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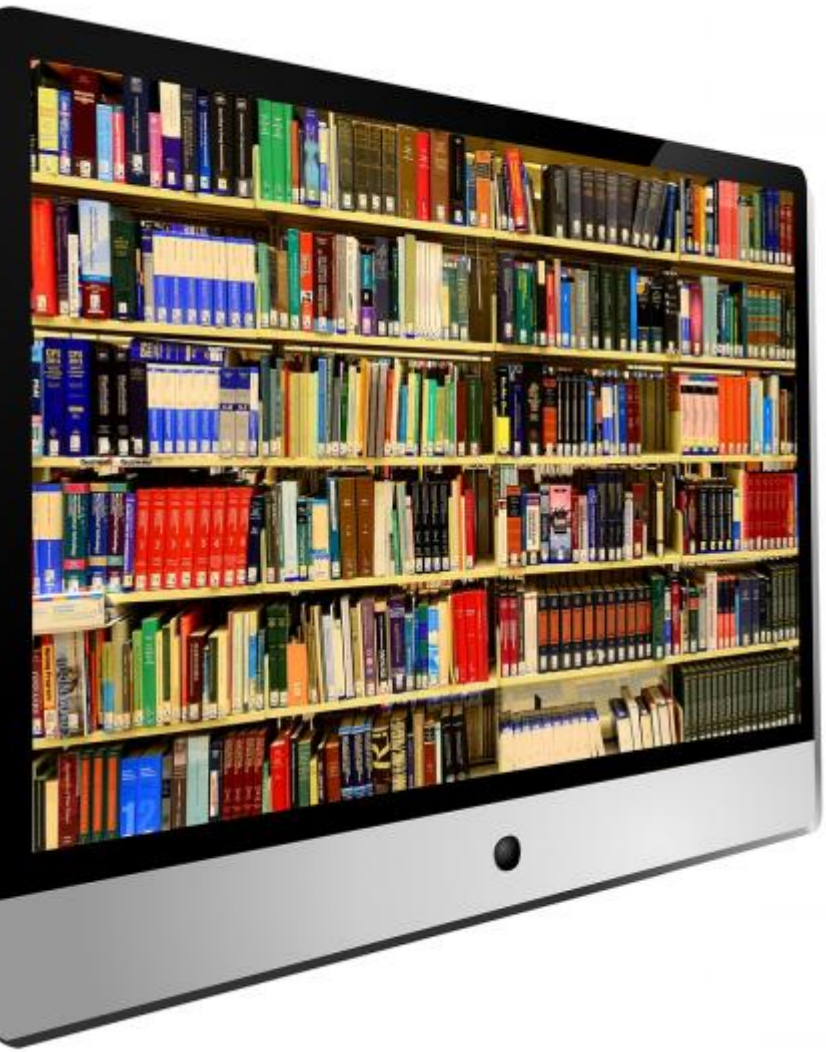
Integrating Data Into Early Childhood Education



Strength in Numbers: Supporting Quality Improvement in Early Care and Education Programs through Linking Administrative Data

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Introduction

High-quality early care and education (ECE)[1] experiences can improve the health, academic, social, and economic outcomes for young children and their families.[2] These outcomes are more effectively achieved when community partners work together to link data to support high-quality early experiences and services that promote children's optimal development. Having access to current and past data collected on children and families by *other* local or state agencies, in combination with use of their own program data, can contribute crucial information to support high-quality practices in ECE settings.

In recent years, states have started developing and using early childhood integrated data systems to better support children birth through age five.[3] However, there are fewer efforts supporting local programs to combine their own data with data from other organizations to improve services. Therefore, this brief focuses on understanding the benefits and challenges for local ECE programs in sharing and receiving (i.e., linking) their data with other organizations at the local or state level to improve services for young children and families.

There are several benefits of using linked data to help strengthen ECE program quality and services, but there are also many challenges that must be overcome throughout the data sharing process. This brief begins by defining the terms *administrative data* and *linked data.* We then describe benefits for ECE programs of using linked data and provide examples of how ECE programs, including Head Start programs, have linked their data to make decisions related to improving program quality and services. We draw upon information gathered from published reports as well as conversations with Head Start grantees, city-level administrators, state-level data systems specialists, state child care administrators, technical assistance providers, and researchers (please refer to the Appendix for more details). Finally, the brief highlights challenges programs encounter when attempting to link data, or to use linked data, and offers strategies to overcome the identified challenges.

Defining *Administrative Data* and *Linked Data*

In this brief, ***administrative data*** refers to information programs collect about individual children, families, and staff to deliver program services and meet program, funding, or legal requirements. Generally, programs collect administrative data to determine child/family eligibility for services, monitor staff workload, document services provided, or examine progress children are making. Examples of administrative data may include information on enrollment, staff qualifications, family eligibility, child assessments, child health, mental health and behavior, participation in child welfare, and demographic information. Local ECE programs vary in the types of data they collect and how they use data, often based on different funding requirements (e.g., Head Start, state-funded prekindergarten) and other factors. Programs often keep these data in multiple places or databases.

In this brief, data are considered ***linked*** when information from two or more separate data systems or databases are shared, connected, combined, or merged. These data systems or databases may be housed in the same program or in two or more separate agencies. Data linking can occur in various ways, ranging from simple to more complex. However, all types of data linking have the potential to provide useful information for ECE program improvement. For example, a relatively simple way to link data is having staff from two different agencies enter data into the same spreadsheet. As another example of linking, multiple ECE programs might enter data into a single, shared database on a website. This may be somewhat complicated to set up but relatively easy for staff to use. Another simple way to link data involves staff at one agency sharing data on families with staff at another agency (e.g., enrollment information from a social services agency; immunization records from a health department; housing status from a community housing provider), so that staff at the second agency can enter this new information into their own database. A third way to link data is to merge two separate datasets into a single data file. This is more complex and requires some way of matching data about an individual in one dataset with data about that individual in another dataset (e.g., matching individual children across files based on name, date of birth, and ethnicity or using a unique identifier if available). Two organizations often engage in this kind of data linking as part of a research study or project. As a final example, several states and communities are developing *integrated data systems* that link data across multiple programs or agencies that serve children and families. This is one of the more complex ways to link data that often requires time and resource investment from multiple agencies. Examples of information that can be linked for ECE program improvement include:

- Child, family, or staff information from different data systems **within an ECE program** (e.g., child attendance, family characteristics, teacher training, child assessments);
- **Other ECE program** data (e.g., early intervention, state pre-k, child care);
- Data from **health and social service** programs (e.g., Temporary Assistance for Needy Families or TANF data from a local social services agency; Medicaid information from the health department; Supplemental Nutrition Assistance Program or SNAP data from a local social services agency);
- Local **K-12 education** data (e.g., kindergarten entry assessment, attendance, special education placement, 3rd grade reading level); or
- Many types of data in a **community or state integrated data system** (i.e., immunization, child welfare services, job training for parents, developmental screening information, K-12 education data).

Benefits of Using Linked Data

Programs can improve the services they provide when they are able to link administrative data within their *own* program as well as share data *across* agencies. This ability to link data across multiple agencies also supports the development of strong partnerships and early childhood systems at the local or state level. This section outlines important benefits of using linked early childhood administrative data and provides examples of how ECE programs have used linked data to improve their own services and those in their communities.

Inform Staff Support

By linking data from multiple sources, ECE programs can improve the supports they provide for staff and, in turn, better support the needs of young children and families. For example, having ECE data that are linked can inform the kinds of professional development and training needed at the program level. One program that we interviewed linked children's assessment data with their data on staff qualifications and training. By linking these data within their own program, they were able to compare children's performance before and after program staff went through a targeted training on teaching math and science. Linking data can help program directors examine how staff training relates to children's skills so that they can appropriately allocate resources to support continued staff development.

Examine Children's Progress after They Leave the Program

ECE programs are often interested in understanding how children are progressing once they leave the program and move into elementary school. By combining ECE program data with public school data, ECE program leaders can have access to information on how children are performing in later years. One ECE program that we spoke with tracked children's progress through 3rd grade to examine the trajectories of children who attended their program. The ECE program worked with the local school district to gather grade retention and achievement data on their ECE program graduates over a 10-year period. The ECE program leaders were then able to look at trends over time and use the information to support conversations between the ECE program and elementary school, and inform transition supports for children and families. The ECE program and school personnel also used these linked data to help them plan professional development activities for staff. This kind of long-term collaborative data-linking project can allow ECE program leaders to examine trends over time and look at multiple years' of data to identify possible areas for improvement. However, linking and then analyzing administrative data over time is not necessarily the same as conducting a more rigorous program evaluation, and findings from analyses should be interpreted cautiously.

Improve Comprehensive Services for Young Children and Families

ECE staff can have a more comprehensive picture of the families they serve and can better individualize services if they have data on other social service programs in which their children and families are enrolled. Utah, for example, is linking data from multiple programs, including Head Start, health, and social service agencies through a state-level data system.[4] This helps programs verify whether children have received their immunizations and identify if families may need additional support in this area. Additionally, there is interest among ECE program leaders to link their data with data from other social services (e.g., Supplemental Nutrition Assistance Program or SNAP, Temporary Assistance for Needy Families or TANF) to better understand the needs of the families they serve, to inform their community assessments, and to identify additional support services available to families. For instance, a Head Start program we spoke with that linked data with a local social service agency was able to identify if any of their families were eligible for but not receiving TANF. They could

[4] Jordan, E., Schultz, T., & King, C. (2015). *Linking Head Start data with state early care and education coordinated data systems.* Available at www.ecedata.org

then provide TANF enrollment assistance for those families in their program. Through data linkage efforts, ECE programs would have more comprehensive information about the children and families they serve.

