occupation (OES), projected growth and predicted openings, online job postings (Burning Glass), and an estimate of the unemployment rate in an occupation using unemployment insurance data. The list also incorporates employment outcomes from training program completers, which NJDLWD acquires directly from training providers that they fund. The original model was solely based on real-time data, but by combining OES, projections, outcomes, and UI data, the state developed a more robust decision model.

⁵ Tiffany Smith, Principal Managing Analyst, was interviewed for this report.

○ ***Enhancing Jobs4Jersey.com***

The Burning Glass Focus/Career software is the engine for [OnRamp](#), New Jersey's free career exploration and resume building tool on its Jobsfor4Jersey website. Focus/Career adapts Burning Glass' job ad database and spidering capability into a user interface targeted at job seekers.

○ ***Produced the State's Green LMI Reports***

The NJDOL used Burning Glass data to produce five standalone reports for its Green LMI project. One of the reports looked at online postings to see how prevalent green postings were in the overall jobs data and what types of qualifications and skills were in demand. The other four reports were: educational outcomes in green programs, employer interviews, traditional LMI, and a compendium of educational institution experiences. Taken together, these reports informed the department's strategy around green job development.

○ ***Supporting Talent Networks in Targeted Industries***

New Jersey launched talent networks in seven target industries. The networks are strategic partnerships of employers, educators, and workforce development professionals (WIBs, Career Centers) working together to strengthen the workforce for their industries. Each network is paired with a labor market analyst to provide ongoing labor market information analysis and support. With traditional and RT LMI data as a foundation, network partners design education and training programs that seek to cultivate a supply pipeline for the state's key industries.



KNOWLEDGE CENTERS AND INTERMEDIARIES

In addition to state workforce agencies, RT LMI vendors market their products to a wide range of clients. Educational institutions, Career Centers, and workforce systems can access RT LMI to do their own analysis by purchasing a subscription or receiving a shared software license through a consortium.

According to the vendors and our own research, one of the “best practice” applications of RT LMI involves a regionally centralized analytical entity aggregating and disseminating LMI to workforce development stakeholders. This section highlights products from three regionally focused intermediary organizations that provide both industry and education entities in their region with actionable real-time labor market analysis. Regional workforce development organizations can be critical partners in helping education providers translate regionally-focused labor market information into effective career pathway development, employer engagement, program and curricular review, and student career counseling materials. These intermediaries also use RT LMI to engage the local business community, respond to ad hoc LMI requests, and coordinate the implementation of sector focused workforce development initiatives.

Michigan’s Workforce Intelligence Network

Southeast Michigan’s Workforce Intelligence Network (WIN) is a collaborative of nine community colleges, seven workforce boards, and economic development partners in nine Detroit area counties. Funded by 10 local and national foundations, WIN subscribes to Burning Glass and Career Builder and employs labor market analysts to provide actionable LMI to its regional partners. One example is 2012’s [Working Smarter](#) publication, which identified the region’s strongest occupational growth sectors and explored the challenges and opportunities for cultivating a talent development pipeline.

In [Working Smarter](#), WIN provides a list of the top 15 emerging skills in each of the area’s three largest growth sectors. In producing the list, WIN staff found that the list of skills from the job postings were helpful but not quite as descriptive as their education partners would need to conduct a review of the learning outcomes in their program curricula. To gather additional information, WIN met with industry



representatives to review the list of skills from the job postings. As a result, the list of skills in the final report is an amalgam of information from job postings and language directly from employers. The LMI conversation also established the foundation for business collaboration with the Michigan workforce system and the area's nine community colleges in each sector development initiative.

Delaware's Center for Institutional Research and Workforce Analysis

Delaware's Center for Institutional Research and Workforce Analysis (CIRWA), located on the campus of Delaware Technical and Community College, was created through the USDOL Trade Adjustment Assistance Community College Career Training (TAACCCT) grant program funding. CIRWA is a labor market research and analysis center aimed at identifying evolving change within an industry and assessing the impact on educational programs and the available workforce within the Delmarva region. CIRWA is a Burning Glass subscriber.

