



# ETA Sector Strategies Technical Assistance Initiative: USING DATA TO UNDERSTAND WORKFORCE SUPPLY



**EMPLOYMENT AND TRAINING ADMINISTRATION**  
UNITED STATES DEPARTMENT OF LABOR

## About This Brief

This resource is part of a series of integrated briefs to help workforce policymakers practitioners build a range of skills needed to launch and advance sector strategy approaches. The briefs are designed to be succinct and connect readers to existing resources, best practices, and tools. For more information, visit the U.S. Department of Labor Employment and Training Administration's [Business Engagement page](#).

## About Sector Strategies

Sector strategies are regional, industry-focused approaches to building skilled workforces and are among the most effective ways to align public and private resources to address the talent needs of employers. While the approach is not new, there is a growing body of evidence showing that sector strategies can simultaneously improve employment opportunities for job seekers and the competitiveness of industries. As such, a number of national initiatives and federal laws (including the Workforce Innovation and Opportunity Act) are driving workforce organizations, in particular, to embrace these approaches, to meet both the needs of workers and the needs of the economy.

At the heart of sector strategies are sector partnerships (sometimes referred to as industry partnerships, workforce collaboratives or regional skills alliances, among others). These partnerships are led by businesses—within a critical industry cluster—working collaboratively with workforce areas, education and training, economic development, labor, and community organizations. Sector partnerships are the vehicles through which industry members voice their critical human resource needs and where customized regional solutions for workers and businesses are formed.

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## INTRODUCTION AND OVERVIEW

In a global economy driven by innovation and knowledge, policymakers, elected officials, workforce and education providers face the challenge of adequately training workers so that employers can remain competitive. A 2010 study, *Help Wanted: Projections of Jobs and Education Requirements Through 2018*, predicts that U.S. employers will need 22 million new workers with postsecondary degrees by 2018. The report also predicts postsecondary education will under-supply candidates for three million jobs over the same period. A recent McKinsey Global Institute article reports that, although the U.S. unemployment rate has returned to prerecession levels, nearly 38 percent of working-age adults are unemployed, inactive, or working only part-time, while companies struggle to fill open positions. The article also points to skill mismatches between the talent available and the skills that businesses say they need. Sector strategies, then, can be employed to transform how workforce systems function, positioning them to play a more strategic role in addressing regional skill gaps and creating meaningful career pathways for a range of workers.

Improving the alignment between industry demand and the supply of qualified candidates requires access to accurate and useful workforce data. Quality labor market intelligence helps decision-makers and practitioners measure where education and training programs are not at scale to address skills shortages and surplus. This brief provides a list of resources that workforce staff can use to better understand the current and potential workforce supply for industry sectors.

The process of selecting target sectors includes a combination of qualitative trend data, such as labor market data and industry growth patterns, and on-the-ground qualitative assessments. While assessing the growth, strength, and concentration of a region's industry sector are important first steps in aligning training investments with local demand for skills and occupations, understanding a region's capacity to supply talented workers within an industry sector is equally important in determining where to deploy resources.



## EDUCATIONAL ATTAINMENT AND WORKER CHARACTERISTICS

Assessing workforce supply within an industry sector consists of two main components: the characteristics of workers currently employed in the industry and the pipeline of individuals completing degree and certificate programs aligned with an industry's occupational staffing pattern. Current workforce characteristics and education data help inform the selection of target sectors and can help establish a recruiting and training strategy across a regional workforce development system. For example, even if an industry is highly concentrated in an area, pays a living wage across its occupations, and is projected to grow in the future, high turnover rates and the number of individuals graduating from associated training programs may indicate a talent pipeline oversaturation. Analyzing workforce supply data can also help reinforce the need to train more workers in occupations with low growth projections but a large number of impending retirements. This section explores the workforce supply questions a collaborative should consider when identifying target sectors and implementing a sector strategy.

### WHAT ARE THE CHARACTERISTICS OF CURRENT WORKERS IN AN INDUSTRY?

The three main data categories of current workers in an industry sector are demographics, churn, and geography. A full list of publicly-available resources on current worker characteristics is included in the summary table at the end of this section.

