



MINNESOTA
EARLY CHILDHOOD
LONGITUDINAL
DATA SYSTEM

Economic Analysis Study:

Minnesota's Early Childhood Longitudinal Data System

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Introduction and Purpose

Many young children and their families access public programs in the years prior to kindergarten. Participation in these programs and resources can continue into K-12 experiences for children. These programs and resources may include early education, child care, home visiting, health interventions, and economic supports.

With financial grant support from the federal government, states across the nation have developed longitudinal data systems (LDSs) to better understand families' experiences across public programs and over time.¹ States have built LDSs for their K-12 to higher education and wages systems (Statewide Longitudinal Data Systems or SLDS) and for years prior to kindergarten entry (Early Childhood Integrated Data Systems or ECIDS). Minnesota's ECIDS system, the Early Childhood Longitudinal Data System (ECLDS), integrates program data from the Minnesota Departments of Education, Health, and Human Services. Like all LDSs, it moves monitoring beyond swim-lane (i.e. single program) measurement to a more shared outcome model of publicly-funded programs. It also helps Minnesota avoid several costs which are described later in the report.

LDSs are essential. They provide a coordinated view at the population level over time of outcomes across most public funding streams, while simultaneously protecting privacy. Many states' ECIDS run parallel to similar information systems, linking high school, higher education, and workforce data. Through collaboration in Minnesota, these systems cut their information technology (IT) costs in half by jointly planning and sharing technical resources. Together, the systems create a standard platform for public reporting across multiple geographic levels, and streamline the ability of stakeholders to access and use the information.

¹The Institute of Education Sciences (IES) Statewide Longitudinal Data System (SLDS) grant program provided funding opportunities for states.

LDSs often require substantial funding for start-up and initial production. The federal government has supported Minnesota's creation of LDSs through approximately \$11.7 million in funding. These federal funding opportunities are time-limited and competitive, and for a number of years Minnesota pursued state funding for maintenance and ongoing expansion costs in order for its system to remain fresh and relevant to stakeholders' needs.

This report examines the costs and benefits of Minnesota's ECLDS to inform state decisions. Analyses herein include adjusted funding to-date considerations, the estimated cost per person (i.e. individual data point, or person record) of maintaining the system, as well as the annual public cost savings attributable to the now-implemented system. The annual public cost is currently estimated at \$535,000 for Minnesota's state IT department (MN.IT) operations support and maintenance, a full-time system coordinator, as well as the addition of two new data sources annually.²

² The maximum likely number of data sources will be reached at some point and these costs will reduce over time.

Key Findings

Minnesota's ECLDS:

- ◆ was built and expanded with approximately \$9 million secured from national funders, both public and private.
- ◆ costs approximately \$0.33/participant to maintain.
- ◆ saves staff efforts of approximately \$126,360/year toward the cost of producing annual department studies.
- ◆ saves approximately \$1.118M annually in staff time for community assessments conducted across the U.S.

System Development, Current Fiscal Status

Minnesota spent seven years building its K-12, postsecondary, and workforce data system (Statewide Longitudinal Education Data System or SLEDS), beginning in 2006 and ultimately releasing its first report in 2013. With the initial SLEDS work blazing the path, Minnesota's ECLDS was a comparatively easy build. Staff were able to scaffold off the institutional knowledge gained from creating SLEDS, and use its linking engine for the ECLDS data.

The Head Start Act of 2007 required states to develop a plan to integrate early childhood information into one system to allow for unduplicated counts across program areas. In 2011, Minnesota received funding from the federal Race to

the Top Early Learning Challenge Fund to begin building the ECLDS. This work involved meeting with attorneys to establish data sharing agreements, initiating data governance, and planning with MN.IT to explore initial integration of program data across the state departments of Education (MDE), Human Services (DHS), and Health (MDH).

The SLEDS governance structure also inspired the ECLDS's. Data governance for both systems was developed purposefully in Minnesota to represent state and local organizations. For the ECLDS, commissioners of MDE, DHS, and MDH selected members to represent their agencies. Each state agency was also asked to identify two professional associations for governance that represented their practice communities. As new data sources were identified and added, additional members joined the ECLDS recommending group (the Research and Data Committee), so all program areas and data owners have representation.

