Spark NH

NH Early Childhood Data System Blueprint and Recommendations

Prepared for Spark NH
Early Childhood Advisory Council

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1. **Introduction**

Spark NH, the Governor-appointed Early Childhood Advisory Council, is a private-public partnership that works to create a comprehensive coordinated system of programs and supports for expectant families and young children aged birth to three and their families. For Spark NH, an integrated early childhood data system represents one-of-a-series of strategic steps that the State of New Hampshire (NH) is taking to document successes and improve the state’s early childhood programs and services in the areas of health, early learning and family support.

The Early Childhood Data Collaborative (ECDC)\(^1\) (www.ecedata.org), a nationwide organization that that provides tools and resources to encourage state policy change and provide a national forum to support the development and use of coordinated state early childhood education (ECE) data systems, states the objective of developing an early childhood data system is to “close the achievement gap by preparing all students to succeed long before students enter a classroom.” Research shows that differences in children’s abilities appear as early as the first year of life, and that targeted interventions during the early childhood years can narrow the "school readiness gap" so that all children enter kindergarten ready to succeed in school and life.

Ensuring that data are accessible and that stakeholders have the capacity to use data appropriately, coordinated state early childhood care and education data systems to promote data-driven decision making and to improve the quality of early childhood and workforce programs, increase access to high-quality early childhood programs, and ultimately improve child outcomes. To achieve these objectives the ECDC has identified 10 fundamentals for a high-quality ECE data system.

1. Unique statewide child identifier.
2. Child-level demographic and program participation information.
3. Child-level data on development.
4. Ability to link child-level data with K-12 and other key data systems.
5. Unique program site identifier with the ability to link with children and the ECE workforce.
6. Program site data on the structure, quality and work environment.
7. Unique ECE workforce identifier with ability to link with program sites and children.
8. Individual ECE workforce demographics including education and professional development information.
9. State governance body to manage data collection and use.
10. Transparent privacy protection and security practices and policies.

Spark NH’s Early Childhood Data Systems Committee, consistent with the ECE Data Collaborative’s 10 fundamentals (a) initiated a project focused on identifying information needs and (b) issued an Early

\(^{1}\) A list of acronyms used in this report is provided in Appendix A.
Childhood Data System Blueprint and Recommendations Study Request for Proposals (RFP). The Spark NH’s early childhood data system study has the following objectives.

1. Identify available data sets.
2. Define high-value data set gaps.
3. Develop action plans describing steps to secure these data sets across sectors and longitudinally on an ongoing basis to meet identified information needs.

ESP Solutions’ Early Childhood Data Systems Blueprint and Recommendations Study is designed to achieve the project objectives and facilitate Spark NH’s data system development efforts.

Therefore, this study’s objective is to make recommendations for an integrated early childhood system in NH that includes quality early childhood programs and services. To achieve this objective, the study has been conducted in three phases. During the first phase, the ESP team worked with Spark NH, NH Department of Health and Human Services, and the NH Department of Education staff to perform comprehensive information gathering focused on identifying important early childhood data resources. Using document reviews, research on early childhood legislation and other state-based early childhood data systems initiatives, key stakeholder interviews, and other investigative strategies a profile of the current status and impact of early childhood data systems in NH and around the country has been developed.

The second phase addressed key findings derived from the information gathered and developed research and experience-based recommendations to improve data gathering, access, and analysis capabilities. The third and last phase of the planning process focused on the development of this Blueprint and Recommendations Report that offers guidelines in areas of early child data access, governance, and analytic tools.

1.1. Spark NH Vision, Mission, and Goals

Spark NH activities, and specifically the Early Childhood Data Systems Committee work, are aligned with the organization’s vision, mission, and goals for children from birth through grade 3. The Early Childhood Data Systems Committee and the focus of the Data System Blueprint and Recommendation Study addresses data access, linkages, and needs that will support Spark NH’s vision, mission, and specifically attaining goal 3.

Vision: All New Hampshire families are healthy, learning, and thriving now and in the future.

Mission: To provide leadership that promotes a comprehensive, coordinated, sustainable early childhood system that achieves positive outcomes for young children and families, investing in a solid future for the Granite State.

Goals:

1) Promote access to and provide commitment for quality early childhood programs and services.
2) Foster public awareness of the importance of early childhood.
3) Coordinate the integration, collection, and use of meaningful information about young children and their families.
4) Coordinate the development and implementation of an integrated comprehensive strategic plan for early childhood in New Hampshire.
5) Strengthen New Hampshire’s early childhood infrastructure.
6) Ensure Council effectiveness.
1.2. Study Methodology

ESP’s study methodology synthesizes research-based activities with qualitative and quantitative data gathering and analyses (Figure 1). By triangulating findings with investigative and data gathering activities, research-based recommendations have been developed.

![Figure 1: Study Methodology]

1.2.1. Document Review

Documents from NH family and child program and service support providers were collected and reviewed to provide information on current data availability, use, and reporting. The document review process provided baseline data and current status information. A list of the documents and websites reviewed for this study is provided in Appendix B.

1.2.2. Research

Research on Federal and NH early childhood legislation and regulations relevant to the integrated Early Childhood Data System Blueprint and Recommendations Study was conducted. Additionally, a review of exemplary early childhood data systems in other states was included in the study’s research activities. The goal of reviewing early childhood data system initiatives in other states was to identify successful implemented statewide strategies for creating an integrated data system across departmental program and services databases while maintaining program information ownership and complying with confidentially requirements.

1.2.3. Interviews

An interview protocol was designed for the study. Interview questions were reviewed by Spark NH staff and committee members prior to use and emailed to study participants in advance of the interview meeting. Key stakeholders interview in the conduct of this study are listed in Appendix C.
and the Interview Protocol is included as Appendix D. Interviews were conducted onsite and by telephone during the month of August 2013. Each interview was completed in about one hour.

To document the current status of early childhood data, a data set overview chart was created. The completed Early Childhood Data System Overview (Table 1) is on pages 17 and 18 of this report.

1.2.4. Qualitative Methods

Qualitative data were gathered using document review, research, and interview protocols.

1.2.5. Quantitative Methods

The quantitative data gathered and analyzed included Spark NH and early childhood program and services document reviews, and analysis of policy, planning, and communication documents.

1.3. Data Sources

The following DHHS and DOE programs were identified as source data contributors to an integrated early childhood data system (Figure 2).

<table>
<thead>
<tr>
<th>NH Department of Health and Human Services (DHHS)</th>
<th>NH Department of Education (DOE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Endeca [Data Management System]</td>
<td>• State Assigned Student Identifier (SASID)</td>
</tr>
<tr>
<td>• Public and Health Vital Records</td>
<td>• Longitudinal Data System (LDS)</td>
</tr>
<tr>
<td>• New HEIGHTS</td>
<td>• Preschool Special Education</td>
</tr>
<tr>
<td>– Temporary Assistance for Needy Families (TANF)</td>
<td>• Special Education</td>
</tr>
<tr>
<td>– Supplemental Nutrition Assistance Program (SNAP)</td>
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<tr>
<td>• Bridges</td>
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<td>– Child Care Scholarship (CCS)</td>
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<td>– Child Protection</td>
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<tr>
<td>• Family Centered Early Supports and Services [NH Leads]</td>
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<tr>
<td>• Home Visiting New Hampshire</td>
<td></td>
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<tr>
<td>• Watch Me Grow [Welligent]</td>
<td></td>
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<tr>
<td>• NH Head Start</td>
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</table>

*Figure 2: Data Sources*

More than 15 key stakeholder interviews were conducted with information technology and program staff at the NH Department of Health and Human Services (DHHS) and the Department of Education (DOE). Interviewees were asked questions regarding data collection procedures, data use, and how data are shared between programs. The interviews also provided a means to identify each person’s understanding and opinions regarding early childhood data resources, quality of data, current data use, and vision for the future of an integrated early childhood data system. A list of the people interviewed for this study is provided in Appendix C.
1.4. Project Timeline

The Spark NH Early Childhood Data System Blueprint and Recommendations Study was structured around identified project milestones (Figure 3). Major components of the process were research and data gathering, documentation of current data system status, development of a draft report, and the completion of the final Early Childhood Data System Blueprint and Recommendations Report.

![Project Timeline Diagram]

The project timeline was developed to provide a completed report that would be available to support a NH application for the Race to the Top – Early Learning Challenge (RttT-ELC) fall 2013 grant application process.
2. Federal Early Childhood Support

Over the past few years, a growing amount of attention has been paid at the federal level to longitudinal data systems (LDS) – specifically those that track student achievement across grades K-12. Recently, the focus on longitudinal data systems has been expanded to P-20 (typically pre-kindergarten through workforce) systems. While the movement to create statewide LDS focused on school and college or workforce entry continues, it is important to note that statewide data systems operate within the broader early childhood system that starts with prenatal services and/or birth. The early childhood system generally administered through state Health and Human Services agencies encompasses a wide area e.g., early learning standards, family supports including financial and nutritional support, and connections to services that address the needs of young children and their families including early intervention and health care.

Federal support for child care and education has come in many forms, ranging from legislation and grant programs to tax provisions. Some programs serve as specifically dedicated funding sources for child care services (e.g., the Child Care and Development Block Grant (CCDBG)) or education programs (e.g., the Preschool Grants Program and Infants and Toddlers Program funded under the Individuals with Disabilities Education Act (IDEA)). For other programs (e.g., Temporary Assistance for Needy Families (TANF)), child care is just one of many purposes for which funds may be used. In many cases, federal programs target low-income families in need of child care, but in the case of certain tax provisions, the benefits reach middle- and upper-income families as well.

Funding for many child care, early education, and related programs is provided each year as part of the annual appropriations process for the Departments of Health and Human Services, and Education. Some programs have been funded under the Elementary and Secondary Education Act (ESEA) while others have been funded by IDEA. Several early childhood care and education programs, when funding authorizations expired or were are due to expire like CCDBG, continued to be funded through appropriations legislation. Authorization for many programs under the No Child Left Behind (NCLB) Act expired at the end of FY2008, though they continue to receive funding.

A literature search conducted for this study was unable to identify or documented a concise history of Federal early child care and early education legislation and regulations. Efforts to sponsor and approve early childhood legislation and regulations have been more fragmented than efforts to improve and coordinate K-12 programs e.g., the move to implement K-12 and P-20 LDS. As a result, it has been largely left to the states to define and enact early childhood programs and data systems.

Most recently federal support for early childhood programs has been provided by the Race to the Top-Early Learning Challenge (RttT-ELC) competitive grant program. In 2011 Phase 1 awarded $497,293,648 to nine states with awards ranging from $45M to $70M. In 2012 Phase 2 awarded $132,915,514 to an additional five states with awards ranging from $20,508,902 to $34,798,696. In September 2013 Phase 3 is expected to be announced with an estimated $300M available with grant awards ranging from $37.5M to $75M. The State of New Hampshire is eligible to apply for an RttT-ELC Phase 3 grant award of up to $37.5M.
3. **NH Early Childhood Legislation and Regulations**

### 3.1. House and Senate Legislation

A review of NH Child Care and Child Care Quality legislation identified ten bills that were introduced into the legislature between 2008 and 2013. Of the ten bills, five were introduced into the House and five into the Senate. Four bills were enacted in the House and three enacted in the Senate.

