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EMPLOYING POSTSECONDARY DATA FOR EFFECTIVE STATE FINANCE POLICYMAKING

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Introduction

Each year, more states are adopting policies to incent and support improvements in postsecondary student success and equitable outcomes through the effective use of quality data. Particularly as the target dates for national higher education attainment goals grow nearer, state economies are in need of more college-educated workers, and budgets continue to be severely constrained, many state leaders are recognizing the need to improve the productivity, completion efficiency and equity of their higher education systems. Moreover, in an era of increasing college costs, states have an obligation to provide demonstrable value to both the students and the taxpayers who invest large sums in higher education each year. The stakes are simply too high—for students, families, taxpayers and legislatures—for states to continue business as usual. Rather, they must develop data-driven policies for effectively funding and operating their higher education systems, in particular by shifting the focus from enrollment counts to quality and to equitable educational outcomes.

Outcomes-based higher education funding structures have gained popularity in recent years as a means for achieving the goal of linking public investment in our colleges and universities to the social and economic benefits that states reap with an educated citizenry. Faced with fiscal constraints of late, many states have sought to link higher education appropriations to specific institutional outcomes, a shift from budgeting these funds based solely on input measures such as enrollments or on historical base funding allotments. These outcomes-based models represent an evolution of performance-based funding models with a more exclusive focus on student progression and completion and financial alignment to state attainment needs.[1]

Even states that choose not to implement outcomes-based funding stand to benefit from a stronger understanding of data systems and the ways that states can use data to inform decision making more broadly. Compiling information from 31 states,[2] this brief evaluates the measures and metrics commonly used in outcomes-based funding systems, identifies a core set of measures and metrics that can help state leaders assess the performance of their higher education system, evaluates data availability and catalogues useful data sources. The paper is guided by three key questions:

1. What **QUESTIONS** do state policymakers need to answer to assess whether their higher education system is on track to increase degree attainment, particularly for underserved students?

[1] "Performance funding" refers to a broad set of policies linking allocation of resources to accomplishment of certain desired objectives. Historically, postsecondary performance funding models were often add-ons or bonuses to base institutional allocations that institutions earned for meeting various goals or benchmarks. Additionally, many of these earlier models included measures focused more on inputs or processes than student progression and outcomes and were not intended to drive increased student completion. Today's outcomes-based funding models similarly seek to motivate and reward progress toward a set of stated goals, but have a direct link to the state's higher-education attainment needs and place primary emphasis on student completion and on narrowing attainment gaps across racial, ethnic, and socioeconomic groups, though they often include measures beyond student progression and completion. Advanced outcomes-based funding models also determine how a significant portion of the state's general budget allocation to institutions is determined.

[2] This paper analyzes the 31 states that were included in a March 2014 analysis by Lauren Davies of HCM Strategists, titled "State 'Shared Responsibility' Policies for Improved Outcomes: Lessons Learned." That report examined states that had outcomes-based metrics on record and publicly available as of Fiscal Year 2014, whether or not the policies were fully implemented or funded. Since the release of that report, additional states have developed or are working to develop outcomes-based funding metrics.

2. What are the core **MEASURES** that state policymakers should consider to assess the performance of their higher education system, and where can they access the **DATA**?

3. How are state policymakers **USING** these metrics, particularly in the context of higher education funding decisions?

What QUESTIONS do state policymakers need to answer to assess whether their higher education system is on track to increase degree attainment, particularly for underserved students?

Amid growing concern about rising college costs, calls for improving degree completion and a realization that our nation simply must do a better job of enrolling and graduating historically underrepresented populations, state leaders are increasingly asking critical questions about the capacity, productivity and equity of their higher education institutions.

Foremost, state leaders must evaluate their baseline attainment levels and consider contextual factors to pinpoint state strengths, weaknesses and policy priorities. For example, states should ask questions about **STATE CHARACTERISTICS,** such as:

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- What are the historical and current levels of educational attainment in the state, particularly by critical demographics such as race/ethnicity, income and age?
- What are the projected attainment needs of the state based on economic development and the aging of the population?
- What are the priority fields of study and types of credentials needed to support the state economy?
- What are the demographic characteristics of potential college students in the education pipeline?

By doing so, policymakers can determine where gaps exist between educational supply and workforce demand, how the state fares when compared with other states and the nation, and which students need the most intense policy focus to enhance educational equity.

Secondly, state leaders must more directly gauge the performance of higher education institutions within the state. While varying to an extent across state contexts, most policymakers are centrally concerned with questions related to **ACCESS, COMPLETION, COST,** and **POST-COLLEGE OUTCOMES,** including but not limited to:

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ACCESS: Which students have access to which programs and colleges in the state?

- How many students are enrolling in the state's institutions today and over time?
- Where are students enrolling by type of program and institution in the state, and can the state's institutions meet the demand?
- Which students are enrolling in which institutions, and are any populations (e.g., low-income, Black, Hispanic/Latino, American Indian, Pacific Islander, first-generation students, adult learner, male, female) underrepresented in college enrollment in the state—overall or within specific sectors or institutions, such as the public flagship university?
- What percentage of students enrolling in the state's institutions requires remediation, and how do the rates differ between recent high school graduates and returning adults, and for specific student populations?
- What percentage of students enrolled in public institutions are state residents, and what proportion of students choose to attend out of state?

PROGRESSION AND COMPLETION: Are the state's students making timely progress toward and completing their college degrees?

- What proportion of students requiring remediation successfully completes these requirements? Completes first college-level courses? Earns credentials?
- What percentage of students attending community colleges transfers to four-year institutions in the state or elsewhere?
- What share of students completes degrees at the state's institutions or elsewhere, and are all students (e.g., low-income, Black, Hispanic/Latino, American Indian, Pacific Islander, first-generation students, adult learner, male, female) completing at the same rates?
- How many students earn degrees in the state each year, and in which fields of study? Are these conferred degrees aligned with the state's most critical needs in terms of industries and occupations?
- Are students in the state completing their degrees with excess credits (e.g., more than 60 credits for associate's degree or 120 for a bachelor's degree) or excess time-to-degree?

COST AND PRICE: How much do students and the state invest in college enrollment and completion?

- How much does the state contribute toward higher education overall and for instruction?
- How has the level of state appropriations changed over time and in relation to tuition paid by students?
- How much is the state spending in grant aid—and on which students?
- What is the net price of attendance for students at the state's institutions by income level?
- How much loan debt do students accrue in the state?
- How many credentials are earned in relation to the resources invested by students and the state?

OUTCOMES: Are students faring well after college, and are they adequately prepared to meet the state's workforce needs?

- What share of students finds employment after graduation?
- Are students who leave the state's institutions earning enough to repay their student loans?
- Are graduates working in industries that meet the state's most critical needs?
- Are graduates staying in state after earning their degrees?

What are the core MEASURES that state policymakers should consider to assess the performance of their higher education system, and where can they access the DATA?

Although many of these may seem like straightforward questions to which state policymakers should already have the answers—or at least the data readily available to develop answers—the reality is that many—perhaps most—states cannot answer these questions. In recent years, a number of voluntary data initiatives such as Complete College America,[3] the National Governors Association Higher Education Effectiveness and Efficiency Metrics Learning Lab,[4] and the Voluntary Institutional Metrics Project[5] have supplemented federally funded efforts to improve state data systems.[6] These initiatives aim to help policymakers fill crucial information gaps about the performance of their higher education institutions in producing more college graduates and more equitable postsecondary outcomes to better meet the economic needs of their states. At the same time, states have been developing dashboards and outcomes-based funding systems that aim to employ data about institutional performance to guide policymaking, especially with respect to resource allocation. **Table 1** specifies core measures that many states are taking into consideration when evaluating the performance of their higher education institutions.

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Table 1 also assesses data availability in federal and national datasets, voluntary data initiatives and institutional data sets, and offers a recommended data source for each measure. All measures coded in green are readily available and are disaggregated in ways that enable meaningful comparisons between key populations of interest (e.g., race, income level, age). Other measures are not readily

[3]See http://completecollege.org/

[4]See http://www.nga.org/cms/home/nga-center-for-best-practices/meeting--webcast-materials/page-edu-meetings-webcasts/col2-content/main-content-list/higher-education-effectiveness-a.html

[5]See http://hcmstrategists.com/analysis/voluntary-institutional-metrics-project/

[6]See http://nces.ed.gov/programs/slds/

available with this necessary level of detail, but could be with either minor (coded in yellow) or major (coded in orange) adjustments to existing data collection practices or expansion to more states. The final group of measures coded in red does not appear to be currently available on a broad scale.[7] This snapshot of data availability at the state level shows that all **ACCESS, COMPLETION,** and **COST** measures are available in at least one existing dataset, whereas **OUTCOMES** measures are more challenging to obtain. However, in order for state leaders to compile a complete set of measures, they likely will have to use multiple federal/national, state and institutional data sources. States can use this list to evaluate the extent to which their state longitudinal data system includes these core measures, to implement plans to incorporate data on missing measures into their longitudinal data system, and to consider whether to add or customize measures based on their context. For more information on state longitudinal data systems, see Sidebar 1.

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In addition to the measures in **Table 1,** some states and institutions collect data on process measures related to specific institutional functions, such as institutional research and academic advising. Process measures of this nature can be useful in informing state higher education policy if prior research clearly suggests which processes lead to target outputs and outcomes. However, the research base is not yet clear enough in higher education to link outcomes-based funding to these process measures. Furthermore, even when key processes are identified, results can vary heavily based on the quality of implementation, adding to the difficulty of including process measures in outcomes-based funding formulas effectively. However, while process measures may not be ready to be included in outcomes-based funding formulas, they can be useful in other ways, providing useful context to signal the importance of certain key practices. Additionally, limiting outcomes-based funding formulas to outcome/output indicators—and not process indicators—allows institutions more flexibility and opportunities for creativity in how they deliver the outcomes. A system with process measures could become prescriptive, as suggestions for improvement would be directly tied to specific institutional functions.

