COVID-19 Statistics in North Carolina and the United States

What trends in North Carolina COVID-19 data can we measure, and how do they compare and contrast with National COVID-19 data?

DATA SOURCES

The COVID Tracking Project

US Census

OpenWeather API

Questions to Answer

How did North Carolina and United States COVID-19 data compare over time?

Is there a correlation between positive COVID tests and hospitalizations?

Is there a correlation between the number of tests administered and deaths?

Is there a correlation between positive COVID test and temperature?

What was the ratio of viral tests to antigen tests in North Carolina, and did the 9/30/20 introduction of antigen tests impact the state's overall negative testing rate?

How do mortality rates in North Carolina compare between different racial/ethnic groups? Is there a correlation between the total of cases to deaths?

Data Retrieval and Assembly

The COVID Project provided COVID-19 data (hospitalizations, deaths, testing, etc.) for individual states and the United States as a whole.

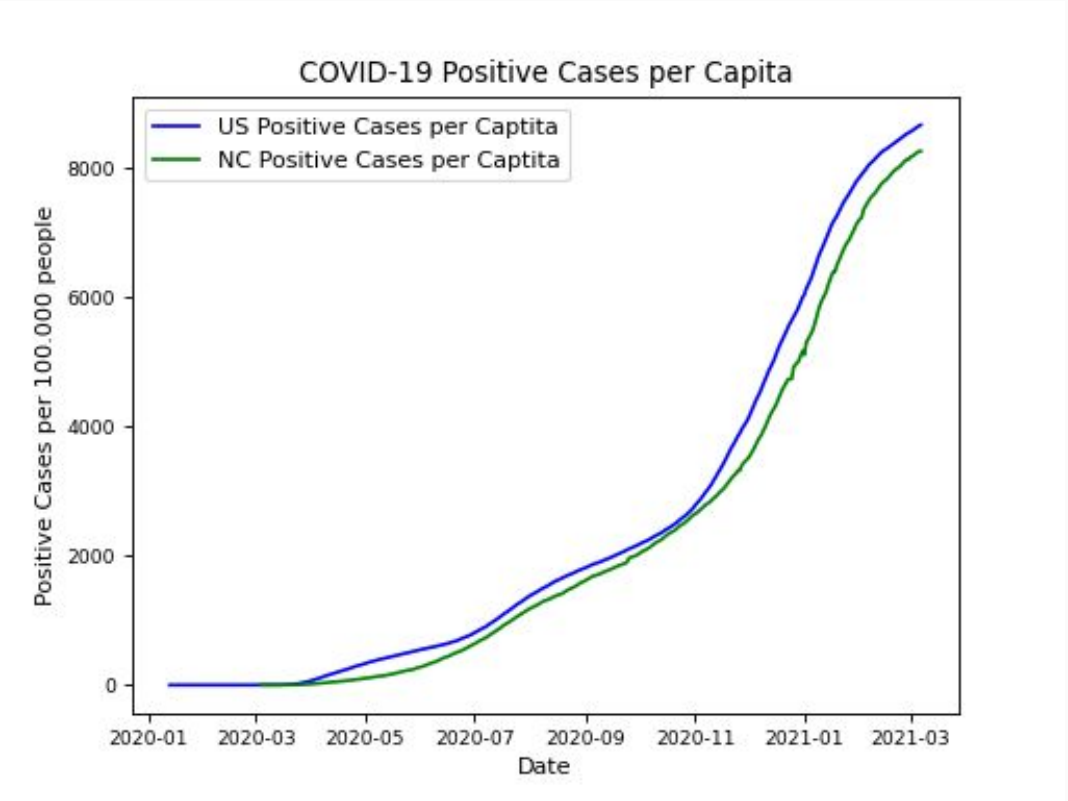
The US Census provided population information for individual states and the United Stats as a whole, so that we could create per-capita statistics to better compare a state to the country as a whole.

