The Importance of having a Distinct Count for Early Childhood

Children and families in Nebraska access a number of programs and services during early childhood. These programs make up what we refer to as the early childhood mixed delivery system (MDS). Knowing how many children are being served by one or more MDS programs throughout the state is a foundational metric to address many short- and long-term practice, policy, and research-related questions.

Calculating the distinct count is such a foundational metric for early childhood data and analyses that the federal government is now prescribing states to start working towards this goal, adding a requirement in the Preschool Development Birth through Five (PDG B-5) grant for funded states to *"Identify, to the extent practicable, the unduplicated number of children being served in existing programs and the unduplicated number of children awaiting service in such programs."* Additionally, supporting the integration of data from multiple early childhood data systems to better inform early childhood systems, services and policies is a formal recommendation by the Nebraska Early Childhood Interagency Coordinating Council (ECICC) in its Biennial Report to the Governor.

Many states are working towards calculating a distinct count through the development of **Early Childhood Integrated Data Systems** (ECIDS) that can match children and families across different data systems to identify those children participating in multiple programs and services at the same time. Clearly, this is a foundational component for ECIDS and for understanding the impact of early childhood programs and services on our youngest learners.

What exactly is a distinct count? [1]

*A **distinct count** – also called an **unduplicated** or **unique** count – is the number of distinct children being served by a program or a set of early childhood programs and/or services within a specified geographic area over a given time period. (SLDS Issue Brief, 2019)*

Calculating a distinct count of children being served in early childhood programs allows the state to[1]:

Better understand the landscape and scope of early childhood offerings throughout the state.

- How many children are served by only one MDS program or service within the state?
- How many children are served simultaneously by more than one MDS program or service within the state?
- How many eligible children are *not* participating in any MDS program and/or service?
- How do children progress among MDS programs and/or services?

Inform how resources and funding should be allocated.

- How well are children's needs met by current program and/or service offerings?
- Are there programs or services that have open enrollment and have eligible children in the area?
- Are there any service gaps or 'early learning access deserts' where more EC programs or services may be needed?
- Are there any redundant program and/or service offerings in particular areas?

Assess the impact of early childhood programs and/or services.

- Which programs and/or services have the greatest positive impact on different populations of children?
- Which combinations of programs might have the greatest positive impact on different populations of children?
- What *dosage* of participation in programs and/or services is needed to achieve positive impact?

What are important considerations for calculating a distinct count for early childhood?

A unique identifier / Matching algorithm

- Will there be a universal unique ID across all EC programs, or will records be matched across programs using common identifiers (i.e. DOB, Parent's names) and a matching algorithm?

Participation

- Is there a threshold for participation to be included in the count?
- Consider dimensions like:
  - Duration
  - Frequency of participation
  - Dosage or Intensity

Time

- How often does the data system need to capture the number of children served?
- Does the data system need to be updated in real time to be used for reporting or analyses?

Program, service, and child attributes

- Which EC programs and/or services will be included in the distinct count?
- By what program, service, or child attributes will data be aggregated?

Geographic area

- In what geographic area do you need to capture the number of children served?
  - Might cover a city, school district, zip code, county, or the entire state

Data quality

- Will there be mechanisms to ensure the data are of sufficient quality to serve the purpose identified?
- How will you reconcile differences in definitions of common data elements?

State Snapshots

Several states have made significant progress in calculating a distinct count of children participating in early childhood programs and/or services. We reached out to a number of states working towards this goal to understand their progress, challenges and barriers encountered, and lessons learned throughout the process. A brief summary of these states, followed by our plan in Nebraska, is provided below.

