

The Statewide Longitudinal Data System Landscape

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State education data systems that began as tools for compliance are increasingly becoming engines of improvement. At their most effective, statewide longitudinal data systems (SLDSs) give policymakers, educators and learners the information they need to create pathways to prosperity from early learning into the workforce. State leaders have been working with the federal government, nongovernmental organizations and members of the public to envision, create and strengthen such systems.

What Is a Statewide Longitudinal Data System?

Education Commission of the States defines an SLDS as a data system that connects individuals' data over time across at least two of the following domains: early care and education, K-12, postsecondary and the workforce. An SLDS may also incorporate data from other domains, such as juvenile justice or corrections.

Their efforts have been supported by 50-state surveys that highlight the condition of such data systems, rubrics for understanding their strengths, and recommendations for improving them. However, as valuable as these resources are, it might not always be apparent how they add up to a coherent vision or set of strategies for creating a culture of information.

This Policy Guide aims to demonstrate how such efforts align with each other to support an emerging consensus about what can make an SLDS effective and powerful. In addition, it offers readers guidance on where they can learn more about how their own states' data systems line up against that emerging consensus.



Our [50-State Comparison](#), paired with key tools and resources in the field, highlights an emerging consensus about what can make statewide longitudinal data systems effective and useful.

Statewide longitudinal data systems identify what people need to know, build the capacity and governance to meet that need, and help people make use of resulting information.

Transparency is a key aspect of successful data systems. When state leaders provide public information about what those systems do and how they do it, they engage a broader set of audiences.

A Framework for Understanding the Field

Education Commission of the States' [50-State Comparison](#) of Statewide Longitudinal Data Systems has drawn inspiration from efforts across the country. Using only publicly available sources, it provides information about relevant policies and practices in all 50 states and the **District of Columbia**. By relying on public information available on state websites, the 50-State Comparison also underscores the value of transparency: When state leaders provide public information about what data systems do and how they do it, those systems can engage a broader set of audiences.

We organized state-specific information by adapting a conceptual framework that helps convey what an effective SLDS looks like. That framework is fundamental to a [P20W Modernization Diagnostic Tool](#) that allows SLDSs to assess themselves. Created by the nonprofit organization WestEd, the tool provides criteria for ensuring that an SLDS can support a culture of information: Demand, Systems, Governance and Use. Those criteria help tell a story about how cross-agency data systems can identify the information diverse audiences demand, build the capacity and governance to meet that demand, and help different audiences understand and use the information that results.

Our 50-State Comparison has adapted and added to that framework. We use the following criteria:

- Establishment. Is there an SLDS that enables cross-agency data sharing, analysis and reporting? What broad domains of data does it include? How was it created?
- Demand. Does it include mechanisms for understanding what information its diverse audiences need — whether they be policymakers, educators, families, employers or learners?
- Capacity. Does it have the financial, technological and human capacity to deliver that information?
- Governance. Is it governed in a way that promotes data sharing while protecting the privacy and security of learners' data?
- Use. Does it give its diverse audiences ready access to information they need to make decisions?

This framework allows Education Commission of the States to foster coherence between its 50-State Comparison and a diverse set of other organizations' surveys, rubrics and recommendations for improving SLDSs.

The External Tools and Resources Examined

Education Commission of the States examined a varied set of additional resources in the context of the framework. Five of those resources, including the P20W Modernization Diagnostic Tool, offer recommendations or models for strengthening data systems or enriching the information those systems provide. They are:

- The Council of Chief State School Officers (CCSSO) Community of Innovation: [P20+ Reference Architecture](#) (2023).
- Data Quality Campaign: [What Now? A Vision to Transform State Data Systems](#) (2023).
- George W. Bush Institute: [State Longitudinal Data Systems: Worth the Legislative Investment to Connect Workforce and Education](#) (2024).
- Mathematica: [Education-to-Workforce Indicator Framework](#) (2022).
- WestEd: the [P20W Modernization Diagnostic Tool](#) (2023).

