BRIEF

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The Workforce Data Deficit

Who It Harms and How It Can Be Overcome

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Notwithstanding valiant efforts and some significant progress over the past few decades, an early care and education (ECE) workforce data deficit has endured, with persistent shortcomings in our data collection efforts at the national and state levels. Yet the early childhood field needs data-driven policy solutions. Only data can reveal inequities in access to professional development and better working conditions for early educators and inequities in access to highly qualified, well-supported early educators for children. Only data can provide the information needed to advocate for change.

As illustrated by the calls for better workforce data beginning in the 1970s, the time is long overdue to prioritize a more robust ECE workforce data agenda and to advocate for the necessary resources. Toward this agenda, we describe the existing data deficit and its consequences and outline the features of comprehensive and sound data. We apply these criteria to understand the strengths and challenges of workforce registries and surveys, the most common data collection mechanisms employed by states. We also highlight several promising practices in the states to combat these challenges.

Key Takeaways

- The absence of good data allows anecdote — and sometimes bias — to drive policy decisions.
- The early care and education field needs data on the size and key characteristics of the entire ECE workforce (across settings) that is:
  - collected regularly;
  - comparable across regions, states, and localities;
  - and that can be linked to data at the program level as well as the child and family levels.
- Registries and surveys are not mutually exclusive, and given their respective strengths and limitations, they can be especially powerful when used together to develop a richer, more comprehensive understanding of the ECE workforce.
- Without sufficient funding, progress toward realizing the potential of either registries or surveys will likely be halting and incomplete.

Action Steps

- **State and local leaders should continue to develop and strengthen workforce data systems.**
  - Take stock of your data shortfalls by identifying members of the workforce and programs not included in formal data mechanisms.
  - Establish the basic and in-depth questions you can and cannot answer about the workforce.
  - Identify potential funding sources, including expanded Child Care Development Fund (CCDF) dollars, and design advocacy strategies for funding workforce data collection, management, and analysis.
  - Ensure that workforce data are part of early childhood governance structures and support the integration of workforce data systems with broader early childhood data.
  - Set goals and a timeline for implementing changes to workforce data collection.
  - Help spearhead a federal advocacy effort for better workforce data.
- **Federal leaders should continue to encourage and assist states to develop data systems that track ECE workforce composition and characteristics over time.**

Introduction

> **Symptomatic of the lack of concern for the plight of child care workers in this country is the absence of comprehensive data about child care employees. Attempting to locate current data which accurately represents the complexity of child care work environments is both a frustrating and largely unfruitful endeavor. This lack of data has led many child care advocates to conduct salary surveys in their local communities. — Child Care Employee Project (1985)**

The call for better workforce data at the national, state, and community levels was first articulated by teachers and providers themselves in the 1970s.[1] Progress toward better workforce data at each of these levels reflects the hard work of many individuals and organizations over the years as well as those currently engaged in collecting data, building data systems, and advocating for resources for these purposes. As we reported in the 2016 *Early Childhood Workforce Index*, nearly all states (47) have created a formal, statewide workforce data collection mechanism, most commonly a registry (42) and/or a workforce survey (15) conducted within the last five years (Whitebook, McLean, & Austin, 2016). Some of this movement is relatively recent: between 2011 and 2016, ten new registries were created across the country, and several new state surveys have been conducted or published since 2016 (Kipnis & Whitebook, 2011; Whitebook, McLean, & Austin, 2016).

Nonetheless, data about the early childhood workforce remain wanting to varying degrees. In 2016, only 25 states attempted to capture information across all licensed early care and education (ECE) settings, whether via mandatory registry participation, by survey, or both. As a consequence, data currently available about the workforce often describe only one component of the whole (Whitebook, McLean, & Austin, 2016). There may be data that describe, for example, the demographics, education, and earnings of early educators participating in certain quality initiatives or working in Head Start programs, but lack equivalent information about early educators who are not participating in those programs.

Across the K-12 and ECE communities, concerned stakeholders seek comprehensive, reliable, and current data to inform sound policy and practice aimed at providing ongoing learning experiences for new and veteran educators and organizing learning environments to ensure that all teachers can best address the needs of an increasingly diverse child population. Both communities raise similar questions about teacher stability and demand, as well as teacher and administrator preparation, compensation, working conditions, and demographic background. However, existing data in the respective communities demonstrates divergent abilities in K-12 and ECE to access needed information and consequently to engage in evidence-informed deliberations.

There is no ECE equivalent at the national level to the federally supported K-12 School and Staffing Survey (SASS), a series of regularly updated questionnaires that provide data about members of the K-12 workforce and the public, private, and charter schools in which they work. Between 1987 and 2011, the SASS was repeated seven times. A redesigned version of the SASS, called the National Teacher and Principal Survey, first conducted in 2015 and to be repeated every two years, collects data on demographic and professional backgrounds of the teacher and principal labor force. Information can be disaggregated to the state and, in some cases, the district level. In contrast, more than

1 From the mid-1970s to the early 1990s, early childhood teachers and providers in communities across the country independently conducted salary surveys to bring attention to their concerns about low status and poor compensation, limited training opportunities, and high turnover. "Documentation of just how bad it is encourages us to speak out and helps facilitate the education of parents and policymakers," noted the Child Care Employee Project (CCEP), further pointing out that data allowed them to demonstrate high rates of turnover and low pay compared to comparable occupations, facts largely unknown at the time (CCEP, 1985, p. 1). To facilitate this strategy, CCEP published *Salary Surveys: How to Conduct One in Your Community* (Bellm & Whitebook, 1987), which offered guidance about survey questions, samples, data analysis, and data dissemination.

20 years elapsed between the federally supported Profile of Child Care Settings conducted in 1990 and its revised equivalent, the National Survey of Early Care and Education (NSECE), conducted in 2012 and scheduled to be repeated in 2019. Additionally, analysis of state-level data from the NSECE is limited to very few variables and only the largest states, while the other major federal sources of data are limited by federal standards for classifying occupations within the ECE workforce, among other problems (see **National Data on the ECE Workforce**). State-specific data are a pressing need in light of the wide variability of ECE delivery systems across states, particularly in contrast to the relative uniformity of K-12 (Whitebook, 2014).