CIRWA recently incorporated RT LMI into an in-depth [analysis](#) of five engineering technician occupations in the Delmarva region. The report combines RT LMI with survey data and traditional employment and projections information into an in-depth analysis of the region's engineering technology occupation group. Job postings data was critical in developing the content of the survey disseminated to employers and verifying engineering technology job classifications. Though the report was requested by Delaware Technical Community College, the geographic focus of the data spanned a 13-county region across Delaware, Maryland, and Pennsylvania; all community colleges in those regions can use the information in the report to help ensure that the associate degree programs accurately reflect the skill needs of business.

New York City Labor Market Information Service (NYCLMIS)

New York City Labor Market Information Service, housed at the City University of New York (CUNY) Graduate Center, serves as a central resource for labor market information for the public workforce system. It was formed as a joint endeavor of CUNY and the NYC Workforce Investment Board (now managed by Office of Workforce Development). LMIS synthesizes, distills, and frames the volumes of



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available labor market and economic information and makes it accessible for use by the public workforce system's partners and stakeholders for their day-to-day operations and strategic decision-making. LMIS subscribes to WANTED Analytics and the Conference Board's Help Wanted OnLine for job postings data. The NYCLMIS has also contracted with Monster Government Solutions to obtain RT LMI on actual career pathway experiences. Monster secured the data for this from PayScale, with which it has a close relationship.

As part of a Trade Adjust Assistance Community College and Career Training (TAACCCT) grant, LMIS provides 15 customized occupational and industry RT LMI reports to eight CUNY colleges ([CUNY CareerPath](#)) on a quarterly basis. NYC LMIS also incorporated real-time LMI from job postings and online resume data into career pathway analyses of the initiative's target occupational groups.

As one example, the RT LMI reports helped three CUNY community colleges clarify the demand for community health workers (CHWs) and better position their program graduates to succeed in the local labor market. The reports helped them to identify alternative job titles, as well as industries and employers who hire CHWs in and around New York City. In addition, information contained in the quarterly RT LMI reports, and validated by business, led the colleges to adapt CHW programming to provide graduates with credentials in CPR, AIDS Community Research Initiative of America (ACRIA) and Strategies for Crisis Intervention & Prevention-Revised (SCIP-R).

In another example, NYCLMIS obtained information on the actual career pathways of Medical Assistants, and contracted with a graphic designer to illustrate the types of jobs entry-level Medical Assistants in New York State actually moved into after five and 10 years. This career map has been widely distributed.

The NYCLMIS also publishes and distributes monthly citywide reports of real-time demand by industry and occupation, using data obtained from WANTED Analytics and HWOL.



SUMMARY

Publicly-available traditional labor market information provides a broad picture of what has already occurred in the labor market. There is a real and growing need for current, reliable, geographically and occupationally specific information about the changing dynamics of labor supply and demand so that education and workforce efforts can be better aligned to the demands of a fast-changing labor market.

Over the past several years, several RT LMI vendors have developed products that address this need. The tools and systems available that collect and analyze data have the potential to enhance services to job seekers and students and to be valuable tools for data-driven decision-making in the workforce, education, and economic development systems.

Based on research conducted through this project, and previous research conducted by Jobs for the Future⁶ and others, there are several lessons learned that are of value to those using or considering using RT LMI.

- **RT LMI supplements more established forms of labor market information.** Traditional and real-time LMI complement each other, and when used in combination deliver a more complete picture of the labor market.
- **RT LMI makes analysis of employment demand easier.** It allows users to get information on job posting activity from one source rather than having to visit multiple job boards. In most cases, the source offers lists of actual employers or job boards, by occupation, in a designated geographic area. Also, RT LMI vendors provide the actual job listings and aggregate the most common skills, certifications, and credentials employers are seeking. It can be a powerful source of information that is up-to-date and can be tailored to local needs.

⁶ Dorrer, Milfort, [Real-Time LMI Vendor Product Review](#), 2012.



