
COVID-19
Pixabay

Group 6

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MINNESOTA COVID-19

MOTIVATION & THESIS

We are concerned about the current state of the global pandemic and seek to better understand what's being reported and trends, especially in Minnesota.

We asked whether testing necessarily increases number of positive cases, and how Minnesota compares to the rest of country?

We learned that for its population, the number of total confirmed cases in Minnesota is comparatively low, but average in total number. Testing and positive cases seems to track but were unable to draw any strong correlation.

We analyzed the impact that the COVID-19 pandemic has had on the Minnesota relative to overall testing, confirmed cases, hospitalizations and death rates by comparing

1) Impact Nationally.
2) Impact on Minnesota vs. Colorado and Michigan.
3) Impact on Minneapolis/St. Paul MN. vs. Detroit MI.

QUESTIONS & DATA

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- Needed accurate, current, and ideally API accessible data on COVID-19
  - Led to covidtracking.com
- Further didn't know what State or cities to compare with, but knew we wanted to base on population
  - The de facto source for population data is the US Census
- The city comparison caused a wrinkle because COVID-19 data was available only to the county level
  - Used county Census data and used that population size as proxy for "metro area"
  - Ended up with more analysis at State level because of available data.

DATA CLEANUP & EXPLORATION

- Phil did the initial heavy lift of composing API calls to grab the data we needed and generate CSVs used in analysis, then we split up so we each looked at a different level of comparison.
- The counties as metro area proxy was tricky because the county data available was less thorough than what we had for State and National
- Sorted Census data and compared MN values to determine comparisons
- It wasn't clear until we had the data in front of us that bar charts for the comparisons would be best
- The line charts showing positive cases following testing also came late
- Initially we thought Growth Factor could show directionality of trends, but it was too variable to be conclusive

DATA ANALYSIS

- Rob took States vs a National comparison
- Phil did metro area comparison, as well some State level work
- Ian Mac did population analysis to determine comparisons, and National level maps and line charts

IMPACT NATIONALLY

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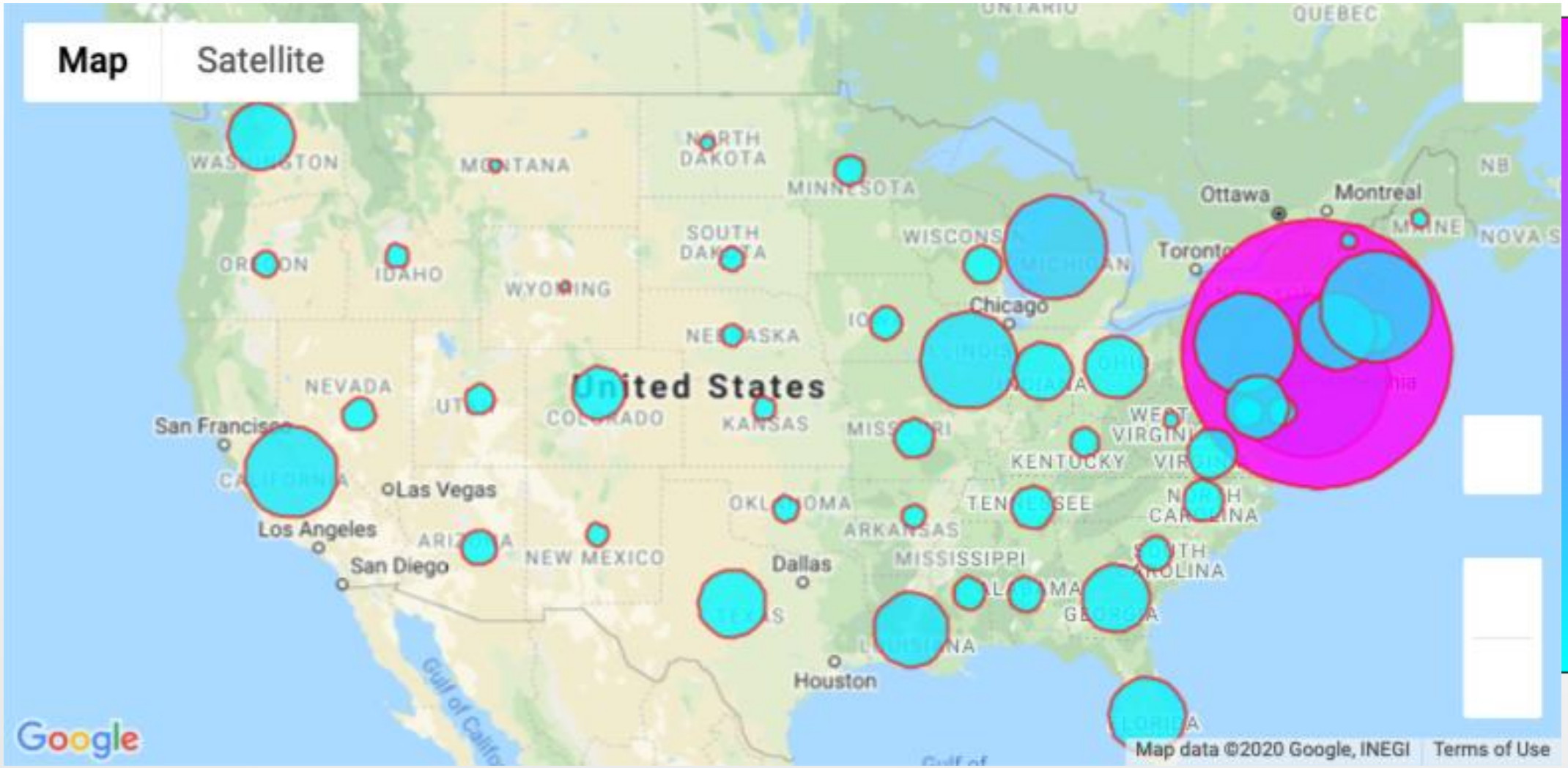
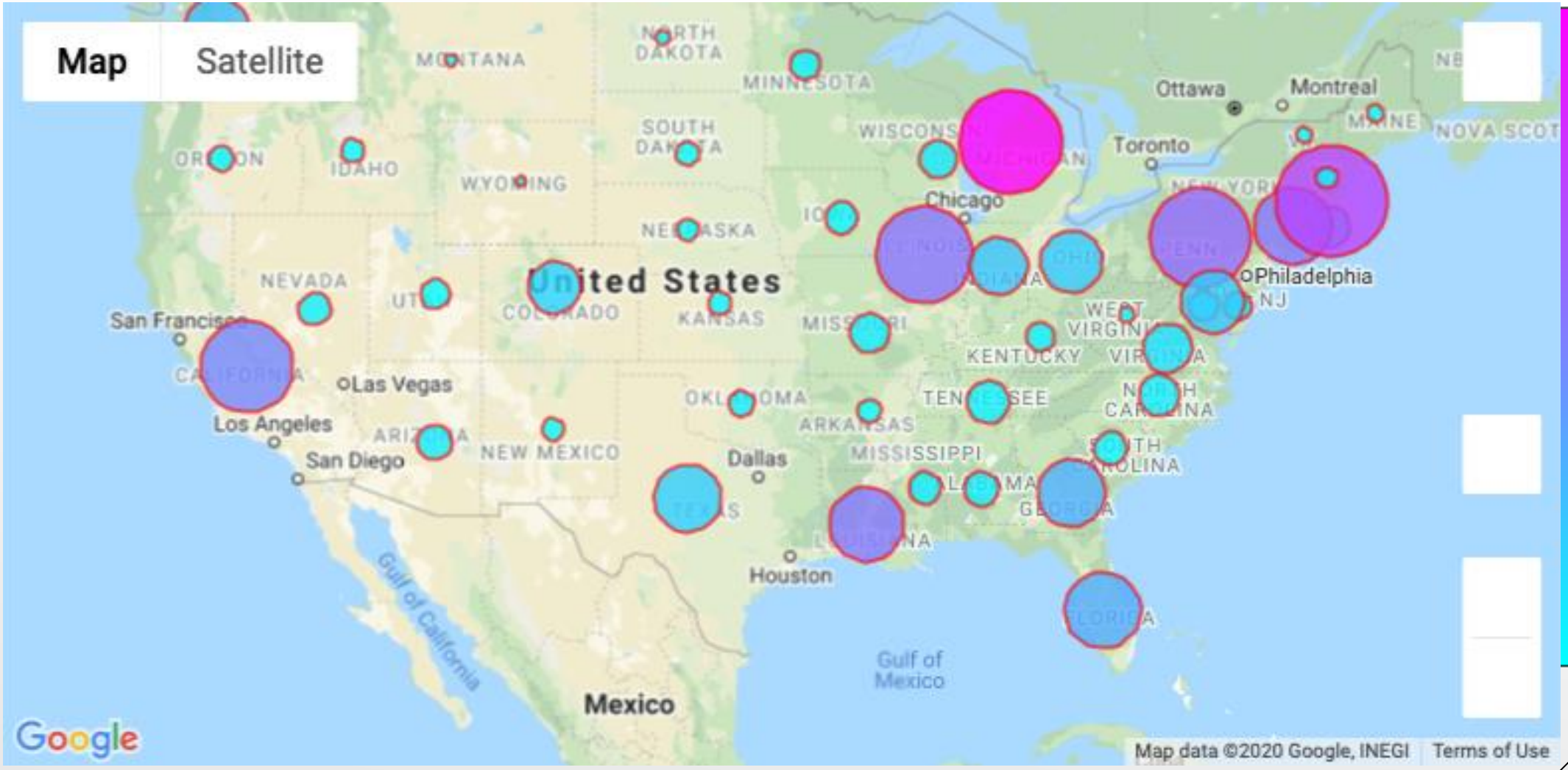


