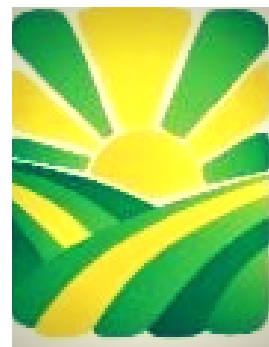


Early Childhood in Rural North Carolina

**ASSESSING RURAL COMMUNITIES ON
PATHWAYS TO GRADE-LEVEL READING**



Rural communities are unique, and failure to address the particular strengths they possess and the challenges they face can result in poor health outcomes in our rural areas.

– NC Rural Health Leadership Alliance

Overview

The NC Rural Health Leadership Alliance (NCRHLA), established in 2014 by the [Foundation for Health Leadership & Innovation](#), aims to improve the health of rural North Carolinians through collaboration, forums and work groups to discuss and foster implementation of rural health solutions. The NCRHLA work group on Early Childhood is responsible for the development of this report.



Prior to third grade, children learn to read; after this critical transition, they read to learn. Reading proficiency by this time is an important predictor of future academic and other success. Third grade reading proficiency is achievable with policies and practices that reflect the science showing that reading is a cumulative process that develops from birth and is rooted in early brain development. Research shows that improving third grade reading takes a coordinated birth-through-age-eight approach that focuses on children’s health and development, families and communities, and high-quality learning environments with regular attendance. When children are healthy, develop on track, live in supported and supportive families and communities, and receive high quality education, they are more likely not only to read on grade level by third grade, but to have overall child well-being and a brighter future.

The purpose of this report is to examine how children in rural and non-rural communities differ along key measures that impact third grade reading proficiency. Overall, we found that children in rural communities are likely to experience challenges along the pathway to grade-level reading at a higher rate than their non-rural peers.

Introduction

The NCRHLA Early Childhood work group, in tandem with the [NC Pathways to Grade-Level Reading Initiative](#), has charged itself with assessing how rural communities fare in three areas critical to achieving grade-level reading proficiency:

- Health and Development on Track Beginning at Birth
- High Quality Birth-through-Age-Eight Learning Environments with Regular Attendance
- Supported and Supportive Families and Communities

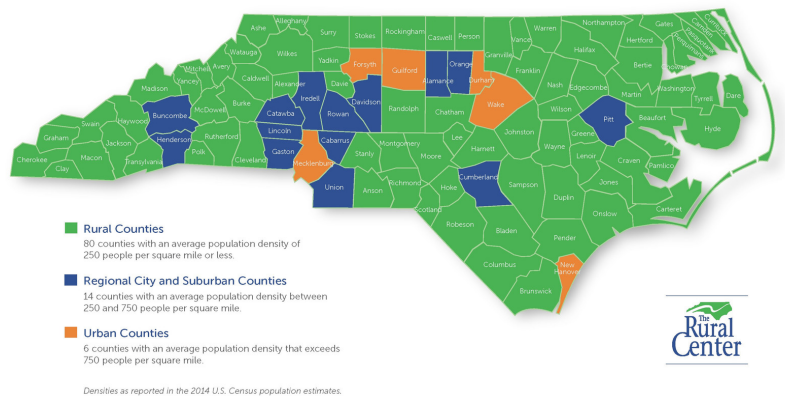
¹ NC Pathways to Grade Level Reading. More information available at www.buildthefoundation.org/pathways.

NC Pathways to Grade-Level Reading Initiative is an initiative of the NC Early Childhood Foundation, in collaboration with the NC Partnership for Children, NC Child and BEST NC. Thirty experts from North Carolina’s leading universities, research institutes, government agencies, nonprofits, businesses and think tanks—in partnership with Pathways to Grade-Level Reading partners, a group 150 strong and growing—co-created the NC Pathways to Grade-Level Reading Measures of Success Framework. The Framework includes nearly 60 measures that research tells us move the needle on third grade reading proficiency, arrayed under the three goal areas noted above. The Framework can be found in Appendix A.