While the analysis in **Table 1** focuses on state-level data sources, states may want to consider evaluating their needs at a smaller geographic scale, such as the county or city level. Policymakers can evaluate variations in economic conditions, workforce statistics, and educational opportunities and attainment using data sources such as the Bureau of Labor Statistics' Local Area Unemployment Statistics, the Bureau of Economic Analysis, the Census Bureau's American Community Survey and the Integrated Postsecondary Education Data System (more commonly known as IPEDS).[i] Placing institutional performance within the local context is particularly important when understanding and serving the needs of traditionally underserved communities.

[7]Red measures may be available in some states' longitudinal data sets, but are not collected broadly in voluntary state-based postsecondary data initiatives.

Table 1. Core Student Access and Success Measures for State Policy Leaders

	Measures	Federal and National Data Sets[8]	State-Level Data Sets[9]	Institutional Data Sets[10]	Recommended Data Source (see Appendix A for acronym list)
STATE CHARACTERISTICS	State educational attainment rates	●	●	⬢	NCHEMS or Census
	State demographic profile	●	●	⬢	Census
	State income and employment profile	●	●	⬢	BLS
	State workforce needs	●	●	⬢	Projections Central
	Income inequality by race/ethnicity	●	⬢	⬢	Census
	Social mobility	●	⬢	⬢	Equality of Opportunity Project[11]
ACCESS Which students have access to which programs and institutions in the state?	Enrollment status (first-time, transfer)	●	●	●	IPEDS
	Attendance pattern (full-time, part-time)	●	●	●	IPEDS
	Degree/certificate-seeking status	▲	▲	▲	Institution
	Income or financial-aid category	▲	●	●	IPEDS for Pell; State Longitudinal Data System or Institution for more detail
	Race/ethnicity	●	●	●	IPEDS
	Major or program of study	■	▲	●	Institution
	Residency	●	●	●	IPEDS
	Gender	●	●	●	IPEDS
	Age	●	●	●	IPEDS
	Military status or benefits receipt	▲	■	▲	IPEDS (starting in 2014-15)
	Level of academic preparation	■	●	●	State Longitudinal Data System, Institution, or Voluntary Initiatives such as CCA
	High school attended	⬢	●	●	State Longitudinal Data System or Institution

● Available in data set with no modifications

▲ Requisite level of detail available with *minor* adjustments to existing data collection practices or expansion to more states

■ Requisite level of detail available with *major* adjustments to existing data collection practices or expansion to more states

⬢ Not currently available in data set on a broad scale

[8]Federal data sets included in this analysis include the Integrated Postsecondary Education Data System (IPEDS), the National Student Loan Data System (NSLDS) (if reported publicly on, for example, the College Scorecard), the U.S. Census Bureau and the Bureau of Labor Statistics (BLS). Also included is the National Student Clearinghouse (NSC), a non-profit organization that collects student-level data from more than 3,600 colleges and universities and makes these data available to member institutions and states.

[9]For state-level analysis, we relied primarily on the work of 15 voluntary data initiatives that collect data from participating institutions. See Appendix A for a full list and Appendix B for a summary of state participation in the initiatives. Note that most of these voluntary data initiatives collect data only from public institutions, and not all of the initiatives aggregate data at the state level. These ratings also are based on IHEP staff knowledge of state data systems. State leaders should consult their state data systems to confirm availability of data on the measures listed above.

[10]Institutional data sets include data that institutional research offices collect for their own internal use. Color-coding is based on IHEP staff knowledge of institutional data sets.

[11]The Equality of Opportunity Project reports data at the "commuting zone" level, which represents groups of counties based on commuting patterns. Aggregating the raw data for all commuting zones within a state will yield state-level data.

Table 1. Core Student Access and Success Measures for State Policy Leaders (continued)

	Measures	Federal and National Data Sets[8]	State-Level Data Sets[9]	Institutional Data Sets[10]	Recommended Data Source (see Appendix A for acronym list)
PROGRESSION AND COMPLETION **Are the state's students making timely progress toward and completing their college degrees?**	Retention rate (first-to-second year) and/or persistence rate (year-to-year and term-to-term beyond first-to-second year)	●	●	●	IPEDS (retention), State Longitudinal Data System, Institution, or Voluntary Initiative (persistence)
	Remedial course completion rate	⬢	●	●	State Longitudinal Data System, Institution, or Voluntary Initiative
	Gateway course completion rate[12]	⬢	●	●	State Longitudinal Data System, Institution, or Voluntary Initiative
	Credit accumulation[13]	⬢	●	●	State Longitudinal Data System, Institution, or Voluntary Initiative
	Course completion ratio	⬢	●	●	State Longitudinal Data System, Institution, or Voluntary Initiative
	Transfer-out rate	●	●	▲	NSC
	Still-enrolled rate (after 100, 150 and/or 200 percent of normal completion time)	●	●	●	NSC
	Graduation rate	●	●	●	NSC
	Time to degree	●	●	▲	NSC
	Credits to degree	⬢	●	●	State Longitudinal Data System, Institution, or Voluntary Initiative
	Credentials conferred, disaggregated by program/major	●	●	●	IPEDS
COST AND PRICE **How much do students and the state invest in college enrollment and completion?**	Student price (e.g. tuition and fees, cost of attendance, net price)	▲	▲	●	IPEDS
	Federal grant aid	●	●	●	FSA, IPEDS
	State grant aid	▲	●	●	State Longitudinal Data System, NASSGAP
	Institutional grant aid	▲	▲	●	IPEDS, Institution
	Net tuition revenue	●	●	●	IPEDS, SHEEO, Delta Cost Project
	State appropriations	●	●	●	IPEDS, State Longitudinal Data System, SHEEO
	Institutional expenditures by category	●	▲	●	IPEDS
	Student Debt	▲	■	▲	College Scorecard, College InSight

● Available in data set with no modifications

▲ Requisite level of detail available with *minor* adjustments to existing data collection practices or expansion to more states

■ Requisite level of detail available with *major* adjustments to existing data collection practices or expansion to more states

⬢ Not currently available in data set on a broad scale

[12]A gateway course is the first credit-bearing college course in English or math that applies to course requirements for a certificate or degree. States should consult with their institutions to determine which courses fall under this category.

[13]Credit accumulation should be measured at predetermined credit intervals such as 15, 30, 45 and/or 60 credits.

Table 1. Core Student Access and Success Measures for State Policy Leaders (continued)

	Measures	Federal and National Data Sets[8]	State-Level Data Sets[9]	Institutional Data Sets[10]	Recommended Data Source (see Appendix A for acronym list)
OUTCOMES **Are students faring well after college, and are they adequately prepared to meet the state's workforce needs?**	Employment rate	■	▲	■	State unemployment insurance records, College Scorecard
	Earnings/wages	■	▲	■	State unemployment insurance records, College Scorecard
	Loan repayment measures (e.g. repayment rate, default rate, debt-to-earnings)	▲	⬢	■	FSA (default rates), College Scorecard (repayment rates)
	Learning outcomes	⬢	■	▲	Institution
	Continuing education outcomes (e.g. licensure/certification, graduate school enrollment)	▲	▲	■	Institution, NSC

● Available in data set with no modifications
▲ Requisite level of detail available with *minor* adjustments to existing data collection practices or expansion to more states
■ Requisite level of detail available with *major* adjustments to existing data collection practices or expansion to more states
⬢ Not currently available in data set on a broad scale

In order to answer relevant policy questions, states must look at the core MEASURES in **Table 1**—such as completion rates and tuition charges—and convert them into METRICS, placing them into context in an actionable way. With metrics identified, states can then set targets to evaluate progress and performance. For instance, the number of degrees awarded in a particular year has little relevance on its own, but the change in the number of degrees awarded or the change in the number of degrees awarded to underrepresented minority students is far more telling for policy purposes. To contextualize the core measures within their state environment, policymakers can:

In order to answer relevant policy questions, states must look at the core MEASURES in Table 1—such as completion rates and tuition charges—and convert them into METRICS, placing them into context in an actionable way.

- Track the measures in relation to one another and over time;
- Measure gaps in performance or progress among target populations in the state, with a particular emphasis on improvements for low-income, first-generation, underrepresented-minority and adult students;
- Compare institutional performance or progress within and across states;
- Benchmark state performance or progress with peer states or with national averages; and
- Calculate return on investment for the state.

These contextualized metrics can help inform policymaking in a number of ways, including postsecondary finance policy. The following sections provide further detail on how data can be used in states through outcomes-based funding systems and other mechanisms.

Sidebar 1: Strengthening State Longitudinal Data Systems

State policymakers can and should rely on federal and national data sources when possible to facilitate benchmarking through cross-state comparisons. However, states also should strengthen the capacity of their own longitudinal data systems to allow policymakers and analysts to access more robust information to answer critical and context-specific policy questions. Since 2005, the federal Institute for Education Sciences has awarded grants to states to create longitudinal data systems that link student-level data collected from the early-learning years through entry into the workforce, a range known as the P-20W pipeline. Currently, 45 states are mandated by law or state policy to have such a system, though only 18 states' systems were assessed by the Data Quality Campaign as spanning the entire P-20W pipeline.[ii] Robust, secure longitudinal data systems can serve as states' strongest educational data assets in setting goals, measuring progress, designing policy and driving improvement. However, the comprehensiveness and utility of state data systems vary widely. To fully harness these systems' potential, states should consider the following key questions:[14]

- **MEASURES:** Does the state include all of the core measures in Table 1, and how can the state seek to add measures that are currently missing or incomplete? Do data systems allow for disaggregation by key demographic characteristics, such as race/ethnicity and income, which is necessary for policies that will help close achievement gaps?
- **LINKAGES:** Are data systems within the state linked to each other at all stages in the educational pipeline spanning from early learning to the workforce and including other state agencies such as health and human services? Does the state have an interagency data committee or governing body; if so, does it have institutional representation? How does the state determine who has control over the data?
- **COVERAGE:** Are all sectors of postsecondary institutions—public, private nonprofit, for-profit, four-year, two-year, less-than-two-year—included in the data system? Are all types of credentials included (degrees, certificates, certifications and licensures)?
- **SHARING:** Does the state maintain data-sharing agreements across states? Are there specific regions of the state where cross-state sharing would be particularly useful (e.g., Kansas City, Kan. and Kansas City, Mo.)?
- **PRIVACY AND SECURITY:** How does the state ensure that it is properly protecting all data and adhering to data privacy and security laws and best practices?

