Tracking Graduates into the Workforce:

Connecting Education and Labor Market Data

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National Governors Association

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EXECUTIVE SUMMARY

As the individual with the platform and budget authority to guide public education and economic development at the state level, the governor plays a central role in ensuring that public educational institutions provide students with the knowledge and abilities required for a successful life and career. The systemic use of data from education and labor markets informs governors and other policymakers of the effectiveness and efficiency of their existing postsecondary systems and students and employers of labor market conditions. States also can use such data systems to hold educators and trainers accountable for meeting the goals for degrees and certificates granted and to provide state residents with a clearer understanding of how they are progressing through postsecondary programs and how best to enhance their career opportunities.

Accurate information is a key element of functional labor markets. Information about the current supply of and demand for workers who have specific skills helps potential employers and employees make decisions about hiring, wages, training, and other activities related to the job market. Information about longer-term trends, including projections about future job opportunities, similarly helps students and workers determine which academic courses or training opportunities to seek and helps businesses determine where to locate and invest, which technologies to use, and what kind of training to offer employees.

To determine whether a state's postsecondary education and training programs are achieving state goals, governors can ask the following questions:

- How is the state using data to improve educational system outcomes to benefit workers and employers?
- How is the state using educational and workforce information to improve programs and hold institutions and other state entities accountable for their goals?
- Where do state graduates find jobs?

This paper profiles three promising practices that states are employing to address those questions:

- **Florida**'s statewide collection and reporting system provides information about the outcomes of former students across most of the state's education and training institutions. Governor Rick Scott's Blue Ribbon Task Force on Higher Education Reform used the data to understand the demand for postsecondary graduates and inform legislative proposals.
- **Kentucky**'s community and technical colleges link education and wage records to provide outcome information to students, program staff, and policymakers. Kentucky students use this information to select programs of study, and program staff have used the information in decisions to expand or close specific programs.
- A pilot program by the Western Interstate Commission for Higher Education, a multistate collaboration among **Hawaii**, **Idaho**, **Oregon**, and **Washington**, connects education and wage data across states to track labor migration. That information gives institutions and policymakers a fuller picture of the programs' performance as well as information about the migration of human capital across state borders.

INTRODUCTION

Governors focus on the relationship between their states' education and workforce systems and state economic development for many reasons. The alignment between education systems and the labor market offers individuals the prospect of high-wage jobs and, simultaneously, makes it more likely that a state will retain the businesses current operating in the state, provide fertile ground for new startups, and attract new businesses. The overriding importance of those self-reinforcing aspirations and the share of state budgets dedicated to educating and training workers lead governors to seek a better understanding of how effective such spending is in their states.

A key ingredient in successfully aligning the educations system and labor markets is accurate information. In a market system such as we have in the United States, government does not direct or control decisions about an individual's education or training or about a business' workforce. Rather, individuals and business make these decisions based on their own calculations of benefits and costs. For example, information about the current supply of and demand for workers who have certain skills helps employers make decisions about hiring and wages. Information about longer-term trends, including projections about future job opportunities, similarly informs student and worker decisions about academic courses or training opportunities and helps businesses decide where to locate and invest, what types of technologies to use, and what training to offer employees.

As the individual with the platform, budget authority, and vision to guide public education and economic development at the state level, governors rely on education and labor market data systems to inform themselves, other policymakers, and administrators about whether current policies and programs are achieving their goals. A system that connects data at key points along the education pipeline and links such data to labor market information allows a governor and state policymakers to answer important questions about the effectiveness and efficiency of their educational system, from kindergarten to grade 12 (K–12) through postsecondary education, and its short-term alignment with the state's workforce needs. To evaluate achievements over the longer term, governors and their policy advisors

need better data about educational and workforce outcomes after an individual leaves the educational or workforce training system.

To determine whether graduates of the state's postsecondary education or training programs are achieving desired goals, governors can ask the following questions:

- How is the state using data to improve educational system outcomes to benefit workers and employers?
- How is the state using educational and workforce information to improve programs and hold institutions and other state entities accountable to their goals?
- Where do state graduates find jobs?

This paper profiles three promising state-based initiatives that address those questions: the statewide data collection and reporting system created by the state of Florida, the use of connected education and labor market data in the Kentucky Community & Technical College System (KCTCS), and a pilot program that matches data across state lines conducted by the Western Interstate Commission for Higher Education (WICHE).

How are data used to improve educational system outcomes to benefit workers and employers?

Florida has built one of the nation's most comprehensive statewide data systems to track school-to-work outcomes. In 1988, it created the Florida Education and Training Placement Information Program (FETPIP), a statewide data collection and reporting system that provides information about the outcomes of former students across most of the state's education and training institutions. The system includes longitudinal data on students from public school districts, the predominately two-year Florida colleges, public universities, private for-profit proprietary schools licensed by the Commission for Independent Education, and the 31 members of the Independent Colleges and Universities of Florida (ICUF—private, nonprofit universities). It also captures follow-up data about participants in training programs that the Workforce Investment Act (renamed the Workforce Investment Opportunity Act in 2014) supports as well as specialized programs such as dropout prevention and services for the blind.

