SLDS Topical Webinar Summary

Linking K12 Student Data with Postsecondary Data

Linking student data across primary, secondary, and postsecondary education sectors is a common first step for states planning to explore college and career readiness through their statewide longitudinal data systems (SLDSs). States planning to link data across sectors must consider a number of challenges, including how to match student records, how to protect student privacy, and how the linked data will be used to inform educational programs that prepare students for higher education and the workforce.

Iowa, Kentucky, Maine, and Montana share their approaches to linking K12 and postsecondary education data and how they are using longitudinal data to learn more about college and career readiness for their students.

Iowa: Paving the Way for Data Matching with a Common Statewide ID

Even before Iowa secured its second SLDS grant in 2012, which allowed it to expand its SLDS work beyond K12 to begin linking to postsecondary data, the Iowa Department of Education (IDE) laid the groundwork for cross-sector data sharing by providing its K12 unique identifier to public postsecondary institutions beginning in 2010–2011. The state now uses a two-step process to match data from K12 with data from postsecondary institutions, and vice versa. The first step is ensuring that colleges and universities have the K12 identifier—called the StateID—for all of their students. At the end of each academic year, Iowa state community colleges and universities send IDE a file of student names and dates of birth. The department runs the student information through its eScholar system to retrieve the matching K12 StateIDs and returns the StateIDs to the appropriate colleges and universities to store for future data matching.

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For the second step, IDE sends StateIDs to the postsecondary institutions for each cohort of students for which it needs data—including non-high school graduates. The colleges and universities pull enrollment, awards, and developmental data for those students, which are then stored in the SLDS and updated on an annual basis. Once in the SLDS, the StateIDs for each student record are de-identified and replaced with a new unique identifier. The records can still be matched after the StateID is removed, but only SLDS staff performing the extract, transform, and load (ETL) operations have access to the crosswalk used to match the files. Once the system is fully operational, Iowa intends to be able to destroy the crosswalk and have anonymized linked data in the system.

To date, StateIDs for students in the K12 classes of 2009 through 2012 have been shared with and stored by public community colleges and universities. Student data for those cohorts from the Board of Regents, which oversees Iowa's public universities, have been incorporated into the SLDS, and a pilot sample of community college data has also been incorporated. Although private postsecondary institutions do not currently

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For more information on the IES SLDS Grant Program or for support with system development, please visit http://nces.ed.gov/programs/SLDS.

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participate in data sharing with the SLDS partners, Iowa state law requires that all institutions of higher education that receive federal financial aid—both public and private—must store the StateID with their student records. IDE has also begun providing the StateID to the state's workforce agency, Iowa Workforce Development, which matches the ID to its employment records and stores it.

IDE, community colleges, Board of Regents, and Iowa Workforce Development are all partners in the SLDS project. Cooperation and memoranda of understanding among the partner agencies are driven by the America Competes Act as well as a collective interest in the information the SLDS can provide. The Board of Regents historically provided a limited high school feedback report to K12 institutions showing outcomes for public school students who enrolled in Iowa's university system. Phase I of the SLDS work includes developing enhanced feedback reports to provide the public schools even more information about their students' college readiness. The Board of Regents is also interested in the research opportunities the SLDS is expected to provide under Phase II of its development, and the community colleges are interested in exploring information about developmental coursework.

Iowa is in the process of identifying additional reports that will come out of the SLDS. It is also developing a formal data request process to manage request submissions and the memoranda of understanding needed to share data from the system. Under Iowa's data governance structure, each SLDS partner retains ownership of the data it contributes to the SLDS and can approve or deny any requests to use those data.

Kentucky: Refining the Definition of College and Career Readiness

Kentucky's centralized data system model places management and control of the state's education and workforce with the Kentucky Center for Education and Workforce Statistics (KCEWS), an independent state agency established in 2012 and formalized in state statute in 2013. Connecting K12 data with postsecondary data was part of the state's data use plan from the beginning of its 2009 SLDS grant, and private as well as public postsecondary institutions contribute student data to the SLDS on an annual basis. KCEWS has also established data sharing partnerships to incorporate data from financial aid and labor agencies into the SLDS. KCEWS is the only state entity with authority to collect and match data across education and workforce agencies, and only KCEWS staff members have direct access to the SLDS.