As is often the case in the early care and education community, multiple pressing needs compete for insufficient resources, which influences our thinking about priorities and what might be possible. The early childhood field has a long history of tolerating fewer resources and less support than we need to do our jobs. This observation is true for the jobs of early educators and applies to our workforce data systems, as well. Despite calls for evidence-based decision making, too often determinations about the workforce are made with scant data, which can lead to deciding a policy does not work without understanding why and/or moving on to developing new initiatives without sufficient or accurate information to guide development or assess impact and effectiveness. We risk replication of the very same undetected or undocumented problems that led a previous approach to be deemed ineffective or failing. And all too often, insufficient data trap us in repetitive cycles of investment with limited return. For example, routine collection of wage and turnover data among those participating in publicly funded professional development activities could more effectively demonstrate to policymakers the urgent need to invest simultaneously in raising compensation to retain educators who, at present, understandably leave for better paying occupations (see **The Hole in the Bucket Problem**).

THE HOLE IN THE BUCKET PROBLEM

"As in any business, the hidden costs associated with turnover, to which poor compensation is a major contributor, include the lost opportunity to improve and sustain higher quality; the disruptions to classroom teams that can beget more departures; and the costs of recruiting, hiring, and training replacement staff. These costs mount when investments have been made in the professional development of departing teachers. At present, these costs are impossible to calculate, because data about the career trajectories of those who participate in professional development and education activities are either incomplete or not collected. Nevertheless, it is safe to assume that many thousands of dollars are spent per program each year that could be better used to cover higher wages and to fund professional development opportunities."

– Worthy Work, Still Unlivable Wages
(Whitebook, Phillips, & Howes, 2014)

The time is long overdue to leave behind a minimalist approach to ECE workforce data, which fails to advance our ECE human capital investment and prevents us from advancing our knowledge about effective ECE workforce policies. It is time to prioritize a more comprehensive and integrated ECE workforce data agenda among the many needs in the field and advocate for the necessary resources.

This brief is designed to promote discussion and debate in the service of this new agenda. First, we describe the data deficit in more detail and discuss some of its consequences. Second, we describe the features of comprehensive and sound data in an ideal world. We then apply these criteria to workforce registries and surveys — the most common data collection mechanisms employed by states — assessing their strengths and challenges. We also highlight promising practices from the states in addressing these challenges. Lastly, we recommend actions to advance a bolder workforce data agenda, delineating opportunities at the state and national level.

National Data on the ECE Workforce

There are three commonly used, reasonably current sources of nationally representative* data across the ECE workforce: the Occupational Employment Statistics (OES), the Current Population Survey (CPS), and the National Survey of Early Care and Education (NSECE). Other data sources exist for select slices of the ECE workforce, such as those teaching in Head Start programs (OHS, 2018).

Each of the three major current sources of data on the ECE workforce can provide some national-level estimates as well as limited information at the state level, but not necessarily for all states. While each data source has unique strengths and limitations, neither individually nor collectively can they provide a complete picture of the current ECE workforce across all states.

The OES and CPS data report information across occupations and are not specific to ECE. As such, they rely on federal standards for occupational classification. As early as 1986, ECE experts called for reforming these classifications to more accurately describe existing variation in the ECE workforce, yet to date, this reform has been unsuccessful, despite repeated attempts by researchers and advocates over the past three decades (Phillips & Whitebook, 1986; Workgroup on the Early Childhood Workforce and Professional Development, 2016).

Because of the limited capacity of general labor market sources to describe the ECE workforce, more in-depth studies have been required. Calls for independent research designed to link workforce characteristics and conditions to program quality did result in several large-scale, ECE-specific studies, such as the 1989 National Child Care Staffing Study and the 1993 and 1997 follow-up studies (Whitebook, Howes, & Phillips, 1990; Whitebook, Phillips, & Howes, 1993; 1998). In 1990, the Profile of Child Care Settings extended our national picture of child care centers to home-based settings (Kisker, Hofferth, Phillips, & Farquhar, 1991). Each of these studies were major landmarks in contributing to our understanding of the workforce and program characteristics, yet after a number of years, their relevance diminished, and 22 years passed before another nationally representative study was undertaken: the National Survey of Early Care and Education in 2012 (National Early Care and Education Survey Project Team, 2015), which remains our most complete and up-to-date national data source on the ECE workforce.

Further Information on Key National Data Sources

- The Occupational Employment Statistics (OES) is an ongoing survey of U.S. business establishments that reports data nationally and for all states, but only provides basic earnings and employment information for employees in broad early educator occupations: "childcare workers," "preschool teachers," and "education administrators: preschool/childcare center." Data cannot be further broken down by role or setting.
- The Current Population Survey (CPS) is an ongoing survey of U.S. households that can provide somewhat more detailed information for the early educator occupations listed above, although it should be noted that preschool teachers cannot be distinguished from kindergarten teachers in this dataset. Unlike the OES, the CPS can provide estimates on self-employed as well as employee early educators. However, the ability to perform state-level analyses varies depending on the sample sizes available for any given research question.
- The National Survey of Early Care and Education (NSECE) is a national survey of early care and education settings across the U.S. It provides the most detailed, nationally comparable information about the ECE workforce by setting and role. Currently, data are only available for 2012, although a follow-up study is planned for 2019. Like the CPS, the NSECE does allow for some state-level analysis, but this varies depending on the sample sizes available for any given research question, and even for the largest states (such as California), basic variables of interest (such as educational attainment by race/ethnicity or by type of program) cannot always be analyzed.

* The National Workforce Registry Alliance has also supported states to make their state workforce registries sufficiently comparable as to be able to compile a cross-state dataset (Mayfield, 2017). However, the dataset is not nationally representative.

What is the Workforce Data Deficit?

A data deficit may strike many as a curious notion amid seemingly ever-increasing demands on teachers to report information about the children in their classrooms and demands on programs to document progression toward higher quality standards. Notwithstanding stepped-up data expectations for early educators themselves, information required to deepen our understanding of the specific needs and circumstances experienced by particular groups of educators is inconsistently and infrequently collected, masking differences among those working with children of varied ages and in different programs and settings. Yet understanding such differentiation is necessary for crafting and assessing policies that ensure supportive work environments for early educators and sound teaching practices fundamental to equitable and high-quality early learning experiences for all children.

These observations about absent or insufficient data apply to many workforce policy and research questions. How many lead teachers have bachelor's degrees? Associate degrees? Child Development Associate (CDA) credentials? How does level of education vary according to the linguistic and racial/ethnic characteristics of the workforce? How many early educators earn at or above $15 per hour? Answers to such questions are critical for advocates seeking to educate stakeholders about the need for change, as well as for those engaged in designing and assessing workforce policy.