FETPIP links to other public databases that include information about an individual's

Data Sources for the FETPIP System

Employment Data	Education Data	Corrections Data	Public Assistance Data
• Florida Department of Revenue • Federal Employment Data Exchange System: • U.S. Office of Personnel Management • U.S. Department of Defense • U.S. Postal Service	• District postsecondary • Adult education • Florida college system • State university system • Independent Colleges and Universities of Florida	• Florida Department of Corrections	• Florida Department of Children and Families: • Temporary Assistance for Needy Families • Food stamps

postsecondary education, employment status, public assistance received, and involvement in the corrections system. It also has access to enrollment data from the National Student Clearinghouse to track postsecondary students who have left the state. The data can be disaggregated to provide detailed, student-level information such as program of study, course-taking patterns, participation and success in remediation, test results such as the ACT and SAT, gender, race, and socioeconomic status. Because the database has been fully operational since the early 1990s, it now includes records on more than 20 million former students.

An Example Report

The appendix to this paper includes a sample report produced from FETPIP data designed to inform policy priorities for bachelor's graduates in the state university system. It offers a snapshot of outcomes for the population of Florida 18 months after graduating with a bachelor's degree in 2010–2011 from the state university system. In addition, it displays:

- The outcome categories in which 2010–2011 graduates are primarily found (for example, continuing education, employed, military, or incarcerated) and their subsequent earnings;
- Which academic program areas graduate individuals who see the highest full-time earnings;
- The earning level at which are most graduates are found;

Cautions to Consider When Aligning the State Education System to the Workforce

>>AVOID AN OVER RELIANCE ON ONE-YEAR EARNINGS OUTCOMES. Efforts to link education with employment outcomes have focused narrowly on graduates' initial jobs. Data show, however, that although people who earn associate's degrees might initially earn more than people who have bachelor's degrees, over a lifetime people who have bachelor's degrees earn more. It is important to look at longer time horizons or consider averaging outcomes for several cohorts of graduates over time.

>>LOOK BEYOND THE STATE UNEMPLOYMENT INSURANCE (UI) SYSTEM TO INCLUDE MORE PLACEMENT AND WAGE OUTCOMES. State UI wage records do not include individuals employed in another state, those employed by the federal government or serving in the military, or those who are self-employed.

>>CONDUCT REGIONAL AND INSTITUTIONAL JOB-PLACEMENT ANALYSIS WHERE APPROPRIATE. Dramatic differences in job-placement outcomes across geographic regions or institutions should be reviewed to determine possible explanations. For instance, institutions on the state border or located next to large federal employers may appear to have lower job-placement outcomes because of missing UI data.

>>EXPECT THAT JOB-PLACEMENT OUTCOMES RELATED TO FIELD OF ACADEMIC STUDY WILL BE DIFFICULT TO IDENTIFY. States' UI wage record files do not include information about an individual's occupation and therefore cannot answer questions about whether students are employed in a job related to the field in which they earned a degree. Often, graduates end up in jobs not directly linked to their degree program, so states cannot expect a perfect relationship between education and job outcomes.

- The industries in which graduates are most often employed full time and their average annualized earnings;
- Whether outcomes are consistent for each group one year after graduation; and
- How many students continued their education or were employed full time one to four years after graduation.

Currently, FETPIP reports do not include a breakout by discrete degree program, which limits its use in identifying relationships between the education system and labor market outcomes. This limitation was addressed in 2012 when the governor signed into law Florida Statute 1008.39, which requires that all public institutions report labor market data about their graduates to prospective students and their families. New reports can include earnings information at specific degree levels by program and institution at one-year, three-year, and five-year intervals after graduation. An early version of those data has been released through the College Measures initiative (Florida data can be viewed at http://www.collegemeasures.org/esm) along with similar data from other states.

Actions to align the education system with the needs of the workforce

In addition to creating reports like the one shown in Appendix A, Florida has used FETPIP data to better align its education system to the projected needs of individuals and employers in the following ways:

- **Inform legislative action to connect postsecondary education and the labor market.** Two major task forces have been formed in the past 10 years to advise policymakers on issues related to improving the credential output of postsecondary education. Both Governor Rick Scott's Blue Ribbon Task Force on Higher Education Reform and the Florida Council of 100 Higher Education Funding Task Force began with an effort to assess the demand for postsecondary graduates in current and projected state labor markets. The task forces analyzed labor market information, including employment outcomes data from the FETPIP system. Both of those efforts contributed to legislative action to report the earnings of graduates, which passed in the 2012 legislative session and was signed by the governor.
- **Improve accountability through program evaluation and budgeting.** The Florida legislature has incorporated a review and analysis of performance data, including FETPIP data, into the annual state budgeting process in an effort to improve its program performance evaluation systems. Several agencies' data, including FETPIP data, are included among the performance data reported by the Florida Department of Corrections and the parole and probation department, university system, community college system, juvenile justice system, public school system (K–12), public assistance system, and ICUF's tuition assistance program.
- **Report earnings of graduates to the public.** Early versions of graduate earnings have been released to the public through the College Measures initiative. The Florida college system has also established a website that delivers employment and earnings data from FETPIP for its graduates called *Smart College Choices*.[1]
- **Target education and training for high-demand occupations.** The statutorily mandated Florida Workforce Estimating

1 The tool can be viewed at http://smart-college-choices.com.

Conference includes the Office of the Governor, the Office of Economic & Demographic Research, the Florida Senate and House of Representatives, and a representative from the Florida Chamber of Commerce. During its semiannual meeting, the conference evaluates occupations that are in high demand, fast growing, and offer high earnings, targeting educational and training programs designed to help Floridians obtain the knowledge, skills, and certifications necessary to get those jobs. Data from FETPIP are used to determine whether programs intended to address certain occupational targets have resulted in the types of jobs targeted. Decisions that the conference makes guide program offerings under the federal Workforce Investment Opportunity Act and the state career and technical education programs and are periodically used in the university system's program decisions.

