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AN UNOFFICIAL GUIDE TO THE WHY AND HOW OF STATE EARLY CHILDHOOD DATA SYSTEMS

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INTRODUCTION

These days there are not that many issues with bipartisan support at both the federal and state levels. Early childhood* programs and the data systems that support them are a potential exception. But despite the fact that early childhood data systems aren't on your nightly news—or maybe because they're not on the

* The term "early learning" refers to programs for children birth to 5 years with a learning focus or component, including Head Start, state preschool, and child care. The term "early childhood" refers to all services for children birth to five, including early learning and other health and human service programs.

nightly news—they represent a great opportunity for leaders of both parties at the federal and state levels to come together to improve outcomes for children and families. If you're a policymaker, advocate, practitioner, philanthropist, or have any other role in the policy process or working with young children, early childhood data systems could be the big issue that's been missing in your life. This guide is going to try to get you excited to dive into it.

Even within the relatively small world of early childhood policy and advocacy, the work of developing state early childhood data systems is a pretty compact niche. In the broader world of education policy and the popular press, it's an issue that basically never comes up at all. So my guess is that if you even picked up this guide in the first place, chances are you have some personal connection to the world of publicly funded services for children under age 5. Perhaps you work in the early childhood field; perhaps you know somebody who works in the early childhood field; perhaps you're involved in a related field like education, health, or human services; or perhaps somebody who works in one of those fields is trying to get you to care more, and sent this guide your way. Whichever category you fall in, thanks for making it this far, and I promise we're going to try to have a good time. This is not one of those policy papers that earnestly describes how the world is supposed to be—this guide is a zealous exploration of how the world actually is, focused on how unified early childhood data systems can emerge from the muck to make that world a better place.*

So let's get to it. Now, if you're connected to early childhood policy, it's likely that you're working on one or more of these issues:

- Contributing to or examining the research base on the impact on children of publicly funded services.
- Designing quality rating and improvement systems to measure and strengthen of publicly funded services.
- Advocating for the funding needed to increase access to high-quality services.
- Increasing the capacity of the professionals working with young children, be it through improved preparation, instructional leadership, professional development, increased compensation, or something else.
- Strengthening the connections among systems and programs—preschool, child care, Head Start, home visiting, special education, child welfare, K–12 education, health, mental health, and more.

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* No disrespect intended to earnest policy papers, as this paper cites a lot of them and I've written a few myself.

- Ensuring that preschool children with different linguistic backgrounds are well served by publicly funded services.
- Utilizing child assessments to improve instruction and policy.
- Supporting parents and families to be more actively engaged in their child's education and development.

If you are in a leadership role in state early childhood policy inside or outside government, you or your colleagues have almost definitely worked on those issues—which is great, because they're important. I'm biased, of course, having worked on many of them personally, and having been more peripherally involved in others as part of my organization's work or through my home state's Early Learning Council. And here's the cold reality I confronted many years ago that you need to face right now if you haven't already: if your state doesn't have a unified early childhood data system, the ceiling of what you're likely to accomplish on any of those issues is far lower than you need it to be. So if you or your colleagues aren't yet working on building and implementing a unified early childhood data system, it's time to suck it up and add that to your to-do list.*

> **IF your state doesn't have a unified early childhood data system, the ceiling of what you're likely to accomplish...on any of those issues is far lower than you need it to be.**

I know, I know, many of you were hoping to live a life in which you never had to deal with state data systems. I sympathize with you—when I was a little kid, I fantasized about being the placekicker for the Los Angeles Rams, and now here I am writing this guide while some guy named Greg Zuerlein occupies my dream job. But I want to tell you that building state data systems is a great issue and you're going to be glad you took it on. If you've read this far then the good angel on your shoulder is telling you, "You know he's right, you need to do this," and the purpose of this guide is to demystify the process and give you and your colleagues in the state policy world a running start. (And if you work at the federal level, for heaven's sake, please do something to provide your state-based colleagues with some federal money to help do this!)

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* While the primary audience for this paper is early learning leaders, there are leaders in related fields—particularly K–12 education and health—who are also working on building out state-level data systems that cut across multiple agencies. Early learning leaders will need to partner with those K–12 and health leaders in the development of unified data systems, and hopefully some of those leaders will find utility in the lessons shared here.

First, let's start with defining a "unified early childhood data system," because this may not be a term that comes up a lot in your daily life. States provide early childhood services through multiple state agencies,[1] each of which has its own data system or systems for keeping track of what's going on. The idea of a unified system is that states will develop some way to connect data from all of those different agencies to get a clearer picture of how they're serving children and families. States are in fact required by federal law to develop recommendations on how to unify their data systems,[2] although they're not actually required to do anything with those recommendations. But if you're having a hard time getting started on designing a unified early childhood data system, the old "Don't blame me, federal law made me do it" excuse is definitely available to you here.

And fortunately for you, this is a policy area with a lot of growth potential. Congress has shown bipartisan support for funding early childhood services and quality improvement[3] and education data systems.[4] State leaders similarly have shown bipartisan support for expanding early childhood opportunities[5] and building data systems.[6] But that history of support just frames the opportunity; it doesn't turn it into a reality. So this guide tries to explain for people in the early childhood policy process what unified state early childhood data systems can and should accomplish, and then discusses some of the specific activities that can be used to bring them to life.

This guide first explains the importance of state early childhood data systems and why they matter to state policy improvement. The second section then walks through how states have gone about designing and building systems to meet their needs. The third section discusses the numerous capacities states need to have in place to reap the benefits of having a unified early childhood data system. The fourth section discusses the important privacy and security concerns that any state must consider in developing an early childhood data system.

I. WHY DO STATE EARLY CHILDHOOD DATA SYSTEMS MATTER?

What leaders in early childhood are most focused on is improving child outcomes.* The strategies and tactics for improving child outcomes will vary from state to state, but the goal is always the same. And achieving that goal takes data; it takes data to help execute on strategies and tactics, and to evaluate whether they're working.[7]

Let's start with what we know for sure. Research on child development makes it abundantly clear that the first five years of life are a particularly important developmental period.[8] Research has also made it clear that the interactions children have with adults in those five years has a meaningful impact—

* In the short term, child outcomes include things like kindergarten readiness; in the long term, things like high school and college graduation rates.

positive or negative—on long-term outcomes through childhood and into adulthood.[9] These are commonsense propositions that are no longer seriously debated.

But while the potential impact of adult-child interactions in the first five years of life is well established, I've never met anybody who thinks that preserving the status quo in early childhood policy is the best way to improve child outcomes. Given that, early childhood advocacy is by definition about change: how can we change our policy and practice behaviors in order to improve child outcomes? And so at the highest level, the "why" of state data systems can be framed this way: to obtain information that, if we knew it, might cause us to change our behaviors at both the policy and practice levels to improve child outcomes. What follows are some examples of early childhood policy behaviors that unified early childhood data systems could support, if we only had them.

BEHAVIOR: ALLOCATING RESOURCES BASED ON ACTUAL NEED

As noted above, states generally maintain a wide range of budgetary line items that serve young children and their families: preschool, child care, Head Start, home visiting, special education, child welfare, K–12 education, health, mental health, and others. Because none of these line items meet all of a family's needs, states have policies that facilitate (or don't facilitate) the ability of communities and programs to utilize these funding streams in coordination with each other.[10] In Illinois (as in other states), the fact that some children are served by multiple funding streams is an intentional policy choice, and it is important to measure the impact of that choice.[11]

In Illinois,* preschool funds are distributed through a competitive grant rather than by formula. One factor the Illinois State Board of Education (ISBE) uses in determining which programs will be funded is the level of need in the community that program intends to serve—which means that applying programs and ISBE both need actual data on the level of need in communities around the state. That is one reason ISBE is a participating funder in the Illinois Early Childhood Asset Map (IECAM),[12] which provides data and maps showing a wide range of early childhood services across the state. IECAM provides aggregated data that can be sliced in numerous ways, including by community.

ISBE's state-funded preschool programs aren't the only ones that benefit from IECAM. Head Start programs are required to complete a community needs assessment,[13] and IECAM data can be valuable for that purpose as well. Indeed, the ISBE and Head Start requirements are actually interrelated, because Illinois has long made it a priority to think of its Preschool for All primarily as a complement to

* Full disclosure: A disproportionate number of the examples in this paper are going to be from Illinois. I'm the chair of the Illinois Longitudinal Data System Governing Board, and also of the Illinois Early Learning Council's Data, Research, and Evaluation subcommittee; this is the work I've been doing for the last decade. And yes, I like to tell myself that holding these unpaid volunteer positions on state boards and committees was Greg Zuerlein's childhood dream.