#### Demographic Considerations

- Affects training program recruitment strategies
- Includes an assessment of impending retirements to plan for future investments



Demographic data includes information about the age, race, ethnicity, and gender of workers in an Industry's occupations. In conjunction with input from employers, age data can provide insight into occupations with large numbers of older workers and potential job opportunities due to replacement needs as well as growth. Data on race, ethnicity and gender can help a sector partnership coordinate training program recruitment strategies through community-based organizations, high school career and technical education programs, and postsecondary institutions.

## Turnover

- Provides insight into the level of competition for new job openings
- Distinguishes between new opportunities and opportunities due to replacements

Job flow dynamics - such as separations, turnover, and retirements - can help to determine the number of jobs that could potentially be filled by workers coming from other subsectors or industries. Understanding job flow (the patterns and rate at which workers tend to move from job to job) can help predict whether vacant positions are more likely to be filled by entry-level workers or experienced workers coming from a previous job.

## Geography

- Assesses commuting patterns: where workers live related to major employers
- Contributes to stakeholder outreach strategy

Two important considerations for a sector partnership are where major employers are located in relationship to their current workforce, and where there may be geographic opportunities to recruit new workers and training program enrollees, based on the area's commuting patterns. The U.S. Census Bureau provides a number of customizable databases allowing sector partnerships to map employer locations alongside demographic

## Case Study

Extensive strategic sector planning and workforce development are currently underway at World Business Chicago (WBC), a public-private partnership that engages business and community leaders to create jobs. WBC provides services to the City of Chicago along with the seven counties that make up the Chicagoland region. WBC has set a goal of making Chicagoland a leading manufacturing hub while developing a demand-driven targeted workforce development strategy.

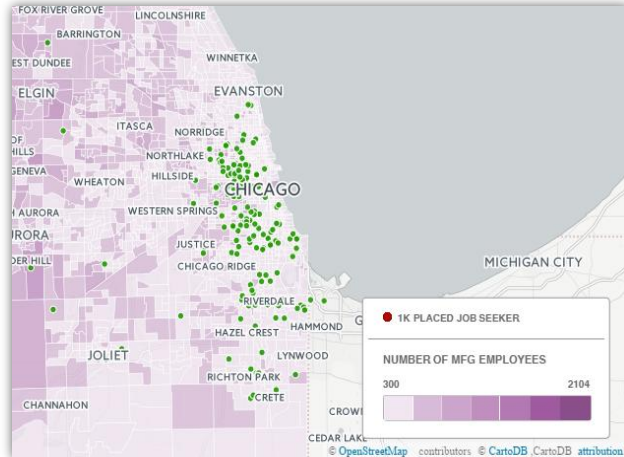
Chicagoland manufacturers identified the need for support in filling over 20,000 open manufacturing jobs in addition to backfilling 23,000 manufacturing jobs due to retirements. WBC had the challenge of connecting manufacturers to a pipeline of talent in order to meet current and future demand. WBC utilized data from the American Community Survey (ACS) to determine the number of manufacturers and manufacturing employees by census tract. ACS data helped WBC determine the location of manufacturing education and training providers and the location of people who are already working in manufacturing. This information helped put 420 people into manufacturing jobs and 150 in training programs. An analysis of supply data will help sector intermediaries understand where resources, people and jobs are located. The maps below show 1000 Jobs Employers & Concentration of Manufacturing Employees.





characteristics to explore commuting patterns and potential untapped areas of worker supply.

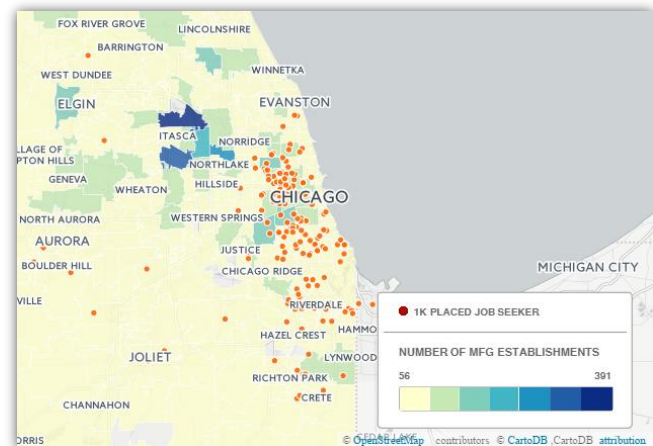
1000 Jobs Employers and Concentration of Manufacturing Employees



