# Assessing and Improving State Postsecondary Data Systems

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POSTSEC DATA

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# Executive Summary

## Introduction

State Postsecondary Student Unit Record Systems (PSURS) analyze student progress and outcomes at the state level. These long-standing data systems have traditionally presented higher education data in a state context for decision-making and analysis. State policymakers often have questions for their postsecondary coordinating and governing boards (which manage PSURS) that are not easily answered by institutional and federal datasets. Specifically, state-level information about the effect of policies—such as remedial and developmental education reforms—in-state transfer policies, and outcomes-based funding initiatives all require state-level unit record data to address policy effects. Uses of state PSURS is broad and varies considerably among the states, but states use these systems to identify problems, support policy implementation, and evaluate the effectiveness of interventions.

Since these systems were developed, demand for accurate and comprehensive student data has increased and the questions asked of these data have grown more complex. The focus of states has shifted from primarily looking at enrollment indicators to tracking student progress and success throughout their postsecondary educations and into the workforce. Overall, state PSURS should be understood as the primary mechanism for generating state postsecondary metrics and as an integral piece of the postsecondary data infrastructure.

## Role of PSURS in the National Postsecondary Data Ecosystem

State PSURS function among a complex environment of institution, state, and federal data systems. Forty-seven states received federal funds between 2007 and 2016 through the National Center for Education Statistics State Longitudinal Data System (SLDS) Grant Program. Grant funds were distributed to the state K–12 agency, and the grants encouraged collaboration and linking datasets between K–12, postsecondary agencies, and the workforce.

Additionally, many states have developed—as part of a P-20W council or initiative—data sharing agreements and memoranda of understanding between state agencies, which coordinate activities between early childhood, primary, secondary, postsecondary, and workforce agencies. Sometimes, this work is part of the SLDS grant; other times, it is done independently. The interaction between long-standing state PSURS, SLDS-funded systems, and P-20W initiatives makes the postsecondary state data environment complex and varied from state to state.

Institutions in a state submit key data elements to the PSURS agency. Some of these agencies relieve institutional burden by using their state PSURS to submit data to national reporting efforts, such as the Integrated Postsecondary Education Data System or Complete College America. Institutions are one of several key audiences for reporting from PSURS, reflecting a common flow of information between institution, state and federal education agencies, and stakeholders.

## Major Issues

Although state PSURS are often able to adapt quickly to the needs of state policymakers—through gathering new data elements and analyzing new topics—gaps in data coverage, concerns about privacy, and a lack of resources are major issues for many states' PSURS.

Only 18 states surveyed by State Higher Education Executive Officers (SHEEO) collected information from private, not-for-profit institutions. Even in these 18 states, coverage of independent institutions is often limited to those that participate in financial aid programs or to institutions that volunteer to submit data to the state postsecondary agency. There is also considerable variation among the states in the types of data collected by PSURS for reporting. Despite these gaps, these systems provide important value to policymakers who have varying education priorities.

Additionally, some states are being confronted with legislation or potential legislation—stemming from concerns about student privacy—that prevents longitudinal unit record research. Such legislation typically prevents agencies from using personally identifiable information (PII) to link datasets. Although the federal Family Educational Rights and Privacy Act (FERPA) provides strict guidelines for when and how PII can be shared, some state policymakers express concern about linking datasets for longitudinal analysis. By articulating the benefits of longitudinal research and discussing how PII is kept secure, agencies might be able to assure concerned audiences that this kind of research is safe and of tangible benefit.

Despite considerable investments made in postsecondary unit record data, some respondents to SHEEO's survey cited as considerable barriers to effective use of these systems a lack of funding and an inability to retain quality staff who can ana-

lyze data. In order to build a strong case for essential funding, states that use these unit record systems to advocate for policies or to discover critical facts about student behavior should share these findings, credit their staff's work, and communicate the need for quality data. States that use their unit record data for research and policy analysis make a stronger case for expansion of data elements and staff capacity.

## Technical Enhancements Needed to Improve PSURS

A key measure reported by PSURS in many states is student labor market outcomes. Access to this information about graduates varies among the states. Often, unemployment insurance records are used to determine wage outcomes of graduates. However, data elements collected by other federal agencies would allow for more complete understanding. Most wage records matches in states exclude federal and self-employed workers as well as students who move to a different state. Cross-state data initiatives, such as the Multistate Longitudinal Data Exchange, are making progress in tracking student outcomes across state lines. Providing a linkage between PSURS and more comprehensive federal records, such Internal Revenue Service (IRS) records, as well as encouraging more cross-state collaboration could improve the quality of reporting on student workforce outcomes.

Some data administrators of state PSURS have shared with SHEEO that they could not incorporate Free Application for Federal Student Aid (FAFSA) data into their unit records systems or the state SLDS. Demand for comprehensive financial aid research is increasing among state policymakers in an era of constrained budgets and resources. Improved clarity on whether states can connect PSURS and FAFSA data would increase the ability of states to conduct meaningful research on student financial aid. We encourage the U.S. Department of Education (ED) to articulate this to data administrators.

## Resources Needed to Improve PSURS

Federal grants have been instrumental in expanding the capabilities and uses of postsecondary data. The underlying commitment of the SLDS program is to see states creating longitudinal databases that allow them to better understand student progress across all components of the education pipeline. Yet, the grants currently focus on what the systems look like rather than what they can do. Federal funding of state data systems should continue; however, evaluation of these federal grants should focus also on the outcomes produced by these systems instead of only on their design and deployment. The average state has received $13 million in SLDS funding since 2005, and some states, but not all, have provided state funding to maintain these systems after federal grants expire.

The best way to ensure sustained funding of PSURS is to effectively communicate the results of policy research that drew on these systems. The more policymakers and the public see the value in longitudinal student analysis, the more likely these systems are to thrive in this data-driven culture.

## Policy Recommendations
**For States:**

*Invest in state PSURS, and adopt best practices from other state-level unit Record Systems.*
Given state PSURS' ability to quickly respond to unique, statewide policy needs for improving student outcomes, states should view these data systems as essential tools. State PSURS' ability to collect data elements not available in federal datasets and to present information on a statewide basis—often while linking with data from other sectors—means that states are uniquely positioned to provide critical analysis of postsecondary students and the impact of higher education policies.

A number of national organizations regularly convene data experts and practitioners in conferences and meetings designed to improve data capacity and use. Best practices and key examples of new analyses should serve as a model for other, developing data systems.

*Involve the state PSURS in the postsecondary agency's strategic plan for higher education.*
Strategic plans constitute the key mechanism for higher education agencies to articulate their priorities and goals for the state. Progress on key metrics for higher education—most commonly enrollment, completions, and workforce outcomes—is a way for public stakeholders to consistently see the PSURS being put to strategic use.

*Continue to expand the use of state PSURS and communicate their value.*
Critical questions about college costs, student debt, remedial education, and workforce outcomes, among others, will continue to be asked of state PSURS; yet, the capabilities of these systems to answer these questions vary. When state PSURS successfully generate information on new topics of import, their success should serve as a model for other states to emulate.

*Proactively address privacy and security concerns.*
States that develop and communicate safeguards to student privacy are better equipped to fend off legislation that will prevent longitudinal research. FERPA protections already ensure that states must not release PII. However, additional outreach to policymakers and processes to ensure data security protect against unnecessary restrictions that prevent meaningful educational research.

**For Federal Policymakers:**

*Continue to fund state data systems while shifting the focus of federal grants to outcomes rather than infrastructure.*
Lack of resources and retaining capable staff remain challenges for many administrators of state data systems, but federal grants have been instrumental in expanding the capabilities and uses of postsecondary data. By evaluating grants based on the outcomes the system will produce (i.e., the uses of the information to advance appropriate policy development and actual student success), instead of the structure, the federal government can enable meaningful longitudinal research while ensuring that the results of this research are put to use.

