It's Time to Make Linked Data Work for K–12 Leaders

States must put student pathways data in the hands of K–12 leaders to support pandemic recovery and student success.

Chiefs for Change and the Data Quality Campaign collaborated to generate this vision for ensuring that the education leaders responsible for K–12 policy and practice have access to useful data about the postsecondary and career journeys of their former students, also known as pathways data. This vision was informed by interviews with state education agency (SEA) and local education agency (LEA) leaders—including Chiefs for Change members and their teams—from nine states. Across the systems, the statewide data infrastructure, political context, and economic landscape vary. This brief summarizes what we have learned about the pathways data that leaders value most and offers corresponding action steps SEA leaders can take to address the data needs in their state.

Data Quality Campaign (DQC) advocates for the effective use of student data that will empower the education community and lead to policies and practices that improve outcomes for individuals throughout their education and workforce journeys. DQC leads the national conversation on data policy and nimbly responds to the needs of the field by sharing resources, recommendations, and expertise that focus on data systems that work, measuring what matters, centering privacy, data for equity, and making data publicly available.

Chiefs for Change is a nonprofit, bipartisan network of diverse state and district education chiefs dedicated to preparing all students for today's world and tomorrow's through deeply committed leadership. Chiefs for Change advocates for policies and practices that are making a difference today for students and builds a pipeline of talented, diverse Future Chiefs ready to lead major school systems.

State and local K–12 leaders need access to actionable information about the postsecondary and workforce outcomes of former students to make decisions that will prepare current students for success.

School and district leaders across the country are largely in the dark about student trajectories after they leave high school. This situation is true despite the fact that state leaders are increasingly focused on improving alignment between education and the workforce and more and more districts see supporting students' transitions into postsecondary or career as their responsibility.

Though states have made significant progress in linking student-level data between education and workforce agencies, most statewide longitudinal data systems (P–20W data systems) have not kept pace with the information needs of the decision makers who are responsible for creating and implementing K–12 policies, including SEA and LEA leaders. This reality must change for these leaders to be able to prepare students for long-term success in the face of an ongoing pandemic, a changing economic landscape, and evolving workforce demands.

The need to improve K–12 leaders' access to student pathways data is not new, but it is especially urgent as leaders oversee pandemic response and recovery. These individuals are facing once-in-a-generation challenges as they work to support students in learning safely amid continued disruptions to school operations and local economies. Despite juggling many priorities, leaders stated throughout our interviews that pandemic-related challenges have only increased their need to focus on supporting their students' transition to college and career.[1] As state leaders develop policies to improve the school-to-workforce pipeline and address pandemic recovery, they should take steps to build and improve P–20W data systems to ensure that school, district, and SEA leaders can access and use student pathways data.

KEY TERMS

The following are definitions for the purposes of this brief:

K–12 leaders. Decision makers responsible for creating and implementing policies and practices that affect K–12, including SEA, LEA, and school leaders.

Student pathways data. Individual-level, de-identified data that describes student journeys over time, from K–12 to career, and can be disaggregated by high school. This data allows school, LEA, and SEA leaders to identify trends in the trajectories of former students.

P–20W data system. State-level data system that pulls together individual-level data across early childhood, elementary and secondary education (K–12), postsecondary education and training, and the workforce.

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1   See page 9 for methodology and list of participating state agencies, districts, and schools.

What could K–12 leaders do with better access to student pathways data?

Based on our interviews, the following are the most common ways that SEA and LEA leaders want to use pathways data.

With better access to information about the trajectories of former students, **SEA leaders would be able to:**

- Track progress on state postsecondary education attainment and workforce goals.
- Revisit and update statewide K–12 policies so they align with the realities students will face as they pursue postsecondary and career opportunities.
- Allocate state resources strategically and make policy changes to promote the postsecondary or career readiness programs that are most effective and relevant.
- Develop strategies to promote equity and address opportunity gaps.
- Identify local bright spots to understand and scale best practices.
- Analyze what factors lead to success after high school and develop data tools, such as early warning systems, that local K–12 leaders can use in practice.

> "We are working toward a statewide education attainment goal. We want to give our districts as much data about student success after high school as we can and use this data to set goals and make sure students are ready for college and career."
>
> —Dr. Nathan Oakley, Chief Academic Officer, Mississippi Department of Education

District and school leaders would be able to:

- Evaluate whether college- and career-ready programs and support services lead to student success beyond K–12 and make changes where needed.

