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# The Role of Public versus Private Health Insurance in Ensuring Health Care Access & Affordability for Low-Income Rural Children

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## BACKGROUND

More than 35.6 million children were enrolled in Medicaid or the Children's Health Insurance Program (CHIP) in December 2016—accounting for just over half of total Medicaid and CHIP enrollment.<sup>1</sup> Medicaid and CHIP are particularly important in rural areas where 77.1 percent of children in households with income below 200 percent of the federal poverty level (FPL) are covered by public insurance compared with 72.2 percent of children in urban areas.<sup>2</sup> Given the large proportion of rural children covered by public insurance, it is critically important to understand the role of public health insurance in ensuring access to affordable health care for these children. Some research indicates that public coverage better protects families from cost-related barriers<sup>3</sup> and improves access,<sup>4,5</sup> quality,<sup>4</sup> and outcomes<sup>6</sup> compared to private coverage, while other studies identify barriers to seamless primary care<sup>7,8</sup> and limited access to specialty care for children covered by public coverage.<sup>9-11</sup> Though these prior studies have sometimes yielded mixed results, taken in aggregate they suggest children with public health insurance have generally fared as well as their privately insured counterparts on many key access measures.<sup>12,13</sup>

While Medicaid and CHIP provide health care access for many low-income children, it is unclear whether and how access and affordability differs by rural and urban residence. Rural areas have fewer health care professionals per capita,<sup>14</sup> which may translate into poorer access for children, particularly in low-income families. Among adults, we know that the rural uninsured have better access to health care than the urban uninsured,<sup>15</sup> yet rural adults with private health insurance face higher out-of-pocket spending than their urban counterparts.<sup>16</sup> However, rural-urban differences in health care access for children with public versus private sources of health insurance has not been well examined. To address this knowledge gap, we studied rural-urban differences in children's access to care, and their families' perceived affordability of that care among those enrolled in Medicaid or CHIP and those covered by private insurance plans.

## Key Findings

Rural children with public insurance had more health challenges than those with private insurance, including poorer health status and greater prevalence of special health care needs.

Publicly insured rural children were less likely to experience delayed or forgone care in the past year compared with publicly insured urban children.

Parents of rural children with private coverage were more than twice as likely to report problems paying medical bills compared with parents of Medicaid- or CHIP-enrolled rural children.

Parents of publicly insured rural children were nearly twice as likely to report that their child's out-of-pocket healthcare spending was always reasonable compared with rural children with private coverage.

For more information about this study, contact Erika Ziller at [erika.ziller@maine.edu](mailto:erika.ziller@maine.edu)

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## APPROACH

**Data Source and Variables.** We used data from the 2011-12 National Survey of Children’s Health (NSCH), which examines children’s physical and emotional health as well as factors that relate to their well-being. The dependent variables include a series of access to health care measures (access to needed providers; delayed or forgone care; and, problems obtaining referrals) and affordability of health insurance or health care (reasonableness of insurance premiums or difficulties paying medical bills). We controlled for sociodemographic variables known to affect health care access such as child’s age, sex, race/ethnicity, physical health status, special health needs, region of residence, and parent marital status and educational attainment. We defined low-income as family income below 200 percent of the FPL. Our primary independent variable was rural or urban location, based on metropolitan or non-metropolitan county classification.<sup>17</sup> A second independent variable was whether children had health insurance coverage through a private (e.g., a parent’s employer or privately purchased plan) or public source (i.e., Medicaid or CHIP).

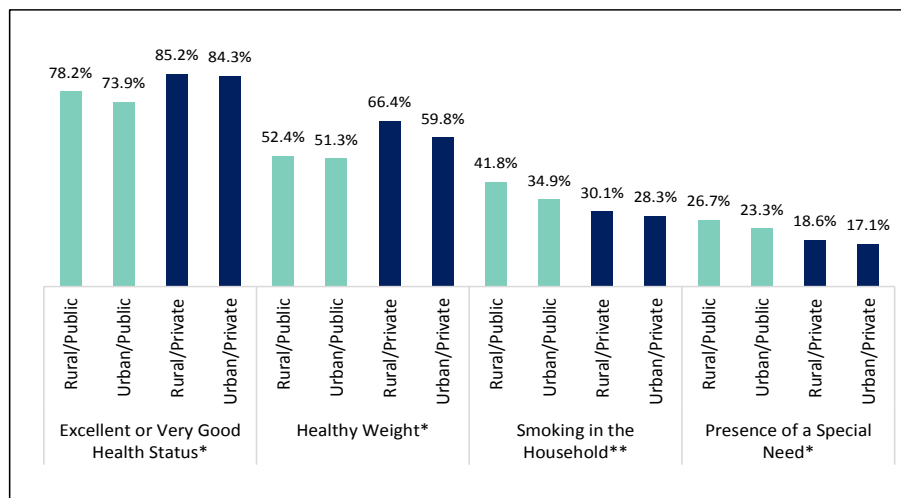
**Analyses.** Reflecting eligibility requirements for Medicaid and CHIP, the analysis was limited to children under the age of 18 with family income less than 200 percent of the FPL who have either public or private health insurance coverage. The final sample consisted of over 24,000 children, of whom roughly 6,400 (27 percent) lived in a rural area. We used bivariate analyses to examine whether indicators of access and affordability differed by

