

Building Capacity for Tracking Human Capital Development and Its Mobility Across State Lines

Over the past five years as the cost and value of higher education have gained increased policymaker, consumer, and media attention, the Western Interstate Commission for Higher Education (WICHE) has worked with four of its member states to test how cross-state collaboration and data sharing might inform important questions about the development and mobility of human capital. This brief discusses the pilot phase of this project – the Multistate Longitudinal Data Exchange (MLDE) – including the process of developing governance structures and cross-state agreements, the importance and feasibility of complying with privacy laws, and some policy-relevant results from the cohort of almost 193,000 high school graduates and first-time college students that were encompassed by the educational and workforce data exchange. Among other things, the MLDE highlights that public policy is better informed when the movement of students and graduates across state lines is factored into the setting and achievement of state workforce and educational attainment goals. The MLDE provides a viable solution for providing the information necessary to do just that.

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In the aftermath of the Great Recession, policymakers have taken a renewed interest in the return on investments in postsecondary education. Accelerating tuition prices and the very real struggles of some recent college graduates to find stable employment (even if those without a postsecondary experience suffered much more significantly during the economic downturn) continue to feed the growing appetite for evidence of those returns.

In response, policymakers are seeking answers from their state longitudinal data systems, especially those that have forged linkages between individuals' education records and their wages. Some states have publicized their efforts to combine these data and are beginning to estimate average wages and employment rates for recent graduates.¹ Members of the U.S. Congress also are eager to obtain this information: the *Student Right To Know Before You Go Act* introduced in Congress would mandate the development of a national system of linked education and workforce records.² And the gainful employment debate aimed at specific vocationally-oriented programs continues to rage, with the for-profit postsecondary sector having sued over the most recently announced regulation.³ But existing data sources are not up to the task of providing all of the

information necessary for policymakers to accurately determine students' future economic outcomes. In particular, many data systems are unable to account for student and worker mobility across state lines.

Against this backdrop, WICHE has been creating a cross-state exchange of data among four states – Hawai'i, Idaho, Oregon, and Washington.⁴ A primary goal of the pilot Multistate Longitudinal Data Exchange is to develop a resource for state policymakers to better understand the extent to which educated individuals move within a regional labor market, as opposed to analyses of the stock and flow of human capital that are constrained by state borders. Results from the project's first phase demonstrate how WICHE was able to bring together the necessary data. On the strength of its success with the first phase of this project, WICHE has received a second grant from the Bill & Melinda Gates Foundation to expand the pilot to additional states and to refine the MLDE to achieve greater utility and relevance.

This policy brief first describes the MLDE project, then provides a discussion of the lessons learned to date, and concludes by proposing that policymaking is strengthened by the existence and analysis of individual-level data that sheds light on what

happens with the mobility of human capital into and out of states, not just within them.

A Closer Look at the MLDE Project

In June 2010, WICHE embarked on a pilot project to stitch together multiple states' longitudinal data systems spanning the K-12 education, postsecondary education, and workforce sectors. The goal was to carry out a proof of concept to assess whether states are able (and willing) to exchange individual data across all three sectors and how best to do it, and then to examine the feasibility and usefulness of such an exchange for generating improved policy- and practice-relevant information.

Achieving this goal was by no means assured at the outset. Numerous issues and potential barriers needed to be addressed, among the most serious were:

- Legal concerns with respect to federal and state privacy protections, while preserving confidentiality protections and ensuring data security;
- Uncertainty about whether and to what extent the pilot effort would yield useful information, especially relative to the opportunity costs of participating state agencies that were operating without much slack available in their workloads;
- Political dynamics within and between states about data ownership, and questions about how the MLDE might impact the work of the agencies with direct responsibility for each sector; and
- The need for trust to be built among participants – essential to any collaborative data project in the current accountability-driven environment.

