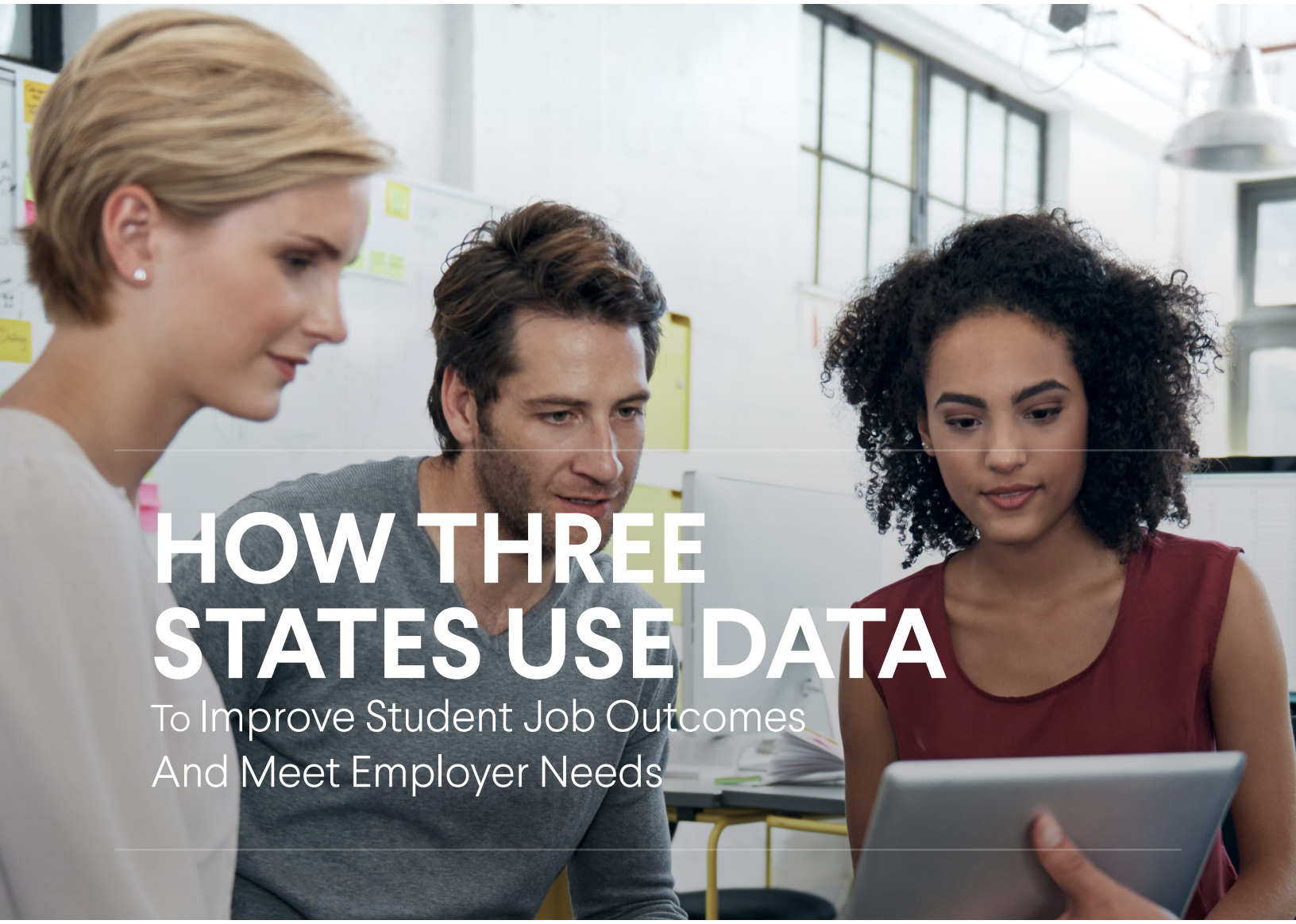

HOW THREE STATES USE DATA

To Improve Student Job Outcomes And Meet Employer Needs

AT A GLANCE

Rapid advancements in information technology provide more opportunities than ever for education and workforce organizations to use data to show that students are obtaining jobs and employers are finding skilled workers. This brief details how Kansas, Massachusetts, and Missouri used data integration to address education and workforce needs.

Note: In addition to interviews, this brief draws from a U.S. Department of Labor webinar, Improving Statewide Data Integration, Sharing, and Use. A full transcript and video recording of the webinar is here: https://www.workforcegps.org/events/2017/05/19/13/07/WIOA-WEDNESDAY-Improving-Statewide-Data-Integration-Sharing-and-Use.

PREPARED FOR

EMPLOYMENT AND TRAINING ADMINISTRATION
UNITED STATES DEPARTMENT OF LABOR

BY

JFF
Building a Future That Works

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Contents

Introduction

Advanced technology is touching every part of the world. Information is being tracked and decisions are increasingly being made based on that data—from informing patient treatment in hospitals to marketing to consumer behavior in stores. Similarly, community college and workforce systems are using data in new ways to drive decisions and demonstrate results for dollars invested by students and taxpayers.

Community colleges feel an urgency to show that students are obtaining jobs and not just degrees, leading to a focus on how data are collected, analyzed, and shared.[1] For workforce development boards (WDBs) and other entities in the public workforce system, the Workforce Innovation and Opportunity Act (WIOA) – signed into law in 2014 – requires that federal investments in employment and training programs be evidence-based and data-driven and that states, local areas, and eligible training providers make performance reports publicly available. These factors have prompted education and workforce systems to develop more interoperable, seamless data systems. With rapid advancements in information technology systems, there are more opportunities than ever for education and workforce organizations that are using data at a programmatic level to shift to a systems level. Several states are developing data collection and analysis infrastructure that spans both the education and workforce fields.

Competitive grants awarded through the U.S. Department of Labor's (DOL) Trade Adjustment Assistance Community College and Career Training (TAACCCT)[2] program provide a few examples of how data integration programs between community college and workforce systems have been scaled and sustained at the statewide level in Kansas, Massachusetts, and Missouri. Drawing from the challenges and lessons learned in these three states, this brief will

provide insights into navigating the various legal, technical, and organizational challenges for achieving data integration in the education and workforce worlds.