Another five resources offer survey data on the condition of states' data systems and reporting:

- George W. Bush Institute's Education and Workforce Pipeline: [State Data System Ratings](#) (2024).
- U.S. Department of Education, Institute for Education Sciences: [Statewide Longitudinal Data Systems Survey Analysis Descriptive Statistics](#) (2023, data collected in 2019-20).
- State Higher Education Executive Officers Association (SHEEO): [Strong Foundations Survey](#) (2023).
- Child Trends: [Data Capacity of State-funded Pre-K Programs Across the United States](#) (2023).
- Strada Education Foundation's [State Opportunity Index](#): an assessment of postsecondary education-to-employment data systems (2024).

None of those tools or surveys address every aspect of the framework, but together they can describe the condition and ideal direction of state education data systems. ([Click here](#) to read more about these and other related resources.)

Understanding SLDSs Within the Framework

Using our framework as an organizing principle, this Policy Guide describes the emerging consensus among different recommendations, rubrics and templates. It also briefly reviews how states stack up against that consensus in the 50-State Comparison while pointing readers to other surveys where they can find additional relevant information. Where appropriate, this Policy Guide also acknowledges areas where surveys do not yet offer insight into how states fare on important dimensions of the framework.

Establishment

Among the state education data resources we cite, there is broad agreement about what an SLDS is, but our 50-State Comparison is the only resource that explicitly identifies which states maintain one. We determined that a state has an SLDS if we could find public evidence of automated data linkages, a cross-agency governance structure, cross-agency research agendas or regular cross-agency data reporting.

Is there an SLDS that enables cross-agency data sharing, analysis and reporting? What broad domains of data does it include? How was it created?

Where Do States Stand?

According to our 50-State Comparison:

- Thirty-three states publish evidence that they have an SLDS that meets our definition.
- Nine states are creating a new SLDS.

While other surveys of state education data systems do not make judgments about which states have an SLDS, they do offer important additional information about state data systems. Some evaluate the strength of state data education systems in general, for example, or they provide further insights into the data capacity of states that lack a formal SLDS. Some of these surveys include:

- SHEEO's [Strong Foundations Survey](#). This survey provides information on data linkages among agency data systems. It asks postsecondary agencies and institutions what state agencies their data systems link to. Respondents also provide more detailed information about specific data elements they can access in K-12 and workforce data systems, whether or not their states maintain a formal SLDS.

- Child Trends [survey](#) of state pre-K programs. This survey provides information about data elements contained in pre-K data systems. It also asks respondents whether data collected from state pre-K programs can be linked to K-12 data.
- The U.S. Department of Education [survey](#). This survey asks states which of the four data domains (early care and education, K-12, postsecondary, workforce) are linked. It also poses further questions, including whether and how those links occur — e.g., through an automated process, via unique IDs or by means of matching data elements across systems.

Demand

In exploring how SLDSs determine audiences' data needs, our 50-State Comparison echoes WestEd's P20W Modernization Diagnostic Tool and [state recommendations](#) from the Data Quality Campaign. The tool

and DQC's recommendations emphasize the need to gather feedback and recommendations from audiences well beyond leadership and staff at agencies that participate in the SLDS. Such feedback can ensure that data collection and research agendas meet diverse audiences' needs for information.

Similarly, the [Education-to-Workforce Indicator Framework](#) makes community engagement a key [Data Equity Principle](#). It urges data leaders to “restore communities as data experts” by involving them in “all phases of the data life cycle, from planning through co-creating solutions.”

Does the SLDS include mechanisms for understanding what information its diverse audiences need—whether they be policymakers, educators, families, employers or learners?

Where Do States Stand?

According to our 50-State Comparison:

- Eleven states refer publicly to a formal mechanism for gathering feedback from data users outside of participating agencies.
- Fourteen states publish a common research or learning agenda for the SLDS.

Few resources beyond the 50-State Comparison identify states that gather public input or publish research agendas. The U.S. Department of Education's SLDS survey has 2019-20 data on states that create a common research agenda.