In 2015, Minnesota was awarded a four-year federal grant through the Institute of Education Sciences (IES) Statewide Longitudinal Data System (SLDS) program, with a goal to promote and support use of the ECLDS. IES SLDS grant funds financed user tutorial videos, local school district planning support in using the ECLDS, the purchase of customized national American Community Survey (ACS) census data, Head Start data integration, home visiting data exploration, and the economic analysis which is the subject of this paper. During the implementation of the IES SLDS grant, several other competitive grants and partnerships³ were secured to build on the SLDS work and enhance the ECLDS.

³ Children's Defense Fund-MN's Annie E. Casey grant (2017); ECDataWorks, round one grant (2016-18); Child Trends SHINE grant (2017-18).

The ECLDS launched online in February 2016. As of August 2019, the ECLDS averages approximately 400 chart views per month. Users report accessing the system for fundraising, local planning initiatives, outreach, research reports, and educational purposes. Use is enhanced because the system gives data provided by local programs back to them and their communities for planning. It is important to note that the Minnesota ECLDS is accessed not only by stakeholders in Minnesota, but also by users across the country. The customized national census data is a prime example of ways the Minnesota ECLDS can and does serve users beyond the state's borders.

Through September 2019, Federal IES SLDS grant funding supported the system's growth through enhancements and ongoing promotion of use. Minnesota's SLDS system, SLEDS, provided operating dollars to ECLDS for fiscal

years 2018 and 2019 to ensure MN.IT staffing for both systems. During the 2019 legislative session, ECLDS was codified in statute and granted ongoing state funding for fiscal years 2020-21 alongside SLEDS. A single point of systems administration allows for consolidated efforts in legal services, data privacy practices, governance, and competing software requirements. Into the future, both systems are positioned for fuller integration into a P20W (early learning, K-12, postsecondary, and workforce) longitudinal data system.

Economic Measurements

Secured Competitive Funds

Minnesota has worked since 2011 to obtain funding for multiple aspects of the ECLDS. As of September 2019, overall approximately \$9 million has been secured through a mix of public and private competitive funding sources used to design, build, and grow the system.

Table A: Secured Funding Since 2011

⁴ Not adjusted for inflation.

⁵ Race to the Top budget data pulled from [Minnesota 2016 Early Learning Challenge Final Performance Report](#). Total numbers represented here do not include funds distributed to program partners in grant years 3-5.

Year of Funding	Nominal ⁴ Amount
Race to the Top (final)⁵	
2012	\$110,450.87
2013	\$654,582.84
2014	\$953,046.46
2015	\$1,340,563.69
2016	\$2,855,536.71
Institute of Education Sciences SLDS Grant	
2016	\$360,370.00
2017	\$988,963.00
2018 estimate	\$650,000.00
2019 estimate	\$750,000.00
ECDDataWorks (Kellogg)	
2017	\$1,032.00
2018	\$395,000.00
Child Trends	
2018	\$20,000.00
TOTAL	\$9,079,545.57

Secured Funding Since 2011 Table Notes:

- *Each of these funding sources was secured by state staff through competitive grants.*
- *These are direct investments. Economic impact would include multipliers.*
- *Minnesota was one of nine states awarded Race to the Top grants out of 37 applicants in that grant round.*
- *Minnesota was one of three states awarded an IES SLDS grant for the early childhood priority area. It was also among 16 states/territories awarded in the FY15 round among all priority areas. Overall, 48 states applied.*
- *Minnesota was one of two awarded ECDataWorks/Kellogg Foundation grants out of five applicants with functioning ECIDS.*
- *Minnesota was one of five awarded Child Trends/SHINE grants out of 14 potential states in this grant.*
- *Federal investments are drawn in October each year; Kellogg investments were drawn in March 2017, 2018.*

Cost Per Participant Estimate

Staff developed estimates on the cost per participant in the ECLDS based on a literature review.⁶ This estimate looks at the ongoing expected maintenance cost as indicated on page 2, and divides that by the number of participants in the system.

There are multiple options for counting participants in the ECLDS. Note that “higher education completers” is the group of people who have graduated from any one-, two-, or four-year college program. They represent parents, staff, and others in the community. Several options are provided below, including:

- a) Only the early childhood population in Minnesota
- b) The early childhood population, their parents, and higher education completers
- c) Those listed above plus the children in kindergarten through third grade

As illustrated by Table B on the following page, the maximum expected cost would be \$1.27 per year, per participant, to follow children through early childhood based on current maintenance estimates. Considering additional experiences from kindergarten forward, the cost ranges from 33 cents to 18 cents per participant. For comparison, the U.S. Census Bureau recently released that Minnesota spent \$12,647 per K-12 student in 2017.⁷

⁶ Levin, et al. (2018) *Economic Evaluation in Education: Cost-Effectiveness and Benefit-Cost Analysis*, Third Edition, Thousand Oaks, CA: Sage Publishing.