- Analyze what factors lead to success after high school and develop interventions, such as early exposure to career opportunities or mentoring programs, to better support students.
- Support counselors' ability to help individual students make informed decisions about the courses they should take and the activities they should engage in to prepare for their next steps after high school.

Improving transitions to postsecondary institutions and the workforce is a top-of-mind recovery priority for state education leaders. To meet this goal, they will need to empower decision makers at all levels with timely, relevant, and thorough data about students' outcomes after high school.

What pathways data do leaders want most?

The pandemic has exacerbated inequities and disproportionately affected students who have not historically been well served by their education system. It has also changed the economic landscape and postsecondary participation patterns, and each community has felt these effects differently. Leaders need information based on comprehensive granular data from K–12, higher education, and the workforce to understand and address the increasingly complex needs of their students.

We found that **K–12 leaders are hungry for a more complete, longer-term understanding of former students' postsecondary and career journeys.** Leaders currently have many questions they are unable to answer based on available data, from straightforward questions about college-going patterns to complex research questions about the impact of specific programs on students' long-term outcomes. The table on page 4 includes a list of the most common questions K–12 leaders have about student pathways that they are currently unable to answer and the data that is necessary to answer those questions.

Data That Is Most Valuable to Leaders Based on Their Priority Questions About Student Pathways

Questions K–12 Leaders Want to Answer	Data Needed to Answer the Questions *Each of the following elements should be based on individual-level data and disaggregated by high school and district.*
SHORT-TERM OUTCOMES	
What opportunities are our students pursuing immediately after high school?	• Industry data • Apprenticeship data • Postsecondary enrollment data • Postsecondary completion data
Are our former students enrolled in remedial courses? Which courses?	• Postsecondary course data*
How many of our former students enlisted in the military?	• Postsecondary financial aid data • Veteran status data[2]
LONGER-TERM OUTCOMES	
Are our former students graduating from college? How long is it taking?	• Postsecondary enrollment data* • Postsecondary retention data* • Postsecondary credit accumulation data* • Postsecondary completion data*
How much financial aid debt are our former students taking on?	• Postsecondary financial aid data*
How much are our former students earning in their careers over time?	• Industry data • Wage data
What are the outcomes of our former students who move out of state for college or work?	• Out-of-state postsecondary enrollment data* • Out-of-state postsecondary retention data* • Out-of-state postsecondary completion data* • Out-of-state industry occupation data • Out-of-state wage data
DIFFERENTIATED OUTCOMES	
How do the outcomes of our former students differ across populations?	• Industry occupation data • Postsecondary completion data (disaggregated by group: race/ethnicity, gender, disability status, Pell status, state aid program participation, full- or part-time status)* • Postsecondary enrollment data • Postsecondary retention data • Wage data (disaggregated by demographic: race/ethnicity, gender, disability status, Pell status)
Is there a difference in degree or certification completion for students who earn dual credit compared to those who do not?	• Postsecondary enrollment data* • Postsecondary completion data* • Dual enrollment and other advanced course data
What are the occupations of students who completed career and technical education (CTE) programs? Are we promoting equity in educational opportunities and outcomes with our CTE programming?	• Industry data • CTE program participation data

These indicators should also be disaggregated by postsecondary institution.

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2   States struggle to understand the pathways of students who enter the military after high school; the SEA leaders we spoke to do not have access to military enlistment data. A necessary workaround some states have adopted is retroactively identifying military-involved individuals through veteran status flagged across several agency data systems, including the receipt of GI Bill benefits or self-reporting veteran status on college applications.

Leaders want clear, disaggregated data to inform their decisions. To answer their most pressing questions about student outcomes, **state and local K–12 leaders want data that is:**

- **De-identified, student level, and longitudinal.** Secure student-level data will allow decision makers to filter data by student populations and answer questions that are specific to those groups.

- **In context.** Leaders should be able to look at their own data alongside data that reflects statewide trends, including benchmarks and progress.

- **Timely.** Pathways data should be available on a predictable timetable that aligns with when and how K–12 leaders are making decisions about programming and system improvements. While pathways data may take longer than other data points to generate and share, states can establish a reasonable timeframe that K–12 leaders can count on to be able to access data.

- **Easy to use.** Data should be available in a format that makes it easy for K–12 leaders to drill down and answer their specific questions. Where possible, leaders should be able to seamlessly integrate the information with existing data tools and platforms.