Reduce the Burden on Program Staff

Program staff sometimes must enter information into multiple systems or databases, particularly if they receive funding from multiple agencies and need to report data separately for each funding source. For instance, if a Head Start grantee receives funds from the state pre-kindergarten program and the child care subsidy system, program staff may be required to enter child attendance and family income into two different data systems. If program staff linked the data from these multiple systems, then they would only have to enter the information once, reducing their data entry time so they could focus on other program tasks. This would also minimize the chance of making errors when entering the data.

Having electronic access to data about children and families from outside agencies can also reduce the burden on staff. For example, we heard from a Head Start program that their staff has access to child screening and assessment data about some of the children in their program who were previously enrolled in a program that used the same data system. Staff were able to view the previous assessment information in the data system. They used the information to better understand the children's unique needs, which provided more insight as they began to conduct their own assessments. Staff also had less data to gather or enter on these children because it was already captured in the data system.

Reduce the Burden on Families

Families needing assistance in a number of areas (e.g., housing, health care, child care) often have to provide the same information (e.g., children's date of birth, family income, immunization records) to every program from which they receive services. If a Head Start program linked its data with data systems from other community agencies, then staff could know if families applying to their program were eligible for or already enrolled in other programs (e.g., SNAP, TANF). It might also be possible for eligible families to enroll in these other programs without having to go to multiple agencies or provide the same information multiple times. This would not only reduce the burden on families but also make it easier for Head Start staff to provide support services to families.

An ECE supervisor we talked to told us about their state's effort (Colorado) to create a universal intake form used by multiple programs to enroll families.[5] With this universal intake form, a family only has to complete one application to verify their eligibility for various programs and services within the state, including child care. This reduced the burden for families as it helped them quickly identify programs for which they were eligible while also minimizing staff time to verify eligibility. Over time, if children remain enrolled in the program, program staff will likely need to continue to understand the family's circumstances and eligibility, as required by the given program's guidelines.

Inform Strategic Community Planning of Services for Children and Families

Head Start and other ECE programs are a critical part of communities, and many program leaders are actively engaged with state and local partners to strengthen the array of services provided to children and families. Head Start grantees are required to conduct a community needs assessment to guide their services, and it must be reviewed annually and updated if there are significant changes to the information in the assessment. Linking data across multiple programs and services could help Head Start and other leaders better understand community needs and plan services to meet the needs of children and families. Program and community leaders who have a complete picture of which children and families are accessing ECE programs and other services, along with the quality of those programs, can identify service gaps for specific populations (e.g., infants/toddlers, dual language learners, low-income families) and implement funding or policy changes.

[5] The universal intake form is available here: http://www.coloradoofficeofearlychildhood.com From this website, click on *Quality Initiatives* and then click on *Universal Application*.

Challenges and Corresponding Strategies for Linking Data

Linking administrative data, and then using these linked data, can greatly benefit ECE programs by supporting continuous program improvement, but it can be hard to do. This section discusses challenges programs might face when trying to link their own data or link their data with data from other agencies. We also describe strategies ECE programs have used to overcome these challenges.

Capacity to Use Linked Data to Inform Practice

Challenge: Program leaders and staff may value using data and want to link data but may not have the capacity within their program (e.g., staff time, technical knowledge, resources) to move forward. Multiple supports are needed to create a strong data culture[6] that would allow staff to link data and use that combined data to guide discussions on program improvement. With a strong data culture, directors and staff use data regularly for planning and decision-making purposes. They also are able to develop the skills to manage, analyze, link and use data. This includes having or hiring staff with the technical skills needed to work with and link to multiple data systems, as well as staff who have experience and training to use linked data to inform practice and program improvement while recognizing its limitations.

The Head Start Leadership, Excellence, and Data Systems (HS LEADS) project, funded by the Administration for Children and Families, identified management and organizational processes that are related to effectively using data to improve practice in Head Start programs. This project has developed tools for programs to help strengthen their use of data and build a strong data culture.

Strategies:

- *Implement program policies to use data regularly.* For example, one Head start director we spoke with decided to have teachers present their classroom data during routine meetings. This gave staff the opportunity to use data, discuss challenges, brainstorm strategies, and monitor improvements in children's growth and development.
- *Identify ways to simplify data collection for staff.* For example, staff in one program we talked to were given laptops to make it easier for them to collect and use data regularly.
- *Offer training to help staff appropriately use data.* Programs we spoke with found it helpful to attend trainings or provide mentors to help leaders and staff use linked data. For example, when we spoke with the Head Start National Center on Program Management and Fiscal Operations (PMFO), a Head Start technical assistance provider, they described trainings they offer to Head Start programs to help foster a strong data culture among program leaders and staff. During these trainings, Head Start program management teams work together to understand how to identify, share, and use data to develop continuous improvement plans.[7]

Privacy Issues and Concerns about Sharing Data

Challenge: Confidentiality questions can arise when outside agencies request information about children and families from ECE programs. Rules and restrictions about what data ECE programs can legally share are complicated to understand. Program staff may also hesitate to share data if they believe others will use the data to make inappropriate comparisons across children or programs, or inappropriate decisions about individual children or programs. Because of the vulnerability of the families they serve, Head Start grantees may feel a particularly strong responsibility to protect the privacy of family- and child-level data and may have concerns about violating the trust of families who confide in them.

[6] Derrick-Mills, T., Sandstrom, H., Pettijohn, S., Fyffe,S., & Koulish, J. (2014). Data Use for Continuous Quality Improvement: What the Head Start Field Can Learn From Other Disciplines, A Literature Review and Conceptual Framework. OPRE Report # 2014-77. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families. U.S. Department of Health and Human Services.

[7] The resources developed by the PMFO center on Head Start data, including online interactive learning modules, can be found at this link: http://eclkc.ohs.acf.hhs.gov/hslc/tta-system/operations/data.

Additionally, families themselves may have concerns with the ECE program sharing personal information on their family or child with other social service or education agencies.[8] These concerns and questions can make it challenging to link administrative data across programs and services.

Strategies:

- *Establish a data governance body*. Some communities have developed data governance bodies to determine rules for using and sharing data. These governance bodies can do several important things to build trust between programs and the families they serve, as well as between multiple partner organizations that are sharing and/or receiving data from each other, to minimize privacy concerns:

    - ✔ *Include representation from every agency that shares data, as well as family and community stakeholders*. This ensures the views and concerns of every stakeholder are considered when policies are developed or decisions are made. For one Head Start grantee we interviewed, the council included both program and parent representatives who helped think about the data collected and how to appropriately use the data.

    - ✔ *Develop data policies and procedures.* These policies and procedures can address privacy concerns related to data collection, access, and use. It is important to include families and staff in the development of data policies. The policies and procedures will provide important guidance to staff and should be reviewed regularly and revised as needed.

    - ✔ *Develop parent consent and notification processes.* These processes include communications with families about their rights to share or keep personal data confidential.[9] It is important for program staff to: discuss the data they would like to collect with families; seek feedback and input from families regarding their interests and concerns around data collection, use, and linking; and develop procedures that clearly explain families' choices and involvement in the collection, use, and linking of data.

    - ✔ *Be transparent about how data are used.* For example, a city administrator who oversees early childhood services told us that in their community, researchers and other agencies requesting to link and analyze early childhood data are required to describe to the governance committee exactly how they will use the data and for what purpose before the committee grants permission to use the data.

- *Develop data use agreements*. Programs can create their own data use agreements to specify which data can be used and by whom. These agreements describe the required procedures another program or outside individual must follow when using the program's data in order to protect the privacy of the children and families. For instance, programs can create data use agreements requiring that anyone who uses their data must store the data in a secure location and cannot publish or release any information that could identify children, families or staff. Data use agreements also often outline policies and procedures for the destruction of data after it is no longer needed. Programs typically develop data use agreements for a specific agency or individual who has requested to use the program data for a particular purpose; alternatively, the requesting agency or individual may already have a data use agreement that the program can modify for their purposes.

Managing Multiple Data Collection Systems

Challenge: A particular challenge in using linked data is determining how to connect data from multiple databases and across multiple programs. Many ECE programs receive funds from multiple agencies (e.g., Head Start, state pre-k, child care subsidies) that may have different reporting requirements. As a result, much of the data about children, families and staff participating in ECE programs are stored in different data systems. The data may be collected differently in each data

[8] In many cases, it is not necessary for a program to share personally identifiable information (PII) in order to link data with another organization. A program should only share PII on children and families if absolutely necessary. As an alternative to sharing PII, the program can share de-identified data using unique identification numbers that are assigned to each child or family. See the discussion of unique identification numbers below for more information.

[9] For more information on communicating with families about data, see another resource in this series, *Data Direction #2: Discussing Data with Families*.

system (e.g., monthly family income reported in one system and annual family income reported in another), as well as defined differently across the data systems (e.g., infants may be defined as birth to 11 months in one dataset and birth to 12 months in another).

Strategies:

- *Assign unique identification numbers.* One strategy to link data is to have a unique identifier (UID). A UID is a single, unduplicated number that is assigned to and remains with a child, family member or staff member throughout participation in early childhood, K-12, and other public programs. Having UIDs for the children, families, or staff in datasets allows information to be linked between two or more datasets because there would be a way to match individuals across various datasets. Some programs we spoke with used UIDs generated from state or local school district data systems. Programs also matched records based on unique information (e.g., name, date of birth, or race/ethnicity) instead of using UIDs, but this process can take a long time and may not yield a complete match of individuals across datasets. A benefit to using UIDs instead of matching records on demographic information is that it reduces the need to share additional personally identifiable information on children and families because UIDs are not connected to any identifiable data on the child or family. For example, instead of sharing data such as name, address, or date of birth, programs can use UIDs to match children and families. This helps protect the privacy of children and families in their programs. However, even when using UIDs, it is important to ensure that data linking procedures and protocols are in place and followed carefully so that the confidentiality of sensitive information is protected.