Head Start rather than a competitor; this means that when ISBE is evaluating community need, it treats children enrolled in Head Start programs as already receiving high-quality early learning.

The idea behind IECAM isn't unique to Illinois, and other states—including Louisiana, Minnesota, Oklahoma, and Pennsylvania—have published "risk and reach" reports that provide similar information about the relationship between services available and community need.[14] These reports can help policymakers in the executive and legislative branches decide where state resources will have the greatest impact. For advocates focused on ensuring that the communities with the greatest needs get the resources required to expand access to quality services, these data reports can be a powerful tool.

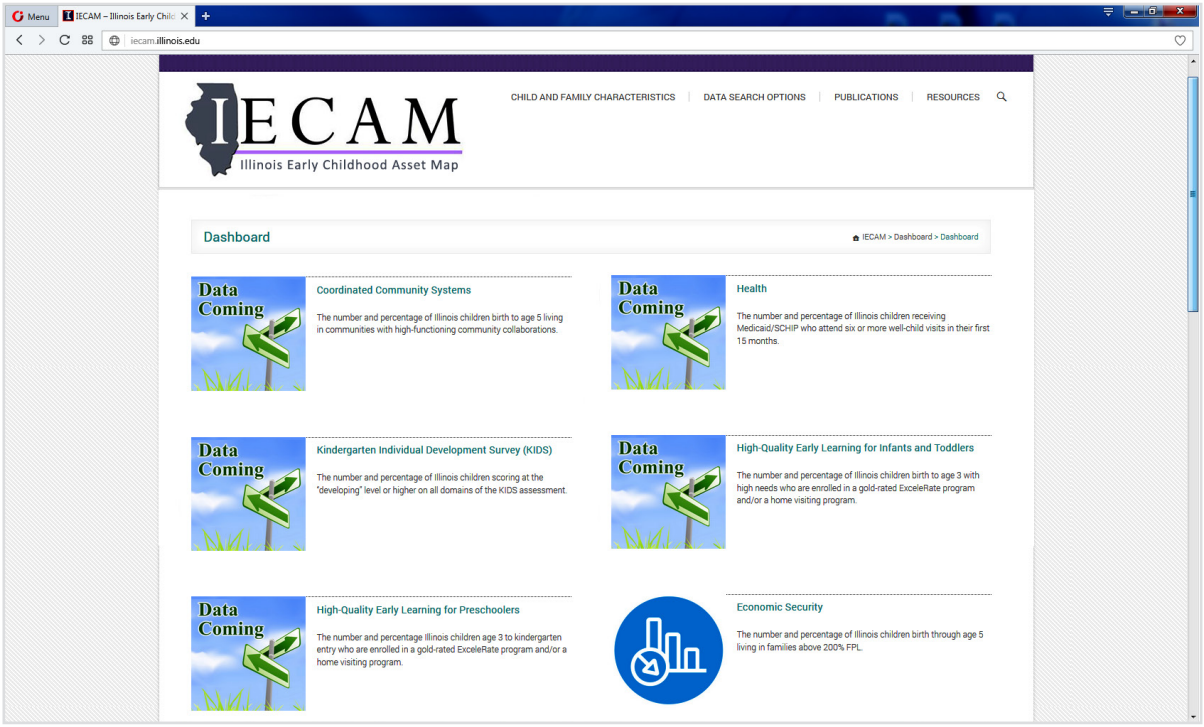
BEHAVIOR: MAKING SURE CHILDREN AND FAMILIES ARE GETTING THE RIGHT MIX OF SERVICES

Given the variety of public funding streams available, we know there are a whole host of adults in publicly funded roles with whom children may interact: their home visitor, their preschool teacher, their early intervention professional, their health care provider, and others. Does your state know which children are interacting with which combination of adults? (Spoiler alert: no, it doesn't.) States have taken responsibility for a range of publicly funded services, and generally see themselves as having the related obligation of making sure that those services are delivered as efficiently and effectively as possible. So if the state doesn't know which children and families are using different publicly funded programs in different combinations, how can it ensure that those programs are providing the most effective service?[15]

Historically, states have chosen to allow some children to be served by multiple funding streams without knowing exactly which children were in fact benefitting from that policy or what the impact of that cocktail of services turned out to be. That is why resource-allocation decisions benefit from producing a "distinct head count," a head count of multiple programs that identifies how many children received each service that includes an analysis of how many children received different combinations of services. For example, to date, states have generally been able to identify how many children received state pre-k, Head Start, and child care, but not how many children received a combination of two programs (or all three),[16] and states are also interested in connecting these early learning programs to a wide range of other health and human services programs.

BEHAVIOR: PROVIDING PARENTS AND THE PUBLIC INFORMATION ON THE EARLY CHILDHOOD SYSTEM AND ITS PROVIDERS

Increasingly, states are seeking to develop dashboards that highlight the key data points measuring how things are going for children birth to five. For example, the Illinois Early Learning Council developed a dashboard that's intended to highlight the key data points that we'd like to see move as a measure of the health of Illinois' system:



Notice that a lot of the data isn't actually available yet. That's okay at the beginning; the fact that some data is missing shouldn't stop states from displaying what they have, and indeed the creation of the dashboard was meant in part to keep pressure on the state to build the systems necessary to generate missing data. Appendix 1 describes in more detail how Illinois chose these particular metrics—but whatever metrics are chosen, a dashboard makes it easier for the public and policymakers to determine which way their state system is headed. And that, in turn, is meant to drive behavior change by providing a measurement of whether the state's chosen strategies are working—which may lead to a doubling down on those strategies, or necessary course corrections.

In addition, states are working to provide better information to parents about individual providers. An increasing number of states are implementing quality rating and improvement systems (QRIS), which rate programs and then provide support for them to get better. (Hopefully the name gave that away.) All but one state now has a QRIS in place or in the planning stages, and all but three of those systems

are statewide.[17] One of the major purposes of QRIS is to provide better information to parents about program quality,[18] and effective data systems are a key part of making that happen.[19] QRIS is certainly not the only way states can inform parents about early learning opportunities, but it's one of the primary methods states are using to communicate to parents about the quality of available services.

BEHAVIOR: IMPROVE TEACHING AND LEARNING IN THE KINDERGARTEN THROUGH 2ND GRADE YEARS

Unified state data systems could be useful at shining light on what now goes on in the mystery years of kindergarten through 2nd grade. These years have largely been left out of state accountability systems[20] and school improvement planning,[21] but the Every Student Succeeds Act (ESSA) opens up new opportunities to change that. Connecting early learning systems to K–12 longitudinal data can give us a much deeper understanding of how early learning relates to what comes after it, and how K–2 builds (or in some cases does not build) on what came before it.

The black box of K–2 has implications for the research base on what works in early childhood. There have been studies showing that early learning services have a meaningful impact on readiness at kindergarten entry but that a few years later, children who received the services are often statistically similar to those who didn't.[22] Early learning advocates take this data and argue that it shows early learning makes a difference,[23] and early learning skeptics take the same data and argue that it doesn't.[24] But given the comparative lack of data on what goes on in those years in between, one logical conclusion is that high-quality early learning has a positive impact, but we could do a much better job of quantifying what that impact is and then building on it.[25] Better data systems connecting preschool to K–2—and including more detailed data about K–2*—would make possible a much richer analysis of what's actually going on in those early elementary years, which in turn could lead to the design of more-effective early learning services and improvements in K–2 education.[26]

SUMMARY

These are only a few of the behaviors that states might want to change relating to how they provide services to young children, but any state that's working on early learning at all ought to have at least some behaviors it thinks it could improve. If states are in fact interested in improving behaviors, then they have an answer to the question of why they would want a unified early childhood system. So how can states go about building them?

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* Importantly, this will in many cases require not only doing a better job of linking data systems, but also collecting better information about what actually happens in the K–2 years.