-Circle size proportional to positive confirmed cases
-Initially no meaning to shade, then added Deaths data, scale in tens of thousands
-New York/New Jersey breaking the scale

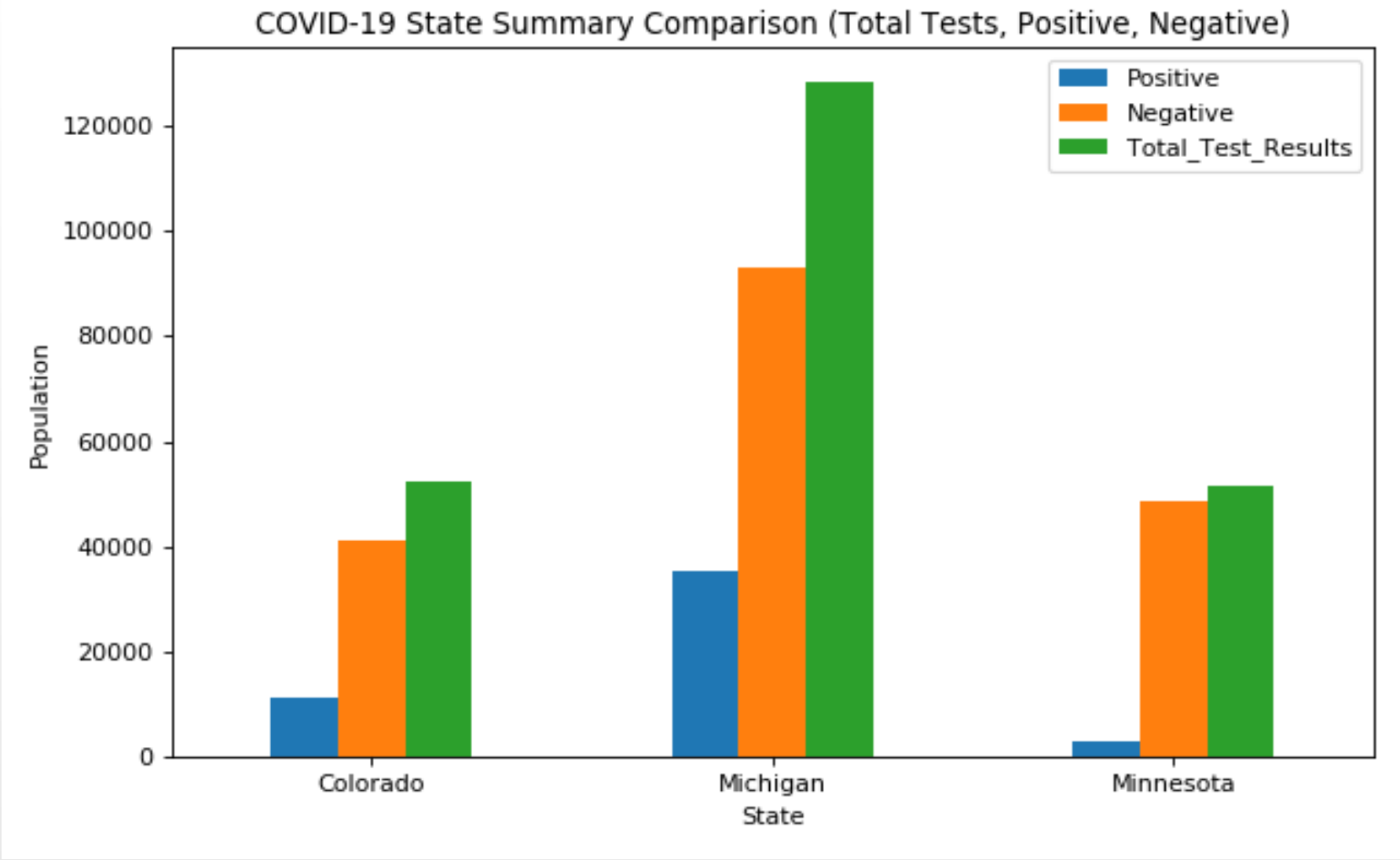
IMPACT NATIONALLY



-New York/New Jersey removed to get a better sense of the rest of the country
-Scale now in thousands
-MI (Detroit) clearly pops out, but so does MA (Boston)
-For the most part, death seem to scale with cases. Notable exception is MI
-CA, IL, and PA are very similar on both axes. WA, FL, and CT are similarly grouped, with CT having slightly more deaths. CO, TX, IN, OH, and MD are next small grouping. LA has the most deaths of the Southern States.

COVID-19 IMPACT COMPARISON MN VS. MI VS. CO VS. NATIONAL

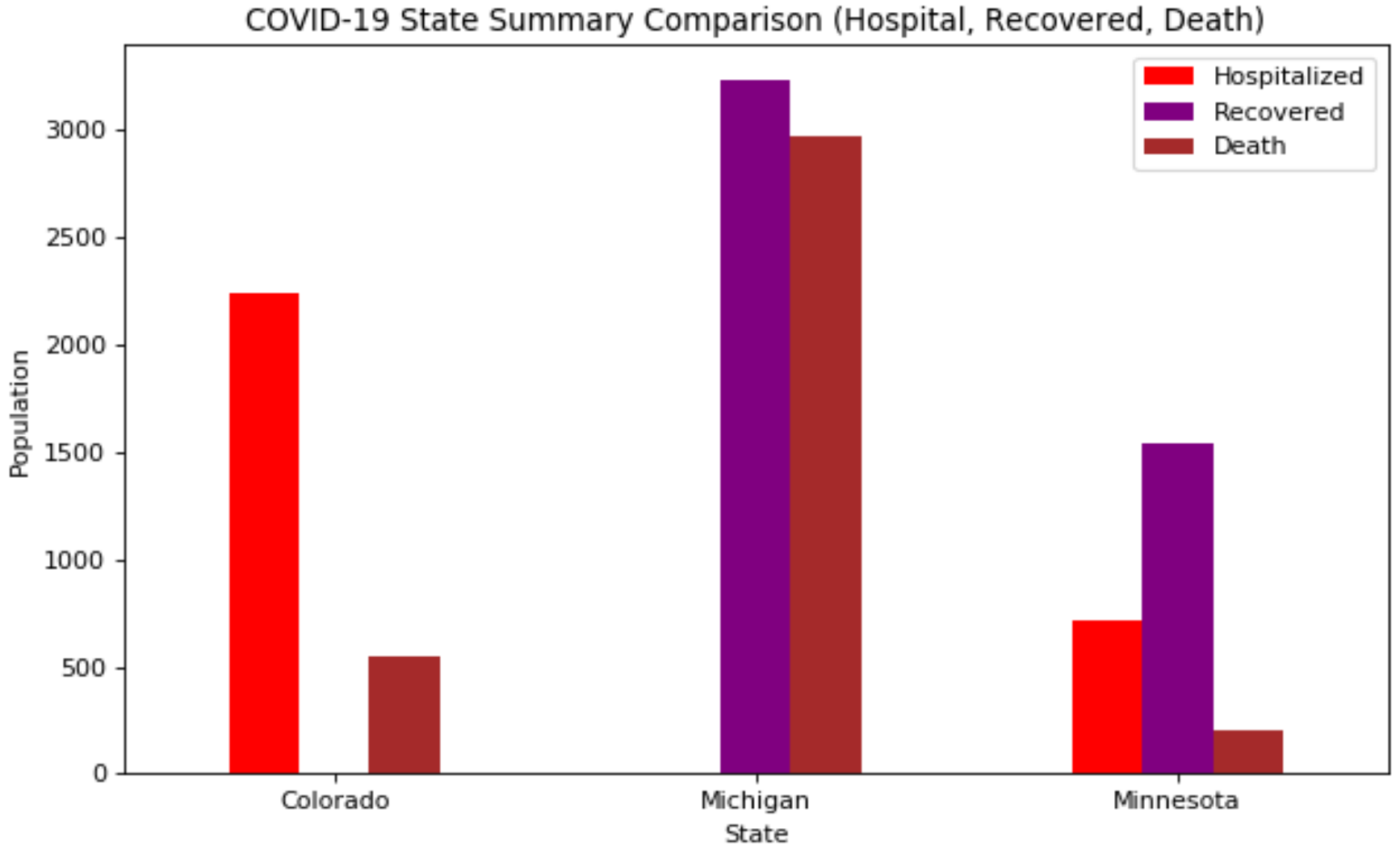
IMPACT MN VS CO VS NAT'L AVG



How does the population of the Positive, Negative, Total Test Results, Hospitalizations, Recovered, and Deaths compare?

- Overall Minnesota and Colorado are approximately the same for Total Test Results.
- Colorado has a less Negatives and more Positives compared to Minnesota.
- Minnesota compared to Michigan is nearly twice the number of individuals tested.

IMPACT MN VS CO VS NAT'L AVG



How does the population of the Hospitalizations, Recovered, and Deaths compare?

