



Building Stronger Pathways to Work: Emerging Models for More Actionable Labor Market Information

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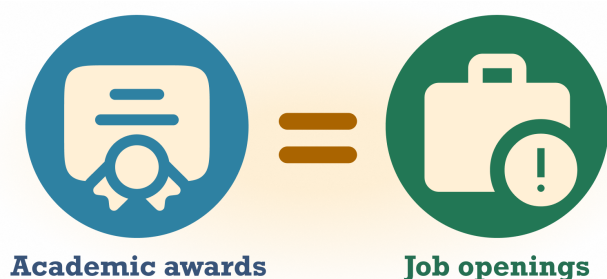
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Across the country, states are working to better align education and training with work opportunities. These efforts are often predicated on compiling labor market information (LMI). Although every state has an office that is tasked with producing this information, relatively few people access LMI resources, in part because they do not know where to find this information. And those who do have access to information struggle to understand how to apply the data to their work. Based on an analysis of efforts in 14 states that are prioritizing access to useful LMI, three promising models emerge. These models highlight a suite of effective practices that could be replicated to strengthen economic mobility for individuals and build prosperity in local communities.¹

Supply and Demand at a Crossroads

Traditionally, LMI has focused on supply and demand, calculated by comparing the number of people who have completed various levels of education—and the discipline in which they earned an award—to the number of projected job openings in related fields. This two-dimensional supply-and-demand calculation is made using a crosswalk of education and occupation codes that is maintained by the National Center for Education Statistics (NCES).



Information on the supply side is drawn from education data sets, such as counts of high school graduates, welding certificate completers, 2-year nursing program graduates, bachelor's degree earners in fields like accounting, and professional degree attainment in areas like teaching. Demand-side information is gathered by state agencies that are funded by the federal Bureau of Labor Statistics (BLS). Managed by the state's labor agency, the BLS-funded entities conduct

¹ States included are Alabama, California, Colorado, Connecticut, Indiana, Kentucky, Louisiana, Maryland, Minnesota, Oklahoma, Rhode Island, South Carolina, Virginia, Washington, and West Virginia.

monthly, quarterly, and annual surveys of employers to understand current and projected job openings, earnings, and requirements.

In addition, states often leverage data that employers are mandated to report each quarter regarding who they employ and how much they pay them. While gathered under the auspices of managing the unemployment insurance (UI) system, UI data are commonly matched to educational and workforce training data to identify employment outcomes.

However, the utility of these conventional formulas is beginning to slip for several reasons.

First, the use of crosswalks assumes that learners complete their education and then enter the workforce in that field. However, students may earn a degree that is a stepping stone to a career that requires further education. For example, many students earn community college degrees in general studies, which have little direct application to the workforce but are a common prerequisite for being an elementary school teacher. Or students might choose to go into a job that leverages similar skills but is not listed on the crosswalk. According to data compiled by the U.S. Census, many psychology majors become managers, leveraging their understanding of human motivation. However, this alignment is not reflected in the NCES crosswalk.

Second, the crosswalks assume that career preparation happens in an academic setting. As people live and work longer, they will gain skills in areas they did not study in college. In addition, workers are increasingly building skills in programs that are not included in the supply-side data sets, such as programs offered through workforce development systems, bootcamps, noncredit courses, and employer-based training.

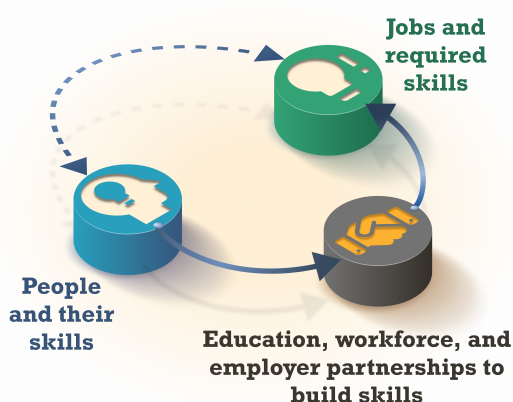
Third, the demand-side calculation is shifting. Employers are exploring skills-based hiring approaches that de-emphasize academic credentials. In addition, BLS-funded entities that collect information on employer needs report that the response rate to their surveys is declining significantly. As a result, the information being produced may not fully reflect shifts in employment opportunities and requirements.

Finally, even when supply-and-demand information is provided, it is rarely used to redesign education and training pathways to better align them with employment opportunities. BLS funding has been flat, despite the rising costs of gathering information, and supplementary state funding is often piecemeal. As a result, most states have minimal staffing to fulfill their mandated BLS reporting, let alone support the use of LMI. Although all state workers we interviewed expressed a strong interest in helping policymakers, educators, employers, and the public use the information they collect, most reported that bandwidth constraints mean that their outreach efforts consist largely of responding to individual requests.