This report presents a subset of available county-level data that the NCRHLA work group believes broadly represents the unique opportunities and challenges children from rural North Carolina communities may face on their pathways to grade-level reading.

Rural Variance

North Carolina Counties



The NC Rural Economic Development Center’s definition of rural was applied for this report. By this definition there are 80 rural counties in North Carolina, each with an average population density of 250 individuals per square mile or less according to 2014 U.S. Census population estimates. The remaining 20 counties have been grouped together as non-rural for this report.

Before assessing the impact of early childhood measures, the NCRHLA work group finds it imperative to note that there is just as much, if not more, variance among rural communities as is present when comparing rural communities to their non-rural counterparts. The landscape, both physically and demographically, of each rural community is unique and presents its own set of opportunities and challenges related to early childhood measures. Below is a brief snapshot of the demographic variance that exists among NC’s rural communities.

Table 1. Rural Variance Snapshot, 2015²

	Lowest	Highest
Population Density/ (population per square mile)	Hyde: 9.45	Onslow: 245.08
Age (% Working Age)	Transylvania: 53.7%	Watauga: 72.1%
Race (% White)	Robeson: 31.9%	Ashe: 97.2%
Median Income	Robeson: \$30,248	Camden: \$63,912

² Data for the Rural Variance Snapshot was pulled from the NC Office of State Budget and Management County/State Population Projections, and the U.S. Census Bureau Small Area Income and Poverty Estimates.

Assessment of County Level Data

The NC Pathways to Grade Level Reading Initiative’s Measures of Success Framework includes “whole-child, birth-through-age-eight measures that put children on a path to grade-level reading.” The NCRHLA work group selected county-level measures from this Framework for analysis in this report. All measures analyzed in this report were found to have a statistically significant difference between rural and non-rural counties, except where noted. Levels of statistical significance are included in the footnotes. Appendix B contains descriptions of each measure, how each contributes to reading proficiency, and data sources.

Health and Development on Track Beginning at Birth

The following Pathways measures were used to assess children’s health and development. These measures can be used, in part, to measure whether or not children have healthy starts in life and access to healthcare, which can affect their physical and emotional health and help them reach appropriate developmental benchmarks.

Table II. Health Measures: Rural and Non-Rural³

	Rural	Non-Rural
Low Birthweight (<2500 grams)*	9.0%	9.0%
Prenatal Care, First Trimester	69.0%	70.2%
Pregnant Smokers	14.3%	7.6%
Teen Birth Rate (Per 1,000)	37.2	23.6
Uninsured Children- Ages 0-19	5.1%	4.3%

**No numerically or statistically significant difference.*

INFANTS BORN WEIGHING LESS THAN 2,500 GRAMS (5.5 POUNDS) ARE AT GREATER RISK FOR PHYSICAL AND DEVELOPMENTAL PROBLEMS THAN INFANTS OF NORMAL WEIGHT. SEE APPENDIX B (P9).

Women in rural counties are slightly less likely to have prenatal care in the first trimester, much more likely to smoke while pregnant, and more likely to give birth while in their teen years. Children in rural counties are more likely to be uninsured than those in non-rural counties. Further, having insurance does not guarantee access, as some rural communities may lack pediatric providers or other medical home options. There is no numerical or statistically significant difference between rural and non-rural counties in regards to low birthweight.

³ Four measures came from NC DHHS State Center for Health Statistics and were collected by healthcare professionals at the time of an infant’s birth. Pathway analysis (a statistical measure with no association with the NC Pathways Initiative) was used to calculate a 95% confidence level. A fifth measure, Uninsured Children, was derived from the Census Small Area Health Insurance Estimate and calculated at a 90% confidence level, following the American Community Survey (Census) guidelines.

High Quality Birth-to-Eight Learning and Education

The following Pathways measures were used to assess birth-to-eight early learning and education. These measures can be used, in part, to determine whether or not children have the high quality learning environments needed to support their optimal development.

