# COVID-19 and Politics

By: J. Ian Stewart

# The Question:
Did politics have an effect on COVID-19 cases?

# Why?

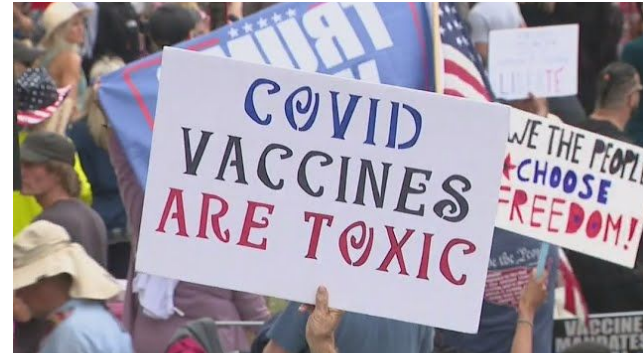well, because....

# Background - Timeline

Masks:

- Government starts quarantining on March 12th, 2020
- Government recommends the use of masks on April 3rd, 2020
- People hate wearing masks and some begin to protest them

Vaccine:

- Government releases vaccine on December 14th, 2020
- People protested the vaccine and some decided on alternative medicine instead





Top: https://www.cnn.com/2020/06/23/world/meanwhile-in-america-june-23-intl/index.html
Bottom: https://www.youtube.com/watch?app=desktop&v=KYgoX8uWasE

# The Data

# COVID-19 Dataset

COVID-19 Reported Patient Impact and Hospital
Capacity by State Timeseries (RAW)

**From:** U.S Department of Health & Human
Services on healthdata.gov

**Row:** Daily Aggregated State Report

**Size:** 79823 rows, 135 columns

- Most columns are adult statistics split up
  into age groups
- Only used 4 columns:
  - State
  - Date
  - Previous_day_admission_adult_covid_confirmed
  - Previous_day_admission_pediatric_covid_confirmed

| | date | state | total_previous_day_cases |
|---|---|---|---|
| 0 | 6/2/2021 | PR | 3.0 |
| 1 | 6/1/2021 | ME | 11.0 |
| 2 | 5/30/2021 | MT | 13.0 |
| 3 | 5/29/2021 | AK | 0.0 |
| 4 | 5/29/2021 | MA | 33.0 |

# U.S. House of Congress Dataset

U.S. House 1976–2022 version 13

**From:** MIT Election Data and Science Lab (Massachusetts Institute of Technology) on dataverse.harvard.edu

**Row:** Candidate Votes by party and district

**Size:** 32452 rows, 20 columns

- Only used data through 2020 and 2022, ending up to 2816 rows actually used

| | year | state_po | party | candidatevotes | totalvotes | unofficial | district |
|---|---|---|---|---|---|---|---|
| 29636 | 2020 | AL | DEMOCRAT | 116949 | 329075 | False | 1 |
| 29637 | 2020 | AL | REPUBLICAN | 211825 | 329075 | False | 1 |
| 29638 | 2020 | AL | OTHER | 301 | 329075 | False | 1 |
| 29639 | 2020 | AL | REPUBLICAN | 197996 | 303569 | False | 2 |
| 29640 | 2020 | AL | DEMOCRAT | 105286 | 303569 | False | 2 |

# Census Dataset

Resident Population for the 50 States, the District of Columbia, and Puerto Rico: 2020 Census

**From:** census.gov

**Row:** State 2020 Census Population

**Size:** 54 rows, 2 columns

- Excluded DC and Puerto Rico as they do not vote in House elections

| | AREA | POPULATION |
|---|---|---|
| 0 | Alabama | 5024279 |
| 1 | Alaska | 733391 |
| 2 | Arizona | 7151502 |
| 3 | Arkansas | 3011524 |
| 4 | California | 39538223 |

# The Model: K-Means

# Visualizations

COVID Caseload
vs
Political Orientation

X-Axis: Proportion of House Votes for a Political Party (2020 or 2022)

Y-Axis: Normalized COVID Cases for that year (2020-2023)