A Vision for Better LMI

The decline in the utility of LMI is happening in tandem with an increase in demand for information that will help ensure employers can hire people with the right skills and learners can evaluate where to pursue training that will help them attain their goals. Now is an ideal time to rethink what types of data are needed, how they are collected, and how a variety of people could be supported to make use of this information.

A new approach to LMI would shift from a two-dimensional model to a three-dimensional one. Specifically, it would document individuals and the skills they possess; clarify jobs and the skills they require; and support partnerships between educators, workforce development entities, and employers to design pathways that help people gain the skills they need to thrive in those jobs. While still using the concept of supply and demand, this approach changes the types of information that would be emphasized and addresses the need to help people make use of the data that get produced.



For example, on the demand side, states could diversify their data sources in order to understand the job market by

- collecting additional information from employers as part of mandated reporting;
- providing access to additional employment data sets, such as 1099 forms;
- leveraging proprietary data sets;
- examining information from federal data compiled by the U.S. Census; and
- scraping information from sources like social media.

States could also improve the supply side in several ways.

- Researchers could construct more accurate models of how individuals build skills in specific programs of study and the types of jobs they secure by examining education and employment data in statewide longitudinal data systems (SLDS).
- States could integrate information on workforce training programs into their SLDS, such as data on apprenticeships or programs on the Eligible Training Providers List (ETPL), a federal workforce program that underwrites training provided in a variety of contexts.
- To better map skills information within academic programs, states could leverage artificial intelligence to identify the content taught in individual courses and programs and compare the competencies taught to the requirements found in online job postings.

To support data use, states could pursue a number of strategies.

- Regional entities could be tasked to convene educators, workforce training providers, and employers in integrating LMI into consolidated planning.
- All academic programs—not just those in career and technical education (CTE)—could be required to reference LMI and reflect employment outcomes as part of processes like curriculum development, program approval, and performance funding.
- Policies could require that state-funded education and workforce initiatives be based on LMI, using data derived from a single, consistent source that leverages uniform definitions of industry sectors, regional boundaries, and skills taxonomies.

The following sections outline three different strategies that states are already using to deliver LMI that is more accurate and useful.

Strategy 1: Link BLS and SLDS Efforts

The most common approach for improving LMI is to have the BLS-focused entity share data with the SLDS. This approach is often limited to identifying the economic outcomes for specific academic programs. However, several states that already had a track record of publishing information on employment outcomes are now moving to conduct additional analyses, and they are expanding SLDS data sets to include learning that happens outside of K–12 and postsecondary pathways. Although this approach has been successful, states emphasize the importance of maintaining political neutrality, maximizing opportunities for input, and building trust as the scope of the labor agency expands.

Alabama

Alabama's Office of Education & Workforce Statistics exemplifies how an LMI entity can build collaboration across educators, workforce entities, learners, and employers. The state has created a common vocabulary of competencies and is helping each party understand how to apply that information to improve opportunities for learners and to grow the state economy. Although the LMI entity is located within the labor agency, it is cofunded with the SLDS and tasked with serving a P20W council that coordinates efforts among preschools, K–12, colleges, and workforce entities.

The LMI entity brings together SLDS, UI, and employer survey data to understand empirical outcomes of different programs, including high school CTE, postsecondary education, and workforce training. Alabama has begun mapping its competency taxonomy to the content of postsecondary programs, which allows the LMI entity to perform a gap analysis that will provide clearer guidance on how to align education and training options.

The LMI entity also produces public job boards and reports that help advisors, learners, and employers understand in-demand jobs, job quality and sustainability, and required skills. These tools provide information on specific “credentials of value” that reflect those skills, earned through opportunities that include programs on the ETPL, apprenticeships, and academic programs. Strong input loops for employers and job seekers ensure the usability of these tools.

Connecticut

At Connecticut's Office of Research, a team within the labor agency combines information from multiple sources, including the SLDS, to create LMI that is more comprehensive and has an emphasis on skills. Going beyond conventional BLS compliance activities, the team convenes state and regional partners in order to improve programs, advise learners, grow businesses, shape policy, and inform the state's workforce development strategy.

The LMI entity provides a range of interest holders with actionable information. In the education sector, it works with a committee that implements Perkins CTE funding, provides information to support high school and college curriculum development, and informs colleges about in-demand skills and job projections. For workforce entities, it provides data to inform the development of apprenticeships, works with local job centers to use data to advise workers on both jobs and available training programs, and supports local workforce boards in providing LMI access in underresourced regions that is more consistent. It advances state policy goals by supporting the SLDS in identifying economic and long-term outcomes of academic programs to advance pathway development. This work involves conducting sector-based research for the governor's

workforce development council and working with the economic development department, trade associations, and nonprofits to bring more industry to the state.

