PUBLIC POLICY INSTITUTE OF CALIFORNIA

APRIL 2021

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Supported with funding from the Bill & Melinda Gates Foundation and the Sutton Family Fund

Building California's Cradle-to-Career Data System

SUMMARY

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California is on the verge of creating a data system that connects existing K–12, higher education, workforce, and social services data. A yearlong collaboration initiated by the governor among representatives from educational institutions and state agencies, advocates, and researchers has produced a plan for a comprehensive data system. This long-overdue system would provide tools for students, parents, educators, researchers, and policymakers to examine data, answer important policy questions, and navigate college access and success.

By facilitating a comprehensive shared understanding of educational and education-to-workforce pathways, the data system can help improve education in several key ways.

- **Setting and tracking progress toward statewide goals.** Connected data will allow policymakers, educators, and researchers to set ambitious intersegmental goals and track progress toward achieving them.
- **Identifying successful initiatives.** Tracking student progress along education pathways can help educators and researchers determine the long-term impact of programs and policies.
- **Advancing equitable outcomes.** Connected student data can help locate opportunity gaps and assess strategies for improving equity.
- **Lowering educational barriers.** The associated tools can help students and families set and track progress toward educational goals. It can also help streamline transitions between educational systems.
- **Facilitating cooperation among stakeholders.** A statewide data system can enhance coordination among education systems, social service agencies, and other institutions seeking to understand and improve education in California.

In his January 2021 budget plan, the governor proposed funding to cover the initial costs of creating a cradle-to-career data system. The legislature will need to consider the short- and long-term funding needs of building, maintaining, and improving a system that can meet California's needs. The state should also consider how best to implement outreach and training to students, families, and educators to ensure that the data is useful and generate long-term support from a broad range of stakeholders. Making data accessible to researchers and advocates, who will play an important role in making the system a successful investment for the state, should be a key priority.

The state's commitment to this new data system during a once-in-a-century pandemic indicates an understanding of the need for data during a crisis, as well as the importance of education—and educational equity—in promoting economic mobility.

California Is Creating a Cradle-to-Career Data System

With support from the governor, the legislature passed the California Cradle-to-Career Data System Act in 2019.[1] The act laid out a process for the design and implementation of a data system that links existing individual-level longitudinal data from education, financial aid, workforce, and social service sources across the state. A yearlong public process resulted in a proposal for a centralized system that includes several tools that will enable students, parents, educators, policymakers, and researchers to use data to improve educational opportunities and outcomes.[2] This system would be housed in a new office in the Government Operations Agency, under the guidance of a board composed of representatives from state agencies and the public.

The first year of implementation would cost between $15 and $20 million, and it could take up to five years to build the system. The result would be a flexible, multifaceted resource that could aid California in improving educational outcomes for its students. The proposed data system will inform six key areas of inquiry identified by the California Cradle-to-Career Data System Act:

- The impact of early education on student success and achievement throughout the education pipeline and in the workforce.
- The long-term effect of state intervention programs and targeted resource allocations in primary education.
- How prepared high school pupils are to succeed in college.
- How long it takes students who transfer from community college to the University of California, the California State University, or another four-year postsecondary educational institution to graduate with a baccalaureate degree.
- College access, completion, and long-term effects of access to state financial aid.
- The workforce effect of graduation from high school, community college, and four-year postsecondary educational institutions.

The Cradle-to-Career Data System will include more than 160 data points from pre-kindergarten through college and the workforce, as well as contextual data in areas such as participation in social services and financial aid programs (WestEd 2020). In addition, the tools that would facilitate use of the data can make it accessible to a broad range of stakeholders.[3] These tools include:

- **Dashboards:** A collection of tables and charts that allow users to view aggregated data with options to view data by subgroups such as race/ethnicity, gender, and geographic location.
- **Query builder:** A tool that allows users to construct their own tables and charts with aggregated data.
- **Reports:** A library of tables, reports, and research generated with the data system.
- **Data requests:** A process for requesting aggregated data unavailable in the dashboards or query builder, or student-level, de-identified data to conduct research. This is the most protected of the data tools, as requests must go through a comprehensive review process.