To test the concept, WICHE developed memoranda of agreement (MOAs) to support an initial exchange of individual-level data. In addition to defining the groups for which data would be exchanged, the MOAs indicated the data elements to be shared, outlined the flow of data, and specified limitations about how the resulting combined data could be used. The MOAs were approved by state attorneys in each participating state.⁵ Reaching these agreements consumed the bulk of the first two years and was helped along by the U.S. Department of Education's decision in January 2012 to release new guidelines for the application of the Family Educational Rights and Privacy Act (FERPA).⁶ The new guidelines helped achieve one of the most important project goals: allowing state agencies to receive education and

employment data from other states on students each state had previously served.

Throughout the project, WICHE has sought to capitalize on work already completed in states, rather than duplicate those efforts. Accordingly, where possible WICHE obtained data from existing state longitudinal data systems, which contained the necessary data pulled together from the respective state's education and labor agencies. Only in Oregon, which is still working to assemble a statewide data system, was it necessary to establish individual agreements with four state agencies and gather data separately from each of them. States provided student names and dates of birth to make it possible to match data across numerous data systems and perform identity resolution. Once this matching process occurred, states submitted limited data, describing enrollment terms and awards conferred, compiled from postsecondary institution data, as well as wage records available through states' Unemployment Insurance (UI) programs. Apart from the Social Security Numbers (SSNs) that are necessary for linking to the employment records, other identifying information relied upon is typically directory information, and all data were strictly managed to protect against disclosure.

Once all the data were assembled, the MLDE provided enhanced datasets back to each state with additional information only on those students for whom states originally shared information. Additionally, WICHE received a complete de-identified dataset spanning all of the state cohorts. WICHE analyzed that data for broad patterns of postsecondary enrollment and degree completion among the study's cohort of high school graduates and first-time college students, as well as the mobility of individuals (particularly college graduates), and their employment, earnings, and subsequent educational experiences after college. But the information garnered through the MLDE goes beyond those initial types of analyses to address an array of important policy issues, including capturing student success and employment outcomes across groups of states and focusing on education and employment outcomes broken down by student characteristics such as race/ethnicity, age, and income, as well as for different institution types and fields of study.

Why Expend the Effort?

Three broad questions that are of key concern to state policymakers compelled the initial four states to sign the MOAs. The first two are not surprising: *Research Question 1: What are the patterns of postsecondary enrollment and employment of high school graduates from each participating state?* And, *Research Question 2: What are the patterns of postsecondary enrollment and employment of students in public postsecondary institutions in participating states?* These inquiries into college enrollment and both educational and employment outcomes for those who benefit directly from state investments represent the core of what can be learned from the MLDE. Accompanied by appropriate disaggregations, these questions can serve as umbrellas for more specific queries about the development and mobility of human capital within a region. They also help shed light on the complexity of individuals' pathways into and through postsecondary education and into the workforce, particularly with respect to how many different institutions, sometimes located in different states, have a hand in students' educational careers.

The MLDE's initial dataset ultimately included 192,689 students, made up of two cohorts: Class of 2005 public high school graduates and first-time college undergraduates at public institutions in the four participating states during the 2005-06 academic year. Several high-level findings from the MLDE pilot reveal the policy- and practice-relevant capabilities available through the MLDE.⁷ For example, 51 percent of the first-time college student cohort represented students from outside the four states or states' residents who delayed going to college. Because the data showed that the states' recent high school graduates were more likely to have completed a bachelor's degree in six years than other first-time college students, one benefit of exchanging data with other states is to better understand those students who come to the state from elsewhere or do not enroll in college directly from high school. Further analysis could help show how to interpret these mobile students' higher education outcomes and how to more effectively serve them.

Another example of the policy relevance of this type of data exchange is the ability it provides to explore outcomes related to students' economic circumstances, something that is generally not possible at the institution- or state-level with

available data.⁸ For example, the findings showed that students who received a Pell grant at least once completed associate's degrees at higher rates than those who never received a Pell grant, but completed bachelor's degrees at lower levels. The MLDE made possible deeper dives into these data as well, such as by breaking the success rates for Pell recipients down further by age and race/ethnicity. These findings empower states and institutions to better target policies and practices where they can have the greatest impact.