How are state policymakers USING these metrics, particularly in the context of higher education funding decisions?

States can utilize the measures and metrics summarized above for purposes of institutional assessment or to inform key policy decisions. Increasingly, a number of states are using these metrics to implement outcomes-based funding systems. **Table 2** reviews the metrics utilized by 31 states that had performance or outcomes-based metrics on record and publicly available as of March 2014.[15] (For more information on statutory and implementation sources for states' performance-based funding policies, see Appendix C.) However, it should be clearly noted that this table is intended for informational purposes only, not to endorse or guide states toward the use of these or other

Every state has different contextual factors to consider, and should select metrics for their outcomes-based funding formulas based on state priorities and needs and with careful attention to how they complement each other.

[14]For additional questions and considerations, see Peter Ewell and Hans L'Orange, *The Ideal State Postsecondary Data System: 15 Essential Characteristics and Required Functionality*. http://www.sheeo.org/sites/default/files/publications/ideal_data_system.pdf

[15]See footnote 2 for additional context.

States must use data to first understand what they need from higher education, then evaluate how their state is performing against those needs, and subsequently make informed finance decisions to align investments with state objectives.

metrics in their funding systems. Every state has different contextual factors to consider, and should select metrics for their outcomes-based funding formulas based on state priorities and needs and with careful attention to how they complement each other. Likewise, states must be mindful of the ways in which metrics can be gamed if institutions do not report data consistently and accurately, and should therefore consider auditing definitions and reporting methods. Furthermore, it is not yet clear that all of the metrics currently in use in these formulas are operating as intended, warranting caution and judgment by state policymakers. States must use data to first understand what they need from higher education, then evaluate how their state is performing against those needs, and subsequently make informed finance decisions to align investments with state objectives.

Table 2 classifies the common types of metrics states have developed to inform funding decisions, along with brief discussion. As shown, there are some commonalities in metrics selected, as well as those *not* selected by states.[iii] For example, nearly every state that has undertaken outcomes-based funding includes a measure of credential completion and many also measure completion of credentials in priority fields, such as science, technology, engineering and mathematics (more commonly referred to as STEM). However, fewer states incorporate equity-focused measures, and those who do approach such measurements differently. Only five states incorporate direct measures of college access for low-income, underrepresented-minority or other underserved students, while seven states directly measure the number of degrees awarded to underserved students, and five states directly measure progression and/or graduation rates of these students. Even within categories, states are taking a wide array of approaches and adopting a diverse set of metrics. For example, while about half of states evaluated here measure student momentum and progress through credit accumulation, each state uses its own credit thresholds; some specify credit accumulation in key subject areas, and some measure course completion ratios as opposed to raw credit accumulation.[16]

This variation in approaches reflects the diversity of states and the abundance of practical options for measuring institutional performance. Regardless, states can use this landscape review to evaluate other states' practices and begin the process of considering the most appropriate metrics to incorporate into their outcomes-based funding models in ways that link clearly to their particular state needs.

[16]Based on IHEP staff analysis of state data in the following paper: Lauren Davies, "State 'Shared Responsibility' Policies for Improved Outcomes: Lessons Learned" (Washington, D.C.: HCM Strategists, 2014), 10. Retrieved from: http://hcmstrategists.com/wp-content/uploads/2014/04/HCM-State-Shared-Responsibility-RADD-2.0.pdf.

Table 2: Inventory of Measures Currently Chosen by States for Performance-Based Funding Models[iv]

This table summarizes the measures that 31 states[17] developed for their performance-based funding models. It is not intended to serve as an assessment of any of these metrics' appropriateness in outcomes-based funding models, nor should it be used as a guide to identify which measures *should* be used in a performance-based funding system. Rather, this landscape review should inform states as they develop their own customized postsecondary finance policies.

	Metric Type	Example Metrics	Discussion
ACCESS	Enrollment	Number of students enrolled	Even though outcomes-based funding represents a shift from basing funding on enrollment to outcomes, some states explicitly name enrollment measures as part of their outcomes-based funding systems. States may also want to consider looking at enrollment in more nuanced ways, giving attention to measures such as immediate college-going rates, enrollment of in-state students, and interstate migration.
	Access for target populations	Percentage of Pell Grant students; percentage of low-income students; access gaps for Pell Grant students; percentage of underserved populations; access gaps for underrepresented minority students; percentage of underprepared students; number of transfer (with associate degrees) students enrolled	Different states identify different target populations, including underrepresented minorities, Pell Grant recipients and transfer students. Some states measure the representation of specific student groups within the student body, while others use a more contextualized metric that measures gaps in representation compared with high school graduates. However, only five states include measures of access for underrepresented groups.[18]
PROGRESSION AND COMPLETION	Credential completion	Bachelor's degrees; associate degrees; certificates; technical credentials; ACT WorkKeys; certificates of proficiency	Nearly all states with outcomes-based funding formulas incorporate measures related to completion of certificates and/or degrees, though not all states include all types of degrees and certificates in their formulas.
	Degrees awarded to target populations	Residents; at-risk students; minorities; rural residents; transfer students; adults; remedial students; nontraditional students; degree completion gap per 100 full-time-equivalent students for target populations and credentials; proportion of underserved students earning graduate degrees	A number of states with outcomes-based funding formulas give some focus to equity, as they include at least one measure related to degrees awarded to students from specific underrepresented racial/ethnic groups or other nontraditional college students.
	Credential completion in specific fields	Science, technology, engineering and mathematics credentials; high-demand, strategic-emphasis credentials; undergraduate and/or graduate; regional economic need	A substantial number of states emphasize completion of credentials in science, technology, engineering and mathematics and other high-demand fields in their outcomes-based funding formulas.
	Credentials conferred per enrollment	Per 100 enrollees; per 100 full-time-equivalent students; per 1,000 full-time-equivalent students	Relatively few states include metrics calculating degrees conferred per enrollment in their outcomes-based funding formulas. Among the states that do include these metrics, some also include the sum of credentials awarded.

[17] See footnote 2 for additional context.

[18] Based on IHEP staff analysis of state data in the following paper: Lauren Davies, "State 'Shared Responsibility' Policies for Improved Outcomes: Lessons Learned" (Washington, D.C.: HCM Strategists, 2014), 10. Retrieved from: http://hcmstrategists.com/wp-content/uploads/2014/04/HCM-State-Shared-Responsibility-RADD-2.0.pdf.

Table 2: Inventory of Measures Currently Chosen by States for Performance-Based Funding Models[iv] (continued)

	Metric Type	Example Metrics	Discussion
PROGRESSION AND COMPLETION (continued)	Graduation rates	Full-time, part-time, first-time in college; on-time; 6-year; success rate using Achieving the Dream definition	The states that consider graduation rates in their outcomes-based funding formulas approach the metric differently. Some disaggregate by attendance pattern, while others do not. Recognizing that graduation rates often exclude nontraditional and part-time students, many states use metrics that examine how all students progress and complete degrees and certificates, not just those who are traditional, full-time students.
	Transfer counts or rates	Number or percent of students transferring at varying credit thresholds and with and without associate's degree; transfer to baccalaureate campus; transfer to another community college	A substantial number of states include transfer measures in their outcomes-based funding formulas. Some transfer measures are specific to community colleges, and some apply to transfer between all types of institutions. In many outcomes-based funding systems, community colleges receive credit for and are incented to increase upward transfers within or across institutions.
	Credit-based momentum points	Credit-hour completion; completion of various credit thresholds (such as 15, 30, 45, 60 and 90 credits) by institutional mission and within specified timeframes; non-remedial course completion ratio	Approximately half of states with outcomes-based funding formulas include one or more measures that track students' progression at pre-defined "midway" points in their programs. Some states focus on a specific number of credits completed, while others consider completion of specific courses or course sequences.
	Non-credit-based momentum points	Retention rate; retention rate of college-ready cohort; 3rd- and 4th-year persistence; academic progress rate such as 2nd-year retention with grade-point average above 2.0; completion of college-level math and/or English courses; acceleration in fulfilling general education math courses	Most of the states that do not use credit-based momentum points—and some that do use these measures—in their outcomes-based funding models choose to track student progression in more general terms, most commonly by progression from one year to the next.
	Success in remediation	Remedial course success rate; completion of remedial course sequence; developmental advancement to credit courses; successful completion of remediation and successful completion of gateway course in same subject area	Some states have developed measures or adopted measures from sources such as Complete College America for student success in remedial courses.
	Progression and graduation rates of target populations	Basic-skills student progress; gaps in completion of entry-level English and math courses for target populations; retention rates for target populations (e.g. Pell Grant recipients) and gaps in rates; transfer rates (and gaps) for underserved populations; graduation rates (and gaps) for underserved populations (e.g., transfer students, Pell Grant recipients and underrepresented minorities)	Few outcomes-based funding states disaggregate progression and completion by race or income. The states that include these measures focus on Pell Grant recipients and "underserved" students, though there is no common definition for the latter term.

Table 2: Inventory of Measures Currently Chosen by States for Performance-Based Funding Models[iv] (continued)

	Metric Type	Example Metrics	Discussion
COST AND PRICE	Productivity/completion efficiency	Ratio of completions to revenue or spending; number of Open Educational Resources tools and services; year-round use of campus facilities and other efficiency reforms; technology-enhanced instruction and resource sharing; student/faculty productivity (student credit hours/full-time-equivalent faculty and full-time-equivalent student/employee).	Only a handful of states link their outcomes-based funding formulas to measures of institutional productivity or efficiency.
	Tuition change	In-state resident tuition increases (counted against the institution only when state general-fund revenues increase above inflation); increase in educational revenue (state appropriations plus net tuition revenue) per full-time-equivalent student at or below the increase in the Consumer Price Index	Very few states have linked tuition to state appropriations as part of their outcomes-based funding systems, though some states (e.g., Maryland) that do not have outcomes-based models have policies in place[19] that link state appropriations to tuition change to encourage institutions to limit tuition increases.[v] No states include a measure of the proportion of student costs that are covered by tuition. Additionally, no states include any metrics related to unmet need in their outcomes-based funding formulas.
	Institutional revenues and expenditures	Expenditures; revenues; growth in research expenditures; externally-generated research and public service funding; number of contracts; research levels including public/private collaboration; expenditures of federal funds; philanthropic support	Many states measure and reward research expenditures in their outcomes-based funding formulas. At least one state (Maine) has built in rewards for collaboration with partners within the state.
	Expenditures on specific functions	Expenditures for instruction per full-time-equivalent student; institutional need-based aid expenditures per full-time-equivalent student; administrative expenditures (as a percent of the cost of education); education and general expenditures on core mission; facilities investment	Only a handful of states include measures on instruction, mission and/or facilities in their formulas. Further, no states consider institutional expenditures on financial aid in their formulas.
	Student Debt	To be determined	No states include measures of student debt in their outcomes-based funding system.