*Allow state PSURS access to federal datasets to improve matching.*
Data quality would be improved if linkages between postsecondary and workforce datasets were made with the more comprehensive IRS and Social Security Administration data elements. Additionally, linkages between state PSURS and the National Student Loan Data System would allow a more comprehensive study of the impact of federal financial aid.

*Federal datasets should better enable state-level analysis.*
Many federal tools, including the new College Scorecard, don't provide state-level analysis. While current federal data systems effectively allow for comparison of institutions, ED has an opportunity to better present the data it currently collects in state contexts, using a common methodology for both easier access to and more consistent quality of the information.

*Use lessons from recent state PSURS improvements if developing a federal unit record system.*
A federal student unit record system would present a variety of advantages to researchers and policymakers at the institutional, state, and federal levels. However, the presence of such a system would not negate the need for states to pursue their own strategic priorities. State PSURS are diverse and varied across the nation in part because each state has differing needs for them. As state policymakers pursue higher education goals that will inevitably vary across states, these PSURS are well positioned to adapt and allow research of new educational questions. SHEEO's past two surveys of state PSURS show clearly that they have changed and adapted to new policy needs in the past decade. We urge ED to consult states in the development of any federal system. This would allow ED to build on the decades of state work spent expanding the capabilities of unit record data.

# Assessing and Improving State Postsecondary Data Systems

## The Higher Education Unit Record Data Landscape

State Postsecondary Student Unit Record Systems (PSURS) are data systems that are administered by state coordinating boards, governing boards, or systems of higher education. They collect and report data on a variety of higher education topics—notably, postsecondary student progress and completion. State PSURS are a critical tool for analyzing student outcomes, and they have a long history of supporting state, national, and institutional policy in postsecondary education: The earliest systems were originally developed to meet the needs of myriad audiences, starting in the late 1970s and 1980s. Most state PSURS collect data from students attending public institutions in that state; some cover students attending private institutions as well. Nationwide, about three-quarters of students enrolled in postsecondary education attend public institutions,[1] meaning that the typical state PSURS captures most postsecondary students in the state. The vast majority of these systems were started with a focus on counting students, to help facilitate state resource allocation or to meet civil rights mandates.[2] Since then, the use and functions of these data systems have transformed as they have responded to state, federal, and student needs related to data and information.

Most often, the key audiences for information from PSURS are state legislators or coordinating and governing board members who enact policy decisions based on the systems' data. Policymakers at the federal and postsecondary institution levels also use data from state PSURS, particularly for recent research into previously unexplored topical areas, such as implementing a new outcomes-based funding model or researching the effects of a new state aid program. Finally, some state PSURS are developing public-facing reporting and tools; students and their families use information generated from these data systems to compare institutions on a variety of topics, such as graduation rates, student debt, and graduate workforce outcomes.[3]

Since these systems were developed, demand for accurate and comprehensive student data has increased and the questions asked of these data have grown more complex. One of the first key transformations when the federal Student-Right-to-Know and Campus Security Act of 1990[4] required calculation of institution-level graduation rates nationally and the National Governors Association urged the postsecondary sector to develop consistent national indicators of student progress to track the achievement of national education goals. These actions expanded the focus of states from look-ing primarily at enrollment indicators to also tracking student progress and success within higher education.[5] Recent years have brought further progress as the national dialogue focuses more on higher education outcomes. Some states have begun adopting outcomes-based funding approaches, while institutions have focused on expanding education outcomes for increasingly mobile students who move between institutions both within and across state boundaries.[6,7]

Tracking these mobile students requires data from multiple datasets, from multiple institutions, or even across state borders, and connecting these data presents technical challenges for analysts and researchers. More students exhibit "student swirl," the phenomenon of students attending multiple institutions with stop-out periods; these students are more difficult to capture in datasets than "traditional" students who attend one institution immediately after high school. As the need for longitudinal data and complex linking arrangements grew, the U.S. Department of Education (ED) invested over $700 million between 2005 and 2016 to build capacity in the states to address challenges in linking datasets. Forty-seven states expanded their data collection capabilities by leveraging federal funds through the National Center for Education Statistics (NCES) State Longitudinal Data System (SLDS) Grant Program.[8] The primary recipients of federal SLDS grants are state education agencies, which oversee activities relating to primary and secondary education within their states. Postsecondary coordinating and governing boards in many states have collaborated with SEAs and workforce agencies to link datasets from across the education pipeline, from primary education to employment. While SLDS grants have encouraged states to expand their data collection capabilities and linkages across the educational pipeline, some grantee states have yet to link K–12 student record data to postsecondary data. In summary, the federal SLDS grant program, which bolstered statewide longitudinal data systems, has allowed many states to link datasets across sectors; however, not all 47 states that have received this federal funding actively link their K–12 and postsecondary unit record systems.

Additionally, many states have developed data sharing agreements and memoranda of understanding between state agencies as part of a P-20W council or initiative. P-20W refers to participation from agencies that oversee prekindergarten, K–12, and postsecondary education along with workforce. This can be accomplished by building a data warehouse or by housing databases in separate locations, to be linked as needed (a federated model).[9] A data warehouse model

involves contributing agencies submitting data into a central repository, while a federated model links multiple datasets on demand. In a brief entitled *Building a Centralized P-20W Data Warehouse*,[10] ED explained that developing a P-20W data warehouse has allowed many states to link data without such efforts becoming dominated by a single agency and thus biased toward the needs of one agency. Cooperation across multiple sectors to create a new P-20W agency (or designate an existing agency) is necessary in order to successfully build and maintain such a system. According to State Higher Education Executive Officers' (SHEEO's) upcoming report on PSURS, 27 states house data from various government agencies in a central warehouse.[11]

Nationally, discussions around both student success and affordability have led to a number of key data initiatives. Intermediaries and advocacy groups have collected student data on college success through such initiatives as Complete College America (CCA) and the National Governors Association's Common Completion Metrics, the Association for Public-Land Grant University's Voluntary System of Accountability, and the American Association of Community College's Voluntary Framework of Accountability, among many others. Such foundations as the Lumina Foundation and the Bill & Melinda Gates Foundation have featured and collected data focused on college completion. The Bill & Melinda Gates Foundation has invested significantly in bringing postsecondary data partners together and moving forward the current postsecondary data infrastructure conversation. In part, this was accomplished through a grant to the Institute for Higher Education Policy in an effort to create more information about the outcomes of all students in our higher education system. Finally, the federal government has begun to use its datasets to better inform both consumers and researchers. In 2015 it released the College Scorecard, which provided a robust consumer interface with a wealth of data about institutional outcomes and affordability. The report also provided researchers with a data file containing an unprecedented amount of data never before shared outside the multiple departments that house them.

Given the interaction between SLDS-funded systems, P-20W initiatives, national data organizations and long-standing PSURS, the postsecondary state data environment is complex and varies considerably from state to state. Not only do state PSURS report on state-level data, they also interact with institutional and federal postsecondary databases to coordinate data submissions and conduct additional analyses. While each state PSURS is unique in terms of data elements collected and structure, across the country each PSURS is essential for generating state postsecondary metrics.

## The Role of PSURS

These data systems fulfill for states a role that is unique from data systems housed in individual campuses' institutional research (IR) departments and federal data systems such as the Integrated Postsecondary Education Data System (IPEDS). The key distinction between data held at the institutions of higher education, state agencies, and the federal government is their levels of granularity. Institutions house a wealth of student-level transactional data; states house a smaller subset of these data, designed to address state-level questions. At the federal level, IPEDS collects aggregate institutional data and the National Student Loan Data System collects unit record–level data for students receiving Title IV aid. Although institutions report a variety of data elements as part of these federal collections, states—due to their substantial investments in public higher education—have distinct needs, many of which cannot be addressed through the federal data collections.