Directly related to early childhood data gathering and analysis is Senate Bill 503 Unique Pupil Identification enacted 2010. Current education law, RSA 193-E:3 Delivery of an Adequate Education includes a requirement for the Department of Education to assign a unique pupil identification number, called a State Assigned Student Identifier (SASID), to all children enrolled in public schools. Senate Bill 503 added the following provisions and requirements for gathering early childhood data to current education law.

**Provision for issuing a unique pupil identifier**

193-E:5 Unique Pupil Identification Section I (b) states, “The random number generator shall make available to each early childhood program...a unique pupil identifier for each child enrolled in a New Hampshire early childhood program.... .

**Definition of an early childhood program**

193-E:4 Definitions, defines an early childhood program as, “a preschool or child care program receiving Head Start or child care scholarship funds, whether licensed or exempt from licensing, or not a preschool program operated by a [school] district.

**Requirement for gathering early childhood program data**

193-E-3 Section VII (a) states, “Annually, beginning with the 2011-2012 school year, each early childhood program as defined in RSA 193-E:4 shall submit a report to the department of education containing information on indicators in the following areas:

1. Program participation.
2. Entry, exit, and type of program.
3. Participant demographics.

(b) The department of education shall integrate all data collected into the data warehouse. The department of education shall have access to the data solely to conduct studies, track and report longitudinal pupil outcomes, and improve education programs.”

A grant to fund the early childhood data gathering requirements set forth in RSA 193-E:3, 4, and 5 was applied for; however, the grant was not approved delaying implementation.

Other NH Child Care and Child Care Quality legislation between 2008 and 2013 relates to a variety of areas ranging from legal guardian access to information, background checks for employees and volunteers to a preschool incentive fund not relative to this report.

### 3.2. Department of Education Regulations

The NH DOE has issued limited regulations addressing early childhood programs and services. Children, with the exception of preschool special education, from birth to age five are under the care of the New Hampshire Department of Health and Human Services. The Preschool Special Education program is administered by the DOE.
The DOE Office of Early Childhood provides technical assistance to public programs serving children birth – through grade 3 to further four DOE priorities:

- Standards and Assessment,
- Data and its ability to inform instruction,
- Teacher and Leader Effectiveness, and
- Improving Persistently Lowest Achieving Schools.

In 2005 the Early Learning Guidelines Task Force established by the Child Development Bureau, Division for Children, Youth and Families of the NH Department of Health and Human Services issued the NH Early Learning Guidelines document. The report’s goal was “to create motivating and appropriate learning environments for children from birth through entrance into public school.” In April 2013, the Early Learning Standards Task Force released a draft of the revised guidelines, which align with other early childhood documents including the Head Start Child Development Learning Framework and the Early Childhood Professional Development System knowledge areas and competencies.

On December 19, 2012, the New Hampshire State Board of Education endorsed the Kindergarten Readiness Indicators document, developed by the Kindergarten Readiness Indicators Task Force, and the Kindergarten ½ day pacing guides as technical assistance to advance the work of early childhood education in NH.
4. **NH Early Childhood Data Systems – Current Status**

The State of New Hampshire enterprise data warehouse includes some early childhood data; however, the majority of NH early childhood data resides in program-based operational databases including Division of Vital Records Administration, a DHHS Endeca data platform, and six DHHS programs that provide direct services to families and children ages birth to five. The six DHHS programs included in this report providing services to families and children are:

1. Bridges
   - Child Care Scholarship
   - Child Protection
2. Family Centered Early Support and Services
3. Home Visiting New Hampshire
4. New Hampshire Head Start
5. New HEIGHTS
   - Temporary Assistance for Needy Families (TANF)
   - Supplemental Nutrition Assistance Program (SNAP)
6. Watch Me Grow (Developmental Screening and Referral)

Each of the six programs has its own data collection process, database, and unique record identifier making correlation of records and services across programs and longitudinally difficult. Head Start program data is located in five individual provider data systems and the each program reports directly to the federal Office of Head Start. Data sharing across DHHS sectors requires programs to adhere to the Health Insurance Portability and Accountability Act (HIPAA) and Family Educational Rights and Privacy Act (FERPA) legislation and regulations.

The foundation of a high-quality data system that effectively informs policy development and decision making is the establishment and dissemination of enterprise-wide data management and governance policies and procedures. The study was unable to identify any:

a. Bureau or division within DHHS that supervises program data management and governance across the Department’s programs or
b. Policy statement regarding data integration across programs.

Limited data are shared between DHHS programs and between DHHS and DOE programs. A data dictionary of the information elements shared was available. However, documented guidelines establishing an authoritative data source, identifying a steward or named person responsible for maintaining specific data elements and criteria for data element format were not available.

Data sharing is limited to New HEIGHTS providing information on children potentially eligible for the free and reduced lunch program to the DOE Longitudinal Data System (LDS) and Family Centered Early Childhood Supports and Services providing information on children potentially eligible for Preschool Special Education services to the DOE New Hampshire Special Education Information System (NHSEIS). The DOE provides the Bridges program with Special Education (SPED) eligibility characteristics that are applied to profiles of children receiving Child Care Scholarship and Child Protection program services.
4.1. **Endeca project**

Endeca is an Oracle-based data discovery platform that provides visual analysis of information. The Endeca software is gathering data from four databases to establish client and provider review and analysis information and document results visually on a dashboard. Three databases – DHHS Division of Vital Records Administration, New HEIGHTS and Bridges – contain early childhood data relevant to this study. Data correlation is difficult as each database has its own unique record identifier. To correlate records across databases several individual data fields are matched, such as first, middle, and last name, address, and when available Social Security Number.

4.2. **Enterprise DW – Division of Vital Records Administration**

The statewide Enterprise DW includes Division of Vital Records Administration information on birth, death, marriage and divorce events. The Bureau of Health Statistics and Data Management is responsible for the materials, tools, and requirements of information into and out of the NH DHHS. The Office of the Secretary of State is responsible for birth, death, marriage, and divorce records.

Unique identification numbers are attached to birth and death certificates. The certificate numbers also provide a link to health records data e.g., an opt-out registry of at-birth conditions, illness conditions outcomes information, and a child immunization registry. Any request for confidential health data is reviewed and approved or denied by the Vital Records Privacy Board.

4.3. **Bridges**

The Child Care Scholarship (CCS) program gathers eligibility and service provision data regarding family assistance with child care costs. To qualify for CCS assistance gross family income must not exceed 250% of the federal poverty guidelines and parents must be working, looking for work or in a training program. The Child Protection Bureau gathers eligibility and service provision data regarding child care funding as a preventive service if children are at risk for abuse or neglect.

The Bridges program database is a proprietary Oracle-based application. There is a bi-directional interface between the Bridges and New HEIGHTS databases as New HEIGHTS provides the eligibility gateway for Bridges services. Bridges and New HEIGHTS records are integrated based on a unique client identifier which is linked to service providers.

The DOE sends Bridges special needs services (SPED) eligibility characteristics information from NHSEIS using a File Transfer Protocol (FTP) server. The Bridges program applies the SPED eligibility characteristics to children’s profiles to identify SPED referrals.

4.4. **Family Centered Early Support and Services**

The Family Centered Early Support and Services (FCESS) program gathers eligibility and services provision data regarding direct services to families with children diagnosed with disabilities or developmental delays of 33% or more between birth and age three. FCESS serves approximately 1,900 children statewide representing approximately 4.5% of the children ages birth to age three.

The data FCESS collects can include:
- Family Support, Education and Counseling
- Vision Services
• Hearing Services
• Health and Nursing Services
• Medical and Diagnostic and Evaluation Services
• Nutrition Counseling & Assessment
• Occupational Therapy
• Physical Therapy
• Special Equipment
• Special Instruction
• Speech and Language Therapy
• Transportation Services
• Service Coordination

FCESS program data are collected on paper and then entered into a proprietary software program called NH Leads. The program was developed between 2002 and 2003 and uses a SQL 2008 RT platform. Each child provided with FCESS services is assigned a unique identifier called a Division Unit Client Key (DUCK). The program provides for Medicaid billing and connects with the NH Special Education Information System (NHSEIS) by downloading information in a Comma Separated Values (CSV) format regarding children potentially eligible for Preschool Special Education services.

4.5. **Home Visiting New Hampshire**

Home Visiting New Hampshire (HVNH) refers to the umbrella of home visiting services provided by the Maternal & Child Health Section through community agencies and organizations. The data system developed by Social Solutions (soon to be named) has been designed to collect eligibility and service provision data regarding preventative health, education, support and linkages to other community services for low-income pregnant women and children up to age 3. Eight community-based organizations provide HVNH programs across the state serving over 700 families per year. The data HVNH collects can include:

• Adolescents who are pregnant or are new moms.
• Women under age 25 who are pregnant or who are new moms.
• Women pregnant with their first child.
• Women at risk for having poor birth outcomes.
• Pregnant women or new mothers with substance abuse issues.
• Families at risk for child abuse and neglect.

One HVNH program, Healthy Families America (HFA) uses the *Family Assistance Form* to collect information in addition to a series of Excel spreadsheets. HFA implementing agencies went live with the new data collection system on August 26, 2013. Methods for converting existing data into the Social Solutions program are still being defined.

4.6. **New Hampshire Head Start**

New Hampshire Head Start gathers eligibility and service provision data at 43 program sites throughout the state and serves approximately 2,000 families and 2,300 children per year. Head Start and Early Head Start program data are complied into the national Head Start Program Information Report (PIR). Data are collected on paper and then entered into a software program as all Head Start programs are required to submit their PIR data electronically to the U.S.

There are five regional NH Head Start programs. The programs and the data systems they use are:

2. Southern NH Services: Child Outcome, Planning and Assessment (COPA)
3. Southwestern: Program Resources and Outcomes Management Information System (PROMIS)
4. Strafford: Program Resources and Outcomes Management Information System (PROMIS)
5. Tri-County: Program Resources and Outcomes Management Information System (PROMIS)

4.7. **New HEIGHTS**

The New Hampshire Empowering Individuals to Get Help Transitioning to Self-sufficiency (New HEIGHTS) serves as an eligibility gateway for DHHS programs including Temporary Assistance for Needy Families (TANF) and Supplemental Nutritional Assistance Program (SNAP). The New HEIGHTS database uses recipient identification and a Medicaid number as a unique identifier.

New HEIGHTS authorizes eligibility for the Bridges Child Care Scholarship program and provides a monthly report to the DOE of TANF and SNAP data for free and reduced lunch program eligibility. There are approximately 6,500 children under the age of 17 receiving TANF and 18,000 under the age of five receiving SNAP support.

4.8. **Watch Me Grow**

Watch Me Grow (WMG) is a screening and referral system available to any NH family with children from birth to age six. It gathers eligibility and service provision data using Ages and Stages Questionnaires (ASQ) and ASQ-SE (Social Emotional). The ASQ gathers developmental and social-emotional screening information and is designed for children from ages 1 month to 5-½ years of age. Questionnaires are scored on paper and entered into the Welligent health records software database.

Children are referred to appropriate state and local resource providers. Service providers have access to the Welligent system to update child screening results and referrals.

WMG staff report difficulty creating reports from the Welligent system. As a result, WMG has contracted with a consultant to export data into Microsoft Access and create temporary, custom designed analysis reports until the Welligent reporting issues can be addresses. Lastly plans are underway to link the Welligent and Home Visiting NH databases.