The proposed system also expands existing programs for students, including a college and career planning tool and electronic transcripts to cover more students and institutions.

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[1] California Education Code Section 10850-10859.

[2] Detailed information on the planning process and the proposal can be found on the California Data System website.

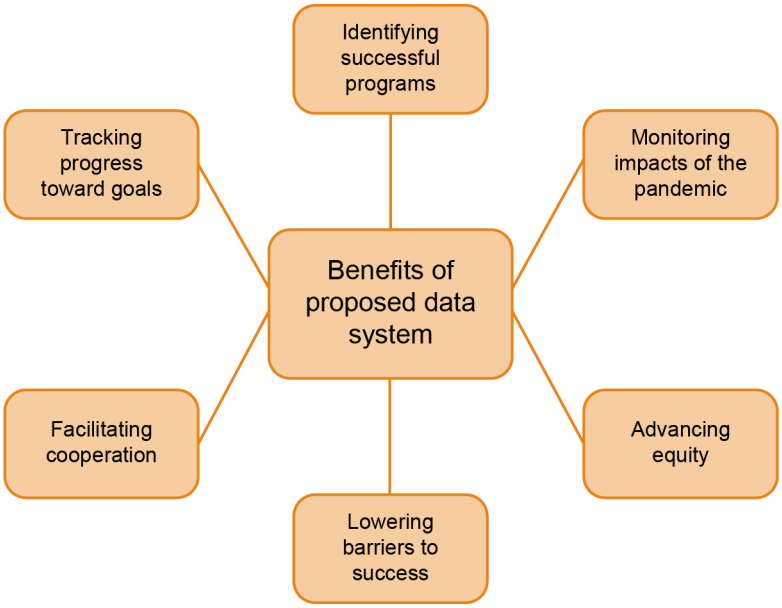
[3] The proposed data providers for the P20W system would eventually include the California Department of Education, California Community Colleges, California State University, University of California, California Student Aid Commission, Employment Development Department, Labor and Workforce Development Agency, Department of Social Services, Health and Human Services Agency, and potentially private colleges (represented by the Bureau of Private Postsecondary Education and Association of Independent California Colleges and Universities). This list may expand as the data system matures and incorporates more data on early learning and care.

This report outlines how a statewide data system could help equitably improve student outcomes by facilitating collaboration among institutions and stakeholders. It also highlights key considerations for ensuring that the system is sustainable and successful.

A Shared Knowledge Base Will Have Multiple Benefits

The Cradle-to-Career Data System will create a shared knowledge base about the education-to-workforce pipeline in the state. This will allow for cooperation, planning, and research that can help policymakers and educators address the challenges and reinforce the successes along that pipeline. In particular, the proposed system could facilitate improvements in six key areas.

A statewide data system could benefit the state in many ways



Setting and Tracking Progress toward Statewide Goals

A data system would help the state and its educational institutions set and track progress toward important intersegmental goals. The state has not updated its goals for access to higher education since the Master Plan for Higher Education was adopted in 1960. Although individual systems have adopted goals and metrics, there are no explicit, statewide goals for higher education outcomes including college enrollment, college readiness, transfer, or college completion. Moreover, it is often difficult for individual segments to measure the impact of policies and programs. For example, California's K–12 school dashboard has a career and college readiness metric with clear goals and metrics, but without connected data it cannot track postsecondary enrollment and success across schools and districts.

Identifying Successful Programs and Policies

Tracking student progress and outcomes across institutions can help educators and researchers determine the long-term impact of programs or policies. Statewide data can help the state, communities, colleges, districts, and schools decide which programs or courses to implement and identify policies that might not be working well. For

example, data that indicates whether (and which) high school graduates have succeeded in college could help schools and districts improve their college preparation. And the state could assess the impact of early commitment programs on rates of college-going, and adjust or expand them.

