

Data-driven Decision Making in Systems Change for the ECE Workforce

Aims

Primary
drivers

Secondary
drivers

The Change Framework brief series takes a closer look at drivers of the National ECE Workforce Center's Systems Change Framework to present strategies for state and local ECE leaders to improve their ECE workforce systems. This brief series provides more details about specific primary drivers, including why they are important, what it looks like when they are being leveraged effectively for systems change, strategies for strengthening them, and examples from states and communities to illustrate the driver in practice. Leaders can use recommendations from this brief separately or in combination with the overall framework. Check out the other briefs in the series at our [website](#).

Top-Line Takeaways

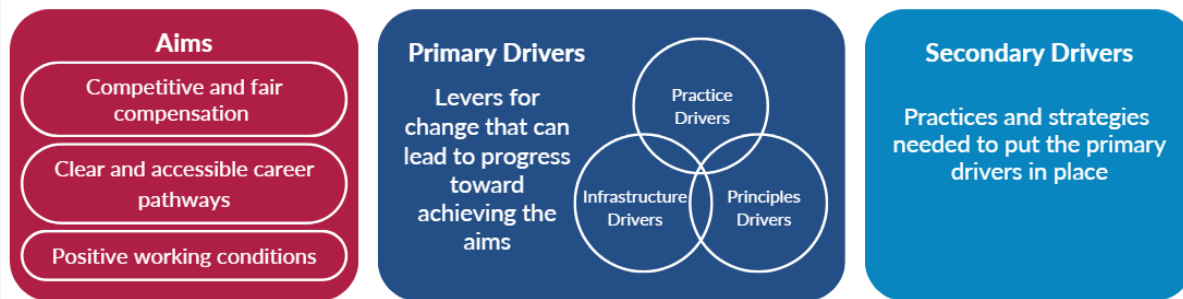
State and community leaders need high-quality data to effectively change systems that support the early care and education (ECE) workforce. When decision makers prioritize using high-quality data to make decisions – a process we refer to as data-driven decision making – they support transparent and adaptive initiatives that align with the workforces' needs. By leveraging existing data and strengthening it where needed, state and community leaders can better understand the scope and nature of challenges experienced by the workforce and ensure that policy solutions are designed and implemented to have maximum impact. In this brief, we define data to include both quantitative and qualitative information available from sources including administrative data systems, workforce registries, workforce surveys, and educator input through focus groups and interviews. See the “Defining Data” section in the appendix for more information on data types and considerations.

In this brief, we describe:

- Best practices for integrating data-driven decision making into state and system initiatives to improve compensation, career pathways, and workplace conditions for the ECE workforce
- Specific strategies that states and communities are using to leverage data to improve conditions for the ECE workforce
- State and community examples to highlight the feasibility and impact of data-driven decision making

