



# Suicide & Social Capital in the United States

A Panel Data & Fixed Effect Regression study examining the correlation between ten proxies of 'Social Capital' and Suicide in the United States using R (2000 - 2022)

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The breakdown of society in the West has been rising prominently during the past few decades. Adjacent to growing rates of racism, hate speech, and discrimination is a less studied factor: **suicide**. Given the lack of research on this topic, our purpose is to elucidate the correlation between suicide and various proxies of 'Social Capital loss', such as the increase of the amount of hate groups and hate crimes in the United States.

"What is the relationship between **suicide** and '**social capital loss**' in the United States? (2000-2022)"

**H0:** There is a strong relation between suicide and social capital loss

**H1:** There is no strong relation between suicide and social capital loss.

## Methodology

**Correlation Formula** { Pearson Correlation Coefficient

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

**Regression Formula**  $\ln(\text{suicide})_{it} = \beta_0 + \beta_1 \ln(\text{hate\_groups})_{it} + \beta_2 \ln(\text{hate\_crimes})_{it} + \beta_3 \ln(\text{unemployment})_{it} + \beta_4 \ln(\text{poverty})_{it} + \beta_5 \ln(\text{religion})_{it} + \varepsilon_{it}$

### Independent Variables

Hate Groups  
Hate Crimes  
Unemployment Rate  
Poverty Rate  
Religious Affiliation

### Dependent Variable

Suicides per 100,000 individuals

Number of observations: 71,392

### 1. Panel Data Fixed Effect Regression Analysis

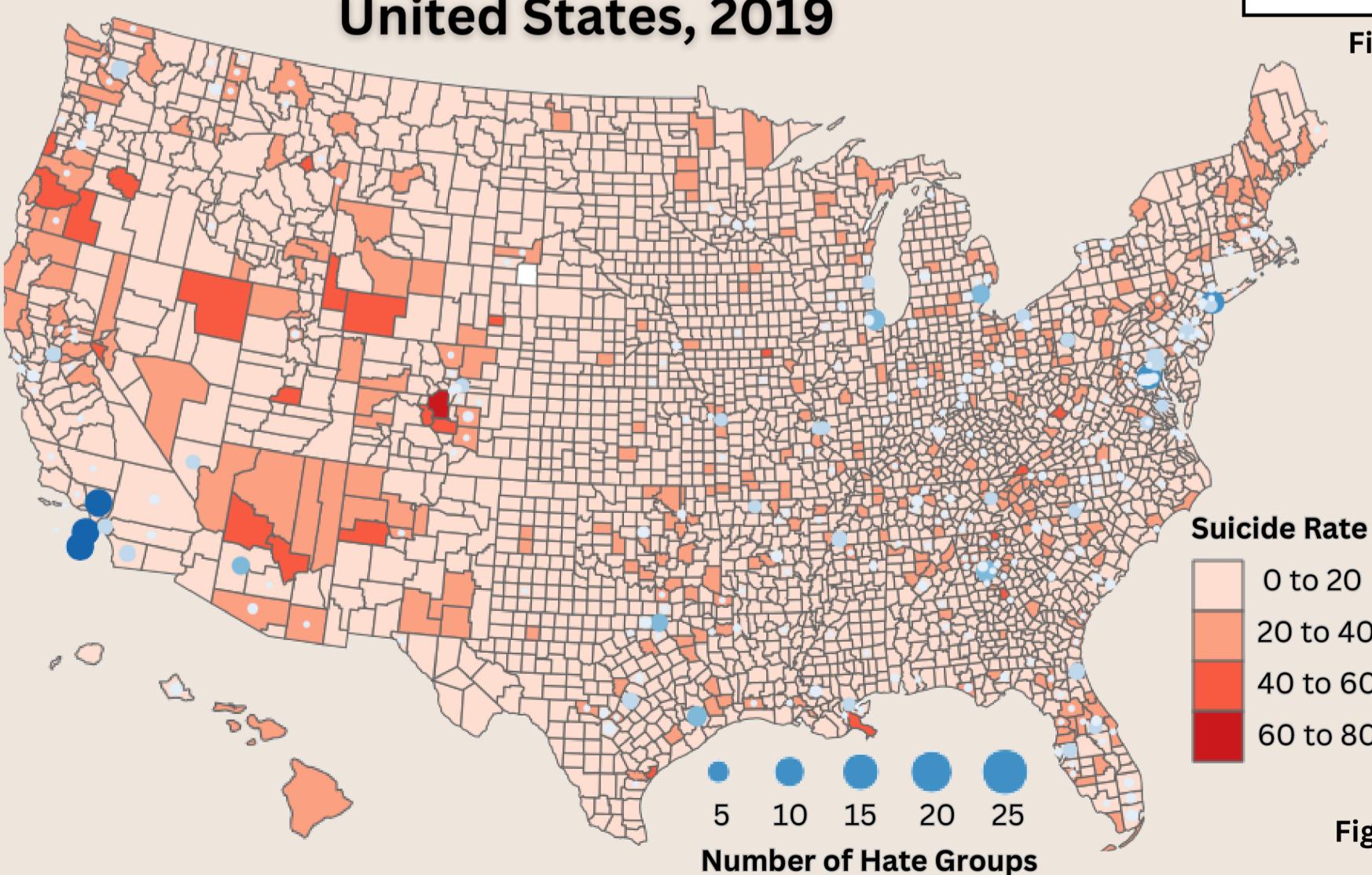
Useful for time-series analyses with large sample size and controlling characteristics that do not change drastically over time