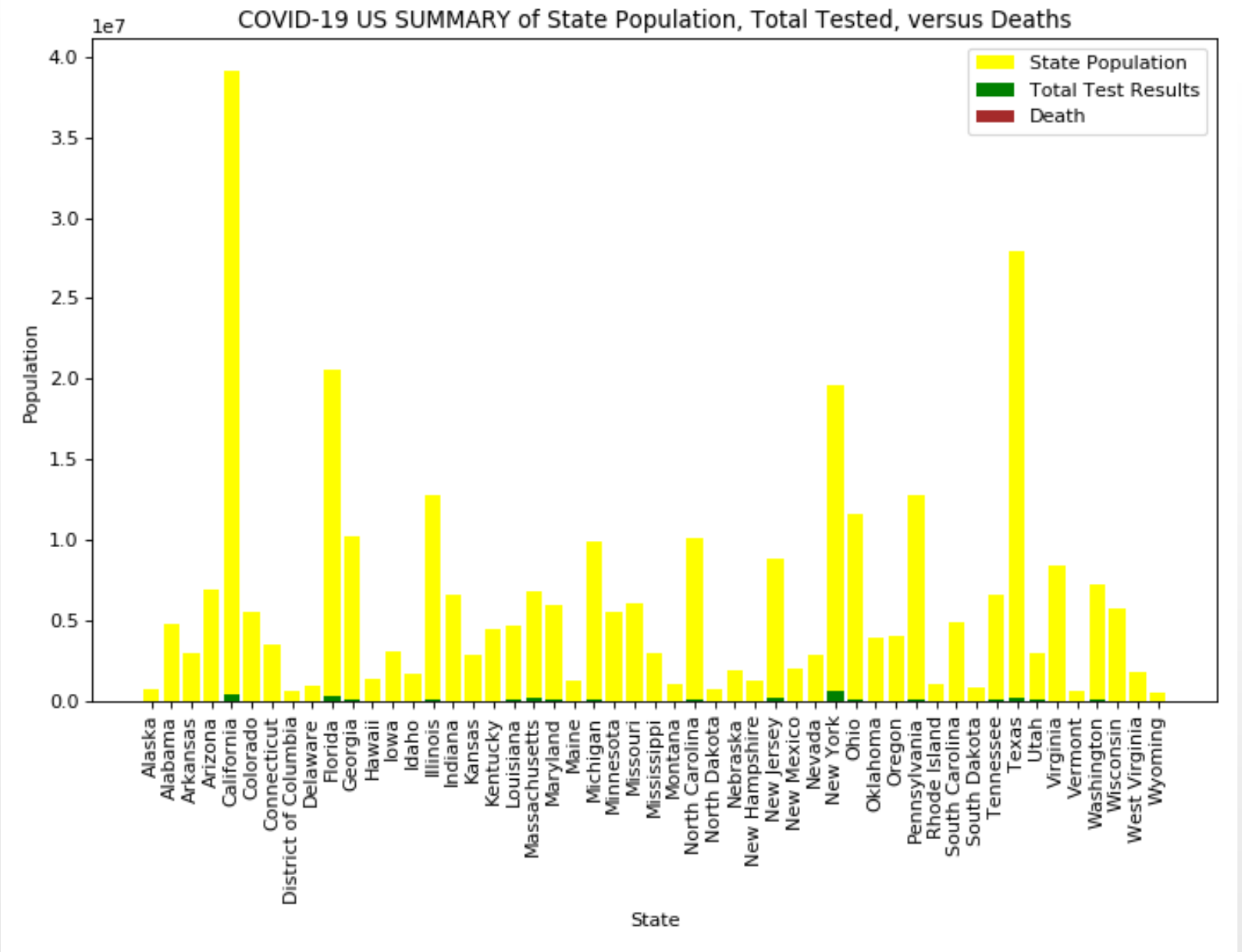
- Michigan has nearly 3000 deaths compared to Colorado's 500 and Minnesota's less than 250.
- Even with Michigan's high numbers of test results. Colorado and Minnesota have much less impact of the virus.

IMPACT MN VS CO VS NAT'L AVG

State	State Population	Total_Test_Results	Positive	Negative	Hospitalized	Recovered	Death
Colorado	5531141.0	52324	11262	41062	2237.0	0.0	552.0
Michigan	9957488.0	128321	35291	93030	0.0	3237.0	2977.0
Minnesota	5527358.0	51548	2942	48606	712.0	1538.0	200.0