ECE Workforce Systems Change Framework Overview

Figure 1. Systems Change Framework

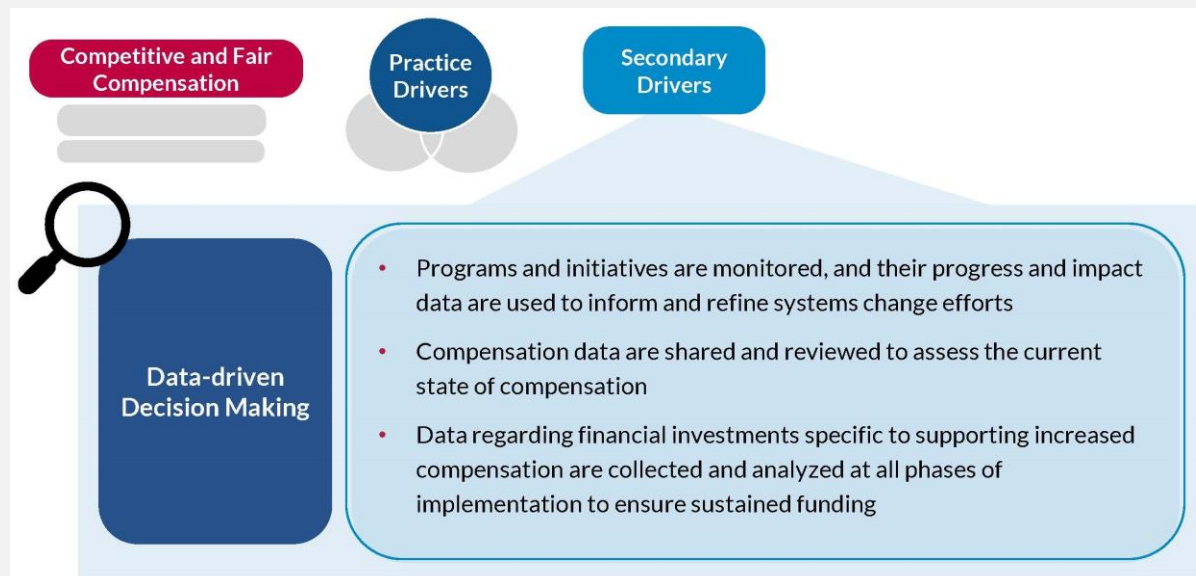


The ECE workforce experiences complex and persistent challenges in compensation, career pathways, and workplace conditions that require a systems change approach to produce solutions that are impactful and sustainable. Drawing on research and policy evidence from the ECE field and other disciplines, the National ECE Workforce Center (the Center) created the ECE Workforce Systems Change Framework (Change Framework) to help state and community leaders approach these workforce issues with a strategy that recognizes and addresses the interconnected parts of the Early Childhood system. The Change Framework identifies a set of nine primary drivers that evidence demonstrates play a key role in meaningful and sustainable systems change.

Data-driven Decision Making in the Systems Change Framework

In the Center's Systems Change Framework, Data-driven Decision Making is a Practice Driver, which are the programmatic and policy actions needed to make progress. We identified three practices—called secondary drivers—that are needed to effectively leverage data-driven decision making for systems change that benefits the ECE workforce. Figure 2 illustrates practices that support data-driven decision making in an example focused on setting competitive and fair compensation.

Figure 2. Secondary drivers that support Data-driven Decision Making



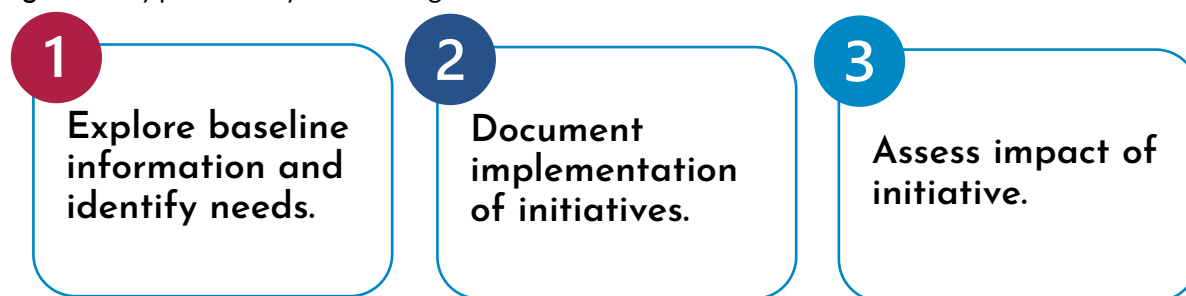
For more information, please see the [Introduction to the ECE Workforce Systems Change Framework](#).

Strategies for Making Data-driven Decisions

In a data-driven decision making process, decision makers use data throughout key phases of the systems change process. This consistent use of data ensures that initiatives align with needs of educators, and allow leaders to gain insight about how initiatives are working and where improvement may be needed. States and communities are effectively leveraging data-driven decision making when data are used to continuously learn, adapt, improve, and inform the broader community.