II. HOW DO YOU UNIFY YOUR DATA SYSTEM?

Early childhood programs are typically governed by multiple state agencies—for example, child care programs are often administered by human services agencies while pre-k programs are administered by departments of education.[27] Some states have consolidated programs into a single agency, but where that is the case they still need to build linkages to connect to K–12 data to study how children do over time. While in theory states could rip out their often-antiquated legacy systems in multiple agencies and start over with something new, the far more common approach is to build linkages that allow for data to be matched across different systems to produce aggregated results.

That work has a long way to go in every state. The last survey conducted by the Early Childhood Data Collaborative[28] in 2013 showed that only one state, Pennsylvania, could link its state pre-k and child care data to produce a distinct head count.[29] (The same was true in the 2010 survey.*) But many of the most basic questions about service delivery and impact are hard to answer when you know that some kids are simultaneously enrolled in both programs but you have no idea which kids those are.[30]

States are working on answering these questions, to be sure. All states are required by the Head Start Act to have a state advisory council, and one of that council's responsibilities is to "develop recommendations regarding the establishment of a unified data collection system for public early childhood education and development programs and services throughout the State."[31] This passage—specifically, 42 U.S.C. 9837b (b)(1)(d)(4)—was added in the 2007 reauthorization of Head Start.[32] Since the work reported in 2013 by the Early Childhood Data Collaborative,[33] some states have been able to use federal Early Learning Challenge funds to advance their data systems work.[34] But while the Head Start Act requires states to make recommendations, it doesn't require them to do anything with those recommendations, nor is there any consequence for failure to make the recommendations. So federal law gives states an excuse to get started, but it won't come anywhere close to forcing the action (especially in states that have already spent the last 10 years ignoring this provision).

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* No matter what happens in the future when it comes to state early childhood data systems, it is important to acknowledge that Pennsylvania was the field's defining pioneer. Under the leadership of Governor Ed Rendell and Office of Child Development and Early Learning Deputy Secretary Harriet Dichter, Pennsylvania built a truly impressive cross-agency data system, Pennsylvania's Enterprise to Link Information for Children Across Networks. Stedron, J. (2010). "A Look at Pennsylvania's Early Childhood Data System." National Conference of State Legislators in partnership with The Early Childhood Data Collaborative. http://www.ncsl.org/portals/1/documents/educ/paearlychild-stedron.pdf. By virtue of being on the vanguard, the Pennsylvania staff have also played a valuable role in supporting work in other states, including hosting a National Governors Association meeting in Harrisburg for other states to learn from the Keystone State experience.

Where states have engaged in the work of building state early childhood data systems, they have generally followed a standard progression:

1. **Engage stakeholders to figure out what they want from the data system**
2. **Develop interagency agreements to oversee the data system**
3. **Assess the data landscape**
4. **Build linkages among systems**[35]

Each of these stages comes with its own opportunities and challenges.[36]

THE "OFFICIAL" GUIDE TO THE WHY AND HOW OF UNIFIED STATE EARLY CHILDHOOD DATA SYSTEMS

In November 2016, the US Department of Health and Human Services and Department of Education jointly released the paper "The Integration of Early Childhood Data."[37] That report, which is cited liberally in this guide, provides a particularly thorough description of the mechanics of developing a unified state early childhood data system (which it calls an Early Childhood Integrated Data System, or ECIDS). In addition to its broader narrative about the development of state systems, it includes case studies from some leading states. That "official" guide is an absolute must-read for anyone working on developing unified early childhood data systems; this unofficial guide drills deeper into the "why," and then with regard to the "how" focuses on providing insights not included in the official guide, and indeed outside the scope of what would normally be expected in an official federal report.

Other highly recommended resources regarding the development of unified early childhood data systems include:

- "Stacking the Blocks: A Look at Integrated Data Strategies," a chapter of the BUILD Initiative's e-book about the implementation of Early Learning Challenge Grants[38]
- "Roadmap for Early Childhood and K–12 Data Linkages: Key Focus Areas to Ensure Quality Implementation," developed by the Data Quality Campaign and the Early Childhood Data Collaborative[39]
- "Early Childhood Integrated Data Systems Toolkit," developed by the State Longitudinal Data Systems Grant Program, including an issue brief on "Answering Key Questions With an Early Childhood Data System"[40]
- "A Framework for State Policymakers: Building and Using Coordinated State Early Care and Education Data Systems," developed by the Early Childhood Data Collaborative[41]

1. THE STAKEHOLDER ENGAGEMENT PROCESS

This should be a good time! Or at least it has been for me. I have presented in and/or staffed data roundtables in five states; at each, the major goals included identifying key questions that an early childhood data system should be able to answer and to build stakeholder interest in the data system, to give it a set of champions focused on carrying the work forward.[42] It is very important to get the eventual end users of a data system involved at the very beginning to make sure that (a) the design of the system meets the needs of its audience, and (b) the audience is activated into advocating for the system's creation. [43] Ongoing support is needed to sustain the momentum of a kickoff event, but having that kickoff event can be a good way to get people engaged in the process.

An important initial task is determining which stakeholders need to be included.[44] Some will be obvious because of their active involvement in the state's early childhood community, but there may be value to engaging a broad group of stakeholders in the work.[45] Engaging a wide cross section at the outset of the process can be valuable for multiple reasons:

- It captures a diverse set of questions from multiple perspectives than a more homogenous group would produce.
- It helps build understanding among different members of the early childhood community about the different issues confronting their colleagues; for example, policy advocates learning about key questions facing program leaders.
- It builds a larger constituency for the production and utilization of data, and that constituency may prove useful to maintain support for the work of building linkages.

The stakeholders involved in the planning process should represent a wide range of possible end users for the final system. Different end users will have very different ideas about how data should ultimately be used, and while it is valuable for them to learn from each other, the stakeholder engagement process can go off track if states are not clear at the outset about the process of developing unified data systems. States should identify the criteria that will be used in system design—which should be based on maximizing impact on child outcomes, however defined—and be clear about how final decisions about prioritization and phasing will be made. Otherwise, stakeholders will enter the conversation with unrealistic expectations. (More on that in a minute.)

Building on the discussion in Section I, the stakeholder engagement process should focus on behaviors that need to be changed—the "why" of the work.[46] One standard and relatively straightforward approach is to develop a list of key questions that the state would like answered in order to facilitate behavior change; for example, how does compensation affect staff turnover, and how does staff turnover affect quality ratings?[47] Another approach (which can be complementary to a list of key questions) is to develop a set of use cases. For example, the Illinois Early Learning Council's Data, Research, and Evaluation Committee developed a set of early childhood data-use cases, with a detailed explanation of two of them and short explanations of others.[48] For our two featured use cases, we chose one broad policy question and one practice-focused question:

- One of our use cases was to develop a distinct head count of children served by multiple programs. I talked about that issue earlier in this guide, but in the use cases, the benefits we identified included using better information to mobilize resources, providing information to K–12 educators about early childhood experiences, coordinating services among providers, and reporting compliance.
- Our second featured use case focused on sharing child-level data with school districts when a child enters kindergarten. This can help inform K–2 strategies and practices, provide a feedback loop back to early childhood educators, improve transition practices and facilitate communication among the school, early learning programs, and families. The basic idea was that if you ask a legislator, "Do you want your child's 2nd grade teacher communicating with your child's 3rd grade teacher to talk about how best to meet your child's educational needs," the answer will almost surely be yes; if you then follow up by explaining that the preschool teacher and kindergarten teacher would benefit from the same conversation, this example starts to feel much more real to them.

Existing lists of questions and use cases can provide a jumping-off point for states that aren't as far along in developing their systems. States should wrestle with the questions and take ownership of them, but at this point there's no need to start from scratch. Appendix 2 includes a draft list of questions that states can use to get started on this process.

THE ILLINOIS EARLY LEARNING COUNCIL RESEARCH AGENDA

In Illinois, we worked in our Early Learning Council to develop a research agenda.[49] The goal of the research agenda is to provide a ready reference guide to any researchers (or funders of research) who are interested in conducting research that is relevant, and is actually likely to drive behavior change. We worked in collaboration with other Early Learning Council committees to compile a thorough list of potential research questions, and then identified some of them as priority questions. Most of these questions are not state specific and could easily be used as a jumping-off point for another state interested in having a research agenda of its own. In Illinois, researchers from public and private universities participated in generating the list of questions, and university partners could be helpful to analogous work in other states.