⁷ [2017 Annual Survey of School System Finances](#), U.S. Census Bureau.

Table B: Cost Per Participant Estimate

Table does not include:

- Customized reports
- Census data
- Tutorial videos
- Child care providers
- County staff
- Parents of the smaller age groups
- System users—currently 4,800 annually.

Notes:

- Estimating 65,899 per grade in K-12
- For parents, assume no siblings in largest age group—disregards other age groups

	Early Childhood	K-12	Higher Ed Completers	Parents	Total Participants	Total Per-person Maintenance \$535,000
All birth to five (children only)	420,000				420,000	\$ 1.27
All birth to five	420,000	N/A	768,663	420,000	1,608,663	\$ 0.33
All birth to five, K-3	420,000	263,596	768,663	420,000	1,872,259	\$ 0.29
All birth to five, K-8	420,000	593,091	768,663	593,091	2,374,845	\$ 0.23
All birth to five, public K-12	420,000	856,687	768,663	856,687	2,902,037	\$ 0.18

Quantified Savings of the System

There are opportunities to better understand the savings which will be realized through use of the ECLDS as the system moves through the first several years of use. One relevant operational area is the completion of annual studies that education and child care staff are either expected or required to do, as well as the planning local areas are required to do. Savings in those areas can be estimated and are discussed below.

Annual department studies

Interviews were conducted during 2016-17 with staff who do work similar to what is automated in the ECLDS. This allowed us to determine estimates of effort saved by using the system instead of doing the work manually. Staff who focus on linking multiple data sets as well as conducting research in multiple parts of the field were interviewed. A detailed summary of this work is available in Appendix A.

The savings estimates were created from the responses to these interviews. An estimated \$15,795 of staff time is required to implement the average department study involving linked data. Considering that there are four data-contributing departments (Education, Health, Human Services, and the Office of Higher Education) and that the system is generally expected to replace two studies annually for each department, the resulting savings is estimated at \$126,360 per year. If it saves each department three studies, that would result in savings of \$189,540 a year.

Community assessments

Each year, school districts, counties, and Head Start agencies—as well as state departments and foundations—conduct community assessments which are mandated by overseeing agencies. These community assessments often consider the demographics of all children in an area, the level of service available, as well as number of children served.

The ECLDS is uniquely positioned to support this work as it contains the already linked service data. Information on the full population of young children in a county or state, banded in smaller age groups, from the U.S. Census Bureau’s American Community Survey is now available through Minnesota’s ECLDS website so staff can compare service levels and population estimates to better understand local need, both met and unmet. (This is the only online source of this more granular data from the American Community Survey.)

Building off the qualitative interviews and conversations with other local staff (Appendix A), estimates were developed on the costs saved through having standardized data available to inform community assessments. Table C on the following page provides a summary of these estimates.

By estimating the number of hours saved per site (typically two sites) solely for the community assessment information gleaned from the Census data available on the ECLDS, and using an estimate of \$20 per hour (including benefits) for the staff who extract the data, the system is anticipated to save \$448,040 annually across the United States. The second number listed in parentheses is the total amount of that category in the United States. This includes savings for school districts, counties, Head Start agencies, state departments, state-level foundations, and more. When this figure was presented to a national audience, the consensus feedback was that this estimate skewed too conservatively.

In response to that feedback, a more middle-of-the-road estimate was deemed sensible. Moving the hours saved per site to four hours and increasing the per hour estimate for staff (including benefits) to \$25, the estimate of savings is \$1,118,600 annually. (See Appendix B for calculations.) This is a substantial level of savings for the non-profit sector.

***“Easy access to all information in one place. I used to spend twice the time looking for information/data that was available—if it (even) was available.”
—Head Start researcher/
ECLDS user***

Table C: Summary of Quantified Savings from the System

	Lower Level Estimate	Middle-of-the-Road Estimate
Annual department studies	\$126,360	\$189,540
Community Needs Assessment	\$448,040	\$1,118,600
Total	\$574,400	\$1,308,140

Shadow Benefits and Cost Avoidance

The previous section focused on quantifiable benefits of the system. There are other benefits resulting from use of the system that are challenging to quantify but are worthy of consideration. For example, the ability to identify trends across program areas is a benefit, but difficult to quantify into cost savings.