Table III. Learning and Education Measures: Rural and Non-Rural⁴

	Rural	Non-Rural
Enrollment in 4/5 star childcare*	73.0%	74.0%
Kindergarten Retention	5.2%	3.5%
First Grade Retention	4.8%	2.9%
First Grade Reading Proficiency	45.9%	51.0%
Second Grade Reading Proficiency	49.8%	53.3%

**No statistically significant difference.*

Of children ages 0-5 *enrolled* in licensed childcare facilities, nearly three quarters in both rural and non-rural counties are in high quality care. However, children in rural counties are more likely to be retained (i.e., held back) than their non-rural counterparts in both kindergarten and first grade. Children in rural counties are also less likely to meet grade-level reading proficiency standards at the end of both first and second grades compared to children in non-rural counties.

A LARGE BODY OF RESEARCH SUGGESTS THAT STUDENTS RETAINED IN THE EARLY YEARS ACHIEVE AT LOWER LEVELS, ARE MORE LIKELY TO DROP OUT OF HIGH SCHOOL AND HAVE WORSE SOCIAL-EMOTIONAL OUTCOMES THAN SIMILAR STUDENTS WHO ARE PROMOTED. SEE APPENDIX B (P10).

Retention data should be treated with care. While there are clear policies around retention in third grade based on reading proficiency, there are not clear policies in the lower grades, leaving each county responsible for determining whether or not a child should be held back. There may also be inconsistencies in retention standards and in reporting, such that higher rates may not necessarily indicate more struggling students compared to other areas of the state.

Supported and Supportive Families and Communities/Community Conditions

The following Pathways measures were used to assess community characteristics. Children are more likely to progress in environments that are safe and nurturing, and that support social-emotional development. The everyday stresses of living in poverty make it difficult for families to meet their children's physical and emotional needs, which impacts their ability to achieve in school.

⁴ Measures were collected from the following sources: the North Carolina Department of Public Instruction, the North Carolina Partnership for Children, Inc., and the North Carolina Child Care Services Association. Three of the five measures were derived using mandatory reporting, similar to vital statistics in that they are not considered a sampling. Pathway analysis (a statistical measure with no association with the NC Pathways Initiative) was used to calculate a 95% confidence level on all indicators.

Table IV. Community Measures: Rural and Non-Rural⁵

	Rural	Non-Rural
Maternal Education (fewer than 12 years)	18.1%	14.1%
Violent Crime Rate (per 100,000)	277.8	409.4
Poverty- Children Ages 0-5	34.2%	24.7%

EXPOSURE TO COMMUNITY VIOLENCE IS ASSOCIATED WITH NEGATIVE OUTCOMES FOR CHILDREN, INCLUDING REDUCED BEHAVIORAL AND SOCIAL COMPETENCE. SEE APPENDIX B (P10).

Mothers in rural counties are less likely to have received at least 12 years of education (i.e., high school diploma or GED completion). Children in rural counties are more likely than their non-rural counterparts to be living in poverty. However, children and families in rural counties experience much less violent crime than those in non-rural counties.

Data Limitations

County-level data is necessary in order to understand life experiences of young children in rural North Carolina. The NC Pathways to Grade-Level Reading Measures of Success Framework contains nearly 60 measures. Data on many of these measures are only collected for the state as a whole, and some are not collected at all. In other cases, data may be available but are not collected consistently across the state. NC Pathways will engage in data advocacy efforts to improve disaggregated data collection on the Pathways measures that are not currently collected consistently. Despite these data limitations, the findings from the available measures are consistent: children in rural counties experience challenges on their pathways to grade-level reading at a higher rate than their non-rural peers.

⁵ Indicators were collected from the following sources: NC DHHS State Center for Health Statistics, the North Carolina State Bureau of Investigation, and the American Community Survey (Census). Pathway analysis (a statistical measure with no association with the NC Pathways Initiative) was used to calculate 95% confidence on Maternal Education and Violent Crime. Poverty data was derived from the American Community Survey 5-year estimates and calculated at a 90% confidence level, following the American Community Survey (Census) guidelines.