- **Paired with support for analysis and use.** SEAs need additional support to translate insights from data into action and to support districts in doing the same.

Leaders at the Tennessee Department of Education (TDOE) have embraced their role in supporting postsecondary transitions and would value having more specific data about student pathways that they can trace back to high school program participation.

"We believe it is our responsibility to ensure students have informed pathways after graduation to pursue postsecondary opportunities or credentials that lead to high-wage, high-skilled careers," said TDOE Chief of Programs Jean Luna. "I'd like to see more expansive alignment of academic advising prior to high school. As students pursue high school pathways we need to explore: How are they aligned to postsecondary success? **For example, if a student enrolls in health science courses in high school, what are their opportunities and options after high school? Did students in certain pathways tend to matriculate into those fields? Longitudinal data in these areas would be extremely helpful."**

Obstacles to Access

While state and local leaders face different access challenges, there is widespread agreement among the K–12 leaders we interviewed that, regardless of the maturity of their state data systems, they are unable to access and use the pathways data they want most. All states have the ability to share data among state education and workforce agencies, but the maturity of state longitudinal data systems varies greatly state to state. Even where data linkages exist at the state level among K–12, higher education, and workforce agencies, often K–12 leaders are not able to access—or easily find—statewide trend data that is specific to their students. The leaders we spoke with identified the following as key obstacles to data access:

- **Pathways data is not available or complete enough to answer leaders' questions.** The most common pathways data that K–12 leaders have access to is postsecondary enrollment data, or

data that reflects whether former students enrolled in a postsecondary institution in the fall after high school graduation. While useful, postsecondary

" [High school] graduation is the floor, not the ceiling. Our priority is creating equitable systems for postsecondary success. [We] can use [pathways data] for systems improvement. . . . Right now we are guessing based on trends. Data doesn't need to be identifiable student data, but [we] need more than overall percentages. **The data we have is not timely or specific enough to do the internal work to make a difference."**

—Whitney Oakley, Chief Academic Officer, Guilford County Schools, North Carolina

enrollment data offers only limited insight when it comes to answering leaders' highest-priority questions about student pathways and often does not reflect the experiences of many students who do not go straight to college or who attend institutions not captured by these counts (such as private or out-of-state institutions). State data systems also fail to capture longitudinal data about certain student populations, such as students with disabilities or undocumented students.

- **Available data is not easy to find or use.** Available pathways data is often presented in a format that is difficult for K–12 leaders to use and may not have been designed with their needs in mind. While these needs will be different depending on the decision maker, in general K–12 leaders noted they want to have the ability to use data to answer their various questions.

> **What would be most helpful for a practitioner would be dashboards that can be filtered to create visualizations and tell a story.** . . . Our district created a dashboard with information about postsecondary enrollment that is broken down by school, race, ethnicity, and gender. Using this tool, we found, for example, that direct enrollment is much lower for male students of color. Because we could disaggregate the data, we were able to pursue targeted strategies and create additional support for this group of students."
>
> —Janet Blanford, Director of Secondary Success, College and Career Readiness, Highline Public Schools, Washington

- **Leaders and their staff lack the time and training to use data.** K–12 leaders expressed concern about internal capacity for data use. Even if they had access to useful data, they doubt they would have the time and training to interpret it and gather the insights needed to influence policy and practice decisions.

Many states have invested in linking longitudinal data between state agencies, but very few states have built sustainable data systems that are responsive to the needs of on-the-ground decision makers who can

Leaders at the Rhode Island Department of Education (RIDE) have access to some pathways data but struggle to find the bandwidth to use that data to answer their many internal research questions.

"We spend a large amount of time fulfilling data requests. . . . **The challenge for us is having the time to dig into the data ourselves,**" said Scott Gausland, director of the Office of Data and Technology Services at RIDE.

After the local petroleum industry declined during the pandemic, officials in Ector County Independent School District in Texas have prioritized preparing students with diverse skill sets so they are able to navigate such economic "ebbs and flows."