For example, without knowledge of the educational distribution of the workforce across settings and by demographic characteristics, it is nearly impossible to estimate the proportion of the incumbent workforce that might need to pursue more education in response to new degree requirements or to assess the distance between current levels of educational attainment and degree completion. Without these data, stakeholders lack the ability to gauge the capacity of higher education institutions to respond to demand. Furthermore, it is impossible to appropriately craft and sufficiently fund policies to ensure equitable access to opportunity for advancement among those from historic minority communities currently underrepresented or overrepresented in various educator roles. Yet, in the majority of states and communities, and across all segments of the workforce, such questions cannot be answered, even fundamental queries about job and occupational turnover.

The data deficit results from two interrelated shortcomings in our current data collection efforts. First, in some instances, data are not collected at all. For example, data may exist for certain parts of the workforce and not others. Second, shortcomings involve areas in which we collect data, but this information is too limited to answer key questions about the workforce. There may be deficiencies in the level of detail or an inability to cross-link data. Depending on the dataset, it might be possible to learn which educators have degrees, but not details about facets of their degrees that influence educator practice, such as whether the degrees are in early childhood education, whether they were required to complete a supervised, extended practicum or student teaching experience with children younger than school age, and how long ago the degrees were earned (Whitebook & Austin, 2015). Or it might be possible to learn the proportion of educators from different ethnic/racial backgrounds and the proportion with different levels of educational attainment, yet be unable to look at degree attainment among educators representing different racial and ethnic groups or linguistic communities to identify barriers to professional development or potential supports to overcome those barriers.

Such shortcomings in our data can lead to conjectures that may or may not generalize to everyone in a population. And because the people and programs in the field are very diverse along multiple dimensions, it is inaccurate to assume the sector or program type in which one works represents the workforce or the services as a whole.

Differential Impacts of Inadequate Workforce Data Systems

A dearth of data reinforces the status quo. While data alone cannot solve problems, information can shine a spotlight on inequitable or troubling conditions. Unequal access to quality early care and education programs varies by child income, race/ethnicity, language, and family immigration status (Garcia & Weiss, 2015). Children of color, children from immigrant families, and/or children who may be living in poverty are most likely to reside in communities with

"ECE deserts", in which few ECE services are available (Malik & Hamm, 2017). Furthermore, depending on the care and education available and affordable for their families, children experience great disparities with respect to the well-being and preparation of their teachers. And for early educators themselves, their salaries and status are often more a function of the setting, age of children, and the funding of the program in which they work than their qualifications or investment in their careers (Whitebook, McLean, & Austin, 2016). Thus, when our data systems provide only generic descriptions of the workforce, these patterns of inequity remain off the radar for policymakers and are more likely to persist.

Likewise, the absence of data allows anecdote — and even bias — to drive policy decisions. The early childhood field is not immune to wider gender, race, and class biases that find their way into policymaking across fields. Robust data hold the potential to identify and disrupt these biases. In discussions about degree requirements, it is often assumed that only a handful of teachers have earned bachelor's or associate's degrees. But in some programs, in some locales, a sizeable proportion may hold a degree, and in others, the opposite may be true. The absence of data could lead to resources being directed to communities that may not need them and not to other communities that might. Policy interventions should be tailored to these different situations rather than be designed as "one size fits all" or created for a particular group and then assumed to be appropriate across the board.

Data in an Ideal World

What would a good ECE workforce data system look like? In an ideal world, core data on the size and key characteristics of the entire early care and education workforce (across settings) would be collected regularly, be comparable across regions, states, and localities, and would have the capacity to be linked to data at the program level[2] as well as the child and family levels. Periodic supplements to this core data collection would also be carried out as needed in order to answer new or more detailed policy questions as they arise. Aggregate data would also be reported for use by stakeholders and the wider public.

This objective is not a pipe dream, but it does require that we raise the bar for our current data collection efforts. At issue are several core considerations:

- Can the data be used to estimate the size and key characteristics of the workforce?
- Do the data accurately and reliably describe the population under study? If the data are sourced from a sample rather than a census, are they representative of the wider population?
- Are key demographic and geographic data elements collected?
- Are the data sufficiently detailed that they can provide answers to more complex or in-depth policy/research questions?
- Can individual-level data be linked to program-level data in order to understand both early educator characteristics and the environments in which they work?
- Are the data collected regularly and comparable over time to reveal trends in the composition and characteristics of the workforce? Do the data include a longitudinal component for tracking the characteristics of the same teachers/providers over time?
- Are aggregate data reported and accessible by various stakeholders?

2 Note that, for the purposes of this brief, when referring to the program level, we mean the individual site, organization, or establishment in which early educators work. In some cases, a single early childhood "program" may operate multiple sites.

Defining the Population of the ECE Workforce and Ensuring Representative Samples

Gaining valid, reliable estimates of the population under study is key to collecting quality data. This undertaking requires:

- Defining the population and ensuring that data collection encompasses all those included in the definition of that population; and
- Ensuring that any sample less than a full census of that population can still provide accurate or unbiased estimates (representativeness).

In the seminal report *Transforming the Workforce for Children Birth Through Age 8: A Unifying Foundation*, the Institute of Medicine and National Research Council acknowledged the diverse terminology used within the early childhood field (IOM & NRC, 2015). Although there has been a recent shift toward understanding early childhood as the period in a child's life from birth to age eight, the institutional structures for educating and caring for children within that age span remain starkly divided. There is public recognition of the importance of education for children beginning at age five or six and, increasingly, at age four or even three, with the expansion of pre-K in many states. Yet early care and education for children prior to kindergarten remains fragmented and inadequately funded compared to the public school system.

In line with this fragmentation of early care and education services is disagreement about who constitutes the ECE workforce and what the correct terminology should be. Early care and education terminology remains divided based on a number of factors, such as:

- Age of children served (0-3, 3-5, 0-8, pre-K-8);
- Location (school-based, center-based, home-based);
- Funding stream/program type (Early Head Start/Head Start, public pre-K, child care, preschool); and
- Occupation/position (director, lead teacher, teacher, teacher assistant, aide, provider, worker, caregiver, practitioner).