[19]Maryland is developing an outcomes-based funding policy in Fiscal Year 2015 and was not included in this analysis of states with metrics as of Fiscal Year 2014.

Table 2: Inventory of Measures Currently Chosen by States for Performance-Based Funding Models[iv] (continued)

	Metric Type	Example Metrics	Discussion
OUTCOMES	Post-college student outcomes	Employment or further education; earnings; success of community college transfers at four-year institution	Some states consider post-college outcomes such as employment, earnings and pursuit of graduate education. Those who do have encountered a number of measurement challenges including length of time, out-of-state migration, and employment within field. No states currently consider other loan-based outcomes such as rates of student-loan repayment and default.
	Learning outcomes	Performance on quality measures, such as the National Community College Benchmarking Project[20] or Noel-Levitz Benchmarking Survey,[21] compared with peers; educational value added (as measured by tests such as the Collegiate Learning Assessment,[22] Collegiate Assessment of Academic Proficiency[23] and Educational Testing Service assessments[24]); adult literacy/ English language proficiency test score gains; performance of students on institutional assessments in general education or in the major field; pass rate on licensure or certification exams; pass rate on General Education Development (GED) exam	Few states' outcomes-based funding formulas include measures related to student learning. The states that do consider learning outcomes use a relatively wide array of measures, including value-added assessments and benchmarking scores.

As **Table 2** suggests, states vary widely in the metrics they use in their outcomes-based funding systems, which are continuing to evolve. While data availability limits what can be incorporated into initial outcomes-based funding systems, implementation of these systems is a strong impetus for improving postsecondary data. These improvements in turn allow for more refined outcomes-based funding systems, generating a cyclical process of data use and improvement. In fact, research on the evolution of outcomes-based funding systems points to several types of indicators that may not have been available upon initial implementation, but should be developed

While data availability limits what can be incorporated into initial outcomes-based funding systems, implementation of these systems is a strong impetus for improving postsecondary data. These improvements in turn allow for more refined outcomes-based funding systems, generating a cyclical process of data use and improvement.

[20]See https://www.nccbp.org/
[21]See https://www.noellevitz.com/student-retention-solutions/satisfaction-priorities-assessments
[22]See http://cae.org/participating-institutions/cla-overview/
[23]See http://www.act.org/caap/
[24]See https://www.ets.org/highered/products/universities

to help combat unintended consequences that may emerge by tying funding to outcomes.[vi] Even if states were unable to include the ideal measures in their initial implementation of outcomes-based funding, they can prioritize data improvements to capture them in subsequent rounds of policy revision. Finally, states will need to continue to refine and strengthen outcomes-based funding formulas and their underlying data, particularly in states where these mechanisms shift from bonus dollars on top of the state's base funding for higher education to an integral component of the state's base higher education budget.[vii] As states continue to refine their outcomes-based funding formulas, they will need to be mindful of the ways in which student populations and delivery models continue to evolve over time. **Sidebar 2** discusses these additional data considerations for state policymakers.

Sidebar 2: Emerging Data Needs for States in an Era of Student-Oriented, Outcomes-Based Education

In developing outcomes-based funding formalas, state policymakers should be mindful of how recent innovations in higher education may influence states' data needs. These innovations have become increasingly popular with adult learners who need the flexibility that traditional institutional schedules do not generally afford, but they pose measurement challenges. Evaluating these policies will require crafting new definitions and data collection strategies, as well as training and support for institutional researchers.

Prior learning assessments are one way of assessing competency within competency-based education programs, but an extensive review found inconsistencies and complications across data sources, spotlighting the need for increased communication and training about these policies and practices.[viii] The University of Wisconsin System is developing a system-based approach to prior learning assessments focused on nontraditional students, with the goal of increasing the number of college graduates by awarding credits for prior learning for returning adult students.[ix] To effectively measure the impact of such strategies, states will need to follow Wisconsin's lead and begin collecting quality data on the availability and usage of prior learning assessments, as well as the progress and success of students obtaining credit in this manner.

Additionally, millions of students participate in **distance learning** every year through courses offered at postsecondary institutions or through third-party providers, a trend that continues to increase. When considering measures and metrics related to progression, persistence, and completion, states will need to consider how multiple modes of delivery play a role in both student and institutional productivity. At the very least, states and institutions should begin coding courses in their datasets as either in-person, online, or a combination of the two delivery modes. For instance, the Southern Regional Education Board has initiated efforts to track undergraduate credit-hour accumulation across delivery modes, collecting data on on-campus, off-campus, and e-Learning instruction for institutions in its 16 member states.[x]

States should also consider ways to address **nontraditional term schedules** in data collection efforts. Not all colleges and universities operate on the same academic calendar, particularly as institutions adapt to the needs of 21st century students. Without accounting for variations in academic calendars, states risk omitting large groups of students with nontraditional attendance patterns and limiting the utility of data for statewide or national comparisons.

Finally, as the share of **nontraditional education providers and delivery models** continues to grow, so too do the number of credentials that are awarded by entities that are not eligible for federal student aid (Title IV) funding and thus not required to report their data to IPEDS and other sources. Although these providers are not currently captured through most current data collection mechanisms or incorporated into outcomes-based funding systems, they have the potential to help states meet educational attainment and workforce goals. States should therefore consider ways to collect and use data on these providers to gain a more complete perspective on education and workforce development trends within the state.

How can state leaders USE data to drive other key policy decisions?

Outcomes-based funding does not exist in a policy vacuum. Many states are including outcomes-based funding as part of a broad array of student success initiatives, understanding that it is only one piece of a more comprehensive policy agenda needed to achieve state goals. States should evaluate the role that outcomes-based funding policies play in interacting with other related efforts and the broader attainment agenda. Furthermore, while outcomes-based funding is one way for policymakers to use data to spur improvement in their states' postsecondary systems, outcomes-based funding policies are not without controversy. In fact, some states have chosen not to adopt these policies, some have tied only small portions of funding to outcomes, and many continue to wrestle with the appropriate metrics and mechanics to use. A lack of willingness, capacity or interest in adopting outcomes-based funding should not hamstring larger state efforts to put data to work in the policymaking process. When crafting higher education policy, leaders can use data to **contextualize** performance within the state environment, **compare** across institutions, **benchmark** to establish state and institutional goals and priorities, and articulate the value of higher education through **case-building**. Below are a few examples beyond outcomes-based funding in which states are utilizing data to guide the policymaking process.

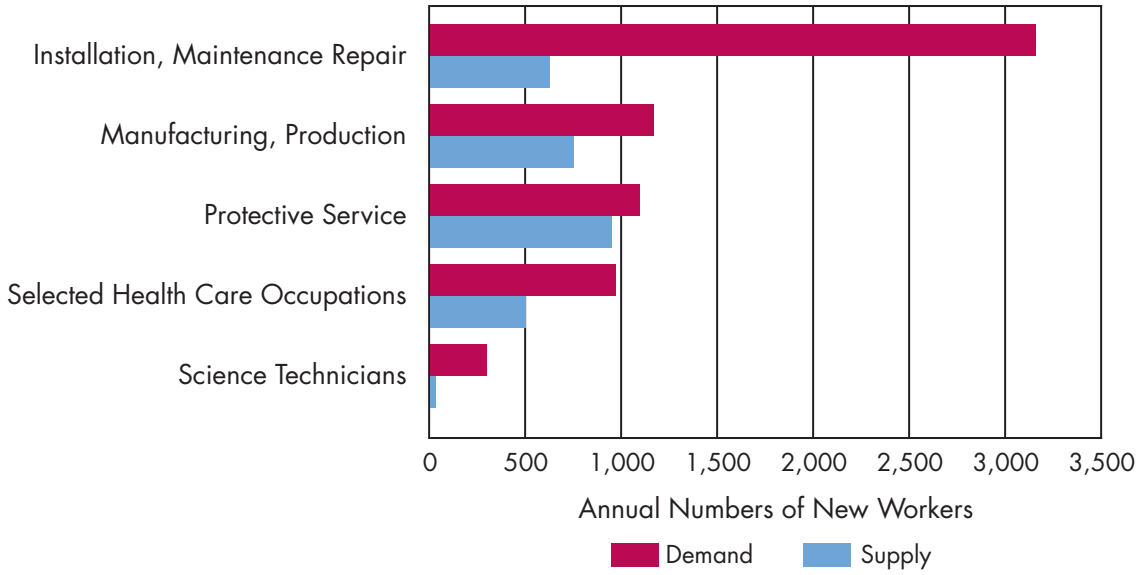
When crafting higher education policy, leaders can use data to contextualize performance within the state environment, compare across institutions, benchmark to establish state and institutional goals and priorities, and articulate the value of higher education through case-building.

Policymakers can use core measures to **contextualize** performance and progress within the state environment. Each state has unique demographic, economic, and political characteristics, which leaders should take into consideration when making policy decisions. One example of contextualization is comparing degree production by field with local labor market needs. A recent report by the State Workforce and Education Alignment Project highlights some ways in which states are examining the extent to which the supply of qualified workers is meeting workforce demand.[xi] Data from Washington State, as shown in Figure 1, suggest that the state is not currently producing enough skilled workers in five key occupations. This information will allow the state to prioritize investments in specific educational programs that will help meet workforce demand in the state.

Policymakers can use core measures to contextualize performance and progress within the state environment. Each state has unique demographic, economic, and political characteristics, which leaders should take into consideration when making policy decisions.