For their coordinating and governing boards, state policymakers often have different questions that are not easily answered by individual institutions or from IPEDS data. For example, if a state legislature has adopted a postsecondary accountability framework or outcomes-based funding initiative, state-level unit record data are used to implement and assess these policy initiatives. Many of these outcomes-based initiatives require detailed information about student progress and completion across campuses. **Tennessee**, for instance, awards a premium on its progression and completion metrics for low-income students, adult students, and community college students who are academically underprepared. These breakouts are not available in federal data systems like IPEDS. Other states are working with institutions to pilot new remediation models. **Georgia** was able to use data collected in their state PSURS to identify the effectiveness of corequisite remediation models and to scale those models statewide.[12] These examples demonstrate how PSURS often report elements that are not collected by IPEDS, NCES, or other national-level datasets in order to respond to the needs of state constituents and support unique state policy needs directly.

State PSURS also collect data at the unit record level, as opposed to aggregate counts. While data such as enrollment and completions of students are available federally in the aggregate, the unit records in the state PSURS allow researchers to more thoroughly examine interactions between student enrollment and completion as well as the effect of other inputs, such as financial aid or course-taking patterns. Additionally, unit records allow linkages to other datasets. When such linkages occur, researchers can analyze student progress and outcomes throughout the education pipeline—from

early childhood into the workforce. Unit record data also allow for greater flexibility in metric definition.

Where state-level data is unavailable or insufficient, or in cases where states want to benchmark against other states, they rely on national databases to analyze other key measures of student success, such as graduation rates and net price through IPEDS or cumulative debt through the National Postsecondary Student Aid Survey (NPSAS). States use institutional, state, and federal data to identify problems, support policy implementation, and evaluate the effectiveness of interventions.

Although state PSURS collect a large amount of unit record data for critical analysis, collaboration with other data initiatives, governments, and national organizations is often necessary to fill in gaps in coverage and collect additional metrics. The National Student Clearinghouse (NSC), a student tracking service, tracks students longitudinally,[13] allowing states to analyze students who leave the state—something difficult to capture through PSURS. Hawaii, Idaho, Oregon, and Washington have begun to address the challenge of analyzing students who cross state lines through the Western Interstate Commission for Higher Education's Multistate Longitudinal Data Exchange.[14] Policy priorities vary considerably among the states, and PSURS constantly adapt their collection and reporting procedures to meet the needs of legislators, board members, and the general public, using external resources such as NSC and MLDE to close the gaps.

## Examples of State PSURS Analyses
To identify and address problems, states routinely generate reports for state policymakers and the general public on common metrics, such as postsecondary enrollment and completions. Recently, these reports have become more nuanced as states have developed specific initiatives to improve postsecondary outcomes for specific groups of students. For example, in **West Virginia**, the Higher Education Policy Council has identified developmental education as a primary means to increase overall completion. In their Master Plan,[15] the council has specific developmental course pass rates for mathematics and English, and the council will regularly collect and report this information to board members and the general public for accountability purposes. Many states have started to collect and report time and credits-to-degree information for students, sometimes spurred by participation in CCA's data collection. This information was previously unreported by states.

Recently, unit record research has allowed state agencies to observe student progress between secondary education, postsecondary education, and the workforce. **Texas**' labor market dashboards[16] for postsecondary graduates responded to increased demand for labor market outcomes of college graduates by linking unit record data to unemployment insurance (UI) records. **Minnesota's** interactive website, sleds.mn.gov, allows high school principals and other users to observe the enrollment and completion outcomes of secondary school graduates.

To implement policy, many governing boards use their postsecondary PSURS to help administer their state aid programs. In addition to collecting information to determine eligibility for state grant dollars, these systems also track aid recipients after dollars have been allocated. This allows states to use complex formulas to award aid or to use student outcomes to evaluate the continuation or impact of aid at both the individual and statewide levels. Tracking this information at the state level not only provides greater oversight of state financial aid dollars but also relieves institutional burden in states where the state fully manages the state aid program.

Interest in student aid programs is increasing among key policymakers at the state level, especially in an era of constrained budgets. Unit record data systems that contain financial aid information allow researchers to assess impacts of student aid on postsecondary success, but states vary in how much and what type of student aid data they include in their PSURS. Agencies that administer state financial aid programs can use PSURS to assess state financial aid goals and the impact of policy changes.[17] However, if a state has access only to aggregate information on total state dollars administered to each institution, the effect of the state aid program is limited to speculation. Similarly, if PSURS lack data on institutional or federal aid, it is difficult to measure the impact of those dollars.

In addition to informing policy, state PSURS inform students, families, and tax payers with important information about the higher education system in a state. Many college access programs, such as those associated with the Gaining Early Awareness and Readiness for Undergraduate Programs grant program, use data from state PSURS to communicate information to consumers around admissions information, outcomes, and costs. This consumer outreach would not be possible without the data that is collected at the state level.

The examples above highlight some of the important policy-related tasks and consumer information that state PSURS help enable. One of the key distinctions of state data systems is that they allow policymakers to look at student activity across institutions and sectors within a state, for postsecondary sectors that participate in the PSURS. Unit records of students allow for analysis of students that exhibit "swirl" in a state and across multiple institutions, in addition to using aggregate institution counts. When unit record data elements are collected and analyzed, the state is able to report more comprehensive and accurate counts of key metrics. Respon-

dents to the *Strong Foundations 2016* survey mentioned that PSURS allow states to develop "one version of the truth" or the "true graduation rate" for the state.

## Current Status of State PSURS

Responses to the 2016 *Strong Foundations* survey show that the vast majority of PSURS are used for generating information, conducting research, and informing policymaking decisions. More than half of PSURS are being used for cross-agency collaboration, consumer information, and external reporting (such as submitting data files to the Southern Regional Education Board or CCA). Additionally, **Figures 1 and 2** show that PSURS continue to expand linkages to unit record data systems maintained by other agencies, such as the SEA or workforce agency. These linkages allow education agencies and states to answer critical policy questions through analysis of the transition between sectors.

Thirty-nine states actively link or plan to link postsecondary data to K–12 data, compared with 16 states in 2010. This significant change underscores increasing interest in understanding student progression from K–12 to postsecondary education.[18]

While linking arrangements between K–12 and postsecondary unit record data have proliferated in part due to federal investment in SLDS grants, connections between students' postsecondary and workforce records have also expanded. As of 2016, 34 states have received Workforce Data Quality Initiative (WDQI) grants, which work in conjunction with SLDS grants to encourage the development of state education and workforce longitudinal administrative databases.

A majority of states have at least one postsecondary agency with the necessary relationships to link to workforce data systems (see **Figure 2**). A comparison of the 2010 and 2016 *Strong Foundations* results shows that labor linkages (or planned linkages) have increased dramatically, from **11 to 42 states**, reflecting growing interest in the relationship between education and the workforce.