In this section, we describe strategies for using data within each of the three phases of systems change and provide examples from states and communities. Leaders can begin by exploring baseline information to identify needs, documenting implementation of initiatives, and assessing the impact of those initiatives. These phases are typically iterative and less linear than presented here, but the strategies within each phase represent the range of approaches needed to effectively use data to drive meaningful and sustainable change for the ECE workforce.

Figure 3. Key phases of systems change



1 Explore baseline information and identify needs.

To drive meaningful change for the ECE workforce, leaders should use data strategically and consistently—first to understand broad workforce needs, and then to examine patterns across sectors and pinpoint areas for improvement.

State and community leaders can track workforce needs by ensuring that they and appropriate governing and coordinating bodies **regularly review data** on compensation, qualifications, and workplace supports. Routine review of comprehensive workforce data—including wages, benefits, credentials, training access, and working conditions—supports awareness of how well current systems are functioning and where adjustments are needed. When possible, this review should be broken down by program type, setting, educator roles, ages served, geographic location, or other features relevant to your context. Further, these workforce data can be used to **set policy goals**. Using data to inform specific targets—such as improved pay scales, reduced turnover, or expanded access to credentialing programs—can strengthen accountability and transparency.

Examples From the Field

Workforce registries are a data source that provides information about individual educators that can be used to inform decision making. These data can be combined with other data sources to further enhance data-driven decision making.

Nebraska

Nebraska Early Childhood Professional Records System (NECPRS) utilizes voluntarily provided data to track the size, qualifications, and compensation of the workforce to inform discussions and decisions by the legislature, policy makers, and philanthropic organizations.¹

Other states, like [Colorado](#), [Kentucky](#), and [Ohio](#), have leveraged combined data from their registry and state administrative data systems to produce dashboards that provide dynamic information on the workforce's experience to support needs assessment and goal setting.²

After identifying a broad area of need for the ECE workforce (e.g., compensation or turnover), leaders can use data to better understand the scope of the issue and how it varies across and within sectors of your ECE system. Administrative and registry data can provide important insights into the baseline status of your workforce's experience in compensation, career advancement, or workplace supports, but the information is often not dense enough to support disaggregation by important workforce characteristics and lacks perspective on the workforce experience. To gain the nuanced understanding needed for creating impactful initiatives to address workforce needs, state and community leaders can **engage early educators and families** to better understand immediate and long-term needs. Policymakers benefit from listening directly to those closest to the system and input from educators and families adds valuable context that administrative or registry data alone may miss. These efforts are often most effective when done in partnership by **working with organizations that represent overlooked segments of the ECE workforce**. Collaborating with intermediary groups—such as those supporting home-based providers, infant and toddler specialists, or educators in smaller community programs—ensures more comprehensive input which can include qualitative data to enhance other quantitative measures as well as opportunities to co-interpret data with those closest to the workforce experiences being examined.

2 Document implementation of initiatives.

After identifying and clearly defining a problem the workforce is facing and designing an initiative to address the issue, state and community leaders move into implementation which calls for a shift in data use strategies. Monitoring the roll-out of initiatives often requires data that are collected with a more targeted focus and at a cadence that is more frequent than other workforce data are collected. These approaches can be used for a pilot of an initiative that is focused on one part of the workforce or in a limited geographic section of the state or community, and these strategies also apply to a full-scale implementation.

To meet the data needs for this type of analysis and data use, community and state leaders often benefit from **building partnerships with research organizations**. Partnering with universities, research institutions, or foundations can expand data collection and analytic capacity and support long-term learning. The expanded capacity brought by partners can be used to **identify which children, families, and educators face barriers to accessing programs and supports**.

Detailed data can highlight where access to funding, training, or stable jobs is limited and help guide responsive investments, and identifying gaps early in implementation can reduce the likelihood that some members of the workforce miss out on the initiative's intended benefit.