Connected data has already enabled the evaluation of some important statewide programs. For example, combined K–12 test results and admissions and course data from the California State University (CSU) to determine that the statewide Early Assessment Program reduces the need for remediation among entering college students (Howell et al. 2010). Indeed, such a system would make it easier to do rigorous policy evaluation that can lead to better-targeted state and local investments.

Monitoring the Effects of Disruptions such as the Pandemic

Connecting K–12 and postsecondary data will allow the state to examine and address the effects of the pandemic and similar disruptions on college-going and progress toward degrees. A statewide system would also allow for the examination of regional differences or equity implications. Existing data connections have been important in tracking the effects of the pandemic on students and their communities. Early evidence from eight large school districts indicates students learned less than usual during the pandemic in English and mathematics (Pier, Hough, Christian, Bookman, Wilkenfild, and Miller 2020). A statewide data system could track the long-term impact of the pandemic as students move to new schools or to postsecondary education.

More connected data could also help build California's resilience during crises. During the pandemic, for example, Minnesota's Early Childhood Longitudinal Data System's services map ended up serving as a resource to direct essential workers to child care providers who had space for their children.

Advancing Equitable Opportunities and Outcomes

Connected student data can help locate opportunity gaps in the educational pipeline and analyze strategies for improving equity in the state. Many of California's higher education outcomes are inequitable. For example, students from middle- and higher-income backgrounds are more than twice as likely to earn a bachelor's degree compared to students at the lower end of the income scale. And Asian American students are almost three times more likely to get degrees than are Latino and African American students (Johnson and Cuellar Mejia 2020).

Educational disparities emerge well before college, and the pandemic has underscored the importance of identifying and narrowing opportunity gaps along the educational pipeline. There is evidence that during the pandemic access to technology, devices, and access to food varied by race and family income, and early analysis indicates that low-income students and English Learners are experiencing more learning loss than their peers (Gao, Lafortune, and Hill 2020; Pier, Hough, Christian, Bookman, Wilkenfild, and Miller 2020). The proposed data system would eventually include important contextual social service data, which could help researchers evaluate linkages between participation in safety net programs like CalFresh and long-term educational outcomes.

Lowering Barriers to Success for Students and Families

The Cradle-to-Career Data System would expand a college and career planning tool via the California College Guidance Initiative (CCGI), which currently enables students and their counselors in participating districts to track in real time their progress in taking the courses (known as A–G courses) required for eligibility for admission to both CSU and the University of California (UC).[4] Helping K–12 students and their families chart a

[4] Currently just under 100 California districts elect to participate with the nonprofit CCGI.

path to higher education is an important way to increase college enrollment and success. Currently, only about half of California's high school students enroll in all of the courses necessary to be eligible for UC and CSU; many of the students who do not take all of the necessary courses are successful in the classes they do take (Gao and Johnson 2017). This leaves many capable students ineligible. Expanding this college and career program to more districts will make it easier for educators to advise students, for schools to provide the right courses, and for students and families to pursue the coursework that can help them achieve their educational goals.

Facilitating Cooperation and Coordination among Institutions

Connected data can help California improve the delivery of social services, college access, financial aid, and transfer rate from community college to four-year institutions by facilitating ongoing collaboration. As one of the few states without a central coordinating body for K–12 and higher education, California currently relies on the legislature, the governor's Council on Postsecondary Education, or educational institutions themselves to coordinate their efforts, usually on a project-by-project basis (Warren 2019).

The Recovery with Equity task force recently released a report that recommends integrated admissions across all segments of higher education and an integrated platform of state services for students (Education First 2021). Implementing these policy recommendations will require a clear view of the educational and social service pipelines, joint planning, and data from multiple institutions.