Policymakers, not to mention prospective students, also benefit from **comparing** institutions within the state on key measures to inform their respective decision-making processes. Take, for example, the University of Texas System Productivity Dashboard. Users can examine data to compare

Figure 1: Comparing Annual Supply and Future Demand for Middle-Skill Occupations in Washington



Source: "A Skilled and Educated Workforce," Washington Student Achievement Council, State Board for Community and Technical Colleges, and Workforce Training and Education Coordinating Board, 2013.

> Policymakers, not to mention prospective students, also benefit from comparing institutions within the state on key measures to inform their respective decision-making processes.

University of Texas system institutions on a number of "core indicators" including enrollment, tuition, graduation rates, expenditures, and employment outcomes (See Figure 2). Similarly, the Texas Higher Education Commission and College Measures, LLC, have developed the Compare College TX dashboard designed for a student and parent audience.[xii] This dashboard enables users to compare Texas' two- and four-year public institutions on a number of measures, including remedial course-taking, transfer and graduation rates, and graduates' average first-year earnings (See Figure 3). According to an analysis by HCM Strategists, 10 states currently have online higher education dashboards, with eight of these including comparisons between institution-level data and national or statewide measures.[xiii] These comparative tools can help state leaders identify areas of strength and areas in need of closer policy attention or—perhaps—additional resources, while also helping institutions benchmark their performance and set goals for improvement.

Within-state institutional comparisons can help colleges and universities compare performance and progress. At the same time, cross-state comparisons, as well as comparisons against national averages, allow state policymakers to benchmark performance and progress, set goals and identify leading institutions from which to learn. Some voluntary initiatives, such as Complete College America, already provide participating states with comparable data on core measures for these very purposes. Additionally, the National Center for Higher Education Management Systems (known as NCHEMS) Information Center maintains trend data on dozens of measures for all states. For

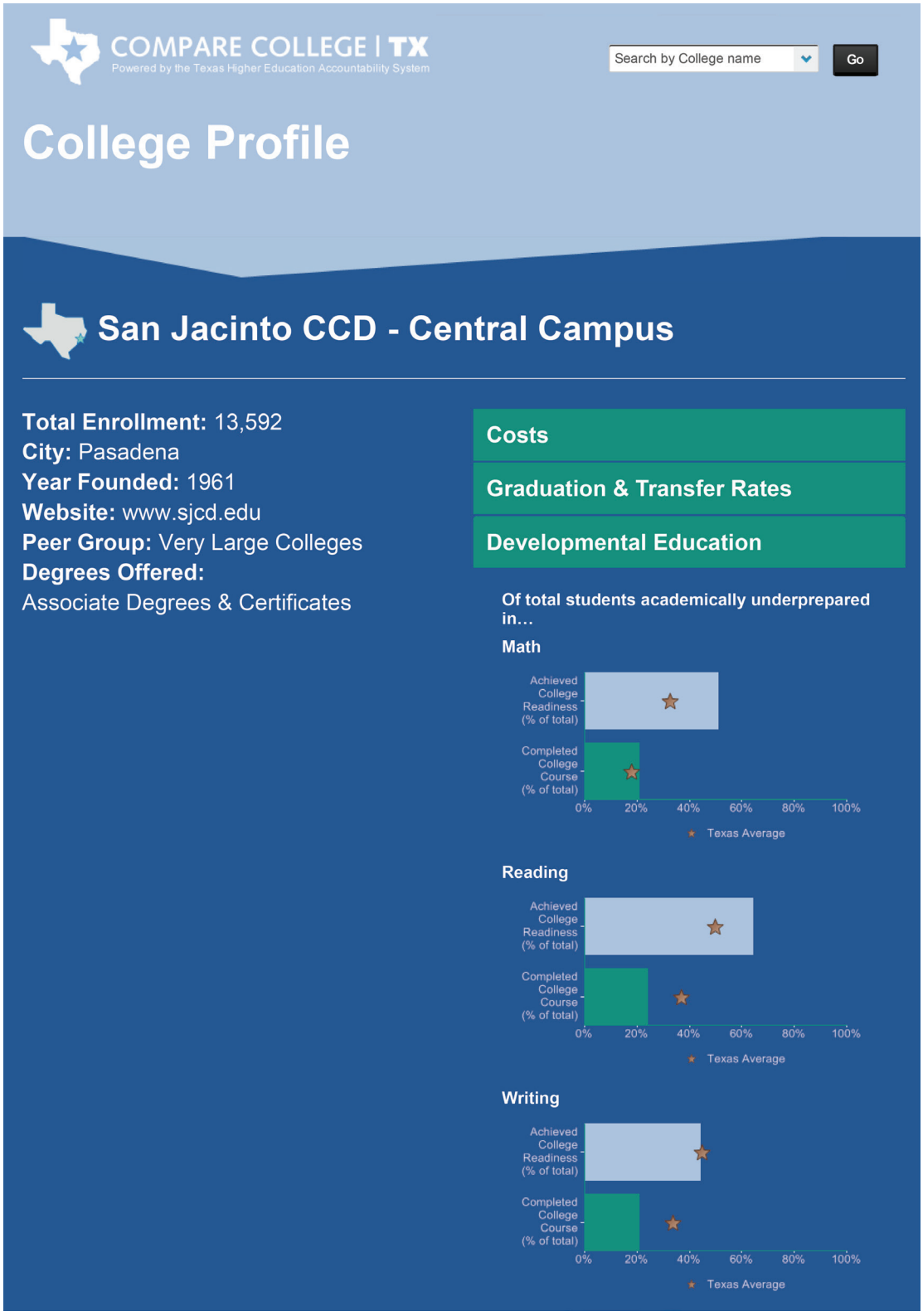
Figure 2: University of Texas System Productivity Dashboard

Source: https://exploredata.utsystem.edu/SASVisualAnalyticsViewer/VisualAnalyticsViewer_guest.jsp?reportName=Graduation%20Rates&reportPath=/Reports/Student%20Access%20%26%20Success/

instance, the NCHEMS Information Center has reported the number of credentials or degrees awarded by public institutions per $100,000 of education and related expenditures dating back to 2005 for each of the 50 states. As Figure 4 indicates, as of 2010, Florida was the leading state on this metric with 2.82 degrees awarded per $100,000.[xiv]

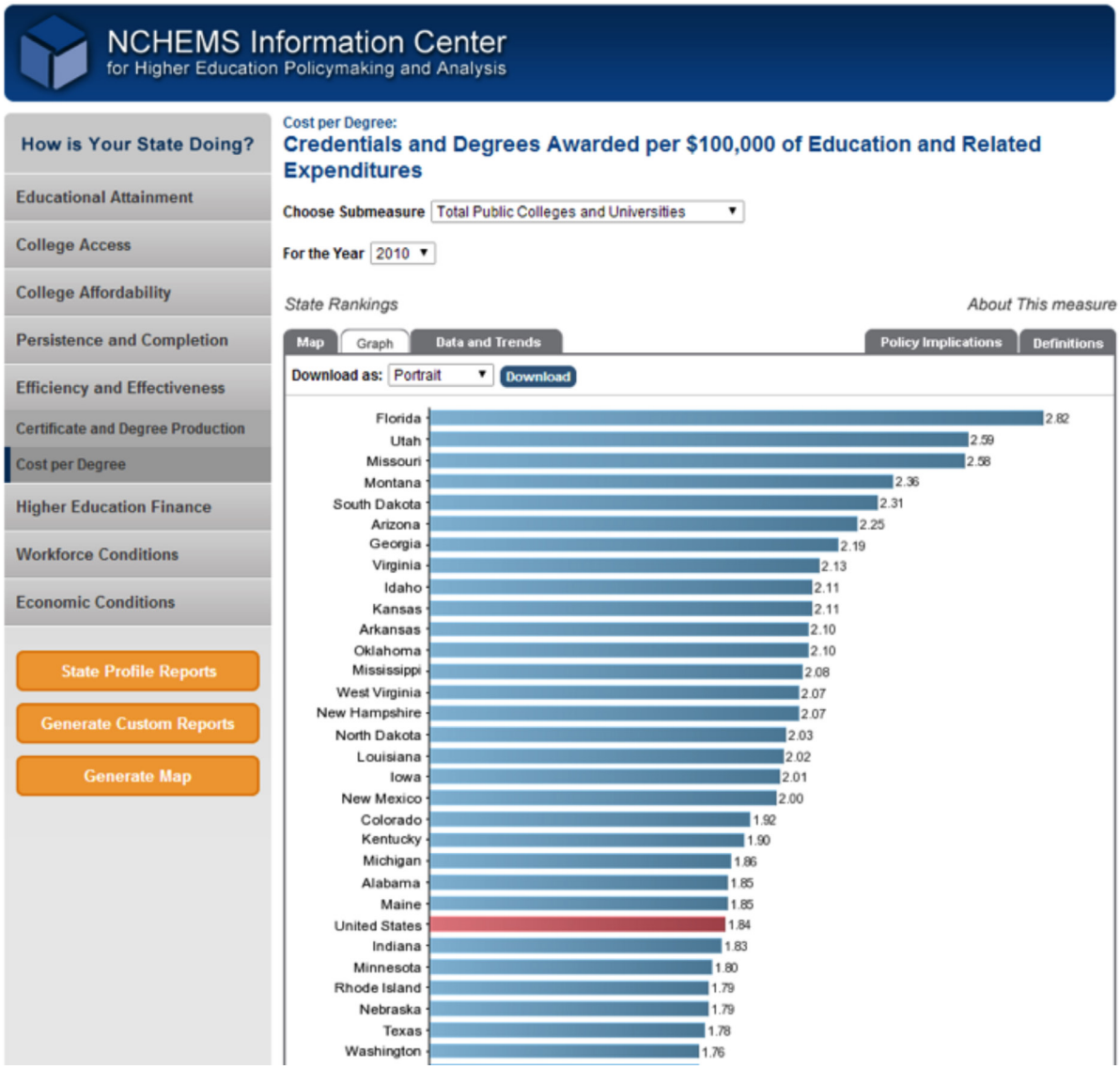
In most states, substantial improvement in postsecondary attainment relies on the success of aggressive efforts to close gaps between low-income, underrepresented-minority and first-generation students and their classmates. Additionally, many states have recognized the moral imperative of providing all their citizens with equal opportunities for college access and success and, as such, have set goals to improve equity within their postsecondary system. At a minimum, states should measure how well their system serves underrepresented-minority and low-income students, but also should consider measuring equity along other dimensions, including gender, age or parental education. Through the Access to Success (commonly called A2S) initiative, led by The Education Trust and the National Association of System Heads, participating state higher education systems have been committed to narrowing race and income gaps since 2007. These systems have committed to cutting their gaps in half and have voluntarily collected their own data to monitor these gaps in more robust ways than are feasible through IPEDS.[xv]

