

An Intersectional Analysis of Health Care Access in the United States Vivienne Maxwell and Lillian Campbell Department of Statistical and Data Sciences, Smith College, Northampton 01060

Abstract

- Examine the relationship between race and (1) income, (2) highest level of education, and (3) type of employment
- Determine which factors are most predictive of an individual's access to health insurance
- **Findings:** The interaction between race and highest level of education has the lowest p-value (p = 0.045), though it is not statistically significant.

Introduction

- Over half of all Americans are insured through their employers (USAFacts), therefore unemployed or low-income individuals are more likely to lack adequate access to health care
- COVID-19 has exposed "the ingrained racial bias [in the health care system] that may further disempower racial and ethnic minorities" (Laurencin and McClinton, 2020)
- **Aim of this analysis:** Focus on relationship between racial disparities and indicators of socioeconomic status with respect to health care access
- **Hypothesis:** Race and income are most predictive factors of whether someone is uninsured

Data

Factors that were held constant

- Racial Background
- Sex
- Age

Indicators of socioeconomic status

- Household income
- Highest level of education
- Employment Type

Dependent Variable

Health Insurance Coverage

Source: US Census Bureau in 2018 Observations: 14,926

Methods

- Datasets were sourced from IPUMS.org
- After initial data wrangling, twenty percent (n= 14,926) of the data were used for statistical analysis
- **Test:** The compounding impact of social and economic coverage in regards to an individual's likelihood of being uninsured
- A multiple logistic regression generalized linear model and nested likelihood test were used

Data Visualizations and Results

ethnic groups and racial backgrounds.



0.00 0.25 0.50 0.75 1.00

Fig 1: Percentage of Participants with Health Insurance by race/ethnicity

- **Test:** Interaction between race and socioeconomic factors for predicting health care coverage
- **Method:** Reduced and full general linear models (Figure 2)

Reduced Model: Predicted Likelihood = Beta 0 + Age + Sex + Race Full Models: Predicted Likelihood = Beta 0 + Age + Sex + Race^Interaction

Fig 2: Example of models used to compare added predictive value of interaction terms

- Race and Education Level: p-value = 0.045
- Race and Income: p-value = 0.093
- Race and Type of Employment: p-value = 0.238
- **Conclusion:** Fail to reject the null hypothesis that the factors *race* and *income* are statistically significant predictors of whether an individual is uninsured



- being uninsured was unfounded

Further work

- health care

- Heal Soc Work. 2005;30(3):265–70.

- system-in-the-world/. insurance-medicare-employers/.

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Discussion

 Goal of this study was to examine the impact of compounding systems of inequalities within the American health care system

• Hypothesis that race and income are the most significant predictors of

• Rather, the interaction between race and education is the most predictive of an individual's likelihood to not have health care coverage

• An analysis among POC and excluding white individuals to better clarify where health care disparities are most prominent

• A more extensive examination of the impact of education by including education levels below high school graduation/GED

• These findings should be re-evaluated with a more complete data set

Conclusion

Relationship between race and education is most predictive of an individual's likelihood of health care coverage

• In this COVID-era, it is critical to consider the disproportionate access to

• Hopefully, this and other studies will employ data science as a tool to advocate against systemic inequality and provide quantitative insight into the lived experiences of so many during these unprecedented times

Citations

Copeland VC. African Americans: disparities in health care access and utilization.

2. Firebaugh G, Acciai F. For blacks in America, the gap in neighborhood poverty has declined faster than segregation. Proc Natl AcadSci U S A. 2016;113(47):13372-7. 3. Laurencin CT, McClinton A. Medical surprise anticipation and recognition capability: a new concept for better health care. J Racial Ethn Heal Disparities. 2019;6:869–73. 4. "The Most Expensive Health Care System in the World." News, 13 Jan. 2020, www.hsph.harvard.edu/news/hsph-in-the-news/the-most-expensive-health-care-

5. USAFacts. "How Do Most Americans Get Their Health Insurance?" USAFacts , USAFacts, 23 Mar. 2020, usafacts.org/articles/how-most-americans-get-their-health-