Examples From the Field

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Oregon

For example, Oregon's Department of Early Learning and Care (DELIC) has a longstanding partnership with several universities who contribute to data collection, management, analysis, and reporting. Through this partnership, DELIC uses their robust data ecosystem to provide updates to legislative committees, adjust investments in scholarships and incentive programs, and target recruitment and retention strategies specific to patterns observed among family child care educators that differ from needs in other sectors of the workforce.³

3 Assess impact of initiatives.

After an initiative has been in place for a suitable period, state and community leaders should assess its impact. As with implementation, these strategies apply to both pilots and full-scale initiatives. Assessment strategies can also be used over time to document the effects of adjustments and track longer-term workforce outcomes.

As with the implementation phase, data required to document the impact of workforce initiatives are beyond the scope of what is typically collected in workforce datasets. Data collection methodology, elements, and timing must be aligned with the goals that teams have identified for measuring impact. State and community leaders can leverage research partnerships to gather and analyze the needed data, and efforts to document impact can also benefit from **data systems that support cross-agency collaboration and transparency**. Well-designed data systems make it easier for agencies to share information and coordinate support, while also providing accessible insights to the public. Data systems that integrate data from multiple divisions within an agency (e.g., QIS, licensing, professional development) provide a broader array of data elements⁴ that may more readily meet the data needs for assessing impact. For example, a study of Colorado's ECE professionals compiled a de-identified dataset on ECE professionals, consolidating data from its workforce registry, background investigation unit, and QRIS.⁵ A matching and data cleaning process were developed to identify and link unique individuals across datasets into a single record. This type of coordination of workforce data from different systems underscores the need for state and community leaders to leverage standardized data collection efforts like Common Education Data Standards⁶ and the National Workforce Registry Alliance's core data elements which will allow for improvements in data quality and tracking trends over time.⁷

As throughout the systems change process, state and community leaders should regularly use workforce data to **monitor the impact of changes** made through initiatives. Ongoing and regularly occurring data reviews can track high-level shifts in the workforce while data that are more specific and aligned to the initiative can be used to more closely and rigorously (if so desired and designed) assess the impact. As leaders and their research partners assess the initiative's impact, teams may also **assess how policies and funding are reaching educators in different types of settings and roles**. Disaggregating data by provider type (e.g., home-based, center-based), region, or educator role allows for a clearer picture of who is being reached—and who is not. For example, Iowa uses data from periodic surveys collected by the Iowa Association for the Education of Young Children along with their state integrated data system to support refinements to the T.E.A.C.H. scholarship program and WAGE\$ salary supplement program including identifying gaps in those who have access to the programs.⁸

Examples From the Field

As reviewed above, there are multiple strategies available to state and community leaders who aspire to use data-driven decision making to guide their workforce initiatives. These strategies work best when they are combined and leveraged across all phases of systems change.

Virginia

Virginia's LinkB5 early childhood integrated data system incorporates information (including child-, classroom-, and workforce-level data) from all early childhood programs in the state that receive public funding. Basic information on educator characteristics, background, and qualifications are collected directly through LinkB5, but Virginia also administers periodic surveys to early educators to learn about their experiences and well-being. This allows Virginia to have a comprehensive understanding of their early childhood workforce and develop strategies to improve recruitment, retention, and track compensation over time. Virginia's LinkB5 serves as a clear example of how a focus on data-driven decision making can strengthen policy initiatives. Findings from early data collection highlighted compelling evidence for the benefit of financial incentives in reducing turnover, which led to expansion of the program.

Additionally, the implementation of the Virginia Quality Birth-Five (VQB5) initiative with required participation for all publicly funded child care has bolstered the data available to inform partners on workforce composition and compensation. This strengthened data has facilitated more precise data-driven decision making such as targeted geographic areas that demonstrate the greatest needs for educator stipends.

Guide for Taking Action

Data-driven decision making can inform your workforce initiatives at any stage of design and implementation. Use the following questions to guide how you apply data to strengthen and support your work:

1

Clarify your purpose and assess alignment of available data:

- Data can be used to identify needs and to track progress on initiatives designed to strengthen the ECE workforce. Some data points are better suited to one purpose or the other. What is the goal for data use at this point in the workforce initiative you are working on?
- What data points are available to you to use? Where do these data come from? Who is included? Who is not included?
- How frequently are the data points you plan to use collected? Does the frequency align with your needs to understand the workforce's experience currently and/or as you implement your workforce initiative?

