



EDUCATION AND LABOR

# Advancing Investments in the Early Years

Opportunities for Strategic Investments  
in Evidence-Based Early Childhood Programs  
in New Hampshire

*Technical Appendixes*

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A 2017 RAND report, *Investing in the Early Years: The Costs and Benefits of Investing in Early Childhood in New Hampshire*, documented the substantial share of children in New Hampshire who are at risk of adverse developmental outcomes because of low family resources and other factors that can compromise healthy development in the first few years of life. The report also indicated that New Hampshire would benefit from further investments in two types of evidence-based early childhood interventions: home visiting and preschool education. The goals of the follow-on study documented in this report were to examine the variation in the need for early childhood investments in communities across New Hampshire, the current investments under way at the local level and how they match with underlying needs, and where there are opportunities for further strategic investments in the state's early childhood system, particularly evidence-based home visiting and preschool education. The author accomplished these goals by (1) assembling local-level indicators to characterize the variation across the state in the factors that place children and families at risk in the early years and to determine whether current early childhood investments are reaching communities with the greatest need and (2) collecting information on four focal communities to identify the strategies they are using to advance their early childhood programs and the challenges they face in making further investments. The analysis of the indicators and focal communities provides a basis for recommending a strategic approach to investments in evidence-based home visiting from birth to age 3 and preschool for one or two years before kindergarten entry.

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## Appendix A. Local Data Indicators and Sources for New Hampshire

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Table A.1 documents the set of substate indicators we assembled for New Hampshire. All indicators come from publicly available sources or administrative databases maintained by federal or state government agencies. For each indicator, the table lists the detailed measure, the years covered and data source, and the level of geography (e.g., county, school district, or a geocoded location).

**Table A.1. Geocode Measures, Sources of Data, and Level of Geography**

<b>Measure</b>	<b>Detailed Measure</b>	<b>Years and Sources</b>	<b>Geography</b>
<b>Demographics</b>			
Age 0 to 4 (N, %)	Count of children under age 5 and percentage of total population under age 5	2013–2017 ACS (Tables S0101, B09001)	School district, county
Race-ethnic distribution of children ages 0 to 18 (%)	Percentage of population 0 to 18 by race and Hispanic origin	2013–2017 ACS (Table S0901)	School district, county
Women with births by age (N, %)	Number of women with births in last 12 months by age (15–19, 20–34, and 35–50) and percentage by age group	2013–2017 ACS (Table S1301)	School district, county
Births by poverty status (N, %)	Number of women with births in last 12 months by poverty status (< 100% FPL, 100–199% FPL, 200% or higher of FPL) and percentage by poverty status	2013–2017 ACS (Table S1301)	School district, county
Language spoken at home (%)	Percentage of population 5 years and older speaks a language other than English at home	2013–2017 ACS (Table S1601)	School district, county
Children age 0 to 4 in single-parent family (%)	Percentage of own children under age 5 in a single-parent family	2013–2017 ACS (Table B09002)	School district, county
<b>Economic Status</b>			
Median family income (\$)	Median income of families with own children under age 18 (2011 inflation-adjusted dollars)	2013–2017 ACS (Table S1903)	School district, county
Poverty rate (%)	Percentage of families living with family income less than poverty threshold	2013–2017 ACS (Table S1702)	School district, county
Poverty rate of children under 18 (%)	Percentage of children under 18 with family income less than poverty	2013–2017 ACS (Table B17010)	School district, county
Poverty rate of children under 5 (%)	Percentage of children ages 0–4 with family income less than poverty	2013–2017 ACS (Table B17010)	School district, county
Children under 6 without health insurance (%)	Percentage of children under 6 without health insurance	2013–2017 ACS (Table S2701)	School district, county
Poverty rate of children 5 to 17 (%)	Percentage of children ages 5–7 with family income less than poverty	2013–2017 Census SAIPE	School district, county
Eligibility for free or reduced-price lunch (%)	Percentage of children in grades K–12 eligible for free or reduced-price lunch	2013–2017 NHDoe	School district
<b>Home Visiting Indicators</b>			
Early Head Start programs and slots	Number of funded Early Head Start slots (infants/toddlers; pregnant women)	2013–2017 Head Start Program Information Reports	Geocoded
Four-year colleges or universities offering nursing degree	Postsecondary institution and annual number of graduates	2013–2017 IPEDS	Geocoded