4.9. **Department of Education Data Systems**

The DOE has two data systems that contain early childhood data relative to this study, the New Hampshire Special Education Information System (NHSEIS) and the Initiative for School Empowerment and Excellence (i4see) data collection system which stores data in the Longitudinal Data System (LDS) data warehouse. NHSEIS contains information regarding eligibility and services provided to children between the ages of 3 and 5 in the Preschool Special Education program as well as Special Education eligibility and services to children in kindergarten through grade 3. The LDS contains extensive information about all children enrolled in public schools and uses the SASID as a unique pupil identifier.
4.10. Data System Integration

DHHS program data silos function primarily to satisfy federal reporting requirements making information uncoordinated and difficult to analyze in a way that informs statewide early childhood policies and investments. Further, it is difficult for DHHS and individual programs to identify families and/or children receiving or eligible for services from more than one DHHS program improving service management, delivery, and return on investment.

The Spark NH early childhood advisory council does not have access to any program’s source data. To develop statewide early childhood reports, the Council gathers and reviews the information published in individual program reports.

With the exception of the data aggregated in Endeca, and the two-way interface between Bridges and New HEIGHTS, DHHS data system integration or sharing data across sectors or longitudinally (Figure 4) is limited. The connections between DHHS and DOE are limited to notification by the Family Centered Early Supports and Services’ NH Leads data system to New Hampshire Special Education Information System (NHSEIS) of children potentially eligible for Preschool Special Education services (red line) and from New HEIGHTS regarding children eligible for the free and reduced lunch program (green line). The DOE provides special education eligibility characteristics information to the Bridges program (dashed line). [Note: NH Head Start data are not really DHHS data systems, but rather, individual grantee systems and the national Office of Head Start PIR database, which gives NH Head Start access to statewide and individual grantee data. National PIR data does not include individual child outcomes. The HSSCO collects this information from grantees.]

![Figure 4: Current DHHS and DOE Data Systems](image-url)
## 4.11. Early Childhood Data Systems Overview

The following chart provides an overview of existing program-based operational data systems containing data on children from birth through grade 3 in DHHS and DOE data systems (Table 1). It includes information about each program’s database including how data are collected and baseline technical information such as database size and format.

<table>
<thead>
<tr>
<th>Program-based Data System</th>
<th>Data Collected</th>
<th>Collector</th>
<th>Data Source</th>
<th>Record Method</th>
<th>Data Verified</th>
<th>Data Updated</th>
<th>Unique Identifier</th>
<th>Data Shared</th>
<th>Database Size</th>
<th>Stored Format</th>
<th>Import Format</th>
<th>Export Format</th>
<th>ODBC Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DEPARTMENT OF HEALTH and HUMAN SERVICES (DHHS)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endeca</td>
<td>Division of Vital Records Administration, New HEIGHTS and Bridges</td>
<td>points to databases</td>
<td>existing databases</td>
<td>data from existing databases</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>TBD</td>
<td>Endeca Oracle</td>
<td>Tab CSV</td>
<td>ETL, Tab and CSV</td>
<td>yes</td>
</tr>
<tr>
<td>Division of Vital Records Administration</td>
<td>Birth, Death, Marriages, and Divorces</td>
<td>various: hospitals, physicians, midwives</td>
<td>existing databases and care providers</td>
<td>data from existing database</td>
<td>at source</td>
<td>at source</td>
<td>Birth and Death Certificate numbers</td>
<td>yes</td>
<td>500,000 – 750,000 records (100G)</td>
<td>Proprietary Enterprise DW Oracle</td>
<td>Tab CSV</td>
<td>ETL, Tab and CSV</td>
<td>yes</td>
</tr>
<tr>
<td>New HEIGHTS - TANF</td>
<td>Eligibility and services provided</td>
<td>Division of Client Services, Family Support Specialists</td>
<td>applicant</td>
<td>paper, phone, or online</td>
<td>at source</td>
<td>at source</td>
<td>client identifier</td>
<td>program eligibility with Bridges</td>
<td>6,500 records</td>
<td>Proprietary DB2</td>
<td>Tab CSV</td>
<td>ETL, Tab and CSV</td>
<td>yes</td>
</tr>
<tr>
<td>New HEIGHTS - SNAP</td>
<td>Eligibility and services provided</td>
<td>Division of Client Services, Family Support Specialists</td>
<td>applicant</td>
<td>paper, phone, or online</td>
<td>at source</td>
<td>at source</td>
<td>client identifier</td>
<td>program eligibility with Bridges</td>
<td>&lt; age 5: 18,000 records ages 6-12: 19,000 records</td>
<td>Proprietary DB2</td>
<td>Tab CSV</td>
<td>ETL, Tab and CSV</td>
<td>yes</td>
</tr>
<tr>
<td>Bridges - Child Care Scholarship</td>
<td>Eligibility and services provided</td>
<td>varies</td>
<td>New HEIGHTS data</td>
<td>paper</td>
<td>from New HEIGHTS</td>
<td>from New HEIGHTS</td>
<td>client identifier</td>
<td>services provided with New HEIGHTS</td>
<td>13,000 records</td>
<td>Proprietary Oracle</td>
<td>Tab CSV</td>
<td>ETL, Tab and CSV</td>
<td>yes</td>
</tr>
<tr>
<td>Bridges - Child Protection</td>
<td>Eligibility and services provided</td>
<td>varies</td>
<td>client, nurse, police, etc.</td>
<td>paper</td>
<td>from New HEIGHTS</td>
<td>from New HEIGHTS</td>
<td>client identifier</td>
<td>services provided with New HEIGHTS</td>
<td>20,000 records</td>
<td>Proprietary Oracle</td>
<td>Tab CSV</td>
<td>ETL, Tab and CSV</td>
<td>yes</td>
</tr>
</tbody>
</table>

*Table 1: Early Childhood Data System Overview*
<table>
<thead>
<tr>
<th>Program-based Data System</th>
<th>Data Collected</th>
<th>Collector</th>
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</tr>
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<tbody>
<tr>
<td><strong>DEPARTMENT OF HEALTH and HUMAN SERVICES (DHHS) continued</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Family Centered Early Support and Services</td>
<td>Eligibility and services provided</td>
<td>coordinator then: service provider</td>
<td>client</td>
<td>paper</td>
<td>monthly for service delivery (Medicaid)</td>
<td>quarterly</td>
<td>Division Unit Client Key (DUCK)</td>
<td>SPED eligibility DOE NHSEIS</td>
<td>3,500 records</td>
<td>Proprietary NH Leads SQL</td>
<td>Tab CSV</td>
<td>ETL, Tab and CSV</td>
<td>yes</td>
</tr>
</tbody>
</table>

| Head Start | Eligibility and services provided | coordinator then: service provider | client | paper | when > than 2 years | ongoing | random number | ASQ shared with WMG | 4,000 records | COPA PROMIS Child Plus SQL; National PIR | Tab CSV | ETL, Tab and CSV | yes |

| Home Visiting New Hampshire | Family Assistance Form | home visitor | client | paper moving to online | ongoing | ongoing | creating one | no | 300 records | Social Solutions SQL | Tab CSV | Tab and CSV | yes |

| Watch Me Grow | Ages and Stages Questionnaire (ASQ-3 and ASQ-SE) for referrals and eligibility for selected services to which referred | Resource Center staff/provider/community partners | parent, child and ASQ | paper | 3 to 4 months | 3 to 4 months | A random number and a unique identifier that includes initials and date of birth | no | 2,200 records | Welligent SQL | Tab CSV | Tab and CSV | yes |

| **DEPARTMENT OF EDUCATION (DOE)** | | | | | | | | | | | | | |
| Longitudinal Data Systems (SASID) | From School Districts New HEIGHTS (Free and Reduced Direct Certification) | DOE | data transfer | data from existing databases (i4see data collection system, ESOL, CaTE, State Testing, etc.) | ongoing | ongoing | SASID | SASID | Approx. 200,000 students but DB contains over several million records | SQL | Tab CSV | Tab and CSV | yes |

| NH Special Education Information System | From School Districts FCESS | DOE | data transfer | data from existing databases | ongoing | ongoing | SASID | no | TBD | SQL | Tab CSV | Tab and CSV | yes |

*Table 1 continued: Early Childhood Data System Overview*

In 2005, the National Governors Association (NGA) Taskforce on School Readiness recommended that states:

- Implement unified data collection requirements, training opportunities, and professional standards across prekindergarten, childcare, and Head Start programs;
- establish common measurements and consistent data reporting mechanisms to enable information sharing and analysis across state agencies and programs and between the state and local levels; and
- invest sufficient resources to support consistent data collection efforts.

States have been working on the NGA recommendations; but in the majority of states, early childhood data collection remains largely uncoordinated. However, during the past few years some states have made progress. The Early Childhood Data Collaborative identified 12 states that are making progress toward building and using coordinated state early care and child data systems. The Mathematica Policy Research issued a report (2011) titled *Defining and Measuring Quality: An In-depth Study of Five Child Care Quality Rating and Improvement Systems*. Two states, Pennsylvania and Illinois, are reviewed in both the Early Childhood Data Collaborative and Mathematica studies.

### 5.1. Pennsylvania

The Pennsylvania Department of Public Welfare’s Office of Child Development and Early Learning (OCDEL), working in collaboration with the Pennsylvania Department of Education, created the Early Learning Network system to pull together data on the children being served by OCDEL’s programs, to link the data to child assessments or developmental outcomes, and to tie this information to K-12 data through the use of unique child identifiers.

The ELN system, *Pennsylvania’s Enterprise to Link Information for Children across Networks* (PELICAN) launched in August 2009 establishes unique identifiers for children and early education professionals across Public Welfare and Education departments. PELICAN (Figure 5) pulls together information related to five different service program areas, the children that are being served, their families, the entities providing the services, and the early learning professionals serving the children.

![Figure 5: Pennsylvania Early Learning Network (ELN)](image)

*PELICAN ELN includes Pennsylvania Pre-K Counts, Head Start, School-district Pre-K, STARS, and Early Intervention.*

All information about the children, their families, the providers supporting services for these children and the early education staff working with the children is housed in a central repository. The central repository feeds a data warehouse solution that supports the ability to report, trend and analyze the data.

5.2. Illinois

Illinois early childhood programs and services are supported by data systems that have been developed and which operate in isolation. The Illinois Early Learning Council has committed to using the Common Education Data Standards (CEDS) as the benchmark for data sharing and interoperability.

P.A. 96-0107, signed into law in July 2009 established the requirements and framework for the development of the state’s longitudinal education data system by:

- setting forth a long-term vision for the state’s education data system,
- requiring the state to implement all of the Data Quality Campaign’s (DCQ)10 essential elements,
- requiring the longitudinal data system to support a broad array of state and Local Education Agency educational functions,
- establishing a framework for data sharing with outside entities to support research and evaluation consistent with privacy protection laws, and
- identifying early learning data as a priority and authorizing the Illinois State Board of Education to collect necessary early learning data.

In 2012 the Illinois Unified System Planning Project worked to develop the technical specifications for an integrated systems environment that would link select early childhood data, early childhood program data, and early childhood workforce data currently being collected by the various early childhood programs across the state.

