



# Early Childhood Data Systems: Putting Data to Work

**Philip Sirinides and Ryan Fink**

**Consortium for Policy Research in Education, University of Pennsylvania**

**March 2014**



This report was prepared for the Institute of Education Sciences (IES) under Contract ED-IES-12-CO-0006 by Regional Educational Laboratory Mid-Atlantic administered by ICF International. The content of the publication does not necessarily reflect the views or policies of IES or the U.S. Department of Education nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

This REL report is in the public domain. While permission to reprint this publication is not necessary, it should be cited as:

Sirinides, P. M., & Fink, R. (2014). *Early Childhood Data Systems: Putting Data to Work*. (2014). Rockville, MD: Regional Educational Laboratory Mid-Atlantic at ICF International. Retrieved from [<https://www.relmidatlantic.org/publication/early-childhood-data-systems-putting-data-work>]

## State Early Childhood Data Systems Face Challenges

Due to increasing interest in high-quality and accountable programming, the demand for information about early childhood programs is rising. States have responded by building or buying the analytic functions necessary for data collection and reporting. The purpose of reporting these data is often to demonstrate that a given program is helping families and children at a reasonable cost, so that the public has enough evidence to sustain the investment. Program administrators and stakeholders would also like to see state data systems being used for continuous quality improvement of program operation.

Through state and federal initiatives, many states are now building integrated data systems that collect and manage information on early childhood programs and the children and families they serve. States are now positioned to move forward in the use of early learning data to benefit early learning and child outcomes. In addition, these conditions have created a great opportunity for cross-state collaboration in sharing and developing new strategies for using data.

As evidenced by states' responses to section E(2) of the Race to the Top Early Learning Challenge Grant, state early childhood data systems are at different levels of maturity. Moreover, while many states are developing integrated early childhood and state longitudinal data systems, a gap is emerging between data collection efforts and the sophistication of data use (Early Childhood Data Collaborative's Inaugural State Analysis, March 2011). Although there are many examples of successful state efforts to launch transactional data systems, these states typically offer only a limited set of static reports that contain mostly raw data. This is, in part, because states' vision and approach to knowledge management occurs after, and often in response to, attempts to use the data for a variety of purposes. Despite the progress in developing state data systems, few are advanced enough in data reporting and data analytics to inform strategic investments, drive program integrity, guide support for training and quality improvement, and enable program accountability.

## Mid-Atlantic Early Childhood Data Systems Workgroup shares ideas and strategies

The states in the Mid-Atlantic region (Delaware, Maryland, New Jersey, Pennsylvania, and the District of Columbia) are not only in different stages of system design, development, and use, but also have different overall strategies for system governance

**“We've launched the first part of our system and now our folks are concerned about managing all these new datasets coming in.”**

**“We're grappling with a lot of the same issues.”**

and integration. State personnel who lead the collection and analysis of early childhood data have noted that the volume and sophistication of demands on state data are growing. To address this need, REL Mid-Atlantic convened a regional workgroup for the state staffs that design, manage, and use data systems (referred to here as the Data Workgroup). This workgroup provides a forum for regular peer exchange of ideas and strategies for collecting, analyzing, and using state data. Hearing a range of perspectives gives the states an opportunity to identify common challenges and learn about innovative solutions. This report offers a summary of the lessons learned and overall themes of the workgroup meetings that took place during 2013, but is not meant to detail the issues state by state.

## Accurate community data are essential to informing strategic investments

The most basic questions that states are seeking to answer with early childhood data are what services are needed, where they are needed, and how best to deliver them. The Data Workgroup addressed these questions by considering three aspects of strategic planning, including: 1) community needs assessments, 2) financial planning, and 3) reporting the number of children receiving early childhood services.

Without accurate community data, states reported they were unable to identify the communities (or subpopulations within communities) that were disproportionately underserved. It was also difficult for states to target program improvements and investments without the ability to assess how services were geographically distributed. A common challenge was that disparate state data systems could not provide state and local decision makers with a complete, unified picture of services in a given geography. In response to these problems, states shared various strategies for coordinating across state agencies to assemble the data needed to identify high-risk communities. Several states in the region produce annual reports that allow policymakers to understand where children with risk factors reside and how the state can allocate resources to better reach those communities. These data were used to reallocate service dollars to maximize the number of eligible children served in high-quality settings. Two states are developing geographic information system (GIS) tools to explore communities in which children are exposed to a variety of risk factors (poverty, single-parent home, home without a vehicle). These states are using these data to address inequities in access to quality care for high risk populations, as well as to help parents make informed choices when selecting a care provider in their area. Workgroup participants agreed that data were frequently requested for use in considering community needs and the distribution of existing services to inform strategic planning and investments.

**“We can talk about access all day but we want to know how far children live from a quality provider. We’re grappling with location information.”**

**“We’re really focusing on getting the enrollment data very, very clear to ascertain which children have access to high-quality ECE programs.”**

## ECE data systems can be used to foster and monitor program integrity

A major component of program integrity is the consistent application of policies and business practices. To address this topic, the Data Workgroup focused on how data systems can be used to foster and monitor program integrity by implementing a combination of data collection and auditing strategies that track program outputs. For example, some states in the region are deploying data systems that automate and verify eligibility, conduct background clearances on staff, or audit provider payments. States are also beginning to audit their data warehouses to identify anomalies or patterns of data that warrant further inquiry. In one state in particular, automated queries are run on a schedule to identify potential improper duplication of services, and the state has acted quickly to eliminate and recoup duplicate payments. Either through proprietary systems or simple in-house data queries, states are using administrative data to accomplish a range of audits such as automated verification of child eligibility and identification of potential fraud in provider payments. With these analytic tools and strategies, states are looking for new ways to use early childhood data to drive program integrity.

