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Haley Hurst

Patrick Ruz

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Effects of Insurance Coverage on Healthcare Access and Outcomes for Children in Ohio

Haley Hurst and Patrick Ruz

Abstract

Objective: Despite health insurance coverage correlating to improved child health outcomes and reduced healthcare costs, it is estimated that 8.7% of children in America lack continuous insurance. Although coverage has expanded multiple times through the Children's Health Insurance Program (CHIP) initiated in 1997, rates for child insurance vary drastically across regions of the country. In this study we investigated child insurance rates over time and by state, as well as explored the effects of having insurance and child health outcomes. To do this, we measured the association of uninsured children to primary care physician access and child mortality in the U.S.

Methods: We collected data from 2023 National County Health Rankings and University of Wisconsin Population Health Institute with records from 2016 and 2022. This data included rates of uninsured children in Ohio and states in different regions including Mississippi and New York, along with differences in access to primary care physicians and the development of childhood obesity.

Results: The rates of uninsured children were found to decrease in Ohio between 2016 and 2022 from 6.119 to 5.510% ($t = -4.337, p < .001$). Rates between states were significantly different, measuring 6.50% of uninsured children in Mississippi compared to Ohio and New York, with 2.51% in 2022 ($p < .001$). Primary care access was seen to increase as uninsurance rates decrease

in children ($r=-.164$), and a positive correlation was found between lack of insurance and child mortality rates ($r=.164$, $p<0.1$)

Key Words: uninsured children, insurance coverage, child mortality, access, primary care, Ohio

Introduction

In light of evidence that children with adequate insurance have improved health, reduced healthcare costs, and improved parental satisfaction, 8.7% of children in the United States still lack continuous healthcare coverage. Although the government began the Children's Health Insurance Program (CHIP) in 1997 to address this concern, the number of uninsured children in America has increased by 700,000 from 2016 to 2019.¹ Despite CHIP being reauthorized and expanded in 2009, there is still a significant lack of continuous healthcare coverage for children without private insurance and in families who are unable to qualify for Medicaid coverage.

Previous research identifies a disproportionate number of uninsured children living in the South compared to the lowest rate seen in the Northeast.^{2,3} Wanting to investigate further, we decided to compare the state of Ohio to various regions when it came to the rate of uninsured children. We also wanted to explore the effect inadequate health coverage can have on children in the United States measuring specific health outcomes. After finding limited data available on the topic, we sought to determine if there was an association between insurance and access to a primary care provider as well as the association of coverage and rates of child mortality in 2022.

Research Questions

RQ1. How has the rate of uninsured children in Ohio changed between 2016 and 2022?

RQ2. How did the rates of uninsured children in Mississippi, Ohio, and New York compare in 2022?

RQ3. What is the association between insurance coverage for children and their access to a primary care physician?

RQ4. How does insurance coverage correlate with child mortality in 2022?

Methods

Data Collection

We collected our data from the 2023 National County Health Rankings and records from the University of Wisconsin Population Health Institute.⁴ These rankings and records have been compiled from a variety of national and state data sources that have been standardized and combined using scientifically-informed weights. We looked at the years 2016 and 2022 focusing on the difference in rates of uninsured children between Ohio compared to other states. Our variables include uninsured children, rates in Ohio compared to other states, as well as differences in access to a primary care physician and the development of childhood obesity. Our inclusion criteria consist of age (0-18 years), location and insurance coverage.

Data Analysis

To answer if there is a difference between 2016 and 2022 in percent of uninsured children in Ohio, we performed a paired t-test. To determine what the rates of uninsured children are across the states of Ohio, New York and Mississippi in 2022, we completed a one way analysis of variance (ANOVA). We also performed a Pearson/Spearman Correlation to find what the association is between a child's insurance coverage and their access to a primary care provider.

To answer how insurance coverage correlates with child mortality in 2022, we created a Pearson/Spearman Correlation.

Results

In this study, we observed the following findings that addressed our research objectives.

Comparing the rate of uninsured children in Ohio in 2016 versus 2022, we discovered a significant decrease from 6.119 in 2016 to 5.510 in 2022 ($t = -4.337, p < .001$) (Table 1).

Table 1. Rate of uninsured children in Ohio in 2016 compared to 2022.

