

A Brief Introduction to Labor Market Information (LMI)

Prepared by the Center for Regional Economic Competitiveness (CREC) for the Jobs for the Future Building Equitable Pathways Community of Practice

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What is LMI?

Broadly defined, Labor Market Information (LMI) is any quantitative or qualitative information related to employers' demand for labor and the workforce's supply of labor. Depending on the context, important LMI may include the following:

- Information on characteristics of neighborhoods where people live, work, and attend school—relating to population dynamics or industrial history;
- Estimates of future demographic shifts (especially among working age adults);
- Estimates of future labor demand by industry or occupation;
- Education and training program offerings;
- Employer validation of lists of certifications referenced in job postings.

A lot of valuable LMI is free and publicly available. Some important LMI is provided through paid subscription services that process and analyze public data sources. Other LMI is publicly available but difficult to access. Critical LMI, such as employer validation of key skills and credentials, must be generated in collaboration with stakeholders. So, where do you start to learn about the LMI available to you?

Why this LMI Primer?

[JFF has provided the BEP CoP with a valuable resource](#) outlining design principles for using LMI data to build equitable pathways—as well as guidance on the types of LMI reports you can produce to inform students, communicate to partners, and advocate for policy changes. This LMI primer builds on that foundation, preparing you to examine various data sources and applications. As you identify the LMI that best supports your work to advance more equitable pathways, you'll test various information sources, their reliability and validity, as well as how different sources of LMI complement each other, in order to identify appropriate applications and draw deeper insights.

Why is LMI important?

LMI is critical for aligning education and training programs with both the populations they seek to serve and with industry demand for labor. Analyzing LMI is a first step in education and training efforts that aim to ensure workers and learners are prepared for family-supporting jobs.

- Key information from the **demand** side of the labor market typically includes historical employment and estimated future job openings for occupational categories with relevant wages, education, and skill requirements.

- Key information from the **supply** side of the labor market typically includes the number of new entrants to (and exits from) the labor market, specifically those with relevant skills and credentials.

What types of data make up the **demand** (or employer) side of LMI?

Information on historical and future labor demand is generated by the U.S. Bureau of Labor Statistics (BLS) in collaboration with state agencies. Information on labor demand may also be sourced from job postings or employer surveys and interviews. Some state LMI agencies produce short-term estimates of job demand and these agencies play an important role in creating and disseminating information on employer demand by identifying and sharing in-demand jobs, typically defined by job openings and wages.

Some examples of sources of data on in-demand jobs include the following:

- Historical employment and wages by occupation are produced by the U.S. BLS **Occupational Employment and Wage Statistics (OEWS)**.
- Estimates of future employment demand (“employment projections”) are produced by the U.S. BLS Employment Projections Program in collaboration with state labor market information agencies.
- Detail on education, training, work conditions, and skill requirements by occupation are available via the U.S. Department of Labor Employment and Training Administration (ETA) **O*NET Online database**.
- In-demand jobs (also called “hot jobs”, “bright outlook”, and other names) are identified by state agencies based on information about employment levels, historical and expected job openings (projections), and wages. Visit the following links for examples of state government “hot jobs” resources:
 - [Colorado Talent Development Dashboard](#)
 - [Wisconsin Department of Workforce Development Hot Jobs Dashboard](#)
 - [Minnesota Employment and Economic Development Occupations in Demand](#)
 - [NC Works Data Home Page – navigate to LMI](#)

What types of data make up the **supply** (employee, learner, or job seeker) side of LMI?

Information on the supply of labor may focus on the number of people seeking jobs and working (the “labor force”) or may also include people not formally seeking jobs (the entire non-institutionalized population). The supply of talent could be limited to people of a certain age group, with a specific level of education, or by geography. Understanding the likely future supply of talent requires examining demographic trends and population projections.

Some examples of sources of data on talent supply include the following:

- The **American Community Survey (ACS)** provides historical information on residents in detailed geographies and their demographics. Savvy ACS users can find demographics by occupation at a broad level.
- All Title-IV-funded universities and colleges report information on their graduates to the National Center on Education Statistics **Integrated Postsecondary Education Data**

System (IPEDS), where you can find information on the demographics of certificate and degree program completers.

- The **public workforce customer relationship management (CRM) systems**, accounting for customers served with Unemployment Insurance and other benefits (such as training and job search services), generate information on talent supply for the workforce system.