- *Coordinate data collection systems and practices.* A larger Head State grantee we spoke with invested in developing technology to merge the various data systems used by their programs. Leaders also worked to align data definitions to make it easier to link data across programs (e.g., developed a data codebook so that an infant was always defined as birth through age 11 months) and generally encouraged the development of an integrated statewide early childhood system that could reduce the duplication of data across multiple funding streams. Efforts at the federal level are also helping support better coordination of data collection standards and practices. For example, the U.S. Department of Education's *Common Education Data Standards* (CEDS) initiative is developing voluntary, common data standards for programs serving children from preschool through high school and beyond.[10] The Administration for Children and Families in the U.S. Department of Health and Human Services also developed the complementary INQUIRE Data Toolkit to specifically support effective data collection and data standards for ECE programs.[11]

[10] To learn more about the Common Education Data Standards, please vis**it: https://ceds.ed.gov/#.**
[11] To learn more about and download the INQUIRE Data Toolkit, please visit: http://www.acf.hhs.gov/programs/opre/resource/inquire-data-toolkit.

Capacity of Existing Data Collection Systems

Challenge: Many programs use existing software from vendors to collect, store and report their data to meet basic reporting requirements. These software programs may have limited flexibility in generating other reports or customizing the databases to meet individual program needs to link or report data. For example, a Head Start Director we spoke with wanted to know which children in her program missed more than ten days but was only able to determine this by examining the raw data and counting absences for individual children (rather than creating a report). Another program did not have an existing data field to track parent consent for data collection. These limitations can make it hard for a program to use or share data.

Strategies:

- *Work with vendors to customize or upgrade databases.* Some ECE programs have worked with vendors to make changes that facilitate linking data. One administrator told us about working with multiple vendors to modify their data systems so that they could combine child assessment data with other program-level data. As another example, a state-level data manager we spoke with negotiated with a vendor on behalf of Head Start grantees to identify which data fields could be used for a parent opt-out indicator for parents that choose not to share their child's data with the state's data system. It may be easier and more cost effective to negotiate with vendors when programs work together or with a state agency to collectively request changes.
- *Analyze data using other software.* We heard from a Head Start program director that she regularly uses Microsoft Excel to help her analyze data because of limitations of the existing data system. She uses the software to analyze, merge, and create charts to display and examine the data. While this process can be time consuming and requires expertise about data analysis and other data software, it allows programs to analyze their data in ways that might not be possible within the primary data system.

Moving Forward

Understanding the power of linked data to inform program improvement is an important first step in using linked data. Once program leaders are interested, though, they often must overcome several challenges.

The information in this brief highlights the particular issues that local ECE programs face when linking data and offers suggestions for overcoming challenges. As data use and linking efforts grow, especially at the state and federal levels, it is important to maintain a focus on local programs' use of data. How can local ECE programs collect data well so that it can be useful for them and included, as appropriate, in local and state data linking efforts? How can local programs best use their data and link with other data to improve their program and support children and families?

It is equally important to understand the limitations of administrative data and the cautions when using administrative data to inform program decisions. For example, addressing particular questions such as program effectiveness or the impact of a program on children's later outcomes would require a more sophisticated evaluation, likely including the collection of additional data.

Local program directors, technical assistance providers, community and state leaders, and families should work together to discuss their shared vision for strong early childhood services and the role of linked administrative data in helping programs and communities realize their vision. We hope these stakeholders will work collaboratively to overcome the challenges identified in this brief. Though this brief offers some strategies to overcome particular challenges, future efforts may provide resolutions that are more permanent. Software packages and vendors, for example, could offer more

flexibility to address local program needs and interests. State early childhood integrated data efforts could support a more coordinated set of data definitions that make it easier for local programs to report information consistently.

As part of the *Building Capacity to Use Linked Data* project, we have developed a series of resources to support ECE programs in linking and using linked data, both within their own program and with other local and state agencies. They include a set of case studies highlighting examples of programs that have successfully shared and linked their data; a set of tips and guidance documents for addressing common issues that arise when linking data; a data planning guide for program administrators to examine their own progress in linking data; and a compendium of existing resources on these topics.

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Appendix: Methodology

This brief was developed through a review of existing literature, discussions with expert consultants for the *Building Capacity to Use Linked Data* (BCULD) project, and conversations with early care and education (ECE) stakeholders at the local, state, and federal levels. We first conducted a search of the literature using various databases to identify reports, fact sheets, webinars, case studies, and guides/tools published within the last 10 years that discuss opportunities, challenges, strategies, or recommendations for using and linking data in Head Start and other ECE programs.[1] We used a broad list of search terms, including *linking early childhood data, Head Start and linking data, data governance, data quality, data use, data security*, and *data management*. From this initial list, we then reviewed 25 resources that focused on benefits, challenges, or recommendations about linking and using linked data. We also conducted a targeted search of the national Head Start technical assistance centers to find resources specific to Head Start data system linkages.

Next, the BCULD team solicited feedback from expert panel members about their experiences and ideas on the benefits and challenges of using linked data. The BCULD team also asked the experts to identify other individuals with similar experience. Each expert recommended up to three stakeholders that could provide a local-, state-, or federal-level perspective about the use of linked data in Head Start and other ECE programs. The BCULD team selected nine stakeholders to participate in informal phone conversations to share their thoughts and experiences on these issues. This brief summarizes the findings from relevant existing resources, conversations with the expert panel members, and selected stakeholders on benefits and challenges of linking and using linked administrative data.

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[1] Information sources included: Google Scholar, Elton B. Stephens Company Information Services (EBSCO), Research Connections, Quality Initiatives Research and Evaluation Consortium (INQUIRE), BUILD Initiative, Early Childhood Data Collaborative (ECDC), Data Quality Campaign (DQC), The National Workforce Registry Alliance (The Alliance), Common Education Data Standards (CEDS), Quality Rating and Improvement System (QRIS) Learning Network, National Center on Child Care Data and Technology (NCDT), Privacy Technical Assistance Center (PTAC), State Longitudinal Data Systems (SLDS), and The Center for IDEA Early Childhood Data Systems (DaSy).

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The Integration of Early Childhood Data -State Profiles and A Report from the U.S Department of Health and Human Services and the U.S. Department of Education

Purpose

This report is intended to help states refine their capacity to use existing administrative data[1] from early childhood (EC) programs to improve services for young children and families. Linking data collected across early childhood programs can help program leaders and policymakers better understand the needs of the children and families these programs serve as well as support continuous program improvement, innovation, and research. Integrated early childhood data can help to answer important questions related to program access, participation, quality, and their association with child outcomes. These answers can, in turn, inform how federal and state funds support young children's early learning, health, and development across a range of programs and services; impact resource allocation decisions; allow for examination of patterns in service use; identify areas for quality improvement and innovation; and improve the coordination of service delivery across systems at both the state and local levels.

The first section of this report includes a vision for integrated EC data and explains how states can use integrated data to inform decisions. The second section covers key considerations when integrating and linking EC data based on the best practices from the field and lessons learned from eight states profiled that are actively engaged in developing integrated EC data systems. The report concludes with more detailed information about the eight profiled states. Because states and localities face challenges when attempting to integrate EC data, the U.S. Department of Education (ED) and the U.S. Department of Health and Human Services (HHS) have funded a variety of research projects and technical assistance (TA) centers to assist states in these efforts. Many of the resources that have been developed through these initiatives are highlighted in this report and listed in Appendix A. Appendix A also includes information on recent federal investments and opportunities to further the development of integrated data systems, federally-funded toolkits, and other useful resources.

Background and Vision

Despite many important federal, state, and local investments in early care, education, and public health, many young children do not receive the support they need to be adequately prepared for school. In fact, achievement and development gaps can be detected in children as early as nine months of age, and these early health and educational disparities often persist throughout a person's lifespan.[2] Early investments in health, family support, and high-quality early learning opportunities have been shown to provide both short- and long-term positive impacts on children's future outcomes that can provide long-term benefits to society. [3]

Because many different programs and services may touch the lives of children and families in the early childhood years, it is difficult to obtain a full picture of the early childhood landscape or understand the relationship between individual programs and outcomes without integrated data. As states and localities work to ensure that all children are supported in their early childhood years and ready for school, integrated data can be used to inform policy and have honest conversations about: 1) the availability and quality of services currently available to young children and their families; 2) how to improve the quality

[1] In this document, *administrative data* refers to information programs routinely collect about individual children, families, and staff to deliver program services and meet program, funding, or legal requirements. This could include, but is not limited to, demographic information (e.g., race/ethnicity, date of birth) on children and families, child attendance, results of child screenings or assessments, staff qualifications, and/or program characteristics.

[2] L. Hutchison, T.W. Morrissey, and K. Burgess. *The Early Achievement and Development Gap. Research Brief.* (Washington, DC: Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, 2014). http://www.researchconnections.org/childcare/resources/27227/pdf

[3] T.M. Morrissey, L. Hutchison, and K. Burgess. *The Short- and Long-term Impacts of Large Public Early Care and Education Programs. Research Brief.* (Washington, DC: Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, 2014). http://www.researchconnections.org/childcare/resources/27227/pdf.

of and access to those services; and 3) how to track progress over time. These conversations can help policymakers and administrators make better decisions about targeting resources, improving services, streamlining processes for eligibility, screening, making referrals, and coordinating services for children and families.

Many states have already invested in developing integrated data systems to help answer early childhood policy questions and support continuous improvement in services. When fully functional, these systems, often called Early Childhood Integrated Data Systems (ECIDS), connect, integrate, secure, maintain, store, and report information from a variety of EC programs and services. Through an ECIDS, EC programs can share data related to the children and families the program serves, personnel, and the characteristics of the program or services offered. In some cases, administrative data that is integral to supporting early childhood development may not be *integrated* into – or a part of – an ECIDS, but instead *linked* to the ECIDS. This report refers to "integrated data" and "linked data" to make clear that states and programs can benefit from broad types of data connecting together, regardless of where the data may be housed and the mechanism used to connect data.