Sources: 1,000 Jobs, County Business Patterns (2013), American Community Survey (2010-2014)  
Data Retrieved: 02/18/2016

WorkforceOne

1000 Jobs Employers and Concentration of Manufacturing Employees



Sources: 1,000 Jobs, County Business Patterns (2013), American Community Survey (2010-2014)  
Data Retrieved: 02/18/2016

WorkforceOne

## HOW ARE EDUCATIONAL SYSTEMS PREPARING WORKERS FOR AN INDUSTRY?

While comprehensive educational attainment data can be notoriously difficult to collect - given the different types of training institutions and their data reporting procedures, public data resources combined with qualitative collaboration among the high schools, colleges, and workforce systems in a region can allow a sector partnership to assess the relationship between demand and future supply in a region's existing talent supply pipeline. Degree completion also does not necessarily correlate to the types of skills and competencies program graduates achieve, and it is important for a sector partnership to broker continuous feedback between educators and employers to ensure curricular alignment. Despite collection difficulties, educational data resources allow a sector partnership to deepen engagement across workforce development stakeholders by identifying potential gaps in employment and training and redundancies across area education institutions.

### Degree and Certificate Achievement

- Identifies areas of potential oversaturation and undersupply
- Helps to determine an area's overall workforce readiness for an industry's key occupations

There are different forms of "crosswalks" between training program data and job openings in occupations that program graduates can compete for. Data on degree and certificate achievement informs the supply side of the analysis and can be compared to projected annual openings for an initial sense of undersupply or oversaturation. Educational data resources also provide insight into a region's overall workforce readiness, including information on



high school graduation rates and adult literacy. A labor market demand analysis will explore the type of educational requirements for entry into a sector's occupation, and these data resources can help a sector partnership assess whether or not a region's population contains the needed baseline educational characteristics.

## WIOA Programming and Workforce System

- Identifies where WIOA training fits within the overall sector training investment strategy among a region's educational institutions
- Helps to determine a collective strategy for high schools, postsecondary institutions and other regional training programs to supply future workforce needs

## Case Study

Recognizing the importance of workforce supply and demand information, the reauthorized Workforce Innovation and Opportunity Act (WIOA) requires states to identify regional skill needs and sectors that are facing skill shortages. Sector efforts typically require a deep understanding of regional industry trends and economic activity. States play an integral part in collecting and providing data to regions. For instance, the Massachusetts State WIOA Plan includes a comprehensive economic analysis that includes information on existing and emerging demand in sectors and occupations. Additionally, Massachusetts conducted an innovative method of analyzing its workforce supply, based on the ratio of online job postings and unemployment insurance claimants.

The table below shows occupations with high demand and high skills gaps.

*Occupations with Overall Higher Demand and Higher skill gaps*

Occupation	Feb to July 2015 Claims	Feb to July 2015 Job Postings	Employment Count	Demand as % of full employment	Claimants per 100 Postings	Entry Wage	Median Wage	Job Zone
Software Developers, Applications	734	13,169	26,900	33%	5.6	\$71,770	\$104,460	4
Web Developers	164	7,133	3,960	64%	2.3	\$48,210	\$74,080	3
Network and Computer Systems Administrators	393	6,781	9,730	41%	5.8	\$58,950	\$81,390	4
Social and Human Service Assistants	678	6,856	17,790	28%	9.9	\$23,350	\$31,110	4
Computer Systems Analysts	453	6,597	15,850	29%	6.9	\$59,550	\$85,180	4
Medical Scientists, Except Epidemiologists	309	5,327	10,000	35%	5.8	\$47,900	\$87,000	5
Industrial Engineers	117	4,951	7,150	41%	2.4	\$64,310	\$90,160	4
Public Relations Specialists	133	3,097	7,000	31%	4.3	\$38,380	\$57,170	4
Demonstrators and Product Promoters	51	2,710	1,480	65%	1.9	\$20,900	\$32,870	2
First-Line Supervisors of Non-Retail Sales Workers	112	2,620	5,740	31%	4.3	\$51,900	\$86,240	4
Physical Therapists	47	2,429	7,300	25%	1.9	\$64,860	\$82,540	5
Computer Programmers	194	2,575	8,440	23%	7.5	\$57,490	\$85,870	4
Speech-Language Pathologists	44	1,875	3,660	34%	2.3	\$56,270	\$76,910	5
Merchandise Displayers and Window Trimmers	144	1,798	1,470	55%	8.0	\$19,260	\$27,210	3
Information Security Analysts	37	1,684	2,630	39%	2.2	\$50,790	\$84,800	4
Telemarketers	127	1,718	3,690	32%	7.4	\$20,820	\$27,710	2
Real Estate Sales Agents	27	1,533	2,600	37%	1.8	\$33,370	\$55,680	3
Database Administrators	119	1,550	3,730	29%	7.7	\$53,520	\$79,560	4
Occupational Therapists	34	1,314	4,490	23%	2.6	\$57,840	\$80,420	5
Bus and Truck Mechanics and Diesel Engine Specialists	111	1,179	3,210	27%	9.4	\$38,510	\$50,020	3