At the Center for the Study of Child Care Employment (CSCCE), we have historically focused primarily on early educators who work in teaching and caregiving roles, in group settings, with children prior to kindergarten as teachers, assistants, or aides, within a broad range of settings, including school- and community-based preschools, Head Start programs, child care centers, and licensed home-based settings. Administrators are also a key group to include in ECE workforce data collection. States should also consider collecting data on educators, leaders, and practitioners within the early childhood field more broadly, such as unlicensed home-based providers, K-3 teachers, coaches, home visitors, school-age providers, and those responsible for educating and training them.

With any data source, it is important to define the population under study. In the absence of national, uniform definitions, it is crucial for states to clearly articulate who is or is not included and, therefore, who may or may not be represented in all state-based workforce data collection efforts. Once the population is articulated, it should be clear whether the data source will be a census or a sample.

In an ideal world, there would be a census of the ECE workforce, in which every member of the population is included by definition. However, collecting data on every single member of a population can be prohibitively expensive, depending on the size of the population and the method of data collection, which is why sampling is often used for data collection purposes. The downside is that any sample has the potential for bias, in which some participants in the sample have a greater chance of being included than others. Therefore, any state data collection that is less than a full census of the ECE workforce must take care to avoid a biased sample in which those included are likely to differ systematically from those who are not included; this would mean that the sample under study is not representative of the wider population, and any data collected could not be used to generalize about that wider population. A key method of addressing the problem of bias is random selection of participants within a defined population.

UNDERSTANDING THE ISSUE OF REPRESENTATIVENESS: EXAMPLES FROM COLORADO AND ILLINOIS

Colorado currently has a voluntary workforce registry — the Professional Development Information System (PDIS) — which was recently used to identify early childhood professionals for participation in an in-depth workforce survey. The researchers implementing the survey were aware of the limitations of this approach, given that Colorado's registry is voluntary, and took care to note that the survey may not be representative of the wider early educator population:

> *"The sample drawn for this study was weighted to reflect the population of early educators in Colorado's Early Childhood Professional Development and Information System (PDIS). It is likely that early educators who do not participate in the PDIS are in some ways different from those who do participate. For example, those participating in the PDIS may be more committed to improving their professional qualifications than those who do not, or may work in centers with more resources that can be devoted to quality improvement and teacher development than those who do not participate. Thus, the inferences drawn from this study should be restricted to early educators and the programs in which they work that participate in the PDIS and Colorado Shines, and generalizations should not be made to the population of all early educators or ECE programs in Colorado"* (Schaack & Le, 2017a).

In contrast, Illinois has worked to include all individuals in licensed settings. A 2017 report is very clear about which portions of the ECE system are included in the data:

> *"The Gateways to Opportunity® Registry is the workforce data system established in 2009 to collect and report on the characteristics of Illinois' early childhood education workforce. While initially voluntary, the Illinois Department of Children and Family Services (DCFS) mandated in 2012 that all individuals working in a licensed child care center or licensed family child care home join and maintain current membership in the Gateways Registry. While the Gateways Registry is open to all individuals working with or on behalf of children and families in Illinois, the DCFS rule has given us a full universe of data about the workforce in licensed child care centers and licensed family child care homes. This also includes most of the Head Start/Early Head Start programs in Illinois, as they are predominantly in licensed settings. As such, the focus of this report is on the workforce in those licensed center-based and home-based settings"* (Whitehead, 2018).

Collecting Core Data Elements and Answering Complex Policy Questions

In any data source, certain essential data elements should invariably be included, at a minimum, in order to effectively describe the workforce at a basic level and to provide data for comparisons across groups as related to broader policy and research questions (see **Core Workforce Data Elements Checklist**).

Core Workforce Data Elements Checklist

- Demographics
  - Age
  - Gender
  - Race/Ethnicity
  - Language skills
- Education & Training
  - Highest level of education
  - Highest level of education completed in ECE
  - State- and/or ECE-specific credentials and certifications
  - Specialized training
- Employment
  - Job role (assistant teacher, teacher, director)
  - Program/Setting (center or home-based, auspice/funding stream, age of children, geographical location for local/regional analysis)
  - Working time (full-time/part-time; hours per week; weeks per year)
  - Tenure: Length of time working in early childhood field; length in current position
  - Compensation
  - Hourly wage/Annual salary
  - Benefits: Health insurance, retirement, paid leave
  - Access to paid professional development and planning time

In addition to these core data elements, there are more detailed elements that states should consider incorporating into their data collection strategies and aligning with common standards (Kipnis & Whitebook, 2011). The National Workforce Registry Alliance provides a list of data elements directed toward workforce registries specifically and includes standard practice for recording these elements (National Registry Alliance, 2013a). Similarly, the INQUIRE data toolkit offers a detailed dictionary of data elements for ECE data systems, including field names, descriptions, and value sets (Friese, King, & Tout, 2013). The Common Education Data Standards (CEDS) initiative also has workforce data elements and attempts to align data collected across ECE and K-12 (CEDS, n.d.).

Using standardized data elements like those listed above can help make data comparable not only within states across organizations, but also across states, as demonstrated by the National Workforce Registry Alliance project to develop a national dataset using state-based workforce registries (Mayfield, 2017).

States should also work toward linking or matching existing program- and child-/family-level data to individual-level workforce data, as well as collecting additional program-level data using their workforce surveys or registries to supplement existing data collection efforts as needed.

Resources for Linking Workforce and Broader ECE Data

- Common Education Data Standards (CEDS) Align Tool
- Early Childhood Data Collaborative
- INQUIRE Data Toolkit
- 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

The selection of data elements beyond standard demographic, education, and employment information should be driven by specific policy and research questions to be answered using the data. For example, if the policy question is "what do we know about how close our state is to the goal of a minimum bachelor's degree for all lead teachers, and what else do we need to do to achieve this goal?" then a variety of related questions need to be addressed by combining several core data elements. Examples of such questions include:

- **Individual Level**
  - What number and percentage of lead teachers currently hold an associate's degree or lower, a bachelor's degree, or higher than a bachelor's degree?
  - What is the current racial/ethnic breakdown of educational attainment? How has this demographic profile changed over time as we move toward higher qualification requirements?
  - How does current educational attainment, access to professional development opportunities, and educational supports like scholarships differ by geographic region and practitioner characteristics, including education/training background, language skills, and tenure?
  - Based on this information, how many more teachers are estimated to need educational supports to reach this minimum requirement?