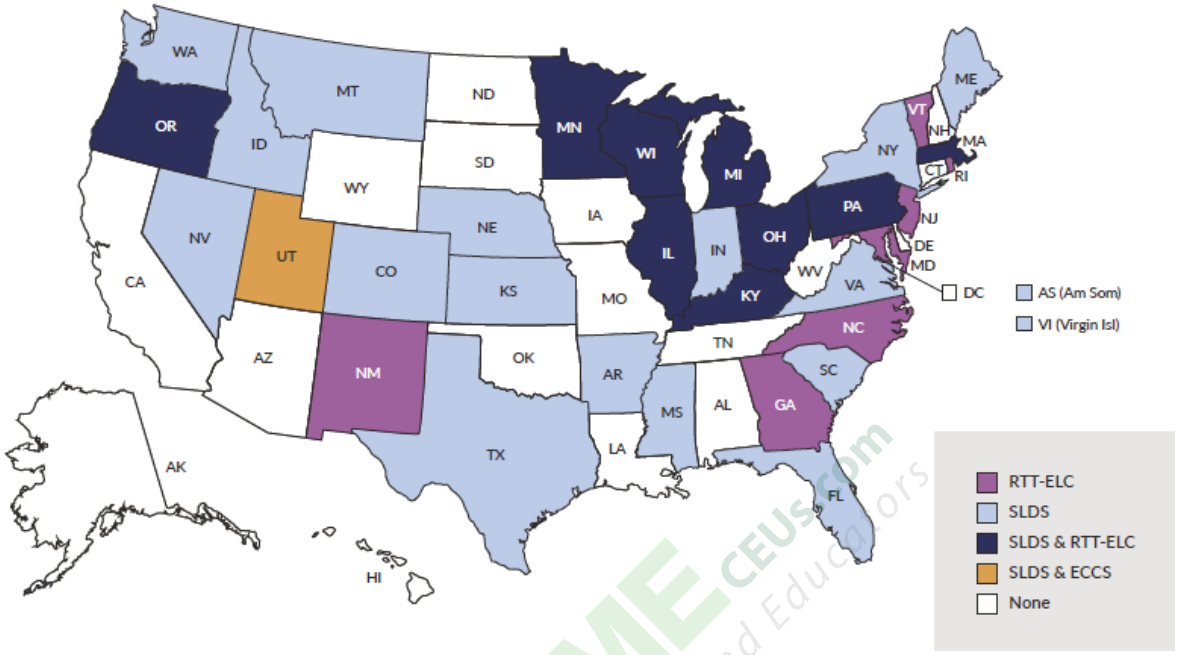
Once an ECIDS is fully functioning, many possibilities around data use emerge. For example, some states use their ECIDS to generate standard, aggregate-level reports for individual EC programs across the state on the children they serve. Other states have made efforts to integrate data in a way that can support more real-time case management and improve efficiency in enrollment and service delivery across programs.

Some of the important policy questions that linked and integrated data can help answer are:

- How many children in the state are participating in EC programs and services (i.e., a distinct count of children receiving EC programs and services)?
- What different combinations of EC programs and services do children receive, and how are these combinations related to child outcomes at kindergarten entry and later in school?
- Where are there gaps in access to and participation in high-quality EC programs and services?
- For children who participated in EC programs and services, what are the relationships among staff characteristics, qualifications, professional development, and child outcomes?
- What other kinds of social and health services are families of young children accessing (e.g., Temporary Assistance for Needy Families (TANF), Supplemental Nutrition Assistance Program (SNAP), Medicaid, job training)? Are there families that may qualify for these services that are not currently accessing them?

As discussed more extensively in Appendix A, federal funds have supported states in their efforts to develop ECIDS. In particular, federal support provided through the Race to the Top-Early Learning Challenge (RTT-ELC) program, administered by ED and HHS, and ED's Statewide Longitudinal Data Systems (SLDS) program have supported state progress in building ECIDS. Twenty-six states have received SLDS funds to incorporate early childhood data into their SLDS or to develop or enhance their ECIDS, and 16 states that received RTT-ELC funds committed to using those funds to develop or enhance their ECIDS (see Figure 1). SLDS-funded states focused their work on EC data to varying degrees. Additionally, many states are using their own funds to develop ECIDS. The profiles included in this report highlight some of the exciting progress made in various states across the country.

Figure 1. Federal funding for state data systems incorporating early childhood data, FY 2009–2015



Source: RTT-ELC, SLDS, and Early Childhood Comprehensive Services (ECCS) grant applications.

Many states are working to integrate data vertically to K–12 public school data and horizontally across programs that serve children during the early childhood period. By 2015, 32 states had linked their K–12 data to some of their early childhood data.[4] As more EC data are linked to K–12 data, EC programs will be able to learn, in the aggregate, how children they served are progressing through school. For example, a program could learn how children who participated in their program fared on kindergarten entry assessments. Integrating data horizontally can allow states and localities to understand the range of services and programs that reach children and families during the early childhood period. Additionally, states and school districts could use this information to better understand the EC experience of arriving kindergarteners and to determine if and where additional early childhood program investments are needed.

An ECIDS that is integrated horizontally could also serve as a case management system and help improve coordination and service delivery. For example, horizontal data sharing could allow authorized users at an EC program to know whether a child in their care has health insurance, is up-to-date on immunizations and developmental screenings, or has been enrolled in early intervention services. Most ECIDS do not yet have the capacity to provide real-time reporting back to EC programs to improve service delivery. However, many states have horizontally integrated their EC data to help answer policy questions, and some states are using horizontally-linked data to streamline enrollment and eligibility determination processes. Investments in ECIDS and alignment across early childhood data systems can establish a more comprehensive understanding of how to organize early childhood systems and programs to achieve improvements in kindergarten readiness and meet other program and policy objectives. While states have made progress in these areas, many states are still working to integrate the range of program data they would need to answer some of the more sophisticated policy questions they seek to understand.

[4] U.S. Department of Education, *Fiscal Year 2015 Annual Performance Report and Fiscal Year 2017 Annual Performance Plan.* (Washington, DC: 2016).

ECIDS and efforts to integrate data across programs serving children and families in the early childhood period will also allow states and local educational agencies (LEAs) to meet new federal reporting requirements and improve performance outcomes required by the amended *Elementary and Secondary Education Act (ESEA)*; the reauthorized *Child Care and Development Block Grant Act (CCDBG)*; the new Head Start Program Performance Standards; the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program; and the *Individuals with Disabilities Education Act (IDEA)* program. Each of these programs has reporting requirements or performance measurement systems that rely upon early childhood data. Examples of these federal EC data reporting requirements are listed below:

- The amended *ESEA* requires states and LEAs to include on their report cards the number and percentage of children enrolled in preschool programs.[5] Additionally, the amended *ESEA* requires that each LEA receiving Title I funds, regardless of whether it operates a Title I preschool program, must develop and implement a systematic procedure for receiving records of preschool children.[6]
- Under the reauthorized *CCDBG* law, each state will be required to report information on its activities to improve the quality of child care across settings and the measures it will use to evaluate progress in improving the quality of child care programs and services in the state. States will also report quality information for each child care provider that receives funding from the Child Care and Development Fund (CCDF), and those states with Quality Rating and Improvement Systems (QRIS) will include QRIS participation level in these data submissions. Additionally, states will be required to report on the number of children served by *IDEA* that also benefit from the CCDF program.
- Under Parts B and C of the *IDEA*, states are required to report on the settings where young children with disabilities receive services. These data collections require states to report on the number of young children with disabilities who receive services in particular settings such as "regular early childhood programs" under Part B of the *IDEA* and "community-based settings" under Part C of the *IDEA*.[7]
- The new Head Start Program Performance Standards regulation, released in September 2016, requires Head Start programs to coordinate with state education data systems, including SLDS and ECIDS, to the extent practicable, if the program can receive similar support and benefits as other participating early childhood programs. The standards also require that Head Start programs participate in state QRIS, and programs will need to meet these QRIS data requirements by August 2017.
- Similarly, integrated data can provide information needed for public health agencies and other administrators of the MIECHV program to report performance measures demonstrating improvements in kindergarten readiness or other relevant benchmark areas.

[5] *ESEA* section 1111(h)(1)(C)(viii)(II)(aa), (2)(C)

[6] *ESEA* section 1119

[7] The *IDEA* 2014-15 data collection defines "regular early childhood program" for the *IDEA* preschool data collection requirement as "a program that includes a majority (at least 50 percent) of nondisabled children … and may include, but is not limited to: Head Start; kindergartens; preschool classes offered to an eligible pre-kindergarten population by the public school system; private kindergartens or preschools; and group child development center or child care" and a "community-based setting" for the *IDEA* Part C data collection as a setting in which services are primarily provided where children without disabilities typically are found … including but not limited to child care centers (including family day care), preschools, regular nursery schools, early childhood centers, libraries, grocery stores, parks, restaurants, and community centers (e.g., YMCA, Boys and Girls Clubs).

Key Considerations for Integrating and Linking Early Childhood Data

Once a state's leadership — which may include the state legislature, the governor, or agency leaders — decides to fiscally and politically support integrating and linking early childhood data to enable the many useful functions it can serve, state staff are faced with the multi-stage task of bringing the vision to fruition. Two useful resources for those groups seeking to develop an ECIDS for their state include: 1) the SLDS State Support Team's (SST)[8] Early Childhood Integrated Data Systems Toolkit; and 2) the Center for *IDEA* Early Childhood Data Systems (the DaSy Center)[9] System Framework. These resources outline in detail the characteristics of a high-quality ECIDS as well as the steps involved in developing one.