In thinking about the questions states want to answer, it's important to think horizontally and vertically. The horizontal linkages across early childhood programs—for example, preschool and child care—are, as noted previously, deeply underdeveloped. But in addition to those horizontal linkages, it's also important to link early childhood data to K–12 data, to help understand the long-term impacts of early childhood services.[50] Accordingly, the stakeholders involved in developing the key questions should reflect the need to think in horizontal and vertical manners.* Moreover, while the questions listed here have focused on child-level data, there is also important data about professionals and higher education capacity that states may wish to address.[51]

A hard-learned caution is that it's important in the stakeholder engagement process to not oversell what's possible. Actually designing and building data systems takes years, and inevitably will not answer all of the questions stakeholders identify as important.† While creating expectations is an important driver of the stakeholder engagement process, it's also important to manage those expectations so that disappointment doesn't set in when actually building the system turns out to take a long time. Unified early childhood data systems are not magic search engines that can answer any

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* Indeed, states can think quite vertically if they recognize the links among K–12, higher education, and workforce data; with those linkages in place, early childhood data can connect all the way up past high school graduation to give an even richer long-term picture of a state's educational system. That said, there are some data points that should not necessarily travel with the child, and states should be thoughtful about only building linkages that will yield valuable information while not compromising legitimate privacy interests.

† At an Education Commission of the States reception once I ran into somebody who I'd last seen at a state data roundtable several years prior, and when I commented on it, she launched into a diatribe about how the roundtable had created unrealistic ideas about what is possible and she wished it had never happened. I kept a brave face, but I felt inside much the way children feel when they find out there's no such thing as the tooth fairy. Fortunately, I was able to connect later with one of the people leading data systems work in that state who reassured me that in fact the roundtable was a huge help and I shouldn't be discouraged by the dissenting view.

question at any time easily and quickly, and in many instances just having the data is not enough—a rigorous research design and research capacity will be needed to provide meaningful answers to some key questions. Even with that caveat, though, the stakeholder engagement process should be a rewarding and energizing phase of the work. As I said, this should be the fun part.

2. INTERAGENCY AGREEMENTS

Because nobody thinks interagency agreements are the fun part.

Data sharing among state agencies requires data sharing agreements.[52] Data sharing agreements set expectations and spell out the roles and responsibilities across agencies, including when and how data are shared. This is important not only because it makes it possible to connect data across agencies but also because otherwise one agency's data might be used without its permission or even knowledge, which can lead to bad results. At one of the data roundtables I attended, the story was told of an incident in which Agency A granted permission to some researchers to use Agency B's data without Agency B ever being alerted, and indeed, Agency B only learned that its data had been shared on the day a report trashing Agency B's practices was released to the public. This is terrible practiceand potentially illegal, and there was no question that because of this incident, this state was deeply focused on coming up with some better protocols for interagency data sharing.

Now, all of us might be able to identify an Agency B in our state whose work could stand to be held up to greater public scrutiny, but it's not best practice to access agency data without the agency even

knowing about it. Protections must be put in place to ensure that the public and researchers have access to data to which they have a right of access, but protocols should also be in place to ensure that agencies are carefully managing the release of their data and ensuring that it's being handled appropriately. Interagency agreements can govern these practices and ensure that when data from multiple agencies is being released, each agency involved has had an opportunity to guarantee the accuracy and propriety of the data.[53]

AN agency head can change the dynamic entirely by making it clear to agency counsels that their metric of success is how quickly they get these agreements in place and how much legal data flow they facilitate for their program colleagues.

So now let's turn to the attorneys responsible for these interagency agreements, and the release of data that the interagency agreements allow. First, it's safe to assume that many of these attorneys are not experts in data privacy; there are exceptions to be sure, but it's not an area of universal expertise within state agency legal offices, and it's a potentially confusing area of law for nonexperts. Second, to the extent that attorneys are knowledgeable about privacy laws, they will (appropriately) be very focused on making sure that data privacy is protected and minimizing the likelihood of legal action against the agency for improper disclosures. Third, many state agency legal offices are already stretched thin and have limited capacity. So whenever attorneys are actually able to free up some time to work on this issue that they don't really want to work on to begin with, here's how they might look at the pros and cons of approving data sharing:

IF THEY GIVE APPROVAL TO GO AHEAD WITH THE DATA SHARING:	IF THEY SAY NO, DON'T GO AHEAD WITH THE DATA SHARING:
• A whole lot of work is created for a lot of people, and there may be more-difficult legal questions in the future that require more work for the attorney. • There's a nonzero risk that data will be released that shouldn't have been. This could lead to lawsuits, an angry public, and (if things go badly enough) job loss within the agency counsel's office. • There's also a nonzero risk that data will be released appropriately but that ends up embarrassing the agency in some meaningful way. This too could lead to frosty relationships between program staff and the counsel's office. • There may be benefits articulated to the linkages among data systems, but it's exceedingly unlikely that any of those benefits have anything specific to do with the agency counsel's office.	• There's no more work to be done • Nothing bad happens, other than the lost opportunity cost of some ephemeral benefit that would have been realized by somebody who may not even have a day-to-day working relationship with the agency counsel's office.

So what ends up happening is that agencies, in an excess of caution, end up not releasing data that actually could be released. From their standpoint, the cost/benefit calculus is clear: releasing data that you should keep private gets you in trouble, while holding data that legally could be shared generally does not get you in trouble. The result of that is that agency data that could be shared ends up not being shared.

It's important to emphasize that typically, agency counsel offices are innocent victims here, as they're just doing the job as it's been defined for them by their agency head. An agency head can change the dynamic entirely by making it clear to agency counsels that their metric of success is how quickly they get these agreements in place and how much legal data flow they facilitate for their program colleagues. Fortunately, there have been states with strong high-level leaders who have made data

sharing a priority.[54] If the "why" of using data is compelling, then it will be important for governors' offices and agency heads to keep staff at all levels focused on that "why" and ensuring that counsels' offices understand that getting to yes on data sharing is a key part of their mission.

While this discussion has focused on getting interagency data sharing set up, it's important to sustain interagency governance structures over time to keep the system healthy.[55] Many states have interagency data governance systems that are broader than the early childhood agencies, so states need to decide whether the early childhood data governance should be included in that larger structure or kept separate.[56]

3. ASSESSING THE DATA LANDSCAPE

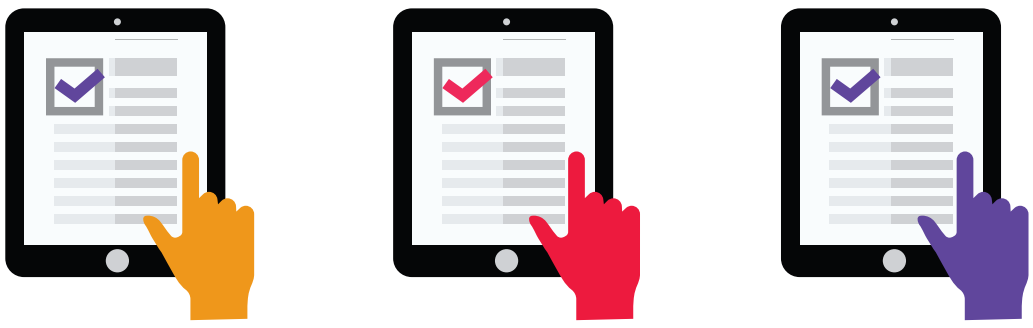
Once key desired data has been identified, the state can conduct a gap analysis that identifies where that data is collected—if anywhere—and what changes would be necessary to plug any holes.[57] Many state agencies feature a crazy-quilt set of multiple data systems that don't talk to each other. Each division within an agency may have its own data system that tracks the data it needs for compliance reporting purposes, and no more. Within a single state agency there may be a wide range of data platforms and reporting formats that would require a great deal of effort to synthesize—let alone across multiple agencies.[58] Accordingly, it is essential that states study and understand their landscape before designing and building any new systems.

The gap analysis will be informed by the stakeholder engagement process, which should have identified what data is really important to people. In keeping with the theme of managing expectations, in all likelihood actually closing all of the gaps included in the gap analysis will cost about a squajillion dollars more than the state actually has, so the state will have to refer back to its identified priorities and figure out how much it can actually get done within available resources. This is an important analytic step that generally will require some focused capacity with expertise in data analysis;[59] in Illinois, we used a federal grant to hire a contractor to review state agency data systems and to help develop a Request for Proposals to hire a subsequent contractor to actually build a linked system that met our needs. States often use this opportunity to identify "quick wins"—places where a quick impact can be achieved in a way that builds momentum for future work.

