Correlation between Economic Metrics and suicide rates in countries with and without healthcare

Abstract

This project seeks to examine the correlation between several economic factors and suicide rates around the world. We also examined if these correlations would differ significantly depending on a country's access to universal healthcare policies.

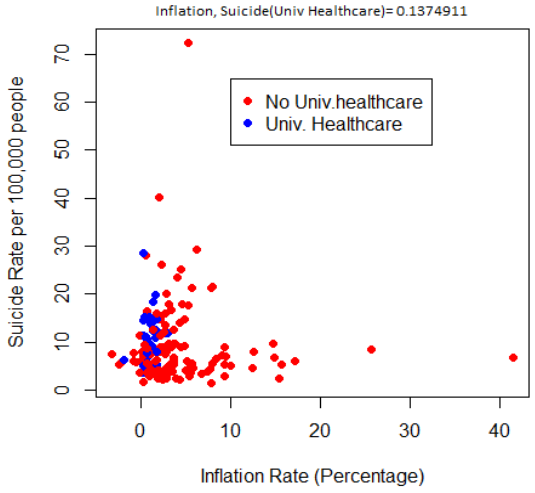
Background

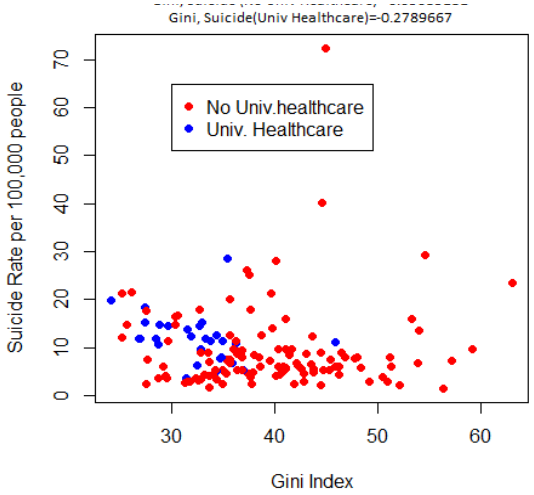
As we did background readings on important economic factors of a country, we saw that measures of low economic status were associated with a higher risk of suicide (https://doi.org/10.1027/0227-5910/a000487)
This led us to choose metrics that we thought would measure economic conditions and inequalities. We also wanted to see if universal health care affected the correlation of these metrics.

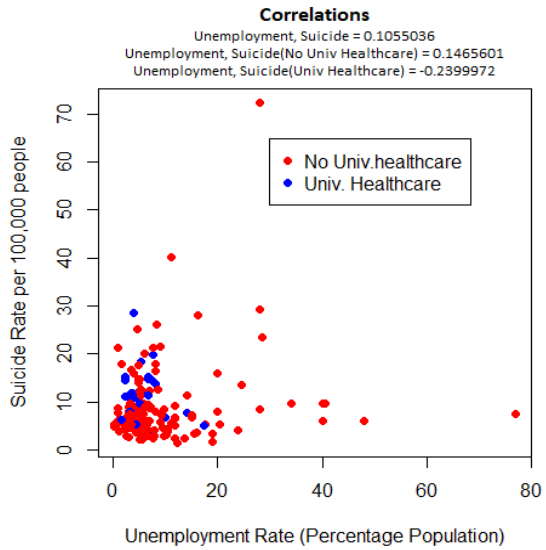
Methodology

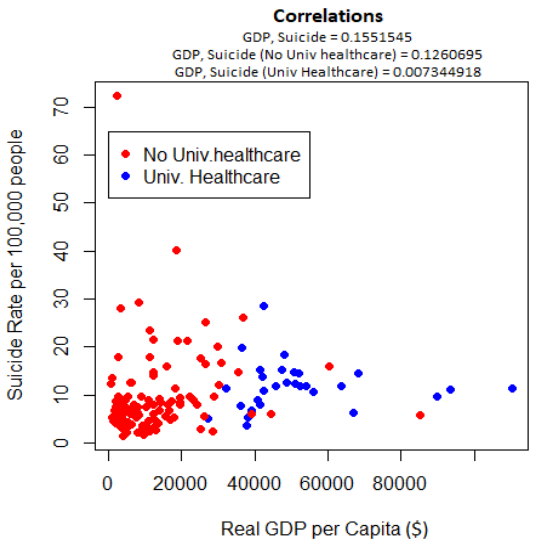
We used scatterplots to visualize correlations between the economic factors and suicide rate, differentiating between countries that do and don't have Universal Healthcare. Data was collected and combined from various online databases, considering the most recent data point if multiple were available. Countries with too many missing data entries or having significant outlying data were excluded from the analysis. We conducted ANOVA to see if Universal Healthcare affected relevant correlations.