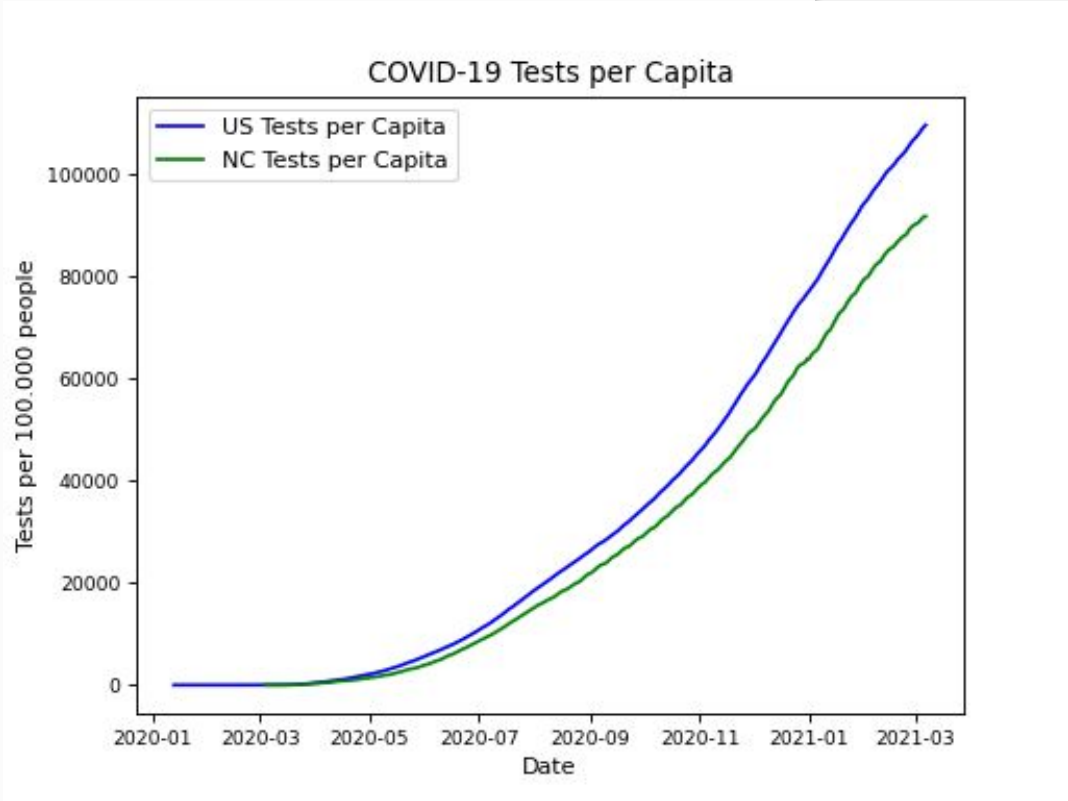
OpenWeatherAPI would give us temperature data for each state so that we could compare if that correlated with COVID-19 data.

After cleaning the data we used Pandas to create DataFrames of just the variables being analyzed. Then using matplotlib, we created visualizations of our findings.