Figure 3: Compare College TX Dashboard



Source: http://www.comparecollegetx.com/college/San-Jacinto-CCD-Central-Campus-TX

Figure 4: NCHEMS Information Center



For example, Figure 5 shows how the Access to Success data can help state leaders understand gaps in graduation rates by race and socioeconomic status, as well as chart the increases or decreases in these gaps over time.[xvi] In this instance, the University of Hawai'i system has reduced race and income gaps in both enrollment and increased degree attainment among underrepresented groups over the past five years. The Access to Success data are collected at the institution and system level, allowing detailed analyses of opportunity and achievement gaps. As a result of their participation in the Access to Success initiative, the University of Wisconsin system tracks equity gaps in their annual accountability reports, and the Pennsylvania State System of Higher Education has incorporated progress on closing gaps into their outcomes-based funding model.[xvii]

Finally, in this era of scarce resources, state policymakers are hard-pressed to ensure that tax dollars are well-spent, and it often is necessary for higher education institutions or systems to make a

Figure 5: Access to Success Report Card: University of Hawai'i System

The Education Trust

NASH
National Association of System Heads

University of Hawai'i System
BACHELOR'S PROGRAMS

ACCESS: IS THE SYSTEM ENROLLING MORE UNDERREPRESENTED STUDENTS?

5,653 Total entering students (2010)
(5-year change: ▲ 12%)

	LOW-INCOME						UNDERREPRESENTED MINORITY					
	Freshmen			Transfers			Freshmen			Transfers		
	2010	5-year change	Campuses ▲	2010	5-year change	Campuses ▲	2010	5-year change	Campuses ▲	2010	5-year change	Campuses ▲
Number enrolled in entering class (#)	680	225 ▲50%	3 of 3	1,011	325 ▲47%	2 of 4	907	177 ▲24%	3 of 3	1,072	290 ▲37%	3 of 4
Percent enrolled in entering class (%)	26	8	3 of 3	33	7	3 of 4	35	5	3 of 3	35	5	3 of 4
Gap between percent enrolled in class and percent among high school graduates (%)	7	-6 ▼46%	2 of 3	-4	-7 ▼>100%	3 of 4	22	-8 ▼27%	3 of 3	24	-6 ▼20%	4 of 4
BOTTOM LINE	Increase in number and percentage of Pell freshmen narrows access gap.			Increase in number and percentage of Pell transfers closes the access gap.			Increase in number and percentage of URM freshmen narrows the access gap.			Increase in number and percentage of URM transfers narrows access gap.		

SUCCESS: IS THE SYSTEM IMPROVING THE RATE AT WHICH UNDERREPRESENTED STUDENTS COMPLETE?

Overall six-year graduation rates (2010)
48% Freshmen (2-year change: ▲ 3%) | **40%** Transfers (2-year change: 0%)

	LOW-INCOME						UNDERREPRESENTED MINORITY					
	Freshmen			Transfers			Freshmen			Transfers		
	2010	2-year change	Campuses ▲	2010	2-year change	Campuses ▲	2010	2-year change	Campuses ▲	2010	2-year change	Campuses ▲
Percent completing within six years (%)	44	3	2 of 2	39	2	1 of 3	49	7	2 of 2	37	-1	2 of 3
Gap between percent completing and percent of peers completing in six years (%)	5	0 0%	1 of 2	1	-3 ▼75%	1 of 3	-1	-6 ▼>100%	2 of 2	3	1 ▲50%	1 of 3
BOTTOM LINE	Equal increases in Pell rate and non-Pell rate leave success gap unchanged.			Increase in Pell rate and decrease in non-Pell rate narrows success gap.			Increase in URM rate and non-URM rate. Success gap is closed.			Decrease in URM rate and no change in non-URM rate widens success gap.		

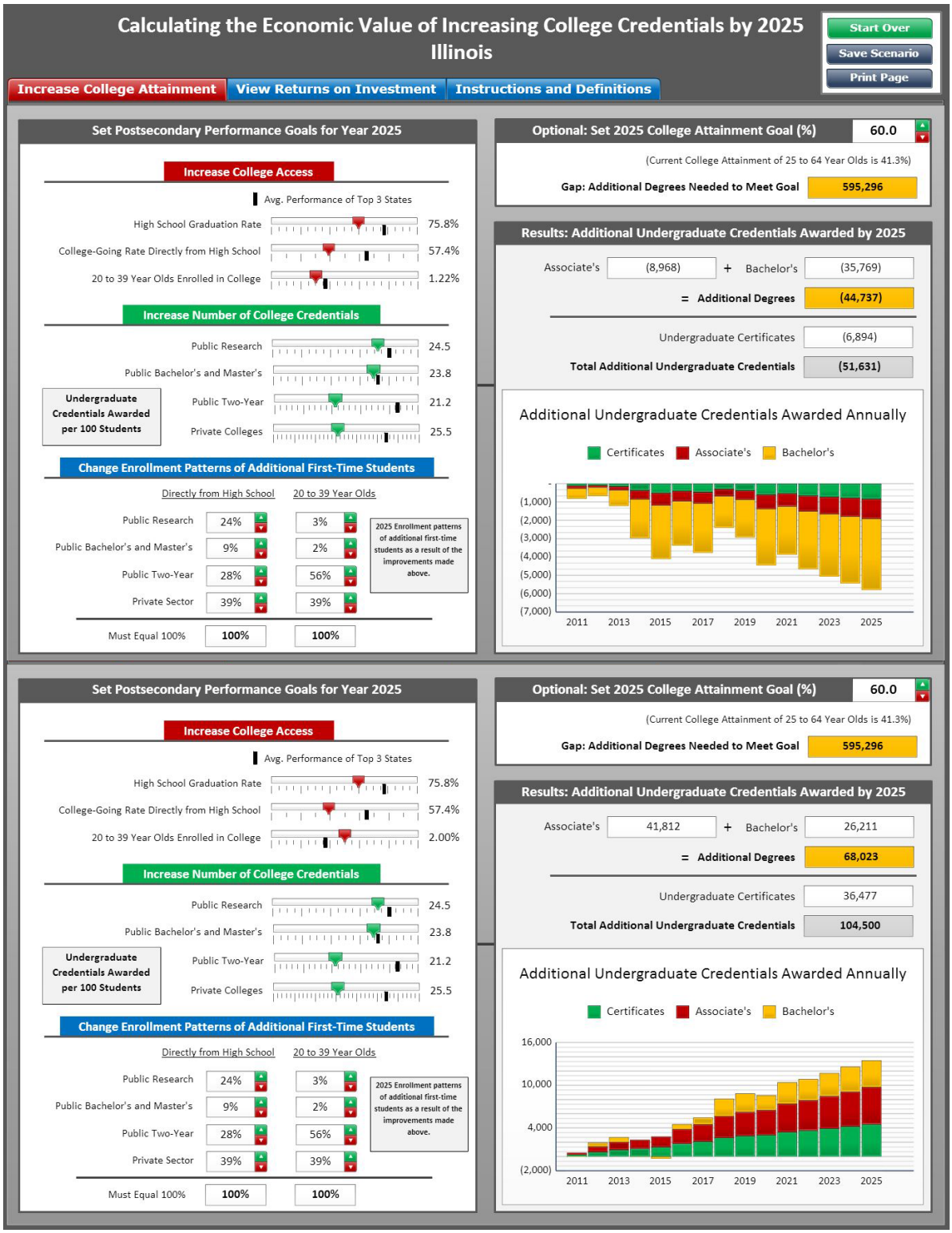
DEGREES: IS THE SYSTEM PRODUCING MORE DEGREES EARNED BY UNDERREPRESENTED STUDENTS?

3,044 Total degrees (2010)
(5-year change: ▲ 2%)

	LOW-INCOME			UNDERREPRESENTED MINORITY		
	2010	5-year change	Campuses ▲	2010	5-year change	Campuses ▲
Number of degrees conferred (#)	1,177	111 ▲10%	2 of 4	930	132 ▲17%	2 of 4

compelling case to state leaders about the importance of taxpayers' postsecondary investments. Data can serve the important purpose of case-building, both to the public and to state legislators. For example, the Center for Law and Social Policy has launched an online dashboard specifically geared toward calculating return on investment in higher education for each state. Developed in conjunction with NCHEMS, the tool allows users to view projected changes in personal income and state and federal revenues and costs based on the state's current degree production trajectory. Users also may manipulate the interactive tool to better understand the relationship between educational attainment and these state economic indicators. Increasing one or more of the values in the "Increase College Access" or "Increase Number of College Credentials" sections will adjust the corresponding data for the projected number of credentials awarded, as well as a variety of related economic indicators (not pictured). Policymakers in Illinois, for instance, used the tool to identify working-age adults as a critical population on which the state must focus in order to meet their goals.[xviii] Figure 6 shows the degree shortfall that Illinois will face if it remains on its current trajectory, with 1.22 percent of 20- to 39-year-olds enrolled in college. By increasing the share of adults enrolled in higher education to 2 percent, Illinois is projected to make substantial progress in meeting its educational attainment goals.