How is most LMI produced?

Generally, most of the quantitative information upon which we rely comes from two sources: **federal statistical surveys** (e.g., the Occupational Employment Wage Statistics survey) and **administrative records** (e.g., program records from Title IV schools or business tax records). These data are enhanced by states, private sector providers, federal-state partnerships, and data analysts to meet the needs of various customers. Qualitative information may come from industry leaders, industry and trade associations, authorities on education and training, national and local news, and employer and student surveys and interviews.

How reliable or valid is LMI from federal surveys and real-time data sources like job postings?

Helpful federal and state sources of LMI provide quantitative information such as job numbers and wage levels based on reliable survey design and data collection methods (e.g., methods are replicable and consistent, producing comparable results over time). However, this data and its validity depends on survey participation from employers and individuals. For example, major disruptions to Census participation would diminish the results from the Census and American Community Survey. Additionally, given the time lag created by data collection and production processes, recent events may not be captured, such as the lasting effect of the Pandemic nationwide or of a local employer closing its doors.

Similarly, there are limitations to the reliability and validity of “real-time LMI”. Job postings, when aggregated and analyzed on a daily or monthly basis, can provide “real-time” information about what employers and their Human Resource teams are advertising, but the trends that we observe in job postings may not represent real hiring processes or skill requirements or job opportunities. There are also data modeling services that regularly update modeled data based on federal data inputs, but there are limitations to the methods based on the data sources and their population coverage.

Regardless of the data sources, modeling human behavior will always be imperfect. So how can we best use LMI to inform decisions about programming and strategy? It is always wise to cross-check results with information from employers and other stakeholders in regional and local labor markets for the most accurate and up-to-date information. The practice of evaluating and comparing quantitative and qualitative information from various sources, including from employers in local labor markets, is known as “mixed-methods” research or “triangulation,” combining the available evidence to assess and validate information. This

practice of triangulation includes tapping multiple sources of data—or multiple approaches to analyzing data—to better identify what data are representing and what they are suggesting.

LMI from National Surveys

Both the **American Community Survey (ACS)** and the **Occupational Employment and Wage Statistics (OEWS)** survey can help to generate insights about the education and earning levels of local populations, but these results are generated for different purposes, in very different ways, from distinct populations of survey respondents.

	ACS	OEWS
Education and Earning Information for Key Populations	Allows for cross-tabulation of information on specific populations and their education and earnings levels, but it is difficult to get detailed information by occupation.	Includes only the number of employees and their average earnings, organized by occupation. No demographic information is provided.
Survey Respondents	Asks individuals about their level of education, including anyone in the non-institutionalized population, regardless of their employment status.	Asks companies about the occupations and wages of their employees, covering only employed people.
Smallest Level of Geography	Available at the county level and for smaller geographies down to the level of the census tract.	Available for states, metropolitan areas, and some non-metropolitan areas.

Note that state LMI agencies often combine OEWS occupational earnings results with information on occupational education levels to show typical education levels alongside average earnings.

LMI from National Reporting Systems

Educational institutions and workforce development agencies receiving federal funding must report information on participation and completion of training and education programs to federal oversight agencies. Employers are required to report information on employees and wages for tax records. And state licensing authorities and certification providers voluntarily report information to the Employment and Training Administration (ETA). These reports serve regulatory and public information purposes.

Educational institutions seeking eligibility under Title IV (the federal statute governing authorization for students to receive financial aid at qualifying higher education institutions) are required to submit information to the **Integrated Postsecondary Education Data System (IPEDS)** managed by the National Center on Education Statistics (NCES). IPEDS contains information on credential completion (degrees and various types of certificates) by the following attributes:

- Year
- School
- Instructional code
- Gender
- Race

Federal and state agencies pair similar information with wage records (matching individuals' education or training records to their wage outcomes) to report summary outcomes for program participants by area of study cohorts in each graduation year. See information on state participation in the **Post-Secondary Employment Outcomes (PSEO)** program and state dashboard examples (section below on LMI products).