How might colleges and workforce systems benefit from integrated data systems? Below are potential benefits distilled from interviews with those involved in the projects in Kansas, Massachusetts, and Missouri. An integrated set of technology systems on their own will not guarantee these results or performance improvements. Instead, it's the foundational role that integrated data systems play that can lead to more informed, collective decision-making among stakeholders.

The benefits of data system integration for college and workforce systems

- **Strong coordination** across the workforce system and partnering colleges
- **Evidence-based** return on investment
- **Clear training provider outcomes and effectiveness** so that program and curriculum improvements can be made
- **Improvement of accessibility of information** so job seekers and students can make more informed choices
- **Increased transparency** so the general public can more easily understand how programs benefit their communities

SNAPSHOTS:

Three States, Three Models

The TAACCCT Round 4 grants, active from 2014 to 2018, included options for grantees to apply for supplemental funds to support projects that focused on several types of system change, including developing or enhancing systems of statewide data integration. Consortia in Kansas, Massachusetts, and Missouri, three grantees who received supplemental funds, demonstrate different models in varied contexts to integrate higher education and workforce data into a unified system, enabling job seekers and funders to better understand their return on investment. Each state used a different model to effect change, as described below.

Data Integration, WIOA, and DOL

The TAACCCT funding that was used to support data integration efforts built on existing work that DOL has supported and that the Workforce Innovation and Opportunity Act (WIOA) set into motion. WIOA requires states to develop unified plans to address how state agencies will align and integrate various types of data. In addition to TAACCCT, the DOL has supported a number of efforts to improve data integration through investment in "good data, good systems, and good connections." For instance, starting in 2010, the DOL launched the Workforce Data Quality Initiative (WDQI) to fund the development or enhancement of state workforce longitudinal administrative databases. Ultimately, databases developed through WDQI are intended to link to education data at the individual level.

Missouri Snapshot: Homing in on Noncredit Programs and Outcomes

> The MoSCORES system is the first-ever statewide noncredit workforce longitudinal secure data warehouse that connects student records through Social Security Numbers, de-identifies them, and then links the data across agencies.[3]

The goal of the Missouri project was to support the integration of data in the performance and employment outcomes from students who undertake noncredit coursework.

Missouri is one of the original 32 states that received a Workforce Data Quality Initiative (WDQI) grant, which supported the state in building its wage explorer tool, an online resource that displays entry-level wages, industries, and work regions of recent Missouri graduates, based on programs of study.

Through a TAACCCT-funded collaboration among 13 community colleges and local workforce development boards across Missouri, the state expanded on the system built through the WDQI grant. The newly enhanced system combined noncredit student performance data, for-credit programs of study performance data, a new WIOA-compliant Eligible Training Provider System, and a public wage exploration tool all-in-one. Data from these sources were gathered in a data warehouse, from which reports could be generated for public and specific end-user research.

To begin this work, Missouri Workforce Innovation Networks (MoWINS) initiated a statewide data advisory task force to design

and develop how the data warehouse and reporting system they were developing would enable the state to collect and aggregate information across the many systems of public workforce and higher education. The key stakeholders involved in the task force and their roles in the effort are listed in Table 1. One of the key results from their work is now branded as MoSCORES (Missouri School Credentials for Occupations Resulting in Employment Success), launched in July 2018. MoSCORES is a website where users can search or download employment and wage information on a selection of higher education programs of study.

Moving forward

Currently, the community colleges and the workforce system use the reporting function of the data warehouse to make data-driven decisions about program refinements and new program development, and will continue to do so into the future. The website MoSCORES (https://scorecard.mo.gov/scorecard/Search) is live and available for public use. A recent MoSCORES newsletter notes, "MDHE (Missouri Department of Higher Education) is discussing additional resources which might be applied to development of the portal beyond the expiration of the TAACCCT grant. Staff will also soon be adding another year's data to the database to provide more recent outcomes information."[4]

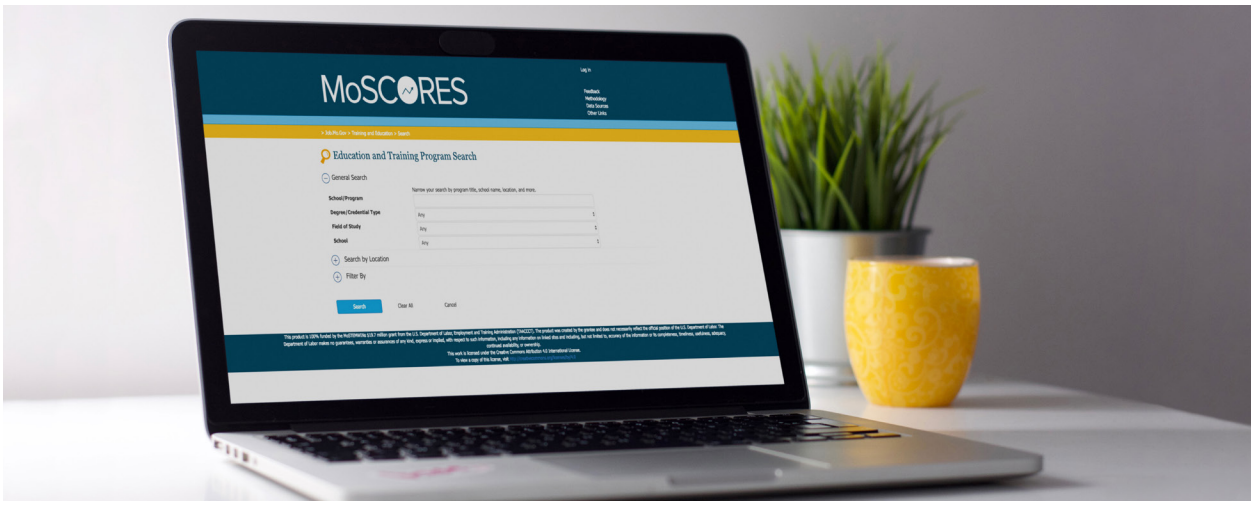
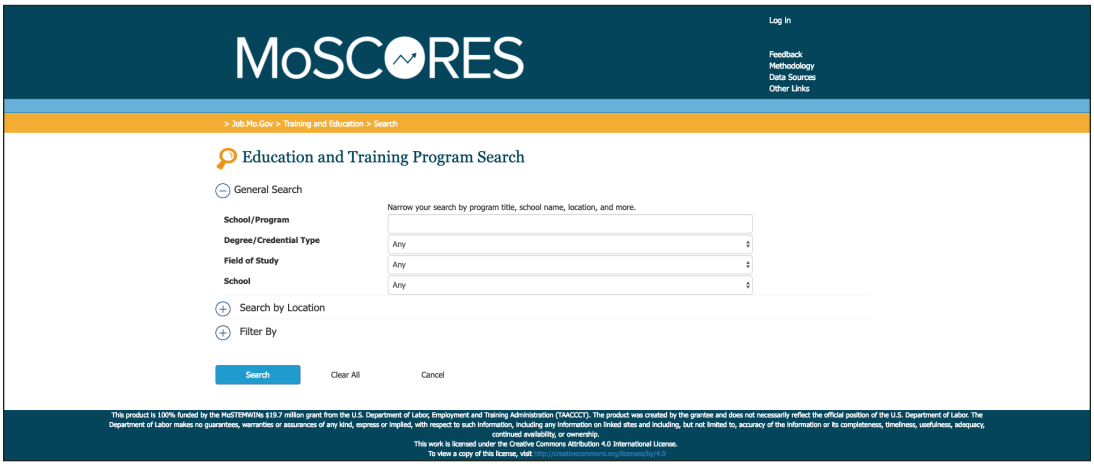