The key considerations for integrating and linking EC data listed below draw from these two frameworks, as well as from common lessons learned from the experiences of eight states actively engaged in the process of developing, improving, and using their own ECIDS. HHS and ED staff selected these eight states following discussions with experts from the field[10] and HHS and ED leadership. State profiles, included at the end of the report and hyper-linked throughout the report, provide an overview of the states' work, including lessons they have learned.[11] These frameworks and state experiences suggest that states consider the following as they move forward in developing an ECIDS or linking data across early childhood systems:

1. Develop a purpose and vision for the ECIDS;
2. Create strong data governance processes;
3. Engage stakeholders meaningfully;
4. Ensure data ownership is clearly included in vendor contracts;
5. Ensure children's and parents' rights to data privacy;
6. Ensure data security;
7. Ensure data quality and comparability across data systems;
8. Build capacity to analyze and use data;
9. Capitalize on other data integration efforts; and
10. Integrate and link broad types of early childhood data together.

1. Develop a Purpose and Vision for Early Childhood Data Integration

Once a state leadership team determines it is interested in integrating data, the state should develop a clear purpose and vision for the ECIDS. The purpose statement should describe the reasons the state is building the ECIDS and intended short- and mid-term results the state aims to achieve. For example, stakeholders in the state may aim to have the capacity to answer a set of key policy and research questions that require using data from multiple programs; however, in the short-term they may only be able to have a core set of data integrated to answer their highest-priority questions. The vision statement should be an aspirational description of how the state will use the integrated data to inform policy decisions or enhance services to improve outcomes for young children. The vision statement should be broad enough that the ECIDS could continue to expand and develop to include new sources of data as knowledge and experience grow; however, if the state seeks to expand the ECIDS to include a source of data that was not originally included in the purpose and vision, the state should revisit and, if necessary, revise the purpose and vision. As described in the subsequent section on stakeholder engagement, stakeholders at both the state

[8] ED's SLDS State Support Team (SST) is composed of experienced state data systems experts whose primary objective is the direct support of all states in their development and use of SLDS.

[9] The DaSy Center provides technical assistance to state agencies to build capacity in developing or enhancing data systems for Part C early intervention and Part B preschool special education programs supported through the *IDEA*, including support for incorporating *IDEA* data in the development of ECIDS.

[10] ED and HHS staff consulted with Missy Coffey from the SLDS SST, Carlise King from the Early Childhood Data Collaborative, and Kathy Hebbeler and Donna Spiker from the DaSy Center.

[11] The state profiles are illustrative examples of select key considerations. Neither ED nor HHS specifically reviewed all of the policies and disclosures for each of these states, and this document does not represent review of such policies and procedures.

and local levels should be involved in setting the purpose and vision (e.g., *What questions should the integrated data be able to answer? How will the data be used?*). Considering the timeline for implementing the vision and setting milestones to track progress towards that goal may also help the state define and move forward in this work.

Resources that may assist states and local jurisdictions with setting a purpose and vision include:

- The SLDS SST ECIDS Toolkit on Purpose and Vision, which provides an overview of the purpose and vision development process; and
- The DaSy Framework, which outlines elements for states to consider related to the Purpose or Vision of a data system.

2. Create Strong Data Governance Processes

Data governance[12] involves the development of policies and procedures for managing and using data, usually by a group of stakeholders known as a *data governance body* or *data governance entity*. The data governance body should include a range of stakeholders, such as representatives from agencies serving children, local EC programs, providers and caregivers, parents and families, researchers, and professional organizations. The data governance body develops policies and procedures related to data records management, data quality, data privacy, data security, and data access. As each of these topics may be handled differently across programs and services, they are particularly important for data governance bodies of integrated data systems to consider.

Effective data governance will help states ensure that high-quality data are securely available to identified end-users such as decision makers and researchers in a timely fashion, while also protecting the privacy of the individuals whose information is being shared and integrated. The data governance body is responsible for developing a process for end-users to access data from the ECIDS. The data governance body can help states address this issue as well as other key considerations discussed in subsequent sections of this report, such as stakeholder engagement, data ownership, data privacy, data quality, and data use.

There are several federally-funded resources available to assist states with developing effective data governance structures and procedures, including:

- The Privacy Technical Assistance Center[13] (PTAC), which has created a Data Governance Checklist that identifies best practices for state or local organizations that are establishing or maintaining a data governance program;
- The SLDS SST, which provides an introduction to early childhood data governance for states and other key stakeholders;
- The DaSy Center's Early Childhood Data Systems Framework, which includes a component focused on key elements of effective data governance and management; and
- HHS' *Building Capacity to Use Linked Administrative Data* Project that has developed a guide for data governance for local EC programs to use as they consider sharing data with states or other agencies.

3. Engage Stakeholders Meaningfully

In order for any data system, and especially an integrated data system, to be useful and meaningful, various stakeholders need to be engaged in an on-going manner throughout the process of developing and

[12] Head Start uses the term "data management;" see 1302.101(b)(4) of the Head Start Program Performance Standards. The current report uses the term "data governance."

[13] The Privacy Technical Assistance Center (PTAC) is funded by the U.S. Department of Education and serves as a resource for education stakeholders to learn about data privacy, confidentiality, and security practices related to student-level longitudinal data systems and other uses of student data. See below for additional information on PTAC.

using the system. Depending on the particular early childhood data integration effort in a given state, key stakeholders may include: data owners (e.g., state agencies, local jurisdictions, local EC programs and providers), data users (e.g., state and local policy makers, program directors, researchers), parents and families, data vendors, foundations or other funders, early childhood advocacy groups, and professional organizations (e.g., State Head Start Associations, Head Start State Collaboration Offices, professional associations that support the Early Care and Education (ECE) workforce). Some of these stakeholders may be members of the data governance body while other stakeholders will work with the data governance body.

Stakeholders should be engaged early in the process of developing and enhancing an ECIDS to determine the purpose of the integrated data system and to discuss issues regarding data privacy, access, and use. Stakeholders should be involved in guiding the broad goals of the data integration efforts (e.g., *What questions should the integrated data be able to answer? How can we use the linked data to improve efficiency?*), as well as specific goals associated with the integration of new data sources (e.g., *What specific data elements should the state integrate from Head Start programs?*). Data owners are more likely to view the effort to integrate their data as worthwhile if they understand how their program — and the children they serve — will benefit by linking program data to an integrated system such as an ECIDS. Additionally, data owners need to understand — and provide input on — how their data will be safeguarded, the conditions under which their data may be shared with analysts or researchers and the procedures for sharing their data, and the types of reports that the state will make available.

Minnesota, North Carolina, and Pennsylvania are examples of states that spent time carefully explaining to stakeholders what types of questions the ECIDS would and would not be able to answer (e.g., the systems would not allow for local programs to learn about individual children). When Minnesota worked to integrate Head Start data into its ECIDS, it included local Head Start leaders in its governance structure to ensure that the ECIDS would be able to address questions to which Head Start leaders wanted answers. North Carolina also wanted to integrate Head Start data into their ECIDS and in doing so worked closely with its Head Start State Collaboration Office to talk with local Head Start programs about the benefits of integrating data for both the state and for the Head Start programs. In Pennsylvania, there was some hesitation from local providers about integrating early intervention and preschool special education data, so the state facilitated leadership meetings six times a year between local *IDEA* Part C coordinators and local *IDEA* Part B, Section 619 coordinators. As a result of this in-depth engagement, local providers saw the benefits of working together for a unified birth through five early intervention data system. In addition, Pennsylvania developed a guide for parents that describes the benefits of sharing data, the types of data that are collected, and privacy safeguards in place.

There are several federally-funded resources available to assist states with successfully engaging stakeholders in early childhood data systems development. The first two resources listed below were originally developed for *IDEA* Part C early intervention and *IDEA* Part B, Section 619 preschool special education programs but are relevant for all early childhood data systems. These resources include:

- The DaSy Center's Early Childhood Data System Framework, which includes a Stakeholder Engagement component;
- DaSy Center's modules on Stakeholder Engagement; and
- The SLDS SST ECIDS toolkit's Stakeholder Engagement component.

One of the most important stakeholder groups to consider is a group that may have little direct contact with the data governance body: parents and other family members.[14] Data governance bodies must understand the legal implications of any data proposed to be included in the ECIDS to ensure that parents of children receiving education, health, developmental, and related services know, understand, and, where required, provide consent to disclosure of information that EC programs collect about them and their children. Under many federal laws, parents of children must also receive a privacy notice, which includes an explanation of the purpose of the data collections, and what data are shared or linked with other programs or agencies.[15] State data governance bodies should support EC programs and service providers in addressing parents' questions and concerns regarding how their family's information will be used, who will have access to their family's information and for what purpose(s), parents' and children's rights to privacy, when parental consent is required under the applicable laws, how programs will protect parents' and children's Personally Identifiable Information (PII) or protected health information (PHI) under the specific applicable laws, and whether and how parents can opt out, if applicable, of sharing their child's data with the ECIDS. Data governance bodies can offer support to programs in determining when parental consent is required to share PII and communicating with families in easy-to-understand language about the importance of data integration efforts, how data integration will improve services, and what measures are taken to protect PII.

Pennsylvania and Rhode Island are examples of two states that developed materials for parents about integrated data. Pennsylvania's guide for parents describes the benefits of sharing *IDEA* Part C and *IDEA* Part B, Section 619 data, the types of data that are collected, and the privacy safeguards in place in order to provide parents with information so that they could provide the required prior written consent. Rhode Island's materials for parents discuss how developmental screening data is collected, shared, and used, as well as how parents may opt out of allowing their child's PII or data to be shared. There are several federally-funded and non-federal resources available to assist states and programs in communicating with families, as well as resources designed specifically for parents. For example:

- PTAC offers a Best Practices guide for how schools and districts should communicate with parents about data privacy;
- The HHS-funded project *Building Capacity to Use Linked Data* provides a guide to assist programs in discussing data with families; and
- The DaSy Center's families' webpage provides information and resources for families of young children who want to know more about early intervention and preschool special education data under the *IDEA*.