The study’s review of existing early childhood data systems showed that there were significant issues associated with data quality and more importantly, data availability within these systems as they relate to CEDS. The study recommended that limitations have to be addressed through:

- commitment to CEDS standards by participating agencies/programs, particularly as legacy systems are retired;
- implementation of data translation capabilities within [a unified system] environment in order to normalize disparate data; and
- phased implementation of data analysis and reporting capabilities that align with available data.

As a result, Illinois has launched a “Common Identifier” project to facilitate accurate matching of existing child identifiers across a wider range of state programs serving children.

The Illinois State Board of Education’s Student Information System includes a unique child identifier for children in publicly funded early care and education (ECE) programs. For each child receiving services the system tracks program participation, whether a child meets criteria for being "at risk" and/or low household income, and family structure (e.g., two-parent vs. single parent family). School administrators and teachers have access to data for an individual child and the state uses aggregate descriptive data to meet reporting requirements and to support limited longitudinal research on child outcomes.
5.3. Massachusetts

In 2005, the Commonwealth of Massachusetts became the first state in the nation to create one agency to oversee early education and care and out-of-school time programs for families. The Department of Early Education and Care was created by consolidating the former Office of Child Care Services with the Department of Education’s (now the Department of Elementary and Secondary Education) Early Learning Services unit. The goal of the consolidation was to create a single, unified, more efficient system of early education and care in Massachusetts that is better responsive to the educational and developmental needs of children and to the vital role of families in a child’s health, development and success.

Massachusetts General Laws, Part I, Title II, Chapter 15D, Department of Early Education and Care Requires the establishment and regularly update of a:

- comprehensive database of children both waiting for and receiving early education and care services that is compatible with relevant databases at the Department of Elementary and Secondary Education and the executive office of Health and Human Services and
- comprehensive database of early childhood educators and providers for the purpose of enhancing the workforce development system.

The Massachusetts Early Childhood Information System model combines data from parents, screening assessment, and demographic data (Figure 6).

![Figure 6: Massachusetts' Early Childhood Information System Design](source)

*Source: Early Childhood Data Collaborative, Developing Coordinated Longitudinal Early Childhood Data Systems Webinar, 2012, PowerPoint slide 46.*

In 2013 the Departments of Early Education and Care, Elementary and Secondary Education, the Executive Office of Education, the Department of Public Health, and the Executive Office of Health and Human Services began a pilot project to assign a state assigned student identifier to children participating in early intervention programs with the goal of tracking and evaluating educational and developmental outcomes for children receiving early intervention services, improving delivery of services and determining cost savings associated with the early intervention program. An initial pilot project report was due to be issued in March 2013.
5.4. North Carolina

In 2010 the Governor of North Carolina (NC) established an Early Childhood Advisory Council with broad representation of state and local agencies serving young children and families “To create and sustain a shared vision for young children and a comprehensive, integrated system of high-quality health, family strengthening, and early care and education services to achieve the best possible outcomes for the state’s young children” and to be the lead agency for the RttT-ELC grant.

The NC RttT-ELC grant proposal included and allocated $8.9M of the $70M awarded to the development of the Early Childhood Information Data System (ECIDS). The goal of the data system is to integrate data from different agencies that serve young children, provide timely and accurate information for system-wide planning and efficient and effective implementation of services, and promote shared accountability for outcomes among early childhood programs and services.

ECIDS design elements include oversight by the Early Childhood Advisory Council, system development by the State Information Technology Services agency, interagency coordination and decision making for the ECIDS development, data management through the implementation of a Data Management Group, and collaboration with major partner agencies.

ECIDS Project staffing requirements included:
- an ECIDS Specialist on the Early Learning Challenge grant management staff,
- additional Information Technology Services Staff – Project Director, Project Manager, Business Analyst, Technical Architect, and 
- collaboration with and funding for staff in the Department of Public Instruction and Divisions of Child Development and Early Education and Public Health to support program requirements and provide technical development.

A data management group, with representation from each participating agency, was also created. The group resolves data collection, management, and use issues; addresses long-term ECIDS application developmental needs; keeps the Early Childhood Advisory Council apprised of project progress; elevates policy issues; and represents early childhood on the NC P-20W Council.

5.5. Summary

This study’s recommendations include best practice elements from all four state models reviewed (Pennsylvania, Illinois, Massachusetts, and North Carolina). The efforts of these states, and other state models reviewed for this study, all include the development and implementation of a unique statewide child identifier. Additionally,

- Pennsylvania has been successful working across two autonomous departments, the Departments of Public Welfare and Education.
- Illinois is adopting a common data standard for data sharing and interoperability.
- Massachusetts has developed a sophisticated data warehouse design based on a multi-dimensional data model.
- The North Carolina existing data systems were similar to NH in that few data fields were common to all programs, each agency used a different approach to assigning a unique child identifier, and there was wide variation in how data was collected, aggregated and managed. The NC RttT-ELC grant addressed these issues and identified staffing levels needed to successfully develop and implement an integrated data system.

Other models reviewed for this study identified similar components in each state’s early childhood data system development efforts. The adoption of these best practices informs and “jump starts” the NH Early Childhood Data System Blueprint and Recommendations.
6. **NH Data Systems Options**

A Database Management System (DBMS) can be classified as federated or non-federated. A federated system is a distributed system with tools to access multiple databases. The non-federated or centralized system is a single database.

This section reviews the advantages and disadvantages and presents recommendations for implementing a distributed or centralized DBMS model as an NH early childhood data system.

6.1. **Federated database system**

A federated database system (FDBS) consists of component databases that are autonomous yet participate in a federation to allow partial and controlled data sharing. There are two federated data system models. In one FDBS model (sometimes called a composite database), the data remains in existing data silos but a user is able to extract and analyze data across the databases. In the second model (a non-composite database) the data is made available from autonomous databases through the publication of an export schema and access operations. Creating an export schema means that the data has been formatted in a way that matches the structure of the receiving database.

6.1.1. **Composite FDBS advantages, disadvantages and recommendations:**

**Advantages:**
- Reduces implementation costs.
- Minimizes client data privacy disclosure concerns.
- Limits staffing requirements.

**Disadvantages:**
- Requires a unified central schema to eliminate the following conflicts.
  - Naming conflicts e.g., using different names to represent the same concept.
  - Precision conflicts e.g., using different data values to represent the same data.
  - Metadata conflicts e.g., same concepts are represented at schema level and instance level.
- Data conflicts e.g., missing attributes across data tables.
- Limits ability for data mining and policy analysis across programs.

**Recommendation:** The status of existing DHHS databases does not facilitate the implementation of a composite FDBS. A unified central schema is not in place and a data governance structure that would support the development and implementation of a unified central schema across existing agency data silos has not been instituted. For example, the race/ethnicity and language data collected varies across DHHS programs. Naming, precision, and data conflicts would make data mining and analysis findings in a FDBS composite model unreliable.

6.1.2. **Non-composite FDBS advantages, disadvantages and recommendations:**

**Advantages:**
- Reduces implementation costs.
• Minimizes client data privacy disclosure concerns.
• Removes unified central schema requirement.
• Facilitates some data mining and policy analysis across programs.

Disadvantages:
• Requires an export schema and access operations.
• Involves additional hardware and software.
• Increases staffing requirements.

Recommendation: A non-composite FDBS should be implemented as an interim early childhood data collection and reporting solution (Figure 7). This model should bring together limited source data and data dictionary elements in preparation for establishing a larger-scale centralized data warehouse. The non-composite FDBS provides several advantages that will be valuable initial steps in the development of a centralized early childhood data warehouse. These include the following:

• Establishes a data dictionary, the data elements that will be exported.
• Identifies the authoritative data system for each data element.
• Publishes a data export schema and access operations.
• Reduces exports by using Endeca’s client record aggregation across Division of Vital Records Administration, Bridges and New HEIGHTS databases.
• Creates a single location to establish a unique child and worksite identifier and SASID.

Non-composite Federated Database Model

Figure 7: Non-composite FDBS Model
6.2. **Data Warehouse**

A data warehouse (DW) is a central repository of data which is created by integrating data from one or more disparate sources. The typical Extract, Translate, and Load-based (ETL) data warehouse uses staging, data integration, and access layers to house its key functions. The staging layer or staging database stores raw data extracted from each of the disparate source data systems. The data are integrated and moved to the data warehouse database, where the data is arranged into hierarchical groups. The data warehouse architecture supports the ability to drill down from the aggregated data of the data warehouse to the individual data from the source data systems.

6.2.1. **Centralized DW advantages, disadvantages and recommendations:**

**Advantages:**
- Combines data from DHHS and DOE sources into a single database.
- Mitigates the problem of program-based operational database silos.
- Maintains longitudinal data history even if the source program-based operational database systems do not.
- Integrates data from multiple source systems enabling a central view across the programs and services.
- Improves data quality by providing consistent codes and descriptions, flagging or even fixing bad data.
- Creates a platform so a single query engine can be used to present data.
- Presents the organization’s information consistently.
- Provides a single common data model for all data regardless of the data's source.
- Restructures the data so that it delivers excellent query performance, even for complex analytic queries, without impacting the operational systems.
- Establishes a relational database.

**Disadvantages:**
- Costs more to implement.
- Takes longer to implement.
- Requires hardware and software acquisition and implementation processes.
- Benefits from analytic tools (query engine) to create data dashboards and end-user reports.
- Necessitates ETL export schema and access operations.
- Increases staffing requirements.

**Recommendation:** Seek RttT-ELC grant funding to create a centralized DW (Figure 8). A centralized DW will provide NH with an early childhood data system capable of meeting short- and long-term data mining and policy recommendation objectives. The data warehouse should be structured to integrate DHHS program and service data for families and children from birth through grade 3 with DOE academic outcome data for children in Preschool SPED and kindergarten through grade 3. Longitudinal data-mining and reporting will relate the services provided to families and children to education outcomes.
6.3. Establishing common standards

All DW options are based on the combined effort of the DHHS and DOE. Interdepartmental collaboration requires data policies and procedures that preserve departmental autonomy, maintain legislation and regulation requirements, and resolve the privacy disclosure concerns of families and children. The establishment and dissemination of data management and governance policies and procedures to define common data standards and data-sharing agreements will:

- establish how data will be shared,
- define how data will be linked and
- ensure that linked data fields represent the same type of information.

6.4. Privacy

The goal of the Early Childhood Data System is to provide program operation and service delivery aggregate data for quality improvement and outcome reporting. Family and/or child level data is required to create aggregate data; however, the system is not intended and will not be used to track or report on individual families and/or children. Data system enabling policies shall require adherence to all HIPAA and FERPA legislation and regulations and meet and exceed all existing DHHS and DOE privacy disclosure procedures currently in place or established in the future.

6.5. Sustainability

Limited financial resources require that NH Early Childhood Data System options are cost effective, efficient and sustainable without state funding. Expanding existing staff capacity,
building teams with stipends and securing grant funding for the longitudinal data warehouse are essential. The recommendations provided in Section 7 are based on sustainable design and development considerations. That is, a phased approach that identifies initial activities requiring minimal financial investments while funding for the longitudinal data warehouse is secured is recommended.
7. **Recommendations**

Recommendations for creating a NH Early Childhood Data System are presented in five phases. Each of the first three phases (Establish Policy, Create Unique Identifiers, and Interim Database) builds on the previous phase. Secure funding, phase four, is required to support building the comprehensive, sustainable longitudinal data system presented in phase five.