(Normalized meaning number of COVID cases for a state in a year divided by that state's 2020 census population)

# The Year 2020

# Simple Linear Regression (2020)

Democrat

Republican



R-squared: **42.5%**

R-squared: **46.6%**

# Democratic Party (2020)
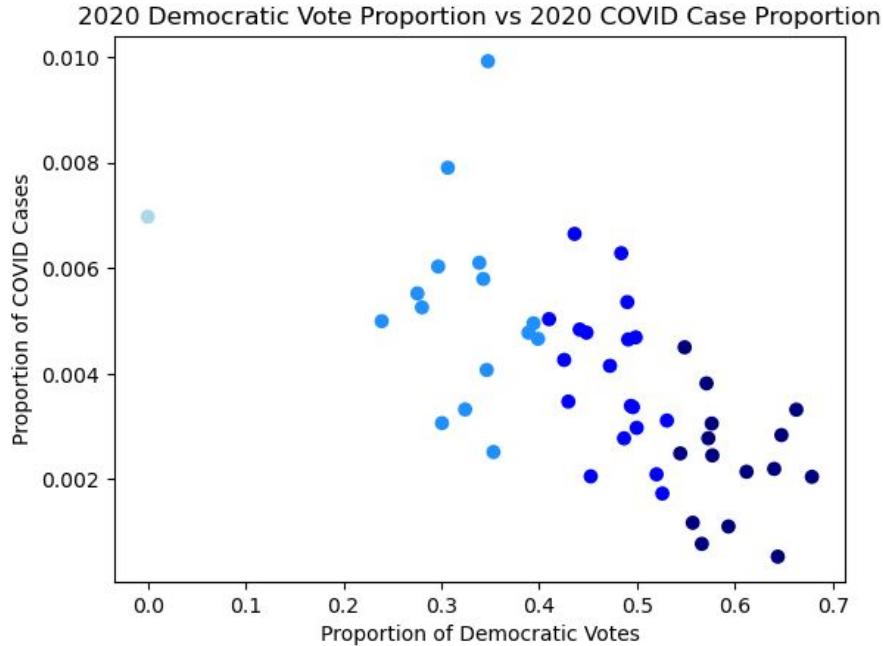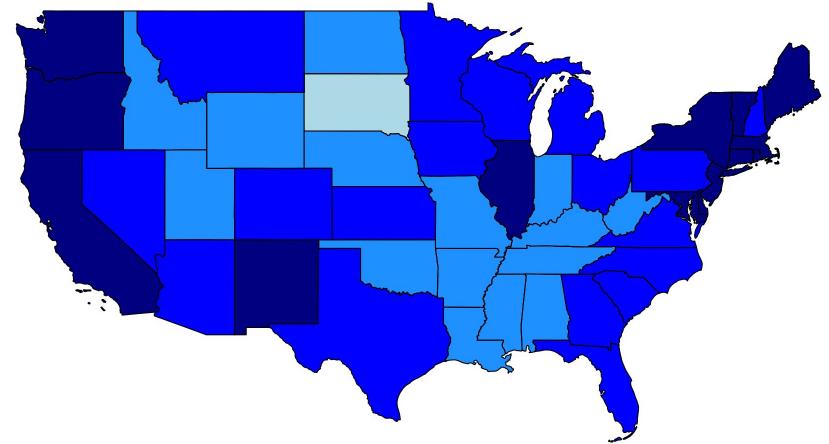


2020 Democratic Vote Proportion vs 2020 COVID Case Proportion