Kentucky

Kentucky has combined the LMI and SLDS functions for the state. A well-defined governance structure with representation from multiple agencies helps the Kentucky Center for Statistics (KYSTATS) maintain a neutral role while bridging education and workforce sectors. KYSTATS staff prioritize attending both planning meetings and community events to reinforce the entity's role as a trusted statewide resource.

The LMI entity produces a wide range of public reports and dashboards, some of which are mandated by law. For example, it produces a report that looks at postsecondary outcomes by institution and by sector. It also works in close partnership with workforce development, K–12, and postsecondary councils to ensure their deliberations are informed by LMI. For example, it is supporting efforts to create the new Workforce Innovation and Opportunity Act (WIOA) plan and to entice more industries to locate in the state. It also produces dozens of reports for the legislature, cabinet, and governor's office in order to address emerging priorities.

Minnesota

In Minnesota, the BLS-based entity has been intentionally integrated with the SLDS in both its staffing and its funding model. Minnesota's Labor Market Information Office provides consistent data to K–12, postsecondary, and workforce training providers, leveraging various regional partnerships to reach both employers and educators. Dashboards that are focused on specific types of data users are posted on both workforce and education websites such as tools that clarify the impact of loans on net earnings.

Strong legislative relationships have had several positive outcomes. For example, new initiatives have encouraged the use of LMI. In addition, the state has prioritized building a strong data infrastructure. Minnesota has a well-established expanded UI file, including hours worked and the places where individuals are employed. As a result, public dashboards clarify that high school students who complete coursework in manufacturing and construction make better wages but that 70 percent of graduates who do not enter postsecondary education work an average of 9 hours per week and make only \$17 per hour.

Emerging Opportunities

- **Louisiana:** Although it gets its data directly from education providers, the Louisiana Office of Research and Statistics Division has focused on addressing priority questions

for the state, particularly regarding aligning education with employment. This LMI entity provides tools that help the public understand their local cost of living, jobs that would support their families, and where to enroll to train for those jobs. Leveraging public dashboards and reports that translate the BLS data, it supports K–12 and postsecondary academic planning, develops the state’s list of industry-recognized credentials, and informs policies like the performance funding formula. In addition to producing reports on the earnings outcomes of educational programs, it is partnering with a university to develop predictive models for high-wage jobs. Staff emphasize their focus on building strong relationships with interest holders to help translate data into action.

Strategy 2: Create Regional Entities That Support LMI Use

When states cover large geographic regions, it can be difficult to compile a single picture of job opportunities. This is also a challenge when economic regions do not align with state boundaries, such as when people live in one state and work in another.

Therefore, some states leverage regional convenors to use LMI to transform local education and training pathways. Regional networks also help gather information on questions that are more nuanced, such as how the need for specific skills is changing or whether there are other factors that are informing hiring.

California

The California community college system has funded a network of regional Centers of Excellence for Labor Market Research (COEs). The COEs are supported by a statewide center that coordinates the regional centers, manages a statewide research agenda, and responds to requests from state agencies and the legislature. Regional centers are based in community colleges. They conduct labor market analyses, provide training and technical assistance to colleges and regional consortia in the use of data, and assist with measuring the efficacy of evidence-based interventions.

In addition to identifying the most in-demand jobs, providing information necessary to expand and integrate apprenticeships, and supporting sector strategies, COEs conduct supply-and-demand analyses, which are required for creating or changing curricula. They leverage a variety of data sources to conduct analyses, including federal and state data; proprietary information on the job market; and enrollment, completion, and employment data that come from a community college-specific SLDS.

Recently, the COEs have been generating analyses for other purposes, such as for regional K–16 partnerships and efforts to grow regional economies. Although information is intended for

education and training providers, the data have been repackaged to support students and strengthen employer relationships.

Emerging Opportunities

- **Louisiana:** The Office of Research and Statistics Division was recently given the responsibility of providing information to workforce programs, which will be implemented using a regional model. The state intends to leverage these networks to gather additional information directly from employers, such as the experience levels they are seeking for projected hires.
- **Minnesota:** Leveraging two different regional networks that are specific to education and to workforce development agencies, the Labor Market Information Office ensures that consistent data are provided to K–12, postsecondary, and workforce training providers. For example, the state uses a consistent formula for living wages. The regional analysts often partner with local policymakers, such as leaders across school districts, universities, and workforce and economic development. This has further strengthened the integration of the LMI entity's information into targeted local policy development as new initiatives are developed.
- **Washington:** The Employment Security Department works with partners in six regions to engage local employers, educators, and workforce development entities in using LMI. Enhanced accountability data, such as an enriched UI file and county-level job analyses, support analyses that are more complex. The LMI entity is currently working to improve coordination and consistency across regional leads.