Lessons Learned from Florida

This comprehensive picture of the Florida state postsecondary system and what happens to its graduates has helped policymakers plan and inform the public about potential earnings outcomes from educational attainment. It also has provided several lessons:

- **Longevity matters.** Long-term investment in and maintenance of a longitudinal system create a powerful tool that shows trends over time.
- **More sources of data matter.** By combining data from 10 separate agencies, the state can answer questions about a broader range of programmatic outcomes, including program participants' wages and whether they interacted with public assistance programs or the criminal justice system.
- **Products matter:** In Florida, data are used to inform budget decisions and communicate complicated but vital information to the public, parents, students, and employers to encourage educational choices consistent with good life and workforce outcomes.

How is information used to assess state institution and program effectiveness?

Public two-year institutions in Kentucky have long emphasized responsiveness to local economic needs. The state's community and technical colleges pride themselves on their ability to open new programs or modify existing ones quickly in response to changing economic conditions as well as their relationships with industry, which allow them to meet state and local training needs.

In 2005, the KCTCS began to match its enrollment records with the Kentucky UI wage and employment records to better understand how effectively its colleges prepare students for the workforce and meet employers' needs. Currently, KCTCS uses those data and additional sources of traditional and real-time labor market information to design program performance targets—for example, the type and number of credentials necessary for high-wage, high-demand jobs—and develop institutional processes for program approval and curriculum review.

Performance Metrics Based on Labor Market Information

As part of its 2010–2016 Strategic Plan, KCTCS adopted annual performance goals for the state's colleges and education system as a whole that set goals for the number of credentials awarded by programs whose graduates would be prepared for high-wage, high-demand occupations.

Important Cautions to Consider When Holding Institutions and Programs Accountable

>>ACCOUNT FOR BENEFITS TO SOCIETY OTHER THAN EMPLOYMENT OUTCOMES. It is possible for programs that have poor employment outcomes to make important contributions to a local community. For example, graduates of early childhood education programs, which train workers for daycare centers, earn consistently low wages, but those programs fulfill an important community need.

>>ALLOW FLEXIBILITY FOR DIFFERING INSTITUTIONAL MISSIONS. Academic programs that yield poor employment outcomes can fulfill other important roles for a particular college or university, such as advancing research and development (R&D), generating revenue, or providing coursework that is a key component of more effective programs.

>>BE AWARE OF POLICY AND REGULATORY CONSTRAINTS PREVENTING CHANGE. Tenure and accreditation requirements may limit institutional flexibility regarding closure of low-performing programs and reassignment of faculty and curricular modifications for existing programs. Those cases may require unique solutions.

The system also set goals for raising the median wage of KCTCS graduates.[2] Those performance metrics are intended to reflect the number of graduates who obtain employment in well-paid, high-demand occupations and to encourage colleges to be responsive to changing economic conditions. According to the KCTCS definition:

- *High-wage occupations* are those with a median annual wage at or above Kentucky's 75th percentile occupational wage; and
- *High-demand occupations* are those projected to grow at a rate at or above the state average or produce 100 or more annual job openings.

KCTCS uses labor market information provided by the Kentucky Office of Employment and Training to produce an annual list of high-wage, high-demand occupations that it then matches to its academic programs.[3] Because the list of occupations varies year by year as economic conditions change, KCTCS and each of its member colleges review curricular offerings regularly to maintain progress toward raising the job placement rates and wages of their graduates.