Illinois

To date, early childhood data integration in Illinois has focused on data describing children served by programs administered by the Illinois Department of Human Services (IDHS) and the Illinois State Board of Education (ISBE). IDHS and ISBE are two of eight State of Illinois agencies integrating data as part of the Illinois Longitudinal Data System (ILDS). This integration uses an interagency unique identifier known as the CDDA-ID, which is developed on behalf of the ILDS by the Centralized Demographic Dataset Administrator (CDDA) based at the Center for Governmental Studies at Northern Illinois University. The CDDA team produces new releases of the CDDA-ID twice annually by algorithmically linking sets of demographic data elements submitted by each ILDS agency. Via the ongoing Unduplicated Counts Project using the CDDA-ID, ***Illinois has established unduplicated counts of children participating in the following State-administered programs:***

- IDHS
    - Child Care Assistance Program
    - Early Intervention
    - Healthy Families Illinois
    - Maternal, Infant, and Early Childhood Home Visiting
- ISBE
    - Prevention Initiative
    - Preschool for All
    - Preschool for All Expansion
    - Individuals with Disabilities in Education Act Part B, Section 619

Goals or Research Questions the state focuses on:

High-level goals of the Unduplicated Counts Project include identifying gaps in service delivery, better allocating resources, and pursuing more rigorous evaluations and analyses. The Project is also informing enhancements of the ILDS to strengthen data practices across relevant early childhood data systems. It focuses on the following set of general research questions.

- How many children birth to five receive early childhood services from programs administered by IDHS, ISBE, and/or Head Start?
- What percentage of the overall birth to five population and the birth to five population in poverty [<185% Federal Poverty Line] receive early childhood services from programs administered by IDHS, ISBE and/or Head Start?
- What are the demographic characteristics (including geography, race/ethnicity, low-income status, English-learner status, disability status, and homelessness) of children receiving these services? How do these characteristics vary by program?
- What number and percentage of children birth to five are served by providers rated in, and at the various levels in, ExceleRate Illinois [the State of Illinois' quality rating and improvement system]? How do these numbers and percentages vary by program?

Challenges Faced & Lessons Learned

- Ensuring coordination and communication between disparate State and local early childhood data systems
- Aligning data definitions and improving data quality across early childhood programs and data systems
- Onboarding and obtaining clear buy-in from ILDS agency leadership and staff
- Integrating Head Start and Early Head Start records with data from other programs

Utah

Utah's ECIDS efforts are led by their Department of Health, and currently integrates data from the Department of Health and the Department of Workforce Services/Office of Child Care. **Utah *is able to produce a distinct count of children participating in and across the following programs:***

- Child Care Subsidy
- Office of Home Visiting Program (OHV)
- WIC Program
- Head Start: Centro de la Familia de Utah
- IDEA Part C Early Intervention

The state also integrates vital statistics (birth and death records), as well as child/developmental screening data. Soon, the state hopes to integrate data from the additional Head Start/Early Head Start programs.

Goals or Research Questions the state focuses on

The mission of the Utah's ECIDS is to better coordinate policy, programming, and funding among all participating programs in Utah through data-driven decision making.[2] Utah's ECIDS Data Policy Committee (ECIDS DPC) governs their ECIDS and drives the development of policies and procedures necessary for the implementation, maintenance, security, and improvement of ECIDS, and ultimately Early Childhood Education and services, in Utah. The ECIDS DPC is comprised of voting members representing agencies and programs which have a current, fully executed ECIDS data sharing agreement with UDOH, and additional non-voting stakeholders. The DPC identified the following policy questions as center (central?) to their ECIDS efforts:

1. Do families have access to the resources they need to raise healthy children?
2. Do families have access to the resources they need to prepare young children to succeed in school?
3. Which children and families in need, are/are not being served by early childhood services and programs?
4. Which characteristics of various early childhood programs are associated with positive outcomes for which children?
5. What are the educational and economic returns on early childhood investments?
6. How is early childhood data currently being utilized and how will data be utilized in the future to inform policy and resource decisions?