Measure	Detailed Measure	Years and Sources	Geography
<b>Early Care and Education Indicators</b>			
Head Start centers and slots	Number of funded Head Start slots	2013–2017 Head Start Program Information Reports	Geocoded
Licensed child care providers	Licensed programs by Licensed Plus status	NHDHHS Child Care Licensing Unit	Geocoded
Licensed child care providers with NAEYC accreditation	Licensed centers with NAEYC accreditation	2017 NAEYC	Geocoded
Public preschool enrollment	Number of children enrolled in preschool as of October 1	2013–2017 NHDoe	School district
Public preschool enrollment rate (%)	Number of children enrolled in preschool as of October 1 divided by kindergarten (or grade 1) enrollment as of October 1 in subsequent year	2013–2017 NHDoe	School district
Two-year colleges offering ECE and special education degree	Postsecondary institution by degree type	2013–2017 IPEDS	Geocoded
Four-year colleges or universities offering ECE and special education degree	Postsecondary institution by degree type	2013–2017 IPEDS	Geocoded
<b>K–12 Education Indicators</b>			
Kindergarten enrollment	Number of children enrolled in kindergarten as of October 1	2013–2017 NHDoe	School district
Grade 1 enrollment	Number of children enrolled in first grade as of October 1	2013–2017 NHDoe	School district
Grade 3 reading achievement scores	Average score and percentage proficient in reading in grade 3	2013–2016 NHDoe	School district
Grade 3 mathematics achievement scores	Average score and percentage proficient in mathematics in grade 3	2013–2016 NHDoe	School district
Grade 8 reading achievement scores	Average score and percentage proficient in reading in grade 8	2013–2016 NHDoe	School district
Grade 8 math achievement scores	Average score and percentage proficient in mathematics in grade 8	2013–2016 NHDoe	School district
High school dropout rate	Four-year adjusted cohort graduation rate	2013–2016 NHDoe	School district
<b>Child and Health Indicators</b>			
Low birth weight (%)	Percentage of birth weights of less than 2,500 grams	2013–2016 NH DVRA	City, county
Teen birth rate (per 1,000 teens)	Number of births to females ages 15–19 per 1,000 females ages 15–19	2013–2016 NH DVRA	City, county
Child abuse and neglect (per 1,000 children)	Number of substantiated maltreatment cases per 1,000 children under age 18	2013 NHDHHS, DCYF	County
Child in out-of-home placements (per 1,000 children)	Number of children in out-of-home CPS or JJS placement per 1,000 children under age 18	2014 NHDHHS, DCYF and DJJS	County
Opioid-related death rate (per 100,000 persons)	Number of opioid-related deaths per 100,000 persons (age-adjusted)	2013–2017 NH DVRA	City, county

SOURCES: As indicated in “Years and Sources” column.

NOTES: ACS = American Community Survey; CPS = Child Protection Services; DCYF = Division for Children, Youth and Families; DJJS = Division for Juvenile Justice Services; DVRA = Division of Vital Records Administration; FPL = Federal Poverty Level; IPEDS = Integrated Postsecondary Education Data System (National Center for Education Statistics, undated, as of January 10, 2019: <https://nces.ed.gov/ipeds/>); JJS = Juvenile Justice Services; NAEYC = National Association for the Education of Young Children; NHDHHS = New Hampshire Department of Health and Human Services; NHDoe = New Hampshire Department of Education; SAIPE = Small Area Income and Poverty Estimates.

## Appendix B. Method for Estimating the 4K Enrollment Rate

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This appendix provides additional detail on the method used to estimate the 4K enrollment rate for New Hampshire as a whole and for the state's elementary and unified school districts. The 4K enrollment rate is reported in Table 7 for the state level and incorporated in Figure 7 of the main report.

