

GISD Final Project Write-Up

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1 Introduction

Infant mortality has been extensively studied by social scientists, particularly medical sociologists and public health researchers, for decades. Often, attention has been directed toward individual-level determinants of infant mortality, for example women's socioeconomic characteristics or prenatal care utilization. I emphasize in my larger work, but also to a smaller degree in this project, the influence of socio-demographic contexts and county-level characteristics over and above individual choices and characteristics. This short paper examines the association between a county-level economic measure (median household income) and infant mortality and investigates if this association varies between black and white populations.

This leads me to my two research questions: (1) What is the disparity between black and white infant mortality in this sample of counties? How does it compare to national-level disparities?; and (2) How is median household income associated with infant mortality rates? And how does this association differ between blacks and whites?

2 Methods

The data I used for this project came from two publicly available data sources, CDC WONDER Linked Birth/Infant Death Files and Area Health Resource Files. The first data source contains the infant mortality rates for non-Hispanic Whites and non-Hispanic Blacks for 160 counties across the U.S. The linked

birth/infant death files provide county-level IMRs for counties with 250,000 people or more, and I excluded counties from analysis that did not have a reliable rate for both blacks and whites since I was interested in racial differences. I also used the averaged years of 2011-2015 to increase reliability of rates as infant death is an outcome of low incidence. I linked the counties in this set to counties in the AHRF by the county Federal Information Processing Standard (FIPS) codes, a unique county-level identifier. The median household income came from the AHRF and was originally in raw dollars, which I converted to tens of thousands of dollars for ease of coefficient interpretation in the regression analysis.

I produced descriptive statistics for each variable in the data set as well as separate descriptive statistics for both black and white IMRs as those are the outcomes of interest. I produced histograms for both black and white IMRs as well as a scatterplot of black and white IMRs to illustrate the relationship between the two (all of this in RMarkdown file). Finally, I produced two bivariate linear regression models, one of which I display here. I regressed black IMRs and white IMRs on median household income in separate models. The described methods are able to answer questions about the difference, on average, between black and white IMRs in the sample as well as about the relationship between IMRs and household income and if this differs between blacks and whites.

3 Results

The mean black IMR for the sample is 9.86 while the mean white IMR for the sample is 3.94 as displayed in Table 1. On average for the counties in this sample, black IMRs are about 2.5 times higher than whites. This sample of largely populated counties actually demonstrates a slightly higher black-white disparity than the national-level one of 2.2 times higher (Office of Minority Health 2019). Black and white IMRs are positively associated with each other according to the scatterplot, meaning that as black IMRs rise, so do whites. Regarding the relationship between IMRs and household income at the county-level, the regression results indicate that there is a significant negative relationship. As median household income increases by ten thousand dollars, both black and white IMRs decrease by 0.6286 and 0.5484 respectively. This relationship for Black IMRs is displayed in Figure 1.

Table 1. Mean IMRs for Blacks and Whites

Black IMR	White IMR
9.86	3.94

IMR Lin Reg.png

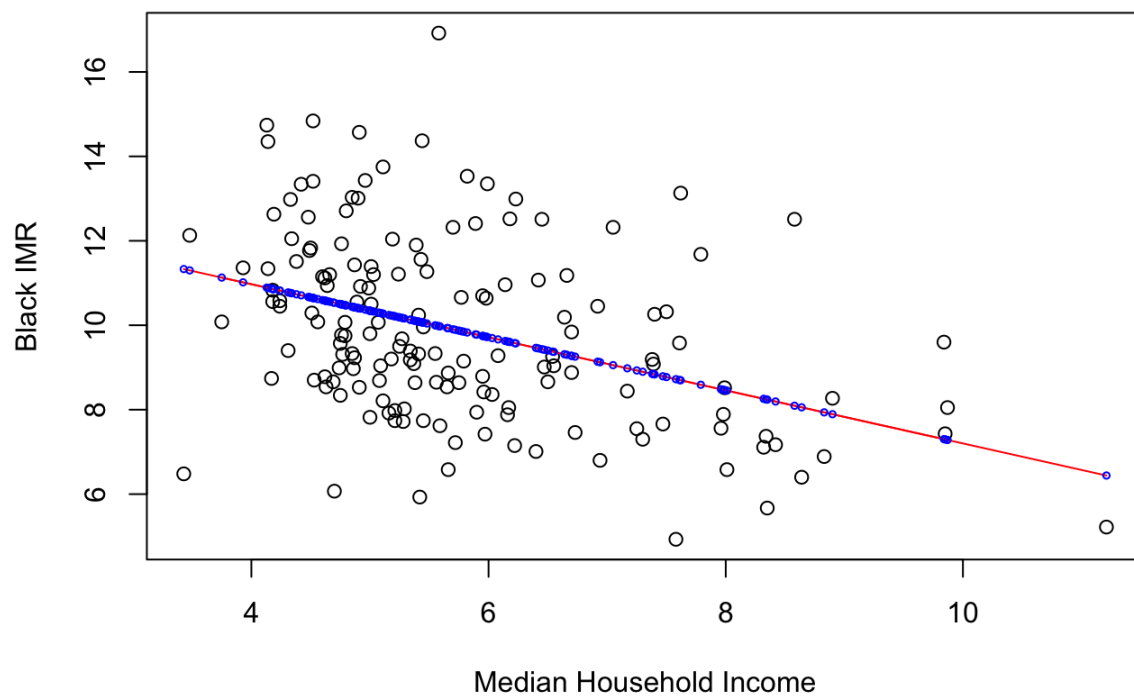


Figure 1: Linear Regression of Black IMR on Household Income

4 Conclusion

The disparity between black and white infant mortality continues to persist and appears to actually be worse in largely populated or urban counties than on the national-level. Median household income is negatively associated with both black and white IMRs with quite high coefficients. Increasing the money that families have in their pockets, and thereby reducing poverty, is a critical intervention tool to address high IMRs across the country and across racial groups.

References

- [1] U.S. Department of Health and Human Services Office of Minority Health. 2019. "Infant Mortality and African Americans." <https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=23>.