These types of benefits are called “shadow benefits,” and a number of their descriptions follow.

Shared language and collaboration

There is benefit to having a shared language across education, health, and human services agencies. The work of developing analytics that are utilized across departments allows for staff to learn more about the others’ programs, requirements, interests, and available data. Sharing information and resources minimizes misunderstandings and redundancy of efforts. This common understanding and language also leads to other collaborations and enhancements. For example, between Early Hearing Detection and Intervention and Early Childhood Special Education there is increased communication now that the programs’ data are linked. In addition, recent linkages between child welfare and education data are informing agencies about the importance of improving the education outcomes for these children.

Identity linking across district, county, region, state

Linking data across systems is a well-established need and has been the focus of multiple legislative initiatives, including [a report](#) produced by the Minnesota Office of the Legislative Auditor’s program evaluation division. The effort to link children across programs relies on the same technology regardless of the program area or geographic level. Using one system to do this, and allowing for testing to confirm accuracy, is more efficient than asking each department and

“Minnesota was the only state to complete this type of (tracking) system due to barriers other state(s’) agencies (had) experienced accessing information.” — Education researcher/ ECLDS user, after completing a multi-state research project.

geographic level to do it independently—or to do so only when projects can be funded. Additionally, this linking has enabled Minnesota to determine a distinct count of children who participate in publicly-funded programs.

Follow children forward into elementary school

The ability to follow children forward into elementary school across multiple state agencies through automated linking is beneficial for multiple programs as well as the state as a whole. In fact, the need to know how children fare over time and after leaving service receipt is a commonplace means of formally reporting outcomes for a variety of programs (e.g. family home visiting models). Likewise, some programs that work with infants and toddlers are federally required to measure outcomes at entry to school, long after the children leave the program. Building on the linking technology that already exists in the system allows for this to happen more readily, affordably, and reliably across years.

“I refer our internal and external users to the [Minnesota Kids Explorer] tool because it is my job to ensure that a variety of individuals and groups have access to the data they need for decision-making and planning.” —ECLDS stakeholder/ECLDS user

Automated ability to reveal trends

The ability to identify trends over time in an automated way with minimal maintenance is powerful. This capability must be contrasted with the level of effort to launch a single study. As data accumulate over time, states and local governments can pinpoint the likely results of changes in policy. Even with only three years of education data, one of Minnesota’s local school districts recently reviewed its K-3 school attendance trends and noted that the data on the ECLDS aligned with the local policy.

Standardized archiving data and trends

The cost of maintaining up-to-date IT standards across multiple districts, counties, and state departments for a longitudinal system—or perhaps multiple regional systems—with statewide follow-through would outstrip resources. The information technology demands remain the same regardless of the level of geography represented. It is therefore more economical for the state to house the information rather than every district in the state. (The least costly scenario would be a national data system, however there are multiple laws against national child-level data sets. It follows then that state hosts of longitudinal data systems are the most logical choice.) In fact, to comply with some cross-system reporting requirements, larger local counties and school districts have already

entered into data sharing agreements and cross-system access, which is expensive. As a result, cross-system reporting is only feasible in better-resourced parts of the state (for example, Hennepin County). The ability to combine this work into one system streamlines local efforts and positions local staff to be able to fine-tune policy implementation and provide additional services to children and families rather than trying to fund individual longitudinal studies and systems. It also offers smaller, less well-resourced jurisdictions with the option to have cross-system data they would not otherwise. In fact, areas that benefit the most are those with the fewest resources, which would likely not be able to hire an analyst or have a dedicated full-time employee to generate and run the reports.

*“I use the system monthly
(to support my work).”
—Health researcher/
ECLDS user*

Enhance collaboration, ability to estimate costs of new community work

The ability to enhance collaborations and estimate new costs of working with new target populations across policy areas is another benefit. A shared system which provides transparency allowing each agency to see who is being served by others removes uncertainty. Early use of Minnesota’s ECLDS has already produced a handful of notable outreach efforts. For example, by using the ECLDS, an early childhood program was able to identify with which other programs and systems they should work to increase participation by specific communities. This new information helped those programs conduct successful outreach and more than doubled their enrollment for new community members—and they’ve sustained this new level of involvement.