The Planning Process Has Emphasized Collaboration

The development of a statewide data system has been swift and inclusive. Representatives from 16 state agencies and more than 30 stakeholder groups—including advocacy, research, and educational organizations—worked together for a year to design the proposed data system.[5] Leaders, lawyers, and technology experts across educational segments and agencies have created a technical and legal framework for a data system that protects student privacy and provides data security for institutions.[6] Representatives from state agencies, educational organizations, and stakeholder groups have developed a mission and vision for the data system, a framework for governance, and processes for requesting access that vary based on the sensitivity and scope of data.

Representatives from the state's educational institutions have also collaborated on common data definitions and identified more than 160 data elements that should be included in the system. Building on past experience has helped increase trust and momentum.

California Has Learned from Other States

As one of the last states to implement a data system, California has learned from the successes and failures of many other states. National experts and representatives from states with successful data systems, such as Kentucky and Washington, provided information and advice during the planning process. California has adopted successful practices such as developing a mission and vision, involving broad representation from agencies in and outside of education, involving key stakeholder groups in the design of the system, and including a transparent

[5] Several other groups have met and produced recommendations for a data system, including the California Education Round Table Intersegmental Coordinating Committee, which convened members from each of the education systems starting in 2018, and the California Education Data Collaborative, which convened advocacy, research, and policy organizations starting in 2019.
[6] The proposed legal and technical framework can be found on the California Data System website.

decision-making structure in the system's governance (Data Quality Campaign 2018; Institute of Education Sciences 2017).

California Is Also Building on its Own Experience

Existing data sharing agreements across the state show that it is possible to link data safely across institutions. California institutions currently share data in order to evaluate the impact of programs or policies, streamline processes, or plan for the future. These collaborations are often critical for understanding what works in education, but the onerous process of obtaining and connecting data has often limited their frequency and scope.

Regional collaborations often involve local institutions sharing student-level data for regional planning and program evaluation. Some regional consortia, such as the Long Beach Promise, match student records from local institutions and make that data accessible to partners to inform decision-making. Others, such as Cradle to Career Fresno County, consolidate data from a wide range of institutions.[7] Many representatives from local data collaborations see improved statewide data connections as important to their local work (Moore, Grubb, and Esch 2016).

Each public higher education sector is required by law to match student records with California's Employment Development Department data to estimate the earnings of their graduates. But many institutions also voluntarily exchange data at the state or even national level. Colleges share information on individual student enrollment and data on degrees with the National Student Clearinghouse, and in return can track where (or whether) their applicants or transfers enroll and graduate.[8] At the state level, many school districts and California State University, University of California, and California Community College campuses have voluntarily shared student-level data with Cal-Pass Plus, a statewide cooperative that provides data tools to participating institutions.

A statewide data system would support planning, decision-making, and policy and program evaluation efforts that currently rely on ad hoc, regional, and other forms of data sharing. Such a system would consolidate data from across the state, allowing regions to keep track of outcomes for students who move to other areas. Moreover, it would allow researchers and their institutions to spend less time on data agreements and more time on evaluation and analysis. This consolidated data would also be available to community members and policymakers across the state.

A Successful Data System Will Require Sustained Support

The planning process for the Cradle-to-Career system has generated strong support from stakeholders and state policymakers. However, a data system's long-term success will require sustained political and financial investment, a commitment to public outreach data to ensure widespread use, and ensuring access to quality data to increase stakeholder support (Institute of Education Sciences 2019).

Funding Will Need to be Long-term

Governor Newsom's state budget plan includes $18.5 million to cover the estimated cost of the first year of implementation. It could take four to five years to finish building the data system (WestEd 2020), and the Cradle- to-Career workgroup plans to estimate the costs for subsequent years. These costs will be important

[7] Cradle to Career Fresno County is also working to connect data for individuals across several institutional data systems.
[8] The Cradle-to-Career Data System First Legislative Report recommends purchasing National Student Clearinghouse data to see the outcomes of Californians who enroll in postsecondary institutions out of the state.

considerations for the administration and the legislature. Future investments will be needed to cover phasing in the data system, adding data partners, outreach, staff, technology, data improvement, and support for partnering entities. Once the system is fully established, it will need sustained funding for operations, maintenance, and improvement.