- **Program and Child Level**
  - How do all of the above vary by program setting or funding source and ages or other characteristics (language, special needs) of children served? For example: What percentage of lead teachers currently hold a bachelor's degree in your state's pre-K settings, Head Start settings, and child care settings?
  - For measuring impact over time: What is the relationship between classroom quality and/or child outcomes and having a teacher with a bachelor's degree?

Collecting Data Regularly and Ensuring Comparability Over Time

It is essential that states collect and use reasonably current data on the workforce (i.e., no more than five years old and ideally more up to date) in order to make policy decisions. Such timeliness is generally good practice, but is especially crucial for the early childhood field, which has seen a great deal of policy changes in recent years, such as the implementation of QRIS or the expansion of pre-K, the impact of which is still not fully understood. High turnover in the field also suggests a need for more frequent data collection, both to document the turnover itself and to better understand its effects on work environments and program quality. Plans should be in place for regular, periodic updates to all state-based workforce data collection. Keeping data elements as consistent as is feasible between surveys or as registries develop over time will facilitate comparability and the ability to analyze changes over time in the size, composition, and characteristics of the workforce.

As the basics of data collection become more standard, early childhood data collection efforts should consider introducing elements that would facilitate longitudinal analysis, in which information about the same individuals is collected over time. Such data can be used to understand career trajectories, for example, rather than overall trends alone.

Helping Stakeholders Use Your Data

Collecting all the data in the world is pointless if no one is using this information. ECE workforce data are often collected with the goal of understanding whether existing policy goals for improving access to quality early care and education services are being met. One priority for the data may be to share with state agencies — such as child care licensing or organizations overseeing the state's QRIS — as many registries already do (National Registry Alliance, 2013b). To facilitate this sharing, data may be formally linked through data partnerships among the agencies that collect and store the data.

In addition to reporting or sharing data among state agencies, it is also good practice for states to regularly report *aggregate* data on the workforce in a manner accessible to the general public, for example, online.[3] Reporting data publicly is important for encouraging use by stakeholders outside partner agencies/organizations, such as advocates, researchers, journalists, and policymakers. The challenge is that it is not always clear what users will find most helpful, and it can be difficult to decide what data to report and in what format. As a starting point, reports should have clear and transparent documentation of data collection practices: who is/is not included and any implications for the representativeness of the data, as well as any further limitations that readers should be aware of when examining the data. This clarity helps with establishing comparisons between different data sources on the workforce, whether across states or within states.

Good data reporting practices also include presenting summary data (key findings, charts) as well as tables of figures in the body of the report, often with more detailed data tables and/or figures in appendices. It can be helpful to supplement these reports with short topic-specific data snapshots or infographics or other means of conveying the information and facilitating its use by wider audiences. For example, Colorado's 2017 workforce survey was reported as a series of topical briefs (Schaack & Le, 2017a), and North Carolina's 2015 workforce study was accompanied by a short video (Child Care Services Association, 2015). In situations where much more information is collected than can be reasonably reported, making data dictionaries or questionnaires available and describing how to request access to data can help external stakeholders use the information and increase its impact.

Realizing the Potential of Registries and Surveys in an Imperfect World

Ideally, every state would regularly collect and report representative data on the ECE workforce, and this information would be sufficiently comparable as to give an overall national picture. In practice, states have been moving toward achieving this goal in different ways. Some states rely on workforce registries, others on workforce surveys, and some combine the two data collection mechanisms to arrive at a more complete picture of the ECE workforce and thereby be able to answer more complex policy questions than might be possible with either mechanism as currently implemented.

Because registries and surveys differ in a technical sense, there are distinct challenges and strategies for meeting the ideal criteria for each mechanism, particularly given the funding and institutional constraints that exist in the real world. However, registries and surveys are not mutually exclusive and can also be used in conjunction with one another to address each of their limitations. For a summary of common data challenges and examples of how states have addressed these issues to date, see **Table 1: Data Challenges and Promising Practices From the States**.

Registries: Challenges and Strategies for Collecting Good Workforce Data

Collecting data that represent the full ECE workforce: The biggest challenge for registries is ensuring that registry data are representative of the entire ECE workforce. In some states, participation in the registry is voluntary or required for select groups only, such as ECE workers who participate in QRIS or in publicly funded workforce development initiatives. As a result, it is not clear whether members of the workforce from different groups (for example, across setting types) are adequately represented in the data (see **Understanding the Issue of Representativeness: Examples From Colorado and Illinois**).

3 While it is important to have unique identifiers for individual-level data, data should be de-linked from personally identifying information (such as names, addresses, etc.) for analysis purposes. Any data collection mechanism should follow established practices for maintaining the security of the data and privacy of individuals about whom data are collected. For more information and key resources, see ECTA, n.d.

In practice, it is difficult for registries to be representative of the ECE workforce population without mandating full participation of staff across settings or at least for a defined population of providers, such as all licensed settings. Even where participation is high due to other strategies, such as financial or training incentives, there remains the strong possibility that the members of the registry differ in key ways from those who do not participate, biasing the results of the data. Without further data on those non-participants, it is impossible to tell whether the registry sample is representative of the wider workforce. It is also important to be able to disaggregate by job role, setting, and other characteristics in order to understand who is included in the registry data — especially when registry participation is open to groups beyond those required to participate — and to understand how those included differ from one another.

Collecting core data elements and answering in-depth policy questions: In principle, there is no reason registries cannot collect all the core data elements needed to describe the workforce. At present, most states with registries collect certain core information (such as participation in training and qualification levels), although some types of data are not as commonly collected, like compensation data (Whitebook, McLean, & Austin, 2016). It is less clear whether states are currently using their registries to answer in-depth policy questions beyond tracking educational and career levels, and this limited usage may be due to practical considerations like insufficient resources to support both verification of participant information and additional data collection and analysis.

Linking individual- and program-level data: Registries are designed to collect detailed information about the workforce at an individual level. However, they could be designed and funded to collect data at the program-level from directors or home-based providers, and some states do. Similarly, they can be designed to identify specific classrooms in which teachers work, so that teacher data can be matched to child data in order to study relationships between teacher characteristics and practices and child outcomes. Registry data can also be formally linked to existing program-level data (such as licensing or QRIS data), provided that common unique identifiers are used in both data sources. Some state registries already have this capacity via formal partnerships with licensing and/or their QRIS, and others are in the planning stages of such partnerships.[4]

Comparing data over time: Registries have great potential for getting very current data on the workforce, if they are regularly updated. In some states, such as Nevada, users are asked to renew their membership every year (Nevada Registry, n.d.-a). Additionally, registry data are inherently longitudinal; changes over time can be tracked at the individual as well as the aggregate level, provided that members' data are maintained and updated on a regular basis using a unique identifier and that a sufficient number of individuals remain in the registry over time to allow for analysis. However, resources must be devoted to analyzing the data longitudinally as such analysis requires a special skill set. As an example, the National Workforce Registry Alliance cross-state dataset includes a longitudinal identifier (Mayfield, 2017).