Democratic Party Clusters for House 2020 and COVID 2020

Note: Hawaii and Alaska not shown

# Republican Party (2020)



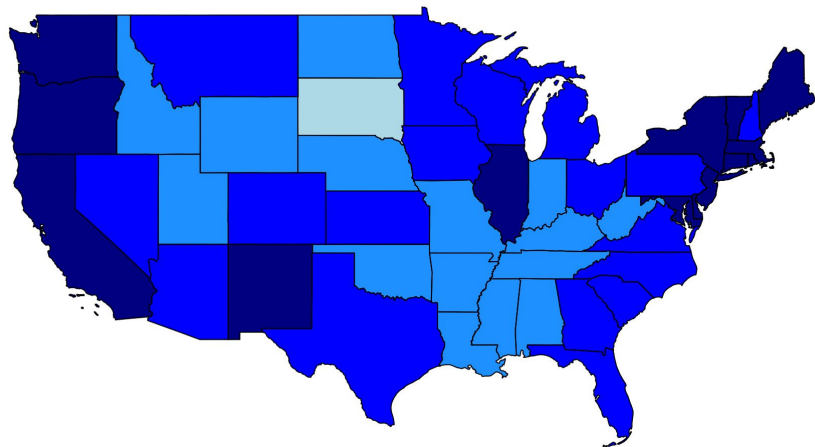2020 Republican Vote Proportion vs 2020 COVID Case Proportion
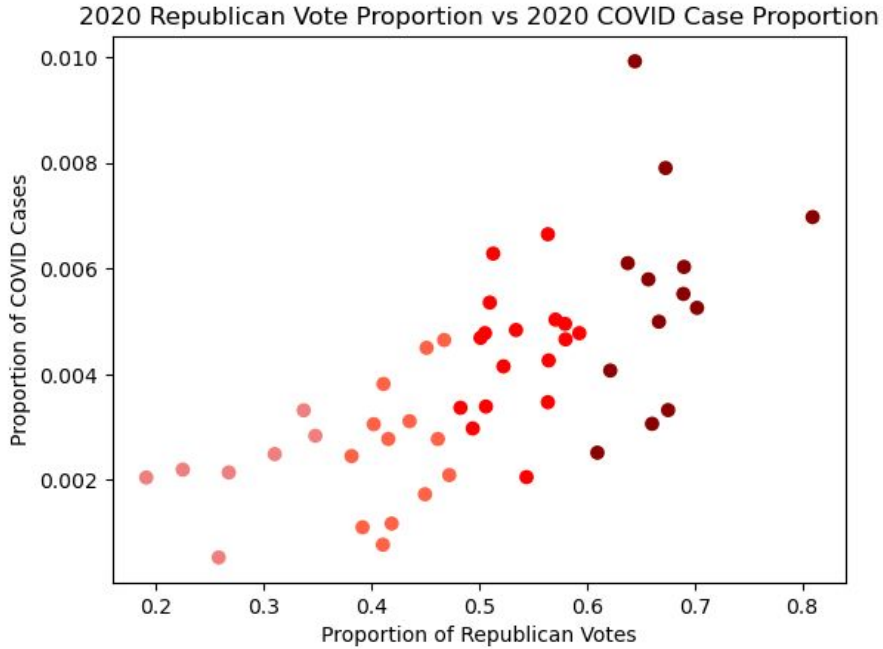


Republican Party Clusters for House 2020 and COVID 2020
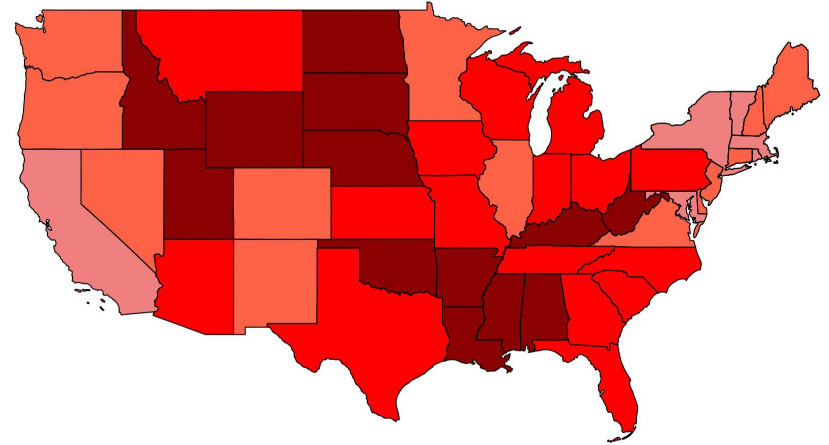
# Comparison (2020)