As noted in the body of the report, the New Hampshire Department of Education (NHDoE) publishes district enrollment rates by grade, including enrollment in preschool.<sup>1</sup> But there is no additional information about the ages of the children enrolled in the preschool grade and whether they are children with identified special needs or their typically developing peers.

For any given year  $t$ , we assume the total preschool enrollment is the sum of a 4K cohort that will enter kindergarten in the following year ( $t + 1$ ) and a 3K cohort that will enter kindergarten in the year after that ( $t + 2$ ). Within each of the 3K and 4K cohorts, we assume that some portion of the cohort has been identified for special education services under the Individuals with Disabilities Education Act (IDEA) Section 618 Part B for preschool-age children. The remainder are the typically developing children.

We define the 4K enrollment rate as the number of students enrolled in 4K for school year  $t$  divided by the number of students enrolled in grade 1 two years later at  $t + 2$ . Thus, to compute the enrollment rate, we need to estimate the share of the reported New Hampshire preschool enrollment that constitutes the 4K cohort. We generate this estimate first at the state level and then at the district level.

### State-Level Estimate

For the state-level estimate of the 4K enrollment rate (reported in Table 7), we rely on one additional source of information. The U.S. Department of Education (USDoE) publishes, at the state level, the number of children identified with special needs under IDEA 618 Part B.<sup>2</sup> Enrollment is reported by single-year age groups starting with age 3. Within each age group, the distribution of children by type of education setting is also recorded. This includes the education settings shown in Table B.1, where children may be classified as being in a regular early childhood program, a separate classroom, another location, or a residual category.

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<sup>1</sup> New Hampshire Department of Education, "Attendance and Enrollment Reports," website, undated. As of January 10, 2019: <https://www.education.nh.gov/data/attendance.htm>.

<sup>2</sup> U.S. Department of Education, "IDEA Section 618 Data Products: State Level Data Files," website, 2018. As of January 10, 2019: <https://www2.ed.gov/programs/osepidea/618-data/state-level-data-files/index.html>.

**Table B.1. Distribution of New Hampshire 3- and 4-Year-Olds with Special Needs, by Education Setting and School Year**

Indicator	2014–2015	2015–2016	2016–2017	2017–2018
Age 3				
In regular early childhood program (any hours)	461	456	516	473
In separate classroom	181	151	154	155
In another location other than regular early childhood program	287	290	285	294
Other	23	8	16	17
Total	952	905	971	939
Age 4				
In regular early childhood program (any hours)	569	667	652	715
In separate classroom	241	210	195	166
In another location other than regular early childhood program	296	337	351	349
Other	14	23	11	18
Total	1,120	1,237	1,209	1,248

SOURCE: USDoE IDEA Part B data.

We generate three different estimates at the state level of the 4K enrollment to determine how sensitive our estimate is to the assumptions we make.

**Method A.** Table B.2 shows that we start in line 1 with the total preschool enrollment for New Hampshire as reported by NHDoe. We then assume that the USDoE figures for 3- and 4-year-olds identified under IDEA constitute the children with special needs among the 3K and 4K cohorts (lines 2 and 3). We assume that the residual group constitutes the typically developing children and that group will be primarily four-year-olds (line 1 minus lines 2 and 3 produces line 4). Statewide first grade enrollment two years later is shown as line 5. Finally, the 4K enrollment rate is the sum of lines 3 and 4 divided by line 5. That rate is reported in line 6. Under these assumptions, the 4K enrollment increases from 21 percent to 24 percent from 2014–2015 to 2016–2017. The rate for 2017–2018 cannot be computed because first grade enrollment for that cohort will not occur until 2019–2020.

**Method B.** One issue in mapping the federal IDEA counts to the state preschool enrollment is that the former is based on age, whereas the latter is based on grade. During the 3K year, some



children will be age 3, while others will already be age 4, depending on when the counts are taken. Likewise, the 4K cohort will be a mixture of 4- and 5-year-olds. Thus, it is possible that the counts for 3-year-olds are an underestimate of the size of the 3K cohort. As an alternative estimate, we assume that the size of the 3K and 4K cohorts would be identical, i.e., equal to the line 3 value from Estimate A. The result is an estimated 4K enrollment rate that rises from 20 percent to 22 percent. The rate is lower because more of the preschool enrollment is assumed to be in the 3K cohort.