2

Start where you are: Improvement science tells us that we can start small and monitor metrics that are collected as part of pilots or initial phases of work. What is one small metric that you could easily collect and monitor to see how the work is proceeding? What would these data tell you about what is going well or where adjustments are needed?

3

Build from the systems approach: For longer-range planning to strengthen your ability to use data in making decisions, consider opportunities from other parts of the system.

- What strengths do you have in data infrastructure or aligned policies that you can build from? Where are there weaknesses in data infrastructure or data-focused policies that you want to address?
- How can you strengthen data and data use by partnering across organizations and sectors?
- How can you enhance understanding of workforce needs and the impacts of initiatives by engaging with educators throughout the systems change process?

Resources for Further Reading

[Guidance for Reporting Data on Your Early Care and Education Workforce](#): provides guidance to strengthen uniformity in reporting on the workforce, including representing the full ECE workforce and highlighting data elements that are typically not included in current workforce data.

[INQUIRE Data Toolkit](#): provides standards for data collection of ECE data and includes workforce-level data elements and policy questions.

[Understanding the Child Care and Early Education Workforce: The Need for More and Better Data](#): provides a review of workforce data sources available and highlights the strengths, limitations, and suitability for linking with other data for each source type.

Acknowledgements

This work is supported by Grant Number 90TA000004-01-00 from the Administration for Children and Families, a division of the U.S. Department of Health and Human Services. Neither the Administration for Children and Families nor any of its components operate, control, are responsible for, or necessarily endorse this website (including, without limitation, its content, technical infrastructure and policies, and any services or tools provided). The opinions, findings, conclusions, and recommendations expressed are those of the author(s) and do not necessarily reflect the views of the Administration for Children and Families, including the Office of Early Childhood Development; the Office of Head Start; the Office of Child Care; and the Office of Planning, Research, and Evaluation.

The National Early Care and Education (ECE) Workforce Center is a joint research and technical assistance center that equips state and local leaders to drive change in ECE workforce policy. To learn more about the center, please visit our website <https://www.nationaleceworkforcecenter.org>.

We thank Audrey Franchett, Katie Paschall, Lauren Walens, and Ria Shelton for their help with brief preparation, design, and review.

Suggested citation: Castle, S., Beatty, L., Douglass, A., Hallam, R., Lee, Y., Sheffler, K., & Pic, A. Data-driven decision making in system change efforts for the ECE workforce. National Early Care and Education Workforce Center.

Appendix: Further background to support action

Defining data

ECE workforce information comes from a range of data sources, each with strengths and limitations. Although more workforce data systems now exist, they are still less likely to capture information useful for workforce development and policy than other types of early childhood data. Leaders often have access to some data on early educator qualifications and compensation, though information may be incomplete. They are less likely to have data on working conditions, such as teaching supports, staffing levels, and policies that can foster positive work environments.^{9,10} To understand workforce needs and the impact of initiatives, leaders must be mindful of strengths and limitations of each source.

Useful data for systems change includes both quantitative and qualitative information from multiple sources. Common data sources in most states and communities include state administrative databases (e.g., QIS, licensing) and workforce registries which track staff education, training, time in the field, and participation in quality improvement initiatives.¹¹ These data are frequently inconsistent across states and sectors and are often siloed within agencies. While efforts are underway to standardize registries¹² and integrate state administrative data within and across agencies,¹³ leaders must be mindful of the current status of their data when using it to guide decisions.

Workforce surveys help fill gaps in administrative and registry data by capturing educators' perspectives and experiences. They can be conducted at local, state, or national levels to provide timely and contextualized data as was demonstrated during the COVID-19 pandemic.¹⁴ National surveys also provide useful comparison points for states and communities seeking to understand how their workforce compares to others.¹⁵ For more information, including strengths, limitations, and capacity to link to other data of the national surveys and other data sources, please see [Understanding the Child Care and Early Education Workforce: The Need for More and Better Data](#).