Source: DUA Unemployment Insurance Claimant Data, Conference Board Help Wanted Online Data Series® real-time job vacancies



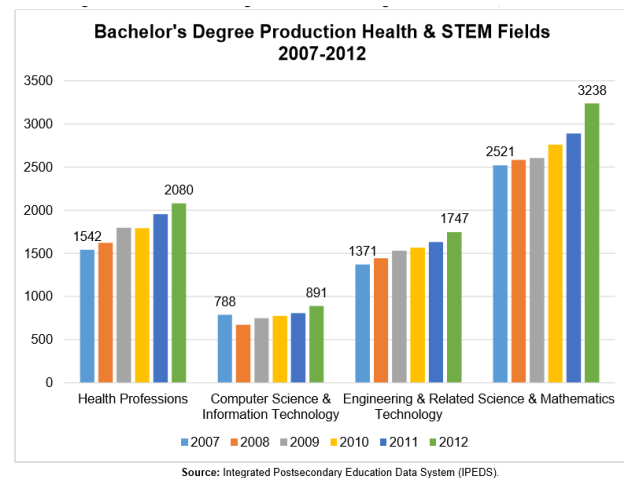
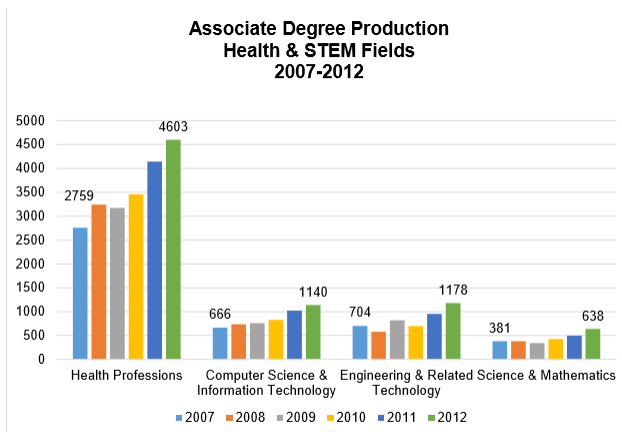


Taken together, workforce supply characteristics and educational attainment data contribute to the process of targeting training investments within a sector, developing marketing and outreach strategies for training programs, and coordinating engagement across a region's workforce development system.

## Case Study

A 2013 study: *A Skilled and Educated Workforce*, prepared by the Washington Student Achievement Council, State Board of Community and Technical Colleges and Workforce Training and Coordination Board, provided a methodology for addressing the gaps between academic degree production and industry skill needs. The research highlighted five occupational areas with gaps between employer demand and supply of skilled workers. The fields requiring a bachelor's degree or greater are computer science, engineering and health. The fields requiring less than a bachelor's degree include installation/maintenance/repair and select health occupations.

The charts below show the increase in degree production in health and STEM fields between 2007-2012.



Legislative support and funding are crucial components to the long-term success of sector-based efforts, and compelling data can make the case for necessary investments. Washington State policymakers set aside appropriations to expand student enrollment in high-demand sectors. The 2012 House budget (HB 2127) reallocated approximately \$9 million to the state public universities and colleges to increase enrollments in engineering and STEM fields. The funding increases continued in the 2013-2015 appropriations. This example demonstrates that access to supply data can improve the alignment between industry demand and supply of skilled workers.