Workforce boards are required to submit information on program participants to the U.S. Department of Labor and publish information on Training Programs in state **Eligible Training Provider Lists (ETPL)**. The Eligible Training Provider Lists are publicly available, though publication practices vary by state. Some of these records contain information on related credentials (degrees, certificates, and other credential types), participant completion rates, and employment outcomes for participants with Workforce Innovation and Opportunity Act (WIOA)-funded Individual Training Accounts. In 2020, the U.S. Department of Labor began to compile all these state lists and now publishes these at trainingproviderresults.gov.

Employers report employment and wages four times a year to state Unemployment Insurance systems to comply with laws requiring proper payment of benefits. A key LMI data product utilizing these records is the [Quarterly Census of Employment and Wages \(QCEW\)](#) produced by the U.S. Bureau of Labor Statistics.

State licensing authorities compile information on state-regulated licenses and share it with the ETA. This information on licenses (the credential) does not include info on license holders (the individual) or their sub-state location. Visit CareerOneStop's [license finder](#) for this data.

Certification bodies voluntarily report information on their offerings to ETA. As with licensing authorities' submissions, this information on certifications (the credential) does not include info on certification holders or their location. [Visit CareerOneStop's certification finder for this data.](#)

Much of this occupation-specific information is available via ETA's [CareerOneStop](#) and ETA's O*NET Online occupational skills database.

Visit O*NET: Check out the [occupational profile for Social and Community Service Managers](#). See links to information on credentials and job postings toward the end of the occupational profile.

Generating and Processing LMI on Credentials and Earnings

To make LMI more accessible to policy makers and program administrators, federal and state agencies process and combine information from the organizations and sources referenced above to create new data products and dashboards. To produce several of the products mentioned below, individual and program information is combined with confidential wage records from employer tax reporting systems.

Federal Data Products on College Graduates' Earnings

Partnerships with post-secondary institutions are key to ensuring that career pathways align with college credit and credentialing programs. However, many post-secondary institutions do not have the resources or processes for sharing information on student progress and outcomes even with their own administrators and faculty.

However, because of reporting requirements and data sharing agreements, some aggregated information on the earnings outcomes of graduates (degree and certificate program completers) is publicly available. For participating colleges, this information can be found through the [U.S. Department of Education's Scorecard](#) and through the [Post-Secondary Employment Outcomes \(PSEO\)](#) project supported by the U.S. Census's Longitudinal Employer-Household Dynamics (LEHD) data partnership project. More than 400 institutions from 11 states are currently participating in the PSEO project, which matches information on individuals' program completion and earnings outcomes, then aggregates the information to publish information by graduation-year cohort and area of study. State leaders and college systems may be interested in participating in PSEO to supplement or eliminate alumni surveys, standardize the results, and compare information from across states.

State Data Products on College Graduates' Earnings

Some state data products, such as [NC Tower](#) and [Illinois College2Career](#), predated the PSEO in matching program completions to wage records and displaying earnings outcomes (also check out [Illinois High School2Career](#)). In some states, colleges only receive information on employment and earnings by Classification of Instructional Program (CIP) area of study cohort directly from a state agency. Other colleges are seeking access to this information.

Products from State LMI Agencies

State LMI shops process a lot of federal data and administer surveys in partnership with the federal government. Some LMI state agencies help the U.S. BLS produce the Quarterly Census of Employment and Wages (QCEW) data product by combining business records and quarterly wage records, assigning industry codes, and identifying business locations. And some LMI agencies help to administer the Occupational Employment and Wage Statistics (OEWS), including by contacting employers directly to complete their survey response. There are also federal-state partnerships to produce the Current Employment Statistics, the foundation for monthly job reports issued by BLS at the beginning of each month, and the Local Area

Unemployment Statistics. The Bureau of Labor Statistics (BLS) publishes results nationwide with information on employment and wages by occupation.

State LMI agencies also create many public data products serving key constituencies such as workforce boards and community colleges, including projections of job demand. Other common data products include assessments of "in-demand" and "hot" jobs. Some states even have regional economic analysts who are dedicated to helping answer user questions and prepare reports tapping public labor market information. They may produce customized reports for legislators and other state and local leaders.

Analysis of LMI by Economic Development Agencies/Organizations

Economic development agencies and local economic development organizations often rely on the Quarterly Census of Employment and Wages (QCEW), published by the U.S. Bureau of Labor Statistics (BLS) in partnership with the states, to describe *industrial* employment. Similarly, these agencies rely on BLS's Occupational Employment Wage Survey (OEWS) to describe *occupational* employment.