**Method C.** Method A and Method B assume that all identified 3- and 4-year-olds are counted by districts as part of their preschool enrollment. However, according to Table B.1 (on the next page), about 30 percent of identified children are in settings outside of a public school. Thus, Method C follows the same assumptions as Method A, but we assume that just 70 percent of the identified 3- and 4-year-olds in the two cohorts will be counted as preschool enrollments by districts.

Estimates B and C define the lower- and upper-bound estimates of the state 4K enrollment rate, respectively. Estimate A falls in between.

**Table B.2. 4K Enrollment for New Hampshire, Alternative Estimates**

<b>Indicator</b>	<b>2014–2015</b>	<b>2015–2016</b>	<b>2016–2017</b>	<b>2017–2018</b>
<b>Estimate A</b>				
1. Total state preschool enrollment (N)	3,557	3,670	3,894	3,876
2. Total identified 3-year-olds (N)	952	905	971	939
3. Total identified 4-year-olds (N)	1,120	1,237	1,209	1,248
4. Total typically developing 4-year-olds (N)	1,485	1,528	1,714	1,689
5. First grade enrollment two years later	12,170	12,453	12,095	–
6. 4K enrollment rate (%)	21.4	22.2	24.2	–
<b>Estimate B</b>				
1. Total state preschool enrollment (N)	3,557	3,670	3,894	3,876
2. Total identified 3-year-olds (N)	1,120	1,237	1,209	1,248
3. Total identified 4-year-olds (N)	1,120	1,237	1,209	1,248
4. Total typically developing 4-year-olds (N)	1,317	1,196	1,476	1,380
5. First grade enrollment two years later	12,170	12,453	12,095	–
6. 4K enrollment rate (%)	20.0	19.5	22.2	–
<b>Estimate C</b>				
1. Total state preschool enrollment (N)	3,557	3,670	3,894	3,876
2. Total identified 3-year-olds (N)	666	634	680	657
3. Total identified 4-year-olds (N)	784	866	846	874
4. Total typically developing 4-year-olds (N)	2,107	2,171	2,368	1,689
5. First grade enrollment two years later	12,170	12,453	12,095	–
6. 4K enrollment rate (%)	23.8	24.4	26.6	–

SOURCE: USDoE IDEA Part B data.

NOTE: Enrollment figures are as of October 1 in each school year. – = unable to estimate.

## District-Level Estimate

To produce district-level estimates (displayed in Figure 7), we draw on one additional data source. The Special Education branch of NHDoE publishes a profile for each district that records the number of 3- to 5-year-olds with identified special needs each school year.<sup>3</sup> The count is not disclosed if the enrollment is ten or fewer children. For the 2015–2016 school year, the most recent year available, 73 districts had the number suppressed.

To estimate the 4K enrollment rate, we followed the Method A approach used at the state level. This required determining the share of the reported district-level special education enrollment that was not in the 4K cohort. Because the district profiles counted 3-, 4-, and 5-year-olds with identified special needs, we use the USDoE counts at the state level for 3-, 4-, and 5-year-old children with special needs and use the 4-year-old share (34 percent) for every district. Effectively, we deduct about two-thirds of the district special education enrollment from the total preschool enrollment to estimate the size of the 4K cohort (inclusive of both children with special needs and their typically developing peers). The last step is to divide that count by the size of the grade 1 class two years later to derive the estimated 4K enrollment rate.

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<sup>3</sup> New Hampshire Department of Education, Division of Special Education, District Data Profiles, website, undated. As of January 10, 2019: [https://www.education.nh.gov/instruction/special\\_ed/data\\_profiles/index.htm](https://www.education.nh.gov/instruction/special_ed/data_profiles/index.htm).