Practical challenges: Registries can provide a rich source of data about individuals in the ECE workforce. However, getting a representative picture requires that all members of the workforce participate, which demands time and resources. Furthermore, many registries serve another function of verifying qualifications and positions on career ladders to support workforce initiatives, such as educational supports and financial awards, as well as QRIS ratings. Without expanded funding, it can be difficult for registries to fulfill this specific verification function as well as the broader purpose of collecting and reporting on the size and attributes of the ECE workforce.

4 Personal communication with Rose Kor, Director, National Workforce Registry Alliance.

Surveys: Challenges and Strategies for Collecting Good Workforce Data

Collecting data that represent the full ECE workforce: As with registries, ensuring that survey data are representative of the entire ECE workforce is a key challenge, due to potential problems such as low response rates across the survey as a whole or for particular questions.[5] In standard survey data collection, there are a broad range of methods and tools that can be used to gain a representative sample (for example, use of sophisticated sampling techniques to ensure random selection across sub-groups) and to correct for biases that arise during data collection (for example, weighting for nonresponse).[6] In practice, surveys do not always achieve a representative sample; when this is the case and known biases cannot be accounted for, a clear explanation should be included in the survey methodology. State surveys of the ECE workforce vary widely in the quality of their methodological reporting, and the extent to which sophisticated methods have been used to reduce bias in their samples is not always clear.

Collecting core data elements and answering in-depth policy questions: Existing state workforce surveys differ considerably in the type and quantity of data they collect on the workforce. If they are the sole source of workforce data collection in the state, surveys should include — at a minimum — all core data elements noted previously, but they should also supplement this information with survey questions designed to address particular policy concerns. In particular, surveys can collect data on topics that require an understanding of early educator perspectives, such as staff perceptions of their work environments or why they leave positions.

Linking individual- and program-level data: ECE workforce surveys are often administered to site directors/owners in order to understand various characteristics of the program, including but not limited to overall information related to staff (e.g., workplace standards, benefits provided, and overall turnover rates). It is crucial to have a director/owner perspective in order to understand characteristics of the overall program, but teachers should also be surveyed in order to gain individual-level data for core data elements such as demographics, qualification levels, wages, tenure, and more. Administrators may not be able to accurately report such detailed information about their staff. Furthermore, it is important to understand teachers' own perspectives (such as their assessments of preparedness and support in the workplace), which may differ from director/owner perspectives. As with registries, survey data can also be matched to existing program-level data (such as licensing or QRIS data), provided that common unique identifiers are used in both data sources. However, automatic or ongoing data sharing is not feasible given that surveys are collected at specific points in time. Unique identifiers at the classroom level can also be used to match specific educators to children.

Comparing data over time: Surveys can serve as a rich source of data, but to date, they have not always been implemented with great regularity, which impedes their ability to track change over time. Some states implement surveys on a regular basis (for example, North Carolina), but in many states, surveys are commissioned ad hoc. Without plans or policies that ensure regular workforce surveys, the administration of each new survey is subject to fiscal and political constraints. If surveys are conducted regularly and data elements are kept consistent, they can be designed to be longitudinal in order to track change at the individual level — as has been the case in North Carolina — but this analysis must be deliberately planned during the design of the study.

Practical challenges: Early educators are busy with the crucial work of caring for and educating young children and are already burdened with a great deal of administrative work. Getting them to participate in a survey can be difficult, which has implications for the representativeness of the survey. Surveys of teachers, in addition to surveys of site directors/owners, can pose additional challenges: site directors/owners may not have lists of work-related staff email addresses or may struggle to recruit teachers to participate. Similarly, outreach to inform members of the workforce about the survey can be time consuming, and resources should be allocated specifically for this process.

5 For further information on response rates and nonresponse bias, see Czajka & Beyler, 2016.
6 For further guidance on good practice in conducting ECE workforce surveys, see T.E.A.C.H Early Childhood National Center and Early Care and Education Consortium, 2016.