Challenges Faced & Lessons Learned

- Child level system data was needed for data integration, which was a difficulty for some data sources

- Initially, several state departments/agencies had data sharing concerns; concerns were addressed by:
    - Initial data extract and matching process is performed in a separate system than the ECIDS system
    - Requiring a username and password to login, as stakeholders were more comfortable sharing their data with ECIDS if this was required
    - Stakeholders agreeing on a standard set of ECIDS reports that they were ok with other authorized users being able to view
    - Individual Stakeholders being the gatekeeper of their data, determining if they want to be a part of a research study or not
- Data Quality concerns, as different systems are more robust than others
    - For smaller data systems additional technical assistance and program specific data integration enhancements may be needed
    - The matching process needs a robust enough matching algorithm to be able to match records even if the name is not exactly the same in each of the systems and if typos exist in the data

Georgia

Early Childhood Integrated Data System efforts in Georgia are led by their Department of Early Care and Learning (DECAL). **Georgia's Cross Agency Child Data System (CACDS)** currently integrates data from Department of Education, the Department of Public Health, the Department of Human Services - Division of Family and Children Services, and the Georgia Head Start Association.[3] Georgia's CACDS policy manual serves as the foundation of the CACDS and describes the internal matching process used to integrate the data (a matching algorithm based on name, DOB, race/ethnicity, and address) that creates a persistent, unique identifier (UID), which are never duplicated and helps produce the unduplicated count for children participating in early childhood programs in the state. ***Georgia is able to provide a distinct count of children participating in the following programs:***

- Early Head Start/Head Start*
- Child and Parent Services (CAPS)
- Pre-K Attendance Data
- IDEA PART C and Part B Section 619
- Home Visiting Program

Goals or Research Questions the state focuses on[4]:

Georgia's CACDS is designed to provide critical information, through the CACDS reporting system, about federal and state programs that serve children and their families, including unduplicated counts of those who receive services and participate in the state's early care and education system. They want to create a data resource that will help state agency leaders and academic and policy researchers better understand how well these programs meet the needs of the children and families they were designed to serve and help facilitate alignment across the state agencies that serve and support children and families with high needs. Georgia's CACDS research agenda, re-focused in May of 2021, establishes a set of common research and policy questions to be answered across agencies and programs. Stakeholders identified the following research questions as the focus of their CACDS moving forward:

- How many children are being by early care programs or combinations of programs in the state, and how many children are awaiting services.

- How many children are eligible for services by focal populations (child and family demographics) but are not currently being served?
- What counties in Georgia do not have Head Start? What counties in Georgia do not have Early Head Start?
- How many three-year-olds are served by Head Start programs in each county ?
- What percentage of 4-year-old children are being served in PreK? What percentage of 4-year-old children in CAPS or who have an IEP are being served in PreK?
- What percentage of children with an IEP or IFSP are being served by CAPS?
- To what extent are children with IFSPs (Individualized Family Support Plan) attending general early care and education programs?
- What percentage of children enrolled in EI are served in general early care and education programs (e.g., Early Head Start, Head Start, home visiting, childcare, state pre-K)? How does this compare with the overall population of children birth to age 5 in the state?
- What are the characteristics of children with IFSPs who are spending time in general early care and education settings (e.g., disability category, race/ethnicity, age, SES)?
- What percentage of children with IFSPs are spending time in quality rated early care and education settings?
- Where do gaps in transition lie within programs?
- Where were DFCS services utilized by geographical location (i.e., county)?

