South Carolina
Rural Health Research Center

Findings Brief
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Chartbook:
Trends in Rural Children's Health and Access to Care

Key Findings

- Non-Hispanic (NH) white children are still the majority in rural areas, but declined as a proportion of the population during the 2003 – 2011/12 period. Hispanic and NH Other children are an increasing proportion of rural children.
- The proportion of children living in poverty or low-income families increased across the decade. Children in both large and small rural areas were more likely to be poor or low income than were urban children.
- The proportion of children with health insurance increased to 95% for all children in the U.S. in 2011/12. Hispanic children's coverage improved, but lagged that of other children (88% in large rural and 89% in small rural communities).
- Medicaid coverage increased among all children and was the principal source of coverage for minority children in rural areas.
- The proportion of children whose parents reported having a personal doctor or nurse peaked in 2007 at 92% and declined slightly in 2011/12 (90%).
- Receipt of a preventive medical visit peaked in 2007 (88% for all children) and subsequently declined to 85% in 2011/12.

Background

Federal policies aimed at increasing health insurance coverage among children represent a success story. Due principally to expansions in Medicaid eligibility through the State Children's Health Insurance Program, the national proportion of children who lack health insurance for an entire year has declined from 13% in 1997 – 1998[1] to five percent in 2012.[2] Insurance alone, however, may not be sufficient to ensure access among rural children. Many providers, particularly specialists, do not accept Medicaid;[3,4] in addition, rural children have fewer practitioners of all kinds available to them. Finally, the picture of children's status in the rural U.S. is made more complex by rising diversity in race/ethnicity and increasing poverty.

We used three waves of the National Survey of Children's Health (2003, 2007, 2011/12), a nationally representative sample of U.S. families with children, to create a portrait of the changing status of rural and urban children across the 2003 – 2012 decade. This Chartbook focuses on the demographics of rural children, their financial access to care, reported use of care, and parentally-reported health status. A companion volume, *Disparities in Access to Oral Health Care Among Rural Children: Current Status and Models for Innovation*, explores trends in children's oral health across the same time frame.

Technical Notes

Data Source

We compiled data from the three administrations of the National Survey of Children's Health: 2003, 2007, and 2011/12, a nationally representative telephone survey of the parents or guardians. All children with data available for age, sex, race/ethnicity, residence, and health insurance coverage were included. There were 99,387 available responses for 2003, 89,446 for 2007, and 91,619 for 2011/12, for a total of 280,452 observations.

Geographic definitions

Definitions for residence parallel those used in *The Health and Well-Being of Children in Rural Areas: A Portrait of the Nation, 2011 – 2012*. Our work expands on that document and its predecessors by incorporating trends across multiple years. Rurality was measured at the Zip Code level and classified using the 2006 Rural-Urban Commuting Areas Codes (v2). The three residence categories were:

- Urban-Focused areas (RUCA codes 1.0, 1.1, 2.0, 2.1, 3.0, 4.1, 5.1, 7.1, 8.1 and 10.1),
- Large rural areas (RUCA codes 4.0, 4.2, 5.0, 5.2, 6.0 and 6.1)
- Small or isolated rural areas (all remaining codes)

Race/Ethnicity

Race/ethnicity was self-reported by the child's parents. Following the National Center for Health Statistics forms, we group children as Non-Hispanic (NH) White, NH Black, NH Other, and Hispanic. NH Other included the categories American Indian, Alaska Native, Asian, Native Hawaiian, Pacific Islander, and Multiracial. These subcategories are not reported separately because of low numbers.

Measuring statistical significance

Because of the large number of observations (280,452) and the large number of comparisons made, the significance level is set at $p < 0.01$ or better. This conservative approach is used to avoid erroneously identifying small fluctuations as important.

Limitations to this report

This Chartbook describes children's access to health services at a very broad level: all children, sorted only by residence and race/ethnicity. For important subgroups, such as children with special health care needs, findings might be very different.

Additional details

Definitions of variables and analytic approach are provided in Appendix A. Supporting details for figures are shown in Appendix B.