Strategy 3: Establish a New, Dedicated Office

Given the many different venues in which LMI is being requested and generated, states are struggling to make sense of competing analyses that are initiated by different experts using varied data sources. K–12 schools and postsecondary institutions, finding that the BLS-funded entity does not have the bandwidth to fulfill requests, often commission their own studies. Workforce-focused entities may contest those findings because they perceive them as ignoring training options such as those provided by community organizations or adult education programs. Inconsistent analyses weaken trust in information. As a result, some states are opting to develop a new entity that specializes in generating reliable, neutral LMI from numerous sources.

Virginia

After a study of ways to improve LMI, Virginia passed legislation to create an independent entity associated with a quasi-governmental workforce board. The Virginia Office of Education Economics (VOEE) was tasked with providing LMI that is more actionable and consistent to policymakers, employers, and agencies. VOEE helps advise on state policy, including generating a list of high-demand and high-value jobs, identifying credentials of value, supporting strategic planning for the higher education sector, revising program approval processes, creating reports for the legislature, and informing a workforce development grant program.

VOEE has also provided support to employers so they can better describe their evolving needs in sectors such as manufacturing and healthcare. For example, VOEE gathered information on the characteristics of manufacturing jobs in the state, training needs, and the sequence of jobs that create career ladders. This information helped VOEE distinguish between cases in which the existing workforce needed additional training and the cases when new hires were required.

Because the state did not collect job titles through its UI data collection process, VOEE matched employment outcomes for graduates of postsecondary and noncredit programs using proprietary data and novel sources such as professional social profiles and social media. VOEE has also been pioneering ways to expand the understanding of how Virginia's education is aligned with employment. This work includes looking at course taking, completion, and employment data to understand the education pathways leading to jobs; integrating workforce training program data; and scraping course descriptions to identify the skills taught in programs. VOEE makes the data it has compiled available through dashboards, custom research, and reports.

Emerging Opportunities

- **California:** The governor recently proposed creating a new Education Interagency Council that would be responsible for compiling information from a variety of data sources—including the SLDS—to inform policymakers about projected jobs and in-demand skills. The data will inform economic forecasting and enable educators to plan for how to teach emerging skills.
- **Oklahoma:** The state recently passed legislation to create the Oklahoma Workforce Commission, an independent state agency that will coordinate a comprehensive workforce development strategy across state initiatives, track investments, and provide consistent workforce data. It plans to combine data sets from education, workforce, and social service agencies; produce reports and AI-based dashboards; and convene agency leads and employers in order to understand changes needed to K–12 and college curricula and state funding.

Characteristics of Effective LMI Creation and Utilization

Experts from the states we interviewed, which have prioritized LMI access and use, highlighted several factors that are critical to their success. This information could inform efforts in other states.

LMI Providers

- **Establish this function within a neutral entity.** Although several states have been able to provide stronger LMI from within their state labor agencies, representatives highlighted that it requires significant work to maintain trust in the information.
- **Focus on streamlining requirements.** When expanding the use of LMI, states should take existing resources and requirements into account. For example, many states now require unique LMI-informed plans for different funding streams. Not only does this generate conflicting reports but it also means time is spent on duplicative planning without the benefit of coordinating across initiatives.
- **Develop consistent LMI definitions and capacity across the state.** In most states, there is a patchwork of providers that prioritize different types of clients and develop their own methodologies for calculating LMI. Although this allows LMI providers to address the varied needs of each entity and region, it often means that the state lacks a coherent strategy for leveraging state-level resources to address local needs. Lack of alignment also hampers the ability to compare or aggregate results.
- **Hire labor market experts.** As states combine more sources of information, it is important that people with appropriate expertise guide the interpretation of data. Many states reported that they often spend time correcting misperceptions based on a cursory review of publicly available data.

Data

- **Include comprehensive information on occupations.** Many states have minimal information on job titles and therefore use survey data or proprietary sources, which may not be comprehensive. This hampers the ability to analyze how well programs prepare people for specific jobs. While some states have begun collecting occupational data as part of UI reports, those that have voluntary reporting are still getting information from only a fraction of employers.
- **Identify the skills embedded within education and training programs.** Currently, only a few states have this information. Without it, it is difficult to determine how aligned individual programs are with in-demand jobs.