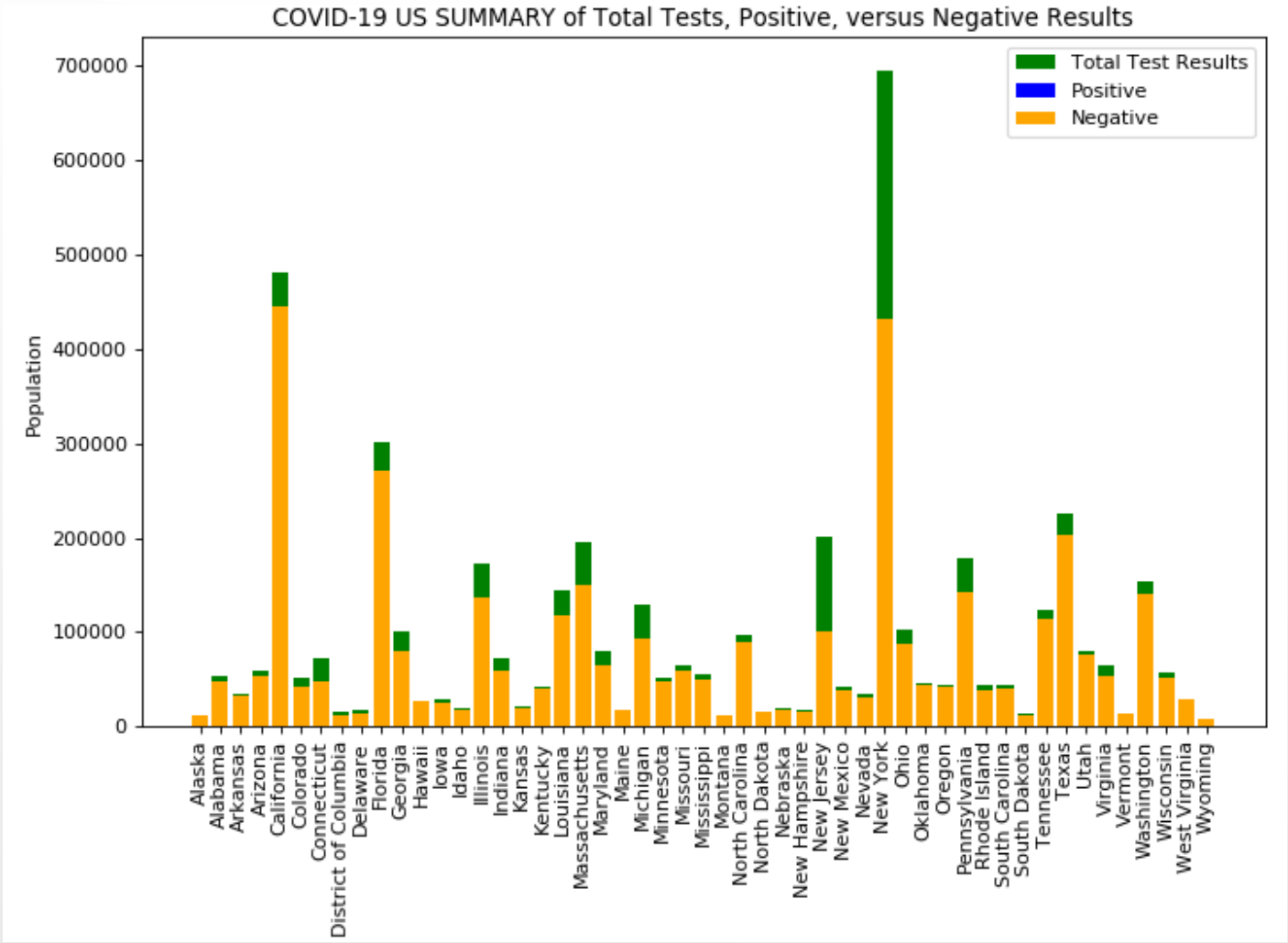
Here is a look at the data

IMPACT MN VS CO VS NAT'L AVG



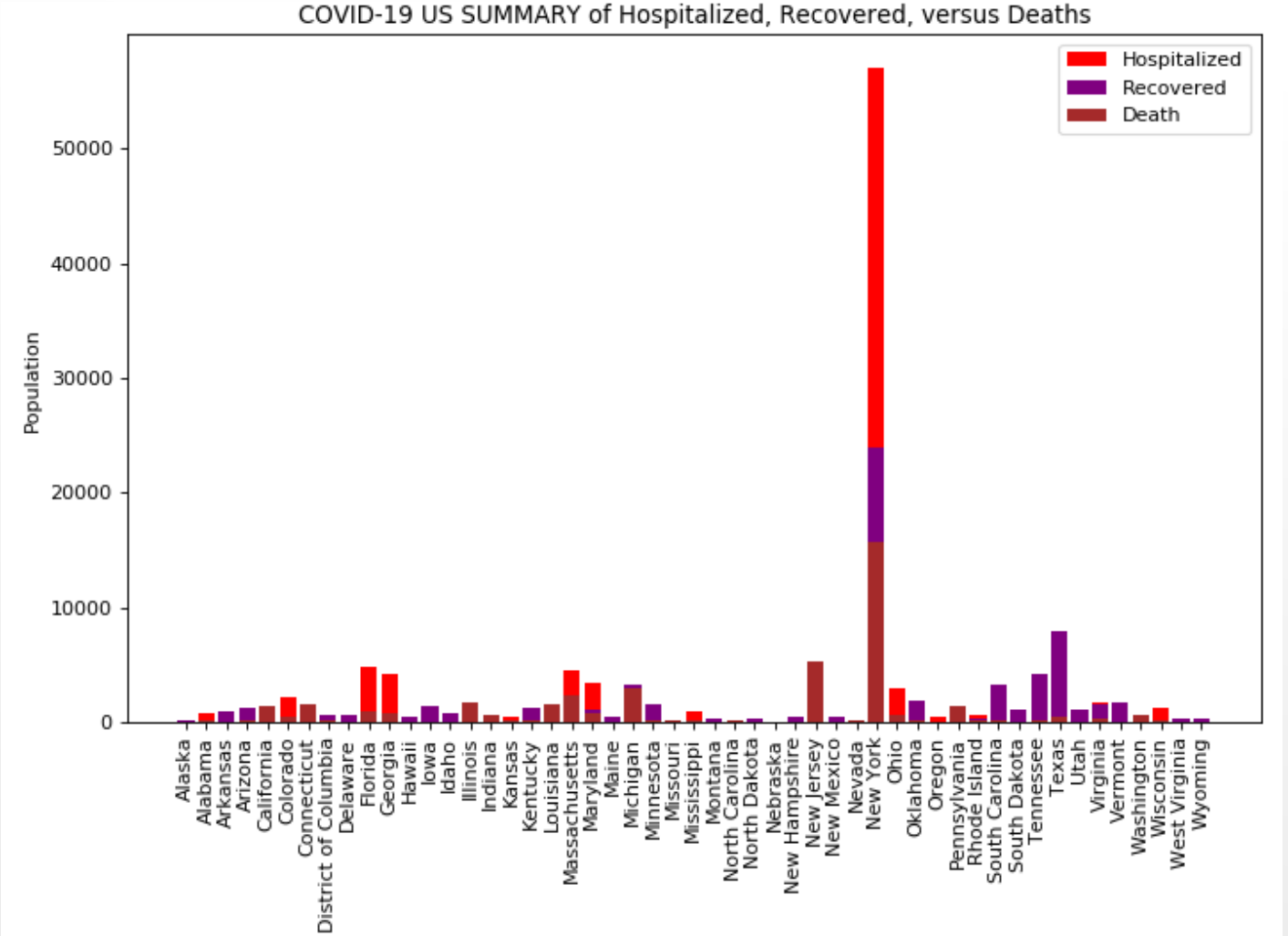
- Minnesota is twenty-second in population of all the 51 states.
- Based on overall population the impact of total tests and deaths are very small. With New York, California, and Texas being the most populated.