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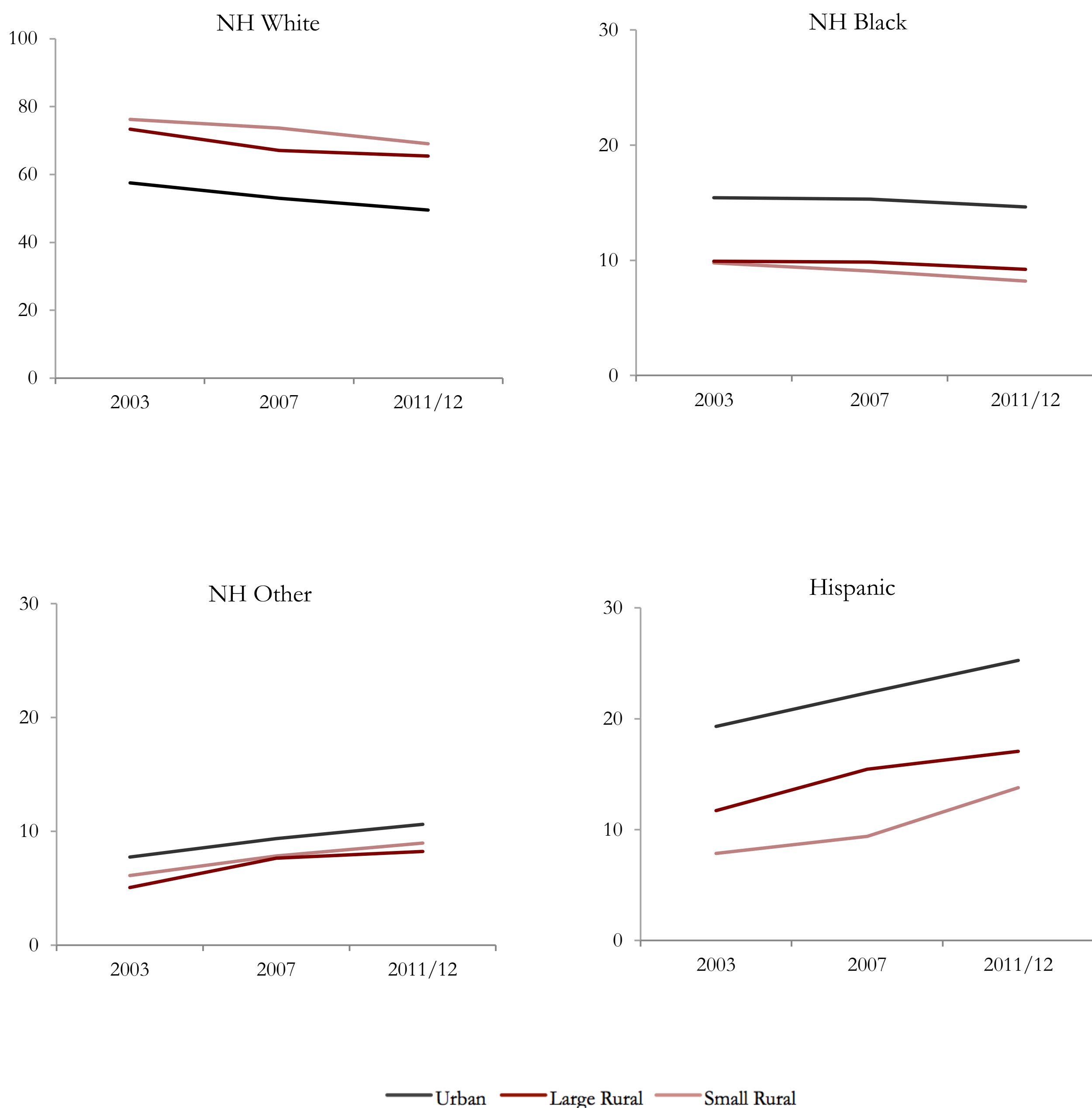
Characteristics of Rural Children: Increasing Diversity, Increasing Poverty

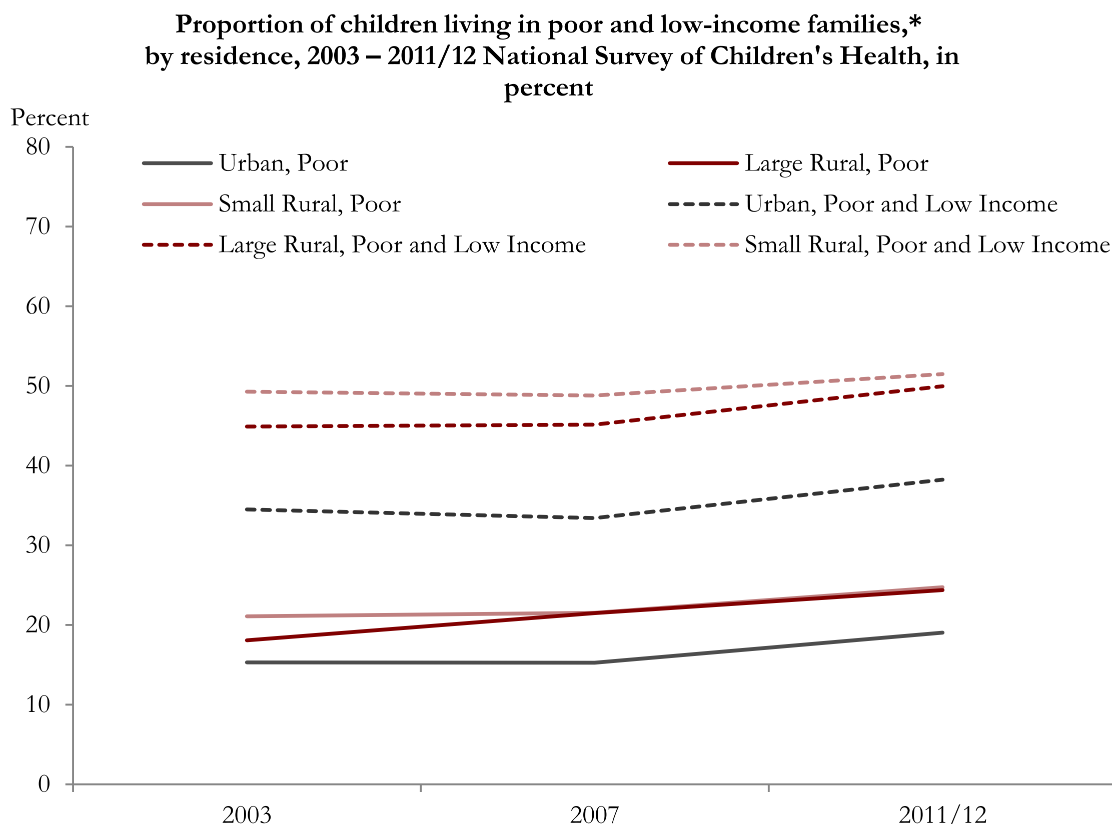
The changing demographics of the U.S. population are reflected among its children. Across the decade 2003 to 2011/12, non-Hispanic (NH) White and NH Black children declined as a proportion of the total population, while the proportion of children characterized as Hispanic and non-Hispanic (NH) Other increased (Appendix B, Table B-1).

