

Group 8: The Relationship between Economic and Health Status

Principal Investigators: Claire Stiles (cmstiles@wisc.edu), Sowmya Subramaniam, Erin Choi

Introduction

In an era marked by growing disparities, understanding the link between economic status and health outcomes is critical for effective public health interventions. This study aims to uncover the complex relationship between economic hardship and the self-reported health status of adults across the United States. By examining the correlation between individuals living below the federal poverty level and those reporting fair or poor health, we explore how economic constraints impact health across different races and regions. Our analysis leverages comprehensive datasets from the Kaiser Family Foundation, which utilize the CDC and American Community Survey data. Using this data, we explore relationships on a state-by-state basis. Preliminary findings indicate a significant correlation: states with a higher percentage of their population living under the poverty line exhibit notably poorer health outcomes. This suggests that economic status is a powerful determinant of health, underscoring the importance of socioeconomic factors in public health planning and policy formulation. Further analysis showed that those living at the extreme ends of the federal poverty level (under 100% and over 400%) showed a strong correlation with health status. However, those in the 200-399% had more variable health statuses. This study also focuses on various demographic layers, including race and regional differences, which highlight the pervasive impact of poverty on health. It illuminates potential areas for targeted health interventions to reduce disparities. These insights could provide a valuable foundation for policymakers and health professionals seeking to improve health equity nationwide.

Analysis

To analyze this relationship, we will use both health status and federal poverty line data from the Kaiser Family Foundation. These datasets provide state-level economic and health statistics. The federal poverty line dataset gives the percent of people in each state within a given range of the federal poverty line. The health status dataset details the share of people who describe their health as fair or poor, divided by the race and state of the respondent. We will use various visualizations and statistics to determine how economic and health status are related, and how these effects vary by income, race, and region.

Economic and Health Status

Figure 1 graphs the relationship between the percentage of adults who report fair or poor health status and the percent of the population under 100% of the federal poverty level. Each point represents a state within the U.S.. Based on this figure and a linear regression ($r = 0.812$), there appears to be a relatively strong, positive correlation between these two variables. This correlation indicates that lower incomes correspond with lower overall health.

This relationship can be further supported by examining the relationship between health status and the share of people significantly above the federal poverty line. Figure 2 displays the relationship between the percent of adults who report fair or poor health status and the percent of the population over 400% of the federal poverty level. This figure and linear regression ($r = -0.790$) show a similar relationship between income and health. There appears to be a strong, negative correlation between these variables, indicating that health status improves with higher income.

However, the relationship between health status and income is not as clear when looking at middle-income earners. Figure 3 shows the correlation between health status and the percent of adults between 200% and 399% of the federal poverty line. Unlike the previous graphs, there is a more ambiguous relationship between these two variables. As the percentage of people between 200 and 399% of the federal poverty line increases, health status becomes more variable, with some states reporting much higher percentages of fair or poor health status than others. Despite this, there does seem to be a weaker, positive correlation between the variables ($r = 0.402$). These results suggest that the effects of income on health are not as pronounced for middle-income earners compared to very low or high earners. It also indicates that there are factors other than income that can affect people's ability to maintain their health.

Regional and Race Variations

Beyond economic status, there are many different factors that can affect someone's health in the United States. When looking at how economic and health status are related, it is important to understand that the results may vary by region, state, or even by person. Figure 4 illustrates the health disparity between different regions of the United States and shows how those differences are affected by race.

As shown in figure 4, the South and Southwest regions of the United States have a higher percent of people with poor health compared to the United States average. The Northeast region with very large, high cost of living areas such as New York City and Boston, has the lowest

average of adults with poor health. But these results are not the same across all races. For example, while the Northeast has the lowest overall average, Native Americans in that region have the worst reported health across all races and regions. Black, Hispanic, and Native Americans also tend to be above the average in each region, indicating worse health status. Conversely, white and Asian individuals tend to be below average, indicating better overall health status. Understanding how these trends in health status change across the U.S. can help inform policies aimed at improving the well-being of specific demographics or areas of the country.

Conclusions and Future Research

By analyzing the relationship between economic and health status, we can conclude that income is strongly associated with reported health status. This is evident by looking at figures 1 and 2, which demonstrate the percent of adults who report fair or poor health status and the percent of the population under 100% or over 400% of the federal poverty line respectively. The strong positive and negative correlations between these variables indicate that those with higher incomes are associated with better health outcomes, while the inverse is true for lower incomes. However, figure 3, displaying the relationship between health status and the percentage of adults between 200% and 399% of the federal poverty line, is not as clear as with low or high-income earners. This suggests that there are other variables that impact health status other than financial stability. Figure 4 reflects the differences in health status based on region and race. The Northeast region of the United States has the lowest average of adults with fair or poor health, while the South and Southwest regions have the highest. Additionally, Black, Hispanic, and Native Americans consistently have a higher percent of adults with fair or poor health compared white and Asian individuals. Overall, these analyses emphasize the importance of considering factors such as region and race in understanding health disparities.