TABLE 1. MoSTEMWINS KEY STAKEHOLDERS IN DATA INTEGRATION PROJECT (FROM THE CONSORTIUM'S GRANT APPLICATION)[5]

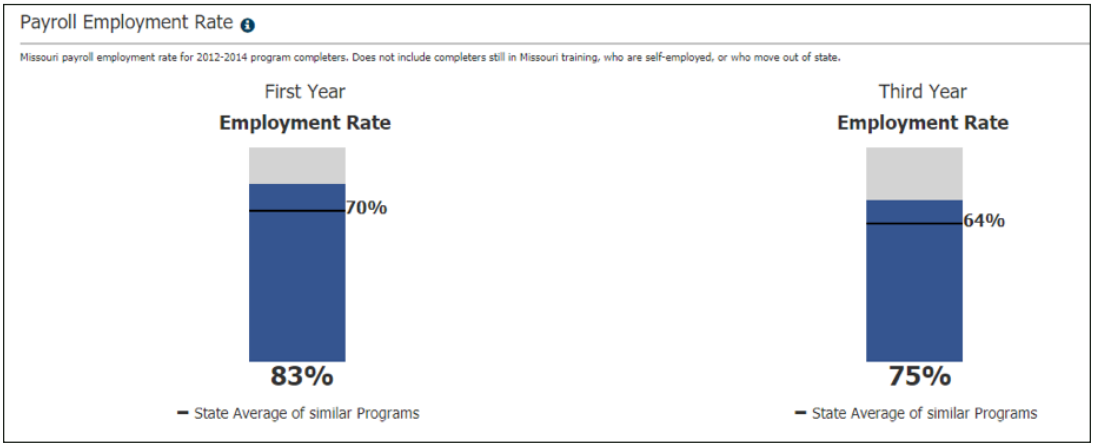
MoSTEMWINs Key Stakeholders In Data Integration Project

STAKEHOLDER	TYPE OF ORGANIZATION	ROLE IN PROJECT
Community colleges and state technical college	Institutions of higher education	Hire or assign staff to implement student noncredit data collection system; use data from system to inform college decisions.
Missouri Community College Association (MCCA)	Nonprofit statewide association	Grant director oversight and spokesperson, lead project manager to facilitate conversations with stakeholders, prepare quarterly project reporting, and provide other leadership and support services.
MCCA IR Council	Voluntary work group of institutional research professionals from colleges around the state	Make and review a standard data definition and common set of reporting elements regarding data portal and repository, participate in pilot program, provide ongoing feedback about system operability, and make recommendations.
MCCA Presidents and Chancellors Council	Governing body of the MCCA	Review and give final approval to major student data system and policy decisions, use the student noncredit data harvested, map the course inventory and student performance data for decision-making processes, and support sustainability.
Missouri Department of Higher Education	Administrative arm of the Missouri Coordinating Board for Higher Education	Provide technical assistance and leadership around linking noncredit student data to existing student data collection systems and provide assistance from four-year institutions with the development of a statewide course-mapping matrix inventory.
Missouri Economic Research and Information Center	Missouri's economic research agency	House data repository, hire or assign personnel to support the initiative, perform research on data, and routinely engage employers and industry via surveys or focus group sessions routinely.
Missouri Division of Workforce Development – ETPS	Administers training program eligibility for federal training funds	House Eligible Training Provider System (ETPS), manage application process for training programs, and support schools in training to use the system.
MoWINs Credit for Prior Learning Workgroup	Voluntary work group from 13 colleges around the state made up of credit for prior learning professionals	Assist in the development of the statewide course-mapping crosswalk matrix by inputting appropriate course information in the data matrix inventory.



MoSCORES

MoSCORES is a publicly available website that combines a searchable program inventory with additional information on program costs, program student demographics, graduate outcomes (earnings and employment), and a program comparison function.[6] When users go to the MoSCORES site (https://scorecard.mo.gov/scorecard/Search), they can search by a variety of fields. Above is a snapshot of a search looking at a certificate program in the field of "Production Welding Machining and Related."



Missouri Employment Rate

Above is an example (screenshot capture) of information for the State Fair Community College (in Sedalia, Missouri) Computer Numerical Control (CNC) Operation program. The bar graphs show the Missouri payroll employment rate for 2012-2014 program completers.

Interested in Learning More about MoSCORES?

- Learn more about MoSCORES: https://dhe.mo.gov/cbhe/boardbook/documents/Tab28--0912.pdf
- Try MoSCORES: https://scorecard.mo.gov/scorecard/Search
- Watch a video on what prompted MoSCORES and how it led to a single data system in the state of Missouri: https://vimeo.com/288420335 and https://vimeo.com/303518222

Kansas Snapshot: Existing System, New Linkages

> One of the major results of KanTRAIN was that the Kansas Board of Regents developed several standard wage reporting tables, which can be repurposed for performance reporting required by WIOA.