Capacity

Our 50-State Comparison provides publicly available information that addresses important questions about SLDS capacity: Is there funding to build and sustain the system? Are there staff to carry out management and analytical capabilities? Is there infrastructure to support data quality, sharing and analysis? In addressing such questions, the [50-State Comparison](#) aligns with recommendations advanced by the P20W Modernization Diagnostic Tool, DQC's recommendations, CCSSO's capability model and reference architecture, and the George W. Bush Institute's policy brief.

Does the SLDS have the financial, technical and human capacity to deliver the information its audiences need?

DQC's recommendations, the WestEd P20W Modernization Diagnostic Tool and the George W. Bush Institute's policy brief all focus on the need for sufficient staff to support SLDS infrastructure and goals, and DQC recommends that an independent entity oversee the state's SLDS. DQC and the George W. Bush Institute also advocate for funding SLDSs and their source systems.

CCSSO joins those organizations' in calling for broadly available public data dictionaries, which list and define the data elements state systems collect. In addition, the P20W diagnostic tool recognizes the maturity of state systems that align their data definitions with outside standards, such as [Common Education Data Standards](#), that support interoperability among different data systems.

Where Do States Stand?

According to our 50-State Comparison:

- Fourteen states have a standalone agency or office with staff dedicated to the SLDS.
- Twenty-six states received federal SLDS grants in 2023.
- Four states received federal Workforce Data Quality Initiative grants in 2023.
- Twenty-one states publish a data dictionary showing what data the state collects. The 50-State Comparison links only to data dictionaries for the entire SLDS rather than separate dictionaries for constituent data systems.
- Twenty-three states publicly align the data elements they collect with Common Education Data Standards.

Other data system surveys that offer additional insights include:

- The George W. Bush Institute's SLDS ratings page. This page includes a section on capacity and resources that promote data systems' sustainability. The institute's underlying [rating data spreadsheet](#) includes information on state funding and staffing levels for education data systems.
- The U.S. Department of Education's SLDS survey. This survey has 2019-20 information on whether states maintain comprehensive data dictionaries for their K-12, postsecondary or workforce data systems. The survey also reports on states that align those data elements with Common Education Data Standards.

What State Surveys Don't Yet Tell Us About Capacity

Other organizations' SLDS rubrics and recommendations address aspects of SLDS capacity for which public information or survey data are not yet available. Among them are principles for promoting data quality and strengthening technical infrastructure. These include:

- The WestEd P20W Modernization Diagnostic Tool. The template includes such criteria as "State has established the infrastructure for ongoing data updates," "State has created flexible structures for storing and integrating information to allow for more P20W use cases," and "State is improving data quality by using issues found in testing to improve source data."
- The CCSSO's P20W+ Capability Model and Reference Architecture. This resource provides a framework to help states build the capacity and technical infrastructure they need for successful data initiatives. CCSSO grounds the model and architecture in principles like avoiding bias in favor of any single approach or technology, future-proofing efforts to ensure their long-term viability, and aligning software and hardware with common standards that promote interoperability among systems.

Governance

Decision makers cannot get the information they need if their states' data systems lack sound structures and processes that govern who is responsible for data, how it travels through or across systems, or how it stays

secure. Our 50-State Comparison links to public information about each SLDS's governance structure. Here too, our focus aligns with recommendations, criteria and principles advanced by the WestEd P20W Modernization Diagnostic Tool, DQC's recommendations, CCSSO's Reference Architecture and the George W. Bush Institute brief.

Is the SLDS governed in a way that promotes data-sharing while protecting the privacy and security of people's data?

The diagnostic tool devotes an entire section to data governance and identifies a formal P20W data governance structure as a key criterion. DQC and the George W. Bush Institute urge states to codify data governance in state law, and the diagnostic tool cites such law as evidence of effective governance.

Data privacy and security are vital aspects of governance that appear prominently in each organization's resources. CCSSO's Reference Architecture characterizes protecting the privacy of individuals' data as a "fundamental responsibility of the P-20W+ ecosystem." WestEd and DQC also focus on the need to protect private information without compromising access. For example, DQC urges states to develop legal and privacy frameworks that can prevent "confusion about what data sharing is permissible, which can be a barrier to access."

Where Do States Stand?