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- **RT LMI is influenced by the realities of online posting practices.** This is not a flaw of the data set; it is the reality of what jobs are posted online, which employers post online, and what information is included by employers in the job postings.
- **Someone with a strong background in LMI and data analysis needs to be on the team using this data for analysis.** Both RT LMI vendors and state LMI shops agree that it is advantageous to have someone with an understanding of labor market data as part of the team when the information is being used for analytic purposes.
- **Understand the strengths and intended uses of each vendor's products when selecting a vendor of RT LMI.** Because there is no one product or tool that fits all user needs, some states and local areas have licenses with more than one RT LMI vendor for different products. Research the breadth of coverage, methods and accuracy of data organization, and "data cleaning." Ask about the number of searchable fields, the accuracy of de-duplication of job listings, and the availability of time series data. *Most importantly, arrange for a demonstration of the product or tool of interest to see how easy it is to use and get a feel for how the vendor relates to customers. Compare costs for the services and features offered.*
- **Investigate the purchase as a collaborative effort with a consortium or with a network.** Collaboration can lead to a more effective use of resources by making the tool more affordable and eliminate redundant efforts to build technical capacity, as well as leading to a higher-level commitment to action and helping to increase adoption within each organization.
- **Speak to other states, local areas, and other entities to understand how they use RT LMI.** Entities looking to invest in real-time LMI are strongly encouraged to connect with peer organizations to learn about their experience and gain their insights. Ask colleagues questions about the





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functionality and application of various RT LMI tools, and review the reports and other products and tools they produce using RT LMI. Readers are also encouraged to visit [ETA's Labor Market Information Community of Practice](#) to explore additional resources that may be of use.

Real-time LMI is a valuable addition to the resources available to the workforce community to understand more about the dynamics of supply and demand in the labor market. This is especially important as the new Workforce Innovation and Opportunity Act (WIOA), with a new emphasis on sector-driven approaches, is implemented across the country. Each state and local workforce area should consider whether and how best to incorporate this powerful data source and analytic capability into its future strategies and activities.



APPENDIX A

DISCUSSION GUIDE FOR CONVERSATIONS WITH REAL-TIME LABOR MARKET INFORMATION VENDORS

FIRM NAME: _____ DATE: _____

LOCATION: _____
(Address, City, State & Zip)

INTERVIEWER: _____
(Name & Title)

INTERVIEWEE: _____
(Name, Title & Organization)

BACKGROUND

The U.S. Department of Labor’s Employment and Training Administration (ETA) has for several years supported state research, investment, and use of real-time labor market information (RT LMI) products and tools. While many states and Local Workforce Investment Boards are building staff capacity to leverage RT LMI, others have not yet begun harnessing RT LMI to develop workforce solutions and improve performance outcomes. In an effort to encourage the use of RT LMI, ETA is funding a project – conducted by independent researchers – to support participating states in building staff capacity to use both RT LMI and “traditional” labor market information and data to enhance employment and reemployment decision-making, program performance, and outcomes for customers. We expect the findings of this work will inform users in the workforce development, community college, economic development, and government arenas about successes and challenges in using real-time labor market information.

I am contacting you because part of this project is to produce a report that is an objective review of the real-time data landscape. All the providers of RT LMI are



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being contacted to answer a few questions on your products and services. We welcome your input in this important initiative.

BASIC INFORMATION ABOUT YOUR BUSINESS

1. Tell us about your firm/organization, e.g.:
 - Mission and purpose
 - Years in business
 - Main business activities/services/products
2. How did your firm/organization become involved as a provider of real-time labor market information?
3. What types of organizations are your major customers for real-time LMI products and services?
4. What type of partnership arrangement, if any, is your organization involved in as a provider of real-time LMI? Please describe roles/arrangements.

REAL-TIME LMI PRODUCTS & SERVICES

1. What are your primary real-time LMI products and services?
2. What is the geographic scope? (national, state, regional, local)
3. Are you considering future enhancements (or adding additional functionality) in any areas of your software functionality? Please comment on your:
 - Identification of skills
 - Identification of credentials, e.g., certifications, licenses, etc.
 - De-duplication of job listings
 - Coding of occupational data
 - Representativeness of data across industries and occupations (are there any occupation groups or industry groups that are difficult for your software to populate?)