The goal of the Kansas Technical Re/training Among Industry-Targeted Networks (KanTRAIN) data integration project was to develop systemic linkage processes using existing or developing data systems to integrate access to employment data as well as postsecondary educational and training outcomes data. The KanTRAIN project, funded by TAACCCT Round 4, built on an existing Kansas system that had been created through previous U.S. Department of Education-funded Statewide Longitudinal Data System (SLDS) grants in 2000 and 2009, as well as a WDQI grant.

Kansas has 19 community colleges and six technical colleges, all of which are independently governed by the Kansas Board of Regents (KBOR), the statewide coordinating board. The state also has a statewide public workforce system separated into five local workforce development areas, with more than 20 workforce centers total. Previously, there had been an existing contract with the Kansas Department of Labor (KDOL) and the KBOR, allowing the board to receive labor market information from the KDOL but the contract did not allow for the data to be shared back to the individual institutions of higher education (IHEs) for individual student level data.

KanTRAIN's contribution helped to match individual-level student data to employment outcomes for TAACCCT-funded programs in Kansas, a significant step toward statewide integration. The program also facilitated the exchange of labor market information data from the local workforce development boards to the KanTRAIN IHEs, facilitating the sharing of case management responsibilities and exchange of participant information to better help students. KanTRAIN also facilitated the exchange of labor market information from the WDBs to the KanTRAIN IHEs.

One of the major results of KanTRAIN was that the KBOR developed several standard wage reporting tables, which can be repurposed for performance reporting required by WIOA. Furthermore, the common table structures and standard definitions developed through the program are helping to ensure that employment and wage metrics are reported consistently across applications.

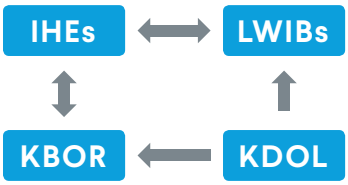
KanTRAIN's contribution helped to match individual-level student data to employment outcomes for TAACCCT-funded programs in Kansas, a significant step toward statewide integration.

In addition, the data integration project enabled a comprehensive study of the job training outcomes on KanTRAIN participants' achievement and employment. KanTRAIN institutions, in collaboration with KBOR and RTI International, KanTRAIN's third-party evaluator, analyzed various outcome variables. Uniquely, they were able to conduct the impact study on a longitudinal basis, comparing "the outcomes of KanTRAIN program exiters who enrolled between fall 2015 and spring 2017 ("KanTRAIN cohort") to participants who enrolled in the same or similar programs prior to KanTRAIN implementation between fall 2011 and summer 2015 ("historic cohort") to determine the impact of KanTRAIN on participant outcomes"[7] (p. 38). The September, 2018, Evaluation Final Report found several significant outcomes of the KanTRAIN project.

LMI Information & Planning

How it was:

Utilizing current systems to create new linkages:



Key:

IHEs = Institutions of higher education

KBOR = Kansas Board of Regents (housed data warehouse)

KDOL = Kansas Department of Labor (labor market information)

LWIBs = Local workforce investment boards (Supply labor market info, as well as case management notes and self-reports)[17]

For instance, the Report noted that, "[c]ompared with the historic cohort with similar characteristics, the KanTRAIN cohort achieved larger academic gains and similar employment outcomes. KanTRAIN participants earned more credit hours, more credentials overall, and more nondegree credentials than the historic cohort."[8]

See https://www.skillscommons.org/handle/taaccct/18334 for the full evaluation study findings.

Moving forward

The stakeholders in Kansas find the system they developed to be highly valuable and will continue to use it. In a recent report, the KBOR noted, "TAACCCT [KanTRAIN] was the first project in which the regents performed an education-to-labor match to fulfill employment and wage requirements for other federal grantees. The knowledge gained while developing contracts and processes that comply with the Family Educational Rights and Privacy Act, federal labor laws, and state laws has been invaluable for forging future methods and partnerships of a similar nature."[9]

Learn more about KanTRAIN: https://wsutech.edu/kantrain/

Massachusetts Snapshot: Good Data = Good Decision-making

> "The big impact of this work has been the democratization of data. We can now provide much broader access to data, so that students, faculty and administrators all have the ability to access data to make well-informed decisions about programs and careers."
>
> Kathleen Kirby,
> Former statewide Project Director, GPSTEM

The goal of the Massachusetts' Round 4 TAACCCT project, Guided Pathways to Success in STEM (GPSTEM), was to improve the ability of both community colleges and potential students to understand the relationship between college programs and needs in the labor market. The colleges also wanted to understand whether their programs were helping students get jobs. The data integration project was implemented by a consortium effort of the commonwealth's 15 community colleges.

Each Massachusetts community college reports student-level data to the Higher Education Information Resource System (HEIRS), maintained by the Massachusetts Department of Higher Education (DHE). The system is a centralized database of student records data from 28 public higher education institutions, including the community colleges, state universities and campuses of the University of Massachusetts. Before the GPSTEM data project, the colleges had limited access to data to help make decisions about

their program offerings. Information to compare the employment outcomes of graduates from different programs, for example, was only available in static reports. And students lacked the data they needed to make career decisions based on the opportunities in their local labor market.

Through GPSTEM, stakeholders from the state agencies of higher education, workforce development, and representatives of community colleges came together and, with the assistance of an outside vendor, sought to develop a means to track student outcomes and make LMI data more accessible to students and college decision makers. Their efforts resulted in three products:

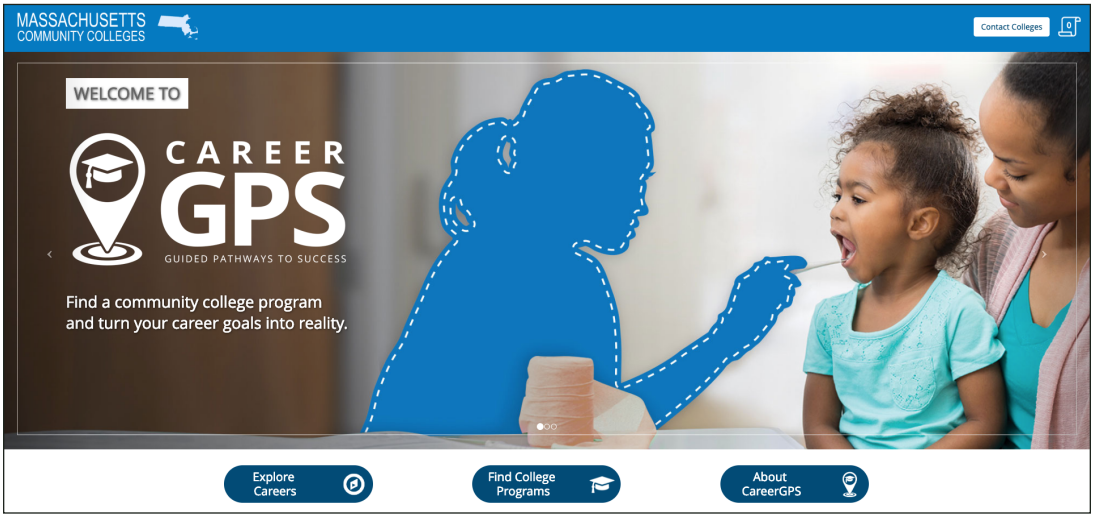
- CareerGPS, an advisory and support tool that serves to inform students of available community college programs and related career pathways. It draws from state and federal LMI data and community college program data from HEIRS. Prospective students are linked to admissions counselors who help the student through the admissions, enrollment and financial planning processes.
- A Research and Reporting Tool (RRT) that combines student success data (retention, transfer, and graduation) with unemployment insurance (UI) wage-record data and real-time, labor-market vendor data. Reports have been developed for use by community colleges to allow them to view student outcomes for specific programs of study, including employment outcomes, and to provide a picture of how college programs align with growing industries and occupations.
- An online scorecard that allows users to see graduation and transfer rates, as well as employment and earnings across all community college majors. The scorecard draws information from the reporting tool and, for the data the public can see, aggregates graduation and earnings rates for programs across the state (e.g., all healthcare programs, all IT programs, etc.). Only colleges can see the data disaggregated for each college's programs.

Moving forward

According to DHE staff, use of GPSTEM tools is expected to continue in the future, with intended enhancements to the tools. Four-year institutions have also shown interest, and DHE is hoping to implement a research tool similar to the RRT for those schools. DHE also aims to migrate the RRT to a highly visual and interactive Tableau environment.

Learn more about GPSTEM: http://www.masscc.org/gpstem

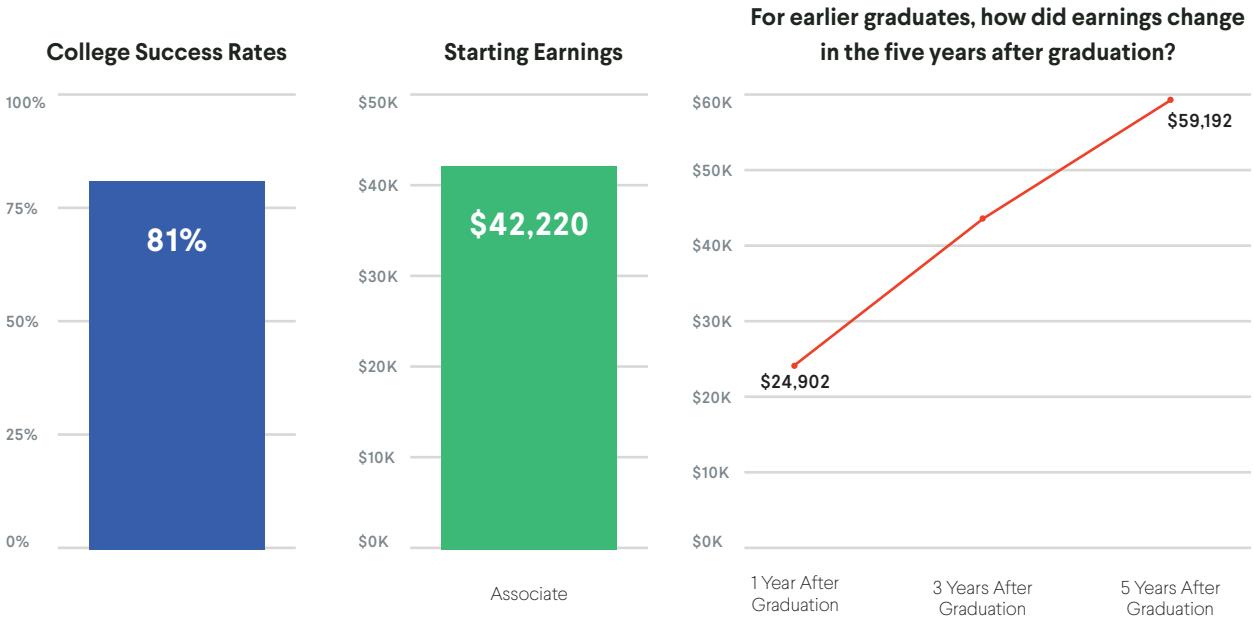
See Massachusetts' online scorecard: http://www.mass.edu/datacenter/gpstem/ccscorecard_home.asp



Career GPS
This image is from the front page of CareerGPS, a website created by the Massachusetts community colleges with the goal of helping prospective students and job seekers to explore careers and find information on the education and training programs available at the Massachusetts community colleges.
https://careergps.mass.edu/home

The two figures below provide a snapshot from the Massachusetts online scorecard funded through TAACCCT, which shows the college success rate, starting earnings, and median earnings for students in the "Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician (HVAC)" major.

College Success & Median Earnings Detail for HVAC Majors



Some questions you might ask as you consider enhancing your data systems:

- How can we increase access to high-performing programs?
- Should we expand access and hire more instructors?
- Are our students attaining credentials and employment?
- Are we retaining students? Are they completing programs of study?
- Where can we apply corrective action on poor-performing programs?
- Do we have programs that we should retire?
- Do we have programs that are in high demand but have limited access?