The type of institutions represented in these systems is often limited to public institutions (see **Table 1**). Only 18 states collected information from private, nonprofit institutions (sometimes referred to as independent institutions). Even in these 18 states, coverage of independent institutions is often limited to those that participate in state financial aid programs

**FIGURE 1: 45 AGENCIES IN 39 STATES CURRENTLY LINK OR PLAN TO LINK POSTSECONDARY TO K-12 DATA**



WA Detail:
OFM-Currently links
SBCTC-Currently links
WSAC-Does not link

WY Detail:
UWYO-Plans to link
WCCC-Does not link

MN Detail:
MOHE-Currently links
MNSCU-Plans to link

CA Detail:
CCC-Currently links
CSU-Does not link
UCS-Currently links

■ Plans to link postsecondary to K-12 data   ■ Currently links postsecondary to K-12 data
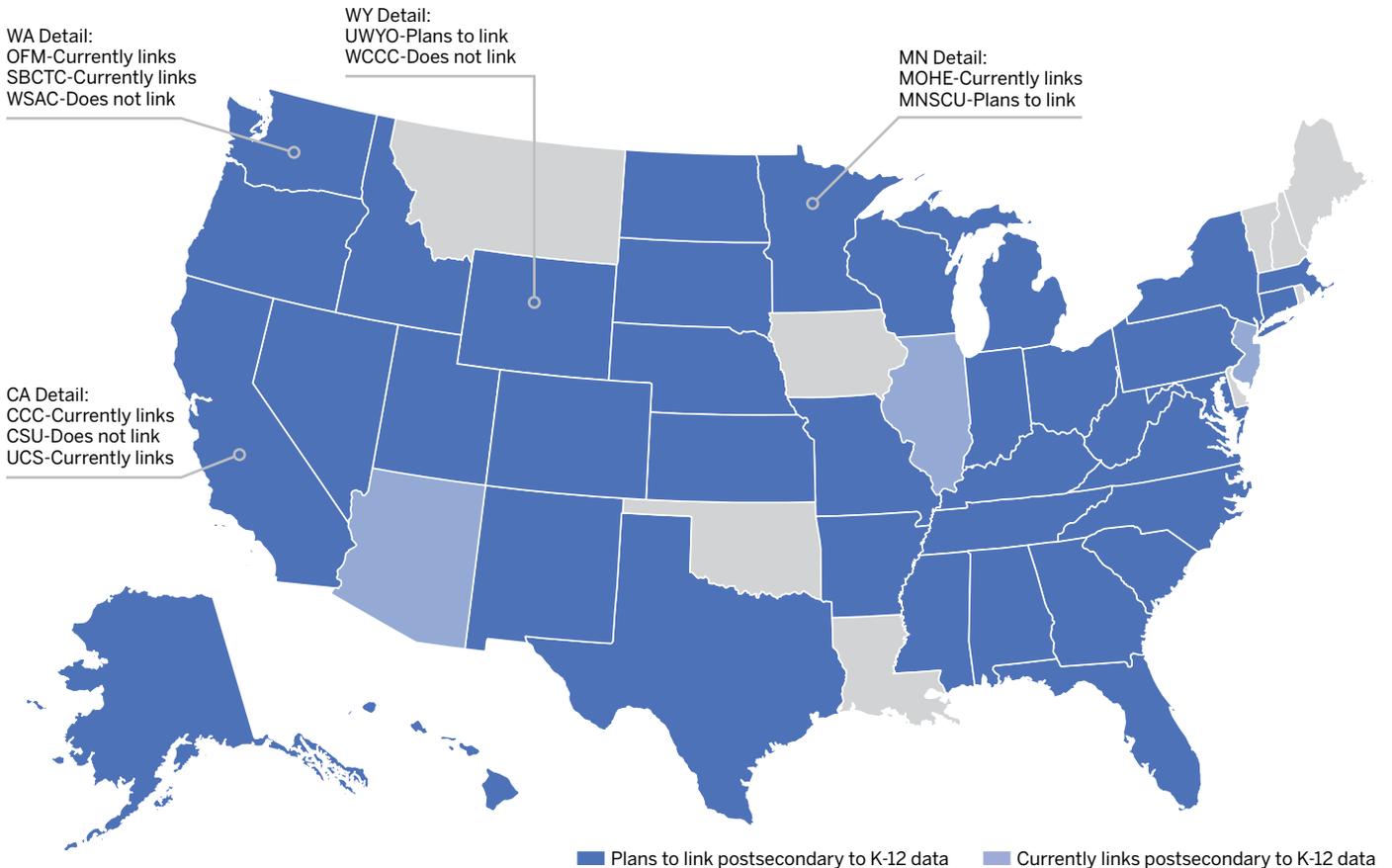
or to institutions that volunteer to submit data to the state postsecondary agency. This number is unchanged from 2010, despite indications in that survey that a few states intended to expand coverage. States that capture data from private institutions in their PSURS often need those data to determine financial aid allocations for state and federal grants. This is one incentive for private institutions to contribute to state PSURS. In addition, private institutions may, through the PSURS linking arrangements with other sectors, have access to additional information about their incoming students or workforce outcomes of their graduates when they participate in data collection.

Private institutions may not wish to contribute to these data systems out of concern that the primary intention of any unit record analysis is to compare institutions. States have an opportunity to expand their coverage of institutions by clearly communicating their intentions for the data to private institutions and articulating the benefits of analysis. While private

institutions may not have an incentive to contribute data to, for example, legislatively mandated reports that compare institutions, an analysis of workforce outcomes of their graduates may give them critical information about their graduates, to which they would not normally have access.

Despite gaps in institutional coverage in many states, the types of data collected by most PSURS have expanded beyond simple "snapshot" measures of students to include longitudinal measures (e.g., graduation rates and cumulative debt) course-level data, financial aid information, and transcript information, among others. **Appendix A** lists the agencies surveyed in the 2016 update to *Strong Foundations* in the context of the Postsecondary Data Metrics Framework recently developed by the Institute for Higher Education Policy and the Bill & Melinda Gates Foundation. See this appendix for examples of which agencies are collecting key elements that can be used to calculate these metrics.