The longitudinal DW recommended in phase five looks to combine short- and long-term data mining on DHHS program and service data for families and children from birth through grade 3 with DOE academic outcome data for children in Preschool SPED and Kindergarten through grade 3. This longitudinal data system satisfies the early childhood data mining and policy recommendation objectives of the State of New Hampshire, the Departments of Health and Human Services and Education, and Spark NH.

7.1. **Phase 1 – Establish policy**

7.1.1. **Data integration**

Each program within DHHS has developed and implemented a data system that responds to specific federal grantor reporting requirements. Limited cross sector integration between data systems exists e.g., Bridges and New HEIGHTS, and DHHS is exploring additional cross sector and longitudinal data integration approaches e.g., the Endeca project. The study was unable; however, to document any DHHS data integration policies or procedures.

The foundation of a high-quality data system is the establishment and dissemination of data governance policies and procedures. The initial step in developing the NH Early Childhood Data System should be appropriate policy determination, documentation and dissemination.

**Advantages:**
- Emphasizes data as a valuable state resource and data management as an essential function.
- Establishes comprehensive, enterprise-wide data management guidelines including common data standards and data-sharing agreements across DHHS and DOE.
- Disseminates data management policies and procedures including system integration policies and best practice standards for data management and life cycle.

**Disadvantages:**
- Imposes additional policy and procedure requirements on programs.
- Requires additional staff or additional responsibilities for existing staff.
- Requires time to establish and implement.
- Requires a unique child identifier field be added to each program-based data system.

**Recommendation:** Develop DHHS data integration policies and procedures and create a position and/or identify a person within DHHS who will be responsible to:

a. Champion data management and governance policies and procedures,

b. Establish and disseminate data integration policies and procedures,

c. Work with DHHS leadership to adopt a policy requiring all programs to include the unique statewide child and identifier in their database, and
d. Work with DOE leadership to define and adopt a policy that expands SASID assignment to all children receiving DHHS services.

7.1.2. **Identify data needs**

A necessary step in creating an effective system to support data-driven decision making is a clear understanding of the questions that the system will help answer. Once the questions are formulated a determination of what data is required to answer each question, if the data is currently collected, where the data is stored, and what additional data collection is required can be completed. This provides a roadmap for system design and use.

**Advantages:**
- Defines what questions will be addressed.
- Identifies how the information will be used.
- Specifies what data elements are needed to answer each question.
- Connects individual data elements with an authoritative data source.

**Disadvantages:**
- Takes time to reach consensus on questions and the data needed to answer each question.
- Requires a data dictionary from each data source.
- Takes time to map each data element to a specific data source.

**Recommendation:** Identify early childhood data needs by continuing the needs assessment process identifying essential questions about early childhood health and wellbeing, school readiness, family support and available programs and services.

- What question(s) will the data answer?
- What data are needed to answer the question?
- Are the data collected?
- Are the data accessible?
- What additional data need to be collected?

This process will define the early childhood data dictionary and map each data set to an authoritative data source. For example, the authoritative data source for child name, date of birth, gender, race, and town of birth (information required for SASID assignment) could be birth certificate data. Authoritative data for individual programs such as Family Centered Early Supports and Services would be in the NH Leads database.

7.1.3. **Establish data governance steering committee**

The Customer Data Integration (CDI) Institute, an information technology advisory firm specializing in customer data integration, defines data governance as the formal orchestration of people, processes, and technology to enable an organization to leverage data as an enterprise asset. Because data governance is a strategic initiative involving multiple functions across the enterprise, a data governance program should include a governing body (steering committee), an agreed upon common set of procedures, and a plan to communicate and execute those procedures.

**Advantages:**
- Identifies responsibility for data.
- Involves a broad base of the organization in the data improvement process.
• Creates a shared vision and lays the foundation for the future.
• Connects methodology with technology initiatives.

Disadvantages:
• Takes staff, time, and commitment to:
  o Identify steering committee members,
  o Implement committee goals and objectives,
  o Establish agendas and coordinate meetings, and
  o Document meetings and publish notes.

Recommendation: Establish a data governance steering committee with representation from the DHHS programs providing services to children, DHHS information technology staff, and DOE early childhood program staff participation. Charge the committee with developing data governance policies and procedures for the NH Early Childhood Data System. The data governance steering committee should establish and monitor:
  • Mission and vision
  • Goals and success measures
  • Data rules and definitions
  • Data stakeholders
  • Data stewards

The data governance process will provide a framework for how DHHS and DOE think about and communicate information-related processes across their respective organizations.

7.1.4. Convene project advisory council

The project advisory council (PAC) serves as a liaison between programs for families and children and school districts. It helps identify school district information needs and the ways that school districts can assist DHHS identify school outcome measures impacted by programs for families and children.

Advantages:
• Broadens the early childhood data system program support and oversight base.
• Connects the early childhood data system to public school districts.
• Provides school district-level advocacy and support for a State of NH RttT-ELC application.

Disadvantages:
• Takes staff, time, and commitment to:
  o Identify advisory council members,
  o Implement council goals and objectives,
  o Establish agendas and coordinate meetings, and
  o Document meetings and publish notes.

Recommendation: Convene an Early Childhood Data System Project Advisory Council (PAC) including representatives from State of NH departments and bureaus (HHS, DOE,) and public school districts. Public school district participants should include key urban school districts as well as select SAUs to ensure that school districts throughout the state of NH are equally represented.
Charge the PAC with ensuring that the Early Childhood Data System is consistent with public school district data collection and management practices. The PAC should ensure that the Early Childhood Data System provides information:

- On individual student school readiness that will be useful and used by school districts as children move into Pre-K, K and first grade programs and
- School success outcome data to inform DHHS of enhancements that will improve program and service delivery and effectiveness.

7.1.5. Data system location

A physical location for the data system hardware will need to be selected. Possible locations include the Department of Information Technology (DOIT) and the DHHS data center. The location of the system may require data center upgrades such as additional cabling and power to accommodate the server as well as increased battery backup, and data backup and disaster recovery capacity.

**Recommendation:** Locate the Early Childhood Data System hardware in the DHHS data center. The system’s multiple data sources, with the exception of student performance data from the DOE LDS, are DHHS programs and services. Further, the key functions of the system are to inform and improve DHHS programs and services, increase DHHS programs and services reporting capability, and define the impact of DHHS services on school readiness and student achievement.

7.2. Phase 2 – Create unique identifiers

7.2.1. Create a statewide unique child identifier

A unique statewide child identifier is necessary to implement the NH Early Childhood Data System and connect records across disparate sector data systems. This study has identified four possible approaches to creating a statewide unique child identifier. Each approach has advantages and disadvantages.

1. **Generate a random number**
   - **Advantages:**
     - Easy to create.
     - Does not link to other sensitive data.
   - **Disadvantage:**
     - Does not link to any other data.

2. **Use SASID number**
   - **Advantages:**
     - Established format.
     - Used by all public school districts and charter schools as a unique pupil identifier.
     - Expanded by legislation to include pre-school age children enrolled in Head Start and receiving Child Care Scholarship funds.
   - **Disadvantages:**
     - Must be assigned and managed by the DOE.
     - Requests specific information for number generation and assignment.
     - Legislation does not include all children receiving DHHS services.

3. **Use the Birth Certificate number**
Advantages:
- Existing unique identification number.
- Links to data required for SASID request.

Disadvantage:
- Links to sensitive health data e.g., birth conditions registry.
- A Birth Certificate number will not be available for children not born in the State of New Hampshire.

4. Generate a random number using the Birth Certificate number

Advantages:
- Links to name, date of birth, gender, race, and town of birth information required for SASID request.
- Not directly linked to sensitive health data.
- Provides for future connection of other valuable data e.g., birth conditions registry.

Disadvantage:
- Must be created by Health Statistics and Data Management and exported.
- Requires establishing a process to generate an identification number for children receiving DHHS services but not born in the State of New Hampshire.

Recommendation: Create a statewide unique child identifier for children receiving DHHS services with a random number generated based on the Birth Certificate number and a process for generating the number for children receiving DHHS services who were not born in the State of New Hampshire.

7.2.2. Create a statewide unique program/worksite identifier

Some DHHS programs assign a unique provider and/or worksite identifier. A unique, statewide program/worksite identifier is a single, non-duplicated number that is assigned to a program site e.g., Head Start, and/or a service delivery site e.g., child care provider or other early childhood service provider. A program/worksite identifier will allow DHHS to link data on child services to a particular site and track these characteristics over time and across sector databases. When connected to a unique statewide child identifier the program/worksite identifier allow DHHS to connect early childhood program sites with their staff and the children they serve to better understand the relationships among the site and staff characteristics, child program participation, and child outcomes.

The unique program/worksite identifier should connect to information on location of services provided; ages of children served; length and duration of the program(s)/services offered at the site; funding sources; and the availability of special services such as parent engagement, mental health consultation or health services data elements. Program quality data including national accreditation information, child-adult classroom ratios, curriculum and staff-child interaction measures and work environment characteristics such as the availability of professional development opportunities for staff, wages and benefits, and turnover could also be included in the data tracked.

Recommendation: Create a unique program/worksite identifier with the ability to link to children and, in time, to the early childhood workforce for data mining that will demonstrate the value of individual and combinations of child program and services.
7.3. Phase 3 – Interim Database

7.3.1. Interim Excel-based federated database

A federated database, in which the data remain in existing operational databases and are extracted into comma delimited files and imported into Excel, is shown in Figure 9. This model provides the means to:

- Discuss and adopt data policies and procedures necessary for the development and implementation of an Early Childhood Data System in advance of grant funding.
- Define a limited early childhood data dictionary.
- Identify the authoritative database for specific data elements.
- Create a single point-of-access to attach a DHHS unique child and DOE SASID identifier to the appropriate record.
- Analyze source data across program sectors.

Figure 9: Excel-based interim database

Advantages:

- Data remain in program-based operational databases.
- Takes less time to implement.
- Costs less to implement.
- More readily available hardware and software.
- Simplifies data confidentiality issues.
- Staff has experience using the Excel software applications.
- Provides a single-point to initiate and link DHHS unique child identifier with DOE SASID.
- Stages data for relational database data warehouse implementation.
- Provides ability to analyze source data across program sectors.
Disadvantages:

- Requires a server with significant processing capability to manage a large number of Excel rows and columns.
- Records need to be matched and combined to identify the same family and/or child receiving services from multiple programs.
- Does not create a unified, central schema for data elements.
- Staff may need additional training or a consultant to create macros combining records and to create effective reports.
- Does not provide the ability to conduct data mining and policy analysis across sectors and longitudinally.
- Creates a flat database not a relational database.
- Will not link child-level data with DOE and other key data systems.

Recommendation: Implement an Excel-based Early Childhood Data System as an interim step to creating a longitudinal early childhood data warehouse. The database should have limited information from each DHHS program. For example:

- Baseline information about each child (name, date of birth, gender, race, town of birth, address, and parent’s names).
- Receiving program services (yes/no).
- Date(s) program services started.
- Date(s) program services ended.

This recommendation is intended to provide the environment to initiate the policy development and adoption discussions and decisions required to implement an effective early childhood data system in advance of a grant award. The interim database would provide the following additional benefits.

