



## SLDS Spotlight

### Linking Early Childhood and K12 Data: A State Example from Kentucky

*Integrating data from early childhood programs into a statewide longitudinal data system (SLDS) is challenging due both to the diversity of programs working in early care and education and to the nature of the data collected by these programs. Unlike public K12 and postsecondary education and workforce programs, which are generally overseen by a statewide entity responsible for data for a large number of individuals, the early childhood environment is often populated by a mixture of state-funded, federally funded, and private programs and providers. Collecting data from this array of sources as well as ensuring the quality of those data require careful planning.*

*In Kentucky, SLDS leaders are working with early childhood programs to incorporate early childhood data into the state's SLDS and to ensure consistency and quality as the data are integrated. Although the process of integrating early childhood data from new sources is ongoing, Kentucky has already begun using its data to explore the scope and impact of early childhood education in the state.*

#### Kentucky's Data Collection Process

Kentucky's centralized SLDS is maintained by the Kentucky Center for Education and Workforce Statistics (KCEWS), an independent state agency with legislative authority to collect data in order to measure and evaluate education and employment outcomes in the state. As part of these efforts, KCEWS has been integrating data from public and independent education institutions as well as state workforce programs into its SLDS since 2009.

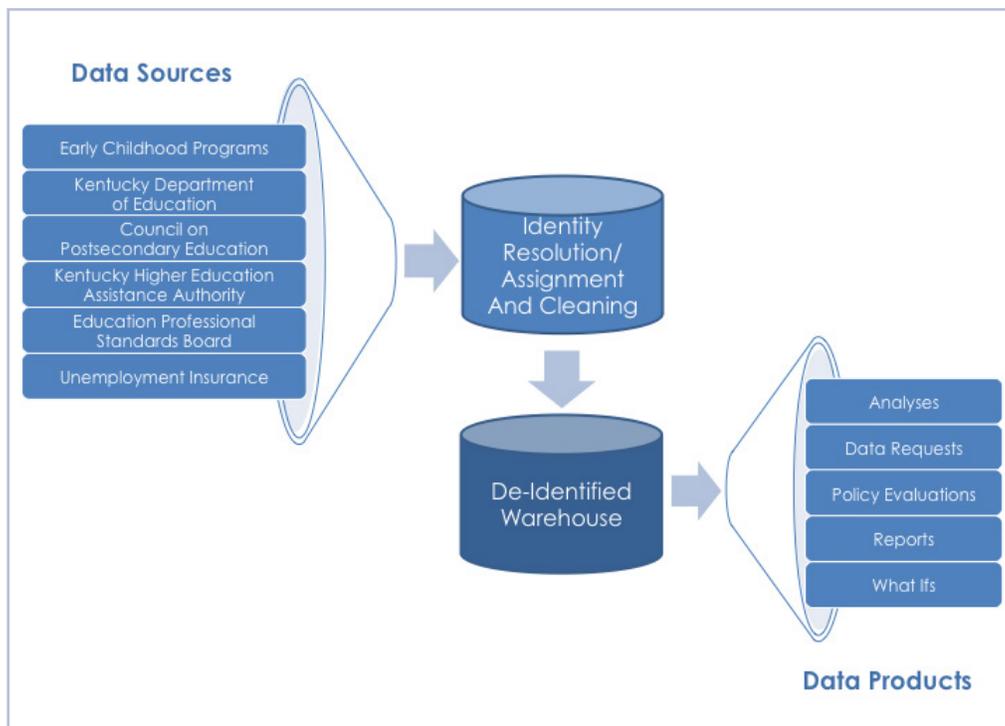


Figure 1. Kentucky's Longitudinal Data System

This product of the Institute of Education Sciences (IES) SLDS Grant Program was developed with the help of knowledgeable staff from state education agencies and partner organizations. The content of this brief was derived from a Statewide Longitudinal Data Systems (SLDS) monthly topical webinar that took place on December 18, 2014. The information presented does not necessarily represent the opinions of the IES SLDS Grant Program. We thank the following people for their valuable contributions:

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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>.*

The majority of education and workforce agencies that contribute data to Kentucky's SLDS do so by submitting their data online through a secure server. Submitted data are validated against criteria from data dictionaries developed for each agency, and data not matching those criteria are flagged for the individual uploading the data. For example, if an agency's SLDS data dictionary includes the criteria that Social Security numbers contain nine digits within a certain range of numbers, the submitter receives an automated email if the data being uploaded have a different number of digits or are outside that range.