A third question included in the MOAs was of particular importance for the proof of concept and is at the heart of what makes the MLDE so promising a resource for state policymakers: *Research Question 3: By more fully accounting for individual mobility across state lines, to what extent does sharing data among states supplement existing state data resources available for conducting evaluations leading to policy and program improvement?* The answer to this question offers information about how much each state is relying on its own graduates or those produced elsewhere, and how many of its own graduates are known to have found employment elsewhere. Even today's most sophisticated state data systems are missing large chunks of information about students' post-collegiate outcomes due in part to the fact that data coverage abruptly stops at the state borders, leaving states largely blind to the extent to which they are exporting their own talent or depending on talent they attract from elsewhere. For example, while more than 60 percent of college graduates were found to be working or subsequently enrolled in the state where they graduated college about a year after receiving their degree, at least seven percent more could be found working or enrolled in a different state.⁹ Further, as shown in Table 1, combining data across just the four MDLE states helps to reveal employment outcomes for 9.6 percent of the college graduates who would be invisible in Washington, to 22.4 percent who would otherwise not be found in Idaho.¹⁰ Some 653 graduates of institutions in Oregon were found to be employed in Hawai'i, Idaho, or Washington. The employment outcomes of those individuals would be unknown to Oregon in the absence of the MLDE, which highlights how it is not possible from a single state's data to determine the full extent to which institutions in Oregon effectively prepare their graduates for the

Table 1. Exchanging Employment Data Reduced Uncertainty About Graduates' Employment Outcomes

	Students Who Graduated with an Associate's Degree or Higher by December 2010				Percent of Those First Not Found Working in State, Revealed by Data Exchange (5)
	Total (1)	Number Found Working in the State (2)	Number Not Found Working in the Same State (3)	Number Found Working in Other MLDE State (4)	
Hawai'i	2,576	1,222	1,354	233	17.2%
Idaho	3,075	1,721	1,354	303	22.4%
Oregon	11,177	6,613	4,564	653	14.3%
Washington	21,984	11,665	10,319	989	9.6%