- Identify and creates a limited data dictionary.
- Select the authoritative data source for each data element.
- Provide source data for analysis and reporting.
- Create a single location to implement a unique DHHS child identifier.
- Establish a single location for requesting DOE SASID assignments and connecting the SASID to a child’s records.
- Develop a CSV file with baseline data that will be used to create the longitudinal database recommended for a NH Early Childhood Data System.
7.4. Phase 4 – Secure Funding

7.4.1. Apply for RttT-ELC grant

The State of New Hampshire is eligible to apply for up to $37.5M in the next RttT-ELC grant competition cycle. The proposal would be a collaborative effort of the DHHS and DOE and requires support from the Governor’s office.

The grant competition will focus on improving early learning and development programs for young children by supporting State’s efforts to:

- Increase the number and percentage of low-income and disadvantaged children in each age group of infants, toddlers, and preschoolers who are enrolled in high-quality early learning programs;
- Design and implement an integrated system of high-quality early learning programs and services; and
- Ensure that any use of assessments conforms to the recommendation of the National Research Council’s reports on early childhood.

The DW proposed in this NH Early Childhood Data System Blueprint and Recommendations Study directly addresses initiatives one and two and indirectly addresses initiative three.

**Recommendation:** Work with the Governor’s Office, DHHS and DOE leadership to create a proposal and apply for the next RttT-ELC grant cycle. The proposal should include a request for funding sufficient to support the development and implementation of the early childhood DW proposed in recommendation 7.5 of this section.
7.5. Phase 5 – Early Childhood Longitudinal Data System

7.5.1. Implement a Relational Data Warehouse

A grant-funded relational database is the preferred model for a comprehensive, longitudinal NH Early Childhood Data System. In this model (Figure 10) data are exported from program operational databases using Extract, Translate, and Load (ETL) tools into a central hub. This model provides the ability to extract and integrate K-3 student outcome data including attendance and behavior data from the DOE NESEIS and LDS with DHHS operational program data for cross sector and longitudinal analysis and reporting.

**Advantages:**
- Creates a relational database.
- Provides the ability to store and analyze longitudinal data even if the program-based operational databases do not.
- Provides the ability to conduct data mining and policy analysis across sectors and longitudinally.
- Links child-level data at DHHS with DOE and other key data systems.

**Disadvantages:**
- Costs more to implement.
- Takes longer to implement.
- Requires hardware, database software, and query engine to be selected, purchased, and implemented.
- Dashboards and reports need to be designed.
• ETL routines need to be created and implemented.
• Staff members need system administration and use training.
• Interagency cooperation and policy issues need to be addressed.
• Compliance with legal issues of disclosing client data need to be resolved.

Recommendation: Secure grant funding (Recommendation 4) and design and implement a data warehouse capable of cross sector and longitudinal analysis and report generation with DHHS service and DOE student outcome data. The database should have more extensive information for each DHHS program as well as data from the DOE LDS and NHSEIS. For example:
• Baseline information about each child (name, date of birth, gender, primary language, race, town of birth, address, and parents names),
• Non-confidential information about the child e.g., allergy medical flags, etc.
• Non-confidential family information e.g., foster child, adopted, parents divorced, custody flags, etc.,
• For each DHHS family and/or child program receiving program services (yes/no),
• Date(s) each program service(s) started,
• Date(s) each program service(s) ended,
• Specific service(s) provided,
• Worksite identifier where service(s) provided and/or provider identifier information,
• school(s) enrollment and withdrawal dates attended,
• Grade(s) attended,
• Child attendance data,
• Child behavior data,
• Preschool SPED and/or SPED service(s) received (yes/no),
• Date(s) each Preschool SPED and/or SPED service(s) started and stopped,
• Preschool SPED and/or specific SPED service(s) received,
• Worksite identifier where Preschool SPED and/or SPED service(s) provided and/or provider identifier information, and
• Academic assessment data.

The development of the longitudinal data warehouse should include the design and implementation of a rich data dictionary, metadata tags, and information dashboards and reports.
8. **Summary and Conclusions**

8.1. **Summary**

Spark NH, the Governor-appointed Early Childhood Advisory Council, is a private-public partnership that works to create a comprehensive coordinated system of programs and supports for expectant families and young children aged birth to three and their families. For Spark NH, an integrated early childhood data systems represents one-of-a-series of strategic steps that the State of New Hampshire is taking to document successes and improve the state’s early learning childhood programs and services in the areas of health, early learning and family support.

Conducting this study has assisted in defining the NH Early Childhood Data System goals – expectations of how the early childhood data system will improve programs and services. The data system’s goals are to:

1. Provide information on the readiness of children to succeed in school and life.
2. Identify families and children who are receiving services from one DHHS program and who may be eligible for services from other DHHS programs or DOE Preschool SPED services.
3. Develop outcome information on the effectiveness of individual and combinations of DHHS programs and services for families and children.
4. Mine school success outcome data to inform DHHS programs and services of enhancements that will improve effectiveness.

Establishing authoritative source data and standardizing data elements are foundations for creating a relational, longitudinal early childhood data warehouse (Figure 11).

![Figure 11: Data-driven Decision Making Building Blocks](image-url)
Data governance policies and procedures that ensure data quality, security and confidentiality addressed in recommendation phase one, are pivotal components for institutionalizing an effective data-driven decision making process. It is on this canvas that data access, analysis, and planning are created and implemented.

The series of phased implementation activities outlined in this report initiate steps that will begin the process of creating a NH Early Childhood Data System and, at the same time, provide a plan that can be described in the RttT-ELC grant application. Demonstrating the state’s efforts to design and implement the plan’s foundation for a scalable, longitudinal DW combined with support from the Governor’s Office, DHHS and DOE leadership, and a public school district-based PAC in advance of a grant award should strengthen the proposal’s appeal.

8.2. Conclusion

The development of a longitudinal data system requires time, financial resources, and technical expertise. Developing a NH Early Childhood Data System will also require the development of data governance policies and intra-departmental agreements. The approach proposed in this Blueprint and Recommendations Study provides a way to make progress on the development of data governance policies, intra-departmental agreements, and initiating data gathering and data mining while working to secure funding for the comprehensive longitudinal early child data system proposed in phase five.

The activities proposed in phases one through four establish a foundation and framework that will support ongoing data system development, analysis and reporting capabilities. For example, the structure recommended of creating a unique DHHS child identifier and then associating the DOE SASID provides the added capability of being able to identify a control group, children in grades K-3 who have not received birth to grade 3 DHHS services and to mine data for longitudinal impact analysis.

As noted above, state-level early childhood data collection remains largely fragmented and uncoordinated. Few research projects have been able to document the direct impact of early child care and education services on increasing student achievement and closing the achievement gap. The State of Florida and Montgomery County Public Schools, Maryland case studies (2011) document that improved kindergarten entry level skills have resulted in significant increases in student reading proficiency by the end of 3rd grade and raised overall student achievement while closing the achievement gap. In both cases an early education strategy focused on public and private partnerships that included parents, community, and private childcare providers, and targeted children and families based on their unique needs was at the heart of the success.

Implementing an early childhood data system that informs and improves services to NH expectant families and children from birth through grade 3 and their families provides the opportunity to deliver positive experiences for all NH children. Combining longitudinal DHHS services and DOE student data provides a model for documenting success and identifying program and service delivery improvements that are at the same time beneficial and sustainable.
9. **Budget**

The Longitudinal Early Childhood Data System project will help New Hampshire significantly advance the use of data for improving policies, services, practices and instruction for children from birth through grade 3. The project will be accomplished by establishing a data governance structure, expanding existing and building additional technical architecture, establishing inter-departmental cooperation between the Departments of Health and Human Services and Education, implementing a Unique Statewide Child Identifier, and ensuring the alignment of local and state data collection and management.

An aggregated project-level budget detail for the Longitudinal Early Childhood Data System project is provided in Budget Part I: Project-level Budget Table (Table 2). Budget detail for the Longitudinal Early Childhood Data System tasks and activities for each project year is presented in Budget Part II: Recommendation-level Budget Table (Table 3). An overview narrative description of the yearly task and activities identified in the budget tables follows.

**Personnel and Fringe Benefits**

No funds for Personnel and Fringe Benefits are included in the project budget.

**Travel**

Travel includes mileage for meetings with project staff and stakeholders.

**Equipment**

Equipment is defined as tangible, non-expendable, personal property having a useful life of more than one year and an acquisition cost of $500 or more per unit. A one-time expense to provide office furniture and equipment for project staff is included in budget year 1.

**Supplies**

This cost includes office supplies, postage, and printing for project activities. Funds for supplies are included in each budget year.

**Contractual**

This funding provides for a project director, project manager, project support, IT business analyst, technical architect, programmer, DHHS and DOE support staff time and consultant services. The DHHS and DOE support funding will provide for assistance from program staff that specialize in the existing agency data systems and work with the early childhood data system team in the system development. Consulting services funding will provide for the purchase of additional expertise or support as needed, in areas such as stakeholder engagement or technical assistance. The use of consulting services will be determined and engaged on an as needed basis.

**Training Stipends**

Training stipend funds have been included in all four project year budgets. Training will be used to enhance existing and build additional capacity in current staff to provide program sustainability.

The total Early Childhood Data System project budget years 1 through 4, excluding Project Year 0 prior to RttT-ELC funding, is $4,528,000.
9.1. **Project Year 0 – ($200,000 prior to RttT grant)**

**Initiatives:** Establish policy, create unique identifiers, implement interim database, and apply for funding.

The Project Year 0 budget, prior to an RttT grant award, includes contractual funds for a project manager to advance the establishment of data governance policy and procedures. It also includes contractual funds to support DHHS and DOE staff time and effort creating and implementing a unique statewide child identifier process.

Additionally, funds are included for hardware and software acquisition and customization to implement an interim flat-file database. The interim database will provide the means to initiate the implementation of data governance policies and procedures, development of the data dictionary and metadata tags, and to begin aggregating program data and implementing the unique child identifier and acquiring and attaching SASID numbers to each child’s records.

9.2. **Project Year 1 – ($1,822,500)**

**Initiatives:** Design early childhood longitudinal data system.

Project Year 1 includes contractual funds to design the early childhood longitudinal data system, project website, and dashboard and reporting structures. Funds for the identification and acquisition of the longitudinal Early Childhood Data System hardware, database and query engine software are included in the Project Year 1 budget.

9.3. **Project Year 2 – ($1,009,500)**

**Initiatives:** Develop longitudinal data system design.

The budget for Project Year 2 includes contractual funds to develop the early childhood longitudinal data system including establishing the website, dashboard and report structures. Funds have also been included for DHHS data center upgrades necessary to support the data system’s additional hardware and software including backup and disaster recovery capacity and funds for yearly database and query engine software licenses.

9.4. **Project Year 3 – ($938,000)**

**Initiative:** Implement and roll-out Early Childhood Longitudinal Data System.

The Project Year 3 budget supports implementing the Early Childhood Data System production site including the project website, dashboards and reporting capabilities.

9.5. **Project Year 4 – ($888,000)**

**Initiative:** Full Early Childhood Longitudinal Data System implementation and DOE data integration.

In Project Year 4 a Memorandum of Understanding is developed with the DOE and data from the DOE’s LDS is brought into the Early Childhood Data System for use in analysis and policy recommendations. This represents full operation of the production site and access to the project’s website with dashboards and report generation tools.
Narrative: The yearly budget detail for Longitudinal Early Childhood Data System tasks and activities is presented in Budget Part I: Recommendation-level Budget Table.