**FIGURE 1: 47 AGENCIES IN 42 STATES CURRENTLY LINK OR PLAN TO LINK POSTSECONDARY TO WORKFORCE DATA**

WA Detail:
OFM-Currently links
SBCTC-Currently links
WSAC-Does not link

WY Detail:
UWYO-Plans to link
WCCC-Does not link

NY Detail:
CUNY-Currently links
SUNY-Plans to link
NYSED-Plans to link

CA Detail:
CCC-Currently links
CSU-Does not link
UCS-Currently links

FL Detail:
BOG-Plans to link
DOE-Currently links

■ Plans to link postsecondary to workforce data    ■ Currently links postsecondary to workforce data
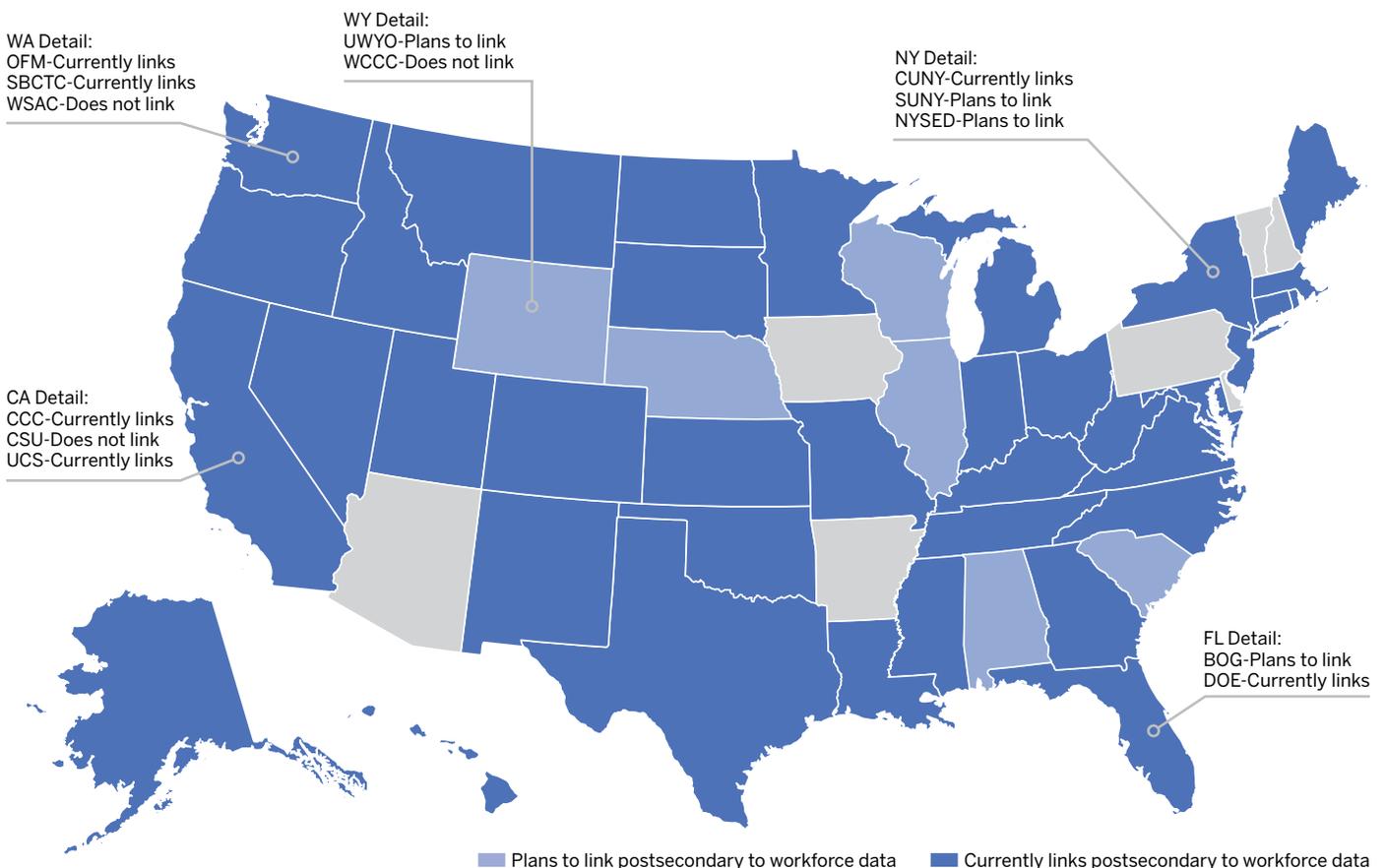
**TABLE 1: PSURS COVERAGE OF INSTITUTIONS**

| State | Two-Year Public | Four-Year Public | Independent (private, nonprofit) | Proprietary (private, for-profit) | Tribal | Other Institution Type | Total Number of Elements |
|---|---|---|---|---|---|---|---|
| MN, WA | • | • | • | • | • | | 5 |
| NJ, OH | • | • | • | • | | • | 5 |
| AR, SC | • | • | • | | | • | 4 |
| MA, TN, TX | • | • | • | • | | | 4 |
| NM | • | • | • | | • | | 4 |
| AL, CO, CT | • | • | • | | | | 3 |
| FL | • | • | | | | • | 3 |
| IL | | • | • | • | | | 3 |
| KY, MD, OK, VA | • | • | • | | | | 3 |
| AK, AZ, CA, HI, ID, IN, KS, LA, MO, MT, NE, NV, NH, NY, NC, ND, RI, UT, VT, WV, WI, WY | • | • | | • | | | 3 |
| PA | • | | | | | • | 2 |
| GA, ME, MS, OR, SD | | • | | | | | 1 |

those are mandated by state law to do so. Several states have developed interactive dashboards that allow students and families to examine employment outcomes for particular programs and institutions.

> **North Carolina's** Tool for Workforce and Education Reporting (http://nctower.com) and **Washington's** Earnings Report and Earnings Dashboard (http://www.erdcdata.wa.gov/esm.aspx) include useful synopses of the caveats surrounding use of these data. In **California**, earnings information for community colleges graduates is available via the College Wage Tracker (http://datamart.cccco.edu/Outcomes/College_Wage_Tracker.aspx).

## Examples of Best Practices and Effective Use of State PSURS

### Workforce Outcomes Analysis

As college prices and student debt levels have risen, students and families have become increasingly concerned about the potential return on investment from a college degree. State and federal policymakers have sought to measure returns on the significant public investment in higher education.

Data matches between state PSURS and workforce data systems are widely used to assess employment outcomes of postsecondary graduates. Most often, this data match involves linking the postsecondary unit record data to UI records, collected by the state workforce agency. These matches allow states to analyze the relationship between postsecondary measures and such workforce measures as employment status, wages, and employment location, among others. While wage projections by degree level are available from federal workforce data sources, such as the Bureau of Labor Statistics, this additional match allows for institution-level and program-level analysis of specific populations of students. Thirty-four agencies currently use their PSURS matches for this purpose, and half of

### Performance Funding

In the context of constrained financial resources for postsecondary education and a growing emphasis by policymakers on student progression and completion rates, many states are adopting performance (or outcomes) funding models. Twenty-six agencies that responded to the *Strong Foundations 2016* survey indicated their states use a performance formula to allocate funds to postsecondary institutions. Of these, a large majority (20 agencies) use their PSURS to support this effort.[19]

> In **Tennessee**, measures of student progress and completion, including credit hour accumulation, transfer, graduation rates, and number of degrees conferred, are included in the formula. The model is also differentiated by institution type; there are separate benchmarks and metrics for public two-year and four-year institutions. Extra weight is applied to outcomes data for selected subpopulations, including adult students, low-income students, and community college students who are determined to be underprepared for college-level work. Tennessee sees the success of these students as vital to the achievement of state goals and applies a premium for progression and completion for these students.

### Transcript-Level Information

When state PSURS have access to transcript detail from students' K–12 records, postsecondary records, or both, researchers can analyze the effect of particular classes on a student's progression through the educational pipeline. Course-level information allows postsecondary agencies to analyze student progress in "gateway"[20] courses and conduct completion analyses by program or major. Additional uses for transcript-level information include degree auditing and analyses of student grades by class type.

In **Massachusetts**, the Department of Higher Education has used the data collected from institutions for submission to CCA (through its PSURS) to inform its policy recommendations to improve math outcomes at its community colleges. An analysis of remedial course enrollment and outcomes for students who did not take math their senior year led to a recommendation to the legislature to require four years of math in high school.[21]

The University of **North Carolina** conferred an additional 1,459[22] certificates or associate's degrees through its analysis of transcript-level information for transfer students. These analyses often encourage campus systems to adopt common course numberings and improve their articulation agreements between individual institutions, with the aim of producing better transfer outcomes for their students.

## National Reporting

State data systems have also been instrumental in enabling national-level data collections designed to improve outcomes for multiple stakeholders. In the early 1990s, when there were federal calls for new accountability measures—in particular, a standard graduation rate approach—the state data systems provided a starting point for constructing these measures and understanding the challenges associated with reporting them. Today, many states and systems use their PSURS to submit data to IPEDS on behalf of institutions or to verify institutionally submitted data; 33 of the 59 agencies surveyed in *Strong Foundations 2016* verified or submitted data to IPEDS. In addition to IPEDS, state PSURS coordinate institutional responses to other federal data collections, such as federal student aid databases, cohort default rates, and gainful employment.

State unit record systems have also supported multiple national initiatives designed to systemically transform higher education through the use of data. The first of these initiatives, Achieving the Dream, began in 2004 and partnered not only with institutions but also with states to ensure a commitment to improving completion outcomes primarily for community college students. In fall 2007, the Education Trust and the National Association of System Heads launched Access to Success, a national initiative aimed at increasing access and success for underrepresented minorities and low-income students, working with state public higher education systems.