Table 1: Data Challenges and Promising Practices From the States	
Challenges	Promising Practices
Collecting data that represent the full ECE workforce	**Nebraska:** Nebraska's 2017 survey report included data from center- and home-based settings as well as pre-K and K-3 teachers, allowing comparison across all four groups (Roberts, Iruka, & Sarver, 2017). **Nevada:** Participation in the Nevada registry for all staff in licensed programs has been required as part of the state's child care licensing regulations since 2009 and was fully phased-in as of December 2012 (Nevada Registry, 2018a). **North Carolina:** The 2015 North Carolina workforce study surveyed center directors and teaching staff across all licensed programs. Licensed home-based providers are also surveyed every other year. Their surveys provide clear reporting on their methodology, including details on: sampling methods, survey instruments/questionnaires, response rates for different sub-populations, and survey weighting. Although the survey is limited to licensed programs and therefore does not include license-exempt programs and some public pre-K, the surveys are clear about who is and is not included (Child Care Services Association, 2018).
Collecting core data elements (example: compensation)	**Nevada:** Nevada collects wage data as well as benefit information as part of its registry membership (Nevada Registry, 2018b). Although reporting this information is optional, as of the fiscal year 2017 report, 80 percent of all members reported wage data, which were used to report aggregate data on wages by job role (Nevada Registry, n.d.-b). **North Carolina:** North Carolina workforce studies collect detailed wage data at both the teacher and program levels, and the data can be disaggregated by region as well as type of setting. The availability of benefits at the program-level is also collected across a wide range of benefit types such as: health insurance, paid leave (sick days, vacation, parental leave), and retirement. Because wage data are collected at the teacher as well as center level, wages can be compared by job role and level of educational attainment, and because North Carolina has completed multiple workforce studies, wages can also be compared over time (Child Care Services Association, 2018).
Linking individual- and program-level data	**Oregon:** Oregon uses a centralized database to link individual-level registry data (such as qualifications) with program-level licensing data in the state, allowing comparisons of workforce characteristics by setting characteristics. Not only does this process help to ensure that teachers and administrators can be matched with data at the program-level for policy and research purposes, it also reduces the chances of error and creates cost savings by avoiding duplicative paperwork. For example, access to workforce registry data reduces the workload for licensing inspectors during their annual checks. Registry data may also be accessed by Oregon's QRIS administrators to assess workforce qualification levels for rating purposes (Deardorff, Brownell, & Pham, 2016; ECDC, 2017; U.S. Department of Health and Human Services and the U.S. Department of Education, 2016). **Colorado:** Colorado's 2017 workforce study included both a teacher survey for staff and a center director and family child care provider survey for information at the program level (Schaack & Le, 2017a). The combination of these two forms of data allowed Colorado to paint a richer picture of the workforce and answer more complex policy questions. For example, Colorado's workforce study was able to document that "higher wages, more workplace benefits, and having stronger collaborative leadership in a center predicted teachers' intentions to stay in their jobs" (Schaack & Le, 2017b).
Answering in-depth policy questions	**Colorado:** In addition to describing the key characteristics of the state's ECE workforce, Colorado used a 2017 survey to investigate a variety of other topics, such as: • Teacher perceptions of their preparation for the job, barriers to ongoing professional development, and the supports needed to continue their education; • Turnover and strategies to retain teachers; • Teacher well-being (levels of burnout, depression); and • The relationship between programs that serve children living in poverty and the educational attainment of their ECE teachers (Schaack & Le, 2017a).
Comparing data over time	**Ilinois:** Illinois has legislation to ensure that workforce data are collected regularly. A statewide survey of the workforce within licensed child care facilities must be conducted every two years by the Illinois Department of Human Services (IDHS) (Whitehead, Anderson, Ernst, & Presley, n.d.). **Washington:** Washington ensures that the data for its MERIT registry are regularly updated, and inactive memberships are culled by keeping MERIT professional records active for one year from the date of registration. Members are notified of their renewal date by email and must update their MERIT record, including any changes in employment, contact information, and confidential workforce data, in order to remain active (Whitebook, McLean, & Austin, 2016). **Oregon:** Oregon published a detailed report comparing characteristics of the workforce between 2012 and 2015 using its registry data (Oregon Center for Career Development in Childhood Care and Education and Oregon Child Care Research Partnership, 2017). **North Carolina:** North Carolina workforce studies have been repeated for several years and allow for comparisons over time. In addition, data collection was deliberately set up with a panel of a subset of centers to enable longitudinal analysis of the same providers over time, although this analysis has not yet been undertaken (Child Care Services Association, 2015).
Practical challenges	**North Carolina:** North Carolina's workforce studies provide examples of how to increase the response rate to ECE workforce surveys, such as employing a variety of contact methods (email, phone, mail) and using raffle tickets or small gifts to incentivize participation (Child Care Services Association, 2015).

Self-Report or Verified Data: Which to Use and When?

Part of the debate about when to use surveys and when to use registries involves questions about when it is acceptable to use self-report data and when data should be verified. There is a perception that registries only collect verified data and surveys only collect self-report data, but both workforce registries and surveys can include a mix of self-report data and verified data: for example, surveys sampling from licensing lists may verify licensing status, and registries may include optional information that is self-report only. In practice, however, registries rather than surveys are primarily used for verification purposes, and surveys rely largely on self-report data, so it is important to understand the differences between these types of data and their value.

Self-report data are based on individual statements or answers to questions. **Verified data** are data that have been assessed by an external party to determine whether they meet some criteria (for example, checking transcripts or training hours to determine whether a credential or career level should be awarded).

Self-report data are widely used in social scientific research (examples include the U.S. Census or any other large-scale, national survey, such as the American Community Survey or the Current Population Survey). If the research design and data collection are sound, self-report data can be a valuable tool for understanding the size, composition, and characteristics of a population. Some data are by nature nature self-report: individual beliefs, perceptions, and rationales are all important information, yet cannot be externally verified. Self-report data also have limitations: individuals may elect not to offer information or may deliberately or unintentionally give inaccurate information.

In some situations, it may be worth any added time and expense to attain verified data. In ECE, states have developed registries to verify educational and training information, career level status, eligibility for participation in scholarship or stipend programs, and more.

Registries and Surveys: Joint Tools for Describing and Analyzing the ECE Workforce

As of the 2016 *Early Childhood Workforce Index*, the vast majority of states had implemented a workforce registry, in part due to their strengths as education and training verification mechanisms and the possibility of linking to wider ECE databases, such as licensing or QRIS. Yet, of the 42 identified states with a statewide registry, 15 had also completed a workforce survey within the past five years (Whitebook, McLean, & Austin, 2016). While a few states (e.g., Nevada) discontinued surveys as they shifted toward making their registries fully inclusive of staff in all licensed programs, many states still employ both types of data collection in order to address one or more of the challenges identified previously.

For example, states might conduct surveys in addition to registries as a means to overcome the challenge of representativeness with their registries. At present, not all registries gather data on all early educators in the state, nor are they designed with random sample selection as well-conducted surveys are, and therefore, they may not be representative of the wider ECE population. Until a state's registry is fully inclusive of the ECE workforce, periodic surveys may be necessary to establish baseline population estimates and characteristics of the ECE workforce to which registry data can be compared. An analogy can be drawn with the United States Census, which conducts a survey every 10 years to establish baseline estimates of the U.S. population, which other surveys and administrative data use for comparison purposes. However, surveys of the ECE workforce would need to take care to extend beyond the common practice of using licensing lists as a sampling frame, in order to collect data on teachers and providers participating in programs such as Head Start and pre-K, which may not be licensed (as they are regulated by state/federal entities other than child care licensing agencies).

States might also conduct surveys in addition to registries in situations where the registry as implemented does not collect needed data. To date, registries have not consistently collected information on wages, with only 25 of the 42 states with statewide registries collecting such data (Whitebook, McLean, & Austin, 2016). Until the recording of comprehensive data becomes feasible for a given state's registry, a survey can be used to supplement data collected by the registry.

One likely reason that registries do not always collect the full range of core data elements is that they also serve another crucial function for the ECE field: verifying education and training. Unlike in K-12, the ECE field does not have a coordinated system of certification distinct from general data collection efforts.[7] If registries become better funded to serve both their education/training verification and broader data collection and analysis roles simultaneously, or if there were a distinct certification system to manage the verification function, as in K-12, registries could focus on collecting and reporting core data on the workforce and ensuring that such data are integrated into wider early childhood data systems.