Figure 6: Center for Law and Social Policy's Return on Investment Dashboard – Illinois



Source: http://www.clasp.org/resources-and-publications/flash/cpes-roi-tool/Illinois.swf

Conclusion

Shifting from input-based to outcomes-based funding is a substantial step for the states that have moved in that direction, but states must consider the measures they choose for this purpose strategically to advance the intended goals. For instance, if a state's goal is to improve overall educational attainment to strengthen its economy, policymakers may look to a combination of number of degrees conferred and graduation or degree-attainment rates, but also may want to consider other post-college outcomes such as graduates' job-placement rates, loan-default rates or learning outcomes to prevent credential increases at the expense of quality. In the same vein, states should balance completion measures with access measures to avoid possible "creaming" behaviors that would cut access to those students who most need a postsecondary education to achieve social mobility.

Shifting from input-based to outcomes-based funding is a substantial step for the states that have moved in that direction, but states must consider the measures they choose for this purpose strategically to advance the intended goals.

As noted throughout the paper, data can be used in a variety of ways to inform postsecondary policy development and decisions. Data should be used to develop a baseline understanding of a state's higher education context and how institutions and the system perform across key measures, such as access, student progression and completion and affordability. With a baseline established, policymakers can make more informed policy decisions, such as the development of various finance policies and funding decisions that may include the use of an outcomes-based funding model. When crafting or revising an outcomes-based funding policy, states should consider the following:

- **Which populations are of critical importance to the state's success?** All states need to improve postsecondary opportunities for low-income, underrepresented-minority and first-generation populations, who too often lag in equitable chances at college access and success. Individual states may need to identify additional critical populations of interest, such as adult students or veterans. To track the success of students most in need of targeted support, states must disaggregate their data on key demographic characteristics. The resulting information on equity gaps can spotlight success stories, identify areas for needed improvement and mobilize specific change efforts.

All states need to improve postsecondary opportunities for low-income, underrepresented-minority and first-generation populations, who too often lag in equitable chances at college access and success.

- **How strong is the state data infrastructure, and what improvements and investments are necessary?** Underlying any strong funding system are solid, reliable data. While states should leverage the data that already are available through national and other collections, they also should strengthen and refine their state data systems to fill data gaps and collect data that are relevant to their particular context. With a robust state longitudinal data system that incorporates

the core measures outlined in this paper and other key measures identified by the state, leaders will have the necessary tools at their disposal to answer critical policy questions and develop effective policies. As a first step, leaders should convene the key players in their state—and neighboring states, if appropriate—to evaluate the adequacy of their state longitudinal data system using the guiding questions in **Sidebar 2**. Further, states must consider the capacities required in terms of funding, personnel and technology to develop effective data-driven outcomes-based funding systems. Leveraging federal and state longitudinal data system grants can help build and solidify states' data infrastructure for this purpose.

Underlying any strong funding system are solid, reliable data. While states should leverage the data that already are available through national and other collections, they also should strengthen and refine their state data systems to fill data gaps and collect data that are relevant to their particular context.

- **Which measures are most meaningful in the state's context and can they be adopted to drive performance towards state goals without unintended consequences?** Each state must consider carefully which measures and metrics are most appropriate for their context and make reasoned decisions about how to apply them to disparate institutions, possibly using different measures or weightings for different institution types.[xix] Tying funding to performance runs the risk of unintended consequences or gaming of the system. To the extent possible, states should attempt to predict and protect against such negative effects by considering the variety of ways that institutions could respond to a particular measure, by ensuring that institutions report data according to consistent, audited definitions and methods, and by gathering feedback from the postsecondary community before implementing a system. Because not all consequences are predictable, states also should develop a regular review mechanism to re-evaluate the system and make adjustments to correct for unforeseen effects.

Each state must consider carefully which measures and metrics are most appropriate for their context and make reasoned decisions about how to apply them to disparate institutions, possibly using different measures or weightings for different institution types.

- **How should the state use data to measure and improve student success and equity through efforts other than outcomes-based funding?** Certainly funding can have a great influence on institutional performance, but state data use is not restricted to outcomes-based funding models alone. States can and should use data to identify areas of strength and weakness, inform policy development, and measure and publicly report progress and improvement, particularly for underrepresented groups. Close examination of data can help uncover previously unseen barriers to student success, allowing practitioners to implement strategies to alleviate those barriers. Data also can serve as a communication tool, helping entities—such as elementary and secondary education systems, institutions of higher education, and workforce organizations

and agencies—coordinate across silos, and should be integrated into the daily operations of state capitols and educational institutions.

- **How can the state use data to measure and create incentives for new, innovative practices within higher education?** Data should be used to measure and inform current policies and practices, but also should remain flexible and adaptable to new innovations, including new models of learning and credentialing. Policymakers should identify evolving practices in their state and coordinate with practitioners for real-time data collection and evaluation. Emerging innovations, while exciting and promising, must be evaluated and reviewed on a regular basis as the field continues to develop. (See **Sidebar 1**)

Data have immense power to advance change in state higher education systems.

Data have immense power to advance change in state higher education systems. Used thoughtfully, regularly and within the appropriate context, they can uncover compelling success stories, areas for improvement and previously unrecognized inequities. And, when incorporated into state policy, carefully designed metrics can drive institutional improvement in serving students who have traditionally been underserved by our postsecondary system—including low-income, first-generation, underrepresented-minority and adult students. By leveraging existing data sources at the national level, building capacity within state longitudinal data systems and embedding data routines into ongoing activities, states can realize tangible and continuous improvements that will improve the lives and well-being of their states' residents.

Author Bios

Jamey Rorison

Jamey Rorison is a senior research analyst at the Institute for Higher Education Policy. Prior to coming to IHEP, he was a research associate with the National Center for Public Policy and Higher Education and the Institute for Research on Higher Education. Dr. Rorison's research interests include college access, choice, and affordability; federal, state, and institutional financial aid policy; and the role of postsecondary data in student, policymaker, and institutional decision making. Rorison earned a Ph.D. and an M.S.Ed in Higher Education, as well as a bachelor's degree in Elementary Education, from the University of Pennsylvania.

Mamie Voight

Mamie Voight is the vice president of policy research at the Institute for Higher Education Policy (IHEP), where she directs IHEP's projects on affordability, accountability, and data policy. Before joining IHEP, Voight worked at The Education Trust, where she researched college access, success, and affordability topics and advocated for policies that would enhance equity in America's higher education system. She holds a bachelor's degree in civil engineering from Villanova University, a master's degree in civil engineering from the University of Delaware, and a master's degree in public policy from Georgetown University.

Jennifer Engle

Jennifer Engle is the senior program officer leading the CLEAR initiative as part of the Bill & Melinda Gates Foundation's Postsecondary Success strategy. The initiative is focused on improving the availability and use of quality data about the performance of postsecondary institutions in order to increase transparency and accountability. Jennifer is a national leader and expert on a number of higher education issues, including student access and completion; equity; and data, metrics and accountability. In her previous role as vice president for policy research at the Institute for Higher Education Policy (IHEP), Dr. Engle oversaw the research portfolio and team, including launching the Postsecondary Data Collaborative.

Appendix A: Voluntary Data Initiative Acronym Dictionary and Contact Information

15 Voluntary Initiatives Reviewed to Inform Table 1:

A2S: Access to Success
www.edtrust.org/issues/higher-education/access-to-success
Contacts: Kati Haycock, Rebecca Martin

ASPEN: Aspen Prize for Community College Excellence
www.aspeninstitute.org/policy-work/college-excellence/overview
Contacts: Walter Isaacson, Josh Wyner

ATD: Achieving the Dream
www.achievingthedream.org
Contacts: Karen A. Stout, Wei Song

CBD: Completion by Design
www.completionbydesign.org
Contacts: Kathleen Cleary, Sue Clery

CCA: Complete College America
www.completecollege.org
Contacts: Stan Jones, Katie Zaback

CSRDE: Consortium for Student Retention Data Exchange
csrde.ou.edu/web/consortium.html
Contacts: Sandra Whalen, Miaomiao Rimmer

DCS: The National Study of Instructional Costs & Productivity
http://ire.udel.edu/hec/cost/
Contact: Tom Eleuterio

NCCBP: National Community College Benchmarking Project
www.nccbp.org
Contacts: Lou A. Guthrie

PAR: Predictive Analytics Reporting Framework
http://www.parframework.org/
Contacts: Beth Davis, Ellen Wagner

SREB: Southern Regional Education Board State Data Exchange
www.sreb.org/page/1126/srebstate_data_exchange.html
Contacts: Joan Lord, Susan Campbell Lounsbury, Lisa Cowan

TBD: Transparency by Design
wcet.wiche.edu/advance/transparency-by-design
Contacts: David Longanecker, Cali Morrison

VFA: Voluntary Framework of Accountability
vfa.aacc.nche.edu/Pages?default.aspx
Contacts: Walter G. Bumphus, Kent Phillippe

VIM: Voluntary Institutional Metrics Project
hcmstrategists.com/analysis/voluntary-institutional-metrics-project/
Contacts: Terrell Halaska, Kristin D. Conklin

VSA: Voluntary System of Accountability
www.voluntarysystem.org
Contacts: Christine Keller, Teri Hinds

WICHE: Western Interstate Commission of Higher Education Multistate Longitudinal Data Exchange
www.wiche.edu/longitudinalDataExchange
Contacts: David Longanecker, Patrick Lane, Peace Bransberger

Additional Data Sources Cited in Table 1:

BLS: Bureau of Labor Statistics
http://www.bls.gov/sae/
Contact: Erica Groshen

College InSight
college-insight.org
Contact: Matthew Reed

College Scorecard
https://collegescorecard.ed.gov/

Delta Cost Project
www.deltacostproject.org
Contact: Steve Hurlburt

FSA: Federal Student Aid
studentaid.ed.gov/data-center

IPEDS: Integrated Postsecondary Education Data System
nces.ed.gov/ipeds
Contacts: Sam Barbett, Richard Reeves

NASSGAP: National Association of State Student Grant and Aid Programs
www.nassgap.org
Contact: Stephanie Butler, Clantha McCurdy

NCHEMS: National Center for Higher Education Management Systems
www.higheredinfo.org
Contact: Patrick Kelly

NSC: National Student Clearinghouse
nscresearchcenter.org
Contact: Douglas Shapiro

SHEEO: State Higher Education Executive Officers
www.sheeo.org/projects/shef
Contacts: George Pernsteiner, Andrew Carlson

Appendix B: State Participation in Voluntary Data Initiatives

Note: This chart indicates whether *some* institutions in the state participate in the initiative. In some cases, many institutions, such as all public institutions, participate; but in other cases, only a few institutions participate. State participation accurate as of 2014.