After the data are submitted, they pass through KCEWS's identity resolution and matching process to link them with any matching records already in the data system. The matching process uses numerous data elements to link multiple records for the same individual, with a scoring process determining matches that are strong enough to be linked automatically and questionable matches that will be reviewed by KCEWS staff before being linked or not linked. The matching algorithm was developed in-house at KCEWS and can be customized for specific data sources and even for specific batches of data. For example, when KCEWS received a data upload from a program in which all student records were submitted with the same date of birth, KCEWS staff members were able to modify the algorithm to exclude date of birth as a matching element for that particular dataset.

After the matching process, personally identifiable information is removed from the records and the records are stored in a de-identified data warehouse for use in reports, policy evaluations, and other analyses (see figure 1, previous page).

### Collecting Data from Early Childhood Programs

The early childhood portion of Kentucky's SLDS, known as the Kentucky Early Childhood Data System (KEDS), currently contains data from all of the state's preschools. These data include a unique student identifier used by the preschools, a point-in-time identifier assigned by KCEWS for KEDS, student name, date of birth, gender, race, academic year, assessment information, whether the student has an individualized education plan (IEP), and school and district entry and exit information. Each program can also submit data specific to outcomes that it would like to be part of KCEWS evaluations in the future.

KCEWS has established memoranda of understanding with the state's Health Access Nurturing Development Services (HANDS) home visitation program and the First Steps program for children with developmental delays to begin incorporating their data into KEDS. Incorporation of federal Head Start program data is also being planned. Data dictionaries for the elements each agency will submit to KEDS have already been created. Figure 2 lists data elements to be collected from Kentucky's HANDS and First Steps programs.

### HANDS Program KEDS Data

**Required Data Elements**

*These elements should appear in all records submitted by the agency:*

- Unique HANDS Identify
- Primary Caregiver Social Security Number
- Primary Caregiver Race
- Basic Demographic Information
  - » First Name
  - » Last Name
  - » Date of Birth
  - » Gender
- County
- Zip Code
- Referral Date
- Exit Date
- Exit Reason

**Optional Data Elements**

*These elements are not required and may not appear in all records:*

- Social Security Number
- Basic Demographic Information
  - » Middle Name
  - » Race
- Progress Indicators

### First Steps Program KEDS Data

**Required Data Elements**

*These elements should appear in all records submitted by the agency:*

- Unique Technology-Assisted Observation and Teaming Support System (TOTS) Identify
- Basic Demographic Information
  - » First Name
  - » Last Name
  - » Date of Birth
  - » Gender
- County
- Zip Code
- Entry Date
- Exit Date

**Optional Data Elements**

*These elements are not required and may not appear in all records:*

- Social Security Number
- Basic Demographic Information
  - » Middle Name
  - » Race
- Progress Indicators

Figure 2. Data elements to be incorporated into KEDS from Kentucky's HANDS and First Steps early childhood programs.

KCEWS has received some feedback expressing concern about the use of individual Social Security numbers to facilitate data record matching, particularly at the early childhood level. KCEWS's establishing legislation authorizes it to collect Social Security numbers as well as other personally identifiable data in order to link data from multiple sources. Because early childhood records are often the first records it receives for an individual, KCEWS finds that including Social Security numbers with the records when possible is particularly valuable to facilitate record matching in the future.

## Using Early Childhood Data

Even as it works to expand the early childhood program data available in KEDS, Kentucky has begun publishing data products to inform and assist early childhood stakeholders in the state. Since 2013, KCEWS has released a set of annual Early Childhood Profiles for each of Kentucky's 120 counties and for the state as a whole (see figure 3). The two-page profiles illustrate the early care and education landscape and the impact of early childhood programs in each county through a combination of enrollment and program data from KEDS and data from other sources, including

- aggregate kindergarten readiness screening and third-grade assessment data from the K12 portion of Kentucky's SLDS;
- general demographic and socioeconomic information about children living in the county from the U.S. Census; and
- program quality information from the statewide quality rating and improvement system for early childhood programs.

The counties use this information each year in applications for state grants, making the profiles a valuable product for them.

The profiles were developed in cooperation with the Governor's Office of Early Childhood and the data subcommittee of Kentucky's Early Childhood Advisory Council, which includes child care providers and early education practitioners as well as university researchers and early childhood policymakers. Although much of the information in the profiles is currently gathered from sources outside Kentucky's SLDS, KCEWS hopes to add many of the most used external data to the SLDS in the future.