Understand the return on investment in public education

A longitudinal data system positions Minnesota to better identify the long-term return on investments in education, particularly as the state moves towards a more fully-integrated ECLDS and SLEDS system (P20W) that spans the life course from birth to workforce entry and far beyond.

A longitudinal data system is also uniquely positioned to assess the entire structure of programs and services to understand where adjustments are needed. Non-longitudinal systems can only identify program level adjustments.

Identify population-wide policy issues

A longitudinal data system can call out when there are population-wide issues versus a single program issue. For example, if a program is starting to see a de-

crease in enrollment, it can quickly identify and potentially explore similarly affected program areas and what may be causing the drop. As LDSs are cross-sector, they also allow a state to see the ways in which a phenomenon in one sector (e.g. a health crisis) may impact another (e.g. school attendance).

Refocused time

Since the ECLDS is already built, it frees up local staff time to focus on fundraising and editing reports, rather than researching and developing reports from scratch. This is already a known primary benefit of Minnesota’s LDS systems—both SLEDS and ECLDS—in which local staff use the integrated data systems rather than attempt to create data reports on their own.

“The Minnesota Department of Health has saved time trying to obtain data sharing agreement and MOUs with other organizations and departments. MOUs had been years in the making; (b)efore it took four years to create partnership and increased effort to get everyone on the same page. ECLDS was used as a framework that was pre-existing (for our data).” —Health researcher/ECLDS user

Earned reputation as a national leader

Minnesota’s reputation nationally has benefitted from its launch of both the SLEDS and ECLDS systems. In 2016, Minnesota was among the first five states to launch a public-facing early childhood longitudinal data system. As a leader in longitudinal data system innovation, Minnesota is looked to as a model for other states’ systems. Our ECLDS team has been approached to participate in other grant opportunities which have enabled additional functionalities and services to be added to the system.

This national reputation was exemplified during a recent site visit by the Centers for Disease Control and Prevention (CDC) to Minnesota’s Early Hearing Detection and Intervention team at the Minnesota Department of Health. At that site visit, CDC staff remarked that they had never before seen a state positioned to follow children identified from birth with hearing needs, all the way into kindergarten entry and beyond.

Demonstrated willingness to support the ECLDS

Minnesota’s ECLDS was built upon a charter that outlines agreement through collaborative governance. Most states grounded their systems’ LDS work in state statute, creating imposed collaborations. Such forced structures can lead to contentious deliberations and strained relationships. Minnesota’s level of collaboration continues through both the ongoing voluntary governance by committee members and contribution of data through existing partnerships.

Informed decision-making results in better use of resources

An ECLDS can provide stakeholders information that demonstrates where needs are being met. When these areas are identified, focus can be turned instead toward areas and populations that may need more and better resources.

Cost avoidance

The following is a list of additional potential costs that could be avoided by leveraging the ECLDS.

State studies and local assessments

Without SLEDS and ECLDS, costs related to state department studies and local needs assessments would continue to accrue. State and local staff would be required to continue to do these types of studies in the manual way which involves less information, more effort, and reduced ability to track trends. There is also increased likelihood for data entry errors, matching discrepancies, and lost opportunities.

Impact on other systems

ECLDS has contained development costs through close work with SLEDS, including a shared IT team. If the ECLDS were to fold, there would be negative impacts on other data systems, including SLEDS, which would potentially lose half of its information technology team. This could result in SLEDS needing to increase operating costs—perhaps up to doubling it in order to rebuild its IT cadre.

In addition, for the first time we can see how families access multiple public programs and services, and the degree to which those efforts are reaching targeted populations. While other data systems exist within state agencies and organizations, they are largely siloed. The data within the ECLDS are linked by individual and are retrospective, and privacy is protected. The ECLDS is the only mechanism that connects the data across systems, giving data back to local programs for their use in holistic and easy to understand reports.

Federal expectations

Knowing that most states already have an ECLDS implemented or in development, it is likely that future federal requests for proposals will require a state to have an active longitudinal data system. Without Minnesota's ECLDS we would

“The ECLDS gave Minnesota an advantage in a federal proposal. Minnesota recently submitted a proposal for the federal Preschool Development Grant for several million through the Governor’s office in coordination with DHS, MDE and MDH. Information provided by ECLDS was required to respond to the bonus points.” —Education researcher/ECLDS user

risk losing these opportunities, or—worse yet—Minnesota could need to recreate a system years from now after the institutional knowledge of current staff is lost.