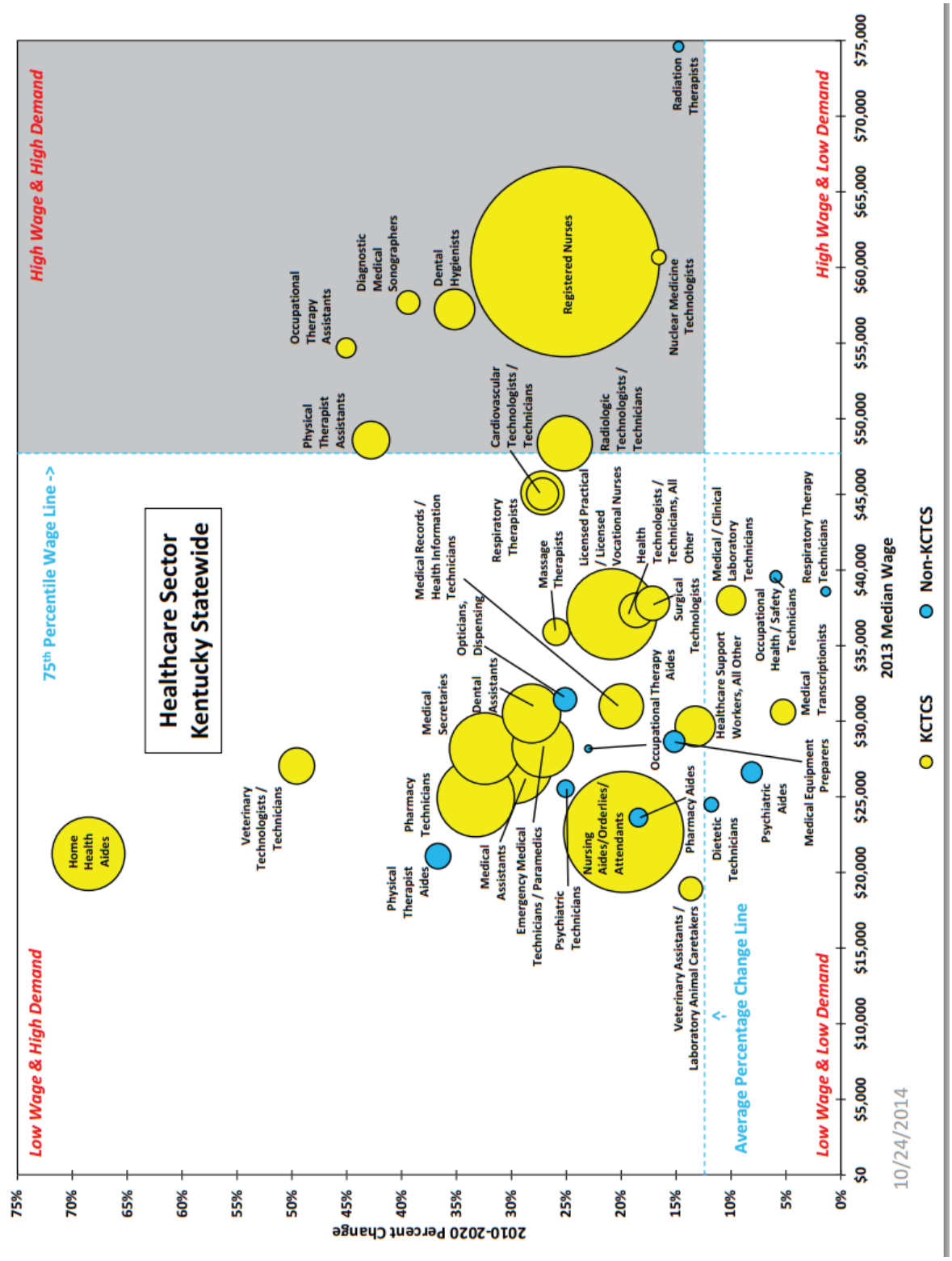
Data Visualization

KCTCS has also applied innovative visual displays (*see page 9*) to show the alignment of program offerings to the state's high-wage and high-demand occupations. Institutions and policymakers use these displays to prioritize programs; students use

2 The strategic plan established annual college- and system-level goals by using a wage index performance measure that compares graduates' median earnings two quarters after completion to the statewide median occupational wage. Kentucky Community & Technical College System, "2010–2016 Strategic Plan," http://www.kctcs.edu/en/About_KCTCS/System_Administration/Our_Strategic_Plan/2010-2016_Strategic_Plan.aspx (accessed June 22, 2015).

3 Kentucky Career Center, http://kylmi.ky.gov (accessed June 22, 2015).

Kentucky Occupational Wage and Projected Demand Matrix: Health Care Sector



Source: Kentucky Community & Technical College System.[4]

4 Kentucky Community & Technical College System, "Kentucky Occupational Wage and Demand Matrix," http://www.kctcs.edu/About_KCTCS/Institutional_Research/Occupational_Wage_and_Demand_Matrix.aspx (accessed June 22, 2015).

them to make program enrollment decisions. The chart on page 9 is limited to health care occupations in the state that typically required an associate's degree, high school diploma, or General Educational Development certificate in 2012. The horizontal axis shows the median wage for each occupation; the vertical axis shows the projected change (as a percentage) in jobs for that occupation in the state. The size of each circle represents the number of Kentucky residents who were employed in that occupation in 2012.

The degree of alignment between the labor market and KCTCS offerings is depicted by the color of each circle. Yellow circles represent occupations for which KCTCS offers a related health care program. Blue circles indicate occupations for which KCTCS does not offer related training. The gray quadrant in the upper right corner highlights occupations defined by KCTCS as high-wage, high-demand.

Similar charts have been produced for other KCTCS-targeted industry sectors (manufacturing, both automotive and aircraft; energy production and transmission; business services and research and development; and transportation, distribution, and logistics) that align with those of the Kentucky Workforce Investment Board.[5] The charts can also target specific colleges or any one of the state's economic development regions.

Program Approval and Curriculum Review

In addition to identifying high-wage, high-demand programs to inform its strategic plan, KCTCS uses wage and demand data to categorize existing and potential academic programs. When colleges submit proposals for new programs, they must include documentation of anticipated employment outcomes for graduates. When that requirement was imposed, emphasis was exclusively on programs leading to higher-wage jobs. During the recent economic downturn, college leaders successfully requested the addition of a new "middle-wage" category to acknowledge the importance of a broader range of employment outcomes in the context of high unemployment.