- **Ensure confidentiality of individual-level data.** Data sets must be linked before education-to-employment pathways can be calculated based on the experiences of individuals rather than code crosswalks. This requires the exchange of sensitive information such as Social Security numbers. States need to have strong systems in place to safeguard this information.
- **Partner with data experts who understand source information.** Preparing LMI that is more nuanced requires bringing together multiple data sets. Domain-specific knowledge is important to ensure that appropriate variables are selected and to clarify discrepancies between the ways different entities describe similar concepts.
- **Provide more information on learners and workers.** To better understand the employment outcomes of programs, states report that it would be helpful to know more about the people participating in those programs and the circumstances that surround their engagement with the learning opportunity. Some states are also seeking information on specific populations, such as veterans.
- **Include additional data sources when focusing on people who are not in the labor force.** Several states are prioritizing the reengagement of people who are unemployed and no longer looking for work. This population frequently faces significant challenges, including lacking literacy and numeracy skills, having a disability, or needing additional supports such as child care or transportation to return to school or work. Designing stronger pathways for people who are not in the labor force would benefit from additional data sets that have not traditionally been included in LMI analyses, such as public benefit participation.
- **Create opportunities for cross-state data sharing in order to conduct analyses about people who leave the state.** A number of states are studying how to retain people who have completed postsecondary education in the state. This may create an opportunity to broker data sharing agreements that enable multiple states to pool information in order to better understand where learners move and what industries or jobs are drawing them to new locations.

Engagement

- **Provide support for data use.** Many states reported that one of their biggest challenges is helping people find, understand, and apply LMI. Experts spend most of their time explaining what data points are available and what they mean. But even when this information is clarified, educators, training providers, employers, and learners find it difficult to use the information. They need expert support in order to understand what actions they need to take to create or improve programs, where to enroll, or where to find qualified workers.

- **Begin with interpretive reports and presentations.** Most of the states have established mechanisms to make it easier to access and process information such as visualizations, topical articles that accompany mandated reports, and presentations to those who express interest.
- **Create dashboards that are designed for different types of audiences.** A number of states have created dashboards that make data from mandated reporting easier to view, but they were implemented with no specific audience in mind. As a result, information may not be user-friendly or address the different ways in which a college dean, a policymaker, and a high school student will use information about projected job openings. When designing for a particular type of user, states are pairing compliance data with different types of complementary information. For example, in addition to sharing information about job opportunities, tools for learners include information on available programs, the skills they teach, and the employment outcomes of completers. Those who have been publishing dashboards for a longer period of time also reported that they found they needed to simplify the information presented.

Strengthening Labor Market Information

Looking across states, we identified several factors that appear to support stronger LMI. States can use this as a self-assessment to prioritize actions they could take.

Scope

- Does your state have an entity that has clearly defined authority to provide consistent information to the executive branch, the legislative branch, state agencies, employers, and the public in order to clarify the status of the labor market?
- Is there a governing body that helps direct the work of the entity that includes representatives from the various LMI user groups?

Capacity

- Does the entity have analytical staff with expertise in labor markets and the source data sets who can answer priority questions?
- Does the entity have sufficient, ongoing funding to provide analyses?

Engagement

- Does the entity engage interest holders in regularly prioritizing the questions that should be answered in order to support state goals?

- Does the entity have a communications plan that ensures that a variety of interest holders are aware of key labor market trends?

Data

- Can all of the following sources of data be linked to conduct analyses?
 - K–12 enrollment, course taking, and completion
 - higher education enrollment, course taking, and completion
 - public workforce system enrollment and program outcomes
 - public benefit participation
 - employment and earnings
 - labor market projections
 - characteristics of individual learners and workers
- Has your state created standardized definitions for concepts that are referenced in multiple funding streams or programs?
- Is your state working to get better data on occupations and their required skills through such means as capturing occupational data from employers, using proprietary sources, or leveraging social media?

Security

- Is information stored in a data environment that protects sensitive information through encryption, access controls, and audit protocols?
- Are there clear procedures for data management, integration, and ethical use that are supported by formal agreements with partner agencies?

Conclusion

As states seek to fill the skills gap, grow local economies, and strengthen individual prosperity, they have the opportunity to rethink how they are generating and using LMI. While each of the states interviewed for this study has a unique structure, they outlined similar challenges and provided consistent advice. They also described several innovations that could be replicated in other states. However states elect to grow their LMI capacity, they should design with these attributes in mind: Ensure that a neutral party provides consistent information, examine skills and analyze the ways individuals have navigated career pathways, and deploy experts to help a variety of data users take action on the information.