New and Potential Future Projects that May Impact Analysis

It is expected that there are opportunities for increased efficiencies and even greater benefits that will come after the conclusion of the current grant period at the end of September 2019. The possible benefits of these updates and expansions to the system cannot be estimated now but are worth noting.

Parent Linking/Family Ecology

Minnesota is believed to be among the first states to explore linking parent data to learn more about families. Currently longitudinal data systems most often focus on a single child (or student) outside the context of his/her family. This means vital and developmentally important information is either missing or frozen in time. For example, a birth certificate documents a mother's education level at birth. If that mother returns to school when her youngest child starts kindergarten, that attainment would not be visible in the system. The benefit of that higher education may erroneously be credited to another program or not recognized at all. As Minnesota implements new linking technology during 2019 and 2020, the state will have the ability to understand the changes at a family level and the resulting impact on child outcomes. This two-generation perspective will also align with the objectives of programs aimed at serving entire families (e.g. Head Start and many school district-based programs).

MN Kids Explorer (Data Story tool)

In 2016, Minnesota was approached to apply for and ultimately awarded an EC-DataWorks⁸ grant in coordination with the University of Pennsylvania and funded by the Kellogg Foundation. This work resulted in the development of a tool that allows for quick access to information for county administrators, legislators, school board members, and other leaders. Data stories contextualize data and provide key findings for quick retrieval and portability, offering users a print/PDF function. This tool was built in response to the needs of busy leaders who require a fast option for sharing information with others. Minnesota's first data story, *Nourishing Our Children for Success*, was released in February 2019.

⁸ [ECDataWorks](#) provides innovative opportunities for states to improve the delivery and use of their early childhood data among state policymakers and practitioners.

Aggregated Federal Reporting

There are several examples of programs across education, health, and human services that require cross-program reporting. For example, Early Hearing Detection and Intervention is required by the CDC to report on the levels of school readiness for their children. Currently, staff must establish their own data sharing agreements and conduct the data matching to deliver reports. In June 2017, Minnesota was the first state to integrate this data source. Cross-program reporting is a growing trend and is a key benefit of Minnesota's SLEDS system which reports data on outcomes of students as they move from high school to higher education.

***"We are using the Kids Explorer to develop a process to create new and useful data stories."
—ECLDS stakeholder/ECLDS User***

Parent Surveys for Early Childhood Family Education and School Readiness

Once Minnesota's parent linking/family ecology work is in place, there will be an opportunity to review existing reporting requirements. School districts currently conduct approximately 40,000 parent surveys annually to understand their early childhood service populations.

Where statute permits, the linking engine could allow for the linking of parent records with high schools, colleges, and workforce. This would allow for parent education levels and household incomes to be estimated while simultaneously protecting privacy. The response rate and accuracy would increase and demands on local program staff currently collecting this information by survey could decrease or be eliminated. Most importantly, the burden on parents would decrease because they would not have to provide the same information multiple times.

Averaging Across Years to Decrease Use of Counts Too Small to Report (CTSTR)

The ECLDS uses multiple privacy protections and small cell suppression. One of these methods appears on the site as the Counts Too Small to Report (CTSTR) reported in cells where small counts of less than 10 could identify an individual. Alternatives to this would be the creation of an average across years, similar to the process used by the American Community Survey in its three- and five-year estimates. This would allow sparsely populated areas or programs to have access to the same level of information as have more densely populated areas or larger programs to inform their planning.

Encouraging Research Opportunities

Interest has already been expressed in utilizing the data sets established in the ECLDS for independent research and analysis. SLEDS has in place a process for allowing external research and analysis in a way that protects privacy. Papers and reports benefit-

ing from the use of SLEDS data are then published and shared with others on the SLEDS website. At times, the work of these researchers has identified gaps in data or inspired the creation of new SLEDS public reports.

Currently, existing data sharing agreements prohibit research access to ECLDS data. The data sharing agreements are to be renewed by the end of 2019. Based on the SLEDS experience with research access, it follows that ECLDS could also benefit in similar ways. Additionally, the potential exists for substantial cost savings when research findings instigate adjustments to statewide policies in order to better meet Minnesota citizens' needs and reflect their realities. SLEDS research has provided many new insights, and busted long-held myths; the same could be true of ECLDS research.