## WHAT RESOURCES CAN I USE TO ANSWER QUESTIONS ABOUT WORKFORCE SUPPLY?

The table below provides a diverse series of supply data metrics from several data sources that can be utilized to examine labor supply. By incorporating multiple data sources, your workforce supply analysis will be richer and more likely to pick up on nuances and recent shifts that are characteristic of the complex labor market. These data taken together will guide decisions and investments designed to better align the supply of workers with demand.

Question	Metrics	Where to Find the Data
How are education systems preparing future workers for an industry?	<p><b>Educational Attainment:</b> Aggregate data on educational programs that produce skilled workers. An analysis of program enrollment and completions is critical to understanding the supply of potential workers needed to fill current and projected job openings. Additionally, an examination of the number of education providers and programming in a region can help determine if the region's capacity to produce the number of workers needed is an issue that must be addressed.</p>	<p><b>National Center on Education Statistics:</b></p> <p><b>Integrated Postsecondary Education Data System (IPEDS)</b>  <a href="http://nces.ed.gov/ipeds">http://nces.ed.gov/ipeds</a>            Postsecondary data such as admissions, enrollment, financial aid, degrees/certificates conferred, persistence, success, and costs. More than 7,500 institutions contribute data to this program.</p> <p><b>Career &amp; Technical Education (CTE) Statistics</b>  <a href="http://nces.ed.gov/surveys/ctes/index.asp">http://nces.ed.gov/surveys/ctes/index.asp</a>            Institutions and credentials, high school student participation in CTE, CTE offerings, CTE enrollment, persistence, attainment, and outcomes.</p> <p><b>Common Core of Data (CCD)</b>  <a href="http://nces.ed.gov/ccd/pub_dropouts.asp">http://nces.ed.gov/ccd/pub_dropouts.asp</a>            Drop-out, graduation and completion data for Public High Schools.</p> <p><b>Digest of Education Statistics 2013</b>  <a href="http://nces.ed.gov/pubs2015/2015011.pdf">http://nces.ed.gov/pubs2015/2015011.pdf</a>            Broad educational statistics, such as schools, teachers, colleges, enrollment, graduates, attainment and others, covering Pre-K through graduate school.</p> <p><b>National Assessment of Educational Progress (NAEP)</b>  <a href="http://nces.ed.gov/nationsreportcard/about/">http://nces.ed.gov/nationsreportcard/about/</a>            Referred to as "the nation's report card." Ongoing assessment of U.S. students' achievement in math, reading, science, writing, and a variety of other subject areas.</p>

Question	Metrics	Where to Find the Data
		<b>NAEP Urban School District Profiles</b> <a href="http://nces.ed.gov/nationsreportcard/districts/">http://nces.ed.gov/nationsreportcard/districts/</a> Comparison of urban school districts to large cities for math, reading, writing, and science.
		<b>State and National Assessments of Adult Literacy (SAAL) &amp; (NAAL)</b> <a href="http://nces.ed.gov/NAAL/alsa.asp">http://nces.ed.gov/NAAL/alsa.asp</a> State and National Literacy Estimates and State and County Estimates of Low Literacy. Extrapolated estimates for all 50 states and the nation based on 2003 data collection.
		<b>U.S. Dept. of Education – Ed Data Express</b> <a href="http://eddataexpress.ed.gov/index.cfm">http://eddataexpress.ed.gov/index.cfm</a> National and state educational data, such as graduation rates, adequate yearly progress, proficiency on assessments, and populations served.
		<b>Postsecondary Analytics</b> <a href="http://www.postsecondaryanalytics.com">http://www.postsecondaryanalytics.com</a> Educational attainment by state, gender, race and age group for 2006-2013, Degree completion trends, Pell recipient data.
		<b>U.S. Census Bureau</b> American Community Survey (ACS) <a href="http://www.census.gov/programs-surveys/acs/">http://www.census.gov/programs-surveys/acs/</a> American Fact Finder <a href="http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml">http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml</a> Provide one, three and five-year estimates for educational attainment, as well as a number of other demographic, economic, and social metrics.
	<b>Certificate and Certification Completion:</b> Currently, the U.S. does not have a federal program to collect national data on certificates and certifications awarded by educational providers.	<b>U.S. Bureau of Labor Statistics - Certificates: A Fast Track to Careers</b> <a href="http://www.bls.gov/careeroutlook/2012/winter/arto1.pdf">http://www.bls.gov/careeroutlook/2012/winter/arto1.pdf</a> The most common occupations that require certificates and certifications. Wage data for specific credentials is also provided.