Follow-up research can further analyze the correlation between middle-income earners and their health status by examining what other factors influence the ambiguous relationship between the two variables. The variables' correlation is relatively more positive than negative, and a more meaningful analysis can be conducted to identify other variables that impact this correlation. These variables may include regions and races, or factors such as diet, physical activity level, and smoking status. The results of these analyses can be used by individuals looking to understand and improve health equity in the United States.

Works Cited

[KFF's State Health Facts](#). Data Source: 2008-2022 American Community Survey, 1-Year Estimates.

[KFF's State Health Facts](#). Data Source: The Centers for Disease Control and Prevention (CDC)'s 2013-2022 Behavioral Risk Factor Surveillance System (BRFSS).

Appendix A: Figures

Figure 1: Health Status under 100% of the Federal Poverty Line

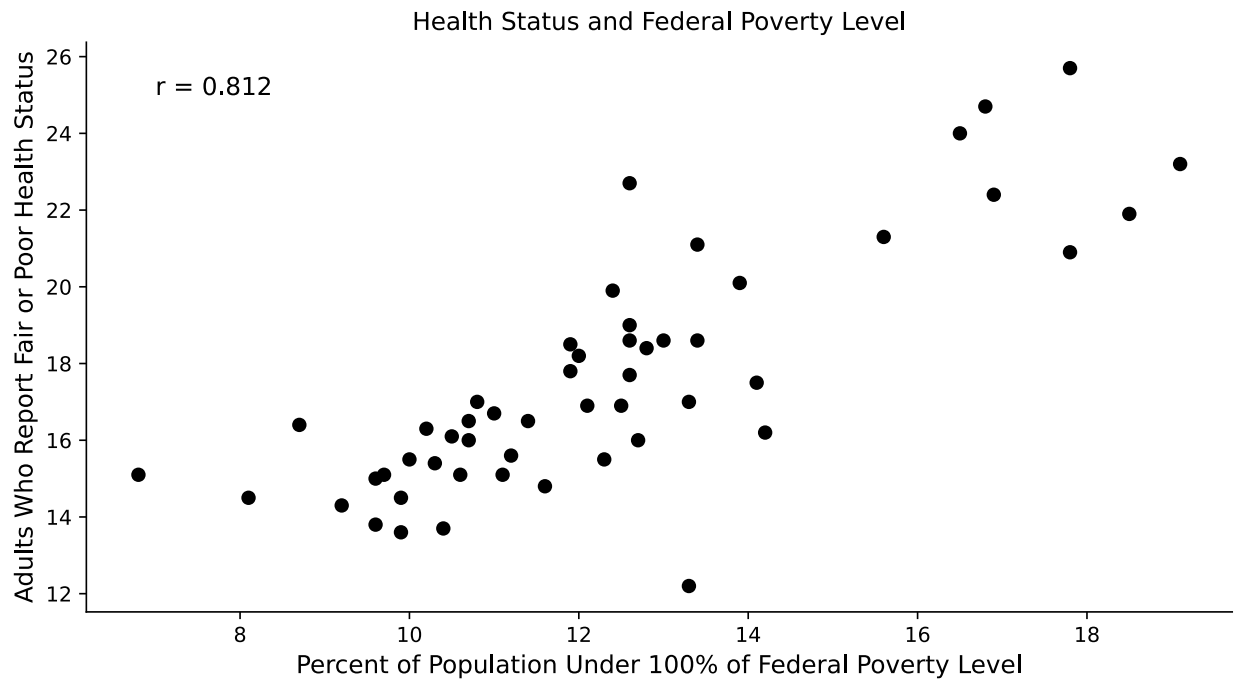


Figure 2: Health Status over 400% of the Federal Poverty Line

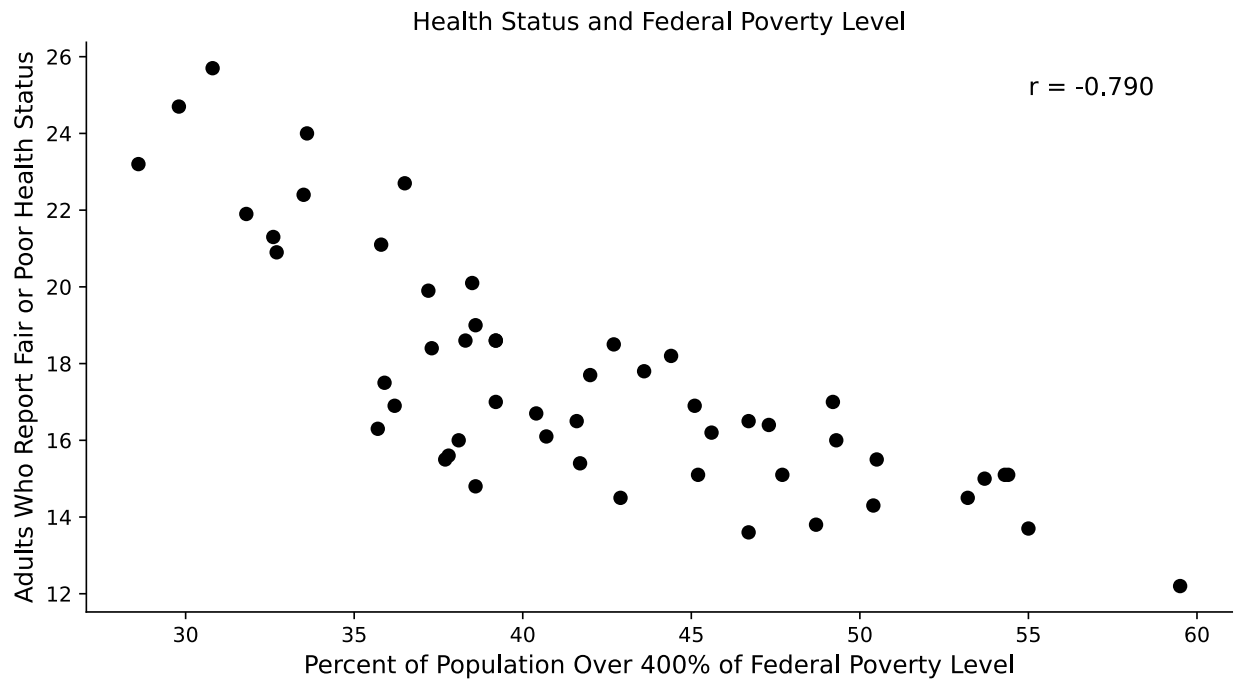
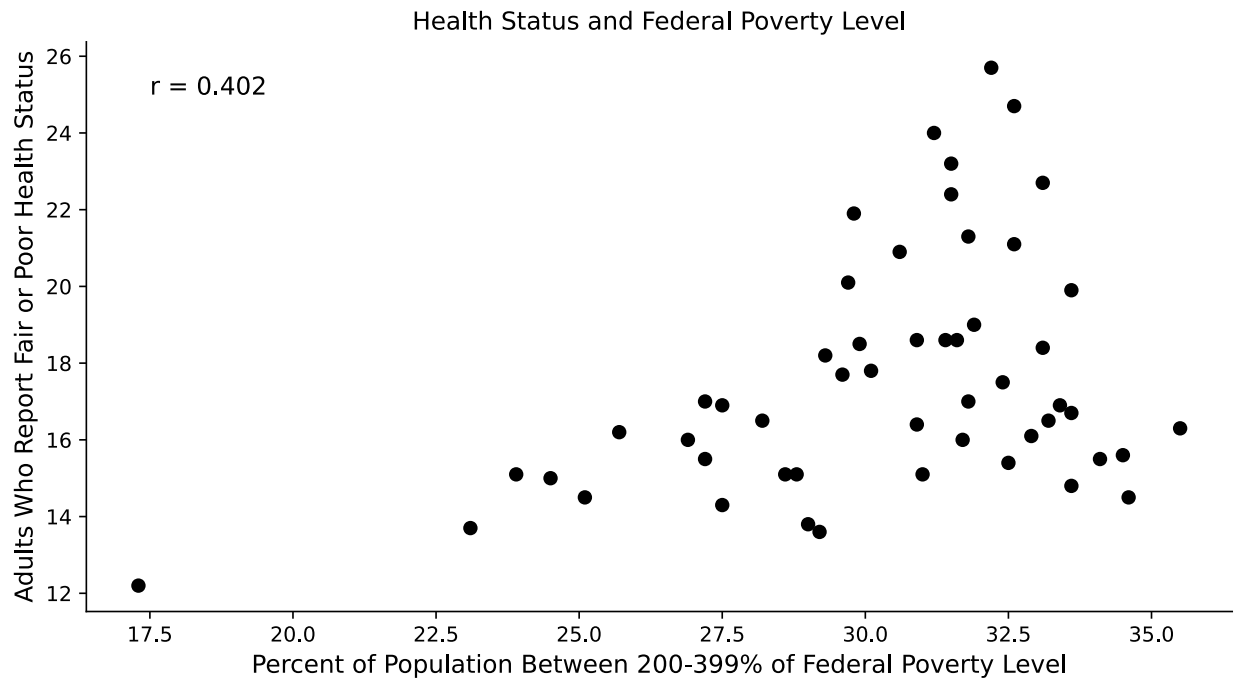


Figure 3: Health Status between 200% and 399% of the Federal Poverty Line**Figure 4: Health Status by U.S. Region and Race**