"Our goal is graduating students who are prepared for a range of options, not just one track," said Annette Macias, executive director of accountability, assessment & school improvement. District leaders see information about student pathways as a critical starting point in creating an action plan to support student success moving forward. While district staff do have access to some pathways data, they need additional support to use it. Macias said, "How do we use [trend data] to improve our programs and set students up for success with multiple pathways, not just one? **We are data rich but information poor. . . . It's not just access to the data, it's how to put data in a format that is easily understandable.** A data analyst who understands education is hard to find. That's a tremendous need. If it weren't for some of the strategic partnerships we have in place, we would still struggle with that."

use this data to make policy and practice decisions to support student success. The landscape differs across states. In many cases, the data exists, but it is not getting into the right hands at the right time, causing local leaders to pursue their own (often burdensome) workarounds. It is important for states to help ensure that their data infrastructure is designed to support access and for states to invest in strategies to enhance K–12 leaders' capacity to use this data.

Four Strategies for States to Help Ensure Access to Student Pathways Data

State leaders should prioritize meeting the demand for pathways data by pursuing state-level solutions that create the conditions for better access and use at the state and local levels. P–20W data systems are the best tool states have to meet these needs. But data linkages do not support access and use on their own. States must embrace a service-oriented approach to improve their statewide data systems by prioritizing the following components:

1. **Cross-agency data governing body.** States should have a coordinated, service-oriented vision for P–20W data and an accountable, leadership-level body to execute that vision.

2. **Modern and secure statewide linked data infrastructure and quality source systems.** Outdated infrastructure is an obstacle to access. Part of providing better access to linked data for K–12 is ensuring that state-level data systems are modernized and nimble enough to respond to evolving needs. Source systems have to be quality and standardized in a way that allows data to be matched. Information needs will change over time, and data systems must be agile enough to adapt to these changes.

3. **User-oriented data tools.** Leaders should be able to access data in a format that is useful and tailored to meet their unique needs.

4. **External capacity to support data analysis and use.** SEAs and LEAs must have the time, money, and training to interpret and use insights from linked data, which may require cultivating partnerships outside of these agencies to support research and analysis.

What can SEA leaders do to move their states forward?

SEA leaders are uniquely positioned to forge partnerships, invest in infrastructure, allocate resources, and disseminate insights. SEA leaders can also ensure that districts, regardless of their size, geography, and capacity, have equitable access to data resources. **SEAs can take the following steps to support pathways data access in their state:**

1. Establish a cross-agency data governance body:

- **Advocate for a formal cross-agency data governing body.** SEA leaders can advocate for their governor and state legislators to codify cross-agency data governance policies that embrace a service-oriented vision for data, with K–12 leaders as one key audience for this data. Regardless of how mature a state's data infrastructure is, governance is critical for ensuring that data systems are responsive to stakeholder needs. State leaders should establish a mission that is service oriented and a data governance body that is representative of all data users, including K–12 practitioners. Codifying the structure is a best practice that improves the sustainability of the governing body.

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  The Art of the Possible: Data Governance Lessons Learned from Kentucky, Maryland, and Washington examines how three data governance bodies reflect the unique context of each state and have broken down the silos that exist among state agencies that use data to support education and workforce efforts.

  California Sets a New Bar for P–20W Data Policy explains how, by centering equity, best practices, and evidence-based policy, California has set itself up to lead the country in using data to serve individuals.

- **Center privacy.** States must ground new data linkages and access policies in privacy and security best practices. Data governance bodies should be made responsible for designing policies with privacy in mind, including building trust through transparency about how students' personal information is protected and used.

2. Ensure that data infrastructure meets access needs:

- **Advocate for sustained state funding support for the state's P–20W data system.** Data systems require regular improvements and updates to better adapt to changing information needs and address technological advancements. The best way to ensure that today's investments have lasting impact is to secure a sustainable state funding mechanism that can support needed improvements over time.

- **Communicate about the uses for a P–20W data system and pathways data for leaders and the students they support.** SEA leaders can use their bully pulpit to explain the value of putting pathways data in the hands of K–12 leaders and provide concrete use cases for this data. No matter what a state's data goals are, it is always essential to communicate clearly about how investments in the P–20W data system directly promote education and workforce goals and generate political support for needed legislative action.

- **Explore interstate data sharing compacts.** A major gap in the data needs of SEAs and LEAs is the ability to follow students who pursue college and career out of state. States can pursue data sharing across state lines through initiatives that will fill information gaps by facilitating individual data sharing compacts or matching state data with data from national databases.

A Roadmap to Better Data: Developing a Census Bureau Partnership to Measure National Postsecondary Earnings Outcomes, published by the Institute for Higher Education Policy, provides state data leaders with guidance for every critical step of replicating the partnership, including building buy-in and approval from leadership, developing necessary legal agreements, and ensuring the quality and security of data.