State	ASPEN	ATD	A2S	CBD	CCA	CSRDE	DCS	NCCBP	PAR	SREB	TBD	VFA	VIM	VSA	WICHE
Alabama	●	●				●	●	●	●	●		●		●	
Alaska														●	
Arizona	●	●				●	●	●	●		●	●	●	●	
Arkansas	●	●			●	●	●	●		●		●		●	
California	●	●	●			●	●	●			●	●		●	
Colorado	●		●			●	●	●			●		●	●	
Connecticut	●	●			●	●	●				●	●	●	●	
Delaware						●	●	●		●				●	
District of Columbia		●			●	●	●					●			
Florida	●	●	●	●	●	●	●	●	●	●		●		●	
Georgia	●	●			●	●	●	●		●				●	
Hawaii		●	●		●	●		●	●						●
Idaho					●	●	●	●				●		●	●
Illinois	●	●			●	●	●	●	●		●	●	●	●	
Indiana		●			●	●	●	●					●	●	
Iowa	●				●	●	●	●			●	●		●	
Kansas	●	●				●	●	●			●		●	●	
Kentucky	●	●	●		●	●	●	●		●		●	●	●	
Louisiana	●		●		●	●	●			●			●	●	
Maine	●	●				●	●	●						●	
Maryland	●	●			●	●	●	●	●	●		●	●	●	
Massachusetts	●	●			●	●	●	●			●	●		●	
Michigan	●	●				●	●	●				●		●	
Minnesota	●	●	●			●	●	●	●		●		●	●	
Mississippi	●		●		●	●	●			●				●	
Missouri	●	●	●		●	●	●	●					●	●	
Montana	●	●			●	●	●	●				●		●	
Nebraska	●					●	●	●				●		●	
Nevada		●			●	●		●				●		●	
New Hampshire						●	●	●				●	●	●	
New Jersey	●	●	●			●	●	●				●		●	
New Mexico	●	●			●	●	●	●				●		●	
New York	●	●	●			●	●	●	●		●	●	●	●	
North Carolina	●	●	●	●		●	●	●		●		●		●	
North Dakota						●	●	●	●			●		●	
Ohio	●	●		●	●	●	●	●	●		●	●		●	
Oklahoma	●	●			●	●	●	●		●		●		●	
Oregon	●	●			●	●	●							●	●
Pennsylvania	●	●	●		●	●	●	●	●			●		●	
Rhode Island			●			●	●					●		●	
South Carolina		●				●	●	●		●		●		●	
South Dakota	●				●	●	●	●							
Tennessee			●		●	●	●	●		●		●		●	
Texas	●	●	●		●	●	●	●	●	●		●	●	●	
Utah	●				●	●	●	●			●	●	●	●	
Vermont		●			●	●	●							●	
Virginia	●	●				●	●			●	●			●	
Washington	●	●				●	●	●	●			●		●	●
West Virginia	●				●	●	●		●	●	●	●		●	
Wisconsin	●	●	●		●	●	●	●						●	
Wyoming					●	●		●				●		●	
TOTAL	37	35	17	3	31	50	47	41	14	16	14	34	15	48	4

Appendix C: Statutory and Implementation Sources for State Performance-Based Funding Policies

[Adapted from Lauren Davies, "State 'Shared Responsibility' Policies for Improved Outcomes: Lessons Learned," (Washington, D.C., HCM Strategists, 2014)]

Note: This table includes sources for the 31 states that had performance or outcomes-based metrics on record and publicly available as of March 2014. The table denotes the October 2014 implementation status of these states and four others that made such metrics available.

State	Source	Implementation Status as of October 2014
Arizona	Arizona Board of Regents. Statement by ABOR and University Presidents on Passage of Fiscal Year 2014 Budget	Implementing
	Arizona State Legislature Joint Legislative Budget Committee. Arizona Board of Regents Fiscal Year 2014 Appropriations Report.	
Arkansas	Arkansas Department of Higher Education. 2011. Arkansas 2025: Leading in the Global Economy by Investing in Education and Enhancing Accountability.	Implementing
	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	
Colorado	Colorado Commission for Higher Education. Colorado Performance Contract Worksheet.	Developing
	Friedel, J.N., Thornton, Z.M., D'Amico, M.M., & Katsinas, S.G. 2013. "Performance-Based Funding: The National Landscape."	
Florida	SB 52, Gen. Asmbly., (Colorado 2011)	Implementing
	3-Metric Performance Funding Model Questions and Answers.	
	Budget and Finance Committee Meeting. Board of Governors: 10 Metric Performance Funding Model Overview.	
	Budget: Press Release 5.3.13. "State University System celebrates successful legislative session."	
	2013-14 Allocation Summary and Workpapers.	
	Florida Statute: Title XLVIII Chapter 1101 1101.95.	
	Friedel, J.N., Thornton, Z.M., D'Amico, M.M., & Katsinas, S.G. 2013. "Performance-Based Funding: The National Landscape."	
	State University System Proposed Performance Funding Model - $20 M.	
Georgia	State of Georgia. 2012. Higher Education Funding Commission Report to Governor Deal	Developing
Hawaii	HB 2978, 24th Leg., (Hawaii 2008).	Implementing
	National Council of State Legislatures. Performance Based Funding for Higher Education.	
	University of Hawaii System. Academic Planning, Assessment, Policy Analysis: 2013 Performance Funding.	
Illinois	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	Implementing
Indiana	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	Implementing
Iowa	N/A – not included in analysis	Developing
Kansas	Kansas Administrative Statute § 74-3202d.	Developing
	Kansas Board of Regents. Board Responds to Fiscal Year 2014 & 2015 Budgets.	
	Performance Agreements: Funding Guidelines: Approved April 20, 2011 with revisions approved April 18, 2013 and June 18, 2014, Kansas Board of Regents, 2013	
	Performance Agreement Model, Kansas Board of Regents, 2013.	

State	Source	Implementation Status as of October 2014
Louisiana	Friedel, J.N., Thornton, Z.M., D'Amico, M.M., & Katsinas, S.G. 2013. "Performance-Based Funding: The National Landscape."	Implementing
	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	
	Second Annual Review of the Master Plan for Postsecondary Education in Louisiana: 2011.	
Maine	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	Implementing
	University of Maine System. FY2014 Operating Budget & Student Charges.	
Maryland	N/A – not included in analysis	Developing
Massachusetts	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	Implementing
Michigan	HB 5372, 96th Leg., (Michigan 2012).	Implementing
	Michigan League for Public Policy. Michigan House and Senate Reach Agreement on FY14 Budget for Universities and Colleges.	
Minnesota	Friedel, J.N., Thornton, Z.M., D'Amico, M.M., & Katsinas, S.G. 2013. "Performance-Based Funding: The National Landscape."	Implementing
	SB 1236, Reg. Session, (Minnesota 2013-14). Omnibus higher education appropriations bill.	
Mississippi	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	Implementing
	Mississippi Public Universities. Board of Trustees Approves New Allocation Model for University System.	
	SB 2851, Reg. Session, (Mississippi 2013).	
Missouri	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	Implementing
	Coordinating Board for Higher Education. Performance Funding Model: Recommendations of the Performance Funding Task Force.	
Montana	Friedel, J.N., Thornton, Z.M., D'Amico, M.M., & Katsinas, S.G. 2013. "Performance-Based Funding: The National Landscape."	Implementing
	Montana University System. Performance Funding Taskforce Report and Recommendations.	
	SJ 0013, 63rd Leg., (Montana 2013).	
Nevada	AB 507, 77th Leg., (Nevada 2013).	Implementing
	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	
	Nevada System of Higher Education. New Model for Funding Higher Education in Nevada.	
	Nevada System of Higher Education. 2013-14 Operating Budget.	
New Mexico	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	Implementing
North Carolina	Friedel, J.N., Thornton, Z.M., D'Amico, M.M., & Katsinas, S.G. 2013. "Performance-Based Funding: The National Landscape."	Implementing
	HB 950, Gen. Assembly, (North Carolina 2012).	
North Dakota	Friedel, J.N., Thornton, Z.M., D'Amico, M.M., & Katsinas, S.G. 2013. "Performance-Based Funding: The National Landscape."	Implementing
Ohio	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	Implementing
	HB 59, 130th Gen. Assembly, (Ohio 2013).	
	Recommendations of the Ohio Higher Education Funding Commission.	

State	Source	Implementation Status as of October 2014
Oklahoma	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	Implementing
	Oklahoma State Regents for Higher Education 2014 Legislative Agenda.	
Oregon	HB 3120, 77th Leg., (Oregon 2013).	Implementing
	Friedel, J.N., Thornton, Z.M., D'Amico, M.M., & Katsinas, S.G. 2013. "Funding: The National Landscape."	
	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	
Pennsylvania	Cavanaugh, J.C., and Garland, P. 2012. "Performance Funding in Pennsylvania." Change: The Magazine of Higher Learning.	Implementing
	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	
South Dakota	Friedel, J.N., Thornton, Z.M., D'Amico, M.M., & Katsinas, S.G. 2013. "Performance-Based Funding: The National Landscape."	Developing
	SB 5, Reg. Session, (South Dakota 2013).	
Tennessee	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	Implementing
Texas	Friedel, J.N., Thornton, Z.M., D'Amico, M.M., & Katsinas, S.G. 2013. "Performance-Based Funding: The National Landscape."	Implementing
	SB 1, 83rd Leg., (Texas 2013).	
Utah	SB 2, Gen. Session, (Utah 2013).	Implementing
Virginia	Friedel, J.N., Thornton, Z.M., D'Amico, M.M., & Katsinas, S.G. 2013. "Performance-Based Funding: The National Landscape."	Developing
	SB 1459, Reg. Session, (Virginia 2011).	
Washington	Jones, D.P. 2013. "Outcomes-Based Funding: The Wave of Implementation."	Implementing
Wisconsin	N/A – not included in analysis	Implementing
Wyoming	N/A – not included in analysis	Implementing

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