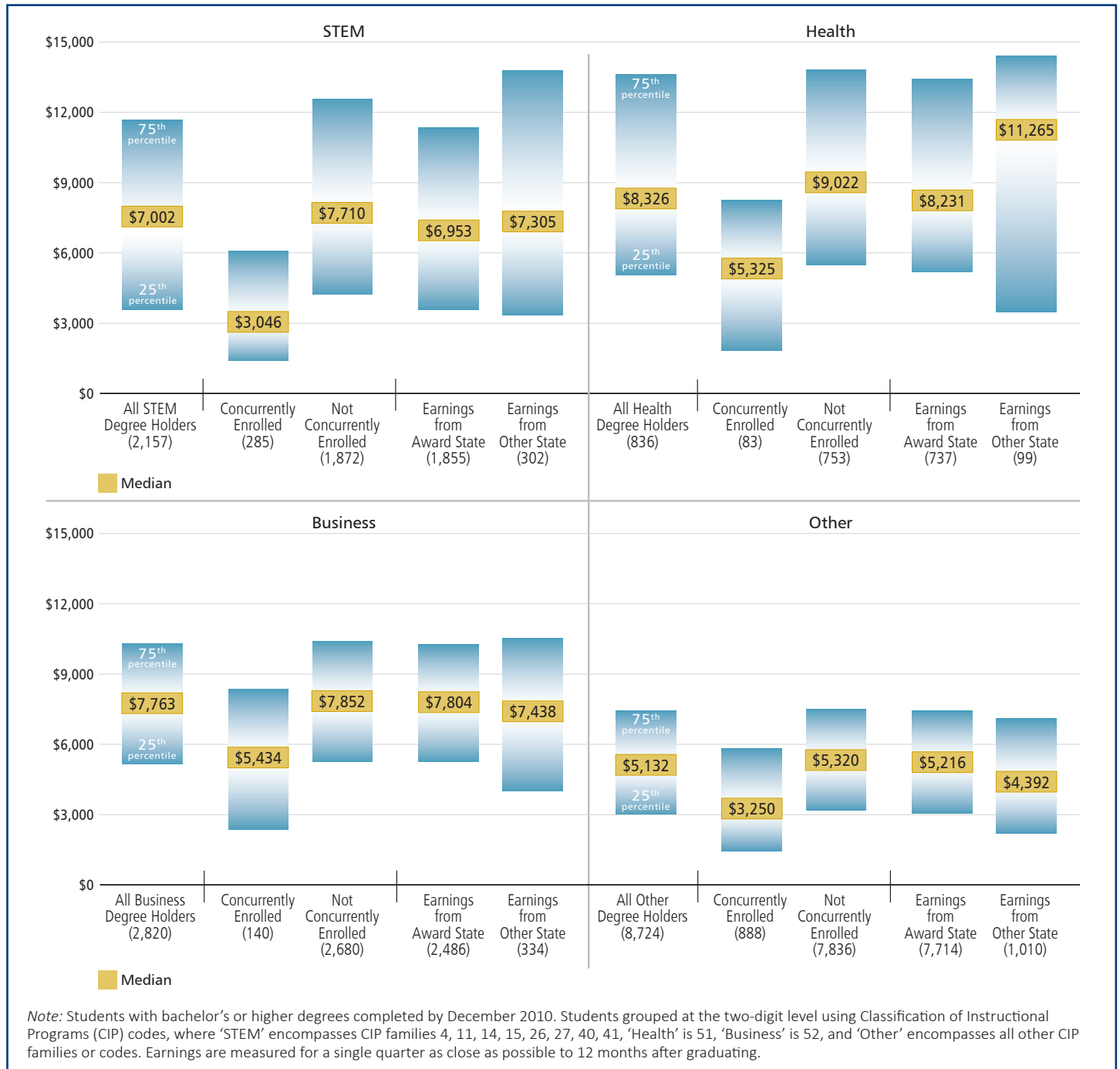
Notes: Column 3 equals column 1 minus column 2. Column 5 equals column 4 divided by column 3. All data refer only to students from the originally defined cohorts (public high school graduates in 2004-05 or first-time postsecondary students in public institutions in academic year 2005-06) who completed an associate's degree or higher by December 2010. Individuals for whom a single valid SSN was unavailable are excluded from all counts in this table. Employment records are measured for a single quarter as close as possible to 12 months after graduating.

world of work. With these additional outcomes confirmed by cross-state data exchanges, legislators and institutions can better understand the factors associated with students' decisions to leave the state after their studies (and in other cases what contributes to their decision to stay), or to what extent graduates earned degrees in fields related to the employment they engage in after graduating. These data illustrate how conclusions about employment outcomes drawn from states' singular internal data sources requires an assumption that may be unlikely to bear out: that there is not much difference between individuals who move in or out of state for college or work and the individuals who stay put in-state for education or work. We already know, for instance, that flagship universities are able to attract out-of-state students in numbers that other institutions may be unable to match. If the classes of graduates from flagship institutions are therefore potentially more mobile during or after their studies, a state that can only look for outcomes data within its own borders does not have the information it needs to understand the potential differences between graduates from flagship institutions compared to those educated at other state institutions. While economies differ from one state to the next, state policymakers can also benefit from being able to explore earnings variation for their graduates who stay in state versus those who move on and work elsewhere. For example, median earnings for the college graduates in the MLDE dataset who were found working in-state were about 15 percent higher than earnings among the