In addition to using the occupation wage and demand data to approve programs, KCTCS is piloting an innovative, data-driven Dynamic Skills Audit (DSA) process that compares curricular competencies with the skills requirements found in job postings.[6] The project uses a data product from a third-party provider that pulls data about hiring activity and employer-requested skills and certifications by "mining" online job postings from more than 17,000 websites.

Each of the 16 KCTCS colleges was tasked with implementing the DSA methodology to incorporate real-time labor market data with traditional sources and to integrate the results with existing institutional knowledge (for example, through industry advisory committees or focus groups). In addition to the DSA process, KCTCS colleges use real-time labor market data to:

- Gauge whether there is sufficient demand within the local labor market

5 Burning Glass' Labor/Insight product. For more information, see EMSI and Maher & Maher, Kentucky's Target Industry Sectors (May 2011), http://workforce.ky.gov/KYTargetIndustrySectors.pdf (accessed June 22, 2015).

6 Jobs for the Future, "Using Labor Market Intelligence to Support Strategic Decisionmaking for Community Colleges," http://www.jff.org/sites/default/files/services/files/CTW_onepager_072513.pdf (accessed July 7, 2015).

to propose new employee training programs;

- Reinvigorate industry advisory committees by tracking top or new employers that might be hiring in the region as well as engaging employer feedback when demand for new skills or certifications begins to appear in local, statewide, or national job postings;
- Support regional employers through workforce skills training based on their own job postings; and
- Communicate employment opportunities and skills requirements to students through Kentucky's data products, which facilitate job matches between employers and job seekers.[7]

Lessons Learned from Kentucky

Policymakers in other states can adapt the analytic methods KCTCS has developed to serve their own needs and priorities. Using data from their equivalent of Kentucky's Labor Market Information Office, states can easily replicate these high-wage, high-demand charts for state-specific key industry sectors.[8] In addition, "real-time" job postings data are readily available for purchase from target industries' vendors.[9]

Several lessons can be drawn from the KCTCS experience:

- State leaders can require that public postsecondary institutions incorporate analyses of labor market information in their program approval, program closure, budgetary, and curriculum review processes.
- Institutions can be encouraged to open or expand programs in high-wage, high-demand sectors and to reallocate

Cautions to Consider When Identifying Students Employed Out of State

>>USE CAREFUL DATA GOVERNANCE TO MAKE PRIVACY A PRIORITY. When matching state records, a central entity will need access to an individual's personally identifiable information (PII). When the match has been made across state lines, records can be stripped of PII and shared for analysis. States should consider which entity will match the data and at what point it will be made anonymous.

>>WORK TO IMPROVE SYSTEMS FOR CROSS-STATE SHARING. The process for sharing longitudinal data across state lines can be labor intensive. Concerted efforts to improve the flexibility and timeliness of those systems can help minimize that burden and maximize the amount of useful data made available.

>>BUILD CAPACITY FOR DATA USE. Be aware of the additional resources state data personnel may require to share and receive data across states lines. Limited capacity among research staff can play a key role in preventing the effective sharing and use of information across state longitudinal data systems.

7 Burning Glass, "Focus/Career," http://www.burning-glass.com/products/focuscareer-job-matching-career-exploration (accessed June 22, 2015).

8 U.S. Department of Labor, Bureau of Labor Statistics, "State Labor Market Information Contact List," http://www.bls.gov/bls/ofolist.htm (accessed June 22, 2015).

9 In addition to Burning Glass, examples include Help Wanted OnLine (http://www.conference-board.org/data/helpwantedonline.cfm) and the Bureau of Labor Statistics' Job Openings and Labor Turnover Survey (http://www.bls.gov/jlt/) (accessed July 7, 2015).

resources from low-wage, low-demand programs.

- Policymakers should consider how to tie the results of labor market analyses to economic development initiatives and distribute them widely to inform decisionmaking by institutions, students, and displaced workers.

Where do state graduates find jobs?

States like Florida and community college systems like Kentucky's have learned to use employment and earnings data to monitor and adjust their education and training programs to meet the needs of their residents and employers. The movement of people from one state (where they are educated and trained) to another (where they might work) makes it difficult for state policymakers and administrators to track labor market outcomes. Being able to track such individuals across state lines can lead to a more complete picture of where workforce demand exists. To answer questions about labor migration, in 2012 WICHE conducted a Multistate Longitudinal Data Exchange (MLDE) among Hawaii, Idaho, Oregon, and Washington. This project followed students who had graduated from high school in 2005 or first time-college undergraduates enrolled during the 2005–2006 academic year until 2011.

MLDE stitched together longitudinal data systems from each state spanning education sectors (that is, K–12, postsecondary, and workforce). The goals of the pilot included a proof of concept (in other words, states are able and willing to exchange individual student and graduate data across sectors) and second, whether those data are useful to states and cost-effective to gather.

The main challenges to interstate data sharing were legal concerns about data ownership and privacy protections at both the federal and state levels.[10] WICHE developed memoranda of agreement (MOAs) with each state to support the exchange. In Oregon, which is still creating its state longitudinal data system, WICHE took two years to develop an MOA with each of four state agencies that controlled the data. For other states, it took several months to complete the MOA. The data elements exchanged included limited information about enrollments in and awards from institutions as well as workforce participation data from UI wage record files. The data also included the PII necessary to link individuals' records across state lines, such as Social Security numbers, first name, last name, and date of birth.