Unemployment Insurance Wage Record Data and Unemployment Insurance Benefit Claims: What's the Difference?

Wage record data is collected quarterly from every employer participating in and required to report to Unemployment Insurance (UI). These employer-provided wage record data are utilized to produce the Quarterly Census of Employment and Wages (QCEW). Some wage record data is included in workforce board customer management systems and/or attached to federal reporting to the U.S. Department of Labor, which publishes a master Participant Individual Record Layout (PIRL) database and a master Eligible Training Provider List (ETPL) for the U.S. However, the raw wage record data submitted by employers—or "micro data"—is rarely made available and only by request.

When individuals apply for their UI benefits, their claims are recorded by state labor or workforce agencies. **UI benefit claims** are analyzed by state agencies to measure the number of individuals claiming unemployment benefits. Weekly data on claims for UI provide the highest-frequency official statistics on the state of the current labor market. During the Pandemic, some states, [such as Washington](#) and [South Carolina](#), made progress in utilizing the benefits claims data for real-time information on labor market trends. You can explore some of the data and trends through a [dashboard created by the Federal Reserve Board of Atlanta](#)

For strategic planning purposes, economic development organizations use this information to identify related industries, group these into "clusters," and analyze their presence in a state or region. Industries might be grouped together based on a tendency to locate together, share common characteristics and interdependencies related to supply chains and product markets, or similar staffing requirements. These "clusters" are analyzed to identify opportunities for growth and development. Different ways of grouping industries may have implications for the job ladders or lattices that are available and identifiable.

Data Generated by Federal- and State-Funded Workforce Development Agencies and Workforce Boards

Workforce development agencies and workforce boards comprise a network of federal, state, and local offices that support job search, matching, and related training. Workforce agencies create detailed administrative records through their customer management systems as they process information about job seekers and those seeking services. Many of the individuals served by workforce agencies are seeking unemployment insurance benefits; others are seeking job search services and training.

To assess the progress of individuals before and after receiving services, state employment record agencies match customer information to employment and wage outcomes, typically wage information for individuals four quarters prior to receiving services and four quarters after services have been provided. The participant information from all states nationwide is stored in the Participant Individual Record Layout (PIRL) files, but it is difficult for external researchers and program managers to access. WIOA performance outcomes analysis can be found here: <https://www.dol.gov/agencies/eta/performance/results/interactive-data-analysis>

Data Sources and Sample Research Questions

	Sample Research Questions	Data Source
Demographics	What is the racial and ethnic make-up of the population? How many people in my county have a high school diploma? In which industries and occupations are people employed?	ACS
	For Hispanic/Latinx immigrants, what are differences in employment and earnings by country of origin?	ACS
Industries & Occupations	What are the most important skills for a computer network support specialist?	O*Net
	What are the typical entry-level, median, and 90 th -percentile wages earned by licensed practical nurse?	OEWS

	Which industries are growing fastest in my county? How does that compare with growth of those industries across the entire state?	QCEW
Education & Training	What are the completion rates for WIOA-approved training programs relevant to health professions? How many people are participating in these programs?	ETPL
	How many Black and Latinx students completed healthcare-related degree and certificate programs at my local community college in 2019-2020 school year?	IPEDS
	What are the typical earnings of people that completed a short-term certificate program (<1 year) in the Health Professions? <i>For schools not (yet) participating in PSEO project, median earnings for all students may be available via College Scorecard</i>	PSEO (if school included)

Data Sources Referenced

Above, we referenced eight public LMI data sources. More detail on these data sources is provided below.

- **American Community Survey (ACS):** Determine a region’s demographics; gather detailed housing and population information for local areas.
- **Integrated Postsecondary Education Data System (IPEDS):** Describe and analyze trends in postsecondary education. Gather indicators of students’ postsecondary experience at an institution.
- **Post-Secondary Employment Outcomes (PSEO):** View and compare the economic value of a postsecondary degree, by degree and certificate level, subject area, and institution.
- **Occupational Employment and Wage Statistics (OEWS):** Identify in-demand occupations based on employment levels and mean wages in a region.
- **Quarterly Census of Employment and Wages (QCEW):** Measure employment and wages in a region, accessing a dataset representing 95 percent of U.S. jobs.
- **Participant Individual Record Layout (PIRL):** Appreciate the detail captured by the public workforce system through its customer management system.
- **Eligible Training Provider List (ETPL):** Identify authorized providers of postsecondary training, eligible to serve learners with WIOA-funded individual training accounts.
- **O*Net Online:** Explore the occupational characteristics (knowledge and skill requirements; daily activities; work context) for 800+ occupations. Search by job title or occupational code.