IMPACT MN VS CO VS NAT'L AVG



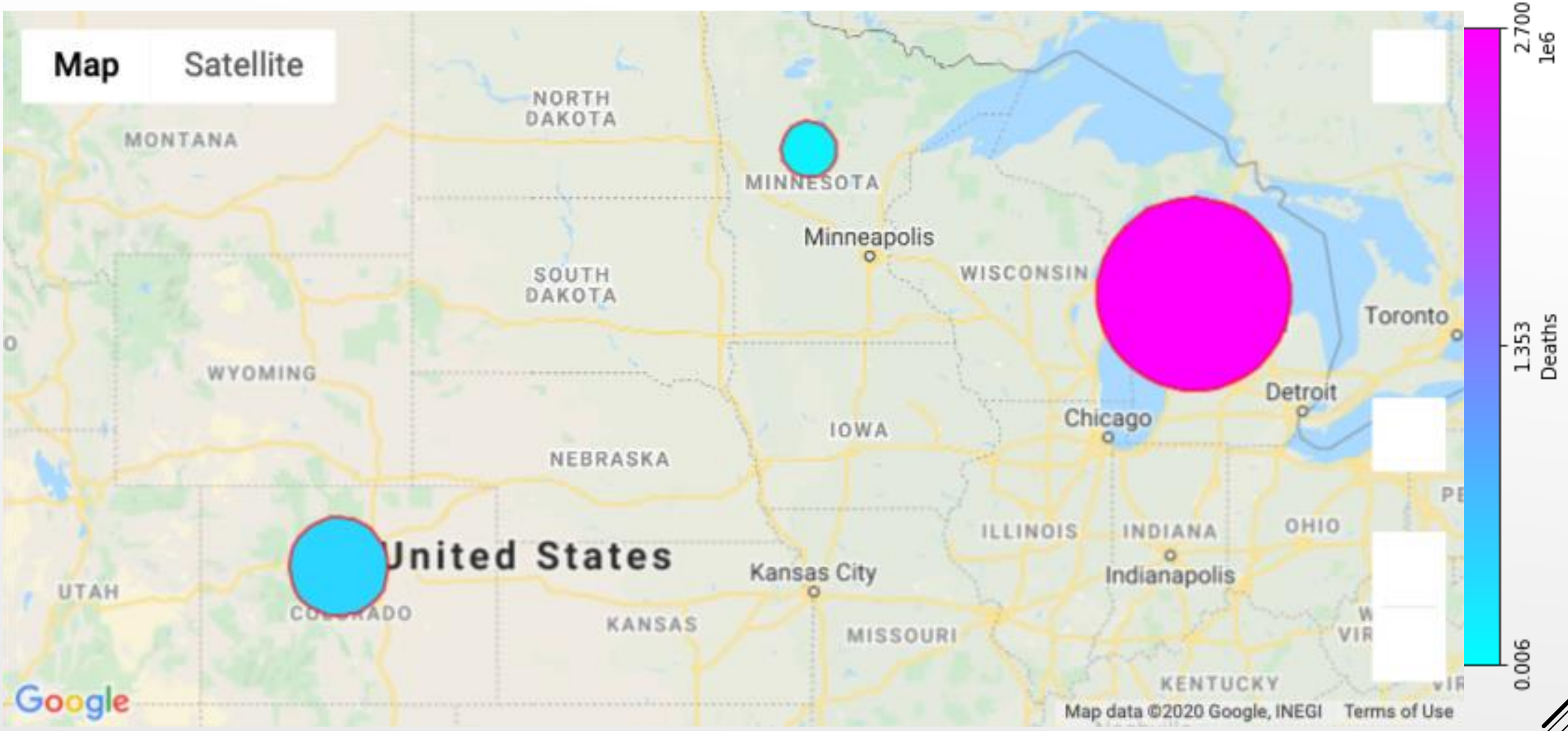
- Nationally Minnesota is about average. New York, California, Florida, Texas, and New Jersey have the most infections based on numbers tested.
- This chart shows those states that have completed more testing and show similar trends of high Negative infections. Which means one of three possible scenarios:
  1. The virus is more isolated based on current testing results.
  2. The virus contagious is not known due to being too early in the testing process.
  3. Those tested today may get the virus tomorrow.

IMPACT MN VS CO VS NAT'L AVG



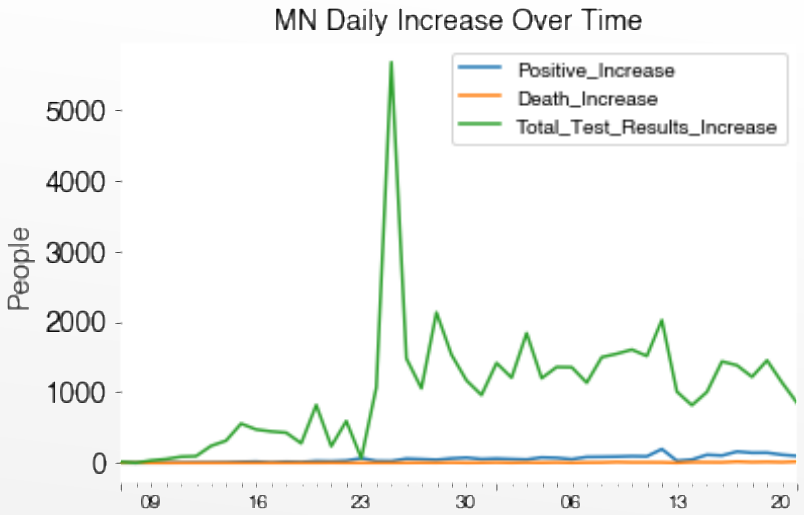
- Minnesota barely measures related to Hospitalizations, Recovered, and Deaths (HRD). A possibility that we are very early in the spread of the virus or low in numbers based on other probabilities yet to be determined.
- Higher number of HRD is occurring on the east coast of the United States. New York, Florida, Georgia, Massachusetts, Maryland, New Jersey have more Hospitalizations and Deaths.