residence and by child and parent characteristics within residence. In multivariate analyses, we included an interaction between rural-urban residence and insurance type to assess source of coverage differences in rural versus urban access and affordability. We used two logistic regressions to estimate 1) the odds that a child would experience delayed or forgone needed medical care and 2) the odds that a child’s family experienced difficulty paying medical bills in the preceding 12 months. Results are presented as odds ratios with 95 percent confidence intervals. All statistical tests are calculated using SUDAAN version 11 (Research Triangle Institute, Research Triangle Park, NC) because of its ability to account for sample design parameters and to yield valid standard errors for weighted data. Unless stated otherwise, reported differences are statistically significant at the .05 level or less.

## FINDINGS

**During 2011-12, publicly insured low-income rural and urban children had greater health care needs than those with private insurance.** The majority of children living in families with income below 200 percent of the FPL had Medicaid or CHIP (75 percent) and this percent did not vary by rural or urban residence. (See Appendix A for this and other characteristics of the low-income children in the sample by residence and insurance type.) Regardless of residence, low-income children with public coverage were less likely to be in excellent or very good health or to be at a healthy weight than those with private coverage (Figure 1).

**Figure 1. Publicly-insured low-income children have greater health care needs**



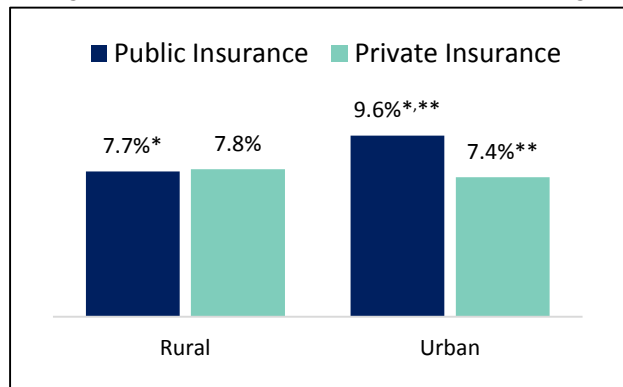
Data: National Survey of Children’s Health, 2011-12.

\*Residence and insurance different at  $p < .05$ . \*\*Insurance different at  $p < .05$ .

Among low-income children with public coverage, rural children were more likely than children in urban areas to have a special health care need (26.7 percent vs. 23.3 percent) and to have a smoker in their household (41.8 percent vs. 34.9 percent).

**Public versus private insurance is associated with equal access to care, but more problems with referrals for rural children.** As shown in Figure 2, low-income rural families with a publicly-insured child were less likely to report needed but delayed or forgone care for their child in the past year compared with low-income urban families

**Figure 2. Low-income children needed but delayed or went without care in the past year**



Note: Low-income children are those with family income below 200% of the federal poverty level.  
Data: National Survey of Children's Health, 2011-12.  
\*Residence different at  $p < .05$ ; \*\*urban insurance different at  $p < .05$ .