The MOAs were built around a broad set of questions that aligned with the goals of the pilot:

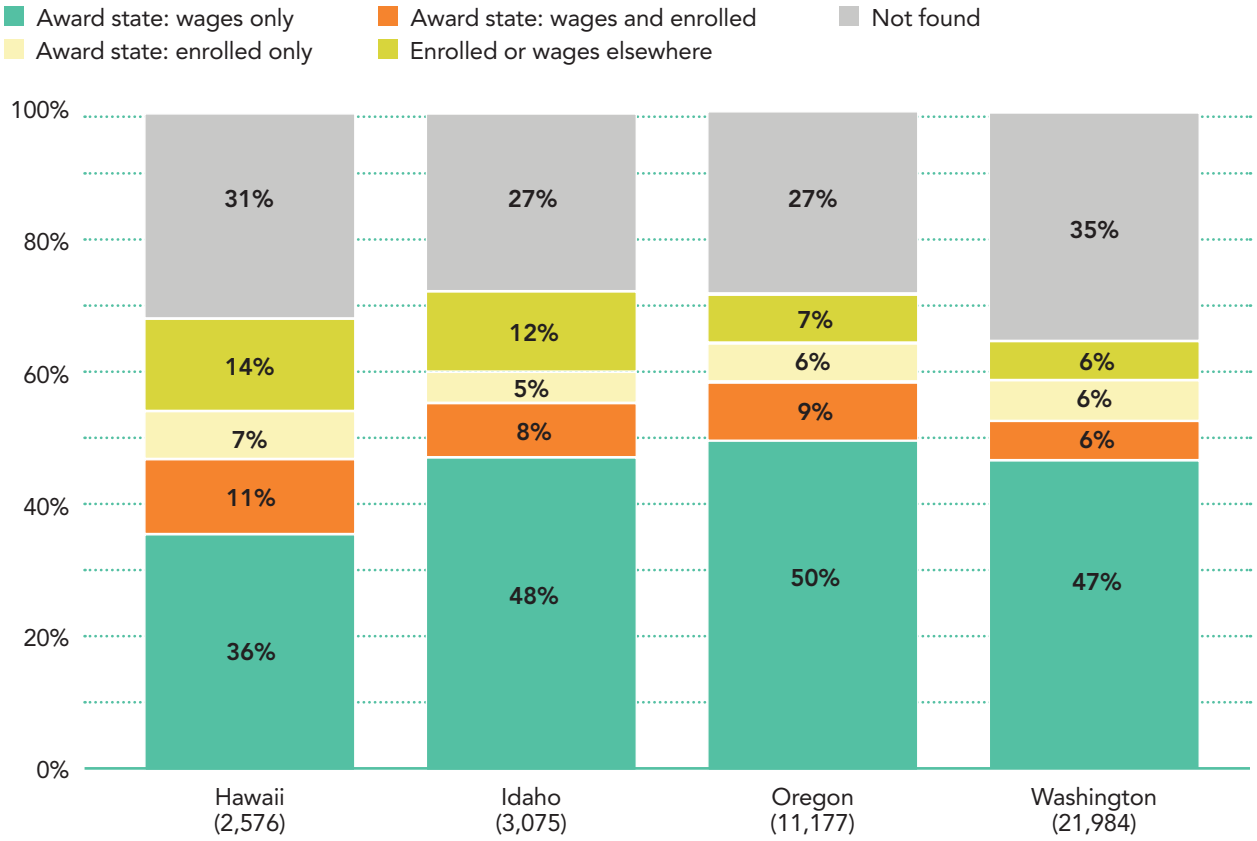
- What are the patterns of postsecondary enrollment and employment of high school graduates from each participating state?
- What are the patterns of postsecondary enrollment and employment of students in public postsecondary institutions in participating states?
- To what extent does sharing data among states enhance existing state data resources available for conducting evaluations that lead to policy and program improvement?

Those questions can serve as overarching guides for more specific queries about the education and mobility of human capital within a region. The first two questions

10 Brian T. Prescott, Beyond Borders: Understanding the Development and Mobility of Human Capital in an Age of Data-Driven Accountability. A Report on WICHE's Multistate Longitudinal Data Exchange Pilot Project (Boulder, CO: WICHE, 2014), http://www.wiche.edu/info/longitudinalDataExchange/publications/MLDE_BeyondBorders.pdf (accessed June 22, 2015).

Location of Work and Education Approximately 12 Months After a Degree Was Awarded

By percentage of students who completed a degree in 2010



Note: Among students who completed a degree of Associate's or higher by December 31, 2010, from one of the four MLDE states, for which necessary data were available to search for earnings.