Challenges Faced & Solutions

- One of Georgia's main challenges is integrating Head Start data from all Head Start programs throughout the state
    - Currently, they must work with *each* Head Start Grantee and data vendor to integrate this data, but working with the State Head Start Collaboration office have helped these efforts
- Disagreements and inconsistencies between existing state data systems has proven to be a challenge
    - For example, programs often work on different yearly calendars (i.e., may be fiscal year, school year)
    - The way individual programs collect and calculate counts of children may differ from the state's calculation
    - Data elements and definitions may differ between source systems

→ To help solve this problem, Georgia's DECAL office hired a consulting firm, Resultant, who helped with validation efforts, established communication between partnering agencies, and standardized definitions across all participating agencies

South Carolina

South Carolina's ECIDS, led by their Department of Health and Human Services, combines data from DHHS, the Department of Education, and the Department of Social Services, and ***is able to produce a distinct count of children participating in the following programs:***

- Supplemental Nutrition Assistance Program (SNAP)
- Temporary Assistance for Needy Families (TANF)
- Child Protective Services (CPS)
- First Steps local partnership programs (home visitation, parent training, child care assistance, health, school transition)

- Disabilities and Special Needs Services
- State-funded 4K and Part B 619 services
- Child Care Vouchers

The system also integrates birth and vital records into the system, but does not currently capture the number of distinct children *awaiting* services, as well as other important questions related to accessibility, utilization, and impact of services.

Goals or Research Questions the state focuses on:

South Carolina's Early Childhood Advisory Council serves as the governing body for Early Childhood System Data Governance and guides much of the work. The council released a statewide survey and held a number of stakeholder meetings to determine priorities/needs for Early Childhood Integrated Data.[5] Several key questions emerged:

1. What early childhood programs, statewide, are available for eligible young children?
2. How many young children are there?
3. How many young children are eligible for early childhood programs?
4. How many young children are enrolled in early childhood programs?
5. Are those enrolled in early childhood programs on track to succeed?
6. What is the return on investment for early childhood programs?

These questions are guiding phases of the development of the integrated data system and will be revisited by the advisory council quarterly to ensure continued alignment with the statewide vision and that end users' (program administrators, educators, families, caregivers, policymakers) needs are being met.

Challenges Faced & Solutions

- South Carolina's team had initial challenges with gaining momentum for the work and has had challenges with integrating *some* data sources
    - Having a neutral state agency lead the work, strong data governance policies, and showing state partners the power of the system helped gain momentum
- Data security and privacy were a core concern of state agencies and partners
    - Strong data governance policies, including data security and privacy protections (e.g., encryption, restricted access, privacy and security training of staff members) helped mitigate concerns
- Data quality issues and inconsistencies across data source systems created some problems when integrating data

Minnesota

The state Department of Education is the lead agency for Minnesota's Early Childhood Longitudinal Data System (ECLDS) and they currently integrate data from the departments of Education, Human Services, and Health.[6] ***Minnesota is able to provide a distinct count of children participating in the following programs:***

- Child care and early education participation
- K–12 school system
- IDEA Part B, Section 619
- TANF
- SNAP

Birth and vital records, QRIS data, child assessment data (Kindergarten entry and school system), and teacher licensing information are also integrated into Minnesota's ECLDS.

Goals or Research Questions the state focuses on:

The Minnesota team designed the system in response to not having a complete picture of all the ways investments in early childhood have impacted children in the state. The state creates a unique state identifier for all children at birth, which helps in their efforts to streamline collection of application and enrollment data, and allows for the counting of children awaiting services, not just those participating in services. Minnesota wanted to answer four main questions with the ECLDS:

1. How many children are being served by MDS programs in the state?
2. In what MDS programs are children participating?
3. In what types of quality programs do children participate?
4. What are child outcomes over time?

The Minnesota ECLDS team strives to share information and educate stakeholders through communication newsletters, toolkits, videos, webinars, presentations, and reports, enabling wide use of the system and helping stakeholders better understand the power of an integrated data system (http://eclds.mn.gov/#outreach). Their interactive database (http://eclds.mn.gov/#) includes standard and customizable reports, data stories, the ability to download raw data, and other various analytic tools.