Kentucky also has begun using data already in its SLDS to explore the link between students' preparation for kindergarten and their college and career readiness after leaving high school. Using results from the statewide kindergarten readiness screener as well as the state's established measure of college and career readiness, KCEWS researchers calculated the percentage of

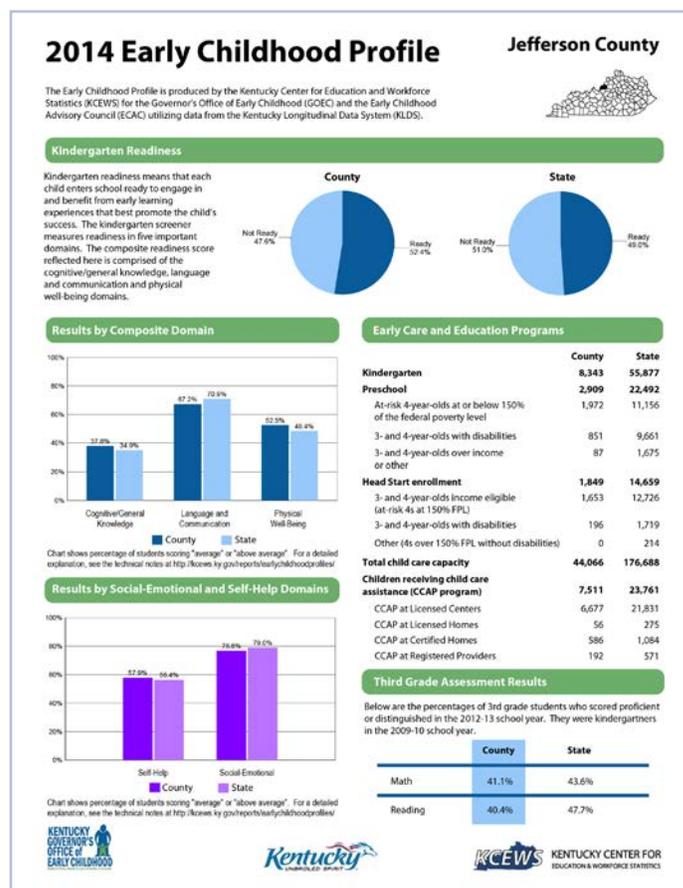


Figure 3. First page of the 2014 Early Childhood Profile for Jefferson County, Kentucky

kindergarten students and recent high school graduates meeting those thresholds at the state and county levels. These results were then mapped to illustrate how county rates for both kindergarten readiness and college and career readiness compare to the statewide rates (see figure 4, next page). The increasing availability of longitudinal data over time will eventually allow Kentucky to see kindergarten readiness and college and career readiness for the same cohorts of students. In the meantime, the data currently available lead KCEWS researchers to believe that kindergarten readiness and college and career readiness are related, and the map shows some geographic clustering related to these measures.

As data from additional sources are incorporated into the SLDS and as more longitudinal data become available over time, KCEWS will be able to address more stakeholder questions about the impact of programs such as Head Start, HANDS, and First Steps on students' kindergarten readiness, academic proficiency in K12, and other outcomes.

In addition to providing valuable information for stakeholders, producing reports and other data products has the added benefit of helping improve the quality of data submitted and stored in the SLDS. Agencies whose data are used in KCEWS data products are given 10 business

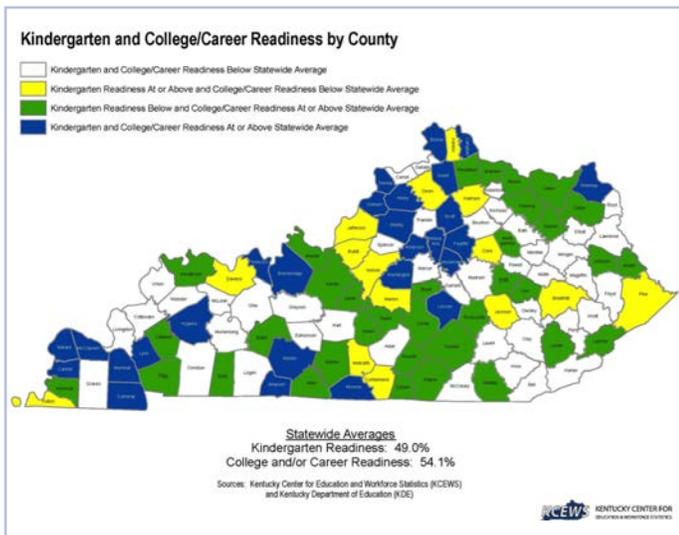


Figure 4. Map of county-level kindergarten readiness and college and career readiness in Kentucky, as compared to statewide rates

days to review the products before they are released, to ask questions, and to identify any discrepancies between data appearing in the report and data in the agencies' own systems. The process of preparing SLDS data for analysis and public release reveals data quality issues that can be addressed in the future.