In many ways, the development of a unified early childhood data system is a great opportunity to build consistency across state data systems because many programs are collecting slightly different data, and a process of connecting data systems will expose some of the mismatches between different systems.[60] States can analyze what they're collecting, and potentially update the requirements for each individual program even as they try to knit together a coherent whole. A few problems with data are likely to emerge during the process of linking data across agencies:

- There's data that the state needs to answer critical cross-cutting questions that isn't collected by any of the participating agencies. If that's the case, the state needs to make a decision about whether that data is worth collecting anywhere.
- The data being collected by one or more agencies just isn't that good. A lot of data is self-reported and unaudited, which can lead to problems with the incentives to report accurately and the strength of quality control systems. When nobody is paying attention, these problems can slide for years, but building linkages can force them to the surface. It may also require states to develop systems for determining which source is "authoritative" in the event of conflicts among sources.
- Everybody is collecting the same data but calling it different things. This may require the development of a master data dictionary to get different agencies on the same page about terminology.[61]

Solving these problems could provide a meaningful reduction in administrative burden for early childhood service providers that are supported by more than one funding stream, in addition to raising the quality of data at the state level.



4. BUILD LINKAGES AMONG SYSTEMS

Once the gaps are identified they can be closed, and clearly, this requires focused capacity with the technological expertise to build linkages among existing systems. While states may not always have the capacity to effectively oversee this kind of contractor, these contractors exist; data expertise is readily available in the marketplace. States need to be thoughtful about how they engage and oversee that expertise (as discussed in the sidebar "Vendors"), but the expertise is out there.

VENDORS

The development of a unified early childhood data system will almost inevitably involve the use of technology vendors. In some states, the effort to launch work on a unified early childhood data system will be greeted with a state information technology leader relating a horror story of some previous data effort in which a vendor spent huge amounts of money on a project that ended in disaster. Data projects that go astray often involve a project design that was not sufficiently clear or a lack of management capacity on the part of the state; when either or both of those problems crop up, vendors may attempt to fill the void by making decisions that don't actually represent the desires of stakeholders. Thus, having a clear plan and strong oversight is necessary for states to use vendors effectively.

One strategy some states have used is to break the work up into multiple phases, which can make each piece more manageable. It can also lessen the risk if work goes awry; if a discrete phase doesn't turn out right, it may be possible to clean up the mess and start over. The worst problems occur when states discover an error made several steps ago, after additional layers of work have been done building on the earlier mistake. But one challenge of phasing the work may be ensuring consistency, and state procurement rules will also impact decisions about how best to structure the phases of a data systems project.

Another approach is to design some small pilots and execute those before attempting a more sprawling systems integration effort. Pilot projects can address top priorities, provide positive visibility through quick wins, and provide insights that prove useful when the work expands.

Many people in the field will tell you that the act of building linkages is often assumed to be a technical challenge, but that in the end the technology is often the easiest part. The real challenge in this work is frequently navigating the state agencies themselves, and the program leaders responsible for existing data systems. Some states have strong cultures of interagency cooperation to draw on and others don't, but a meaningful level of interagency cooperation is essential to the development of unified early childhood data systems.

A critical capacity challenge in the work of connecting those data systems is the bandwidth of the division administrators responsible for the systems.[62] Those systems were likely set up to meet some actual compliance reporting and program administration need, and there's almost certainly an annual report required by federal or state law that the system reliably produces. That report may never be read or acted upon by anyone with high-level authority, but the failure to produce it could lead to an agency audit finding and potentially an embarrassing legislative hearing.

The division administrator and his or her staff almost certainly have a keen understanding of the strengths and weaknesses of the data system they oversee. What they probably do not have is three important things: (1) the knowledge and support needed to manage the transition to a new system, (2) any operational imperative to connect their data to any other system, and (3) the time in their day to focus on this issue, considering all of the other demands on them. For their job as it's been defined, they probably have all the data they need. And in many instances, their time is stretched thin just running the division as it's currently constituted, because states often underestimate the amount of capacity needed to build and maintain data systems.[63] So for these division administrators, the work of linking data to other systems involves potentially a lot of difficult work—for somebody else's benefit.

MOST of the work described in the guide isn't IT work — it's about identifying needs, defining priorities, and building capacity.

THE STATE'S INFORMATION TECHNOLOGY CULTURE

The information technology (IT) field is a lucrative and rapidly advancing one, and the perception, at least, is that state government has a hard time keeping up.[64] Of course, the exact challenges of state government information technology will vary from state to state; some states have a culture of seeking to maintain a strong IT infrastructure, and others don't. The state's overall IT culture does have an important impact on how advocates should approach their work.

There's a reason this guide is written on the assumption that states are going to try to maintain a lot of their legacy systems, and that advocacy should focus on how to build linkages among those systems: A lot of states have taken that approach. That's not inevitable, though; in some states, there may be energy to consolidate agency IT systems.[65] So advocates need to educate themselves about the state's IT approach: Is it planning to leave in place legacy systems? Ripping those systems out and replacing them with something new? Consolidating IT governance in a centralized agency? Some combination thereof? Early childhood leaders may not want to spend a lot of time or political capital influencing that strategy (which probably is not time and energy well spent for them), but they do at least need to have some sense of what the strategy is.

In some states, leaders may be fed up with old technology and ready to make a change; in other states, leaders may be resigned to old technology, and hunkering down to grow old together. Those decisions may be made outside of the circles in which early childhood leaders and advocates usually travel. And that matters to some degree, but the development of a unified early childhood data system can move forward regardless of a state's IT approach. Most of the work described in this guide isn't IT work—it's about identifying needs, defining priorities, and building capacity. If a state gets those things right, it should be able to move forward in all but the most toxic IT environments; if a state can't get those things right, there's no IT environment that will make up for it.

There are legitimate obstacles, but surmountable ones. As with agency attorneys, governors' offices and agency heads need to be sensitive to these dynamics and try to structure data-linkage projects in a way that's respectful of existing agency imperatives and capacity. It's not fair to just add this work to a division administrator's job; there needs to be dedicated staff focused on the linkage project, and ideally they'll do their work in a manner that doesn't impose too significantly on existing agency responsibilities. Indeed, the design of a unified early childhood data system will be all the more likely to succeed if division administrators are consulted early in the process and on an ongoing basis to share

their expertise about the use cases, the prioritization of phases, and how the final system can be most effective. And if division administrators are being expected to carry significant weight in this work, their supervisors must understand the cost that comes at and protect and support them through the process.[66]

High-level leaders need to be thoughtful about how to make this work modular and sequence it appropriately. Given the scope of data that might be linked, it is extremely unlikely that it will make sense to try to link it all at once; high-level leaders need to determine the most reasonable way to stage the work. High-level leaders should also be aware that states sometimes have multiple data-linking projects operating at the same time, and should work to ensure that building connections among early childhood systems is integrated with those other efforts, rather than competing with them or duplicating them.[67]

HEAD START

Head Start is a special issue because Head Start funding flows directly from the federal government to local providers without passing through the state. Three keys to successfully working with Head Start are (1) engage multiple Head Start stakeholders, (2) try to make the linkages add value for Head Start programs so they can clearly articulate why the linkages matter, and (3) be realistic about the practical and technical barriers to including Head Start in state data systems, and where possible, offer resources to help address them. In Illinois, we commissioned a 2013 report[68] that analyzed what benefit Head Start would realize from being linked to the state's data systems, and how the state might go about the integration process. Two years later, the Early Childhood Data Collaborative published a more generalized guide for states on integrating Head Start.[69] The official guide also has a discussion of this work,[70] including detailed descriptions of the work to partner with Head Start in North Carolina and Minnesota.[71]

Given that Head Start programs are independently operated, it is important to understand the dynamics of the Head Start community in a state and ensure that Head Start stakeholders are included. The potential operational benefits of linking to state data—and the technological challenges of those linkages—may vary meaningfully from agency to agency. While this can add to the complexity of the work, it can also be a great opportunity for the state to engage Head Start providers about their needs and how the state can help meet those needs.