Challenges Faced & Solutions

- The system was originally designed for technical users and may have been overly complicated for those who use the system the most (i.e., state administrators and school staff)
    - They needed to simplify the interactive database for non-technical users
    - They also held trainings, webinars, and presentations to educate stakeholders on how to properly use the system
- After some stakeholder engagement and feedback, they discovered that figuring out what the primary stakeholders wanted to learn from the data is critical to developing a tool that works for everyone

Pennsylvania

Pennsylvania's Enterprise to Link Information for Children Across Networks (PELICAN), led by the Office of Child Development and Early Learning (OCDEL), has gained national attention for supporting management and reporting for PA's early childhood programs. The Early Learning Network (ELN), the state's ECIDS, was first developed in 2009. With the integration of several additional programs since its creation, the system ***is able to produce a distinct count of children participating in the following programs[7]:***

- Child Care Subsidy
- Pennsylvania Pre-K Counts
- Head Start & Early Head Start
- School-based Pre-K
- Early Intervention Part B
- Early Intervention Part C
- Home Visiting

The state also integrates child assessment data, QRIS data, and workforce data into the system. Each child, staff member, and provider are given a unique identifier, which enables the state to calculate the distinct count of children participating in all the listed programs.

Goals or Research Questions the state focuses on:

Pennsylvania's OCDEL supports families and their children from birth through school age, by utilizing data, research, and stakeholder input to assure high quality early childhood programs and services. The state's most important questions related to early childhood care and education were first defined in 2007 with the creation of the OCDEL. They were later revised with the creation of the ELN:

1. How is the development of Pennsylvania's children progressing?
2. How are the state's early childhood programs improving?
3. Where in the state are most at-risk children, and do those children have access to high-quality programs?
4. Are state investments in early childhood generating the intended results for children, providers, and programs?
5. Is the state providing information to all - parents, teachers, administrators, professional development, organizations, higher education and OCDEL – to support improved quality of service?

Challenges Faced & Solutions

- There was initially some hesitation by local providers about integrating early intervention and preschool special education data
    - The state held meetings six times per year between local IDEA Part C coordinators and local IDEA Part B, Section 19 coordinators; local providers were able to see the benefits of the integrated data system and sharing data and better understand the types of data that are collected and the privacy/security features in place
- Confidentiality and security issues were prevalent, including security differences between existing state data systems
    - Communicating these concerns to practitioners and parents was crucial to the efforts
- Data Quality was a constant issue; source systems often had different data elements or labels
    - Staff members were trained on what information needs to be entered and how to properly enter data
- Early on in the efforts, the state had trouble with funding, as dedicated resources are needed to keep the project moving forward

The Plan in Nebraska

Nebraska has begun the groundwork to calculate a distinct count of children participating in MDS programs throughout the state. Nebraska's definition of **mixed delivery system**, as specified in the PDG Birth-5 Needs Assessment[8], is the following:

> *"Nebraska's early childhood mixed delivery system (MDS) for children from birth to age 5 includes an array of services and providers that support children's social, emotional, cognitive, and physical development to build a solid foundation for lifelong learning and well-being. In order to holistically support a child's needs, the mixed delivery system is composed of an integrated network of services across two broad domains: early childhood care and education (ECCE) and essential services for early childhood development."*

The state will begin by integrating data primarily from the Department of Education and the Department of Health and Humans Services. As an initial step, the ECIDS team has met with representatives from the following programs to discuss data integration efforts:

- Child Care and Development Fund (CCDF) Subsidy
- Childcare Licensing
- Head Start/Early Head Start
- IDEA Part B (Section 619)
- IDEA Part C (Early Intervention)
- Maternal, Infant, and Early Childhood Home Visiting Program (MIECHV)
- Nebraska Department of Education Early Childhood Programs
- Nebraska Early Childhood Professional Record System (NECPRS)
- Sixpence Early Childhood Programs
- Vital Records

These programs/data sources have been recognized as a priority for inclusion in the initial distinct count requirements from a short, targeted list of data sources, and will be the initial focus of the first phase of development.