## Best Practices and Lessons Learned

### *Establish Early Wins*

Kentucky's Early Childhood Profiles are examples of an early win—a set of products that clearly and quickly demonstrate to early childhood stakeholders the value of including their data in the SLDS. Early wins help solidify stakeholder interest in and support for the SLDS by providing them with results for the time and resources they have contributed to the system.

When planning for early wins, it is advisable to consider the priorities and needs of each stakeholder and how SLDS products or tools can help meet those needs. For example, in working with one county's Head Start system on a pilot project for incorporating Head Start data into the SLDS, KCEWS learned that although the county uses a centralized data system for all its Head Start programs, most of its reporting is still being done manually. As they continue to plan the data integration, KCEWS and the

Head Start district are discussing early-win tools to ease the burden of manual reporting for administrators. It is also important that products utilize data and terminology the stakeholders will readily understand to better demonstrate how the stakeholders can use the information coming out of the SLDS.

### *Ensure the Buy-In of Senior Leaders*

Support from senior leaders at key partner organizations is essential to establishing data sharing agreements and prioritizing the collection, transfer, and integration of data across data systems. Senior leaders must authorize the release and use of any data from their organizations, and they will need to approve memoranda of understanding (MOUs) and any other documentation governing data sharing. In addition, the interest of senior leaders in the SLDS and their commitment to participating in it can be instrumental in gaining the support and cooperation of data stewards and others in the organization who will be actively involved in carrying out the SLDS work.

At the same time, efforts to engage stakeholders in the SLDS work cannot stop with senior leaders. Having approval from senior leaders to move forward with data exchanges is just one step in implementing those exchanges; much of the success of the SLDS will depend on the commitment of data stewards and others involved in collecting and managing an organization's data, ensuring data quality, and implementing data sharing procedures. For Kentucky, the products and tools released as early wins have been key to showing the value of the SLDS to the individuals who are directly collecting the data and those who provide the data to the SLDS.

### *Create and Implement a Timeline for Data Sharing Documentation*

Negotiating, drafting, and approving data sharing MOUs among data-contributing agencies can be a time consuming process and may involve multiple rounds of discussion and review to ensure the agreement is complete and accurate. In Kentucky, leadership changes in state agencies further delayed some MOUs as the SLDS team had to restart the process to engage new agency leaders and staff after each transition. Establishing a structured process for creating MOUs and other data sharing documentation can help states finalize agreements in a timely manner and help put efforts back on track quickly in the face of unexpected delays.

## **Additional Resources**

Kentucky Center for Education and Workforce Statistics

<https://kcews.ky.gov/>

KCEWS 2014 Early Childhood Profile

<https://kcews.ky.gov/Reports/EarlyChildhoodProfiles/EarlyChildhood2014.aspx>

KCEWS 2013 Early Childhood Profile

<https://kcews.ky.gov/Reports/EarlyChildhoodProfiles/EarlyChildhood2013.aspx>

SLDS Early Childhood Integrated Data Systems (ECIDS) Toolkit

<https://slds.grads360.org/#program/ecids-toolkit>

SLDS Issue Brief: Early Wins

<https://slds.grads360.org/#communities/pdc/documents/5906>

SLDS Issue Brief: Getting Started: Incorporating Head Start Data into an SLDS

<https://slds.grads360.org/#communities/pdc/documents/2633>

SLDS Issue Brief: Moving Right Along: Incorporating Head Start Data into an SLDS

<https://slds.grads360.org/#communities/pdc/documents/3421>

SLDS Issue Brief: What is an Early Childhood Integrated Data System?

<https://slds.grads360.org/#communities/pdc/documents/4441>

SLDS Webinar: Introduction to ECIDS System Design – The Basics 101

<https://slds.grads360.org/#communities/pdc/documents/5834>

SLDS Webinar: Linking K12 Education Data to Workforce

<https://slds.grads360.org/#communities/pdc/documents/5871>

SLDS Webinar: Linking K12 Student Data with Postsecondary Data

<https://slds.grads360.org/#communities/pdc/documents/5793>

SLDS Webinar: Strategies for Engaging Early Learning Stakeholders

<https://slds.grads360.org/#communities/pdc/documents/5908>