Question	Metrics	Where to Find the Data
	<p>However, some research has been done using the Survey of Income and Program Participation (SIPP) to determine, on average, what share of the population has earned these awards and the degree of economic value they carry in certain states. Additional data on certificate and certification awards may be available from state-based sources.</p>	<p><b>Georgetown University Center on Education and the Workforce (CEW) - Certificates: Gateway to Gainful Employment and College Degrees</b> <a href="https://cew.georgetown.edu/report/certificates/">https://cew.georgetown.edu/report/certificates/</a></p> <p>Report detailing certificate seekers, earnings' returns on certificates and state comparison data for certificates.</p>
What are the characteristics of current workers in the industry?	<p><b>Workforce Demographics:</b> Baseline metrics for an industry or subsector of an industry are necessary to fully understand the supply of workers needed to fill position openings. The data sources in this section provide basic data specific to NAICS industries out to the six-digit NAICS level. Knowing this information can help determine not just how many workers are needed to fill position openings, but also the demographic characteristics of workers needed to adequately strengthen and diversify an industry's workforce.</p>	<p><b>OnTheMap Area Profile Analysis Tool</b> <a href="http://onthemap.ces.census.gov">http://onthemap.ces.census.gov</a></p> <p>Interactive tool that allows for customized analysis of the workforce in a specific geography, including a variety of map layers, metrics, and time periods. Can help identify commuting patterns and the proximity of current workers to businesses.</p>
		<p><b>Quarterly Workforce Indicators</b> <a href="http://lehd.did.census.gov/data/">http://lehd.did.census.gov/data/</a></p> <p>Set of economic indicators including employment, job creation, earnings, and other measures of employment flows.</p>
		<p><b>QWI Explorer Tool</b> <a href="http://qwiexplorer.ces.census.gov/-x=o&amp;g=o">http://qwiexplorer.ces.census.gov/-x=o&amp;g=o</a></p> <p>Allows for quarterly comparative analysis and rankings of a wide variety of employment indicators for any industry, including age, gender, and race.</p>
		<p><b>The LED Extraction Tool</b> <a href="http://ledextract.ces.census.gov/">http://ledextract.ces.census.gov/</a></p> <p>Allows for more detailed and intentional examination of specific geographies, employment indicators and industries.</p>

Question	Metrics	Where to Find the Data
	<p><b>Current Employment Levels:</b> Identify current employment levels and job flow dynamics such as separations, turnover, and retirements that can help to determine the number of jobs that could potentially be filled by workers coming from other subsectors or industries. Understanding job flow (the patterns and rate at which workers tend to move from job to job) can help predict whether vacant positions are more likely to be filled by entry-level workers or experienced workers coming from a previous job.</p>	<p>Job Openings and Labor Turnover Survey (JOLTS)  <a href="http://www.bls.gov/jlt/home.htm">http://www.bls.gov/jlt/home.htm</a>            Monthly release of <b>employment, job openings, hires, layoffs, discharges and other separations</b>. Available in four regions: Northeast, South, Midwest, and West</p>
How many people receive training through the workforce investment system?	<p><b>Participation in Workforce Investment System and WIA Programming:</b> Monitoring the flow of participants coming into and out of the workforce system can help identify the potential supply of workers to fill job openings. The sources below provide quarterly updates on several metrics captured by state systems, including new enrollees, exiters, employment, retention, and degrees/certificates earned for WIOA Adults, Dislocated Workers, and Youth participants.</p>	<p><b>U.S. Department of Labor – WIOA Dashboards</b>  <a href="http://www.wiadashboard.org/default.asp">http://www.wiadashboard.org/default.asp</a>            User-friendly, interactive dashboards for WIOA participant flow, performance measures, and WIA results</p> <p><b>NOTE:</b> Tool only includes customers that received staff-assisted services and are therefore subject to performance measures. As a result, approximately six million self-service customers are not taken into account. All metrics are available at the national, state and local WDB levels.</p>

## About The Author

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Jobs for the Future (JFF) designs and drives the adoption of innovative, scalable approaches and models—solutions that catalyze change in our education and workforce delivery systems.



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