Importantly, Head Start leaders are increasingly looking for opportunities to connect data with states. Indeed, the Head Start Performance Standards issued in 2016 include the following paragraph:

> Data systems. A program, with the exception of American Indian and Alaska Native programs unless they would like to and to the extent practicable, should integrate and share relevant data with state education data systems, to the extent practicable, if the program can receive similar support and benefits as other participating early childhood programs.[72]

This is a positive step. But the fact that integration and sharing "should" be done "to the extent practicable" means that unless states can show Head Start programs a meaningful value proposition, Head Start programs will have no real reason to link their data with state systems.

SUMMARY: MAKING THE HOW HAPPEN

A. Leadership in the Executive Branch

One theme that hopefully you haven't missed in this section is the importance of leadership. In every state that's made any headway on this issue, someone in a high-ranking and empowered role within state government has been a firing piston that kept this work on track. Without that high-ranking leadership, stakeholders won't come to the table to formulate a plan; agency staff won't have a clear vision of how interagency collaboration represents an opportunity to better serve their constituents; and when things go wrong in the process (which they inevitably will), there's nobody to push the car back onto the road. Inertia can be a powerful force, and without a relentless champion the work of building a unified early childhood system can easily turn into a bureaucratic grind that ends up collapsing in ignominy.

Leaders play a valuable role by ensuring that the project of unifying early childhood data systems has clear outcomes, buy-in from a wide range of stakeholders, and ongoing leadership through the process. Even with all of that in place, the work will be challenging; without those things, it has no hope. Thus, leaders within state government contemplating the work of building a unified early childhood data system should develop a clear plan with the necessary management capacity in place, and advocates outside of state government should ensure that the state has such a plan and that they understand their role in supporting the plan's success.

B. Oh Yeah—You Need Money, Too

States have been the designers and executors of unified data systems, but the federal government has to date been a major funder of state progress on building early childhood data systems.[73] This is an incredibly valuable role that should continue. Indeed, the American Enterprise Institute—which frequently advocates for a more limited federal role—has wisely identified data transparency and research as key areas where the federal government is uniquely situated to advance policy.[74] Moreover, the federal government can play a role in helping to shape Head Start's participation in state data systems; in doing so, it is important to be sensitive to Head Start's history and context, but also to take advantage of the opportunities state data systems present.

But while the federal government is a key funder, a lot of the work described here has to happen at the state level. Whatever percentage of the necessary funding the federal government is providing, state leadership and commitment is an absolute must or unified early childhood data systems will simply not happen. And that state commitment isn't just a state government commitment: the work will also engage numerous outside stakeholders, require community engagement, and draw on philanthropic support.

Advocates for data systems funding at the state level face some important and ongoing challenges. Fortunately, legislators are often thirsty for data-based knowledge about how state government is doing, which is a helpful point of entry. But the expenses of building a data system are often characterized as administrative costs, which are treated by many politicians as inherently evil. Moreover, because state data systems take a long time to build, they offer less immediate payoff than other competing spending priorities. In a 10-to-15-year time horizon, data systems might help deliver service to thousands of additional families—but in the next fiscal year, investments in data systems may be seen as reducing the number of families served.

To a large extent, this explains why it's so important that advocates and leaders from the early childhood community bang the drum for this issue. There will always be urgent political pressure to invest in something other than long-term infrastructure needs. But the early childhood field still has a long way to go: nationally, 57% of 4-year-olds and 84% of 3-year-olds are not enrolled in a publicly funded preschool program, either state funded or Head Start.[75] Given that, advocates need to be thinking in a generational time horizon, and work with federal and state legislators to fund the data infrastructure needed to support long-term change.

It's also important to note that advocating for data systems funding is not a one-time event. While building out systems may require significant upfront money, the staffing needed to maintain the system is an ongoing carrying cost. Federal funding has played a major role in helping states build out their systems, but actually using the system is primarily a state responsibility. And that requires states to be thoughtful about what capacity they're going to need to make the system effective, and who's going to pay for that capacity.

III. THE CAPACITY TO GENERATE AND UTILIZE DATA

Around the country there is no shortage of data-based state government reports that are more or less dumped immediately into an abyss. State legislatures often require data reporting by state agencies, but in too many instances neither the legislature nor the agencies have the capacity to actually do anything with the results of that reporting. In other cases, the legislature or the agency could actually do something with the data, but they don't really want to, and there isn't anybody to press them to do otherwise.

A number of different kinds of capacities can be important to making good use of data. What that capacity looks like and where it is housed will appropriately vary from state to state, and be reflective of local conditions. Sometimes the logical place for that capacity is inside government agencies[76]; other times it makes sense to house it at a university, or elsewhere outside government. Without that capacity, though, all of the effort to produce data will be largely wasted. Moreover, the term "capacity" has to also include the idea of commitment; having the ability to use data is meaningless if key actors

don't make the commitment to actually do so, which in many instances will require processes designed to engage multiple stakeholders in effective data use.

While this list is not exhaustive, there are at least six kinds of capacity worth considering here: the capacity to continue producing data; the capacity for policymakers to analyze data; research capacity; advocacy capacity; community-level capacity; and provider-level capacity. I've continued to draw heavily on Illinois examples, but there are certainly plenty of other states that have done great work in some of these areas; many of their stories are told in some of the other resources cited elsewhere in this guide.

1. STATE CAPACITY TO PRODUCE DATA

Remember a few pages ago when I discussed how state administrators and attorneys don't have a lot of capacity to deal with data system issues? In fact, state agencies don't have a lot of capacity generally.[77] As discussed above, putting in place the framework for interagency data sharing can be taxing on agency staff—and then maintaining that infrastructure requires an ongoing commitment. But at least some minimum threshold of state agency capacity is absolutely necessary for any unified early childhood data system to work.[78]

One approach we've taken in Illinois to advancing this work is having some dedicated capacity that receives state funding but is independent of the state agencies that actually hold data. The Education Systems Center housed at Northern Illinois University[79] has played an instrumental role in facilitating interagency data sharing agreements in support of the state's Longitudinal Data System and staffs the system's Governing Board (which brings together leaders from the seven participating agencies). One of the center's pivotal roles is consulting on the technical aspects of interagency data agreements, and the center was a key driving force behind shepherding Illinois' existing master agreement through seven agency processes. Having a center housed at a public university provides capacity that sits outside any individual agency—which can provide valuable neutrality when navigating some of these complex processes, and the center also has the expertise to question and/or problem solve when agencies say no.

To be clear, having the center is not a complete substitute for having personnel within each agency who have responsibility for data systems, the time to work on them, and the expertise to work on them well. Ongoing carrying costs of any system have to be part of a state's upfront calculations of cost, so that states don't end up building whiz-bang new systems that are too expensive to maintain.*

* This discussion focuses on the state-level capacity to manage data. It is also important for states to be cognizant of the impact that data collection requirements have on early childhood programs, many of which have limited capacity and can be subject to multiple overlapping reporting requirements. Much of this paper focuses on building linkages to connect data that the state already collects, but there are places where it calls for consideration of expanded data collection, and in those instances, the state should do a cost-benefit analysis of whether the benefit of the new data collection outweighs the burden it places on service providers and state infrastructure.

2. STATE CAPACITY TO ANALYZE DATA

As limited as many states are in their ability to produce data, the fact that data reporting has compliance and audit implications mean that state agencies will generally have some baseline of capacity to conduct that work. But what many agency leaders have talked about losing over time is analytic capacity: the staffers who sit down with results, analyze what they mean, and make recommendations based on that analysis. That analytic capacity doesn't necessarily have to sit in a state agency—but if state agency leaders don't have access to that capacity, then that will limit and hamper their decision-making.[80]

The Illinois Early Childhood Asset Map described earlier is an example of analytic capacity that serves state agencies while being housed outside them. While state agencies fund IECAM, they have also partnered with philanthropy in doing so; IECAM is a public site that meets the needs of state administrators while also serving a broader audience. The ability to sort IECAM data in multiple ways makes it a useful tool at the community level, as well as for state administrators working to meet the needs of communities. Over time, the site has evolved to meet the changing needs of its consumers, and it continues to be supported by a mixture of state and private funds.