Source: Western Interstate Commission for Higher Education.

can help policymakers uncover trends in education and mobility. For the third question, the project sought to establish to what extent searching for individuals in nearby states would reveal interstate mobility. Such information helps provide a fuller picture of the outcomes of the state's graduates, which is valuable for workforce development policy and budget decisions. The data revealed a substantial amount of movement among postsecondary graduates among the states. In total, WICHE was able to identify 7 percent more graduates than it would have with in-state data only because those graduates were working or enrolled in a different state within the exchange. The chart above shows where students' wages and continued enrollment information were found through the project.[11] The three blue sections represent graduates who continued to live in the state where they earned their degree ("Award State"), documented either by wage records or

11 Peace Bransberger, A Glimpse Beyond State Lines: Student Outcomes from WICHE's Multistate Longitudinal Data Exchange Pilot Project (Boulder, CO: WICHE, 2014), http://www.wiche.edu/info/longitudinalDataExchange/publications/MLDE_GlimpseBeyond.pdf (accessed June 22, 2015).

continued education records. The gold sections represent graduates who were living in one of the other states involved in the project, documented either by their wage records or continued education records. The gray sections represent graduates who were not found in any of the participating states.

The lime green section in the chart shows how combining data from just four states can reveal a sizable portion of students whose employment status the state would not otherwise have known. The portion found varied by state, from a low of 6 percent in Washington to a high of 14 percent in Hawaii.[12]

Lessons Learned from the Western Interstate Commission for Higher Education

After four years, lessons from WICHE's MLDE are emerging:

- Individual-level longitudinal records can be linked across multiple states' education and workforce sectors.
- Linking data across state lines reveals considerable mobility among graduates and employees. That information is essential for understanding not only the return on educational investments but also how states can spur economic development through smart regional collaboration with neighboring states.
- Joint state ownership of the MLDE gives states control over how data are collected, stored, and used as opposed to providing unit record data to a third party.
- States participating in an exchange can expect to incur costs from two primary sources: the cost of "plugging in" to the exchange and the ongoing costs of maintaining the exchange. Each cost is likely to vary substantially depending on the state's governance structure for the data, how advanced and flexible the state's data system infrastructure is, and staff members' capacity to analyze and interpret the longitudinal data.

CONCLUSION

Governors are increasingly focused on their state's capacity to provide detailed information to policymakers, students, workers, and businesses about how well aligned academic and workforce training programs are with jobs within the state. They can help equip themselves and others with such information by directing their states to link their existing postsecondary education and workforce data systems. After the systems are connected, governors and their staff can use the information to inform decisions about policy and resource allocation. Individuals and businesses can use the information to inform their choices, as well.

12 These results are for a handful of states located in a part of the nation in which mobility across state lines is limited by the size of the states; characteristically vast rural areas along borders; and, in Hawaii's case, half the Pacific Ocean. One might expect these figures to be considerably higher in New England, for example.

APPENDIX

Florida Education and Training Placement Information Program Sample Report [13]

State University System Bachelors – Graduate Trends

Outcome summary

Initial Year Trends
represents each of the specified groups one year after graduation

Example
Using '2007-08 Graduates

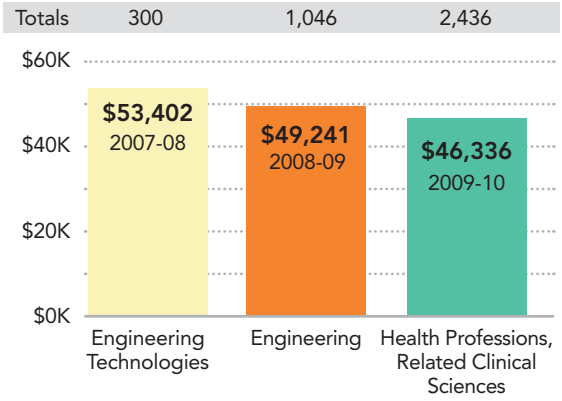
Initial year totals for the 2007-08 State University System Bachelors Graduates reflects the outcomes of those students who were found with corresponding outcome date the acedemic year following graduation (Fall 2008 Spring 2009)

Are outcomes consistent for each group one year after graduation?

Outcome Categories	2007-08 Graduates		2008-09 Graduates		2009-10 Graduates	
Graduates	48,369		49,921		51,766	
Continuing Education	9,373	**19%**	10,403	**21%**	10,121	**20%**
Employed	30,210	**62%**	30,107	**60%**	31,463	**61%**
Civilian Employment	877	**2%**	893	**2%**	589	**1%**
Military	478	**<1%**	547	**1%**	463	**<1%**
Community Supervision	77	**<1%**	86	**<1%**	86	**<1%**
Incarcerated	*	*	16	**<1%**	*	*
Public Assistance	534	**1%**	1,036	**2%**	1,587	**3%**

Program area earnings

Which program area produced the highest full-time earnings for each of the pervious graduate groups



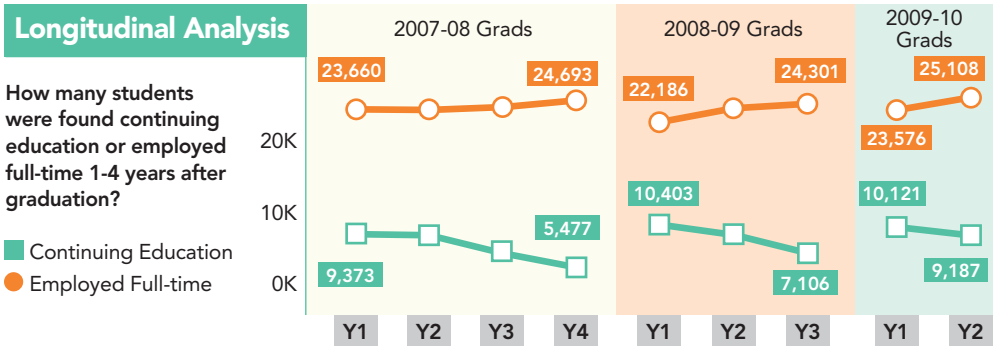
Earning Levels

In which earning level are most graduates typically found?