To link data from multiple sources, KCEWS uses a matching algorithm that draws on data elements including name, Social Security number, data of birth, gender,

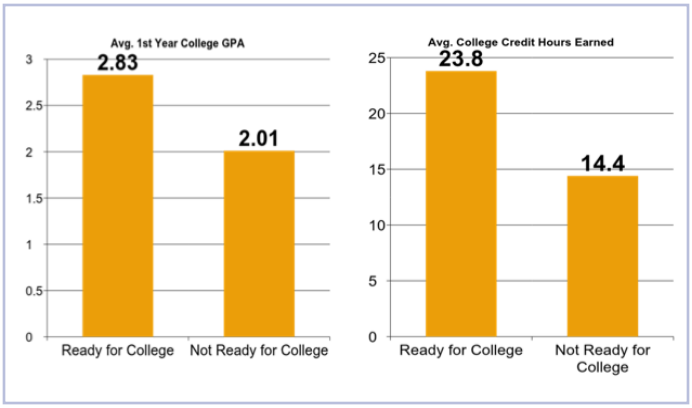

Figure 1. Grade point average and credit hours earned during the first year of college for Kentucky students identified as "ready for college" or "not ready for college" based on ACT math scores

ethnicity, and some geographic elements. The algorithm takes into account common misspellings and data entry errors when matching records, and KCEWS staff review any questionable matches manually. The SLDS stores unique identifiers used by individual state agencies as well as historical data such as previous names to further aid the matching process.

Kentucky began producing high school feedback reports in 2006 to provide public schools with basic information about their students' readiness for college. One of the state's goals for linking K12 and postsecondary data in its SLDS was to obtain better metrics related to student preparation and success in higher education and the workforce. KCEWS now produces feedback reports at the school, district, and regional levels that show the number of their graduates enrolling in both in-state and out-of-state postsecondary institutions; how those graduates are performing in terms of credit hours earned, grade point averages, and grades in specific subject areas compared to high school; and how many students remain enrolled for a second year. The reports also show how many students leave high school "college ready" according to a common, statewide definition of readiness based on English, reading, and math scores on the ACT, which all public school students take in the 11th grade. Kentucky has found those scores to be strong predictors of success in those subjects in college based on grade point averages and credit hours earned for students meeting the college-ready threshold compared with those who did not.

As additional data for student cohorts become available, the feedback reports will also show college graduation rates. Kentucky has also created reports tracking employment outcomes for students who did not enroll in higher education.

Additionally, Kentucky has begun using its K12 and postsecondary data to link teacher information, including

information about teacher preparation programs they attended, to K12 student outcome data. Once more longitudinal data are available, the state also plans to produce feedback reports for postsecondary institutions with information such as post-graduate enrollment and workforce outcomes for their students.

Maine: Serving a Statewide Focus on Education Outcomes

Before applying for its 2009 American Reinvestment and Recovery Act (ARRA) SLDS grant, the Maine Department of Education (MDE) met with representatives from the state's public high schools, colleges, and other postsecondary stakeholder groups to discuss the questions it hoped to answer by linking K12 and postsecondary data in its SLDS. The resulting research agenda and a corresponding $1 million research budget were written into the grant. Since then, the statewide focus on postsecondary education policy has been reinforced by legislation related to remedial course taking and postsecondary retention as well as a task force created to study higher education outcomes.

Like Iowa, Maine created a K12 student identifier that is stored by the public university system and shared with several other SLDS partners. Educators in the public K12 system also have unique identifiers. The unique IDs are also used in data collections for educator credentialing and adult education. Partnering with the Maine Department of Labor through that department's Workforce Data Quality Initiative (WDQI) grant, MDE is also working to link student records with wage records. Additionally, the department is partnering with private organizations on efforts such as encouraging postsecondary enrollment with support from the Maine Educational Loan Marketing Corporation (MELMAC), and developing high school feedback reports in cooperation with the Mitchell Institute.

Maine produces two types of high school feedback reports to meet different goals and reporting requirements. Student Tracker Reports show high schools how their students are performing in higher education through data disaggregated by demographic, program, and assessment characteristics. These reports previously were generated by the Mitchell Institute for about 60 percent of Maine's high schools based on data from the National Student Clearinghouse (NSC). Through the SLDS, MDE has been able to streamline the data exchange process with NSC and provide reports to 100 percent of high schools. The second type of high school feedback reports generated with SLDS data are the remedial course-taking reports published annually by each of Maine's two- and four-year public colleges. These reports include the number of students taking remedial coursework in math, English, or both subjects, as well as the number of students taking remedial courses as freshmen who returned for their sophomore year. The remedial course-taking reports are presented to the state legislature and published on each college's website.