Recommendations



Efforts to boost grade-level reading proficiency must be informed by the environment in which they are implemented. While this report argues that rural children face bigger hurdles to reading proficiency than their non-rural peers, policy, practice, program and capacity-building interventions to boost grade-level reading proficiency must rest on deeper analyses and build on the strengths in each community. Rural communities should build on their unique strengths—such as less violent crime, smaller populations, social networks and other connections—to promote third grade reading proficiency.

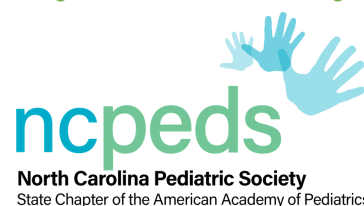
With this in mind, we recommend that policymakers, state child-serving agencies, philanthropists, and other early childhood stakeholders work collectively to accomplish the following:

- *Prioritize rural communities* – While the data in the report are incomplete, available data clearly show that children growing up in rural counties face more obstacles. Policymakers, providers, and funders must pay more attention to rural communities, and better understand how their actions affect rural communities.
- *Fill critical data gaps and analyze all available data for continuous quality improvement* – Data at the community level does not exist for about half of the 60 Pathways to Grade-Level Reading measures. Measuring how communities across the state are faring is critical in order to understand and improve outcomes. In the absence of comprehensive, comparable data, communities may rely on available data such as community surveys or low-sample size analyses. Continual steps should be taken to improve data usefulness and completeness. North Carolina should also analyze data on all available measures and use the findings to improve policy and practice around early reading proficiency and children’s well-being both at the state level and in rural areas of the state.
- *Seek to understand differences among “rural” communities* – As noted previously, there is often substantial variation in performance across rural communities. Better understanding why some rural communities perform substantially better than others may provide answers to help those who lag behind. As well, important insights may emerge by disaggregating “rural” data into demographic and other types of groupings. The Pathways Initiative is disaggregating data by race/ethnicity, income and age wherever possible.
- *Monitor and spotlight rural best practices* – Further evaluation of policies, practices and programs designed to increase pathways to grade-level reading is needed to better understand opportunities and limitations across rural settings. Policies, practices and programs with the greatest opportunity for success should be highlighted and disseminated.

Acknowledgements

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- For a rural perspective, Smart Start Directors representing Ashe, Avery, Carteret, Cherokee, Clay, Graham, Haywood, Jackson, Macon, Mitchell, Montgomery, Pamlico, Rockingham, Swain, Wilson, and Yancey counties.



Appendices

Appendix A: NC Pathways to Grade-Level Reading Measures of Success Framework

NC PATHWAYS TO GRADE-LEVEL READING MEASURES OF SUCCESS FRAMEWORK



PATHWAYS BIRTH-THROUGH-AGE-EIGHT LITERACY DEVELOPMENT MILESTONES

Language Skills on Track at 24, 36 and 48 Months → Developmentally Ready at Kindergarten Entry → Meeting Expected Growth in Reading (K-3) → Reading at Grade-Level by the End of Third Grade

All children with disabilities achieve expressive and receptive communication skills commensurate with their developmental ages.

Appendix B. Defining and Connecting Measures to Grade-Level Reading

[Shared Measures of Success to Put North Carolina Children on a Pathway to Grade-Level Reading](#), a Pathways Initiative report, outlines the research base that connects each of the Pathways Measures of Success to third grade reading proficiency. The text below is excerpted from that report. Sources for the research can be found in the Pathways report, linked above.

