

# Learning from the Past to Shape the Future for North Carolina's Youngest Children

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This commentary explores various public health interventions that have been implemented in North Carolina to advance the well-being of children aged 0-8. Despite improvements across social determinants of health, North Carolina's youngest residents still experience poor outcomes and significant racial disparities. In discussing these challenges, future strategies are recommended at policy and programmatic levels, particularly in supporting public health infrastructure responsive to the COVID-19 pandemic and its long-term effects on children and families.

## Introduction

North Carolina is home to more than 10 million people, and children aged 0-8 years are approximately 11% of the population [1, 2]. Of the 118,725 babies born in North Carolina in 2019, approximately 54% were white, 24% were Black, and 16% were Hispanic [3]. Of these, approximately 38% were born across the 80 rural counties in North Carolina, though since 2000, the state's rural population has continued to decrease while urban counties, such as Wake and Mecklenburg, have experienced growing residential density [3-6]. The 2020 NC Child Data Card, 2020 March of Dimes Report Card, and 2019 NC Child Health Report Card highlight significant inadequacies in North Carolina's capacity to address poor outcomes across the social determinants of health [7-9]. Despite these gaps in services, North Carolina has experienced important advancements in particular quality of life measures that deserve recognition. But given the current COVID-19 pandemic, persistent racial inequities, and impending transformation of the state's Medicaid program, North Carolina's public health policies, programs, and infrastructure must adapt to address the needs of our state's most vulnerable.

## The Good News

In many areas, North Carolina has achieved significant health improvements among children aged 0-8 years. Through the North Carolina Immunization Program, low-income children who are Medicaid-eligible, American Indian or Alaska Native, uninsured, and/or underinsured receive free vaccinations recommended by the Advisory Committee on Immunization Practices [10]. Between 2013 and 2017, the percentage of children who received the combined

7-vaccine series by 24 months of age increased from 71.2% to 82.5% [3]. With improvements in Medicaid accessibility and eligibility, from 2012 to 2017 the percentage of children aged 0-15 months and 3-6 years enrolled in Medicaid increased from 54.4% to 64% and 64% to 70%, respectively [11]. Nurse-Family Partnership (NFP) and Healthy Families America (HFA), two home visiting programs providing support for pregnant women, mothers, and children, have produced considerable return on investment (ROI) across North Carolina communities and families for more than 25 years; each \$1 invested in HFA and NFP culminates in \$1.46 and \$5.70 ROI, respectively [12, 13]. In 2019, NFP programs experienced a 48% reduction in incidences of child abuse and neglect, 20% fewer preterm birth complications, and 67% fewer behavioral and intellectual health challenges among children by age 6 [13]. Similarly, HFA programs have resulted in significant reductions in rates of physical and emotional abuse, substantiated maltreatment, and neglect among children aged 1-7 [12].

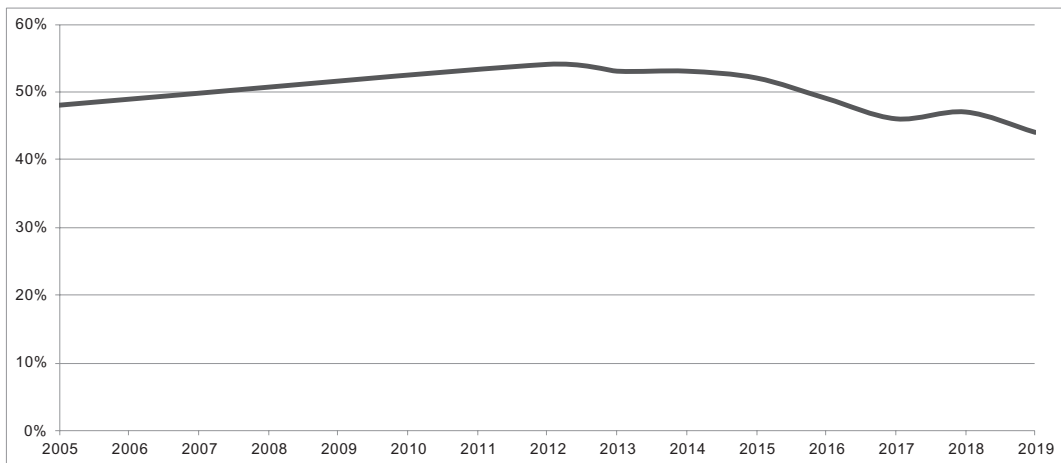
Across North Carolina, collaborative efforts such as the Improving Community Outcomes for Maternal and Child Health (ICO4MCH), the Essentials for Childhood Initiative, and Community Care of North Carolina facilitate coordination and collective impact approaches among public health practitioners and clinical providers. Through these practices, evidence-based strategies have been incorporated to improve birth outcomes, reduce infant mortality, promote safe and stable home and community environments, and improve overall health among children aged 0-8 [14-16]. From 2016 to 2019, the number of substantiated incidences of child abuse and/or neglect decreased from 9,358 to 9,167, and the percentage of children who experienced two or more adverse childhood experiences (ACEs) decreased across all racial/ethnic groups [17, 18]. In addition, with the passage of Session Law 2013-45 in 2015, North Carolina expanded the Newborn Screening Program to require that newborn infants be screened for critical congenital heart defects (CCHD)

Electronically published May 3, 2021.