Educator focus groups or surveys of related parts of the ECE system (e.g., higher education faculty) help provide nuance and context regarding workforce experiences and needs that are not captured in other data sources. These direct engagements with educators help state and community leaders to answer specific questions and make more effective decisions with and for the ECE workforce.

Table 1. Data sources to support ECE workforce initiatives.

Data Source	Type of information included	Typically contains Information on...	Capacity to collect longitudinally on individual educators
State administrative data systems	Information gathered in Licensing, QIS, and Professional Development systems (usually program level data summarizing multiple educators' information, e.g., years of experience, degrees, training completed); Unemployment insurance wage data	Programs, individual educators	Yes (with data sets that contain data on individual educators)

Data Source	Type of information included	Typically contains Information on...	Capacity to collect longitudinally on individual educators
State registries	Educator demographics, work history, training	Individual educators	Yes
State and local surveys	Time at current position, time in field, compensation, job conditions, and training	Individual educators	Yes
Focus groups	Information from groups who are sharing their perspectives and experiences of the current system and anticipated benefits and challenges of proposed initiatives	Groups of educators or other stakeholders	Yes

Note: Adapted from [Understanding the Child Care and Early Education Workforce: The Need for More and Better Data](#); see full brief for more specifics on data sources including considerations for use of each type. Data source availability may vary by location, and data density and quality may not support all desired analyses.

Principles for data use

The data sources outlined above that describe the workforce and their experiences are available in most states and communities, but the data available within them vary in several important features that must be considered when utilizing data to guide workforce initiatives. Specifically, many administrative data systems, registries, and surveys do not represent the entire ECE workforce across settings, including center, home, Head Start, pre-K, and license-exempt programs. Additionally, data sources differ in whether they include data on wages, benefits, and other key fields needed to guide workforce initiatives.¹⁶

Many states and communities face limits in data quality or alignment with the questions they wish to answer.¹⁷ For example, examining workforce turnover or tracking the impact of initiatives requires linked data collected over time. These limitations are real and must be addressed over time for the most effective use of data. However, leaders can begin practicing data-driven decision making with the information they already have. Using data often highlights gaps, which then point to priorities for strengthening data systems.

In many cases, data are collected on early educators but not in ways that decision makers can use. Some data are siloed or fractured across systems, making them hard to link and interpret.¹⁸ In other cases, data are collected once for a narrow purpose and then discarded¹⁹, leaving leaders without information that answers their most pressing questions. These gaps underscore the need to strengthen data infrastructure in tandem with other efforts such as targeted policies (Driver 2) and multi-sector collaboration (Driver 5).

Over time, leaders can improve data collection by adding new data elements, expanding who is included, or increasing the frequency of collection to better support decision making.

Here we highlight key principles to guide how you interpret and apply the data you have now, while also planning for stronger data in the future. Applying these principles—and engaging early educators and other stakeholders in data collection and interpretation—will help strengthen your data-driven decision making over time.

- **Representation of all sectors of the ECE workforce:** qualifications, compensation, and experiences vary widely within and across sectors within ECE. Data should represent the full workforce associated with the initiative under consideration, including those who work in center, home, Head Start, pre-K, and license-exempt programs.

- **Alignment of data elements with goals and initiatives:** data elements must include fields that are key to identifying needs and examining impact of workforce initiative. Necessary data elements may include wages, benefits, education, certifications, and current employer.
- **Data quality:** data sources are generated using different methodologies that may result in different levels of data quality. Be mindful of quality assurance of your data sources and the potential benefits and limitations of self-reported data.
- **Data coverage:** data sources that include a subset of the workforce due to voluntary self-report may or may not be representative of your state or community's workforce overall.
- **Frequency and recency of data collection:** data sources vary in the frequency with which data are updated, and the implications of the recency of the data should be considered in designing workforce initiatives. Monitoring workforce initiatives may also require more frequent data points than are contained in existing data sources.

Citations

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