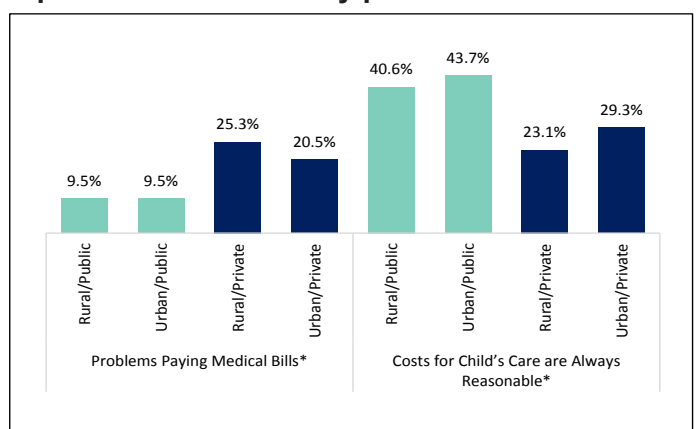
with a publicly-insured child (7.7 percent vs. 9.6 percent). Among low-income rural children, there was no difference between those with public and private coverage in delayed or forgone needed care; about eight percent of low-income rural children experienced delayed or forgone needed care in the past year. By contrast, low-income urban children with public insurance were more likely to experience delayed or forgone needed care than low-income urban children with private insurance (9.6 percent vs. 7.4 percent). Among low-income rural families, those with a publicly insured child were more likely to experience problems obtaining referrals for their child than those with a privately insured child (27.4 percent vs. 13.3 percent;  $p < .05$ , data not shown). About one-third of families reported difficulty obtaining specialty care for their child, but we found no rural-urban differences, or differences by insurance status (data not shown).

**Low-income rural families with public coverage found costs more affordable during 2011-12.**

About 10 percent of low-income rural families with a publicly insured child reported problems paying

medical bills for their child's care, compared with 25.3 percent among low-income rural families whose child had private coverage (Figure 3). Problems paying medical bills were greater among low-income rural versus urban families when a child had private coverage (25.3 percent vs 20.5 percent). Low-income rural families with a publicly insured child were nearly twice as likely to report that the out-of-pocket spending for their child's health care was always reasonable compared with low-income rural families with a privately insured child (40.6 percent vs. 23.1 percent) (Figure 3). Results were similar for low-income urban children.

**Figure 3. Publicly-insured low-income children report fewer affordability problems**



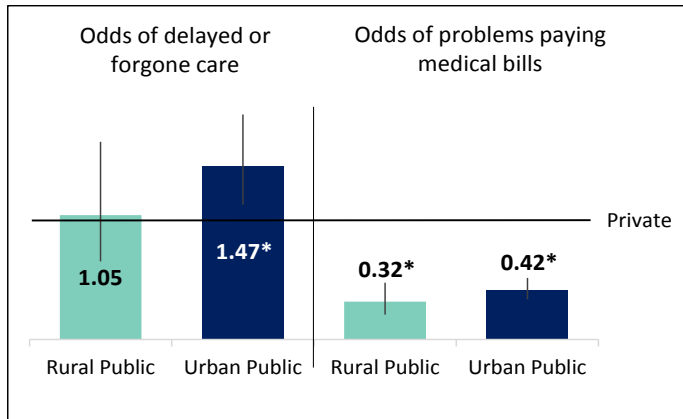
Note: Low-income children are those with family income below 200% of the federal poverty level.  
Data: National Survey of Children's Health, 2011-12.  
\*Differences between public and private insurance for each measure significant at  $p < .001$  for both rural and urban residence.

**Factors associated with health care access and affordability problems include residence, type of insurance, and presence of a special health care need.** As indicated in Figure 4, there were no differences among rural low-income children in Medicaid or CHIP versus those in private coverage in the adjusted odds of experiencing delayed or forgone needed medical care. In contrast, low-income urban children with public insurance had a 47 percent greater likelihood of experiencing delayed or forgone needed medical care in the past year compared with low-income urban children with private insurance. Comparing rural and urban low-income publicly insured children, we found that rural children had 30 percent lower odds of delayed or forgone care (Figure 5).

The regression models further demonstrated that, regardless of residence or type of insurance, children in fair or poor health or with special health care needs had significantly greater odds of delayed



**Figure 4. Effect of public versus private coverage on access for low-income rural and urban children**

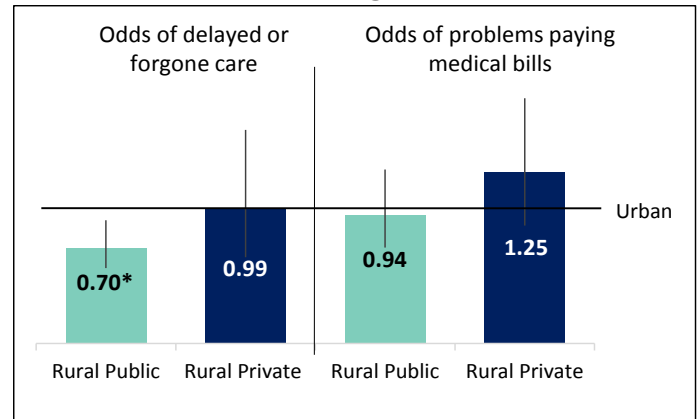


Note: Controlling for age, sex, race/ethnicity, health status, presence of a special health care need, and parents' marital and educational status.