Finally, in 2009, the National Governors Association and CCA released the Common Completion Metrics, a set of measures designed to allow policymakers to track and examine both student success and student progress across an individual state's higher education system. Each of these initiatives engaged multiple states in looking at data from a state perspective to improve student outcomes in specific ways. All of them challenged states to use data from their state unit record data systems to report metrics at the state level.

These are certainly not the only initiatives in the field; in fact, the Institute for Higher Education Policy has identified 16 voluntary metrics initiatives, of which about a third collect data at the state level.[23] All of these initiatives focus on creating a common set of metrics designed to help improve higher education in specific ways. They also provide national data that allow us to look at higher education from a state lens and help them better understand the challenges faced by postsecondary education systems. In addition to providing a way to focus analysis and a mechanism for using data, these nationwide data collections have sometimes served as a way for states to expand their data systems. For example, when CCA began collecting data on remedial education outcomes and Pell students, many states did not have these elements in their system, but CCA gave them an impetus for expanding the systems to include these elements. Without developed PSURS, these metrics initiatives would not be possible; however, without these external initiatives, PSURS may not have developed their present level of utility.

## Improving State PSURS Through Strategic Planning

While the expansion of data elements collected allows for many different types of analysis, the sheer volume of data collected in these systems requires careful consideration of which research to prioritize. The average state PSURS in surveyed in *Strong Foundations 2016* collected 36 of the 55 data elements surveyed at the unit record level. Combine these data elements with the thousands of students attending public institutions in a state, and the number of data points quickly grows into the millions. In order to make sense of this large amount of data, agency leadership should be involved in determining priorities for research in conjunction with PSURS administrators. In addition, state agencies must closely coordinate with institutional research staff to ensure that collection for institutions will be as accurate as possible without creating undue burdens.[24] Master plans and other strategic initiatives present an opportunity to prioritize which data are critical to the state, and PSURS often collect such data elements.

An example of a state where PSURS analysis is critical to the state strategic plan is **Texas**. Texas just ended its 15-year strategic plan, adopted in 2000, entitled *Closing the Gaps*. The Texas Higher Education Coordinating Board's PSURS was integral to measuring progress on the goals articulated in this plan. *Closing the Gaps* included specific access and completions targets for subpopulations of students, including African Americans and the state's growing Hispanic population. In 2015, Texas launched its new strategic plan *60x30 TX*, which aspires to have 60 percent of Texas residents possessing a postsecondary credential by 2030. This new plan requires the PSURS to break down the projected needed credentials for the state into completions by ethnicity, gender, and economic disadvantage. A notable goal in this plan is that all graduates

in Texas will complete programs with demonstrated "marketable skills." The coordinating board is in the process of defining these marketable skills and, in consultation with institutions across the state, determining how to assess progress toward this new goal. Leadership in the state anticipates this new information will lead to curricular reforms intended to give students a more marketable education. Additionally, the strategic plan aims to have student loan debt not exceed 60 percent of the first-year wages for all graduates of Texas public institutions. The PSURS must develop means and measures for tracking the information needed to assess progress toward these goals.

By tying state PSURS metrics to strategic goals, Texas demonstrates that regularly engaging policymakers and reporting key metrics can ensure that postsecondary unit record data are put to use, with specific goals to improve student outcomes.

### Barriers Inhibiting Effective Use of PSURS

Despite variations in the capabilities of PSURS across the country, and their ability to link with other sectors varies both in terms of scope and method, federal policy can assist PSURS' capacity to add value to state-level reporting. Additionally, these policies can help to expand the data elements collected and ensure effective use of unit record data in the states. Through assistance from the federal government, some of the following barriers to effective use of postsecondary student unit record data can be mitigated.

**Lack of Resources**

The 2016 *Strong Foundations* report asked respondents to provide details about barriers to using PSURS and creating linkages with PSURS. The results show that in both cases resources are the primary barrier, with 34 of 59 respondents identifying their absence as the greatest obstacle to linking PSURS. This finding is consistent with prior literature from the National Center for Higher Education Management Systems and SHEEO; all include resources as a top barrier. Resources can refer both to technical infrastructure and to staff capacity to analyze data. Both are necessary to ensure an active PSURS. The average state has received over $13 million in federal SLDS grant funding,[25] which may pay for either data infrastructure and information technology support, or policy analysis staff at the secondary and postsecondary level. Some states have secured additional state funding to maintain these longitudinal data systems after federal dollars expire.[26] However, one respondent to the *Strong Foundations 2016* survey mentioned that the SLDS program was "non-functioning," implying a lack of action in the SLDS after grant funding expired.

The true cost of each state-level postsecondary data system is unknown and is an opportunity for future research.

The challenge in determining the cost of data systems stems from significant variation in the structure of these systems and how state agencies staff the collection, maintaining and reporting tasks that these systems provide. Nonetheless, consequences for a disinvestment of these data systems would have far-reaching effects. Where federal and state investments have expanded data collection capacities and linkages, a loss of funding for these data initiatives would often result in an inability to answer key questions about student progress and completion through postsecondary education. National initiatives, such as the Bill & Melinda Gates Foundations' Postsecondary Metrics Framework, highlight progress on improving student outcomes and crafting policies based on using better data. Disinvestment of state PSURS would seriously slow the progress toward goals set forth in the framework. Securing funding for these efforts in an era of constrained fiscal resources is challenging for many states; thus, data producers and consumers at institutional, state, and federal levels must effectively communicate how these data allow researchers and analysts to answer critical questions and assess the impact of state and federal policies. State constituents of PSURS should communicate with the federal government how changes in data governance could positively impact students in their state.

**Ensuring Both Data Privacy and Meaningful Analysis**

Perceptions about the Family Educational Rights and Privacy Act (FERPA) and a lack of a common identifier between state data systems are the next most cited barriers to linking PSURS with other databases, with both being mentioned by more than 25 respondents in the *Strong Foundations* survey. Addressing privacy related to education data is particularly challenging, because there is significant variation in privacy laws across both sectors and states. To better support the success of the SLDS program, ED's Privacy Technical Assistance Center (PTAC) has become a one-stop resource for states as they grapple with ways to both address privacy and encourage linking data to improve information on education outcomes.[27] Additionally, the Data Quality Campaign has developed an infographic designed to assist researchers who have questions about when personally identifiable information (PII) may be shared under federal law.[28]

Despite the presence of these helpful resources, some states have considered legislation that would practically shut down data sharing or use of unit record data for analysis.[29] This kind of legislation has become more prevalent as data privacy becomes a salient topic among the general public. Resources and political sensitivities to student privacy present real challenges to researchers and policymakers when collecting data for analysis. However, by articulating the benefits of longitudinal research, agencies can assure concerned audiences that this kind of research is safe and produces tangible ben-

efit. This research—which is never done to assess individual students, but rather cohorts of students—can be done while keeping PII secure. Collection of unit record data allows for analysis of program interventions, the effect of policies on subpopulations of students, and rigorous statistical analysis of how various data inputs affect student progress and completion through all levels of education and into the workforce.[30] While demonstrating the value of unit record analysis is crucial, states can also take steps to ensure data security and inform legislators of these efforts.

**Lack of Data Elements and Data Quality Concerns**
A number of survey respondents also identified data quality and data limitations as a key barrier for using state data systems. Quality has multiple dimensions; it is important to ensure the data coming into the system are accurate, but existing data, even when accurate, cannot always answer the questions. Gaps in data elements exist for many states; for example, few state systems house any information related to how much college costs individual students.[31] Some of these questions can be answered by pairing state data with national data collections like IPEDS or recent data released from Federal Student Aid (FSA) as part of the College Scorecard. In particular, as states continue to partner with workforce systems, there are limitations to the data available in those systems to fully understand student employment.[32] While national datasets are able to fill in some gaps in data element coverage for states, state legislators often rely on PSURS to expand data collection for new and pertinent topics. PSURS often adapt to the demand for new data elements much more quickly than the federal government does.