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NC Med J. 2021;82(3):208-213. ©2021 by the North Carolina Institute of Medicine and The Duke Endowment. All rights reserved. 0029-2559/2021/82313

**FIGURE 1.**  
**Percent of North Carolina Children Aged 0-8 Living Below 200% Poverty: 2005-2019**



Source: Kids Count Data Center. North Carolina Indicators. Annie E. Casey Foundation. <https://datacenter.kidscount.org/data#NC/2/0/char/0>. Accessed February 13, 2021.

[19]. Moreover, from 2015 to 2019, the mortality rate among children aged 1-9 decreased from 20.5 per 100,000 children to 19.3 per 100,000 children [3].

### A Mixed Bag

Despite these achievements, North Carolina continues to rank poorly on children’s health indicators compared to other states in the nation. From 2012 to 2016, the percentage of children aged 0-8 who experienced food insecurity decreased from 27% to 21%, but despite this improvement, North Carolina still has the ninth-highest hunger rate in the United States [11]. Despite improvements in health insurance coverage, the percentage of kindergartners with untreated tooth decay increased from 2013 (13%) to 2017 (14.3%) [9]. In 2019, approximately 12.5% of children aged 1-5 experienced tooth decay or cavities, and 37.6% did not receive services from an oral health care provider [17].

Among infants, the prevalence of breastfeeding initiation increased from 75.3% in 2013 to 80.3% in 2017, but the percentage who were breastfed exclusively through six months of age remained relatively low (20.8% in 2013 to 23.3% in 2017) [18]. Moreover, while mothers and children enrolled in Special Supplemental Nutrition for Women, Infants, and Children (WIC) experience greater engagement in preventive health services, increased access to high-quality, nutritious foods, and reductions in pregnancy and birth-related health complications, from 2011 to 2019 the average monthly participation in WIC decreased approximately 22% [20]. During this time, the number of children aged 2-4 receiving WIC services decreased from 132,478 to 84,008 [20]. From 2015 to 2019, the percentage of WIC children aged 2-4 who had a BMI greater than the 85th percentile increased from 29% to 30.4% [21]. Furthermore, in 2017, only 42% of children and youth lived in a neighborhood containing a playground or park, 43% had access to a sidewalk or walking

path in their neighborhood, and only 15% of farmers markets accepted WIC [22].

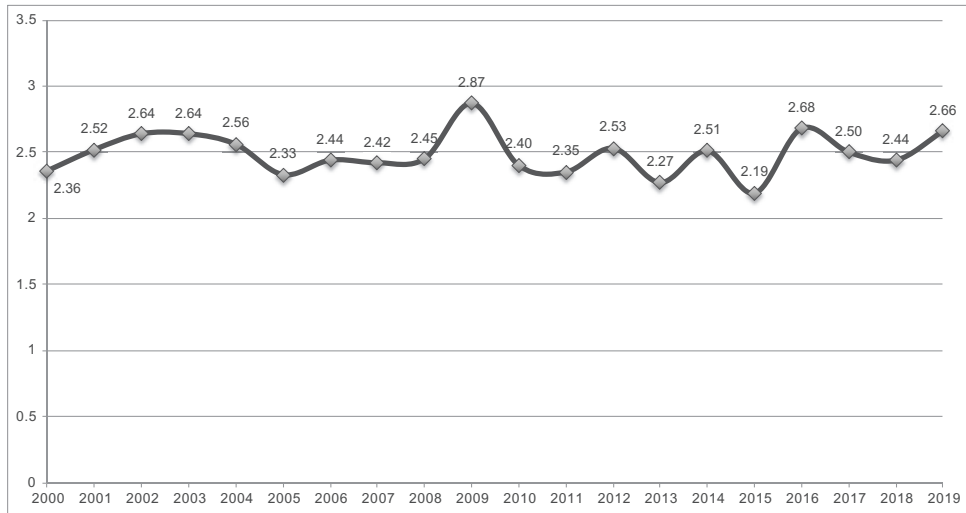
### The Bad News

Poverty and structural racism continue to operate as fundamental causes of disease [23, 24]. In 2015, 1 in 28 children aged 0-6 in North Carolina were homeless at least one point in time, and in 2018, approximately 9,970 kindergarten through third-grade children experienced homelessness [11]. In 2016, 33% of children aged 0-8 lived in households where more than 30% of income was spent on rent/mortgage [11]. In 2019, approximately 22% of children aged 0-5 lived in poverty in North Carolina and the percentage of children aged 0-8 living below 200% poverty has remained relatively stable since 2005; in 2019, the 200% poverty threshold for a family of four was \$51,853 (Figure 1) [2]. While more than half of all families with children aged 0-8 lived at or below 200% poverty in 2016, families of color were significantly overrepresented: 69.7% of Black, 78.3% of Hispanic, and 62.8% of American Indian families in North Carolina lived at or below 200% poverty compared with 36.9% of white families [11]. Despite improvements in the infant mortality rate since 1988 (when North Carolina had the highest rate in the United States), the disparity ratio between Black and white infants has actually widened since 2000 (from 2.36 to 2.66), with 12.5 Black infant deaths per 1,000 live births that year compared to 4.7 white infant deaths per 1,000 live births in 2019 [3] (Figure 2).