ACCESSING OUT-OF-STATE DATA: A Role for Congress

Congressional leaders should prioritize passage of the College Transparency Act (CTA), lifting the ban on a federal student unit record. Passing CTA would allow the U.S. Education Department (ED) to collect student-level, protected data from states' postsecondary systems while still protecting personally identifiable information. Currently, postsecondary institutions share mostly aggregate-level data with ED, and as a result, the questions that can be answered using that data are limited. CTA would pave the way for leaders to have access to comparable and useful information about how well students are prepared for their next step after graduation.

3. Create user-oriented data tools:

- **Engage local leaders to understand their needs.** SEAs can start by convening local leaders to understand information needs and challenges, including identifying these leaders' highest-priority pathways questions as they respond to COVID-19. SEAs should consult all types of local decision makers—including school counselors—who have an important role to play in student transitions and continue to solicit feedback on access needs over time.

- **Make existing linked data available to districts and schools.** SEAs can start by pursuing policies and practices that ensure that the data the agency has access to about student pathways is also available to districts and schools.

- **Use federal funding to support improvements to data systems and tools that meet user needs.** State leaders can use federal funding to support efforts to modernize systems, develop source systems, and build new tools. This federal funding includes stimulus funds, Statewide Longitudinal Data System grants, or Workforce Data Quality Initiative grants to invest in modernizing state data infrastructure to make available data relevant, sustainable, and service oriented.

State and Local Governments Can Use Federal Funding for Education Data identifies federal funding streams that are flexible, specify data as an allowable activity, or are allocated specifically for data.

4. Build capacity for pathways data analysis and use:

- **Establish district-level peer learning networks to disseminate insights and best practices**. A network will allow districts to learn from similar systems, discover best practices, and compare across districts. It will give districts additional support to overcome barriers to data use.

- **Convene districts for a state data conference.** Regardless of the extent to which pathways data is available, statewide data conferences can be used to communicate and build relationships among those who work with education data. States can use these settings to share best practices, inform decision making, and engage with LEAs on their data needs.

breaks down what leading states consider when hosting these convenings to ensure that leaders walk away with clear next steps and a shared vision for using data to support students in their state.

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- **Pursue strategies to enhance state and local research capacity.** Local K–12 leaders need external support to answer their most pressing questions and translate insights into changes in practice. SEAs can address these needs by:

  - Advocating for the creation of a shared research agenda for P–20W via a cross-agency data governing body.

  - Creating an independent state-level body to serve as a data service center to support local data needs.

  - Partnering with Regional Education Labs to build capacity for data use at the SEA and LEA levels.

  - Establishing research-practice partnerships that support answering practitioner questions that require linked data.

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offers a closer look at key focus areas that researchers and education leaders should discuss when embarking on a specific research project or at the start of a longer-term partnership.

Leadership Matters

A sustainable P–20W data infrastructure requires support and leadership across agencies that embrace data use for change. State leaders must be intentional about creating a statewide data culture that promotes data use at the local level and make a commitment to use data to inform change in policy and practice. With better access to data about student pathways, K–12 leaders are able to make decisions about where to strategically allocate resources and change policy and practice to ensure that all students have the support they need to succeed after high school.

Methodology

DQC spoke to leaders across the following nine states, six LEAs, and two schools between April and July 2021:

- Alaska: Alaska Department of Education and Early Development**

- California: California Department of Education; Santa Barbara Unified School District

- Kentucky: Kentucky Center on Statistics; Kentucky Department of Education

- Mississippi: Mississippi Department of Education**; Gulfport School District; Gulfport High School

- North Carolina: Guilford County Schools**; North Carolina Department of Public Instruction

- Rhode Island: Rhode Island Department of Education**; South Kingstown School District; Westerly High School

- Tennessee: Tennessee Department of Education**

- Texas: Ector County Independent School District**; Texas Education Agency

- Washington: Highline Public Schools**; Washington Office of Superintendent of Public Instruction

**System led by a Chiefs for Change member

All interviews were standardized, and interviewers probed for an understanding of the SEA or LEA prioritization of student outcomes data and challenges using and accessing student outcomes data. We analyzed our interview notes thematically and made our best determinations based on all of the sources to provide the recommendations found in this report.