Year	N	Mean	SD
2016	88	6.119	2.42
2022	88	5.510	1.30

Abbreviation: Number of uninsured children in Ohio (N), Standard Deviation (SD)

An ANOVA determined the rates of uninsured children between Ohio, Mississippi and New York in 2022 were significantly different ($F_{2,229} = 116.7, p < .001$). Post hoc tests showed that Ohio had a significantly lower rate of uninsured children (5.51) than Mississippi (6.50) at $p < .001$ level. Also, Ohio had a significantly higher rate of uninsured children compared to New York (2.51). ($p < .001$)

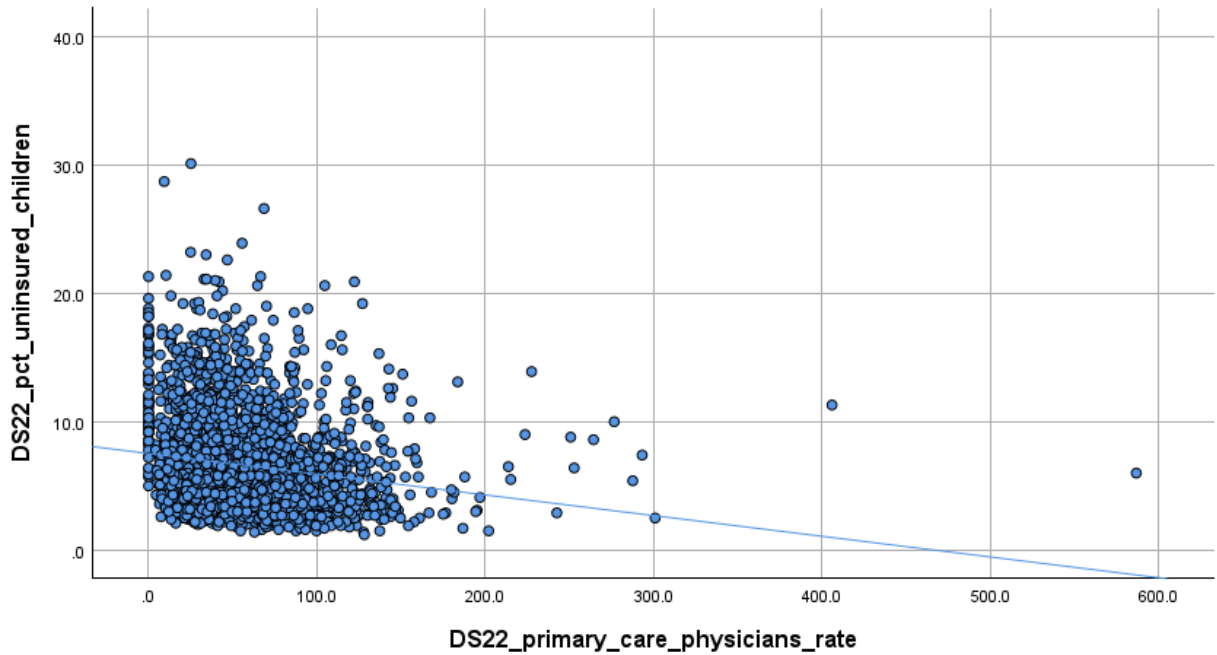
Table 2. Rate of uninsured children in Ohio, Mississippi and New York in 2022

State	N	Mean	SD
Ohio	88	5.510	2.243
Mississippi	82	6.501	1.223
New York	62	2.510	.589

Abbreviation: Number of uninsured children (N), Standard Deviation (SD)