According to our 50-State Comparison:

- Twenty-nine states publicly specify how the SLDS is governed.
- Of those, 11 states codify cross-agency data governance in state law.
- Sixteen states' published governance structures include individuals, organizations or agencies from sectors outside of education and workforce.
- Thirteen states publish governance meeting agendas or minutes.
- Twenty-four states publish formal data privacy policies for the SLDS that expand upon federal and state privacy laws.

The George W. Bush Institute's SLDS ratings page devotes much of its state-by-state rankings to the governance of education data systems. It focuses on the value of codifying governance in legislation, clarifying data systems' purpose, aligning systems to that purpose and ensuring that leadership teams

are committed to it. The institute’s underlying [rating data spreadsheet](#) includes state-by-state information about participants in governance and their roles and responsibilities within governance structures. It also cites detailed information about how states define roles and protocols for ensuring data privacy and security.

In a [report](#) that accompanies its 2023 Strong Foundations survey, SHEEO offers aggregate information on policies and practices postsecondary data systems have adopted to ensure data privacy and security.

Use

DQC [calls on](#) state leaders to “invest in, build, and change SLDSs to enable everyone from a student to a state legislator to access and act on information.” Our 50-State Comparison examines key indicators of whether an SLDS meets that challenge. It identifies states that publish reports or dashboards derived from cross-agency data linkages as well as states that train diverse audiences on how to understand or use such tools.

Does the SLDS give its diverse audiences ready access to information they need to make decisions?

The P20W Modernization Diagnostic Tool, CCSSO’s Reference Architecture and the George W. Bush Institute brief sound similar notes. The diagnostic tool’s criteria include “public access to the P20W state data system” through dashboards or data marts, as well as professional development and outreach how to use data system tools. A similar principle behind CCSSO’s reference architecture is that data should be “accessible and understandable to appropriate users for decision-making and to perform their functions.” The George W. Bush Institute recommends a single public place for dashboards and reports that allows many audiences to “review and engage with the data.”

The [Education-to-Workforce Indicator Framework](#) envisions a future in which state data systems support the needs of diverse data users by answering their [essential questions](#) about students’ journeys from early learning to the workforce.

Where Do States Stand?

Our 50-State Comparison explores evidence of how states make their SLDS useful. In our comparison, we found that:

- Twenty-six states publish regular dashboards or reports derived from cross-agency linkages.
- Five states publish training resources on how to use their SLDS.

Other surveys provide additional information about how states' SLDS and constituent data systems encourage multiple audiences to use them, including:

- The George W. Bush Institute's [data spreadsheet](#). The spreadsheet offers a state-by-state assessment of whether “data can be accessed by multiple stakeholders, including policymakers, students, teachers/instructors and researchers.” It also reviews the accessibility of each state’s K-12 and postsecondary data via report cards or dashboards.
- The U.S. Department of Education’s SLDS survey. Findings from this survey include 2019-20 information on how states use data for decision-making. For example, the survey asked states whether they use their data to create resources for the public, design instructional supports, influence funding or curricular decisions, or inform strategic plans or agency goals. Rather than focusing on how states use cross-agency data, the survey presents findings broken out by sector — e.g., K-12 or postsecondary.
- The Strada Education Foundation’s [State Opportunity Index](#). The index includes an assessment of postsecondary education-to-employment data systems in all 50 states and the District of Columbia. The assessment addresses how well those systems meet the needs of such audiences as learners, families, institutions, researchers and policymakers. Among the measures it examines are systems’ capacity to provide information on earnings and employment after high school and postsecondary education or training, broad access to open data files with anonymized statistics, access to individual-level data sets for researchers, and interactive resources that inform decisions by learners, families or institutions.

Understanding the Needs of Different Audiences

As resources like the WestEd P20W Modernization Diagnostic Tool make clear, different audiences need different kinds of support. The diagnostic tool includes criteria for serving such audiences as local institutions that need linked individual-level data to understand their impact on the individuals they serve, researchers who need anonymized individual-level data to study the impact of different interventions, and individuals who need data tools to help them navigate education and workforce development systems.