- Historical data consistency from year to year or time period to time period
- 4. To what extent does input and “intelligence” from employers/industry representatives and the workforce and education systems help inform the development and enhancement of your products and services?
- 5. How is your real-time LMI product(s) delivered? If via a website, please provide the URL.

PRODUCT LICENSING STRUCTURE

1. Does your product(s) require a license or subscription in order to have access to the information?
2. If yes, what are the different license or product subscription options?
3. Do you have any products that do not require a license? If yes, please list.

HOW YOUR CUSTOMERS IN THE WORKFORCE SYSTEM USE YOUR PRODUCTS AND SERVICES

1. Within the workforce system – broadly defined as state LMI shops, regional and local LMI shops, Workforce Investment Boards at state and local levels, Career Center systems, and educational institutions – who are the most common users of your real-time LMI products and services?
2. How do your customers in the workforce system typically use your products and services?
 - To increase access by job seekers to job listings
 - To enhance career exploration for job seekers
 - To better align training and education offerings with employer demand
 - To perform a skills gap analysis
 - To profile major industries and occupations with current job listings
 - To assess current supply/demand dynamics
 - To obtain current, local labor market information to inform decisions
 - What types of decisions?
 - To supplement information available through traditional LMI sources



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3. What do you believe your customers in the workforce system value most in their use of your products and services?
4. What is it about your products or services that stands out in the field?
5. Of your existing workforce system customers, are you at liberty to recommend some that we might contact in order to understand the products they generate with the use of your data and how they value the products and services they receive from you?
6. Is there anything else you would like to add that I have not asked you about?



APPENDIX B

DISCUSSION GUIDE FOR CONVERSATIONS WITH REAL-TIME LABOR MARKET INFORMATION USERS

INTERVIEWEE:

NAME, TITLE & ORGANIZATION:

DATE:

Background

The U.S. Department of Labor’s Employment and Training Administration (ETA) has for several years supported state research, investment, and use of real-time labor market information (RT LMI) products and tools. While many states and Local Workforce Investment Boards are building staff capacity to leverage RT LMI, others have not yet begun harnessing RT LMI to develop workforce solutions and improve performance outcomes. In an effort to encourage the use of RT LMI, ETA is funding a project – conducted by independent researchers – to support participating states in building staff capacity to use both RT LMI and “traditional” labor market information and data to enhance employment and reemployment decision-making, program performance, and outcomes for customers. We expect the findings of this work will inform users in the workforce development, community college, economic development, and government arenas about successes and challenges in using real-time labor market information.

I am contacting you because part of this project is to produce a report that is an objective review of the real-time data landscape. The intent of this interview is to capture how innovative state departments of labor and workforce development organizations are capturing and implementing real-time LMI data. We welcome your input in this important effort.



General Questions

1. How is your RT LMI access funded?
2. Does your staff support the implementation of web-based tools for job listings, career information, education listings (including the collection and analysis of data)?

Real-Time LMI Data Provider

1. What are the sources of your real-time LMI?
2. Did you purchase software through current federal (DOL or otherwise) grant, supplemental funds, shared resources with agencies (who are they), or other avenue?
3. Do you feel confident you can sustain your investment in RT technologies over the next 1-2 years? 3-5 years? 5+ years?
4. Are you satisfied with the quality of the data in the following categories?
 - De-duplication
 - Coding of occupational data
 - Representativeness across industries and occupations
 - Scraping data consistency

Analysis

1. To what extent are you using RT LMI data for analytical purposes? Please share with us some consistent ways that you are using real-time LMI analytics in your state.
2. Can you give us some examples of recently-completed projects and whom they were completed for?
3. Do you provide monthly reports to Career Centers? If so, in what capacity?



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4. What are your long term plans and strategies for incorporation of real-time LMI into your functions and services?

Dissemination Efforts

1. How does your real-time information get disseminated to training providers?
2. How do you collaborate with Workforce Investment Boards, educational institutions, and/or other local/regional entities to act on the data that you produce?