Common Challenges—and Strategies to Address Them

The three states each employed different models to achieve their data integration goals, reflecting different systems and capacities that existed prior to their work. Missouri focused on the noncredit side of their community college programs, while Kansas and Massachusetts, in their state-level efforts, focused on the for-credit side. Massachusetts started with less of an infrastructure and foundational relationship for data sharing across the community college and public workforce systems, whereas Kansas and Missouri were building from systems that already had access to wage-record data and other data sharing agreements in place. Kansas and Massachusetts, unlike Missouri, did not build a new data system. Instead, they utilized their existing systems—Kansas' KBOR and Massachusetts' HEIRS—but created new linkages to aid data integration and flow. And unlike Missouri and Kansas, Massachusetts worked closely with a third-party vendor to shape the project as well as create a technology solution. But even across three different states, with different models, several common challenges emerged. Those challenges and the strategies employed to overcome them follow:

Strategies to Address Common Challenges

1. Establishing or identifying common drivers and incentives
2. Creating a data dictionary with many players, many ideas [10]
3. Navigating legal complexities
4. Troubleshooting operational and technical issues

1. Establishing or identifying common drivers and incentives

Both the higher education and workforce systems are large bureaucracies with many stakeholders at different levels. The leaders of all three state projects observed that one challenge to overcome was getting everyone to come to the table. As stakeholders from Kansas noted, it's important to have strong leadership buy-in, or "champions" at the senior level, to move a data integration system ahead. Furthermore, interviewees from all three states noted that the incentives for each party involved must be clear. Clear incentives provide momentum to get over the many speed bumps on the road to data integration. Below are some of the common incentives interviewees cited in the Kansas, Massachusetts, and Missouri examples:

Compliance with WIOA

From a compliance standpoint, WIOA provides an overarching impetus toward workforce data integration at a system level, as it requires workforce programs to align and coordinate services. WIOA also requires that state unified plans address how state agencies and partner organizations, such as community colleges, will align and integrate data across multiple systems.

Competition for students

Integrating public workforce and community college information helps students make more informed decisions about their education and career. Students can be more savvy consumers when they have access to employment projections across occupations, average earnings, and the locations of related college programs. And with the proliferation of online courses and credentials, proprietary schools, and other types of training, colleges increasingly need data to differentiate themselves from the wide range of options.

Performance-based funding

Due to increasingly tight budgets, many states have moved away from the traditional block grant or enrollment-driven formulas to performance-based funding (PBF), which rewards institutions that meet predetermined performance targets. Having access to better data allows college leaders to address performance shortcomings more quickly and thus have a direct impact on the funding a college receives.

Program and industry alignment

From a programmatic standpoint, the matching of student data with college outcome data helps colleges determine what programs to continue, discontinue, or revise.

According to Debra Mikulka, former project director for KanTRAIN, "For schools to keep up with what industry needs, [we] need to be data-driven. This was a common theme: [among colleges involved in this effort] Schools want to be responsive to area businesses and what industry needs."

In 2015, Missouri conducted a student census and found 100,000 students statewide enrolled in for-credit degree programs versus 125,000 adult learners enrolled in noncredit workforce training programs seeking to earn industry credentials. "For the first time ever, we had a higher student enrollment in our noncredit programs of study than we did in our credit associate degree programs of study. But we had no way to collect this data statewide and see what the return on investment was and how valuable these programs were," said Dawn Busick-Drinkard, former MoWINs program director.[11]

The sheer number of noncredit students helped drive the creation of the MoSCORES data system created through MoWINS' supplemental funding. The new web-based data system has a public side and a back-office side, which allows

"For the first time ever, we had a higher student enrollment in our noncredit programs of study than we did in our credit associate degree programs of study."

– Dawn Busick-Drinkard

Former MoWINs Program Director

each college to access its respective data to begin making data-driven decisions. "So as a college administrator and a higher ed administrator, you'll be able to evaluate which of your programs are performing and at what level," said Busick-Drinkard.[12]

> "With 100,000 credit-seeking students versus the 125,000 noncredit job training students, we really needed to find out what our return on our investment is, because over 90 percent of [the noncredit students] are placed in a job immediately after completion of that program of study and earning those industry credentials, or very soon after."
>
> – Dawn Busick-Drinkard,
> Former MoWINs Program Director

Understand outcomes

In Massachusetts, the desire to understand workforce outcomes was the common driving motivation for the leaders across the community college, K-12, and workforce systems to engage in the data integration effort. "There really is a drive toward closing the middle-skills gap in Massachusetts.... There's a strong commitment to higher education as an economic engine," said Kathleen Kirby, former GPSTEM project director.[13]

For several years, there had been a drive in the state to align community college programming to workforce needs. Data to assist colleges in doing that were limited to state and federal labor market data and direct information from employers. What they were missing was information about student employment post-graduation. Previously, the only way community colleges had to track students' outcomes was through surveys that were used to submit reports on Perkins-funded programs.[14] The Massachusetts Department of Labor and Workforce Development could track outcomes of individuals who attended training with funding from

WIOA, TAA (Trade Adjustment Assistance), and other programs, and some of those programs were community college programs. But the individuals who were eligible for those funding sources were a small percentage of the community college student body, and the programs that were on the eligible training provider list were a small percentage of the programs of each community college (and mainly limited to the noncredit programs). Data integration has helped Massachusetts link program completion and employment information.

Massachusetts' effort to match wage record data with community college student graduates received a further push from the Massachusetts Department of Elementary and Secondary Education (DESE). DESE had received an SLDS grant from the U.S. Department of Education to assess the trajectories of Massachusetts' high school graduates. Kirby explained that leaders at the DESE were a strong driver of the process and that the community colleges were able to "ride the coattails" of that effort.

2. Creating a data dictionary with many players, many ideas

Another common difficulty the three TAACCCT grantees cited was that once organizations came together at the same table, they had to develop a united understanding of what data exist, how certain types of data are defined, and what new data needed to be collected.

Define, prioritize, and decide

One of the common themes across the three states was the challenge of uniting institutions with various missions to come to agreement on a data dictionary. Then they asked, "What are the must-haves and what are the nice-to-haves?"

Missouri created a statewide data advisory task force made up of 65 key college staff from across all 13 MoWINs consortium colleges, along with a few state agency representatives from the state's DOL and other relevant organizations. They met monthly to develop their plan for an integrated data system. In addition, they utilized outsourced data business analysts, who conducted one-on-one interviews with key staffers to aid in the data design. There were many conversations around the data system, including what it was going to look like and how data would be reported. The conversations also touched upon the definitions of data, as well as reflections on their previous full-time student reporting system implementation back in 2010.