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<th>Year 3</th>
<th>Year 4</th>
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Table 2: Project-level Budget
## Budget Part II: Recommendation-level Budget

### Project Year: 0 Prior to RttT-ELC funding

**Initiatives:** Establish policy, Create unique identifiers, Implement interim database, & Apply for funding

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*Table 3: Recommendation-level Budget – Year 0*
## Budget Part II: Recommendation-level Budget

### Project Year: 1

**Initiative: Design early childhood longitudinal data system**

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*Table 4: Recommendation-level Budget – Year1*
### Budget Part II: Recommendation-level Budget

**Project Year: 2**

**Initiative: Develop early childhood longitudinal data system**

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**Table 5: Recommendation-level Budget – Year 2**
### Budget Part II: Recommendation-level Budget

**Project Year: 3**

**Initiative: Implement and roll-out early childhood longitudinal data system**

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*Table 6: Recommendation-level Budget – Year 3*
### Budget Part II: Recommendation-level Budget

**Project Year: 4**

**Initiative: Full Early Childhood Longitudinal Data System Implementation & DOE Data Integration**

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| Total Years 1-4: $4,528,000 | $0           | $0        | $20,000            | $1,350,000 | $38,000      | $2,880,000  | $240,000               | $0                 |         |

*Table 7: Recommendation-level Budget – Year 4*
10. **Action Plans**

10.1. **Establish a data governance steering committee**

<table>
<thead>
<tr>
<th>Initiative: Establish a Data Governance Steering Committee</th>
<th>Recommendation: Establish a Data Governance Steering Committee to define the policies and procedures that will be used to develop, manage and sustain a NH Early Childhood Data System.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interdependencies:</strong></td>
<td>This recommendation is not dependent on the completion of other high priority recommendations. It is rather the driving force behind a successful, concerted effort that maximizes existing resources to produce long term results for moving forward by creating an organization structure that improves information data acquisition and management in support of data analysis, reporting and data-driven decision making.</td>
</tr>
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</table>

**Leadership Responsibility:**

*Spark NH Early Childhood Data Systems Committee*

*DHHS Executive and IT Leadership*

*DOE IT Leadership*

**Key Performance Indicator(s):**

1. Data Governance policies and procedures that maintain up-to-date, complete and accurate data for informed decision making.

<table>
<thead>
<tr>
<th>Action Steps <em>Denotes that step has already started.</em></th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Convene a NH Early Childhood Data Governance Steering Committee as an independent committee or as a subcommittee of the Spark NH Data Systems Committee including executive, program, and information technology leadership. <em>(Establish a data-driven culture.)</em></td>
<td>Year 1 13/14</td>
</tr>
<tr>
<td>2. Charge the committee to emphasize early childhood data as a valuable State resource and data management as an essential State function.</td>
<td>X</td>
</tr>
<tr>
<td>3. Include in the Data Governance Steering Committee charter responsibility to develop, adopt, and disseminate data quality assurance policies and procedures.</td>
<td>X</td>
</tr>
<tr>
<td>4. Complete the process of identifying the specific questions where data is important to informed decision-making.*</td>
<td>X</td>
</tr>
<tr>
<td>5. Conduct an inventory of data elements available from DHHS program data systems. <em>(Create a data dictionary.)</em></td>
<td>X</td>
</tr>
<tr>
<td>6. Based on the data element inventory, develop a data map that defines the source of all data items and identifies which system is the authoritative system and identifier for data each item. <em>(Develop a Metadata dictionary.)</em></td>
<td>X</td>
</tr>
<tr>
<td>7. Develop an annotated list of the questions that early childhood reports will work to answer and identify: (a) the data elements that are need to answer each question, (b) if the data is collected, (c) the authoritative source for the each data item, and (d) additional data that needs to be collected. <em>(Document the report inventory.</em>)</td>
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</table>
### Initiative: Establish a Data Governance Steering Committee

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<td><strong>Year 1</strong></td>
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<tr>
<td>8. Establish a working group to review existing and recommend additional</td>
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<tr>
<td>DHHS data management policies with emphasis on identifying processes</td>
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<tr>
<td>that ensure early child data quality at the point of entry for all</td>
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<tr>
<td>authoritative data elements.</td>
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<tr>
<td><em>(Define data governance policy and procedures.)</em></td>
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<tr>
<td>9. Support the working group with establishing data needs for early child</td>
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<tr>
<td>program analysis and reporting with access to national best practice</td>
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<tr>
<td>policies, procedures, and tools.</td>
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</tr>
<tr>
<td><em>(Define data governance policy and procedures.)</em></td>
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<tr>
<td>10. Identify, document, and publish the data owner and/or steward, a named</td>
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<tr>
<td>person, for each official authoritative data element and source.</td>
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<tr>
<td><em>(Identify data stewards.)</em></td>
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<tr>
<td>11. Establish DHHSS-wide child program services data management guidelines</td>
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<tr>
<td>including data element format standardization where possible.</td>
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<tr>
<td><em>(Implement data standards.)</em></td>
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<tr>
<td>12. Adopt and disseminate data management policies and procedures</td>
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<tr>
<td>including systems integration policies to which each Bureau, program, and</td>
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<td>service provider must adhere and identify best practice standards for data</td>
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<tr>
<td>life cycle. <em>(Implement data standards.)</em></td>
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<tr>
<td>13. Set, publish, and enforce data quality integration standards for all DHHS</td>
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<tr>
<td>child service program data system application purchases going forward.</td>
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<tr>
<td><em>(Adopt data integration standards.)</em></td>
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<tr>
<td>14. Task the DHHS IT Department in collaboration with the Data Governance</td>
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<tr>
<td>Steering Committee to research, design, and propose a Data Warehouse (DW)</td>
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<tr>
<td>design, and Business Intelligence (BI) tools for gathering, storing,</td>
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<tr>
<td>analyzing, and reporting on near-term and longitudinal service provision</td>
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<tr>
<td>and child and student success metrics. *(Select Business Intelligence</td>
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<tr>
<td>analytic tools.)*</td>
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<tr>
<td>15. Identify DHHS early child role-based data dashboard designs and access.</td>
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<tr>
<td><em>(Create role-based data dashboards and data access rights.)</em></td>
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<tr>
<td>16. Implement a yearly process to review policies, procedures, and evaluate</td>
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<tr>
<td>their effectiveness in making accurate, complete, and up-to-date</td>
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<tr>
<td>information available and its success supporting and improving data-driven</td>
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<tr>
<td>decision-making. <em>(Review data analysis and planning program.)</em></td>
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10.2. Create a statewide unique child identifier

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<th>Create a statewide unique child identifier</th>
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<tr>
<td>Recommendation:</td>
<td>Implement a statewide unique child identifier by creating a random number using the NH birth certificate number as a base and a process for creating a unique identifier for children not born in NH to connect records across disparate data systems.</td>
</tr>
<tr>
<td>Interdependencies:</td>
<td>This recommendation is not dependent on the completion of other high priority recommendations. It is the essential component for connecting family and child records across disparate operational program databases for data aggregation, analysis and reporting.</td>
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<table>
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<th>Leadership Responsibility:</th>
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<tbody>
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<td>DHHS Executive and IT Leadership</td>
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<tr>
<td>Bureau of Health Statistics and Data Management</td>
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<td>Office of the Secretary of State</td>
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<table>
<thead>
<tr>
<th>Key Performance Indicator(s):</th>
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<td>1. A process for creating the statewide unique child identification number.</td>
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</table>

1. Invite the Spark NH Early Childhood Data Systems Committee, appropriate DHHS executive and IT leadership including the Bureau of Health Statistics and Data Management, and the Office of the Secretary of State representation to meet and discuss establishing policies and procedures for creating and using a statewide unique child identifier. *(Establish a data-driven culture.)*

2. Establish a policy that a random statewide unique child identification number shall be assigned to each child receiving DHHS program services. *(Define data governance policy and procedures.)*

3. Institute a policy requiring that when a child born out of state is approved for DHHS services the approving program shall copy the child’s out of state birth certificate and send an electronic copy to the Bureau of Health Statistics and Data Management. *(Implement data standards.)*

4. Implement a process for the Bureau of Health Statistics and Data Management to catalog and store electronic copies of out of state birth certificates. *(Define data governance policy and procedures.)*

5. Define the process for the Bureau of Health Statistics and Data Management to create a random number based on the NH Birth Certificate Number with a numeric or alpha character identifying the NH birth. *(Implement data standards.)*

6. Design a process for Bureau of Health Statistics and Data Management to create a random number for children not born in NH with a numeric or alpha character identifying the out of state birth. *(Implement data standards.)*
<table>
<thead>
<tr>
<th>Initiative: Create a statewide unique child identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommendation:</strong> Implement a statewide unique child identifier by creating a random number using the NH birth certificate number as a base and a process for creating a unique identifier for children not born in NH to connect records across disparate data systems.</td>
</tr>
</tbody>
</table>

| 7. Create a web portal with query page for DHHS programs and services providers to request a child’s unique identification number from the Bureau of Health Statistics and Data Management. *(Implement data standards.)* |
|-------------------------------------------------|---|
| X | X |

<table>
<thead>
<tr>
<th>8. Provide an identification number web portal response that includes the:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) child’s unique identification number,</td>
</tr>
<tr>
<td>(b) name,</td>
</tr>
<tr>
<td>(c) date of birth,</td>
</tr>
<tr>
<td>(d) parents name(s),</td>
</tr>
<tr>
<td>(e) gender,</td>
</tr>
<tr>
<td>(f) race/ethnicity, and</td>
</tr>
<tr>
<td>(g) town of birth.</td>
</tr>
<tr>
<td><em>(Note: This data is required for DOE SASID assignment.)</em></td>
</tr>
<tr>
<td><em>(Adopt data integration standards.)</em></td>
</tr>
<tr>
<td>X</td>
</tr>
</tbody>
</table>

| 9. Develop a DHHS process for sending the information to the DOE for SASID assignment and receiving and associating the SASID with the child’s unique DHHS identification number. *(Adopt data integration standards.)* |
|-------------------------------------------------|---|
| X | X |
10.3. Implement an interim Excel database

<table>
<thead>
<tr>
<th>Initiative:</th>
<th>Implement an interim Excel database</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommendation:</td>
<td>Implement an Excel-based Early Childhood Data System in advance of creating a longitudinal, relational data warehouse. This will provide the environment to initiate the policy development discussions and adoption decisions required for the longitudinal, relational data warehouse in advance of an RttT grant award.</td>
</tr>
<tr>
<td>Interdependencies:</td>
<td>This recommendation is dependent on establishing the policy, procedures and implementation of the statewide unique child identifier.</td>
</tr>
<tr>
<td>Leadership Responsibility:</td>
<td>Spark NH Early Childhood Data Systems Committee, DHHS Executive and IT Leadership, Bureau of Health Statistics and Data Management</td>
</tr>
<tr>
<td>Key Performance Indicator(s):</td>
<td>1. An Excel database that includes all children from birth through grade three receiving DHHS services associated with a unique identification number.</td>
</tr>
</tbody>
</table>

### Action Steps

<table>
<thead>
<tr>
<th>Action Steps</th>
<th>Timeline</th>
</tr>
</thead>
</table>
| **1.** Identify the data elements and the operational program data source where they reside. ([Create data and metadata dictionaries.](#))
| *Denotes that step has already started.* | Year 1 13/14 | Year 2 14/15 | Year 3 15/16 |
| | **X** | | |
| **2.** Establish a common understanding of the project objectives, activities and timeline with staff in each operational program sector. ([Identify data stewards.](#)) | **X** |
| | | | |
| **3.** Specify and secure the required server hardware and Excel software. | **X** |
| | | | |
| **4.** Ensure that appropriate power and data backup and disaster recovery capacity and procedures are in place to support the interim system. | | | |
| | | | |
| **5.** Create stored procedure(s) to extract operational program data and create a CSV file(s). ([Define data governance policy and procedures.](#)) | **X** | **X** |
| | | | |
| **6.** Test the ability to compile the CSV format data into one Excel file. ([Implement data standards.](#)) | **X** |
| | | | |
| **7.** Develop procedures for matching files on common data fields e.g., name, date of birth, gender, ethnicity, etc. ([Adopt data integration standards.](#)) | **X** |
| | | | |
| **8.** Define a process for adding the unique identifier to the matched files. ([Adopt data integration standards.](#)) | **X** | **X** |
| | | | |
| **9.** Explore procedures to add assigned unique identifiers back into the individual operational program databases. ([Adopt data integration standards.](#)) | **X** | **X** |
| | | | |
| **10.** Develop a process for sending information to the DOE for SASID assignment and receiving and associating the SASID with the child’s unique DHHS identification number. ([Adopt data integration standards.](#)) | **X** | **X** |
11. Appendices

**Appendix A – Acronyms**

The following acronyms have been used in this report.