## Democrat

## Republican

Democratic Party Clusters for House 2020 and COVID 2020



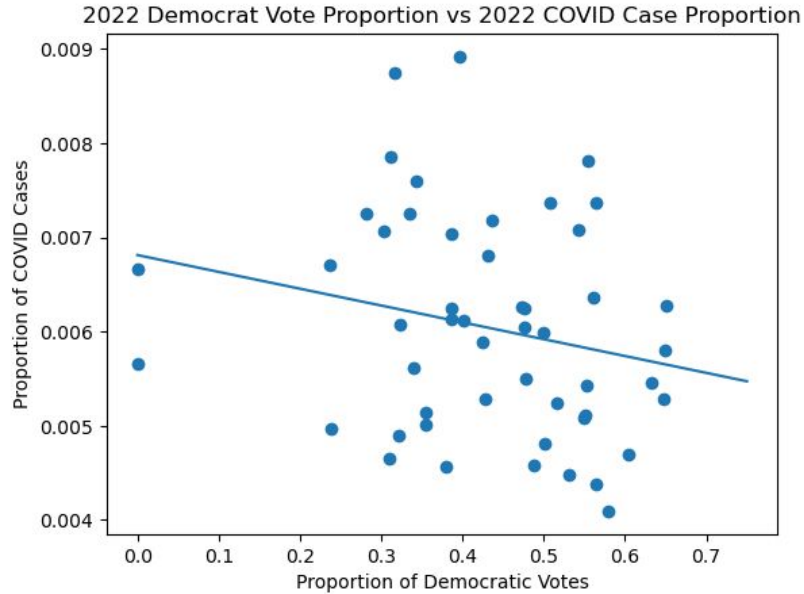Republican Party Clusters for House 2020 and COVID 2020
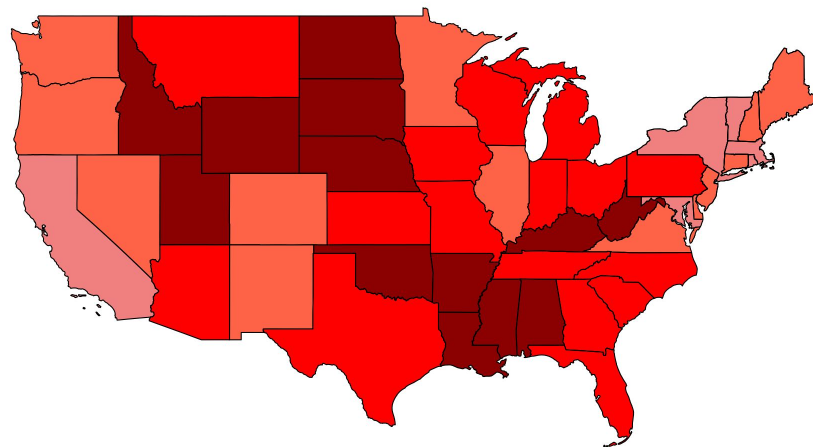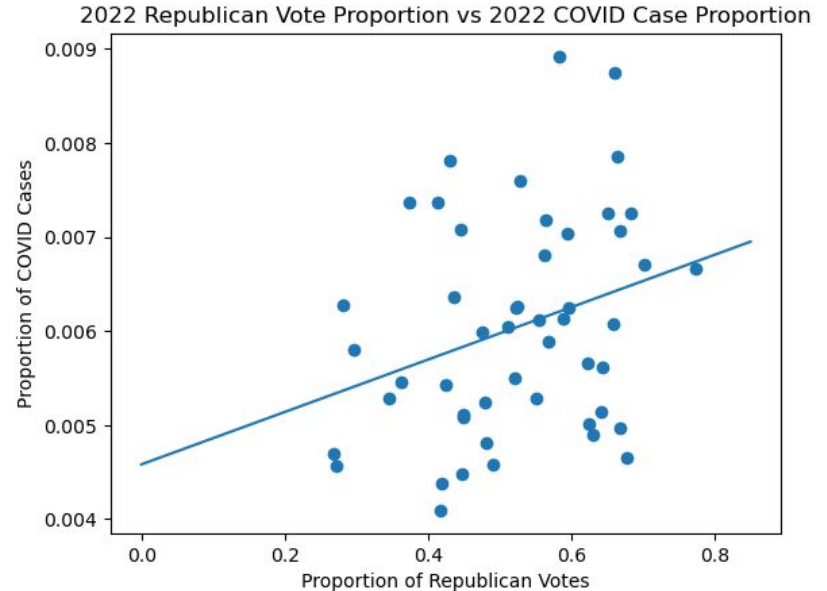