	Measure	Description	Source	Connection to Grade-Level Reading
Health and Development on Track Beginning at Birth	Low Birth Weight (<2500 grams)	2011-2015: Percent of babies born weighing <2500 grams	NC DHHS State Center for Health Statistics, 2017 County Health Data Book	Infants born weighing less than 2,500 grams (5.5 pounds) are at greater risk for physical and developmental problems than infants of normal weight. Children who are born at a low birth weight are at higher risk for long-term illness or disability and are more likely to be enrolled in special education classes or to repeat a grade.
	Prenatal Care, First Trimester	2011-2015: Percent of Women receiving prenatal care beginning in the first trimester	NC DHHS State Center for Health Statistics, 2017 County Health Data Book	Early, comprehensive prenatal care increases the likelihood that a child will be born healthy. Mothers who receive good prenatal care are less likely to have preterm or low birth weight infants and are more likely to obtain regular pediatric care for their young children.
	Pregnant Smokers	2011-2015: Percent of NC Resident Births where mother smoked during pregnancy	NC DHHS State Center for Health Statistics, 2017 County Health Data Book	Prenatal smoking, drug or alcohol exposure can place the fetus at risk for a variety of negative outcomes, including low birth weight, poor coordination, problems with learning, and delays in mental skills during toddler years.
	Teen Birth Rate (Per 1,000)	2011-2015: Rate per 1000 births to women ages 15-19	NC DHHS State Center for Health Statistics, 2017 County Health Data Book	Parental age is significantly related to child well-being. Children born to teenage mothers are more likely to be born with low birth weight, suffer poor health, and have lower levels of cognitive and educational attainment, lower levels of academic achievement, and higher levels of behavioral problems than children born to mothers age 20 and over.
	Uninsured Children-Ages 0-19	2015: Uninsured children under 19 years of age	Census Small Area Health Insurance Estimates (SAHIE)	Children with health insurance are more likely to access primary health care services that can prevent health problems or address existing chronic or acute health conditions. Lack of health insurance can affect a child's school attendance and ability to participate in school activities.

High Quality Birth-through-Age-Eight Learning Environments with Regular Attendance	Enrollment in 4/5 star childcare	2014-2015: Percent of enrolled children (ages 0-5) in 4/5 star childcare	North Carolina Partnership for Children, Inc., Data collected at time of annual licensing consultant annual visit	Children who attend a high quality early education program are better prepared for school--academically, socially and emotionally.
	Kindergarten/ First Grade Retention	2015-2016: Percent of children retained in Kindergarten/ First grade	2015 Child Care Services Association. <i>Figures derived using the most recent available data from Child Care Services Association, DCDEE, NC Budget and Tax Center, NC State Data Center and US Census Bureau, NC Department of Public Instruction, NC Child Resource and Referral Council, NC Head Start State Collaboration Office.</i>	A large body of research suggests that students retained in the early years achieve at lower levels, are more likely to drop out of high school, and have worse social-emotional outcomes than similar students who are promoted.
	First/Second Grade Reading Proficiency	2015-2016: Students performing Below, or Far Below Proficient on grade level reading	NC Public Schools/NC State Board of Education/NC DPI Report to the NC General Assembly <i>Improve K-3 Literacy Accountability Measures</i>	Student growth in reading over the course of a school year is a proxy measure for the quality of the learning environment, leadership, and teaching, and demonstrates progress towards reading proficiently by the end of third grade.
Supported and Supportive Families and Communities/ Community Conditions	Maternal Education (<12 years)	2011- 2015: Percent of mothers with less than 12 years of education (i.e. no obtainment of high school diploma or GED)	NC DHHS State Center for Health Statistics, 2017 County Health Data Book	Children of mothers with at least a high school education tend to have better school readiness, better health, increased likelihood of finishing school, more supportive home learning environments, and more parent involvement in their schools.
	Violent Crime Rate (per 100,000)	2015: Violent Crime (murder, rape, robbery, aggravated assault) per 100,000 population.	NC State Bureau of Investigation, Annual Summary Report	Exposure to community violence is associated with negative outcomes for children, including reduced behavioral and social competence. Repeated exposure to violence threatens children's physical, intellectual, and emotional development.
	Poverty-Children Ages 0-5	2011-2015: Poverty Status of those under 5 years of age in the past 12 months	Census American Community Survey 5-Year Estimates	Child poverty is linked with a range of negative outcomes, including diminished academic achievement, more health problems and lower nutrition, and lower overall well-being. Screening for poverty at primary care visits can help health care providers connect families with community programs, financial supports and other opportunities they need to become self-sufficient.