Final Thoughts

DQC [recognizes](#) that “the future of state data systems must start with people.” In that spirit, the conceptual framework that undergirds this Policy Guide begins and ends with people: States have a responsibility to understand people’s needs for information and to ensure that the data systems they build meet those needs.

Transparency is a key aspect of meeting people’s needs. An SLDS may have robust data governance structures and processes even if our 50-State Comparison does not find public evidence of them. However, without public evidence of how a data system is structured or used, people who lack insider knowledge have few opportunities to engage with that system. Such people can include students or parents, but they can also include state legislators. By confining itself to public information, the 50-State Comparison provides an implicit measure of state data systems’ progress along the continuum from establishment to use.



More on the Included SLDS Resources

- Child Trends, Data Capacity of State-funded Pre-K Programs Across the United States (2023). [This survey](#) includes data about states' capacity to access and use data about early care and education and to link that data to K-12 data systems.
- The Council of Chief State School Officers Community of Innovation, P20+ Capacity Model and Reference Architecture (2023). [These resources](#) help statewide longitudinal data systems, and the different agencies that participate in them, adopt and implement strategies for modernizing their data system infrastructure.
- Data Quality Campaign, What Now? A Vision to Transform State Data Systems to Inform People's Pathways Through Education and the Workforce (2023). [This report](#) describes common use cases for statewide longitudinal data systems and includes a set of recommendations for supporting access to information through those systems.
- George W. Bush Institute Education and Workforce Pipeline, State Longitudinal Data Systems (2024). This [report](#) evaluates systems against four broad criteria: Governance (Coordinated Vision); Governance (Capacity and Resources); Accessibility and Data-Driven Policy; Transparency and Reporting.
- George W. Bush Institute, State Longitudinal Data Systems: Worth the Legislative Investment to Connect Workforce and Education (2024). This [report](#) outlines recommendations for state longitudinal data systems in legislation and policymaking.
- Mathematica, Education-to-Workforce Indicator Framework (2022). This [set of resources](#) offers guidance on how to use data "to promote equitable outcomes and economic security for all." The framework includes a set of essential questions for Education-to-Workforce data systems to answer, indicators associated with economic mobility and security, disaggregates systems should use to break down data, evidence-based practices to move the needle on key outcomes and system conditions, and data equity principles for encouraging more ethical and effective data use.
- State Higher Education Executive Officers Association, Strong Foundations Survey (2023). This [survey](#) of state postsecondary data systems documents the content, capacity, use and development of

those systems, and the ability of those systems to link to data systems for early care and education, K-12 and the workforce.

- Strada Education Foundation, [State Opportunity Index](#) assessment of postsecondary education-to-employment data systems (2024). The State Opportunity Index assesses the capacity of state data systems to strengthen the connection between education and opportunity. It examines 10 elements that, taken together, “provide a roadmap for states as they make continued investments in data systems and partner with stakeholders to ensure their effectiveness.”
- U.S. Department of Education, Institute for Education Sciences, Statewide Longitudinal Data Systems Survey Analysis: Descriptive Statistics (2023, data collected in 2019-20). This [report](#) presents information on SLDS capacity based on states’ response to 2019 and 2020 surveys of state systems. A new survey of state systems is in the field. As of April 2024, survey findings.
- Watershed Advisors, [State Early Childhood Data Linkages](#) (2024). This report and accompanying 50-state scan review the state of early childhood data systems, examine linkages between those systems and SLDSs, and address the conditions that enable states to build successful early childhood data strategies.
- WestEd, P20W Modernization Diagnostic Tool (2024). This rubric allows statewide longitudinal data systems to assess their own capacity in four categories: demand, systems, governance and use.

About the Author

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As senior policy director, Claus works with his Education Commission of the States colleagues to promote timely and relevant education policy and research. He has held senior positions in education organizations for more than 20 years and has spent much of that time helping diverse stakeholders find consensus on important education issues. Claus is dedicated to ensuring that state leaders have the information and guidance they need to make the best possible decisions affecting young people. Contact Claus at cvonzastrow@ecs.org.

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