Note: Hawaii and Alaska not shown

# The Year 2022

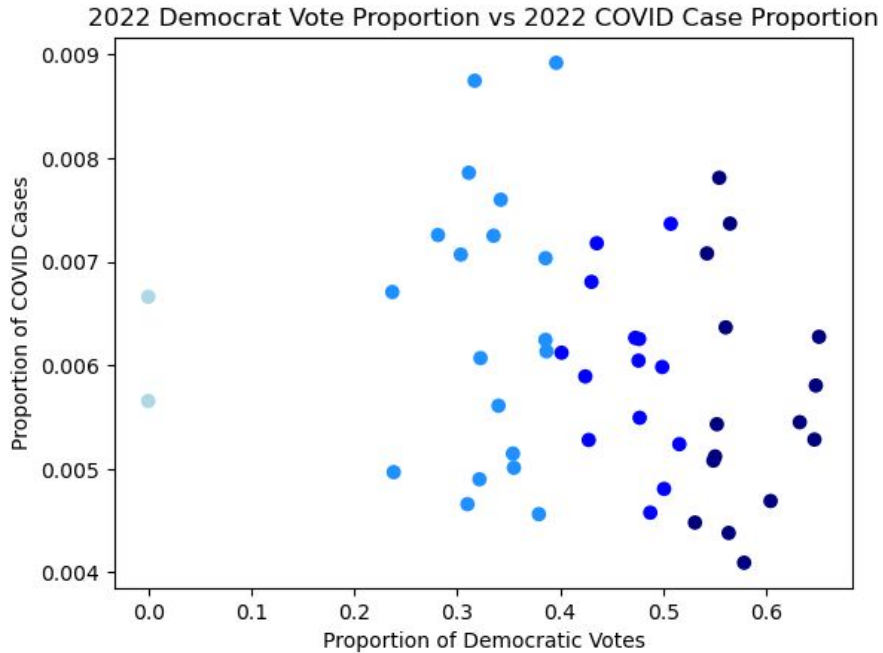# Simple Linear Regression (2022)

Democrat                                    Republican
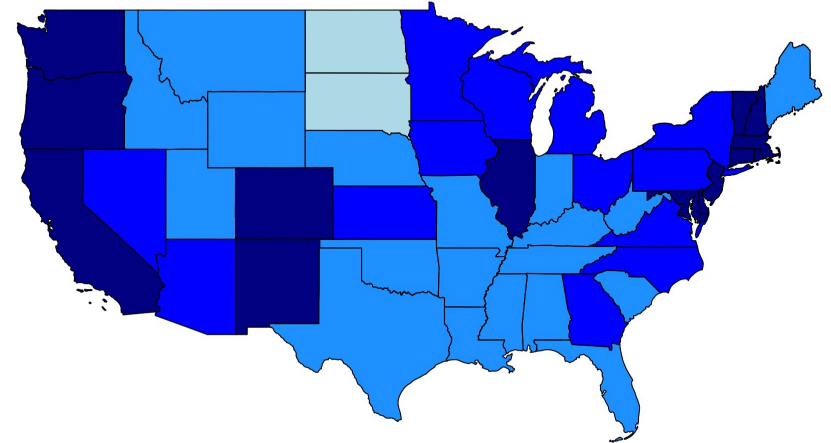