### Future Directions

In dismantling fundamental causes of disease, future policies and programs must incorporate an intentional anti-racist praxis designed to address the inequitable distribution of resources and supports that disproportionately impact communities of color [24, 25]. In addition, statewide and

**FIGURE 2.**  
**North Carolina Infant Mortality Disparity Ratio Between Non-Hispanic Black and Non-Hispanic White Infants: 2000-2019**



Source: NC State Center for Health Statistics. Statistics and Reports. North Carolina Department of Health and Human Services; 2021. <https://schs.dph.ncdhhs.gov/data/mch/>. Accessed February 13, 2021.

local public health initiatives should be responsive to the challenges rural counties are experiencing, especially given North Carolina’s continued urban growth and the resulting decline in economic, physical, and social supports conducive to population health and well-being in rural communities [5, 26, 27]. As the COVID-19 pandemic has shown, telehealth services offer unique opportunities to facilitate patient-provider engagement, but these initiatives must address inaccessibility in telecommunications across rural populations, such as nonexistent or inadequate Wi-Fi connection [28–30].

While North Carolina’s Into the Mouths of Babes program supports providers in delivering preventive oral services to children enrolled in Medicaid, teledentistry can operate as a practical screening tool to improve access and care in counties currently without any practicing dentists [31, 32]. Similarly, the Centers for Disease Control and Prevention’s (CDC) Levels of Care Assessment Tool (LOCATe) and Project Extension for Community Health Outcomes (ECHO) can assist providers and patients through technologies designed to facilitate collaborative decision-making across experts at various levels of health care [33, 34].

While investments in these programs could improve and sustain quality care for North Carolina’s children, policies aimed toward expanding Medicaid, increasing the minimum wage, reinstating Earned Income Tax Credits (EITCs), and strengthening public health systems would provide the greatest ROI. From 2010 to 2016, states that expanded Medicaid realized significantly greater reductions in the infant mortality rate (6.6 to 5.6) compared with the national average (6.7 to 5.9) and with non-Medicaid expansion states (7.3 to 6.5) [35]. Furthermore, while North Carolina local

health departments currently provide the Pregnancy Medical Home (PMH)/Obstetric Care Management (OBCM) and Care Coordination for Children (CC4C) programs to support care management approaches for at-risk children aged 0-5 and women experiencing high-risk pregnancies, this will soon change [36]. As PMH/OBCM and CC4C transition as part of the Medicaid managed care environment into Care Management for High-Risk Pregnant Women (CMHRP) and Care Management for At-Risk Children (CMARC), respectively, standard plans will not be required to contract with local health departments for these services after a three-year transitional period [36]. Increasing the centrality of other providers relative to local health departments will further weaken the capacity of the state’s public health system to serve as the safety net for underserved maternal and child health populations in North Carolina [37].

Though North Carolina is investing in public health infrastructure to prioritize COVID-19 vaccine distribution, we must also focus on social determinants of health. Among adults living in households with children, no fewer than 40% lost employment income since April 2020, 58% were very or extremely likely to experience an eviction or foreclosure between November 25 and December 21, and nearly 20% indicated they sometimes or often did not have enough food to eat [2]. Raising the state minimum wage could lead to better outcomes across the social determinants of health with each additional dollar increase in the minimum wage correlating with a 1.8% reduction in infant mortality deaths [38]. In addition, offering state-level EITCs could significantly reduce the child poverty rate (North Carolina eliminated EITCs in 2014), and corresponding expansions in Temporary Aid to Needy Families (TANF), the Supplemental

Nutrition Assistance Program (SNAP), and Child Tax Credits (CTCs) could collectively improve familial and community wellbeing [39, 40].

### Conclusion

Despite persistently poor outcomes across various measures of well-being, North Carolina has achieved commendable advancements in children's health, including improved vaccination rates, decreased ACEs, and more effective care coordination. But structural racism, poverty, and the rural-urban divide have produced pronounced disparities that have been exacerbated by COVID-19. As COVID-19 continues to overwhelm public health and medical systems across the United States [41], North Carolina must allocate necessary resources to support families and ensure that pre-

ventive public health approaches are sufficiently funded to address current and long-lasting consequences of the pandemic on the state's youngest residents. **NCMJ**

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### Acknowledgments

Potential conflicts of interest. L.G. and D.C. report no conflicts of interest.

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