Proportion of the child population falling into different race/ethnicity categories, by residence, 2003 – 2011/12 National Survey of Children's Health, in percent



Poverty among rural children

The proportion of children living in poverty (below 100% of the Federal Poverty Level, FPL) increased significantly between 2003 and 2012 among children living in all areas. Similar trends were seen for low-income status (those less than or equal to 200% of FPL).



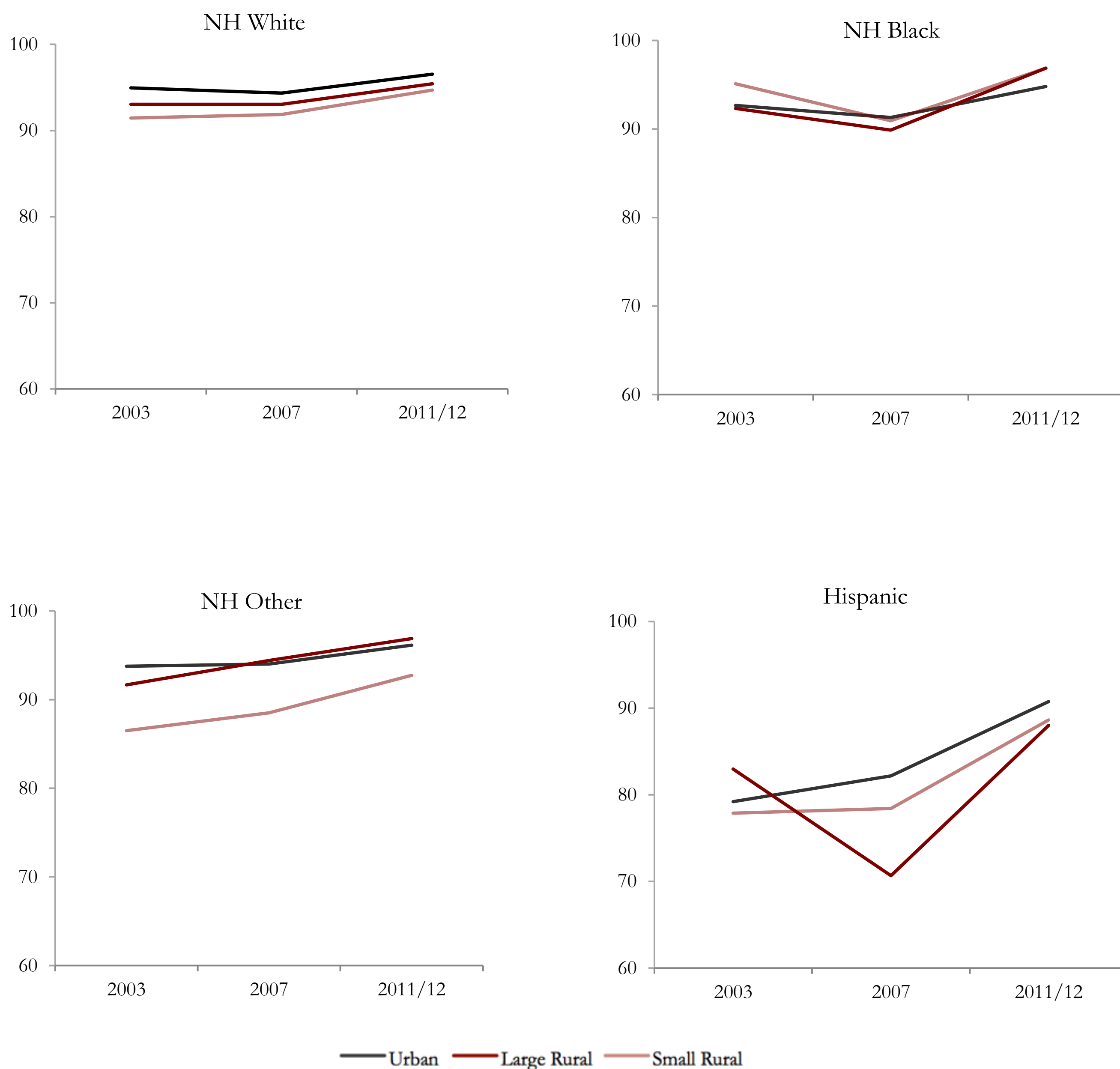
*Poor is defined as less than 100% of the FPL. Low-income is defined as at or below 200% of the FPL; the dashed line shows the total of both categories.

Over the decade, the proportion of non-white children among all poor and low-income children increased. While NH White children constituted 61.0% of all poor children in 2003, this had declined to 52.7% by 2012. The proportion of NH Black children in poverty remained fairly consistent (14.3% in 2003, 13.6% in 2012). Notable growth was present for Hispanic children, who increased from 17.4% to 23.5% of all poor children, and for children classified as NH Other (7.3% in 2003 to 10.3% in 2012).

Health Insurance

The proportion of children with health insurance increased across 2003 – 2011/12, to a high of 94.7% for all children in the U.S. in 2011/12. The increase was statistically significant across all population groups and contributed to a narrowing of gaps between NH White and NH non-white children. Hispanic children remained least likely to be insured, with only 90.5% reported to have coverage in 2011/12 (Appendix B, Table B-2).