4. Ensure Data Ownership is Clearly Included in Vendor Contracts

Both states and local EC programs may choose to contract with data vendors to manage data and report service and outcome data to meet state and federal reporting requirements. While vendors can offer valuable data management and integration services, state as well as individual EC programs should carefully review vendor contracts to ensure that, among other things, the terms of such contracts reflect the fact that EC programs retain ownership of their own data and maintain the ability to easily pull reports from data systems to enable data integration and analysis.[16] For more information on this issue, see the

[14] Under the *Family Educational Rights and Privacy Act (FERPA)* and *IDEA*, only parents (i.e., not "families") are given the rights to access, and to consent to the disclosure of, Personally Identifiable Information (PII) from their children's early intervention and education records. Under *FERPA*, these rights transfer to the student when the student turns 18 years of age or attends a postsecondary institution.

[15] Applicable laws and regulations include, but are not limited to, *FERPA*, Parts B and C of the *IDEA*, the *Health Insurance Portability and Accountability Act* (*HIPAA*), and the Head Start Program Performance Standards. There are also other federal, state, local, and program-specific laws that may be relevant for protecting the privacy of children's records.

[16] States and individual EC programs should review contracts for legal sufficiency, with data ownership being one of the issues a legal team reviews.

SLDS SST's brief on Writing Requests for Proposals and Vendor Contracts: Suggestions for Head Start Grantees.

5. Ensure Children's and Parents' Rights to Data Privacy

When developing an ECIDS, there are several stages when it is critical to understand compliance with applicable privacy laws and best practices. For example: 1) before becoming an ECIDS partner and contributing data to an established governance framework; and 2) when approving specific uses of integrated data from the ECIDS by authorized parties to determine what is permissible under applicable privacy laws. Appendix B: Data Privacy Laws and Regulations describes applicable laws and regulations that contain provisions to protect the privacy of individual-level records from EC programs and services. Applicable laws and regulations may include, but are not limited to, the *Family Educational Rights and Privacy Act* (*FERPA*), *IDEA* Parts B and C, the *Health Insurance Portability and Accountability Act* (*HIPAA*), and the Head Start Program Performance Standards. There are also other federal, state, local, and program-specific laws that may be relevant for protecting the privacy of children's records.[17]

When becoming an ECIDS partner, stakeholders should work with the data governance body to determine what information is needed in the ECIDS, how that information will flow between agencies and who potentially would have access to such information in order to assess which law(s) may apply and what criteria must be met in order to be in compliance with relevant federal and state privacy laws. The information needed in the ECIDS will depend on what state and local government officials, EC program directors, and researchers identify as key research questions. In some cases, multiple statutes may apply to one set of records. Each of these privacy laws and regulations (i.e., *FERPA*, the *HIPAA* Privacy Rule, the *IDEA* Parts B and C confidentiality regulations, and the Head Start confidentiality regulations) have separate exceptions or circumstances under which, for instance, individual-level early childhood data can be disclosed with prior written parental consent, and if these laws apply, an analysis must be conducted separately under each of the applicable laws to determine if the disclosure is permissible under an exception to the respective prior written parental consent requirements. When prior written parental consent is required, appropriate policies, safeguards, and forms must be developed and reviewed regularly to ensure compliance with privacy requirements. If disclosure is permitted without prior written parental consent, stakeholders in almost all cases must develop data sharing agreements (see PTAC's Written Agreement Checklist or the DaSy Center's Data Sharing Agreement Checklist). Under these data sharing agreements, the parties must identify the PII being disclosed, the parties to whom the disclosure will be made, the purposes of the disclosure, and all applicable privacy laws. Under these agreements, the users of PII or data must ensure that it is shared only with authorized entities for authorized purposes and adequately protected (i.e., not re-disclosed) and destroyed after the PII or data has been used for the purposes specified in the agreement.

When approving specific uses of integrated data, the ECIDS data governance body may pre-approve types of projects and analyses that are permissible uses of integrated data and must comply with all applicable privacy laws. The ECIDS data governance body should also develop a process to evaluate new project and analysis requests to use integrated data that fall outside of its pre-approved list of projects to ensure these requests comply with the applicable privacy laws. For information on developing processes around researchers' access to data, see the National Forum on Education Statistics' guides for state education agencies and local education agencies.

In many cases, the release of fully de-identified data to approved individuals is permissible since it is not considered a disclosure under specific laws such as *FERPA*. The de-identified data may be in the form of summary tables and charts or de-identified individual level records. Fully de-identified data require the

[17] The Children's Online Privacy Protection Rule (COPPA) is an example of a law that may apply. For more information, please visit: https://www.ftc.gov/tips-advice/business-center/privacy-and-security/children%27s-privacy.

removal of direct and indirect identifiers and may also require one or more disclosure avoidance techniques to ensure the data are not able to be linked to a specific child. Additional information on de-identified data can be found in PTAC's Data De-identification guidance document and its FAQ on Disclosure avoidance, as well as a joint DaSy Center and PTAC document on data de-identification that is relevant for data from early childhood programs.

If the use of ECIDS data requires the release of records containing PII, then it must be a permissible disclosure under all applicable privacy laws. For example, if the data are protected under *FERPA*, the data may be disclosed without parental consent to an authorized representative of certain statutorily-specified entities such as state or local educational authorities to audit or evaluate a federally- or state-supported education program. Each request for access to integrated data must be evaluated under each of the applicable privacy laws such as *FERPA*, *HIPAA* Privacy Rule, the *IDEA* Parts B and C confidentiality regulations, and Head Start confidentiality regulations, to determine if the disclosure and intended use are permissible.

In certain cases, there may be value in using an ECIDS to improve direct services to children and families. In almost all instances, prior written parental consent may be required to share data with non-educational agencies or institutions under *FERPA* or non-participating agencies under *IDEA*. However, there are exceptions to the prior written parental consent requirements. For example, under a specific narrow exception to *FERPA* and *IDEA*, a caseworker in a child welfare agency responsible for a particular child may be able to access, through an ECIDS, individual-level education records for those specific foster children for whom the caseworker is responsible for addressing the education needs. Using ECIDS data at the individual-level is only permissible with prior written parental consent, or if the entity considering disclosing the data has the legal authority to disclose the data, without such prior written parental consent, to the person or entity requesting access to it for the requested purpose.

6. Ensure Data Security

An ECIDS must protect its data without unnecessarily limiting access to authorized users. Protecting data from corruption or unauthorized use or access is referred to as "data security." Data breaches to an ECIDS would jeopardize the confidentiality of child, parent, and staff data. All data owners (e.g., programs) and users of the ECIDS (e.g., state-level staff) should be trained to protect data confidentiality and preserve system security. For more information on data security procedures see PTAC's Security Best Practices toolkit.

7. Ensure Data Quality and Comparability across Data Systems

Data must be accurate to meaningfully inform decision-makers, but data quality can be especially challenging for an ECIDS because data included in an integrated data system consists of data collected for different programs with various data quality standards and various data definitions. ECIDS consist of data that local programs collect. Such programs are more likely to take the time to train staff and collect high-quality data if they use the data to inform their own decision-making. To that end, state agencies should provide technical assistance to local programs on data entry and data use and monitor local programs' data collection and reporting processes.

To ensure that data elements can be compared across programs in a meaningful way, the data governance body can work with stakeholders to understand how program definitions vary and, where possible, work with the different programs to develop a common data dictionary. A data dictionary includes definitions and attributes of specific data elements. States should consider using data elements and definitions from ED's Common Education Data Standards (CEDS) project as well as health data standards. Alaska provides an example of a state that used CEDS as it planned for its preschool through postsecondary and workforce data system.

In addition to providing high-quality data aligned across programs, an integrated data system must accurately match child records from across systems. When unique identifiers (UIDs) are not used consistently across programs and data systems, ECIDS staff must employ complex matching techniques to link individual child records. A more efficient and accurate way to integrate data is to develop a process of assigning protected UIDs to children, either at the time of birth or at the time of first contact with designated programs or services. The SLDS SST created an issue brief on this topic entitled UIDs Beyond K12.

8. Build Capacity to Analyze and Use Data

For an ECIDS to help stakeholders make data-informed decisions, states must have the technical capacity to analyze the data, analysts must develop reports that are meaningful for stakeholders, and states must work with stakeholders to engage with data and build their understanding of data reports. Interviews with ECIDS staff in Georgia and Pennsylvania highlight the importance of having staff capable of cleaning data as well as developing, running, and analyzing reports that will inform policy decisions at the state and local levels. Georgia also emphasized the importance of working closely with stakeholders who request reports to ensure that the requester understands the results as well as the limitations of the report. While analysts will need to work with stakeholders to address specific data requests, the data governance body can engage stakeholders in designing ready reports that answer policy-relevant questions. Specifically, the data governance body and analysts should share drafts of standard public reports with stakeholders and revise such reports based on their input to ensure data are appropriately introduced and user-friendly.

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As mentioned in the previous section, a local program is more likely to collect high-quality data if that program uses data to inform its own decision-making. Therefore, state agencies should support efforts to build the capacity of local program administrators and directors to use their own data when making programmatic or policy decisions. For example, even before Minnesota began to integrate Head Start data into its ECIDS, the state worked with local Head Start grantees to build capacity to use their own data, and to export data from their data management system developed by a private vendor. State agencies can assist local programs as they interpret and use standard reports created with ECIDS data (i.e., reports informed by data beyond their own programs). Resources that may assist states and local jurisdictions in efforts to use data in a meaningful way include:

- The SLDS SST ECIDS Toolkit on Data Use's overview of the data use process, which includes sections on planning, creating, and supporting;
- The DaSy Framework's quality indicators for states to support data use; and
- The HHS-funded project *Building Capacity to Use Linked Data*, which provides a Data Linking Planning Guide designed to help local EC programs and TA partners assess their capacity to engage in data linking efforts and identify next steps to accomplish data linking goals.