Additional Use Cases

While calculating the distinct count of children participating in programs/services is the initial use case focus, two other use cases have been prioritized by early childhood stakeholders in Nebraska[9]:

1. Equal access to full-day, year-round, high-quality early care and education for children regardless of the setting or family income; and
2. A Head Start/Early Head Start Pilot Project, enabling Head Start stakeholders to access and use data for decision making, continuous improvement, and demonstration of program success.

These use cases will drive much of the ECIDS work moving forward and will continually be revisited to ensure alignment with the statewide vision and that users' needs are being met.

System Design and Architecture

System design is essential to an ECIDS because it translates the business needs of the data contributors and data users into a technical infrastructure. Given the complexity and changing nature of the early childhood sector, ECIDS system design needs to allow for ongoing improvements that enhance the system's performance and quality of its data linkages. ECIDS will be designed to allow its development and integrations with other systems to occur over time. Integrations will be scheduled incrementally.

Generally, ECIDS system design flows using one of three models: centralized, federated, or hybrid. In a centralized model, data linkages are loaded and stored in a central database or warehouse where they can be accessed for multiple purposes. In a federated model, data linkages are created for specific purposes but the data do not persist after each use. The data linkages are only created when they are needed and no identifiable information is stored outside of the original data source. A hybrid model combines aspects of the centralized and federated models to more efficiently link data sets for specific use cases. A **federated data model** is being proposed for Nebraska because of the many advantages it offers to the agencies and organizations sharing data with ECIDS. Each participating ECIDS entity retains ultimate control over their data and how and when it is used. The technology behind a federated data model also ensures the observance of the security and privacy requirements of the data source entity.

Next Steps

The Nebraska ECIDS team is in the process of developing a Request for Proposal (RFP) for the development of ECIDS technology and architecture. Additionally, meetings with leaders from each of the prioritized data sources have been set, where we will continue the conversations surrounding the distinct count use case and data sharing agreements. With continued collaboration from stakeholders across Nebraska, the team hopes to build the technological infrastructure and capacity for ECIDS, resulting in the ability to calculate the distinct count of children participating in MDS programs/services across the state, as well as the ability to add additional use cases in further phases of development.

Notes

1: The SLDS Issue Brief (https://slds.ed.gov/#communities/pdc/documents/9435) provided much of the information for the first two pages

2: More information on Utah's ECIDS can be found at ECIDS.Utah.gov

3: More information on Georgia CACDS can be found at gacacds.com/about.aspx

4: The overall goals and vision of Georgia's CACDS comes from the CACDS policy manual (http://www.gacacds.com/PDF/CACDSPolicyManual_12_23_19.pdf/).

5: More information on South Carolina's ECIDS can be found at: https://earlychildhoodsc.org/what-we-do/sc-early-childhood-integrated-data-system/

6: More information Minnesota's ECIDS can be found at http://ecIds.mn.gov/

7: More information on Pennsylvania's PELICAN and ELN can be found in this report: https://www.ncsl.org/portals/1/documents/educ/paearlychild-stedron.pdf) and on the following website: https://www.pakeys.org/pa-early-learning-initiatives/pelican/pelican-getting-started/

8: The Nebraska Strategic Plan Needs Assessment can be found at the following link: https://www.nebraskachildren.org/what-we-do/preschool-development-grant/needs-assessment.html

9: The ECIDS Prioritized Use Cases Document can be requested by emailing jared.stevens@nebraska.gov

Additional ECIDS Resources:

- The Nebraska ECIDS website can be found at the following address: https://www.education.ne.gov/dataservices/ecids/
- For more information on Nebraska's Strategic Plan and the Preschool Development Grant, please visit the following website: https://www.nebraskachildren.org/what-we-do/preschool-development-grant/
- For more tools and resources related to policy changes and development/use of coordinated state early childhood data systems, you can visit the Early Childhood Data Collaborative (https://www.childtrends.org/about-ecdc)