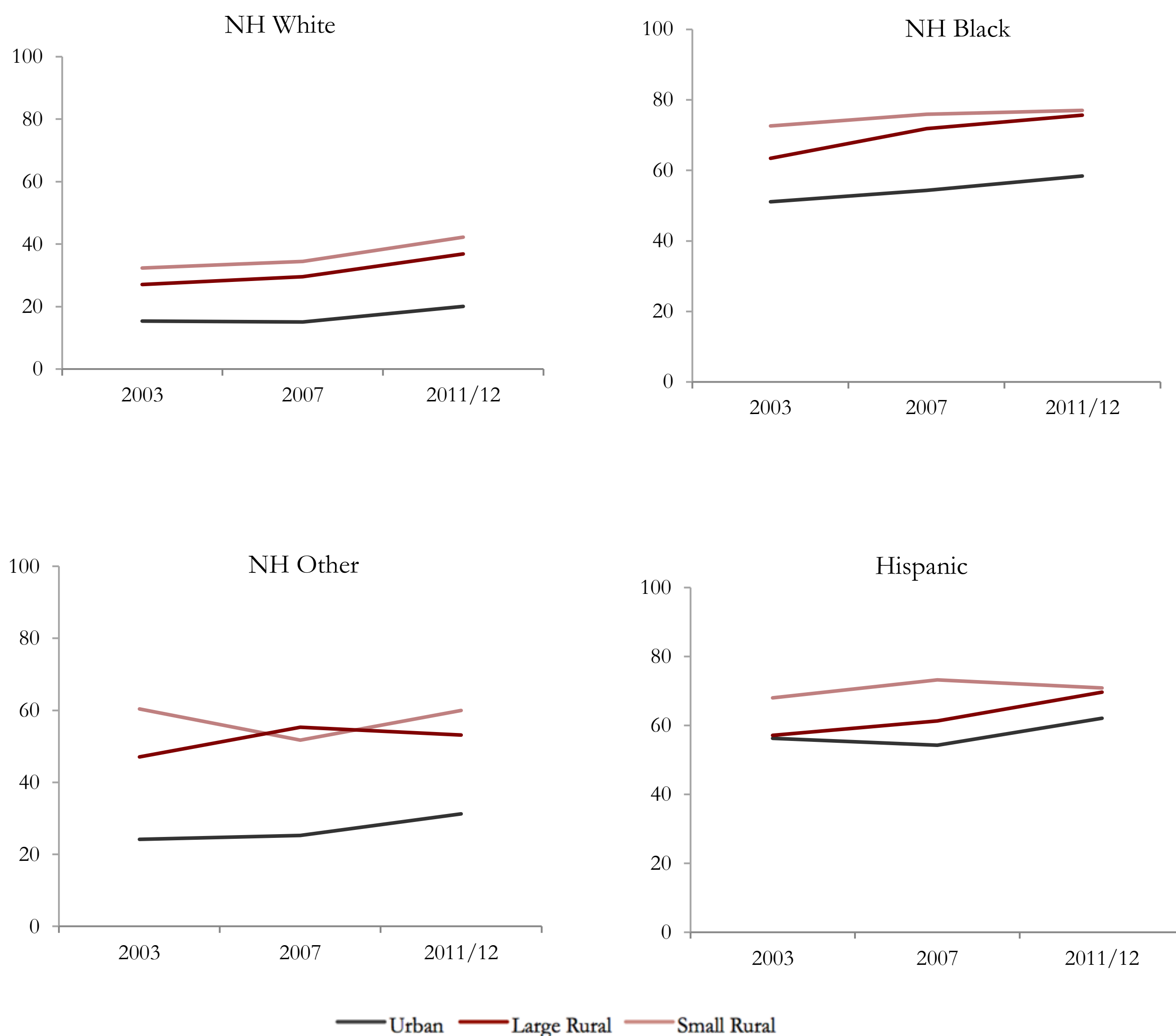
Proportion of children with health insurance, by race/ethnicity and residence, 2003 – 2011/12 National Survey of Children's Health, in percent



Public Insurance coverage

Among insured children, Medicaid and the State Children's Health Insurance Program (SCHIP)* became an increasingly important source of health insurance coverage across the decade. Across all children, public coverage increased from 30.3% of children in 2003 to 39.0% in 2011/12. For all urban children and for all NH White children, the increase was statistically significant. For rural minority children, particularly NH Black and Hispanic children, Medicaid or SCHIP was the dominant source of insurance across all survey years (Appendix B, Table B-3).

Proportion of insured children covered by public health insurance, by race/ethnicity and residence, 2003 – 2011/12 National Survey of Children's Health, in percent

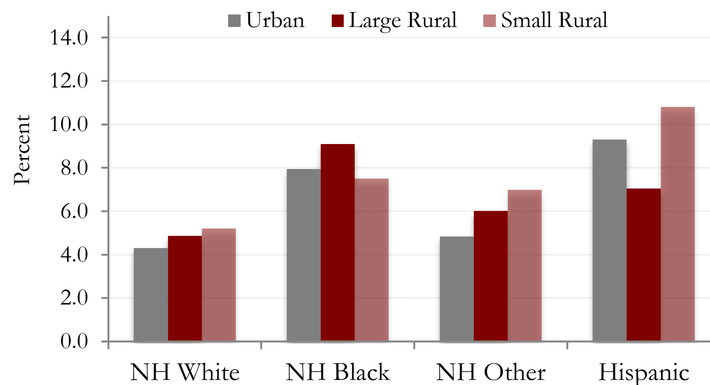


* The National Surveys of Children's Health asked about both forms of children's insurance in a single question: "Is [child] insured by Medicaid or the State Children's Health Insurance Program, SCHIP? In this state, the program is sometimes called [name]."

Characteristics of coverage

A small proportion of children experienced *gaps in health insurance coverage* during the previous year. This proportion (6.8% in 2003, 6.1% in 2011/12) did not change statistically across the study period for the entire population or for any subgroup of children. Minority children were more likely to have experienced gaps in coverage than their white peers, as reflected in the 2012 data, at right.