9. Build On and Leverage Other Data Integration Efforts

When developing or enhancing their own ECIDS, states can capitalize on lessons learned from recent ECIDS efforts in other states as well as other data integration and interoperability efforts in the education and health fields. For example, states may be able to leverage opportunities HHS offers through the

Affordable Care Act. States also can utilize the lessons learned through ED's SLDS grant program and the U.S. Department of Agriculture's (USDA's) National School Lunch Program (NSLP).

States may streamline and integrate health data systems to enable accurate determination of eligibility and enrollment for Medicaid, the Children's Health Insurance Program (CHIP), premium tax credits, and cost sharing benefits through the state-operated health care exchanges set up to meet requirements of the *Affordable Care Act*. Because other federally-funded human services programs can benefit from systems enhancements to create a modern infrastructure for determining eligibility across programs, the government provided a time-limited exception to the cost allocation requirements for this work, set forth in Office of Management and Budget (OMB) Circular A-87 (Section C.3). The cost allocation exception provides states the opportunity to integrate eligibility determination functions across both health *and* human services programs, thus maximizing efficiency by allowing human services programs such as TANF, CCDF, and SNAP to utilize systems designed for determining a person's eligibility for health coverage without sharing in the common system development cost as long as those costs would have been incurred to develop health systems. Medicaid and CHIP can pay for those common system functionalities with an enhanced federal match of 90 percent, subject to allowable costs as defined in these regulations. For more information on this cost sharing opportunity and other federal resources to support ECIDS, see Appendix A: Federal Resources to Support Data Integration. Pennsylvania used this 90-10 match opportunity to link its *IDEA* Part C payments and claims processing data to its Medicaid system to help maximize use of funds under its *IDEA* Part C system of payments, as described in the state profile section of this report.

The Department of Education's SLDS SST has developed a number of Best Practice Briefs, which include briefs on topics such as working with a central state IT agency, data governance, and vendor engagement. States can also use existing tools developed by the education or health data systems when building or expanding an ECIDS. For example, states may be able to use the same Universal ID software that school districts use when creating UIDs for EC programs. North Carolina took this approach when assigning UIDs for Head Start participants.

USDA's NSLP is another example where integration of data across systems can make a positive difference in providing services to children. The USDA is currently engaged in pilot programs in seven states where Medicaid agencies use their data systems to identify children who receive Medicaid and also meet NSLP household income standards. This information is matched with school enrollment records to identify and automatically certify eligible children for free and reduced price school meals, thus eliminating the burden of requiring low-income families to apply for these benefits. Sharing the Medicaid eligibility data across programs can increase access to nutritious meals every school day for thousands of children, while, at the same time, improving certification accuracy in the NSLP and reducing the paperwork burden on families and schools. Appendix C: Data Sharing Opportunities from USDA's Food and Nutrition Service contains additional information on the pilot program, as well as information on using mapping tools.

10. Integrate and Link Broad Types of Early Childhood Data Together

While states have made strides in linking some early childhood data to their SLDS, most states do not yet have a functional ECIDS that can answer pressing policy questions concerning participation in various types of EC programs. By linking broad types of data together, states can gain a more complete picture of the EC services children receive. While this report focuses on integrating and linking EC data together, linking EC data to K–12 data may facilitate understanding longer-term outcomes of EC programs.

Although 32 states linked their K–12 data to some of their early childhood data in 2015,[18] in 2013, only nine states linked Head Start data to K–12 data, and 12 states linked subsidized child care data to other EC data.[19] In 2015, nine states linked *IDEA* Part C and Part B, Section 619 preschool data with K–12 data, and six states linked these *IDEA* data to other early childhood data.[20]

One way to link EC data to K–12 data is to integrate EC program data into an ECIDS, and then, in turn, link the ECIDS to an SLDS. All of the states profiled in this report are working towards linking data from their ECIDS to their state's SLDS. Many other states are also working to bring together early childhood data to better organize and improve the use of existing data. To make ECIDS more useful, states should consider integrating and linking a broad set of relevant EC data, including some of the following types of data that may not yet be included in their ECIDS:

- Head Start data;
- Child care data;
- Data on early intervention and preschool services under *IDEA* Part C and Part B, Section 619;
- Public health and screening data;
- Homelessness data; and
- ECE workforce data.

Head Start Data

Head Start is a primarily federally-funded program that provides early education, health, mental health, family engagement, and other associated services to low-income children ages birth to five and their families. During the 2014–15 program year, approximately 1,600 Head Start grantees provided services to over one million children and families. Despite being one of the largest federal investments in early childhood education for low-income children ($8.6 billion in FY 2015), Head Start still serves less than half of the nation's eligible population. An ECIDS that includes Head Start data allows states to have a more complete picture of the children being served and the various EC programs serving them, as well as potential gaps in service.

Despite the importance of incorporating Head Start data into ECIDS, many states still struggle with this task. There are several possible reasons for this, such as: 1) some stakeholders may have concerns that Head Start data might be used inappropriately in research analyses, particularly in comparing the developmental trajectories of children who participate in Head Start with those in other EC settings without accounting for differences in the populations served; 2) Head Start grantees may not be informed about how participation in the data system will directly benefit their program, staff, or participating families; 3) Head Start funds flow directly from the federal government to local grantees, and therefore, states do not collect or report data on Head Start programs that operate in their states; and 4) there can be a substantial cost burden associated with integrating data, both for the state and the local programs. Many states and local programs, however, have made progress in this area.

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[18] U.S. Department of Education, *Fiscal Year 2015 Annual Performance Report and Fiscal Year 2017 Annual Performance Plan,* (Washington, DC: 2016).
[19] Early Childhood Data Collaborative, *2013 State of States' Early Childhood Data Systems* (2014). http://www.ecedata.org/2013-national-results/
[20] The DaSy Center, *State of the States* (n.d.). http://dasycenter.org/state-of-the-states-2016/

The new Head Start Program Performance Standards, released by HHS' Office of Head Start in September 2016, require Head Start program coordination with state education data systems, including SLDS and ECIDS, through the integration and sharing of relevant data, to the extent practicable, if the program can receive similar support and benefits as other participating early childhood programs. States will still need to work closely with Head Start grantees to develop data sharing agreements that comply with the applicable privacy laws and demonstrate the benefits of participation for Head Start programs as they work to integrate Head Start data into their ECIDS. The new standards will provide more opportunities for these efforts.

While state policymakers may be most interested in the service and gaps analysis and other research results that ECIDS can yield, local Head Start programs may be more likely to agree to share data with an ECIDS if they understand the benefits of participation, if their concerns are addressed, and if the state can provide technical assistance. For example, local programs may be excited to share data if they know that, through participation in the ECIDS, they will receive information on how, in the aggregate, children served in their program are doing as they move to kindergarten and beyond. Programs may also appreciate capacity building opportunities to create data linkages and use integrated data in their own planning and evaluation processes. By providing information to local Head Start programs, an ECIDS can support their efforts to continuously improve services and link children and families to needed services while in the program, or as they transition to kindergarten. States that have successfully integrated Head Start data into their ECIDS through stakeholder engagement and carefully developed data sharing agreements, such as North Carolina, Georgia, and Minnesota, provide learning opportunities for other states thinking through their approach to data integration.

The Building Capacity to Use Linked Early Childhood Data project, funded by HHS, was created to help early care and education programs, including Head Start, and their state and community partners, in their efforts to use linked administrative data for program improvement and research purposes. It provides several short, easy-to-read resources to help program leaders as they work to use linked data to improve the quality of services for young children and families. These resources may also be useful for state leaders as they engage Head Start and other EC program partners in state ECIDS efforts.

Child Care Data

From birth through kindergarten entry, children are in a variety of child care environments ranging from homes to centers to schools. Most center-based care, such as private day care centers or other community- or school-based preschool settings, is typically licensed and regulated. Data from these settings may be collected by states through child care licensing or subsidy agencies or school districts. However, many family child care providers or less formal, home-based care provided by family, friends or neighbors may be license-exempt. Licensing standards vary across states, although generally providers must be licensed when they care for four or more children. Data from license-exempt programs outside the subsidy system may or may not be collected by states. Over seven million children from birth

to age five are served by nearly four million home-based providers,[21] and most infants and toddlers are in family child care or home-based care. Therefore, when possible, including information on these settings in an ECIDS could significantly improve understanding of the full landscape of child care services in a given state, especially for the youngest children.

The newly reauthorized *Child Care and Development Block Grant Act* of 2014 requires states to monitor all child care providers that receive federal subsidies through the CCDF program. States collect data from all licensed child care providers, as well as data from the providers, children and families participating in the CCDF program. However, these data are often collected through different electronic systems and by different agencies or offices. Many states also collect data on the early learning workforce, tracking the credentials and professional development of those who care for children in child care or other EC settings, but their workforce systems do not always connect workforce data back to the settings where EC providers work. While 29 states have a QRIS (an accountability system designed to improve the quality of child care by defining quality standards, providing incentives and supports for program improvement, and making quality transparent to providers and parents), quality information from the QRIS has not often been linked to the CCDF subsidy data, licensing data, or workforce data systems used to answer questions of interest such as, *What is the quality of the child care settings families are accessing with CCDF subsidies?* However, some states have made progress in this area, and states will be required under the new rules to report quality information for all CCDF providers. Those states that have already made these linkages have a better understanding of the range of EC settings where children are served in early childhood, and are, therefore, more capable of answering questions of interest to state leaders and researchers.

Another challenge to collecting child care data is that many state child care data systems are outdated and underfunded. In fact, states are facing significant challenges as they work to expand their capacity to implement the requirements of the reauthorized *Child Care and Development Block Grant Act*. States can, however, use CCDF funding to support IT expenditures to improve the quality of child care in their state, and these costs are exempt from the five percent cap on CCDF administrative expenditures. In addition, states can work together on common data system development efforts or build on systems developed by other states. The SLDS SST created a webinar and brief on how states can coordinate their QRIS and ECIDS to increase capacity to address policy and programmatic questions.