### 2. Pearson Correlation

Used to measure strength & direction of a linear relation between two variables

## Results

**Fig 1. Suicide Rate & Hate Groups in the United States, 2019**



## What is 'Social Capital'?

Sociology defines it as the pillars of a "functioning and stable society":



Employment



Absence of Crime



Political Participation



Economic Equality



Access to Education

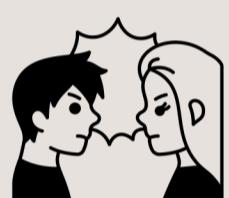
(Durkheim, 1951) (Paxton, 1999)

## We converted them into these variables

### Independent Variables



Hate Groups (SPLC, 2022)



Hate Crimes (FBI, 2022)



Unemployment (BLS, 2022)

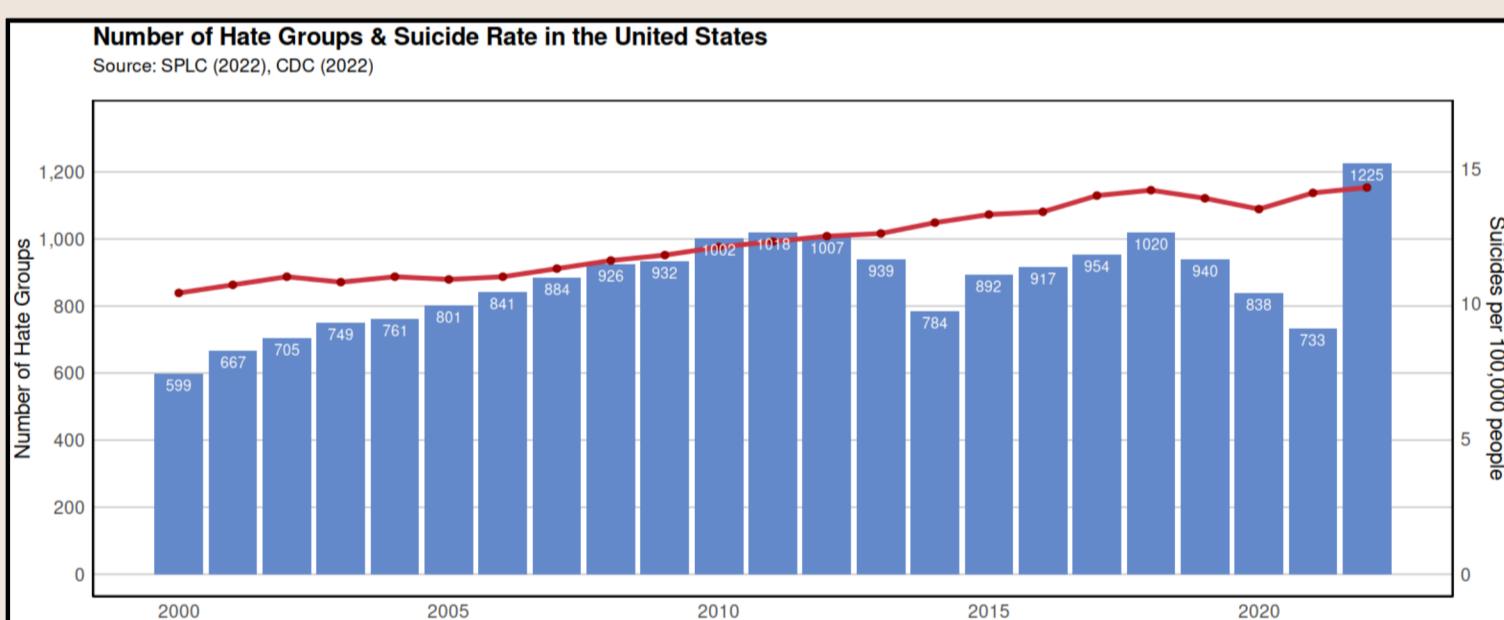
### Dependent Variable



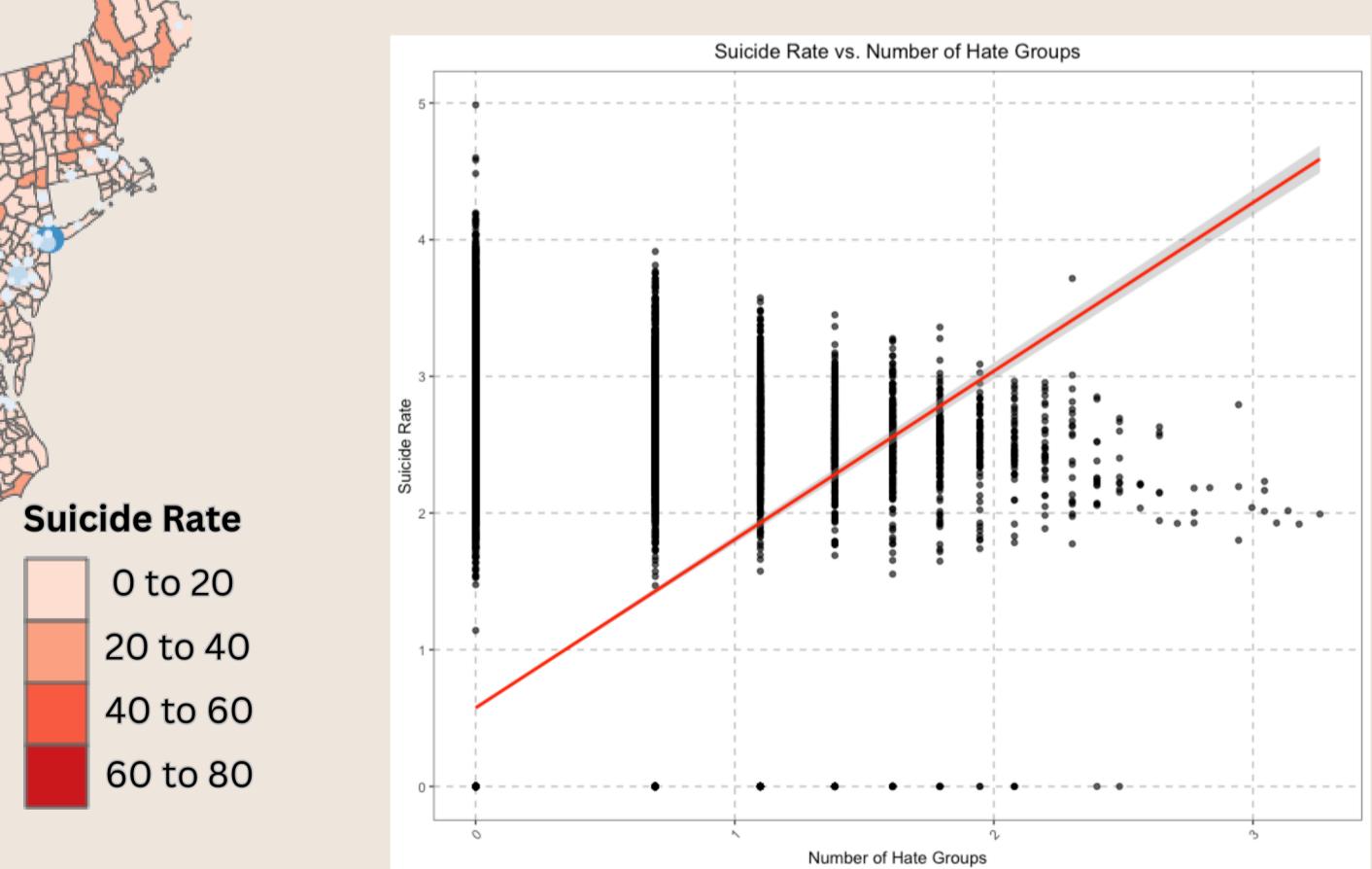
Suicide (CDC, 2022)

(Among seven other variables)

...and found a significant correlation with rising suicide rates in the United States:



**Fig. 2. Shows the increase in suicides per 100,000 people (denoted by the red line) related to the increase in hate groups (2000-2022)**



**Fig. 3. Scatter plot of suicides per 100,000 individuals and hate groups in the United States (2000-2022)**

## References

- Centers for Disease Control and Prevention. (n.d.). Underlying Cause of Death, 1999-2020 Request. Retrieved April 17, 2024, from <https://wonder.cdc.gov/ucd-icd10-expanded.html>  
 Durkheim, E. (1951). Suicide: A study in sociology (J. A. Spaulding & G. Simpson, Trans.; G. Simpson, Ed.). Free Press.  
 Southern Poverty Law Center. (n.d.). Hate map. Retrieved April 19, 2024, from <https://www.splcenter.org/hate-map>  
 Szendro, B. (2021). Suicide, social capital, and hate groups in the United States. *American Journal of Sociology*, 184(4).  
 Paxton, P. (2002). Social Capital and Democracy: An Interdependent Relationship. *American Sociological Review*, 67(2), 254–277. <https://doi.org/10.2307/3088895>

## R Packages

ggplot2  
dplyr  
tidyverse  
purrr  
sf

usmap  
viridis  
tigris  
tmap  
readr