***“We use the data in the [Minnesota Kids Explorer] tool to monitor the children's progress in our schools and how they compare to statewide data.”
—ECLDS stakeholder/ECLDS user***

Conclusion

The ECLDS brings substantial benefits to Minnesota. To date, approximately \$9 million was secured for the state through national funders, both public and private. Estimates of the maintenance cost per child for the ECLDS ranges anywhere from \$1.27 to 18 cents in order to follow their experiences in publicly funded programs over time. The ECLDS provides information that can result in a better understanding of children's overall experiences across education, health, and human services. The decrease in the level of effort to produce reports that ECLDS makes possible would result in savings estimated anywhere from \$574,400 to \$1,208,140 annually.

In addition to these quantifiable savings, there are also other benefits provided by the ECLDS including trend analysis; a community-based understanding of the young children and families in their area; the ability to better understand Minnesota's investments across education, health, and human services; and equitable access to longitudinal information.

Appendix A – Interview Themes

Project 7 – Interview Themes

Users/Program Staff

Q1: First help me understand more about your work and what you use the ECLDS for. Are you required to do a needs assessment? Do you have a MIF involved in your area?

- Reporting (2)
- Community needs assessments (4)
- Comparisons
- Answer questions from department/program
- Information to complete grant funding opportunities
- Understand short- and long-term outcomes of children / families served by program
- Focus on people of color
- File federal reports/grants

Q2: Do you have examples of information you've taken from the ECLDS?

- Early care by demographics (2)
- Built additional analytics for specific uses
- Mapping information (2)
- Poverty data
- Maternal traits and education
- Third grade education status
- Easily understood for everyone – can view in many different ways
- Parent education levels related to child outcomes
- (Moved from question above) Glad that Minnesota was one of the first states to complete this project. It is unique. Not possible prior to ECLDS. (2)
- Complement to mixed method evaluation
- Identify gaps
- Checking long term child outcomes

Q3: How would you describe the value of having this information?

- Time savings (4)/efficiency (2)
- Level of detail of information
- New information never before available (4)
- Increased accountability across programs / New perspective on service array (4)
- Affirm program and service model effectiveness
- Could make data-informed program changes to benefit families/children
- Focus on special populations and their outcomes
- Informed community conversations
- Created new frame for new solutions
- Lots of potential
- Intersectionality
- Invaluable for looking at health outcomes
- Shared information with others
- Shared platforms (conserve IT resources)
- Expanded sub-groups available we wouldn't have had on our own
- Synergist impact on outcomes

Q4: What types of data linking explorations have you done before that you don't have to do now because of the ECLDS?

Data retrieval efforts no longer needed
Cross-program work that previously required legal agreements (or not be allowed) (2)
Project (ECLDS) improved communication across departments.

Q5: What other capabilities should the ECLDS have to make it more useful?

More current data/more often than once a year
Data available in same geographies
Automated report options for specific program reporting
Head Start data integration
Data are easy to pull, but sometimes difficult to understand
More tutorials / additional aids for correct interpretation (2)
Ability to see individual-level data
Control for likely misinterpretation
More cohorts
Changes to state health data sharing laws would be required for more health outcomes.

Data Linkers

Q1: Do you have experience – either in your current position or in the past – linking data from disparate data sources?

Yes (8)

Q2: When you have done this type of linking, how would you describe the general steps involved in either getting files ready or doing the actual work of linking?

Get (or enter in) MARSS numbers or construct MARSS (3)
Which fields are in common across datasets (3)
Looking for duplicates / cleaning (5)
Work from easy matches to less easy using different rules(2)
Construction of master file

Q3: Of all the things listed, which is the most time consuming of these tasks?

Getting MARSS numbers [time estimate: 3-4 weeks] (*note – this is the timeline for Head Start to get the MARSS number from the school district*)
Setting up the process – it needs to be iterative [time estimate: several days to one month]
Preparing data [time estimate: 20-25 hours, or 25% of FTE]
Preparing the data [time estimate: 1-10 hours], saving multiple files
Getting access to other data and understanding it well enough to link [time estimate: up to 3 weeks]
Needing to look up individual records to enhance data quality and linking [time estimate: 4 hours for every 250 students]
Learning new computer programming (SQL)
70% match rate instantly – remaining needs review by hand
(From Program Staff interviews) – MOUs were years in the making, 4 years in the making

Appendix B – State Studies and Community Assessments Estimate

Annual Estimates on Community Assessments (data download hours saved)