R-squared: **4.91%**                        R-squared: **9.0%**

# Democratic Party (2022)


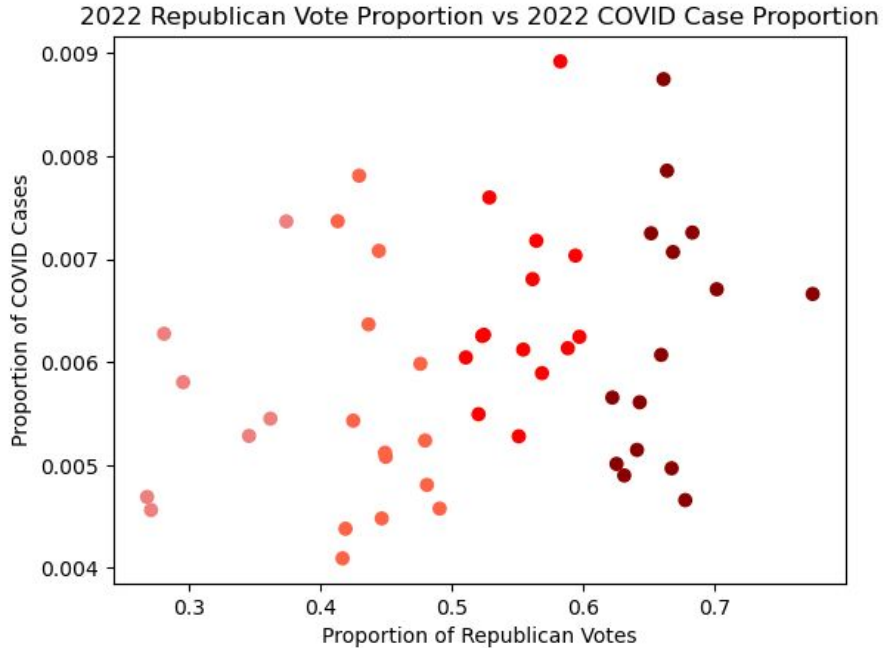
2022 Democrat Vote Proportion vs 2022 COVID Case Proportion



Democratic Party Clusters for House 2022 and COVID 2022

Note: Hawaii and Alaska not shown

# Republican Party (2022)



2022 Republican Vote Proportion vs 2022 COVID Case Proportion



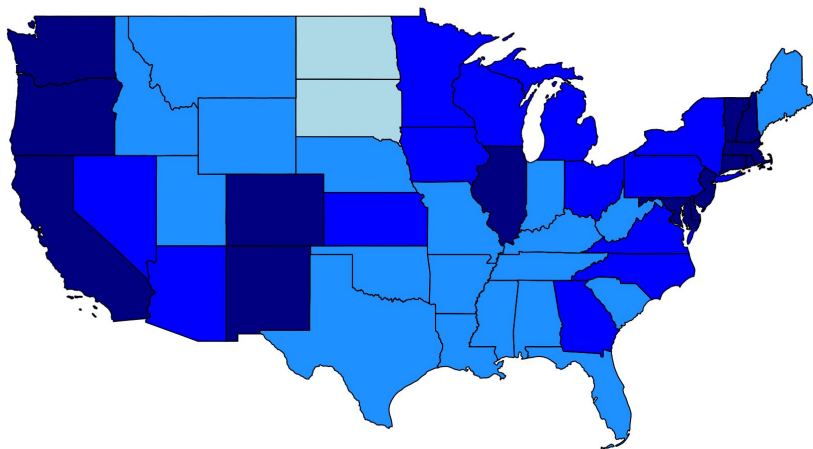Republican Party Clusters for House 2022 and COVID 2022
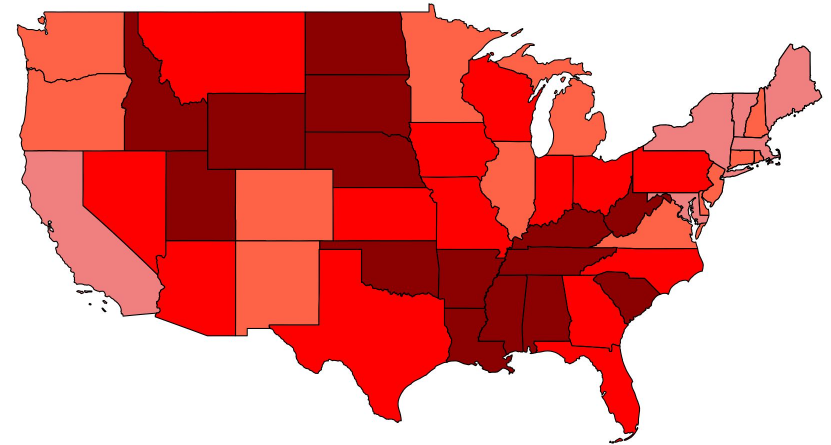
Note: Hawaii and Alaska not shown