3. RESEARCH CAPACITY

Data is mother's milk for researchers, and well-connected longitudinal data is particularly important to a field like early childhood. There are many important research questions relating to the quality of early childhood services and the impact they have that warrant further study. But without research capacity, none of that further study will actually happen. Some of the questions unified early childhood data systems are meant to answer can simply be answered with data, and don't require a research design, but for the questions that do, research capacity is essential.

We are also fortunate to have in Illinois a high level of research capacity. There is a state-created Illinois Education Research Council whose mission is to conduct research on Illinois education policy, ranging from early learning through higher education.[81] In Chicago, the University of Chicago's Consortium on School Research has had a long-standing relationship with the Chicago Public Schools,[82] and the university's Chapin Hall conducts research on a range of issues impacting children and families.[83] All of these entities conduct research on policy initiatives to measure their impact, and also study existing practices to help inform whether policy change is needed in particular areas. Other states and districts

may have similar research partners, but if they do not, they should seriously consider creating them. In Illinois they have had meaningful impacts on policy development, and their research is frequently covered in the local popular press (and national trade press).*

A final word of advice: Because researchers love and live in data, it's very valuable to have them at almost any stakeholder gathering to discuss data systems. Researchers frequently bring genuine enthusiasm to discussions about the need to build data systems; keen insights to conversations about which questions to prioritize answering; best-practice thinking about how to structure data sets and utilize data once it's been produced; and deep experience to conversations about ensuring privacy and security. The size and strength of the research community may vary substantially from state to state, but its fundamental orientation is likely to be similar across geographies. Advocates are well advised to seek out researchers willing to engage in the design and implementation of unified early childhood data systems, and to partner with them wherever possible.

4. ADVOCACY CAPACITY

At the policy level, any behavior change that data systems might end up driving requires advocacy capacity, because policy behaviors don't change on their own. The Illinois early childhood advocacy community has worked hard to use data effectively in service of better policy, which requires the capacity to take raw numbers and turn them into a compelling story. But that's in part because the Illinois early childhood advocacy community includes multiple organizations that each has multiple staff working on policy issues; many states don't have nearly the same level of person power.[84]

Advocacy capacity is also extremely important when challenging data is released. After all, the quality of early childhood services is going to vary—and data about the quality of those services will reflect that, especially when services are chronically underfunded. It requires advocacy capacity to take tough data and turn it into a story about the importance of improving quality and expanding access to quality; without that advocacy capacity, the same data could in some cases be used to justify cutting off services altogether. Data transparency will expose the truth and might lead to some difficult conversations, but strong advocates can use those difficult conversations to help make progress for children and families.[85]

* The focus here on these centers devoted to research on early childhood-related topics is in no way meant to minimize the important research conducted by other entities within Illinois and by individual academics.

5. COMMUNITY CAPACITY

The use of data at the community and practice levels is a critical effort that should draw on unified state early childhood data systems when those have been constructed. Communities can use data to identify and fill service gaps, to improve quality, and to support professional development, among other things.[86] The US Department of Health and Human Services has conducted a project on "Building Capacity to Use Linked Data for Program Improvement and Research Initiatives," which includes numerous case studies of local efforts to use data effectively.[87] While this guide focuses primarily on state-level policy change, it is important for states to consider community-level projects as major end users of data and for communities and philanthropy to consider the potential impact local capacity can have.

THE ROLE OF PHILANTHROPY

One theme that's run through all of the capacities listed here is that they take time and expertise in the form of actual humans, and in many instances, those humans aren't going to be paid for by state government. Analytic and research capacity is often sponsored by state government and philanthropy, but without private support in Illinois, the capacity we rely on simply wouldn't exist. Advocacy capacity really requires private funding, and again, in Illinois we've had several longtime funders who have appreciated the importance of this work. Philanthropists can look at all of the capacities identified here and consider potential grantees in their state or community who can help ensure this capacity exists.

While philanthropic support has played a valuable role in many early childhood data systems efforts, philanthropic capacity varies widely from state to state. In states where the existing early childhood philanthropic community might not have the capacity to support data systems-focused work, early learning leaders might consider this an opportunity to forge stronger connections with local universities and/or the local business community. Data systems and analytics may not be for everybody, but they might be a point of entry into the world of early childhood policy for potential allies who have not previously been active in the space.

6. PROVIDER-LEVEL CAPACITY

Effective data use is a critical practice for many of the most effective early childhood programs.[88] Program-level data use is frequently focused on improving instruction, and much of the data needed for that exercise is collected and housed on-site. But improved linkages among early childhood data systems may have numerous benefits to individual providers, depending on what questions the system was designed to answer. Providers should be involved in the process of identifying key questions, and if improvements to data systems allow for more effective data use, then states should work to put in place the systems needed to capitalize on the new opportunity. That should include funding staff capacity at the provider level to utilize data, and providing technical assistance to providers on that data utilization.

IV. PRIVACY AND SECURITY IN EARLY CHILDHOOD DATA

Data privacy and security is a very serious matter that states are increasingly seeking to address.[89] Current data privacy and security laws make up an outdated thicket that badly needs to be updated. There have been bipartisan attempts to update federal law,[90] and several states have passed laws in the last few years attempting to reflect best practice in this area.[91]

One of the particular challenges of data privacy in early learning is that early learning providers may be subject to multiple overlapping privacy requirements.[92] State preschools and school-based programs will be covered by the Family Education Rights and Privacy Act (FERPA); Head Start programs have their own requirements that apply when FERPA doesn't[93]; and many providers will end up subject to federal and state laws and regulations on the subject. Each of these requirements has its own challenges, and work that lies at the intersection of multiple laws can feel intimidating. But there are established practices that states can use to make sure they comply with those laws while still using data effectively, and there are also best practices in data security that states can employ to keep data safe. With focus and expertise, states absolutely can address privacy and security concerns while leveraging data to improve policy.

INDIVIDUAL AND AGGREGATED DATA

Privacy laws appropriately place significant restrictions on the use of "personally identifiable" data, which as the name suggests is data that can be used to identify a specific student.[94] This makes sense. If a Jennifer Wilson received Head Start services for two years before being identified for an Individualized Education Program (IEP) under the federal Individuals with Disabilities Education Act, that's really personal to Jennifer, and there should be strong safeguards in place about whether or how

that information can be shared. In contrast, there should not be the same concerns about releasing aggregated data showing that 827 children in Jennifer Wilson's home state were referred for an IEP after two years of Head Start, because you'd have no idea whether Jennifer Wilson was one of them, and her privacy would not be at risk.

Privacy laws therefore appropriately focus on personally identifiable data, and restrict its use unless a statutory exception exists—defining a legitimate purpose for the data, such as sharing it in a health emergency—or unless a waiver is signed.[95] There's no question that in many instances, waiver requirements can be very burdensome and can effectively act as a complete barrier to actually compiling or releasing data. That said, the waiver requirement is a good reminder that if the people using data can't explain in clear language how the person whose data is being released will benefit from that release, then maybe the data shouldn't be released.[96]

Aggregated data may not raise the same concerns as personally identifiable data, but accurate aggregated data cannot be developed without personally identifiable data; the whole will be no better than the sum of its component parts. So to provide a common head count across a state pre-k program and state child care program, it's essential to know whether Jennifer Wilson born 12/10/2014 and living at 617 Oceanview Place is the same Jenny Wilson born 10/12/2014 at 617 Ocean Place, because it might be if the data was entered with minor errors at one or both programs, but it also could be two different children.[97] But for purposes of reporting an aggregated head count across the programs, there's no need to report anything personal about Jenny (or Jennifer, if that is in fact a different girl).

In developing privacy and security protections it is therefore important to ensure that the process of aggregating data protects privacy at every step. Typically if data are housed in different systems they will be merged through a matching protocol, and that entire protocol must have strict protections. This is also true of researchers accessing data to produce aggregated results based on individual counts, and indeed, researchers can provide useful support to developing privacy protocols. University-based researchers (and others) whose work is subject to institutional review boards are accustomed to data security measures and human subjects protection protocols that may be even more rigorous than what some states demand. States should partner with researchers to draw on those experiences as they develop review processes that offer rigorous data protection while still providing data for legitimate research purposes.

These issues obviously have implications beyond the early childhood world; they really apply to any interagency data agreement. In states where early childhood data is shared pursuant to a larger interagency data sharing agreement—and Illinois is one of those—these privacy restrictions should be built into that larger agreement. Because early childhood is a policy area where data is almost always spread across multiple agencies, it's important that early childhood advocates be engaged in shaping state policy on data sharing.