Data: National Survey of Children's Health, 2011-12.

\*Odds differ significantly from referent at  $p < .05$ .

**Figure 5. Effect of rural versus urban residence on access among low-income children with public and private coverage**



Note: Controlling for age, sex, race/ethnicity, health status, presence of a special health care need, and parents' marital and educational status.

Data: National Survey of Children's Health, 2011-12.

\*Odds differ significantly from referent at  $p < .05$ .

or forgone care and their families experienced greater problems with medical bills compared to children with excellent or very good health status or no special needs. Similarly, the parents of adolescents reported higher odds of difficulty with both access and affordability compared to the parents of children under age 5 (Appendix B).

**Limitations.** The NSCH is a cross-sectional survey, which precludes our ability to assess temporal sequence of events or causal relationships in the data. For example, it is unclear whether children with fair or poor health have greater odds of delayed/forgone care because they have intensive needs that are a challenge to fully meet, whether poorer access to care has affected their health status, or whether a third factor may be driving both health status and access. Additionally, all measures are self-reported and may be subject to recall bias or inaccuracy. Similarly, measures of access and affordability in the NSCH were subjective and based on parents' perceptions. While these perceptions are critically important for both policy and practice considerations, we recognize that they are only one dimension of health care access.

## DISCUSSION AND POLICY FINDINGS

Our findings suggest that rural children with public coverage are less likely to delay or forgo needed health care services than are their urban counterparts, and that—unlike for urban children—this rate does not differ between those with public versus private insurance. The ability

to obtain needed medical care is a strong indicator of basic health care access, so this finding suggests that Medicaid and CHIP may offer rural low-income children access to timely care that is generally comparable to those with private insurance. This finding may be associated with a greater willingness of rural health care providers to serve publicly insured patients than those in urban areas as has been reported in other studies.<sup>18,19</sup>

However, our findings also suggest that publicly insured rural children may experience some barriers to care, such as challenges obtaining health care referrals. The survey question was unclear as to the source of the referral difficulties or the impact of those difficulties on access. For example, some Medicaid or CHIP managed care plans may require pre-authorization for referrals,<sup>20</sup> or the number of providers willing to take referrals may be lower for public versus private insured children. Nationally, research suggests that specialists are less likely to accept public insurance compared to private insurance.<sup>11</sup> In rural areas, where specialty care is already more limited,<sup>21,22</sup> and public insurance more common, finding a specialist willing to accept referral of a new patient may take more effort or require greater travel. However, while we found that about 30 percent of low-income families in the sample reported problems obtaining specialty care for their children, this did not differ by residence or insurance coverage. This suggests that, ultimately, type of insurance or residence may not be the greatest barriers in accessing specialty care for children.

Our findings also indicate that public coverage generally provides more affordable health care for children than private health insurance. Parents of low-income children with private versus public insurance are less likely to find their child's health care costs reasonable. Similarly, one quarter of rural families with privately insured children reported problems paying for the child's health care services, compared to only 10 percent of those with public insurance. Private coverage may be less affordable because these plans typically involve more cost sharing than Medicaid and CHIP, including coinsurance, deductibles, and copayments. These higher costs may be compounded by the fact that rural residents tend to have lower incomes than their urban counterparts.<sup>23</sup>

In general, our findings suggest that public coverage provided low-income rural children with comparable healthcare access and greater perceived affordability compared with their privately-insured counterparts. CHIP is up for reauthorization in 2017, and in 2019 states will have the option to roll back CHIP and Medicaid eligibility levels to the minimum allowed under Federal law (generally 138 percent of the FPL). Decisions about these policy questions should consider the potential implications for affordability of health care services among rural children.