Data on Early Intervention and Preschool Services under *IDEA* Part C and Part B, Section 619

IDEA Part C provides funds (almost $460 million in FY 2016) to states to ensure that appropriate early intervention services are provided to infants and toddlers with disabilities ages birth through two and their families and, at the option of the state, under a written policy adopted by the state, until the child enters kindergarten. *IDEA* Part B, Section 619 provides funds (almost $370 million in FY 2016) to states for the provision of special education and related services to children with disabilities ages three through five. During the 2014-15 school year, these two programs served 1.1 million young children with disabilities.

[21] National Survey of Early Care and Education Project Team, *Characteristics of Home-based Early Care and Education Providers: Initial Findings from the National Survey of Early Care and Education* (OPRE Report #2016-13) (Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2016).

Some young children with disabilities who receive *IDEA* services also participate in child care, Head Start, or state-funded preschool programs and receive *IDEA* services in these locations. Therefore, it is important to integrate *IDEA* Part C and Part B, Section 619 data with other EC program data to support more high-quality inclusive opportunities for children with disabilities as well as to better understand: 1) the full range of services that children with disabilities receive; 2) the EC programs that children with disabilities participate in; and 3) how various services and programs may relate to child outcomes. Additionally, it is important that states be able to connect data from *IDEA* Part C with Part B in order to have a more comprehensive picture of how many children receive *IDEA* services through their first five years. The DaSy Center compiled a list of Critical Questions that statewide data systems could answer if data on children with disabilities were integrated. Questions include examining what other services children with disabilities receive, what other EC programs children with disabilities participate in, and the quality of the program and services (as measured by state QRIS and staff qualifications associated with child outcomes).

While an integrated data system offers great potential for policy-makers to improve service delivery and outcomes for children with disabilities, there are multiple challenges to fully integrating *IDEA* Part C and Part B, Section 619 data with other data sources at the state level, or as part of an ECIDS. Challenges include providing unique identification numbers, ensuring compliance with *IDEA* Part C and Part B confidentiality provisions, as well as other applicable privacy laws, and creating data governance procedures that protect data use, security, and privacy throughout the period that PII is collected, maintained, or used. There are fewer data sharing challenges if the State Education Agency administers both the *IDEA* Part C and Part B programs through LEAs. States continue to make progress in overcoming these challenges. The DaSy Center's State of the States found that, as of 2015, 16 states linked their *IDEA* Part C and Part B, Section 619 data together; nine states linked *IDEA* Part C and Part B, Section 619 data with K–12 data; six states linked *IDEA* Part C and Part B, Section 619 data to other early childhood data; and 11 states linked these *IDEA* data to workforce data.

Public Health and Screening Data

Research indicates that children's mental and physical health status during the first five years of life impact early learning and school readiness outcomes, as well as later academic and life outcomes.[22] Healthy development across all domains — including cognitive, language, social emotional, physical, and health — sets a strong foundation for children to continue to learn and grow once they move into elementary school.

Despite the important interplay between health and early learning during the first five years of life, health and early learning programs and services are often located in different state agencies, provide services and activities in different contexts, and operate under different funding mechanisms. While these systems provide different primary services (e.g., screening, immunizing, and treating health needs of young children vs. supporting the development of children's cognitive, language, and social skills), both share a similar vision and strive to support children's optimal growth and development so they can meet their full potential in school and beyond.

[22] National Scientific Council on the Developing Child, *The Foundations of Lifelong Health are Built in Early Childhood*. (Cambridge, MA: Center on the Developing Child, Harvard University, 2010). http://developingchild.harvard.edu/resources/the-foundations-of-lifelong-health-are-built-in-early-childhood/

If key health[23] and early learning data are securely integrated, states can better understand the collective impact of coordinated health and early learning investments on children's short- and long-term outcomes. Promoting cross-agency data sharing, alignment, and integration across state health and early learning data systems at the state level can also support efforts to coordinate and expand services across health and early learning sectors and potentially enable better-targeted and higher-quality services and referrals, minimizing duplication of services. For example, although developmental screening can be performed in a variety of settings (e.g., early learning programs, primary care, with home visitors), these providers do not typically have unified databases or repositories where they can enter or store such information. With data integration, providers can see whether a child may have been recently screened or whether they are already receiving needed services as follow-up to screening information. Some states and communities have created innovative collaborations to manage referral activities between medical homes and early childhood programs, using linked data.

Additionally, virtually all children come into contact with the health system in early childhood. States have detailed systems that document birth records as well as other key health information such as newborn hearing screenings. Some states use unique identifiers that are linked to birth records and aligned across systems to support data interoperability efforts. This alignment can help state programs that serve the same populations come together with shared vocabulary and purpose to examine not only how children and families are benefiting from an array of services designed to promote early childhood development but also where there might be room for improvement.

Early Childhood Homelessness Data

Young children are disproportionately represented in the homeless population. Recent data from a 2015 study of homeless families indicate that among persons who seek shelter because they are homeless in the United States, children are most likely to experience homelessness as infants in the first year of life.[24] In addition, approximately half of children in U.S. Department of Housing and Urban Development (HUD)-funded emergency and transitional housing in 2014 were under age six.[25] Research has demonstrated that homelessness during pregnancy and in the early years is harmful to a child's development.[26] Given the far-ranging consequences of early childhood homelessness and its prevalence, policymakers, early childhood programs, public schools, and housing providers must find ways to collaborate to support children affected by homelessness.

Collecting, sharing, and integrating data on early childhood homelessness across programs and systems can help communities collaborate and understand the scope of the problem locally, target housing and early care and education supports to reach families in need, and track progress towards preventing and

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[23] In this document, "health data" includes, but is not limited to: vital records, immunizations, results of developmental screenings, data from home visiting programs, Medicaid or other health insurance status, and information on participation in Women, Infants, and Children (WIC), TANF, and SNAP programs.

[24] U.S. Department of Housing and Urban Development, *Family Options Study: Short-Term Impacts of Housing and Services Interventions for Homeless Families* (Washington, DC: 2015). https://www.huduser.gov/portal/portal/sites/default/files/pdf/FamilyOptionsStudy_final.pdf

[25] U.S. Department of Housing and Urban Development, *The 2015 Annual Homeless Assessment Report (AHAR) to Congress: Part 1: Point-in-Time Estimates of Homelessness* (Washington, DC: Office of Community Planning and Development, 2015). https://www.hudexchange.info/resources/documents/2015-AHAR-Part-1.pdf

[26] M. Sandel, R. Sheward, & L. Sturtevant, *Compounding Stress: The Timing and Duration Effects of Homelessness on Children's Health,* (Center for Housing Policy and Children's Health Watch, 2015). http://www.childrenshealthwatch.org/wp-content/uploads/Compounding-Stress_2015.pdf

ending early childhood homelessness. Both early care and education programs (e.g., Head Start, Education for Homeless Children and Youth program) and housing programs (including the homelessness point-in-time count) collect data on early childhood homelessness and can contribute information about how to best serve young children. In addition, all LEAs have McKinney-Vento requirements for data collection that can inform community assessment of the needs of young children experiencing homelessness. Programs can align data and utilize common definitions and measures to support coordinated analysis and strategies to meet the needs of young children at risk for and experiencing homelessness. ED, HUD, and HHS recently released a joint policy statement on early childhood homelessness that includes specific recommendation for data sharing where feasible for states and communities.

Early Childhood Workforce Data

The importance of early childhood educators and caregivers in the lives of children and families is well-documented, and understanding the experiences, strengths, and challenges facing the ECE workforce can inform policy and program activities. Integrated data on the early childhood workforce can provide critical information that can help to identify opportunities for professional development and support for those who care for our youngest children.

However, most states do not currently have the capacity to fully integrate EC workforce data across EC settings. In part, the inability of states to fully integrate this data is because workforce data collection occurs differently across programs and states, and data are not often coordinated across programs within states. In addition, data may only be available in aggregate form at the state-level, and, in many cases data collections are voluntary or not well-funded.

It is important to consider the diversity of the workforce when connecting data on the workforce to an ECIDS or for other data integration efforts, as one data source may only hold a segment of the early childhood workforce. EC workforce data is commonly collected for state pre-K–12 teacher professional licensing and certification systems, state child care licensing systems, QRIS, professional development or scholarship programs, and voluntary workforce registries. These individual data collections may not align in the data elements they capture, and there may be gaps or overlap in data collected. For example, the pre-K–12 teacher licensing system may not include information on paraprofessionals or assistant teachers or caregivers, but some information about these critical members of the ECE workforce might exist in a separate workforce registry or other professional development data systems. More detailed information about the benefits, challenges, and efforts to integrate EC workforce data can be found in the report, *Early Childhood Workforce Data: Collection Practices and Possibilities*.

Conclusion

Integrated early childhood data allows states to better understand the full scope of services children receive in early childhood, learn what combinations of services are associated with positive outcomes for children, and identify service gaps. While HHS and ED acknowledge that integrating early childhood data is difficult, the Departments offer a variety of technical assistance and other resources to assist states in this work. Using this federal assistance, states have made tremendous progress in integrating early childhood data, including building and using ECIDS and linking those systems with SLDS and other data. As exemplified by the states profiled in this report, states across the country are working hard to expand data integration efforts, yet there is much work still to be done. HHS and ED encourage states to utilize

federal, state, and other resources to continue data integration efforts and to use these data to answer key questions about programs and associated child outcomes, improve program quality, and ensure that our nation's youngest learners are more prepared to reach their full potential.

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"This document was developed from the public domain document: The Integration of Early Childhood Data -State Profiles and A Report from the U.S Department of Health and Human Services and the U.S. Department of Education, (2016)."

"This document was developed from the public domain document: Strength in Numbers: Supporting Quality Improvement in Early Care and Education Programs through Linking Administrative Data – OPRE, ASPE, Child Trends, (Publication # 2016-36)"