Federal funding could play an important role. Since 2005, the federal government has invested more than $700 million to help states build and expand statewide longitudinal data systems (Institute of Education Sciences 2020). Moreover, in 2019 alone, 26 states received an average of $3 million for creating, optimizing, or expanding longitudinal data systems. California should be prepared to seek out these resources when they are available.

Public Outreach Will Be Critical

Public and political support for a data system will depend on how useful the system is to its many stakeholders. The public data tools, such as dashboards and tables, and the operational tools, such as the college planning tool, will be available for anyone to use. However, if parents, educators, and policymakers do not know about the tools, do not know how to use them, or do not find them useful, the data system could lose support.

Making sure that the tools for students, families, educators, and researchers have the broadest possible impact will require ongoing outreach and mechanisms for feedback. The state should look to the development of the California School Dashboard, which benefitted from stakeholder education and feedback, as well as a focus on continual improvement.

The first steps in engaging wide audiences have already been taken. Many stakeholder groups, including research, policy, advocacy, and educational organizations, are helping create the data system. And most of the 400-plus people who attended WestEd webinars about the data system indicated that they would use one or more of the tools (WestEd 2020). Getting these tools in the hands of educators, local policymakers, students, and parents throughout the state will require a major effort. The training required to make the tools useful will differ by type of user and technical skill.

A workgroup is currently developing a plan for community engagement, and its findings will be important for the success of the system in effecting change. A proposed Community Engagement Advisory Board, composed of educators, students, community organization staff, and other public members, would provide guidance to the governing board.

Access to Quality Data Can Help Fuel Support

Data accessibility will be also be key to maintaining public and political support. Because the proposed system does not produce its own research, it will be up to educators, government, academic, and policy researchers to rigorously address important questions. Granting access to researchers who use student-level data to evaluate statewide policies, examine equity, and track the effects of the pandemic and other disruptions will be critical to the success of the system. By supporting important, actionable research, the data system can demonstrate value, remain relevant, and maintain the support of the research, policy, and advocacy communities.

One way to advance usefulness and accessibility for the public is to ensure more public representation on the data system's governing board. In the current proposal, two thirds of the board positions represent data providers and one third represent the public. The independent Legislative Analyst's Office suggests increasing the number of public members to ensure that the system serves the public interest (Steenhausen 2021).

The usability and relevance of the data system will also depend on the quality of its data. This may require improvements to some measures. For example, the state's workgroup has identified ways to improve the

operation tools by integrating with statewide K–12 longitudinal data (WestEd 2020). Other important data points, such as grade point averages, may also need to be improved if they are to be useful to most audiences.

In general, concerns about data quality should help the state focus on improving important measures rather than excluding them from the data system. The proposed Data and Tools Advisory Board, made up of educators, students, and other public members, would recommend improvements to both access and content once the system is established.

The importance of shared knowledge has become even more evident during the COVID-19 pandemic, as policymakers, health professionals, and others have sought to track and contain the virus and its effects. The bifurcated economic impact of the pandemic has underscored the importance of education in creating economic opportunity. The state should act on the important planning done by its educational institutions, state agencies, and stakeholders and give Californians a resource that has the potential to help the state broaden educational pathways, increase equity, and meet its current and future workforce needs.

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ACKNOWLEDGMENTS

Thanks to the Bill and Melinda Gates Foundation and the Sutton Family Fund for supporting this work. We appreciate thoughtful reviews and input by Hans Johnson, Niu Gao, Colleen Moore, Chris Furgiuele, Michael Wiafe, and Vicki Hsieh. Thanks also to Hans Johnson and Mary Severance for their editorial support.

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