## ENDNOTES

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**Appendix A. Characteristics of Low-Income Children, by Residence and Source of Insurance (2011 & 2012)**

Low-Income Children Under 18 (At or Below 200% FPL)				
Characteristics	Rural Total		Urban Total	
	Publicly Insured %	Privately Insured %	Publicly Insured %	Privately Insured %
<b>Total</b>	74.9% (n=4,732)	25.1% (n=1,649)	75.2% (n=12,710)	24.9% (n=4,946)
<b>Age</b>				
Under age 5	35.1***	24.8a***	37.1***	31.4***
5-12	38.3	45.0	39.1	37.4
13-17	26.7	30.2	23.8	31.2
<b>Sex</b>				
Male	50.1	52.8	51.5	50.5
Female	49.9	47.2	48.5	49.5
<b>Race/Ethnicity</b>				
White, not Hispanic	55.5c***	74.9c***	29.5***	49.5***
Not White, not Hispanic	26.8	15.5	31.7	26.1
Hispanic	17.7	9.4	38.8	24.3
<b>Physical Health Status</b>				
Excellent/Very Good	78.2b***	85.2***	73.9***	84.3***
Good	16.3	13.5	19.9	14.2
Fair/Poor	5.5	1.3	6.2	1.6
<b>Presence of a Special Health Care Need</b>				
	26.7a**	18.6**	23.3***	17.1***
<b>Body Mass Index</b>				
Underweight	5.4*	3.2a*	4.5***	7.2***
Healthy weight	52.4	66.4	51.3	59.8
Overweight	18.9	11.6	19.5	16.5
Obese	23.4	18.8	24.7	16.5
<b>Parent Marital Status</b>				
Married	50.3b***	81.3c***	44.6***	68.0***
Not married	49.7	18.7	55.4	32.0
<b>Parent Educational Attainment ^</b>				
Less than high school	23.0a	9.0	27.1***	9.5***
High school graduate	35.9	26.2	35.1	28.1
More than high school	41.1	64.8	37.8	62.4

Residence differences significant at <sup>a</sup>p≤.05; <sup>b</sup>p≤.01; <sup>c</sup>p≤.001.

Insurance differences significant at <sup>\*</sup>p≤.05; <sup>\*\*</sup>p≤.01; <sup>\*\*\*</sup>p≤.001.

Data: National Survey of Children's Health, 2011-12.

Statistics are weighted to population level using weights provided with the NSCH.

Sample size is unweighted.

<sup>^</sup> Based on educational attainment of highest achieving parent.



**Appendix B. Impact of Insurance and Residence on Access and Affordability of Children’s Health Care Services, Controlling for Covariates (2011 & 2012)**

Characteristic (Referent)	Odds of Delayed or Forgone Care		Odds of Problems Paying Medical Bills	
	OR	95% CI	OR	95% CI
<b>Rural versus urban children with public coverage<sup>a</sup></b>	0.70*	0.55, 0.90	0.94	0.70, 1.27
<b>Rural versus urban children with private coverage<sup>a</sup></b>	0.99	0.63, 1.56	1.25	0.86, 1.79
<b>Public versus private coverage among rural children<sup>a</sup></b>	1.05	0.66, 1.67	0.32*	0.21, 0.48
<b>Public versus private coverage among urban children<sup>a</sup></b>	1.47*	1.14, 1.90	0.42*	0.34, 0.52
<b>Age (Under age 5)</b>				
5-12	1.41*	1.10, 1.79	1.19	0.97, 1.47
13-17	2.11*	1.63, 2.73	1.52*	1.22, 1.91
<b>Sex (Male)</b>				
Female	0.98	0.80, 1.19	1.06	0.89, 1.25
<b>Race / Ethnicity (White, not Hispanic)</b>				
Not White, not Hispanic	1.00	0.80, 1.24	1.02	0.84, 1.24
Hispanic	0.86	0.63, 1.16	0.79	0.61, 1.03
<b>Health status (Excellent / Very good)</b>				
Good	1.23	0.94, 1.61	1.32*	1.04, 1.67
Fair / poor	1.72*	1.23, 2.42	1.90*	1.34, 2.69
<b>Child with special health care needs (No)</b>				
Yes, child has special needs	2.25*	1.81, 2.79	1.90*	1.56, 2.31
<b>Parents' marital status (Married)</b>				
Not married	1.01	0.82, 1.24	1.00	0.83, 1.19
<b>Parents' education status (More than high school)</b>				
Less than high school	0.56*	0.39, 0.81	0.66*	0.49, 0.89
High school graduate	0.71*	0.57, 0.89	0.80*	0.66, 0.97

Odds differ significantly from referent at \*p<.05.  
 Data: National Survey of Children’s Health, 2011-12.  
<sup>a</sup>Estimates derived from interaction between residence (rural/urban) and coverage type (public/private) using contrast statements.