Proportion of insured children who experienced gaps in health care coverage, by residence and race/ethnicity, 2011/12 National Survey of Children's Health



The 2007 and 2011/12 National Surveys of Children's Health asked parents to indicate if their child's health insurance always had reasonable out-of-pocket expenses, offered benefits that meets needs, and included the child's health care providers. The proportion of parents reporting that *out-of-pocket health expenses* were "always" reasonable decreased from 38.9% in 2007 to 36.1% in 2011/12 (p=0.0001). Within residence, significant declines were present for urban children (39.4% in 2007, 36.5% in 2011 – 2012); no other residence category showed significant change. In 2011/12, 33.6% of parents in large rural and 34.7% of those in small rural areas reported that costs were always reasonable. The National Survey of Children's Health did not ask about actual expenses; perceptions of reasonableness are those of the parents.

The proportion of parents reporting that their child's health insurance *benefits met the child's needs* increased slightly, from 76.1% in 2007 to 77.9% in 2011/12 (p=0.0003). With residence and race/ethnicity categories, only NH White, urban parents were significantly more likely to report benefits meeting the child's needs in 2011/12 than in 2007 (2007: 75.5%; 2011/12: 77.3%; p = 0.0003). Changes in values between the two time periods were not significant for any other groups.

Similarly, there were no significant differences over the study periods for the proportion of parents reporting that the child's health insurance allows the child to see the health care providers needed. Overall, 84.0% of parents offered this positive report regarding provider availability.

Health Care: Primary Provider

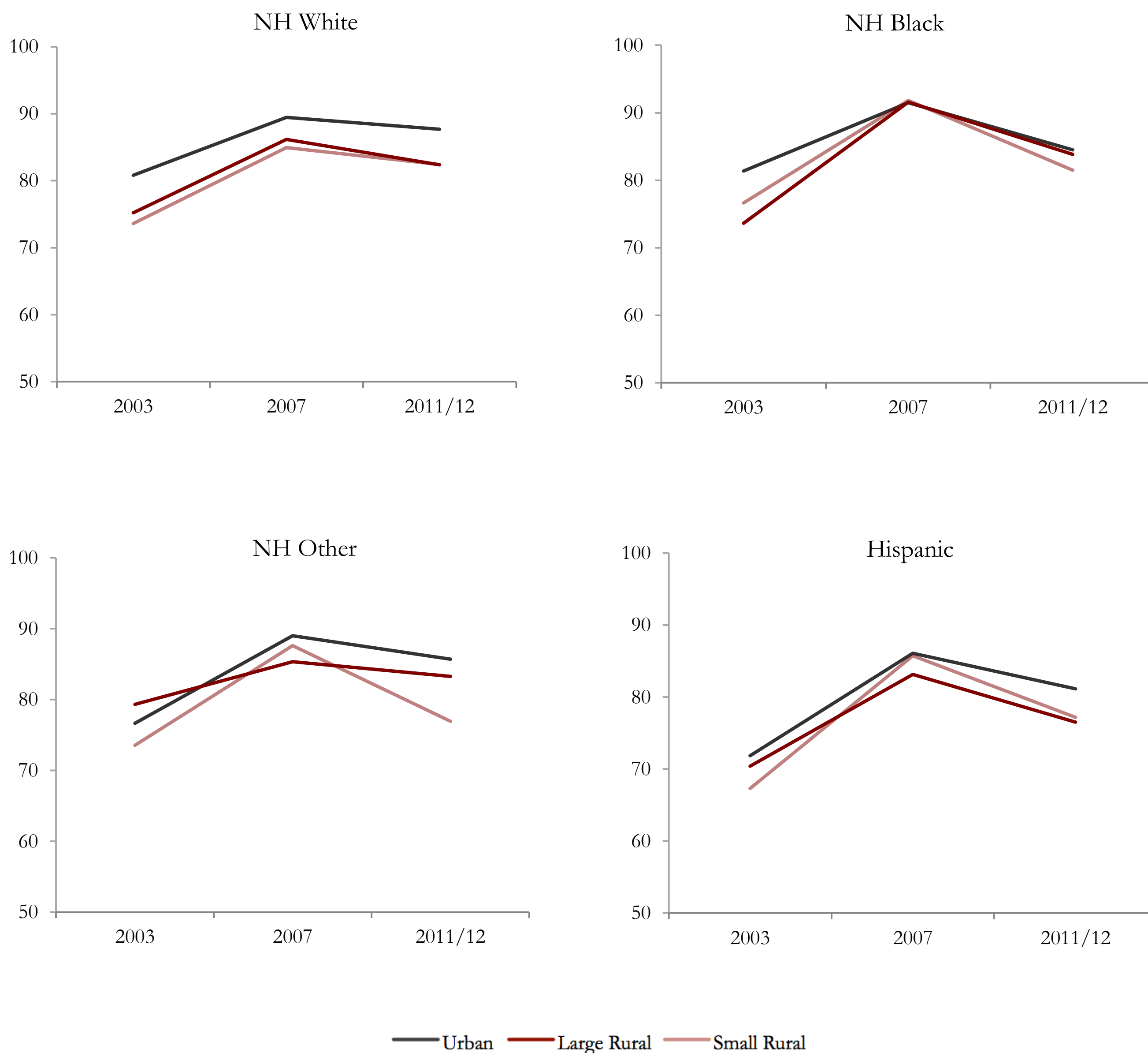
Parents were asked whether they had one or more persons whom they thought of as the child's personal doctor or nurse. The proportion of all parents responding positively to this question increased from 83.6% to 92.2% between 2003 and 2007, but declined to 90.4 in 2011/12 ($p < 0.0001$). An exception was noted among Hispanic and NH Other children in small rural areas, where the proportion of parents reporting a personal provider increased consistently over time (Appendix B, Table B-4).