students found working elsewhere (in one of the other three states in the pilot).¹¹ This finding supports the proposition that students who leave the state where they got their degree may do so for reasons other than just earnings potential. The limitations of a single-state analysis are perhaps even more obvious if the question focuses on the contributions of specific academic programs toward meeting state workforce needs. MDLE results show that for the approximately 3,000 students who earned bachelor's degrees in academic programs in science, technology, engineering, math (STEM) and health care, those found working outside the state that awarded their degree had higher median earnings than those found in-state. States stand to benefit from investigating the post-graduate employment outcomes for students found both in and out of state, focusing their higher education resources to meet state workforce needs with certain fields of study. Figure 1 shows quarterly earnings among students who completed a bachelor's degree or higher, broken out by several fields of study: science, technology, engineering, mathematics (STEM); health; business; and all others about one year after graduation. The data show significant variation related to the field of study, but also reveal differences related to concurrent enrollment and based on whether graduates were found to be working in or outside the state where they graduated. Another likely source of variation comes from the industry sector in which students are employed.¹² These results highlight just a few of the ways that earnings outcomes can vary, which illustrate the need to dig deeper with a more

Figure 1. Earnings Variation by Baccalaureate Field of Study

(Median, 25th, and 75th Percentile Quarterly Earnings in Actual Dollars, 10-12 Months After Degree Conferred)



complete set of information about educational and employment outcomes, so that such data can be most effectively used for decision making.

What Are the Major Lessons So Far?

The MLDE project has lifted the curtain on students' educational and employment outcomes after accounting for mobility across states. Much remains to be learned, but numerous lessons are already apparent. Among them are:

■ *Individual-level longitudinal records can in fact be linked across education and workforce sectors among multiple states.* That includes both the assembly of de-identified datasets for research and evaluation and the exchange of personally identifiable information to which partnering state agencies are entitled under FERPA in order to evaluate education programs, so long as appropriate safeguards on access and use are in place.

■ *Linking data across multiple states reveals considerable mobility, and can reduce a substantial amount of uncertainty that will be present in analyses that are based solely on a single state's data.* While state policies and the coverage of state longitudinal data systems do not cross state lines, individuals, firms, and industries do. A complete picture of how human capital – and the policies that promote its development – impacts the workforce capacity of states requires an acknowledgment of how mobility factors into the fulfillment of that capacity. The MLDE pilot project demonstrated that substantially more information could be obtained on how college graduates made their way into the workforce by swapping data among states, even in a part of the nation where states are vast and population centers typically lie a considerable distance from state borders, making cross-border commutes less commonplace.

■ *Joint state ownership is an important feature of cross-state data and information exchanges.* Joint ownership puts states in the driver's seat for how policy-relevant data are used. Much can be learned from a research dataset containing just the data elements that were exchanged and no student identifying information. But a state-owned MLDE also makes it possible for states to combine the much more comprehensive data on student outcomes available through the MLDE with the full range of data available in their own data systems to produce much richer analysis (at least temporarily as allowable under the provisions of the data-sharing agreement). In research design terms, states using the MLDE can be more confident of their analysis and evaluations of educational interventions and policies since the information they have about the students' ultimate outcomes is not restricted to the set of students who just happened to remain local. Doing so may also give states comfort with how the data they own are being deployed.

■ *Building and making productive use of the MLDE requires substantial state investment and probably also requires a third-party entity to manage it.* WICHE's project has benefited from the active engagement of a number of savvy employees in each of the participating states who have contributed their time and energy to play essential roles in getting agreements in place and in supplying the data for the exchange. Without this significant investment of time and talent, no similar effort can exist. Although it may be possible that a single state