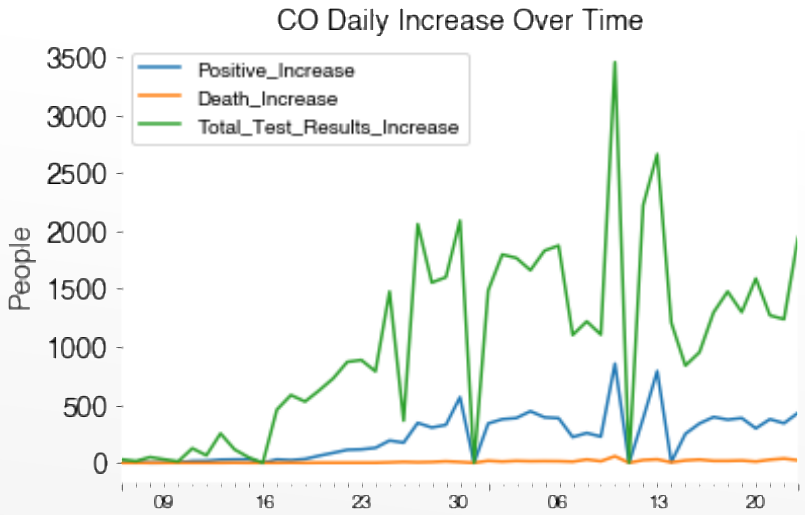
IMPACT MN VS CO VS NAT'L AVG

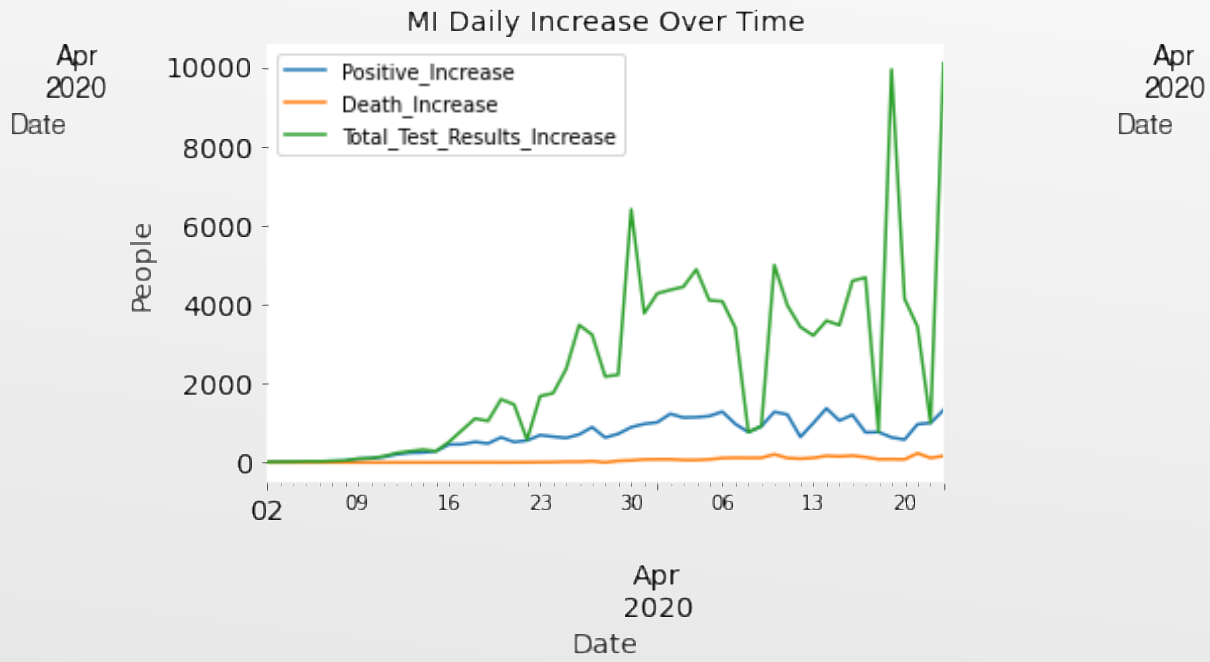


- Zoomed in view of the map
- Circle size proportional to positive cases
- Deaths shaded in, scale in thousands