PRIVACY

A unified data system by definition brings together data from multiple existing data systems, which means that all of the data included is already being collected by the state. But the aggregation of data can raise a different set of privacy concerns, and can also instigate important questions about each individual system within the unified system. Parents have a deep and fundamental interest in the privacy of data about their children; this interest has already been expressed with regard to early childhood data,[98] and new issues are constantly emerging that raise new privacy implications for education data.[99]

This is an area where a thoughtful process to develop use cases may pay dividends, as parents and policymakers who can understand the benefits of data linkages may be more willing to discuss privacy protections tailored to allow those use cases to proceed. Past data-linkage efforts have run aground when they could not make a compelling case to parents of why they were necessary, and the same will be true in the future if advocates can't explain how data is and is not being used. Done correctly, state privacy laws will advance two compelling interests: the interest in using data to conduct research and improve educational outcomes, and the interest in protecting the privacy of children and families. Advancing both of those interests simultaneously will require advocates for unified systems to articulate the potential benefits of data linkages. And if in the course of addressing those interests it becomes clear that the state is collecting data that isn't useful or that is seen as invasive, the state should stop collecting it.

Data about early childhood programs is often collected by teachers and other professionals working directly with children. While those teachers can use the information they collect for educational purposes, once that data is combined with other data, it can take on new meanings. To avoid any inadvertent misuse, states need to provide clarity to those educators, other professionals using the data, and parents about how that data will be used.

SECURITY

Let's assume for a moment that the state has done everything required by law and best practice to protect the private data of individual students, and only uses it appropriately. That's privacy. Security is something different: protecting that data against outside forces that may have an interest in obtaining it illegally, and protecting against inadvertent disclosures of data in transit or by third parties. Data breaches have been an issue in education,[100] and states building new linkages must be careful not to expose sensitive data to outside actors. Specific expertise in data security will be needed as part of any project to design and build a unified early childhood data system. And indeed, linked systems can potentially have security benefits, by developing identifier numbers that do not involve a Social Security number.

While privacy and security are often discussed together (including here), the alignment of interests among parties involved in a unified early childhood data system project is very different for security than privacy. As discussed above, when it comes to privacy, legal ambiguity and different institutional interests create a landscape in which advocates will have to make a case for their proposed approach. But when it comes to security, the alignment of interests is very different. State agency administrators, agency lawyers, researchers, advocates, you name it: everybody involved in the development of a unified early childhood data system should be in favor of better data security. That's an important distinction for advocates of unified early childhood data systems to make.

Moreover, privacy is primarily a legal and policy discussion; the technology exists to build a system that accommodates a wide range of privacy concerns, and states will have the legal authority to execute ongoing decision-making based on whatever privacy requirements they adopt. Security is different: security is about external threats to technology that are likely hard to predict (and indeed are sometimes relatively random), and about the potential for the mistaken release of data that should not be in the public domain. Education advocates and researchers likely have the knowledge needed to speak intelligently about developing the use cases justifying data collection; they're far less likely to have the expertise needed to stop a massive hacker attack.

For better or worse, states and state agencies will already have in place security protocols for their data that should address interagency data sharing. Education advocates may not have the expertise to judge the quality of those protocols, or relationships with the keepers of those protocols. That shouldn't be fatal to a unified data systems effort. But advocates for a unified early childhood data system must make sure that all plans for developing the system take account of those security requirements, and that funding for the ongoing built system will be adequate to meet those security requirements.

DATA RETENTION

Finally, just because states collect data does not mean they should retain all of it indefinitely. States should have protocols for data retention that protect privacy interests while still allowing for the analysis of long-term impacts.[101] If existing laws governing the storage of electronic records do not adequately account for new interagency data infrastructure, then those record laws may need to be updated.

V. CONCLUSION

Really getting early childhood right from birth through five (and into early elementary school) would radically change our education system—indeed, our society. But as long as we don't know what supports kids are receiving or what outcomes they're achieving, we are limited in our ability to get early childhood right at scale. Moreover, unified early childhood data systems that link to later educational data are needed to facilitate continuous quality improvement for early childhood services. With the genuine potential of bipartisan support at both the federal and state levels, early childhood data systems are poised to be a critical and revolutionary element of education reform in the years and decades ahead, whether or not they end up on the nightly news. Which, let's face it, they probably won't.

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APPENDIX 1: HOW ILLINOIS DESIGNED ITS DATA DASHBOARD

Illinois used grant funds to engage consulting support from Child Trends to develop its data dashboard, which helped the process substantially: Child Trends was able to provide examples from other states that had previously developed dashboards. Illinois' work team was clear at the outset that it wanted to have no more than five or six high-level measures that would show how things are going, and could fit on one page.[102] Here's how the six were chosen:

- First, we wanted to be mindful of the population we're serving. Illinois' preschool program prioritizes at-risk children, and our statutory definition of at-risk includes multiple factors. But while multiple factors may be appropriate for determining the enrollment of particular children in a community, for large-scale data, income turned out to be the best single data point: it's simple, and correlated well with almost every other relevant potential risk factor. So we decided to track the percentage of children birth to five who are low income, with the goal being to reduce that percentage by increasing incomes.
- Then, we wanted to track the implementation of our key initiatives to improve outcomes for young children. We broke this into four categories.
    - Illinois has a long-standing commitment to serving infants and toddlers; our Preschool for All program requires that at least 25% of all new money each year be put into programs serving children birth to age three.[103] We have also implemented a QRIS to measure the quality of those early learning programs called ExceleRate. So one key metric is how many high-needs children are enrolled in highly rated ExceleRate programs, or are receiving home visiting.
    - Similarly, with children ages 3 to kindergarten entry, we wanted to know how many of them are enrolled in highly rated ExceleRate programs or are receiving home visiting. Note that for this metric, the denominator is the state's entire population, because by statute we have a goal of serving all children in this age range.
    - To measure child health, our key metric is the number and percentage of children receiving six or more well-child visits in the first 15 months of life. This data is readily accessible and is a good indication of whether young children are getting the health care they need.
    - Our Early Learning Council has been deeply committed to community-level work. We have been working on developing a rubric for measuring the quality of community collaborations, and so our dashboard includes a metric looking at how many children are in communities with high-performing collaborations.

- Having measured the intensity of our interventions, we had to ask the key question: are kids in fact entering kindergarten ready to learn? Illinois has been in the process of implementing a kindergarten readiness assessment, and we see this metric as a critical temperature check on the overall early childhood system.[104] Other states have also used this measure, with Maryland considered a leader and pioneer.[105]

Other states might reasonably choose other metrics, of course. And even in Illinois advocates use plenty of other data points to make their case for improved access to quality early childhood.[106]

APPENDIX 2: SOME QUESTIONS TO GET STARTED

Unified data systems should answer important but previously unanswerable questions. What questions those are will vary from state to state, and it is important to engage multiple stakeholders in figuring out which questions to prioritize. The list below is meant to provide states with a running start on identifying their key questions. Importantly, some of the questions below can be answered with data in a relatively straightforward manner, whereas others would require a research design and research capacity in order to provide meaningful answers.

- Which children are enrolled in which programs, including children enrolled in multiple programs?
- How many children are enrolled in programs that are high-quality? What are the characteristics of those children?
- Are children making smooth transitions among programs, including within birth-to-5 years and into kindergarten?
- What differences are there in the school performance of children who had access to early childhood programs and those who did not? What differences are there in the performance of children who had access to different combinations of early childhood programs?
- What are the differences in quality in early childhood services across different kinds of providers (schools, for-profit centers, not-for-profit centers, licensed homes, unlicensed homes, or others)?
- Is the quality of programs improving?
- What happens to children who receive special education evaluations but are not enrolled in special education services?
- What is the relationship between chronic absenteeism in early learning and chronic absenteeism in K–12 schools?
- What are the attributes (including demographics and credentials) of the professionals working with young children? What are the attributes of the professionals working with young children in the highest-quality programs?

- What kinds of training and professional development have professionals had? What kinds of support have principals and program leaders received? What impact does that have on program quality?
- How does compensation affect staff turnover? How does staff turnover affect quality ratings?
- How are the schools and private providers delivering early childhood services combining funding streams? How are those different combinations affecting children and families?
- Are children on track to succeed when they enter school?

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