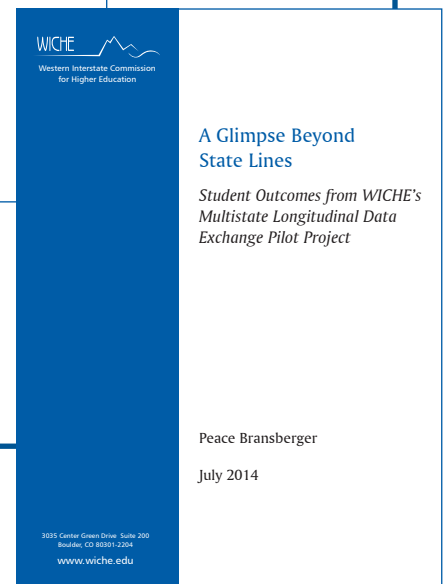
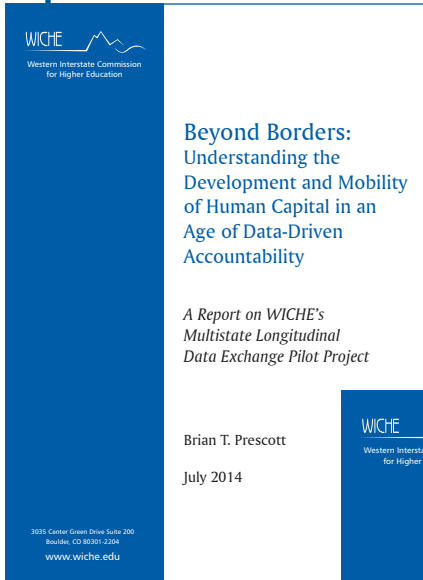
could operate the mechanics of the MLDE on behalf of the group of participating states, it is unclear that states would be comfortable with one of their peers alone in the operations management role, not to mention obstacles to the prospect of entrusting another state with identifiable data. A third party is almost certainly necessary to oversee the MLDE and the performance of the organization that is responsible for combining the data.

■ *Having and exploring this type of linked education and employment data helps to understand the ways in which such data can be appropriately used, and cautions for interpreting and appropriately using them.* The temptation to incorporate employment outcomes derived from such data linkages into state accountability frameworks may be strong (e.g., "placement" rates), but should be resisted for the time being as we develop a better understanding of these new sources of data¹³ – and of students' behaviors in moving between education and employment. For example, most efforts to link education with employment outcomes using individual-level data have focused narrowly on graduates' initial jobs. This is often due to a lack of data across many subsequent years. (In fact, we limited our own approach to earnings analysis to a single point in time one year post-degree, so that we could measure earnings among the greatest possible number of students.) But we know that earnings and the effect of educational attainment on income are often best interpreted over longer time periods. And the value of education should be assessed for the many reasons it is undertaken, including entry into careers not accessible without a degree and the value of higher education for informed citizenship and society at large. Thus, results from such analyses should inform policymakers and institutional leaders and motivate them to ask further probing questions about how well aligned their own state's education investments, in combination with the regional supply of educated talent, are with the requirements of state workforce needs.

Conclusion

Policymakers interested in ensuring that state workforce needs are met should be paying attention not just to how well state educational institutions are producing the necessary graduates, but also to the mobility of recently educated talent into and out of their state. Most of the current research providing evidence from longitudinal education and employment data is promising, but it often lacks information about how individual mobility adds to or detracts from the stock of human capital in a state. As state data systems mature, the need for multistate or regional analyses is growing more obvious. Policymakers need good information about the extent to which college students who were recruited from out of state actually remain in state after graduation and contribute to the states' economy and well-being, for example, or take their new talents elsewhere. They also need information about how well aligned academic programs are to state industries' needs, and how well the programs support human capital development and mobility regionally and nationally. Institutional leaders interested in how well they are preparing their students for the world of work need not be limited to only those who remain in-state after leaving their institutions when they are evaluating their educational interventions and academic programs. They can help equip themselves with this kind of information by insisting that their states look beyond their own borders for information about employment outcomes. WICHE looks forward to working with additional states as the MLDE grows and continues to examine these and other human capital issues that are so crucial to today's mobile society.

Two reports that more fully describe WICHE's Multistate Longitudinal Data Exchange pilot project are available for download at: www.wiche.edu/info/longitudinalDataExchange/publications/MLDE_BeyondBorders.pdf and www.wiche.edu/info/longitudinalDataExchange/publications/MLDE_GlimpseBeyond.pdf.