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASQ</td>
<td>Ages and Stages Questionnaire</td>
</tr>
<tr>
<td>BI</td>
<td>Business Intelligence Analytic Tool</td>
</tr>
<tr>
<td>CEDS</td>
<td>Common Education Data Standards</td>
</tr>
<tr>
<td>CDI</td>
<td>Customer Data Integration</td>
</tr>
<tr>
<td>COPA</td>
<td>Child Outcome, Planning and Assessment</td>
</tr>
<tr>
<td>CSV</td>
<td>Comma Separated Values</td>
</tr>
<tr>
<td>DBMS</td>
<td>Database Management System</td>
</tr>
<tr>
<td>DOE</td>
<td>Department of Education</td>
</tr>
<tr>
<td>DOIT</td>
<td>Department of Information Technology</td>
</tr>
<tr>
<td>DPW</td>
<td>Department of Public Welfare</td>
</tr>
<tr>
<td>DQC</td>
<td>Data Quality Campaign</td>
</tr>
<tr>
<td>DUCK</td>
<td>Division Unit Client Key</td>
</tr>
<tr>
<td>DW</td>
<td>Data Warehouse</td>
</tr>
<tr>
<td>ECE</td>
<td>Early Childhood Education</td>
</tr>
<tr>
<td>ECDC</td>
<td>Early Childhood Data Collaborative</td>
</tr>
<tr>
<td>Eln</td>
<td>Early Learning Network</td>
</tr>
<tr>
<td>ESEA</td>
<td>Elementary and Secondary Education Act</td>
</tr>
<tr>
<td>ETL</td>
<td>Extract, Translate and Load</td>
</tr>
<tr>
<td>FCECSS</td>
<td>Family Centered Early Childhood Supports and Services</td>
</tr>
<tr>
<td>FDBS</td>
<td>Federated Database System</td>
</tr>
<tr>
<td>FERPA</td>
<td>Family Educational Rights and Privacy Act</td>
</tr>
<tr>
<td>FTP</td>
<td>File Transfer Protocol</td>
</tr>
<tr>
<td>HFA</td>
<td>Healthy Families America</td>
</tr>
<tr>
<td>HHS</td>
<td>Health and Human Services</td>
</tr>
<tr>
<td>HIPAA</td>
<td>Health Insurance Portability and Accountability Act</td>
</tr>
<tr>
<td>HVNH</td>
<td>Home Visiting New Hampshire</td>
</tr>
<tr>
<td>IEP</td>
<td>Individualized Education Program</td>
</tr>
<tr>
<td>LDS</td>
<td>Longitudinal Data System</td>
</tr>
<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>NCLB</td>
<td>No Child Left Behind</td>
</tr>
<tr>
<td>New HEIGHTS</td>
<td>New Hampshire Empowering Individuals to Get Help Transitioning to Self-sufficiency</td>
</tr>
<tr>
<td>NGA</td>
<td>National Governors Association</td>
</tr>
<tr>
<td>NH</td>
<td>New Hampshire</td>
</tr>
<tr>
<td>NHSEIS</td>
<td>New Hampshire Special Education Information System</td>
</tr>
<tr>
<td>OCDEL</td>
<td>Office of Child Development and Early Learning</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>ODBC</td>
<td>Object Database Connectivity</td>
</tr>
<tr>
<td>PAC</td>
<td>Project Advisory Council</td>
</tr>
<tr>
<td>PDE</td>
<td>Pennsylvania Department of Education</td>
</tr>
<tr>
<td>PIR</td>
<td>Program Information Report</td>
</tr>
<tr>
<td>PROMIS</td>
<td>Program Resources and Outcomes Management System</td>
</tr>
<tr>
<td>RSA</td>
<td>Revised Statutes Annotated</td>
</tr>
<tr>
<td>RttT-ELC</td>
<td>Race To the Top Early Learning Challenge</td>
</tr>
<tr>
<td>SASID</td>
<td>State Assigned Student Identifier</td>
</tr>
<tr>
<td>SPED</td>
<td>Special Education</td>
</tr>
<tr>
<td>TBD</td>
<td>To Be Determined</td>
</tr>
<tr>
<td>UNH</td>
<td>University of New Hampshire</td>
</tr>
<tr>
<td>WMG</td>
<td>Watch Me Grow</td>
</tr>
</tbody>
</table>
Appendix B – Documents and Websites Reviewed

The following documents and websites were reviewed in the development of this report.


New Hampshire Department of Education, Bureau of Special Education. NH Special Education Information System (NHSEIS) Preschool Session. 2012


Voices for Utah Children. *Raising Student Achievement by 3rd grade: The Success of Montgomery County Public Schools (MD) and Florida Public Schools*. 2011.
Appendix C – Key Stakeholder Interviews

The following key stakeholders were interviewed in the conduct of the study.

Cheryl Clark  
Information Technology Manager  
Bureau of Data Quality  
Pennsylvania Department of Education

Mindy Cox  
Information Technology Manager  
Department of Information Technology

Steven DeGiso  
Information Technology Manager  
NH Bridges Project Manager  
Bureau of Child Protection  
NH Department of Health and Human Services

Irene Koffink  
Longitudinal Data System Project Manager  
Division of Program Support  
NH Department of Education

David J. Laflamme  
Research Assistant Professor  
Department of Health Management & Policy NH Institute for Health Policy & Practice  
University of New Hampshire & State Maternal & Child Health Epidemiologist (contract via UNH)  
Division of Public Health Services  
NH Department of Health and Human Services

Thomas Lambert  
Chief of Health Statistics and Data Management  
Bureau of Public Health Statistics and Informatics  
NH Division of Public Health Services

Laura Milliken  
Director, Spark NH  
Early Childhood Advisory Council

Debra Nelson  
Administrator, NH Head Start State Collaborative Office  
Division for Children, Youth and Families  
NH Department of Health and Human Services
Heidi Petzold  
Home Visiting Program Coordinator  
Maternal & Child Health Section  
Bureau of Population Health & Community Services  
Division of Public Health Services,  
NH Department of Health and Human Services

Christine Philipson  
Data and Software Development Contractor  
Community Support Network, Inc.

Richard Regan  
Managing Analyst  
Office of Information Services  
NH Department of Health & Human Services

Jeff Silver  
Data Warehouse Services, Manager  
Office of Information Services  
NH Department of Health & Human Services

Sudha Sharma  
Database Administrator  
Department of Information Technology

Carolyn H. Stiles  
Program Coordinator  
Family Centered Early Supports and Services  
Bureau of Developmental Services  
NH Department of Health and Human Services

Patricia M Tilley  
Chief, Bureau of Population Health and Community Services  
Division of Public Health Services  
NH Department of Health and Human Services

Susan Wall  
Operations Manager  
SNHS, Inc. Child Development Program  
NH Department of Health and Human Services
Appendix D – Interview Protocol

Interview Protocol for NH Department of Health and Human Services programs including:

i. ENDECA software and data systems integration
ii. Division of Vital Records Administration
iii. New HEIGHTS – TANF, SNAP
iv. Bridges – Child Care Scholarship, Child Protection
v. Family Centered Early Supports and Services
vi. Home Visiting New Hampshire
vii. Watch Me Grow
viii. NH Head Start

1. What data is currently collected?
   (e.g., geographical, age, socioeconomic, family, and/or developmental information)

2. Who collects the data?

3. Who provides the data that is collected?
   (e.g., parents, grandparents, guardian, other)

4. How is the data collected?
   (e.g., paper form, electronic, other)

5. Who maintains the data and how is it saved?
   (e.g., application, import and export data format(s))

6. Is the data verified?
   (e.g., by who, how)

7. Is the data updated?

8. Is the data shared with any other agency?

9. Does this agency get data from any other agency?
   If yes:
   • what data is collected?
   • what is done with the data?
     (e.g., expanded information, verification, correlation)
   • how is saved and maintained?
     (e.g., in same file, separate file, other)
   • how and when is the data updated?
   • If the data is updated, who updates the data?

10. Is there any data that is not currently collect but has been identified as important to collect?

11. Are there any other data sets your agency would like to access?

12. How does the agency adhere to state and federal privacy laws?

13. What policy, political barriers and/or facilitators are there to gathering and sharing data with other agencies?

14. What recommendations do you have for developing an integrated early childhood data system?
Interview Protocol for childhood data at the NH Department of Education:

i. **Longitudinal Data (SASID) System**
   1. What is the current process for assigning SASIDs?
   2. How are multiple SASID assignments managed? (e.g., duplicates, triplicates, etc.)
   3. Under what conditions is a SASID assigned to a preschool child?
   4. How are preschool SASIDs managed when the child enters elementary school?
   5. What will be required to implement assigning SASIDs to preschool children?
   6. What might an integrated NH early childhood data system cost?

ii. **Preschool Special Education**
   1. What Pre School Special Education data is currently collected by the DOE? (e.g., geographical area, age, socioeconomic, family, and/or developmental information)
   2. Who collects the data?
   3. Who provides the data that is collected? (e.g., parents, grandparents, guardian, other)
   4. How is the data collected? (e.g., paper form, electronic, other)
   5. Who maintains the data and how is it saved? (e.g., application, data format)
   6. Is the data verified? (e.g., by who, how)
   7. Is the data updated? (e.g., when, how, who)
   8. Is the data shared with any other agency or agencies?
   9. Is there any early childhood data that the DOE does not currently collect but has identified as important to collect?
   10. How does the DOE adhere to state and federal privacy laws?
   11. What policy, political barriers and/or facilitators are there to gathering and sharing early childhood data with other agencies?

iii. **Special Education**
   1. What is the import/export format that the DOE uses for maintaining Special Education data?
   2. Have NH school systems standardized on one Special Education application (such as Easy IEP, IEP Direct, Case-e, etc.) and/or is one or more IEP software product(s) prevalent than other products?
   3. Is a student’s Preschool Special Education data connected to or maintained separately from their school age Special Education data?