# Comparison (2022)

## Democrat

## Republican
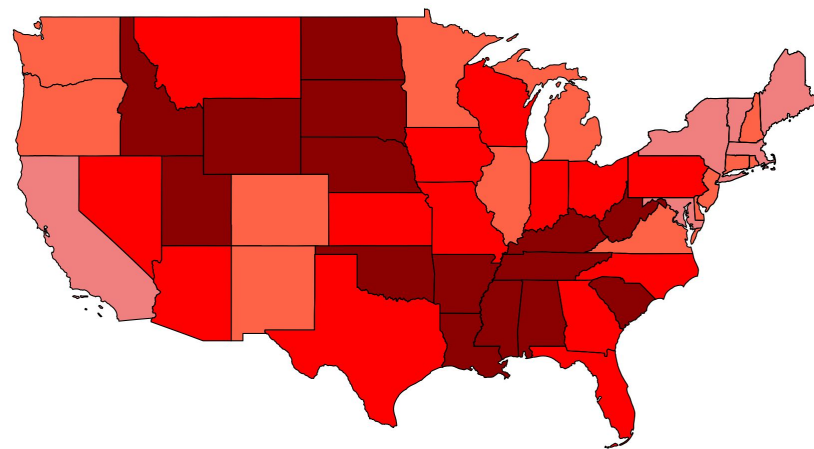
Democratic Party Clusters for House 2022 and COVID 2022

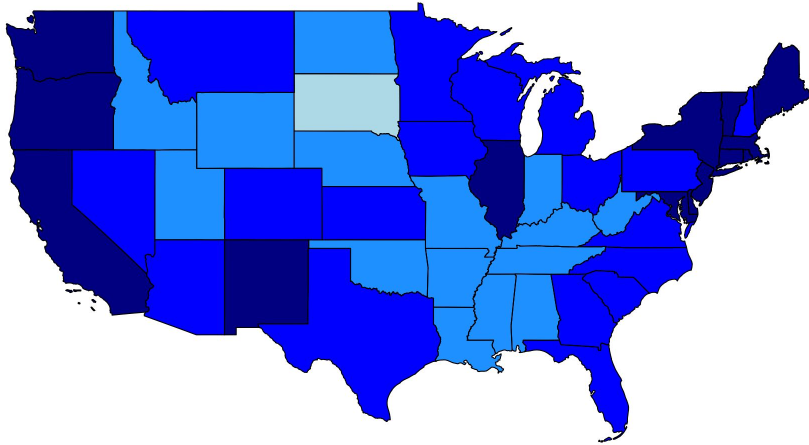Republican Party Clusters for House 2022 and COVID 2022