IMPACT MN VS CO VS NAT'L AVG



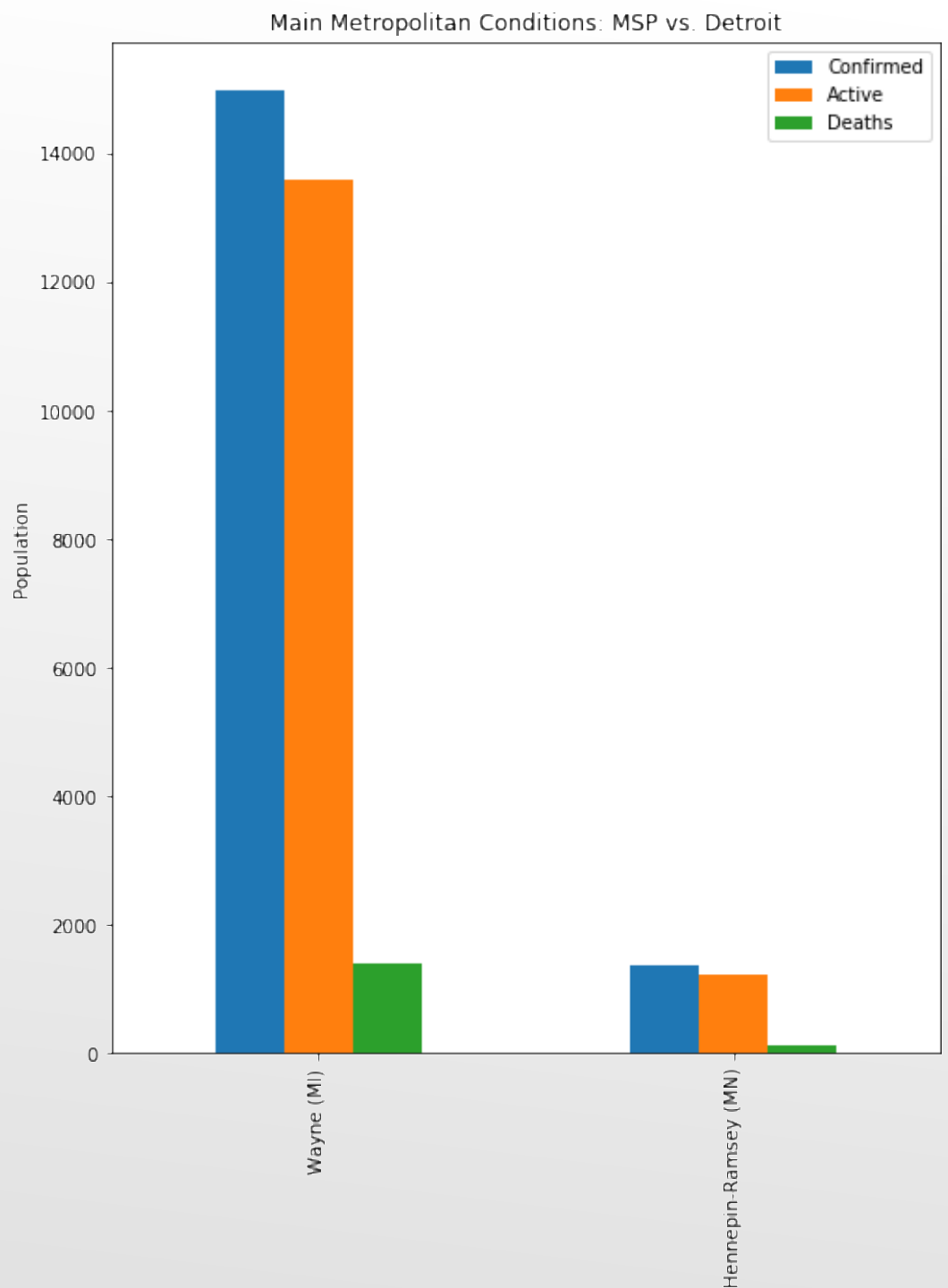


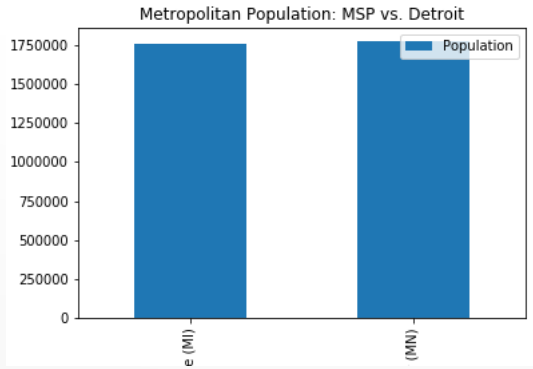


- Interval data since beginning of March on Testing, Positives, and Deaths
- MN and MI appear to have Tests and Positives lines follow each other starting first week of April.
- It's enough to warrant deeper study into whether this is to be expected or not.

COVID-19 IMPACT COMPARISON MINNEAPOLIS-ST. PAUL VS. DETROIT

IMPACT MSP VS DETROIT





- Both of these metropolitan areas were of comparable population size, thus deemed appropriate for impact analysis
- Detroit had 11 times as may confirmed positive cases than Minneapolis since the beginning of 2020. (Detroit: 14,994, MSP: 1,367)
- Detroit has 11 times as may currently active cases as Minneapolis has as of 4/24/2020. (Detroit: 13,598, MSP: 1,230)