## ECE systems data can be used to identify training needs and to guide technical assistance

States are interested in using data for continuous quality improvement of early childhood services but have been limited because their data collection systems were not always designed for that purpose. In practice, state supports to early care and education programs are often generic and not aligned with specific program needs. Data Workgroup participants shared ways that states are using data to identify prevalent statewide issues such as training needs and gaps in technical assistance. One state, for example, regularly analyzes violations for regulated child care. Trends are disaggregated by type of inspection and region. These reports are used to make revisions to the orientation sessions for prospective child care operators. From this annual report, violations that are of greatest concern are targeted in professional development and training for the upcoming year. States are working to find ways in which local community and provider data can be used to guide specific quality improvement strategies. Right now, however they are struggling not only with the analytics required to identify training needs, but also the tools for making information actionable.

**“What we want to do is to make sure the dollars are being directed towards supporting high quality programs or promoting initiatives that will support high quality.”**

**“We've been working for over the last year and a half to try to develop common definitions and common data elements to get data systems talking to each other.”**



## Comprehensive data models are needed to support high-quality and accountable systems

Central to the mission of state data systems is the desire to assess whether children are on track to succeed when they enter school and in the future. For Data Workgroup participants, this entailed both identifying the components of quality programming associated with kindergarten readiness and understanding how state services and supports relate to child outcomes. Although various outcomes are important to states, kindergarten readiness was cited most often. A key strategy (and challenge) in answering states' accountability questions is the careful design of comprehensive data models that combine information about providers, staff, classrooms, and children served. As states develop systems that integrate information and link to longitudinal education systems, participants anticipate an increasing need to enhance data schemas and back-end services to appropriately capture complex data structures such as the experience of a child in a given classroom for a given part of the day.

**“We're working on changing the data schema to manage all of these new data streams that are coming in”**

## State peer exchange fosters sharing of challenges and innovations

The peer exchange among workgroup participants from different states identified common challenges and allowed the participants to learn about innovative analytic strategies being implemented in the region. All states were at different levels of system development and maturity, although each state had recognized areas of strength. Two of the most-discussed challenges facing states were inadequate data models and lack of resources. Workgroup members also shared many strategies for using data. Successful strategies, two of which are described below, included use of data to both scale-up and make changes to early childhood programs.

## Data governance leaders face continuous challenges in integrating systems

While identifying the essential data elements was a clear priority for all state systems, participants voiced a common concern about how their data are organized into a schema that defines its properties and relationships with other data. Each state is pursuing various system initiatives, each producing a fresh data stream. One factor complicating states' system development efforts is the need for chief information officers to constantly rethink how all the information is going to connect. States recognized the need to avoid delay in defining the underlying data models. Group members also valued the role of data governance coordinators in developing an

**“We have scads of information but right now we don't have a mechanism for tying it together.”**

integrated data model. In several workgroup meetings, the common recommendation from participants was to proactively specify the protocols and formatting of data across different systems, often managed by different government offices.

## Limited staffing jeopardizes data integrity and integration

Another common challenge was a lack of resources, particularly a lack of personnel with expertise in data analytics and information systems. Workgroup participants were concerned that inadequate staffing could lead to issues with data integrity and missed opportunities for data integration. States may not be able to monitor data streams if personnel are not available.

## Successful strategies

As an example of successful data use, one state in the region described how it was able to analyze enrollment data for infant/toddler services across the state as part of a credentialing initiative. Data from both state and local systems were reviewed to explore community risk and program reach for very young children within and across local communities. This review found that services in several communities were almost entirely targeted to preschool-aged children. In response, the state used data to make investment decisions to increase access to quality infant/toddler care in specific communities. This effort required local and state coordination of data and resulted in a policy and investment decision that was possible because of the collection and analysis of data.

Another example of state data use illustrated how data were essential to changing the funding structure of the state childcare quality initiative. Data were essential because any changes to the program funding structure had to be neutral to total cost and waitlist volume. A cost model was used as a rate-setting tool to explore the impacts of variable- or fixed-base rates, various tiered rates, and eligibility. Using real data on the population of children and providers, the planning team was able to predict the annual encumbrances of various scenarios based on the number of current providers at each level and the number of subsidized children that each served. This state was able to direct more resources to higher level providers and gave those providers more flexibility in using these resources. This was a major structural improvement to the program with long-term political and programmatic benefits. Data were critical in launching that initiative because the state would not have had the confidence to move forward with changes without knowing that the changes would not affect the total cost and waitlist volume.

## Looking to future collaboration

The Mid-Atlantic Early Childhood Data Systems Workgroup demonstrates how well cross-state collaboration can work. Participants shared their own experiences and challenges, and responded to questions and suggestions from their colleagues in other states. This workgroup is one response to an emerging gap between states' data collection efforts and the sophistication of their data use. Participants are able to share and develop new strategies for data use by engaging in regular detailed conversation about common challenges and offering informed recommendations. The workgroup also highlights the challenges ahead. As states develop advanced data systems and analytic products, new organizational solutions will be needed to support ongoing and meaningful data use.