				Agencies	Hrs Saved	Total Hrs Saved	Est. Cost/Hr + benefits	Total Amount Saved
MN Head Start Agencies - Annual Community				30	3	90	20	1,800
National Head Start Agencies - Annual Community Assessment		(reduced hrs, other data to coordinate)		1,500	2	3,000	20	60,000
		(also reduced agencies from 1608)						
MN School Districts - ECFE Community Assessment								
				Districts				
Minnesota				350	2	700	20	14,000
US School Districts				2,720	2	5,440	20	108,800
13600 school districts								
2720 20 percent of school districts								
Agencies Subtotal								184,600
Foundations/State Gov't and Legislatures/Counties & County Boards								
McKnight Initiative Funds				6	2	12	20	240
State Foundations				40	2	80	20	1,600
one foundation per state								
40 states participating								
State Government				120	6	720	20	14,400
three agencies per state								
40 states participating								
County Boards								
60 in Minnesota				60	6	360	20	7,200
2000				2000	6	12,000	20	240,000
(3,000 counties in US)								
2 hrs for cash assistance, maternal health								
child care								
Subtotal for foundations, state and local government								263,440
Grand Total								448,040

Reasons this is conservative:

Only twenty percent of school districts

Low estimate on HS agencies—also assumes every EHS grantee is with a HS grantee

Cities and townships are not included in this estimate

Federal agencies working in early childhood policy are not included

Professional associations and lobbyists are not included

Reasons this is liberal

Head Start agencies check every year

This includes national benefits—not just benefits to Minnesota; the original funding was federal

Annual Estimates on Community Assessments (data download hours saved)

Changes from initial analysis

Moved Est. Cost per hour to \$25

Moved hours saved to 4/person

					Agencies	Hrs Saved	Total Hrs Saved	Est. Cost/Hr + benefits	Total Amount Saved
MN Head Start Agencies - Annual Community Assessment					30	4	120	25	3,000
National Head Start Agencies - Annual Community Assessment		(reduced hrs, other data to coordinate)			1,500	4	6,000	25	150,000
		(also reduced agencies from 1608)							
MN School Districts - ECFE Community Assessment									
					Districts				
Minnesota					350	4	1,400	25	35,000
US School Districts									
		https://nces.ed.gov/fastfacts/display.asp?id=13600	school districts		2,720	4	10,880	25	272,000
		2720	20 percent of school districts						
Agencies Sub-total									460,000
Foundations/State Gov't and Legislatures/Counties & County Boards									
McKnight Initiative Funds					6	4	24	25	600
State Foundations					40	4	160	25	4,000
		one foundation per state							
		40 states participating							
State Government					120	12	1,440	25	36,000
		three agencies per state							
		40 states participating							
County Boards									
60 in Minnesota					60	12	720	25	18,000
2000					2000	12	24,000	25	600,000
		(3,000 counties in US)							
		2 hrs for cash assistance, maternal health child care							
Subtotal for foundations, state and local government									658,600
Grand Total									1,118,600

Reasons this is conservative

Only twenty percent of school districts

Low estimate on HS agencies—also assumes every EHS grantee is with a HS grantee

Cities and townships are not included in this estimate

Federal agencies working in early childhood policy are not included

Professional associations and lobbyists are not included

Reasons this is liberal

Head Start agencies check every year

This includes national benefits—not just benefits to Minnesota; the original funding was federal

Appendix C – Survey on Time Spent in Governance

Your work is an integral part of the Early Childhood Longitudinal Data System’s success. We would like to better document the investments made to date for the system, including investments of time. We are approaching each group we work with to get a better understanding of the amount of time each person spends each year on building and governing the system.

Research and Data Committee and Governance Body Meetings

How much time do you spend preparing for a typical meeting?

What estimated percentage of meetings do you make each year?

How much time do you spend following up on items from a typical meeting?

How much time do you spend talking with others about ECLDS? This may involve asking people what they would like to see in the system, teaching others what is in the system now or advocating for the system.

Managing Data Flow Process, For Those Who Do

If you load data into the Move It system to be linked with other agencies information, how much time do you spend uploading and confirming the data loaded appropriately for each load cycle?

Your Background

I am on the following committee(s) for the last year: (Check all appropriate)

- Research and Data
- Governance Body
- Analytics Workgroup (Head Start, Home Visiting, Parent Linking, Data Users Group, Program Area, Other)

I am a:

- Local staffer
- State staffer
- Professional Association Representative

I work most closely with the following field:

- Education
- Health
- Human Services
- Higher Education

Thank you for taking the time today to respond to our questions.