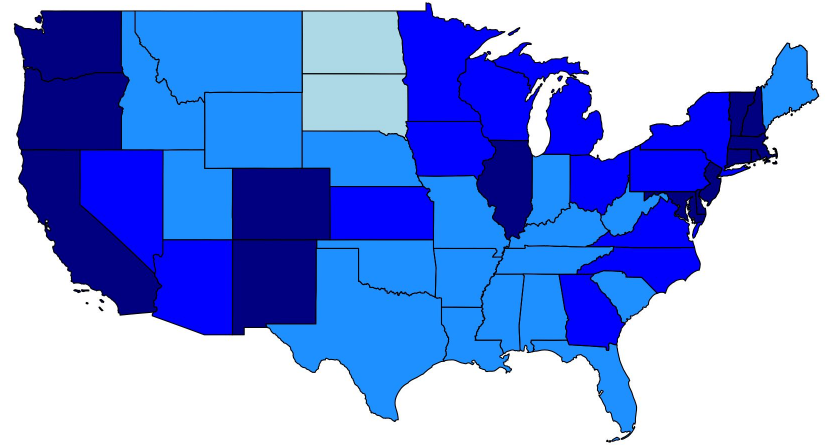Note: Hawaii and Alaska not shown

# Changes in clustering over time

# Democratic Party

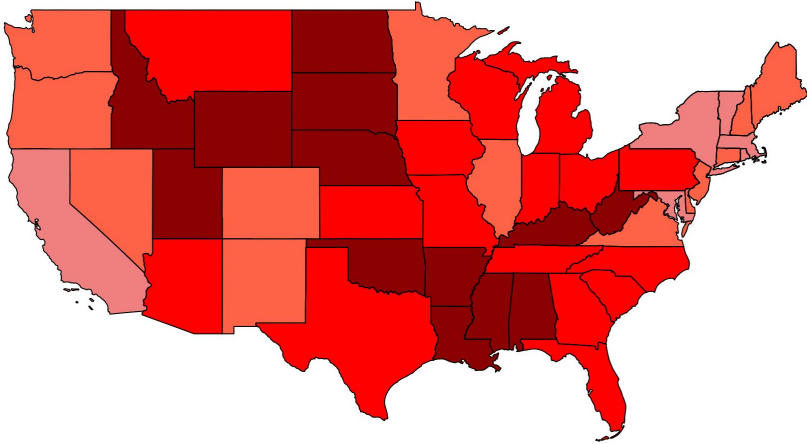Democratic Party Clusters for House 2020 and COVID 2020

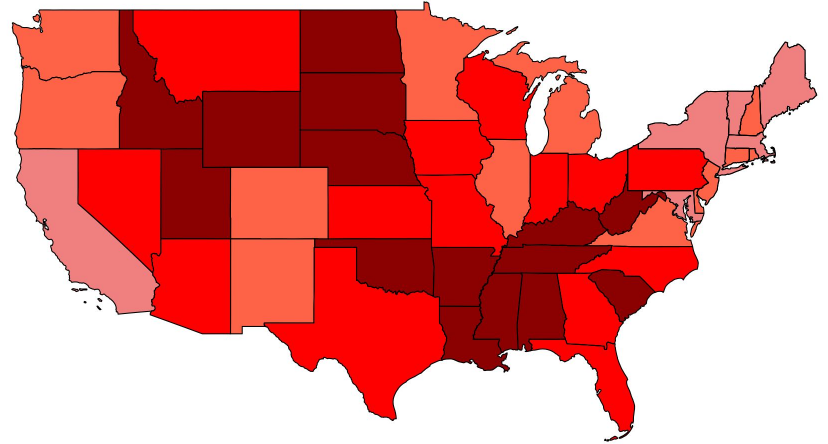Democratic Party Clusters for House 2022 and COVID 2022



Note: Hawaii and Alaska not shown

Republican Party

Republican Party Clusters for House 2020 and COVID 2020

Republican Party Clusters for House 2022 and COVID 2022

Note: Hawaii and Alaska not shown

# Conclusion

## Conclusion

- Some correlation between house votes and COVID-19 cases in the year 2020
    - R-Squared of ~40%
    - Does not continue into 2022

- K-Means clusters are not geographically organized
    - More to do with state-level political affiliation

## Next Steps

- Separate each state into its counties and to the analysis on the counties instead
    - Would require more specific COVID-19 Data

- Compare against other voting data, such as Senate or Presidential

# Thanks!