Proportion of children with a personal doctor or nurse, by race/ethnicity and residence, 2003 – 2011/12 National Survey of Children's Health, in percent

Health Care: Utilization

Preventive medical visits ("well child visits") are important for professional assessment of a child's health and development and for provision of anticipatory guidance to the parents. Receipt of this important service peaked in 2007 (88.4% for all children) and subsequently declined to 84.6% in 2011/12, while still remaining higher than the 2003 level of 77.9% (p<0.0001). The decreases were significant over nearly all race/residence categories and occurred despite general increases in the proportion of children with health insurance (Appendix B, Table 5).

Proportion of children with a preventive medical visit, by race/ethnicity and residence, 2003 – 2011/12 National Survey of Children's Health, in percent



The proportion of children reported to have had ***any medical visit*** during the past year was examined in the 2003 and 2011/12 iterations of the National Survey of Children's Health. Across that time period, the overall proportion of children with a visit increased from 85.9% to 88.4% ($p < 0.0001$). Similar increases were noted among urban children (86.3% to 88.7%) and children in small rural areas (83.6% to 86.7%; p=0.0001). Change for children in large rural areas, while trending in a similar direction, was not significant (84.9% to 87.1%, p=0.0334).

Prevalence of any medical visit by race/ethnicity and residence is shown in Table 1, below. When significant change was present, it was in the direction of increased proportions of children reported to have had a medical visit.

Table 1. Proportion of children reported to have at least one medical visit in the past 12 months, by residence, 2003 – 2011/2012, National Survey of Children's Health (*N*=190,644).

Race/ethnicity	Residence	2003	2007	2011/12	P value, change over time
NH White	Urban	89.9%	.	91.8%	**0.0000**
	Large Rural	87.0%	.	88.9%	0.1015
	Small Rural	85.0%	.	88.5%	**0.0000**
NH Black	Urban	85.1%	.	86.4%	0.1592
	Large Rural	78.4%	.	87.1%	**0.0043**
	Small Rural	80.8%	.	83.9%	0.3001
NH Other	Urban	82.4%	.	88.0%	**0.0008**
	Large Rural	86.3%	.	87.6%	0.6390
	Small Rural	82.2%	.	79.7%	0.4009
Hispanic	Urban	77.9%	.	84.4%	**0.0000**
	Large Rural	76.8%	.	79.7%	0.4104
	Small Rural	74.5%	.	83.7%	0.0127

The proportion of children who experienced a *delay in medical care due to costs* was available for the 2007 and 2011/12 study periods. Overall, 3.7% and 3.4% of children experienced delayed medical care due to costs in 2007 and 2011/12, respectively; these values did not differ significantly. Trends within race/ethnicity and residence also did not differ over time.

Outcomes: Health Status

Nationally, the proportion of parents reporting their child was in excellent or very good health did not change over the study period, at 84.2% in 2003, 84.5% in 2007, and 84.3% in 2011/12 (p=0.8704). With the two exceptions noted in Table 2, below, perceived child health was similar within race/ethnicity and residence groups over time.

More notable were differences *between* race/ethnicity categories, which tended to remain stable over time. The chart below illustrates the persistence of perceived disparities across the period, despite improvements among NH Black and Hispanic children.

Proportion of children reported to be in excellent or very good health, by race/ethnicity, 2003 – 2011/12 NSCH, in percent

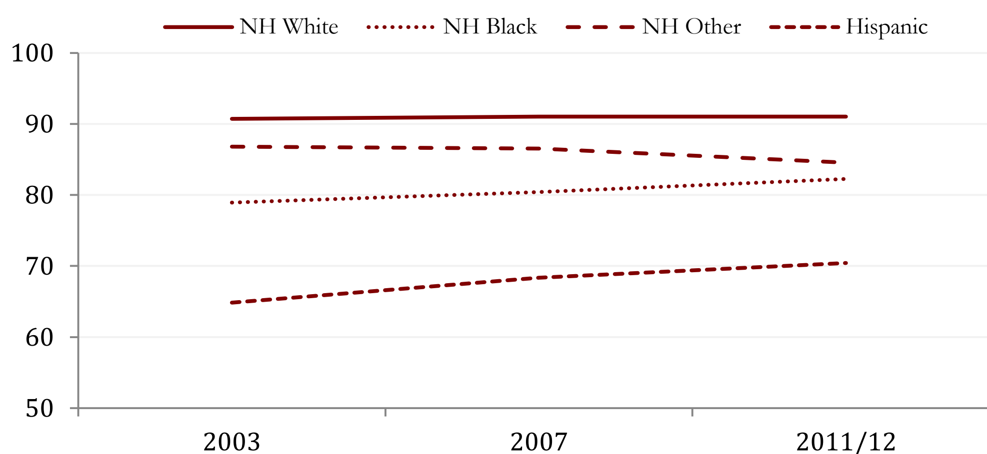


Table 2. Percent of children in excellent or very good health, by race/ethnicity and residence, 2003 – 2011/12, NSCH (*N*=280,376).					
Race/ethnicity	**Residence**	**2003**	**2007**	**2011/12**	**P value, change over time**
NH White	Urban	91.6%	91.9%	91.8%	0.5709
	Large Rural	87.8%	87.7%	88.6%	0.7223
	Small Rural	88.5%	88.4%	88.3%	0.9752
NH Black	Urban	79.6%	81.2%	82.6%	0.0331
	Large Rural	75.9%	77.1%	85.2%	**0.0036**
	Small Rural	73.1%	72.6%	73.0%	0.9935
NH Other	Urban	87.5%	87.1%	85.1%	0.1670
	Large Rural	81.1%	85.4%	80.2%	0.4089
	Small Rural	84.8%	81.8%	82.5%	0.6956
Hispanic	Urban	64.8%	68.8%	70.3%	**0.0001**
	Large Rural	69.0%	66.8%	71.4%	0.7027
	Small Rural	59.4%	61.5%	71.7%	0.0259