Build on existing resources

Grantees noted that, where possible and relevant, building on existing relationships and infrastructure saved time and energy. While Missouri created a new data system, neither Kansas nor Massachusetts did. Instead, in Kansas, KanTRAIN utilized the existing data system, based on previous work done through SLDS and WDQI grants. The model for KanTRAIN's data integration

utilized a data hub—the KBOR data warehouse—to create new linkages among partners: KanTRAIN, which housed the TAACCCT program data; Kansas State Department of Education, which housed student data; the KDOL, which housed labor market information; the Kansas Department of Commerce, which housed data collected at workforce centers; and the KBOR itself, which housed education data. Massachusetts used the data from HEIRS and developed an existing reporting tool to cross-reference it with wage-record and LMI data.

3. Navigating legal complexities

Beyond coming to agreement on the type of data to be collected and shared, TAACCCT grantees cited the challenge of creating and signing proper legal documentation that adequately safeguards student confidentiality—in accordance with state and federal law—and how the data are shared and used across multiple organizations.

Student confidentiality

A common barrier to data sharing is dealing with privacy concerns related to personally identifiable information. Those working with personally identifiable information and student information need to work to ensure compliance with the Family Educational Rights and Privacy Act, local labor laws, and state regulations. In Massachusetts and Kansas, one of the ways privacy concerns of students were addressed was by ensuring that no data sample would have fewer than six students, so that no one student could be personally identified.

Each state also invested significant time and resources to get legal requirements and appropriate agreements in place. If these are not considered early in the process, projects can stall and project costs

can swell. As Mikulka said, "The devil's in the details, and you cannot hurry. You have to deal with details. If you don't plan in advance, you'll be sending data and people will say 'Oh, no' when they receive, for example, data that inadvertently allows the reader to identify individuals. You have to forward think what you need and anticipate problems."

"The devil's in the details, and you cannot hurry… You have to forward think what you need and anticipate problems."

Debra Mikulka

Former Project Director for KanTRAIN

In Massachusetts, colleges were concerned about how the data about their student outcomes could be used. While each college wanted to understand the outcomes for their own students, they were wary of having that data shared publicly or even with other colleges. They explained that their concern was due to the fact that wage-record data are incomplete. It doesn't include individuals employed in other states (a common scenario in a small state), in very small companies, by the federal government and military, or those who are self-employed, among others. In the process of developing access protocols for the scorecard, they developed a user agreement that all college users were asked to sign, saying that they would not share another college's data.

Multi-agency agreements

"We had a really good launching because of this super MOU [memorandum of understanding] that we [already] had with all the state agencies," said Missouri's Busick-Drinkard.[15] The MOU included the Department of Elementary and Secondary Education, the Department of Higher Education, the Family Services division, the Division of Workforce Development, and the state Department of Labor, where the state's wage data resides. In 2015, the various agencies renewed the original MOU and committed to building a new system to address and collect data on noncredit students and begin reporting data via the scorecard. The renewal of the original MOU included

adding data sharing agreements, including a new section to support cybersecurity.

> "The knowledge gained while developing contracts and processes that comply with the Family Educational Rights and Privacy Act, federal labor laws, and state laws has been invaluable for forging future methods and partnerships of a similar nature."
>
> – Kansas Board of Regents

In Kansas, KanTRAIN facilitated contracts with the IHEs and WDBs to promote workforce services and share information and track participants. In particular, KanTRAIN established a new data sharing linkage between WDBs and IHEs by facilitating contracts between the two systems. The result of this data sharing was improved workforce support services. Workforce staff came to offices on campus, and students were co-enrolled as participants in workforce services, to allow both systems to share information on student and participant needs and jointly track students and participants.

4. Troubleshooting operational and technical issues

Technological issues are another major challenge TAACCCT grantees face in trying to attain seamless data integration. This challenge has a technical component as well as implications for changing the day-to-day workload of staff within the system. When different organizations are running on different systems, the question is whether and how to build interoperability among the systems or, alternatively, to build a new system from scratch. Either decision will result in a great deal of technical work to facilitate the data sharing, as well as ensure that the outputs are shared in a user-

friendly format.

Changes in the way data are collected or what data are necessary also impact those on the front line who need to operationalize the work. Stakeholders developing data integration systems must consider what ongoing work is required to maintain and use the system effectively. This creates another level of decision-making regarding staff resources and the agency that will be tasked with housing and maintaining the data. In Missouri, the organizers of MoSCORES invited the colleges' IT directors to the table, recognizing the significant impact on their departments of building another system for colleges to sustain and support after the grant.

Leadership buy-in

For KanTRAIN, Washburn University, the lead college of the consortium, had a fundamental requirement when putting together its grant application, which was that any prospective consortia college had to demonstrate that its senior leadership was invested in seeing the integrated data system move forward. For Washburn University, there was strong institutional leadership, including the president, vice president of instruction, and vice president of administration. This top-line leadership then helped with the planning and communicating to the respective deans and associate deans. As Mikulka noted, the senior leadership at an organization must be "all in" for others within the organization to endure the growing pains accompanied by changing technical systems or data collection requirements.

Data collection

In the Missouri case, a major challenge in data collection was that noncredit students filled out a simple application with basic information that did not include Social Security Numbers. Thus, to obtain more information to effectively track outcomes, the consortium identified what information was needed and how that

data would be used so college administrators could go back to their schools to inform their programming decisions.

The MoWINs data integration effort prompted the state to gather data it had not before. "It allowed us to connect the dots between a student's training, where they ended up working, and the wages they made. This was an opportunity to say, yes, not only can we train, but now we have a tool that actually allows us to understand those outcomes not only now but years into the future," said Alan Spell, research manager at the Missouri Department of Economic Development.[16]

"We've created this program inventory that's merging information from us, from workforce development, from economic development—there's data that's coming from so many different sources," said Jeremy Kintzel, director of data research services at the Missouri Department of Higher Education. Kintzel noted that the information provided in the system is wide ranging. "It's everything from a law degree to truck driving to [medical] to journalism—it's all in there. And I think that's something that's going to be very powerful for people once they've had a chance to sit down and use the tool."