Maine also coordinates with the state's public and private teacher preparation programs to generate feedback reports on teaching program graduates who are teaching in Maine. The state keeps data on teacher employment, subject area, and education and credentials, and it receives transcript data from the teacher preparation programs, which are willing to share data in order to get more information about their graduates. Eventually the state plans to release teacher effectiveness reports based on these data. The links among the state's K12, postsecondary, and workforce data also allow Maine to report on its adult education program outcomes as well as wage outcomes for college graduates by degree and major. The wage outcome reports are public, and the state has significant interest from high school guidance counselors, who are excited to have concrete employment and earnings information to share with students as they plan their education and career paths.

One study examining college readiness in mathematics found that eighth-grade assessment scores in math were a stronger predictor of college success than was SAT performance in the 11th grade.

On top of the wide range of outcomes reports produced by the state's education and workforce entities, Maine has further leveraged the SLDS data to conduct research through the Maine Education Policy Research Institute—a body established by the state legislature and staffed with researchers from the University of Maine system. The institute reports to both the state legislature and MDE, and it works closely with all SLDS partners, from the local education agencies to postsecondary institutions. Its studies of college readiness are helping to identify characteristics of students who succeed in college and those who will require remediation. For example, one study examining college readiness in mathematics found that eighth-grade assessment scores in math were a stronger predictor of college success than was SAT performance in the 11th grade. Students who took Algebra I in the eighth grade and pre-calculus or calculus in high school also took remedial math courses in college at a lower rate than students who did not.

The use of SLDS data across state agencies in Maine has led to a widespread reliance on the system and support for its continuation. The SLDS has significantly reduced time and costs associated with data management for its partner agencies, and in some cases it has replaced systems that were more costly and less accurate. The state legislature has a strong interest in the information produced by the SLDS, and it has established a task force to examine how the system can be sustained into the future.

Montana: Laying the Foundation for Expanded Reporting and Research

Like Iowa, Montana focused its second SLDS grant in 2012 to expand its K12 longitudinal data system—known as GEMS, for Growth and Enhancement of Montana Students—into a K-20 SLDS with the addition of postsecondary data. The Montana Office of Public Instruction (OPI) developed a collaborative agreement with the state's Office of the Commissioner of Higher Education (OCHE) to incorporate data from Montana's public colleges and universities into the system. Because the OPI and OCHE currently use different unique identifiers for student records, the records are matched on student name, date of birth, gender, high school attended, and other demographic elements. In the future, OPI plans to begin sending its K12 unique ID to public colleges and universities along with electronic student transcripts so that ID can be used to match student records. In the meantime, OPI receives records from OCHE annually for Montana public high school graduates who enrolled in Montana public postsecondary institutions.

Once OCHE records are matched to OPI's student data, the linked data are stored in a College Readiness domain within GEMS. This domain has a public-facing portal offering information on college-going rates and remediation rates for students in the Montana University System aggregated to the school, district, county, and state levels that are masked when individual cell counts are fewer than 10 students. Users from K12 districts and schools can log in to a secure-access site to retrieve high school feedback reports at the same levels that are not masked. These reports show college enrollment (or "capture") rates and remediation rates for students by race or ethnicity, gender, economic status, and additional characteristics. OPI also receives data on credit hours earned from OCHE and plans to incorporate retention rates into its feedback reports in the future.

The planned data transports and transcript system that will allow OPI to send electronic student transcripts to public colleges and universities will also enable OCHE and OPI to share course-taking data and compare grades received in high school and college as another measure of college readiness. The partners plan to incorporate assessment scores and postsecondary graduation rates into GEMS in the future, as well as explore the impact of dual enrollment in high school on college readiness. GEMS can also track

Students Entering the MUS Within 3 Months Following High School Graduation - State