Conclusions: Improvement and Vulnerability

Two themes emerge when factors associated with rural children's access to health care is examined over the past decade (2003 – 2011/12). The first theme is improvement. A greater proportion of children, including rural children, had financial access to care through health insurance at the end of the period than at the beginning. Even among Hispanic rural children, the least insured population group, the proportion of children without any form of health insurance declined from 17.0% and 22.1% in 2003, in large and small rural areas, respectively, to 12.0% and 11.4% in 2011/12. The second theme, vulnerability, is illustrated by the increase in public insurance over the same time period. Medicaid or the State Children's Health Insurance Program (SCHIP) insured the majority of NH Black, Hispanic and NH Other rural children throughout the decade; significant increases in public coverage occurred among white children.

The role of public insurance, Medicaid and SCHIP, illustrates the growing susceptibility of rural children to economic and political changes. The proportion of children who were poor or low-income increased across the decade, further exacerbating rural-urban disparities. By 2011/12, half of all rural children lived below 200% of the FPL (50.0% in large and 51.5% in small rural areas), versus 38.3% among urban children. Thus, reliance on public insurance became increasingly necessary. Individual states set income eligibility guidelines and may choose to modify these in times of fiscal stringency. In 2016, the average eligibility level across all states was 261% of the FPL, up from 208% in 2000 (medians, 255% and 200%, respectively).[5] While most states have increased eligibility guidelines across time, not all have done so. Arizona dropped its guidelines from 200% FPL (2000 – 2010) to 140% FPL (2011 – 2013) before increasing them to 152% (2014 – 2016; currently lowest in the U.S.). While Arizona and Alaska were the only states to periodically revise guidelines downward, this option remains available to other states. Thus, the next economic downturn could be associated with losses of financial access to care among rural children.

A second point of vulnerability concerns the loss of previous gains. Despite increases in financial coverage, the proportion of children reported to have received a preventive medical visit peaked for nearly all race/ethnicity and residence populations in 2007, just prior to the economic recession that began in 2008. Rural-urban disparities were smallest in 2007; among NH Black children, there were no differences based on residence. While receipt of preventive visits did not drop to 2003 levels, there were still declines between 2007 and 2011/12 (see table on page 9).

Children's health, as perceived by their parents, was largely unchanged across the study period, with most parents (84%) reporting their child to be in excellent or very good health. To maintain this positive outcome, continued public health vigilance is needed. Further research can seek to identify contributors to the decline in preventive medical visits. Financial burdens on parents associated with the economic recession may have limited their ability to meet co-pays or to take off from work for preventive visits. Changes in visit copays may have contributed to the decreased proportion of parents who consider out of pocket expenses to be reasonable. Alternatively, providers may have reduced their willingness to accept Medicaid or SCHIP reimbursement. In addition, further research is needed to address race/ethnicity and residence-based disparities, which persisted across the decade.

Appendix A. Technical Notes

Data Sources

The analysis was based on three waves of the National Survey of Children's Health, 2003, 2007, and 2011/12. This survey provides rich data regarding non-institutionalized children, including access to health care, utilization of health services, and physical health. The survey is sponsored by the Maternal and Child Health Bureau at the Health Resources and Services Administration, and the National Center for Health Statistics at the Centers for Disease Control conducts the survey.

Population Studied

Analysis were limited to children aged 0 – 17 for whom age, sex, race/ethnicity, residence, and response to health insurance coverage were available (N=280,452). Additional restrictions were based on the availability of data for measures of interest when reported.

Measures

The analysis examined eleven outcome measures, listed in the table below

Health Insurance	
Health insurance?	Does child have any kind of health care coverage?
Medicaid coverage?	Is the child insured by Medicaid or the State Children's Health Insurance Program?
Gaps in health coverage?	During the past 12 months, was there any time when the child was not covered by ANY health insurance?
Out-of-pocket expenses?	Not including health insurance premiums or costs that are covered by insurance, do you pay any money for the child's health care? If yes, how often are these costs reasonable?
Benefits meet needs?	Does the child's health insurance offer benefits or cover services that meet (his/her) needs?
Coverage includes child providers?	Does the child's health insurance allow (him/her) to see the health care providers (he/she) needs?
Health care access	
Primary provider	Do you have one or more persons you think of as the child's personal doctor or nurse?
Any medical visit?	During the past 12 months, did the child see a doctor or nurse for any medical care?
Preventive medical visit?	During the past 12 months, did the child see health care provider for preventive medical care in past year?
Delay in medical care due to costs?	During the past 12 months, was there any time when the child needed health care but it was delayed or not received? What type of care was delayed – Medical?
Physical health	
Health status, excellent or very good?	How would you describe the child's health?

Statistical Analysis

The unit of analysis was the child. All analyses reflect the complex sampling design of the National Survey of Children's Health. The analyses were adjusted to reflect the new sampling of cell phone respondents in 2011/12. To access geographic data, all analyses were carried out at the Research Data Center of the National Center for Health Statistics, located in Hyattsville, MD.