American Community Survey (ACS)

- **What is it?** The ACS is an [annual survey, sent by the US Census Bureau](https://www.census.gov/programs-surveys/acs/data.html) to a sample of the population each month (approximately 3.5 million households annually). The survey, distributed on a rolling basis, is used to provide statistical averages of population characteristics for a geographic area over one-year and five-year time periods (statistics from one year of data collection are based on a more limited population sample, with limited results for smaller geographic areas and populations while statistics from five years of data collection are based on a larger sample with more complete results for smaller geographic areas and populations). The [questions on the ACS address topics such as education, employment, and transportation](#). The survey produces data on social, economic, housing, and demographic characteristics of the nation's population.
- **What makes this data source unique?** The ACS provides estimates on race, ethnicity, ancestry, and foreign-born population groups; includes place of birth (nativity), and year of entry for foreign-born. It also includes language spoken at home and many other household characteristics.
- **What is an example of the type of research question the ACS can address?**
 - Single variable questions: What is the racial and ethnic make-up of the population? How many people in my county have a high school diploma? In which industries and occupations are people employed?
 - Cross-tabulation: For Hispanic/Latinx immigrants, what are differences in employment and earnings by country of origin?

ACS: Where to find it

<https://www.census.gov/programs-surveys/acs/data.html>

Tip

Use 1-Year estimates (smaller sample) when the timeliness of the information (most recent year available) is more important than precision or when analyzing large populations for which sample size is not an issue. Use 5-Year estimates when precision is more important than the timeliness of the information and when analyzing small populations.

Integrated Postsecondary Education Data System (IPEDS)

- **What is it?** [IPEDS](#) is a system of surveys that gathers information from every post-secondary institution participating in federal student financial aid programs. The approximately 11,000 participating institutions include colleges, universities, technical schools, and vocational institutions. The surveys are conducted by the Department of Education’s National Center for Education Statistics (NCES).
- **What makes this data source unique?** IPEDS provides the public with key indicators of institutional performance in U.S. higher education—reported by the institutions themselves.
- **What is an example of the type of research question IPEDS data can address?** How many Black and Latinx students completed healthcare-related degree and certificate programs at my local community college in 2019-2020 school year?

IPEDS: Where to find it

<https://nces.ed.gov/ipeds/>

Tip

The [IPEDS Trend Generator](#) offers researchers a simple way to view data over time.

Occupational Employment and Wage Statistics (OEWS)

- **What is it?** The Occupational Employment and Wage Statistics (OEWS) program, a federal-state cooperative between the Bureau of Labor Statistics and state workforce agencies, conducts a semiannual survey designed to produce estimates of employment and wages for specific occupations. The OEWS program collects data on wage and salary workers in nonfarm establishments to produce employment and wage estimates for about 800 occupations. Self-employed persons are not included in OEWS.
- **What makes this data source unique?** OEWS employment and wage estimates are available for the entire U.S., for individual States, and for metropolitan statistical areas (MSAs), metropolitan divisions, and nonmetropolitan areas. National occupational estimates for specific industries are also available.
- **What is an example of the type of research question OEWS data can address?** What are the typical entry-level, median, and 90th-percentile wages earned by a licensed practical nurse?

OEWS: Where to find it

<https://www.bls.gov/oes/>

- **Tip:** Once the raw employment and wage data are collected from employers, state workforce agencies manually analyze and classify each job reported into a detailed occupation as required by the Standard Occupational Classification (SOC) system. Bookmark SOC codes to help you navigate occupations.

Quarterly Census of Employment and Wages (QCEW)

- **What is it?** The [QCEW program](https://www.bls.gov/cew/) provides a quarterly tabulation of employment and wage information from workers covered by state unemployment insurance (UI) laws and federal workers covered by the Unemployment Compensation for Federal Employees (UCFE) program. Statistics are published for detailed industries and at the county level.
- **What makes this data source unique?** QCEW houses the most comprehensive employment database in the nation.
- **What is an example of the type of research question QCEW data can address?** Which industries are growing fastest in my county? How does that compare with growth of those industries across the entire state?
- **Tip:** QCEW provides a helpful [data viewer](#) that makes the data more accessible to researchers.