Key Lessons Learned for Statewide Workforce Data Integration

The data integration projects in Kansas, Massachusetts, and Missouri operated in different contexts, but there were common challenges and strategies that emerged from each story that enabled the states to achieve data integration that spanned the community colleges and statewide public workforce system. Here are lessons learned:

- **Understanding outcomes is a driver.** Community colleges increasingly want to understand the employment outcomes of their programs. Missouri was at a tipping point with more students enrolled in noncredit programs than in for-credit programs, prompting the state to seek data on the outcomes of each. In all states, government and funders are increasingly asking to see whether the dollars they've invested are leading to students getting jobs. At the same time, students increasingly want to connect the dots between the programs of study they invest in and their future job prospects and wages.
- **Common data = shared insights + solutions**. Creating a shared technology system is not just about creating a shared data dictionary; it's also about creating shared accountability and agreeing on what outcomes matter most to all partners. Technical system integration and data alignment are important steps to larger programmatic integration and mission alignment efforts. Common definitions and goals create a common language, which in turn provides more opportunities for working jointly to solve common challenges across the system as well as challenges for individual job seekers. For instance, in Massachusetts, a greater ability to assess job outcomes has prompted colleges to integrate their noncredit student information into their for-credit student databases. While they haven't gotten there yet, staff in the system believe that

eventually that data will be entered into the statewide HEIRS system.

- **Patience is critical for lasting partnerships.** Interviewees stressed that getting everyone onboard politically as well as technologically takes time. In the case of Kansas and Missouri, in particular, the statewide data integration projects built on foundations of trust that had been forged from previous interagency work. Building relationships and trust requires patience and time. Strong relationships are critical for a partnership to last through the growing pains of creating an integrated data system.

Integrating data, and streamlining information access across partner organizations, provides a win-win situation for both community college and workforce systems. Ultimately, data integration across the higher education system and workforce systems has the ability to tell a more comprehensive story about how resources are leveraged across both systems to benefit students.

The following are resources on data standardization, improved technology systems, and data governance efforts:

- The Workforce Data Quality Campaign
  https://www.nationalskillscoalition.org/national-initiatives/workforce-data-quality-campaign
- JFF and NAWB's AWAKE Initiative
  https://www.jff.org/awake
- NASWA Information Technology Support Center (ITSC)
  http://www.itsc.org/
- NASWA Workforce Information Technology Support Center (WITSC)
  https://www.naswa.org/witsc
- Common Education Data Standards (CEDS)
  https://ceds.ed.gov/

- IMS Global Learning Consortium
  https://www.imsglobal.org/
- T3 Innovation Network
  https://www.uschamberfoundation.org/t3-innovation
- HR Open Standards Consortium
  https://hropenstandards.org/
- Ed-Fi Data Standard
  https://www.ed-fi.org/what-is-ed-fi/ed-fi-data-standard/
- Postsecondary Electronic Standards Council (PESC)
  http://www.pesc.org/
- WDQC College Transparency Act Connecting Data to Understand Student Success Fact Sheet
  https://www.nationalskillscoalition.org/resources/publications/file/CTA_AgencyLinkagesFactsheet-final.pdf

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Endnotes

1. Lumina Foundation, "Outcomes-Based Funding Strategies for Postsecondary Education: A Case Study," March 2018, https://www.luminafoundation.org/files/resources/03-obf-strategies.pdf.
2. The U.S. Department of Labor's Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant program was a major investment to increase the ability of community colleges to address the challenges of today's workforce. Grants were designed to help workers eligible for training under the TAA for Workers program, as well as a broad range of other adults. Every U.S. state received funding for each of four years through 256 grants totaling $1.9 billion. TAACCCT grants, which continued through September 2018, impacted 60 percent of the nation's publicly funded community colleges and built industry-aligned programs in manufacturing, health care, information technology, energy, transportation, and other industries. In total, there were four rounds of TAACCCT grants.
3. Dawn Busick-Drinkard, "MoWINs: Creating Win-Wins Through Partnerships," The EvoLLLution, September 19, 2018, https://evolllution.com/managing-institution/operations_efficiency/mowins-creating-win-wins-through-partnerships/.
4. Coordinating Board for Higher Education, "Tab 28: MoSCORES Update," September 12, 2018, https://dhe.mo.gov/cbhe/boardbook/documents/Tab28--0912.pdf.
5. MoSTEMWINs consortium grant application.
6. Coordinating Board for Higher Education, "Tab 28: MoSCORES Update."
7. Rasmussen Foster, Laura et al. September 2018. "Kansas Technical Re/training Among Industry-targeted Networks (KanTRAIN): TAACCCT IV Evaluation Final Report" (Portland**:** RTI International)
8. Ibid. p.50
9. Kansas Board of Regents Answers to Questions posed by Washburn University for TAACCCT Interim Report, June 20, 2018.
10. Definition from the University of California-Merced Library: "A Data Dictionary is a collection of names, definitions, and attributes about data elements that are being used or captured in a database, information system, or part of a research project. It describes the meanings and purposes of data elements within the context of a project, and provides

guidance on interpretation, accepted meanings and representation. A Data Dictionary also provides metadata about data elements. The metadata included in a Data Dictionary can assist in defining the scope and characteristics of data elements, as well the rules for their usage." http://library.ucmerced.edu/node/10249.

11. "MCCA MoSTEMWINs & MoSCORES," Vimeo video, November 29, 2018, https://vimeo.com/303518222.
12. WorkforceGPS, "WIOA Wednesday: Improving Statewide Data Integration, Sharing, and Use," webinar, June 14, 2017, https://www.workforcegps.org/events/2017/05/19/13/07/WIOA-WEDNESDAY-Improving-Statewide-Data-Integration-Sharing-and-Use.
13. WorkforceGPS, "WIOA Wednesday: Improving Statewide Data Integration, Sharing, and Use."
14. Explanation of Perkins IV from the Perkins Collaborative Resource Network: "The Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV) is a principal source of federal funding to states and discretionary grantees for the improvement of secondary and postsecondary career and technical education programs across the nation. The purpose of the Act is to develop more fully the academic, career, and technical skills of secondary and postsecondary students who elect to enroll in career and technical education programs." https://cte.ed.gov/legislation/about-perkins-iv.
15. Missouri was one of the 32 states that was granted an original WDQI grant, which, with that grant, built a wage explorer. An agency "super MOU" was developed with all statewide partners during the development of that very first system.
16. "MCCA MoSTEMWINs & MoSCORES," Vimeo video.
17. Note that the chart uses pre-WIOA terminology "local workforce investment boards" (LWIBs) instead of "local workforce development boards."

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