Appendix B. Tables

Table B-1. Distribution of child population, by race/ethnicity and residence, 2003 – 2011/12 National Survey of Children's Health, (*N*=280,452)

Race/ethnicity	Residence	2003	2007	2011/12	P value, change over time
NH White	Urban	57.5%	53.0%	49.5%	**0.0000**
	Large Rural	73.3%	67.1%	65.5%	**0.0000**
	Small Rural	76.3%	73.7%	69.1%	**0.0000**
NH Black	Urban	15.4%	15.3%	14.6%	**0.0000**
	Large Rural	9.9%	9.9%	9.2%	**0.0000**
	Small Rural	9.8%	9.1%	8.2%	**0.0000**
NH Other	Urban	7.7%	9.4%	10.6%	**0.0000**
	Large Rural	5.1%	7.6%	8.2%	**0.0000**
	Small Rural	6.1%	7.8%	9.0%	**0.0000**
Hispanic	Urban	19.3%	22.3%	25.3%	**0.0000**
	Large Rural	11.7%	15.5%	17.1%	**0.0000**
	Small Rural	7.9%	9.4%	13.8%	**0.0000**

Table B-2. Proportion of children with health insurance, by race/ethnicity and residence, 2003 – 2011/12 National Survey of Children's Health (*N*=280,452)

Race/ethnicity	Residence	2003	2007	2011/12	P value, change over time
NH White	Urban	95.0%	94.4%	96.5%	**0.0000**
	Large Rural	93.1%	93.0%	95.4%	0.0118
	Small Rural	91.5%	91.9%	94.7%	**0.0000**
NH Black	Urban	92.7%	91.3%	94.8%	**0.0006**
	Large Rural	92.3%	89.9%	96.9%	**0.0050**
	Small Rural	95.1%	90.9%	96.9%	**0.0095**
NH Other	Urban	93.8%	94.0%	96.1%	**0.0024**
	Large Rural	91.7%	94.4%	96.9%	**0.0008**
	Small Rural	86.5%	88.5%	92.7%	0.0142
Hispanic	Urban	79.2%	82.2%	90.8%	**0.0000**
	Large Rural	83.0%	70.7%	88.0%	**0.0055**
	Small Rural	77.9%	78.4%	88.6%	**0.0041**

Table B-3. Proportion of insured children covered by Medicaid, by race/ethnicity and residence, 2003 – 2011/12 National Survey of Children's Health (*N*=259,904)

Race/ethnicity	Residence	2003	2007	2011/12	P value, change over time
NH White	Urban	15.3%	15.1%	20.0%	**0.0000**
	Large Rural	27.1%	29.6%	36.9%	**0.0000**
	Small Rural	32.4%	34.4%	42.2%	**0.0000**
NH Black	Urban	51.1%	54.3%	58.4%	**0.0000**
	Large Rural	63.4%	71.8%	75.7%	**0.0053**
	Small Rural	72.6%	76.0%	77.0%	0.4174
NH Other	Urban	24.1%	25.3%	31.2%	**0.0001**
	Large Rural	47.1%	55.3%	53.1%	0.2635
	Small Rural	60.4%	51.7%	60.0%	0.1595
Hispanic	Urban	56.2%	54.3%	62.0%	**0.0000**
	Large Rural	57.1%	61.3%	69.6%	0.0290
	Small Rural	68.0%	73.2%	70.8%	0.6544

Table B-4. Proportion of children reported to have a personal provider, by race/ethnicity and residence, 2003 – 2011/12, National Survey of Children's Health (*N*= 279,791).

Race/ethnicity	Residence	2003	2007	2011/12	P value, change over time
NH White	Urban	89.9%	96.0%	94.2%	**0.0000**
	Large Rural	88.2%	95.2%	93.0%	**0.0000**
	Small Rural	88.1%	92.8%	92.3%	**0.0000**
NH Black	Urban	77.3%	88.8%	86.1%	**0.0000**
	Large Rural	73.9%	89.4%	86.1%	**0.0000**
	Small Rural	78.6%	89.0%	86.9%	**0.0010**
NH Other	Urban	85.4%	92.7%	91.5%	**0.0000**
	Large Rural	84.4%	89.5%	90.6%	0.0455
	Small Rural	69.9%	85.3%	86.7%	**0.0000**
Hispanic	Urban	68.0%	85.7%	85.2%	**0.0000**
	Large Rural	69.5%	87.5%	82.0%	**0.0001**
	Small Rural	69.5%	84.7%	86.1%	**0.0000**

Table B-5. Proportion of children who received a preventive medical visit in the past 12 months, by race/ethnicity and residence, 2003 – 2011/12, National Survey of Children's Health (*N*=190,644).

Race/ethnicity	Residence	2003	2007	2011/12	P value, change over time
NH White	Urban	80.8%	89.5%	87.7%	**0.0000**
	Large Rural	75.2%	86.2%	82.4%	**0.0000**
	Small Rural	73.6%	84.9%	82.4%	**0.0000**
NH Black	Urban	81.4%	91.5%	84.5%	**0.0000**
	Large Rural	73.6%	91.6%	83.8%	**0.0000**
	Small Rural	76.6%	91.8%	81.5%	**0.0000**
NH Other	Urban	76.6%	89.0%	85.7%	**0.0000**
	Large Rural	79.3%	85.3%	83.3%	0.3191
	Small Rural	73.6%	87.6%	77.0%	**0.0000**
Hispanic	Urban	71.8%	86.1%	81.2%	**0.0000**
	Large Rural	70.4%	83.1%	76.5%	0.0131
	Small Rural	67.3%	85.7%	77.2%	**0.0004**

References

[1] Probst JC, Moore CG, Roof KW, Baxley EG, Samuels ME. *Access to Care among Rural Minorities: Children.* 2002. Developed under grant No. Grant No. 6 U1C RH 00045-01, Federal Office of Rural Health Policy, Health Resources and Services Administration.

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