Results

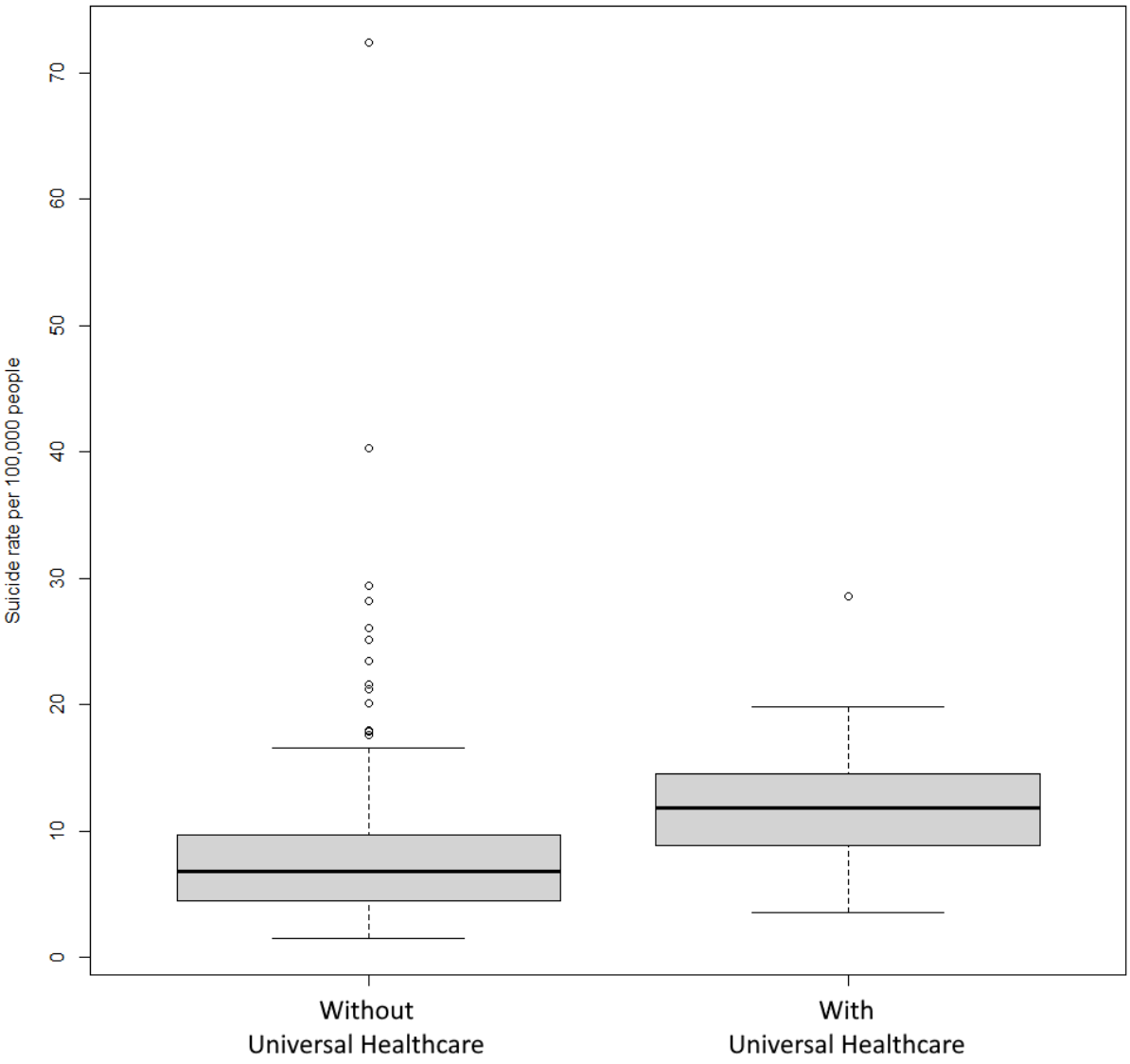


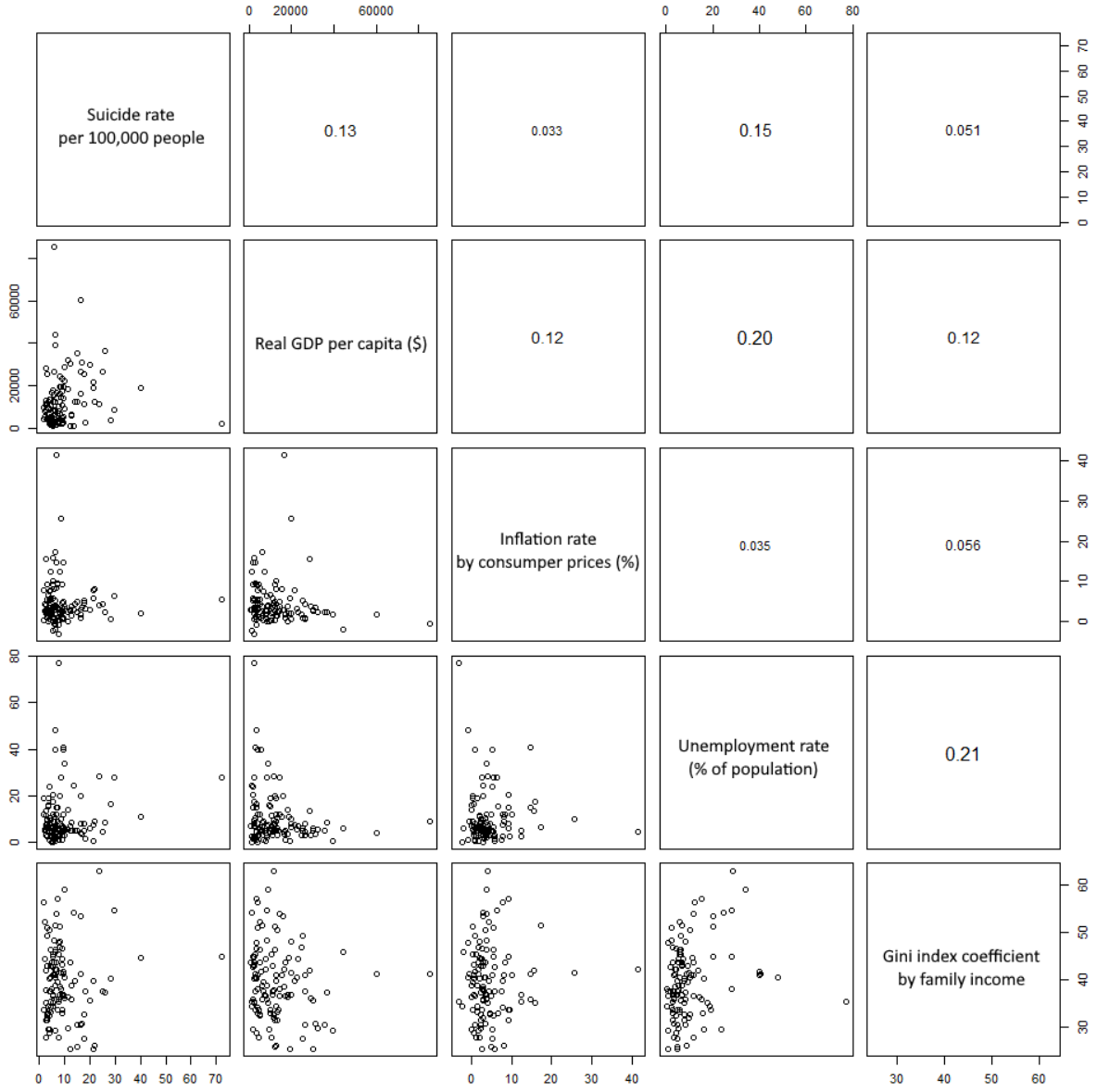


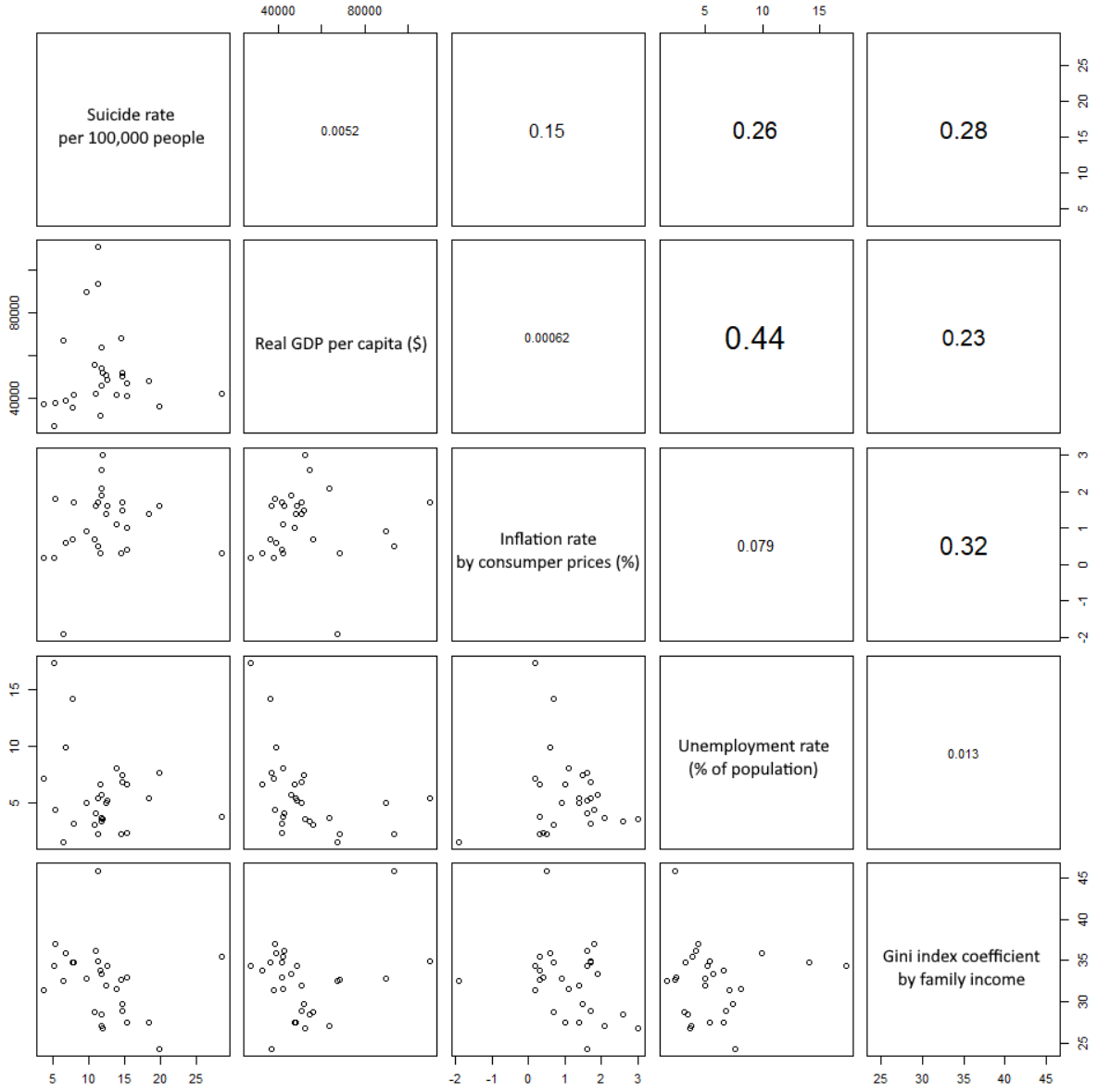




The Scatter plot of various economic metrics against suicide rates indicates a low correlation between the variables.


Suicide rate per 100,000 people
0
10
20
30
40
50
60
70
Without
Universal Healthcare
With
Universal Healthcare


Suicide rate
per 100,000 people
0.13
0.033
0.15
0.051
Real GDP per capita ($)
0.12
0.20
0.12
Inflation rate
by consumper prices (%)
0.035
0.056
Unemployment rate
(% of population)
0.21
Gini index coefficient
by family income



Scatterplot matrices of the correltations

Conclusion

We did not find a significant correlation between the 4 economic factors we examined and the suicide rate, in both countries with and without universal healthcare. ANOVA found a statistically insignificant difference in the average suicide rate between countries with and without universal healthcare.
F(1 and 143)= 2.109, p = .1486.

Discussion & Critique

Data collection and cleanup can take a long while, especially in projects like these where one is collecting data for hundreds of countries. Our data were less correlated than we anticipated. This is likely due to a large number of other underlying factors that may affect mental health and thus suicide rate. Analysis of the means of these factors throughout different years might yield a clearer connection. However, this may be slightly more difficult since it requires accurate and consistent data on many metrics throughout many years, which numerous countries may not collect or report accurately.

More affluent countries are also more likely to have accurate and up-to-date reporting of figures. Because of this, data and analysis are more likely to be accurate in such countries and will introduce biases to our analysis.

Sources

- https://www.kaggle.com/datasets/lucafrance/the-world-factbook-by-cia?resource=download
- https://worldpopulationreview.com/country-rankings/suicide-rate-by-country
- https://www.health.ny.gov/regulations/hcra/univ_hlth_care.htm
- https://worldpopulationreview.com/country-rankings/countries-with-universal-healthcare
- https://doi.org/10.1027/0227-5910/a000487