Many responses to the 2016 survey also mention the challenges of turning data into information and creating a system that enables information sharing. As the questions asked of PSURS become more complex, the need for skilled researchers and analysts to who can answer them is increasing. As noted by Randy Swing in *Institutional Research Capacity: Foundations of Federal Data Quality*,[24] well-trained and staffed IR departments are necessary to ensure that data remains accurate and usable while collection and reporting efforts expand. Addressing complex research requires state agencies collaborate with institutional and federal partners as well as devoting staffing and structural resources to ensure that critical information is successfully generated and appropriately analyzed and interpreted.

## Recommendations
PSURS, SLDSs, and P-20W initiatives enable unique longitudinal analyses that critically address a variety of issues across the educational pipeline. However, as mentioned earlier, some agencies are struggling to maintain the necessary resources to allow for effective utilization. Many of the examples outlined in this paper demonstrate the unique analyses and research that PSURS make possible. If all of these systems are to continue to innovate and improve on assessing student outcomes longitudinally, key stakeholders must understand the value of this research. The following recommendations for state and federal policymakers stem from ideal solutions to some of the barriers previously mentioned, and from best practices in the field of state level unit record data. Adoption of these best practices would increase the exposure of reporting from these data systems, allowing stakeholders to see the demonstrated value of unit record analysis.

## Recommendations for State Policymakers
1. **Invest in state PSURS while adopting best practices from other data systems nationwide.** Given state PSURS' ability to quickly respond to unique, statewide policy needs for improving student outcomes, states should view these data systems as essential tools. State PSURS' ability to collect data elements not available in federal datasets and to present information on a statewide basis—often while linking with data from other sectors—means that states are uniquely positioned to provide critical analysis of postsecondary students and the impact of higher education policies.

   A number of national organizations, including the Institute for Higher Education Policy, the Data Quality Campaign, and SHEEO, among others, regularly convene data experts and practitioners in conferences and meetings designed to improve data capacity and use. These organizations often refer data administrators to colleagues in other states who have solved key data challenges and implemented their systems effectively. Best practices and key examples of new analyses should serve as a model for other data systems to emulate as they continue to develop.

2. **Involve the PSURS in the agency's strategic plan for higher education.** Strategic plans constitute the key mechanisms for higher education agencies to articulate their priorities and goals for the state. Progress on key metrics for higher education—most commonly enrollment, completions, and workforce outcomes—is a way for public stakeholders to consistently see the PSURS being put to strategic use. **Texas** requires a yearly progress report on its strategic plan, and metrics aggregated by the PSURS feature prominently. When states consider a metric that requires the collection of new data elements, PSURS staff should consult with data providers before the metric is articulated in order to ensure that progress can be consistently measured statewide.

3. **Involve the leadership of multiple sectors when governing longitudinal data systems.** When multiple agencies are stakeholders for data and reporting, the need for collaboration and a shared set of priorities is paramount. PTAC created a set of best practices for use when drafting written agreements

between education agencies to share data.[33] They include agreeing on limitations of use of PII, reviewing and approving reported results, and informing the public about written agreements. In **Washington**, the Education Research Data Center develops a large list of potential research questions, with all member agencies contributing to the queue. From there, all stakeholders prioritize which of the potential questions will merit time and resources. The result is a process where multiple stakeholders with many different interests can articulate cross-agency research priorities.

4. **Use external reporting efforts to articulate research priorities and increase the utility of these systems.** In their 1991 paper, Peter Ewell and Dennis Jones wrote, "Experience with past accountability reporting has amply demonstrated that state and national requirements to a large extent shape institutional capacity to produce locally useful management information."[5] In the modern data environment, external pressure—be it from the federal government or from national advocacy groups—have shaped state capacity to collect and produce certain information. For example, before the call from CCA to collect data on remedial success and completion and outcomes for Pell students, many states did not collect these data from their institutions. Now, the vast majority of CCA states collect and house such data in their PSURS. States should continue to use efforts from the larger data environment to inform and drive the development of their individual state systems.

5. **Continue to expand the use of these data systems.** A tremendous investment has gone into developing state data systems and longitudinal data systems. When states use these unit record systems to advocate for policies or to discover critical facts about student behavior, they should highlight these findings, credit their staff's work, and communicate the need for quality data. States that use their unit record data for critical research and policy analysis make a stronger case for expansion of data elements and staff capacity. Critical questions about college costs, student debt, remedial education, and workforce outcomes, among others will continue to be asked of PSURS; yet, the capabilities of these systems to answer these questions vary. When PSURS successfully generate information on new topics of import, their success should serve as a model for other states to emulate. For example, in South Dakota, an analysis of student migration patterns led to changes in out-of-state tuition policy. When out-of-state tuition rates were lowered, **South Dakota** shifted from a net exporter of students to colleges and universities in other states to a net importer. Many states are now looking at statewide outcomes and outcomes for students across the higher education sector—something that could not be done without state-level unit record systems.

6. **Proactively address privacy concerns.** Attention to the privacy of student data has grown in recent years,[34] as have the mechanisms to address these concerns. While some state efforts to analyze students across sectors have been circumscribed by state legislation, there are examples of states that have proactively addressed proposed legislation by communicating methods used to safeguard student data.[35] **Virginia** released an animation online that explains how student data are, and are not, used in addition to methods employed to protect confidentiality.[36] **Arkansas** has articulated to its legislature how the P-20W Initiative uses a secure multiparty computation method while matching records across sectors to maintain anonymity of student records. States that develop and communicate safeguards to student privacy are better equipped to fend off any legislation that could prevent longitudinal research. FERPA protections already ensure that states must not release PII, but additional outreach to policymakers protects against legislation that prevents meaningful educational research.

**Recommendations for Federal Policymakers**

1. **Continue to fund SLDSs while shifting the focus of SLDS and WDQI to outcomes rather than infrastructure.** Lack of resources and retaining capable staff remain challenges for many administrators of state data systems, but federal grants have been instrumental in expanding the capabilities and uses of postsecondary data. The underlying commitment of the SLDS program is to see states creating longitudinal databases that allow them to better understand student progress across all components of the education pipeline. Yet, the grants currently focus on what the systems look like rather than what they can do. Linkages provide little value if those linkages don't result in robust analysis and understanding of the key questions we need to answer about a state's or our nation's education sector and the success of our students. Evaluation of these federal grants should focus on the outcomes produced by these systems and their likelihood of sustainable, meaningful research—instead of solely on their design. These outcomes must be relevant to primary, secondary, postsecondary, and workforce sectors for the vision of using longitudinal data to advance student success. Such direction makes it more likely for states to continue to use these systems to advance students' success after federal grant dollars expire.

2. **Allow PSURS access to federal datasets to improve matching.** Access to labor market information about graduates and financial aid data elements varies between the states. Often, UI records are the means that states use to determine the earnings outcomes of graduates. However, data elements collected by other federal agencies would allow more complete understanding of students' workforce outcomes. For example, most wage records matches in

states exclude federal and self-employed workers as well as students who migrate across state lines; data quality would be improved if these linkages were made with the more comprehensive Internal Revenue Service (IRS) and Social Security Administration datasets. Another, less complete option is greater access to the Longitudinal Employer Household Dynamics survey. Additionally, allowing a link to federal student aid databases would give researchers the ability to assess the impact of federal aid and family income on postsecondary outcomes.