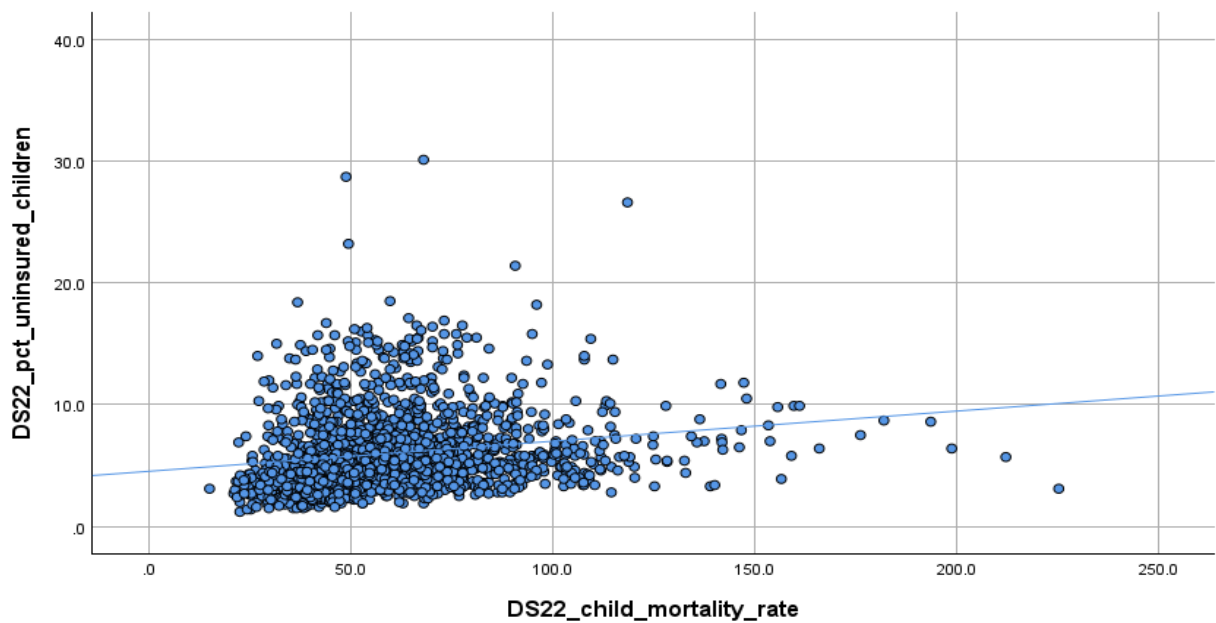
When investigating the association between lack of insurance coverage and access to primary care physicians for children, a Pearson/Spearman Correlation showed a negative correlation ($r = -.164, p = <.001$), stating as lack of insurance increases, there is a decrease in primary care access (Figure 1).

Figure 1. Correlation Between Uninsured Children in Ohio and Access to Primary Care Physicians in 2022



When investigating the association between a lack of child insurance coverage and child mortality, a Pearson/Spearman Correlation showed a positive correlation ($r = .164, p = <.001$), stating as uninsurance in children coverage increases, there is an increase in child mortality (Figure 2).

Figure 2. National Rates of Uninsured Children and Child Mortality in 2022.



Discussion

We found that uninsured children have a negative correlation between their coverage and access to primary care physicians. This supports the idea that families and children may not receive preventative care, screenings, or health visits due to cost or insurance coverage. We also found that lack of insurance had a positive correlation to child mortality, stressing the importance of addressing uninsured children and medical coverage policies to help improve pediatric health outcomes nationwide.

With a decreasing rate of uninsured children since 2016, access to healthcare for children in Ohio is improving (Table 1). After investigating the rate of uninsured children in Ohio between the years of 2016 and 2022, results showed a significant decrease from 6.119% to 5.510% of children. However, the rates of uninsured children in other regions, such as in the states of

Mississippi and New York, were significantly different. Mississippi had a significantly higher rate of uninsured children with 6.5% compared to Ohio, with 5.51%, and New York, with 2.51%.⁴ In states such as Mississippi with an increased uninsurance rate, research by Iorembert et al shows that these children will have reduced access to specialty care compared to insured children.⁷ This suggests reduced treatment for congenital or chronic diseases in kids without insurance, which can lead to poorer health outcomes.

A negative correlation was found for uninsured children and their access to primary care physicians. Children lacking medical coverage are unable to be evaluated for and diagnosed with disorders, including mental health services.⁵ An expansion in coverage and continuous insurance is necessary for children to obtain quality health services, especially to reduce future adverse outcomes.¹ Inadequate insurance coverage and child mortality were found to have a positive correlation nationwide, as seen in Graph 1. Previous pediatric mortality studies also concluded the incidence of death to be greatest in uninsured children, specifically in emergency department settings.⁶ These conclusions support future efforts to improve health outcomes for children by addressing lack of health insurance as a barrier to physician access.

Limitations in this research design include restricted data on individuals without insurance, resulting in state rates of uninsured children and general primary care providers rates being compared. This analysis did not exclude physician rates in pediatric versus family practice centers, so it could overestimate the access children have to a physician. This research process included aggregate data, risking the introduction of bias and limiting results to the available database.

Conclusion

With the prevalence of uninsured children varying between states and a correlation to the lack of primary care access and child mortality, improving coverage for states in need may improve affordability of care and child health outcomes. With greater insurance coverage and state funding, children will have improved access to providers and reduced risk of child mortality with continuous healthcare monitoring.

With more data available on uninsured children in Ohio and beyond, research could focus on child pediatric visits and identifying barriers to care for the uninsured throughout childhood. Along with this, differences in state by state CHIP eligibility could be investigated to address reasons for disproportionate child health coverage in southern states. Future studies could also be expanded to include chart reviews of this specific population, providing increased data to measure child health outcomes based on insurance coverage. When specific barriers and outcomes are identified, more resources can be made available to continue improving the medical care received by children in this country.

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