Earning Levels	2007-08 Grads	2008-09 Grads	2009-10 Grads
Employed	**30,210**	**30,107**	**31,463**
Level 1	25%	27%	25%
Level 2	12%	13%	13%
Level 3	14%	14%	14%
Level 4	14%	14%	14%
Level 5	13%	11%	12%
HS/HV	24%	21%	21%

Longitudinal Analysis

How many students were found continuing education or employed full-time 1-4 years after graduation?



Total Individuals

2007-08	48,369
2008-09	49,921
2009-10	51.766

Gender

Female

2007-08	60%
2008-09	60%
2009-10	59%

Male

2007-08	40%
2008-09	40%
2009-10	41%

Ethnicity/Race

2007-08 Graduates

Asian	5%
Black	13%
Hispanic	17%
Indian	<1%
White	62%
Other	3%

2008-09 Graduates

Asian	5%
Black	13%
Hispanic	17%
Indian	<1%
White	62%
Other	3%

2009-10 Graduates

Asian	5%
Black	12%
Hispanic	18%
Indian	<1%
White	61%
Other	3%

13 Florida Department of Education, "Florida Education & Training Placement Information Program (FETPIP)," http://www.fldoe.org/accountability/fl-edu-training-placement-info-program (accessed June 22, 2015).

State University System Bachelors – 2010-11 Graduates

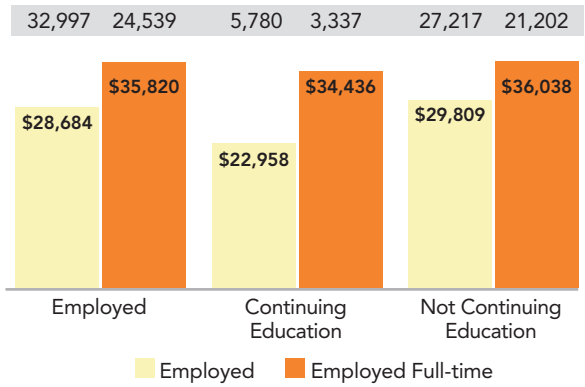
Outcome summary

Which outcome categories are the 2010-11 graduates primarily found in and what are their subsequent earnings

Outcome Categories

Graduates	53,008	
Continuing Education	10,013	**19%**
Employed	32,997	**62%**
Civilian Employment	364	**<1%**
Military	519	**<1%**
Incarcerated	13	**<1%**
Community Supervision	73	**<1%**
Public Assistance	1,912	**4%**

Average Annualized Earnings



Total Individuals

Gender

Black	59%
Hispanic	41%

Ethnicity/Race

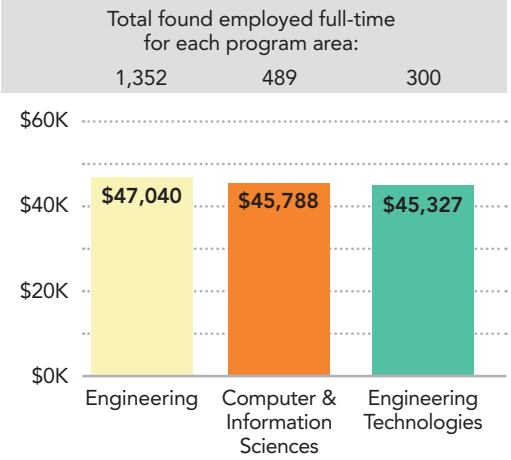
Black	13%
Hispanic	20%
Indian	<1%
White	59%
Other	3%

Military

Army	154
Navy	126
Coast Guard	26

Program area earnings

Which program areas produce the highest full-time earnings



Earning Levels

In which earning level are most of the graduates found?

Earning Levels	Males	Females	Total	
Employed	**32,787**	**20,210**	**32,997**	**62%**
Level 1	3,360	5,098	8,458	26%
Level 2	1,753	2,998	4,751	14%
Level 3	1,667	3,066	4,733	14%
Level 4	1,654	3,050	4,704	14%
Level 5	1,357	2,484	3,841	12%
HS/HV	2,996	3,514	6,510	20%

Program area earnings

In which industries are graduates found employed full-time most often and what are their average annualized earnings?

Industry name	Full-time Employment	
	#	$
1. Elementary and Secondary Schools	2,807	**$34,526**
2. General Medical and Surgical Hospitals	32,997	**$42,932**
3. Full-Service Restaurants	1,339	**$17,904**
4. Professional Employer Organizations	991	**$27,632**
5. Colleges, Universities, & Professional Schools	806	**$26,330**

Industry name	Full-time Employment	
	#	$
6. Temporary Help Services	591	**$23,036**
7. Hotels (Except Casino Hotels) & Motels	560	**$24,406**
8. Offices of Physicians (Except Mental Health Specialists)	412	**$28,124**
9. Offices of Lawyers	397	**$32,922**
10. Engineering Services	380	**$38,383**

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