QCEW: Where to find it

<https://www.bls.gov/cew/>

Post-Secondary Employment Outcomes (PSEO)

- **What is it?** PSEO is an experimental federal-state partnership (with 11 states currently participating) that allows researchers to look at earnings outcomes for graduates of postsecondary institutions and programs. It also provides earnings data for specific fields of study, such as healthcare or business, as well as data on the industries in which program competitors are employed.
- **What makes this data source unique?** The PSEO Explorer tool offers a quick way to assess how much money graduates earn by degree field and institution.
- **What is an example of the type of research question PSEO data can address?** What are the typical earnings of people that completed a short-term certificate program (<1 year) in the Health Professions?
- **Tip:** The Census has published a [short video tutorial](#) that provides a useful overview of how to use the PSEO data visualization tool

PSEO: Where to find it

<https://lehd.ces.census.gov/applications/pseo/>

Participant Individual Record Layout (PIRL)

- **What is it?** The Participant Individual Record Layout (PIRL) is a federally mandated reporting layout that provides a standardized set of data elements, definitions, and reporting instructions that are used to describe the characteristics, activities, and outcomes of Workforce Innovation and Opportunity Act (WIOA) participants. The PIRL provides a framework to help the public workforce development system meet federal reporting requirements while ensuring consistency and comparability across grantees and programs.
- **What makes this data source unique?** The PIRL offers insights into training and work-based learning experiences provided at academic and non-academic institutions.
- **What is an example of the type of research question PIRL data can address?** How many people have participated in WIOA training programs? What is the credential attainment rate?
- **Tip:** The data files are difficult to access but are a key element of the public workforce data infrastructure and support required public reporting systems. Performance data is more accessible.

PIRL: Where to find it

WIOA Individual Performance Results:

<https://www.dol.gov/agencies/eta/performance/results>

Eligible Training Provider List (ETPL)

- **What is it?** The ETPL is a list of training programs that WIOA program participants generally must use to select training that can be funded by WIOA.
- **What makes this data source unique?** The ETPL provides valuable information about programs and courses that lead to credentials and can support career advancement.
- **What is an example of the type of research question ETPL data can address?** What are the completion rates for WIOA-approved training programs relevant to health professions? How many people are participating in these programs?
- **Tip:** You can look up ETPL lists at the state level by conducting a web search on the state name and the term “eligible training provider list.” For example, a search on “Oregon eligible training provider list” yields the following top result: <https://www.wioainoregon.org/eligible-training-providers.html> This web page allows you to access and download the list of eligible training providers in the state, as well as their individual programs.

ETPL: Where to find it

Each state publishes a list of Eligible Training Providers. The U.S. Department of Labor recently began to compile and publish these state lists at

<https://www.trainingproviderresults.gov/>

O*NET Online (O*NET)

- **What is it?** O*NET Online is an occupational work characteristics database supported by the U.S. Employment and Training Administration. You can explore the occupational characteristics (knowledge and skill requirements; daily activities; work context) for 800+ occupations. Search by job title or occupational code.
- **What makes this data source unique?** The O*NET database and occupational profiles are leading examples for governments and non-profits worldwide, demonstrating how to advance skills-based analysis and understanding.
- **What is an example of the type of research question O*NET data can address?** What are the most important skills for a computer network support specialist? (see the occupational profile and choose [the detailed view of tasks](#)) Based on my current job tasks, what are related jobs I might enjoy? (see the [Advanced Search functions](#) – Related Task Search and Related Detailed Work Activities Search)

O*NET: Where to find it

<https://www.onetonline.org/>

Another Tool to Explore

Visualizing Regional Dynamics: OnTheMap

For an interactive view of a few demographic variables in the context of broader regional dynamics, check out [OnTheMap](#). The tool was developed through a unique partnership between the U.S. Census Bureau and 50 partner states (plus the District of Columbia) through the Local Employment Dynamics (LED) partnership. OnTheMap offers a web interface for creating, viewing, and downloading workforce-related maps, demographic profiles, and reports.