- Detroit has 32 times as may deaths as Minneapolis has as of 4/24/2020. (Detroit: 1,396, MSP: 137)

POST MORTEM

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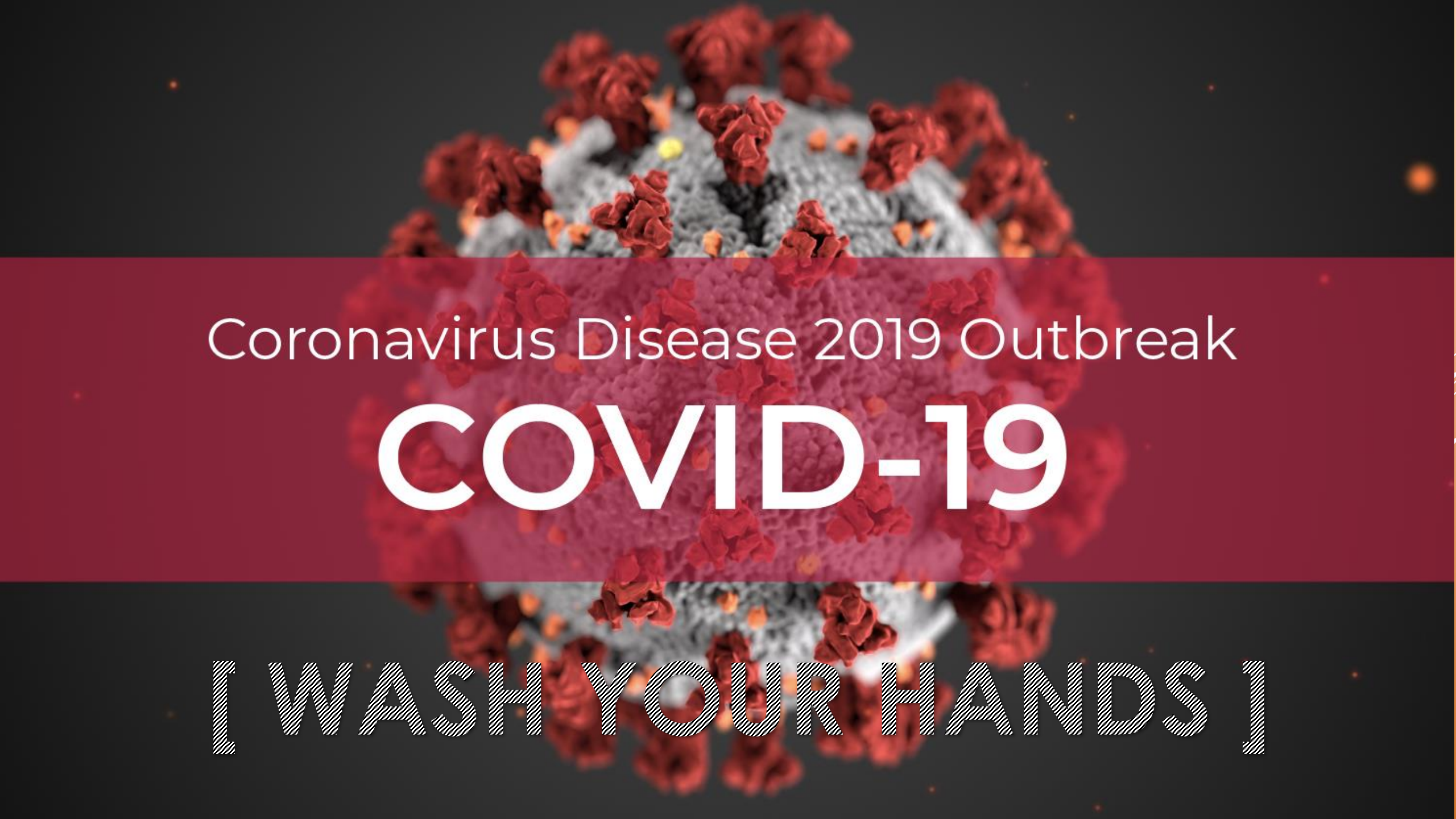
- Could take interpretations of visuals and dig deeper into what seem to be groupings of States.
- A next phase or attempt of charting could be to do a layer of counties and show similar gradient. Could also work on making chart interactive, with hover-over revealing data values.
- Determine quantitative measure for "closeness".
- Find automated way to bring in geographic area data.
- Find data source for metro areas, instead of relying on county proxy.
- Look at volatility closer. Could try to normalize or compress scale of tests to better see trends of positive cases and deaths.

- Open-floor Q&A with the audience

QUESTIONS


Coronavirus Disease 2019 Outbreak
COVID-19
[WASH YOUR HANDS]

INSTRUCTIONS