Endnotes

¹ Perhaps the most visible such resource is www.CollegeMeasures.org, although its estimates of employment outcomes are subject to the numerous caveats outlined later in this brief, and discussed in, for example, Mark Schneider, *Measuring the Economic Success of College Graduates: Lessons from the Field*, Washington, DC: American Institutes for Research, Education Policy Center, 2014.

² H.R. 1937 – 113th Congress: Student Right to Know Before You Go Act of 2013. (2014). Accessed November 14, 2014 from www.congress.gov.

³ Program Integrity: Gainful Employment; Final Rule, 79 Fed. Reg. 211 (to be codified at 34 C.F.R. pts. 600 & 668). Accessed November 14, 2014 from <http://www.gpo.gov>. Tim Devaney, "Colleges sue feds over 'gainful employment' rule", *The Hill*, November 6, 2014. Accessed November 14, 2014 at <http://thehill.com>.

⁴ For more detailed information on the MLDE project, please see Brian T. Prescott, *Beyond Borders: Understanding the Development and Mobility of Human Capital in an Age of Data-Driven Accountability*, (Boulder, CO: Western Interstate Commission for Higher Education), 2014 and Peace Bransberger, *A Glimpse Beyond State Lines*, (Boulder, CO: Western Interstate Commission for Higher Education), 2014.

⁵ See Prescott, *ibid*, for a sample MOA.

⁶ <http://www2.ed.gov/policy/gen/guid/fpco/pdf/2012-final-regs.pdf>.

⁷ These and other findings are detailed in Bransberger, *A Glimpse Beyond*, endnote 2.

⁸ For example, while the Beginning Postsecondary Survey encompasses data about students' economic situation, it is only representative at the national level.

⁹ Because the remaining 40 percent of graduates includes a fair portion of students not included in the analysis due to data limitations, this does not imply that 40 percent of students left after getting their degree.

¹⁰ It is also worth noting that these results are for a handful of states located in a part of the nation where mobility across state lines is actually rather limited by the sheer size of states and characteristically vast rural areas along borders and, in Hawai'i's case, half the Pacific Ocean. One might expect these figures to be considerably higher in New England, for example.

¹¹ Analysis of earnings at about one year after receipt of the college award, among students who received at least an associate's degree with enough time to look for earnings at least one year after award.

¹² Readers should refer to *A Glimpse Beyond State Lines* (see endnote 2), for more earnings results and a detailed discussion of earnings variation and considerations for earnings analysis.

¹³ For further discussion about these data sources and the challenges of interpretation in their use, see for example, WDQC and Mamie Voight, Alegneta Long, Mark Huelsman and Jennifer Engle, *Mapping the Postsecondary Data Domain: Problems and Possibilities*, Washington, DC: Institute for Higher Education Policy, 2014, at www.ihep.org; and Rachel Zinn and Andy Van Kleunen, *Making Workforce Data Work*, Washington, DC: Workforce Data Quality Campaign, 2014, at <http://www.workforcedqc.org>. A special challenge of interpretation concerns the sensitivity about the collection and use of the SSN, which was missing for large numbers of individuals, even with the MLDE filling in some of the gaps in its availability. In our project, the single biggest group with missing SSNs was the high school graduates who did not enroll in a public postsecondary institution. If individual return on investment is important to policymakers, and the UI wage records is a preferred way of estimating that, it is sure to be misleading to have vastly more information about the employment outcomes of those who elect to go to college and very little comparable information for those who do not.

This issue of *Policy Insights* was prepared by Brian T. Prescott, director of policy research, Policy Analysis and Research (303.541.0255 or bprescott@wiche.edu), and Peace Bransberger, senior research analyst, Policy Analysis and Research (303.541.0257 or pbransberger@wiche.edu), WICHE.

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Western Interstate Commission for Higher Education
3035 Center Green Drive, Suite 200, Boulder, CO 80301-2204

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David A. Longanecker, President
Tel: 303.541.0254 Fax: 303.541.0245
E-mail: Policy@wiche.edu
Visit www.wiche.edu for this and past issues of *Policy Insights*.