To the extent that registries can be funded to meet all the criteria of good data collection as outlined in this brief, survey resources can be allocated to examine more in-depth, complex questions on an as-needed basis, including topics such as: differences in economic status, working conditions, and access to professional development opportunities among subgroups of the workforce; understanding the impact of particular professional development or quality initiatives; and gaining insight into teacher perspectives on their practice and their work environments.

Achieving the Goal of Better Data

It is critical to shift perceptions of comprehensive workforce data toward an understanding of its contribution to change, rather than the misconception that it is drain on limited resources. Because of the chronic and severe under-resourcing of early care and education services in the United States, building comprehensive workforce data systems may be considered a "luxury" in the face of issues of access and affordability. Drawing attention to educators' needs or to inequities among them may seem futile when there appear to be no immediate solutions. Yet, had data about occupational and job turnover among those participating in professional development activities or higher education been consistently collected over the years, policymakers might now understand the necessity of linking higher qualifications to better pay.

In early care and education, we have yet to tap the full potential of data in leveraging long-sought policy change. Data used more strategically could contribute to obtaining the financing necessary for well-compensated, well-respected, and well-prepared educators across settings, which is so fundamental to a high-quality, equitable system for children of all ages. Other fields have moved public opinion and policy, in large part because of good data. Health care advocates' use of data documenting the growing ranks of the uninsured and concomitant rises in health care costs is credited for its pivotal role in tipping lawmakers to enact major health care reform after decades of inaction (Babey, Brown, & Wolstein, 2011; Lavarreda, Brown, & Dandurand Bolduc, 2010). Measurable reductions in lack of access to health services have occurred as a result.

Strengthening existing data systems and making data accessible to stakeholders — either through reporting of aggregate data or via formal data partnerships — can aid in the effort to demonstrate data's importance and usefulness, helping to ensure current and future funding for crucial data collection. Many states currently rely very heavily on federal funding for their workforce data collection, some of which (like federal grants) have explicit time limitations.[8] Going forward, states looking to add to, further develop, or expand on their existing data collection can potentially use expanded Child Care Development Block Grant (CCDBG) funds[9] or may need to pursue additional state-level funding.

Moving forward will require investments in workforce data systems that the field has been reluctant to prioritize or acknowledge as being as important as other investments. In contrast, QRIS systems, which still include a small swath of children and programs in many states, have become a high priority for infrastructure investments, often with little debate. Arguably allocating a portion of those resources to ensure every state has robust workforce data linked to program information might be a complementary strategic investment, one with the potential to assess strategies and progress in reducing inequities among children and families and their educators.

7 As discussed in *Building a Skilled Teacher Workforce: Shared and Divergent Challenges in Early Care and Education and in Grades K-12*, in K-12, teachers are required to obtain provisional certification before they begin teaching, whereas in the ECE field, it is rare for teachers to be individually licensed or certified, except in public pre-K programs (Whitebook, 2014).

8 Unpublished data collected for the 2016 *Early Childhood Workforce Index* (Whitebook, McLean, & Austin, 2016) revealed that many states have used quality dollars from the Child Care Development Fund and/or Race to the Top-Early Learning Challenge funds to support their registries and workforce surveys.

9 In March 2018, Congress passed a historic increase ($2.37 billion) for the Child Care and Development Block Grant (CCDBG) Act. The 2014 CCDBG Act reauthorization called for an increase in the amount set aside for quality improvement, which can include workforce development and data collection.

Both registries and surveys could potentially provide the data needed to be able to describe and answer policy questions about the ECE workforce, if they are fully optimized. Registries and surveys are not mutually exclusive, and given each of their strengths and limitations, they can be especially powerful when used together. But without sufficient resources, progress toward realizing the potential of either will likely be halting and incomplete.

CSCCE's assessment of workforce data systems in the forthcoming 2018 *Early Childhood Workforce Index* can be used to further support and encourage state efforts and stimulate more coordinated national advocacy. Here, we offer suggestions to get started in moving toward the robust ECE workforce data we need.

Action Steps

State and local leaders should continue to develop and strengthen workforce data systems.

- Take stock of your data shortfalls by identifying members of the workforce and programs not included in formal data mechanisms.
  - Commit to and develop a plan to enact policies requiring all members of the ECE workforce employed in licensed child care settings and in settings receiving public subsidies to participate in state workforce data systems.
- Take an inventory of your formal data mechanisms, identifying both strengths and shortcomings.
  - Establish the basic and in-depth questions you can and cannot answer.
  - Identify missing core data elements and prioritize inclusion in data collection going forward.
  - Explore how individual-, classroom-, and program-level data links can be established or improved.
- Identify potential state and local funding sources and design advocacy strategies to secure funds for workforce data collection, management, and analysis.
- Ensure that workforce data are part of early childhood governance structures and support the integration of workforce data systems with broader early childhood data, such as licensing databases, resource and referral databases, quality rating and improvement systems, early childhood health data, and K-12 data.
- Set goals and a timeline for implementing changes to workforce data collection.
- Help to spearhead a federal advocacy effort for better workforce data.
  - Seek earmarked and ongoing funds for state data systems. A good source could be expanded CCDF quality improvement dollars.
  - Encourage federal lawmakers to fund the NSECE on a more regular basis in order to establish baseline estimates of ECE workforce and program information over time and/or establish an ongoing set of program and workforce surveys along the lines of the National Teacher and Principals Survey/SASS in K-12. In either case, data collection should provide representative data at both the national and state levels.
- Support implementation of the National Academies' recommendation for more cohesive workforce data collection.

Federal leaders should continue to encourage and assist states in developing data systems that track ECE workforce composition and characteristics over time.

- Provide funding and resources to enhance existing state workforce data systems.
- Resolve long-standing problems in federally funded datasets, including outdated job definitions and limited information about the education and training of the ECE workforce.

The National Academies of Sciences, Engineering, and Medicine (NASEM) report, *Transforming the Financing of Early Care and Education*, recommended that

"The federal government should align its data collection requirements across all federal ECE funding streams to collect comprehensive information about the entire ECE sector and sustain investments in regular, national data collection efforts from state and nationally representative samples that track changes in the ECE landscape over time, to better understand the experiences of ECE programs, the ECE workforce, and the developmental outcomes of children who participate in ECE programs" (NASEM, 2018).

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