3. **Federal datasets should better enable state-level analysis.** IPEDS used to have a state data center available to researchers, but this functionality is no longer maintained by ED. Currently, researchers must aggregate institutional-level data to present them at the state level. This has led to significant variation due to differences in methods used. Other NCES surveys, such as NPSAS, have previously over-sampled states; future oversampling could provide critical information, such as student cumulative debt, that is often not present in state-level datasets. New federal datasets such as the College Scorecard also don't provide information for state-level analysis. While current federal data systems effectively allow for comparison of institutions, ED has an opportunity to better present the data currently collected in state contexts, by using a common methodology. This would permit easier access to and more consistent quality of the information.

4. **Use lessons from recent PSURS improvements if developing a federal unit record system.** A federal student unit record system would present a variety of advantages to researchers and policymakers at the institutional, state, and federal levels. However, the presence of such a system would not negate the need for states to pursue their own strategic priorities. PSURS are diverse and varied across the nation, in part, because each state has differing needs for them. As state policymakers pursue higher education goals that will inevitably vary across states, these PSURS are well positioned to adapt and allow research of new educational questions. SHEEO's past two surveys of PSURS show clearly that PSURS have changed and adapted to new policy needs in the past decade. We urge ED to consult states in the development of any future federal system. This would allow ED to build on the decades of state work spent expanding the capabilities of unit record data.

## Conclusion

In the *Strong Foundations 2016* survey, respondents were asked when their unit record systems first were established; responses ranged from 1972 to 2015. Many of these data systems have been collecting important postsecondary information for more than 40 years. In 2016, the higher education data landscape is on the cusp of major change as more demands are made of data systems at the federal, state, and institutional levels. States have an opportunity to improve the data landscape by advocating for improving federal datasets such as IPEDS and linking to IRS and Social Security Administration records to improve workforce outcomes analysis. States also contribute to many federal systems and use federal datasets for research. At the same time, the key to ensuring the sustainability of PSURS is to highlight the unique roles that they fulfill in improving state higher education policy and the success of students in each state. Above all, the goal of these PSURS is to improve outcomes for postsecondary students through careful research and analysis of unit record data.

## APPENDIX A: COMMON METRICS COLLECTED BY STATES[37]

| State Agency | Enrollment | Credit Accumulation | Credit Completion Ratio | Gateway Course Completion | Retention Rate/Persistence Rate | Transfer Rate | Graduation Rate | Completers/Completions per Student | Net Price | Cumulative Debt | Employment Rate/Median Earnings/Earnings Threshold | Loan Repayment | Time to Credential | Credits to Credential | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alabama | • | • | • | | • | • | | • | | | | | | | 6 |
| Alaska | • | • | • | • | • | • | • | • | • | • | • | • | • | | 13 |
| Arizona | • | • | • | | | • | | • | | | | | | | 5 |
| Arkansas | • | • | • | • | • | • | • | • | | | | | • | • | 10 |
| California CCs | • | • | • | | • | • | | • | | | • | | | | 7 |
| California CSU | • | • | • | | • | • | | • | | | • | | | | 7 |
| California UC | • | • | • | | • | • | • | • | • | • | • | | | | 10 |
| Colorado | • | • | • | | • | • | • | • | | | • | | • | • | 10 |
| Connecticut | • | • | • | • | • | • | • | • | | | • | | • | • | 11 |
| Florida | • | | | | • | • | | • | | | • | | | | 5 |
| Georgia | • | • | • | • | • | • | • | • | | • | • | | • | • | 12 |
| Hawai'i | • | • | • | • | • | • | • | • | • | • | • | | • | • | 13 |
| Idaho | • | • | • | • | • | • | • | • | | | • | | • | • | 11 |
| Illinois | • | • | • | | • | • | • | • | | | | | • | • | 9 |
| Indiana | • | • | • | • | • | • | • | • | | • | • | | • | • | 12 |
| Kansas | • | • | • | | • | • | | • | | | • | | | | 7 |
| Kentucky | • | • | • | • | • | • | • | • | | | • | | • | • | 11 |
| Louisiana | • | • | • | • | • | • | • | • | | | • | | • | | 10 |
| Maine | • | • | • | • | • | • | • | • | | • | | • | • | • | 12 |
| Maryland | • | • | • | • | • | • | • | • | | | • | | • | • | 11 |
| Massachusetts | • | • | • | • | • | • | • | • | | | • | | • | • | 11 |
| Minnesota MNSCU | • | • | • | | • | • | • | • | • | • | • | | | | 10 |
| Minnesota MOHE | • | • | | | • | • | • | • | | | • | | | • | 8 |
| Mississippi | • | • | • | • | • | • | • | • | | | | | • | • | 10 |
| Missouri | • | • | • | • | • | • | • | • | | | • | | • | • | 11 |
| Montana | • | • | • | | • | • | • | • | | | • | | • | • | 10 |
| Nebraska | • | • | • | | • | • | | • | | | | | • | • | 8 |
| Nevada | • | • | • | | • | • | • | • | | | • | | | | 8 |
| New Hampshire | • | | | | | | | | | | | | | | 1 |
| New Jersey | • | • | | | • | • | • | | | | | | | | 5 |
| New Mexico | • | • | • | • | • | • | • | • | | | • | | • | • | 11 |
| New York CUNY | • | • | • | • | • | • | • | • | | | • | | • | • | 11 |
| New York NYSED | • | | | | • | | | • | | | | | | | 3 |
| New York SUNY | • | • | • | | • | • | | • | | | | | | • | 7 |
| North Carolina CC | • | • | • | • | • | • | • | • | | | • | | | | 9 |
| North Carolina UNC | • | • | • | | • | • | • | • | | | • | | • | • | 10 |
| North Dakota | • | • | • | | • | • | | • | • | | | | | | 7 |
| Ohio | • | • | • | • | • | • | • | • | | | • | | • | • | 11 |
| Oklahoma | • | • | • | • | • | • | • | • | | | • | | • | • | 11 |
| Oregon | • | • | • | • | • | • | | • | | | • | | | | 8 |
| Pennsylvania | • | • | • | | • | • | | • | | | | | | | 6 |
| Rhode Island | • | • | • | | • | • | | • | | | • | | | | 7 |
| South Carolina | • | • | • | | • | • | | • | | | | | | | 6 |
| South Dakota | • | • | • | • | • | • | • | • | | | • | | • | • | 11 |
| Tennessee | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 14 |
| Texas | • | • | • | • | • | • | • | • | | | • | | • | • | 11 |
| Utah | • | • | • | • | • | • | • | • | | | • | | • | • | 11 |
| Vermont State Colleges | • | • | • | • | • | • | • | • | | | | | | | 8 |
| Vermont University | • | • | • | | • | | • | • | | | | | • | • | 8 |
| Virginia | • | | • | | • | • | • | • | • | • | • | | • | • | 11 |
| Washington WSAC | • | | | | • | | | • | | | • | | | | 4 |
| Washington OFM | • | • | • | | • | • | • | • | | | • | | • | • | 10 |
| Washington SBCTC | • | • | • | • | • | • | • | • | | | • | | | | 9 |
| West Virginia | • | • | • | • | • | • | • | • | | • | • | | • | • | 12 |
| Wisconsin | • | • | • | | • | • | • | • | • | • | • | | • | • | 12 |
| Wyoming CC | • | • | • | • | • | • | • | • | | | | | | | 8 |
| Wyoming UWYO | • | • | • | • | • | • | • | • | | • | | • | • | • | 12 |
| Total | 57 | 52 | 51 | 32 | 55 | 52 | 41 | 54 | 8 | 12 | 38 | 4 | 33 | 34 | 57 |

## Endnotes

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