Demographic	2010-2011 Graduates	Summer and Fall 2011 MUS Enrollees			
		Capture Rate		Remediation Rate	
		Count	%	Count	%
STATE TOTALS	**9704**	**3568**	**37%**	**1020**	**29%**
Gender					
Female	4766	1826	38%	600	33%
Male	4938	1742	35%	420	24%
Economically Disadvantaged					
Low Income	2742	682	25%	269	39%
Not Low Income	6962	2886	41%	751	26%
Special Education					
No	8886	3457	39%	945	27%
Yes	818	111	14%	75	68%
Limited English Proficiency					
Current LEP	118	13	11%	*	*
Former LEP	127	18	14%	*	*
Not LEP	9459	3537	37%	1006	28%
Race-Ethnicity					
American Indian or Alaskan Native	814	188	23%	86	46%
Asian	72	31	43%	*	*
Black or African American	81	22	27%	*	*
Hispanic	252	62	25%	33	53%
Multi-Racial	69	15	22%	*	*
Native Hawaiian or Other Pacific Islander	19	*	*	*	*
White	8397	3244	39%	876	27%

Figure 2. High school feedback report for 2010–2011 Montana public high school graduates showing enrollment in Montana University System campuses and remediation rates

students who did not complete high school, although the project team is not currently pursuing analysis in that area.

The GEMS research agenda—as developed by a data governance council with representatives from OPI, OCHE, and individual high schools, colleges, and universities—includes the following topics:

- Determine the definition of college readiness and assess which high school factors are associated with college readiness
- Enhance high school feedback reports to include some course results in order to explore the relationship between high school grades and courses taken and grades in postsecondary courses
- Assess the impact of school turnaround efforts such as School Improvement Grants and Schools of Promise in helping students become ready for college
- Assess the impact of education programs such as the International Baccalaureate curriculum, Advanced Placement classes, and Digital Academy courses
- Assess the effect of extracurricular activities at the high school level on college readiness
- Explore the relationship between students' backgrounds and college remediation, as well as how placement in remedial courses affects the students' graduation status

Summary of K12-Postsecondary Data Systems by State

	Iowa	Kentucky	Maine	Montana
Records matched on …	• Name • Date of birth • StateID	• Name • Date of birth • Social Security number • Gender • Ethnicity • Geographic data	• Name • Date of birth • K12 identifier • Social Security numbers for postsecondary and workforce data	• Name • Date of birth • Gender • High school attended • Demographic data
Unique identifier(s)	StateID created by K12 and stored by postsecondary; separate ID for matched SLDS records	Agency-specific identifiers stored in master list of persons	Unique ID created by K12 and stored by postsecondary	Separate K12 and postsecondary identifiers; K12 identifier to be stored by postsecondary
Records matched and stored by …	Iowa Department of Education	Kentucky Center for Education and Workforce Statistics	Requesting agency (K12, postsecondary, or workforce)	Montana Office of Public Instruction
Frequency of data matching	Annually (spring)	Annually for K12 and financial aid data; quarterly for some workforce data; postsecondary data will soon be matched semi-annually	Annually and as needed	Annually (fall/winter)

Reports and products	• High school feedback reports	• High school feedback reports and data files
		• Teacher retention data
		• Teacher preparation feedback reports
			• High school feedback reports
			  ○ Student tracker
			  ○ Remedial course taking (public)
			• Postsecondary outcomes reports
			• Teacher preparation outcomes
			• Adult education outcomes
			• Workforce outcomes reports
			• Additional research
				• College-going and remediation rates (public)
				• High school feedback reports

Additional planned SLDS work	• Developmental coursework studies; further research	• Postsecondary feedback reports		• Electronic high school transcripts • Dual enrollment research • College retention rates • Grade comparisons for high school and postsecondary coursework • Assessment scores • Postsecondary graduation

Additional Resources

Iowa Department of Education
https://www.educateiowa.gov/

Kentucky Center for Education and Workforce Statistics
http://kcews.ky.gov/

Maine Department of Education
http://www.maine.gov/doe

Montana Office of Public Instruction
http://opi.mt.gov/

SLDS Spotlight: State Approaches to Engaging Local K12 Stakeholders
http://nces.ed.gov/programs/slds/pdf/spotlight_engaging_local_stakeholders.pdf

SLDS Spotlight: State Approaches to Engaging Postsecondary Stakeholders
http://nces.ed.gov/programs/slds/pdf/spotlight_engaging_postsecondary_stakeholders.pdf

SLDS Webinar Summary: Engaging Local Stakeholders from Postsecondary and/or Workforce
http://nces.ed.gov/programs/slds/pdf/Postsecondary_and_Workforce_webinar_May2013.pdf

SLDS Webinar Summary: Using DMV Records to Access Social Security Numbers
http://nces.ed.gov/programs/slds/pdf/Using_DMV_Records_to_Access_SSNs_Webinar_Nov2013.pdf