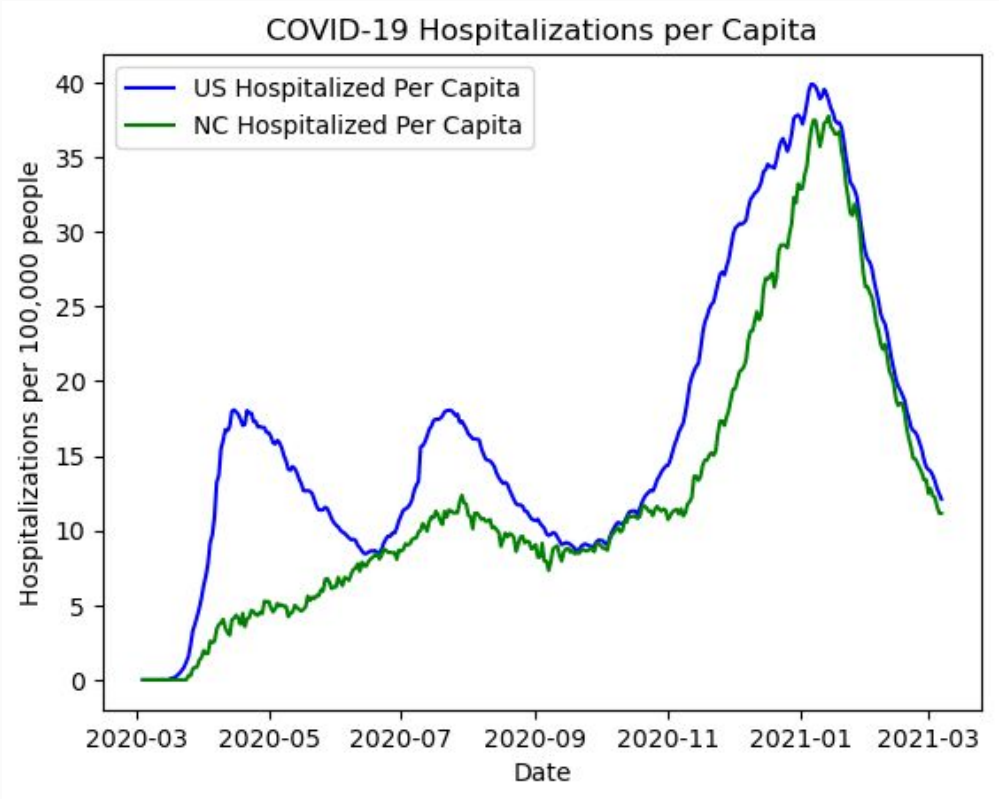
How did North Carolina and United States COVID-19 data compare over time?

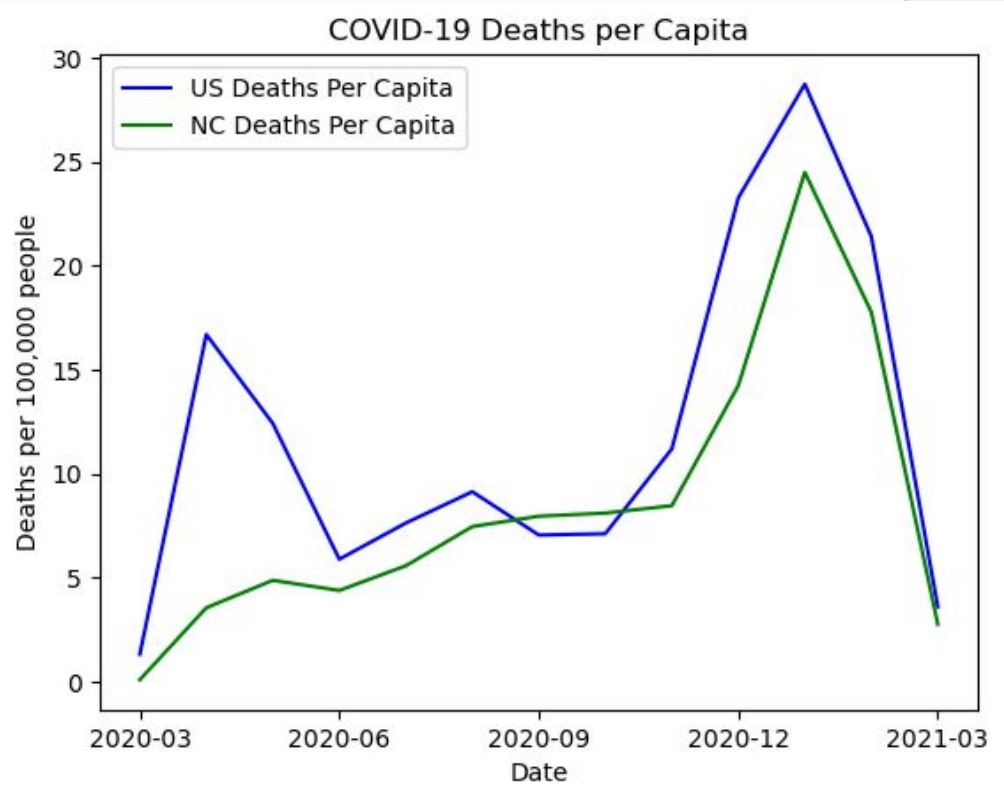
NC vs. US Over Time





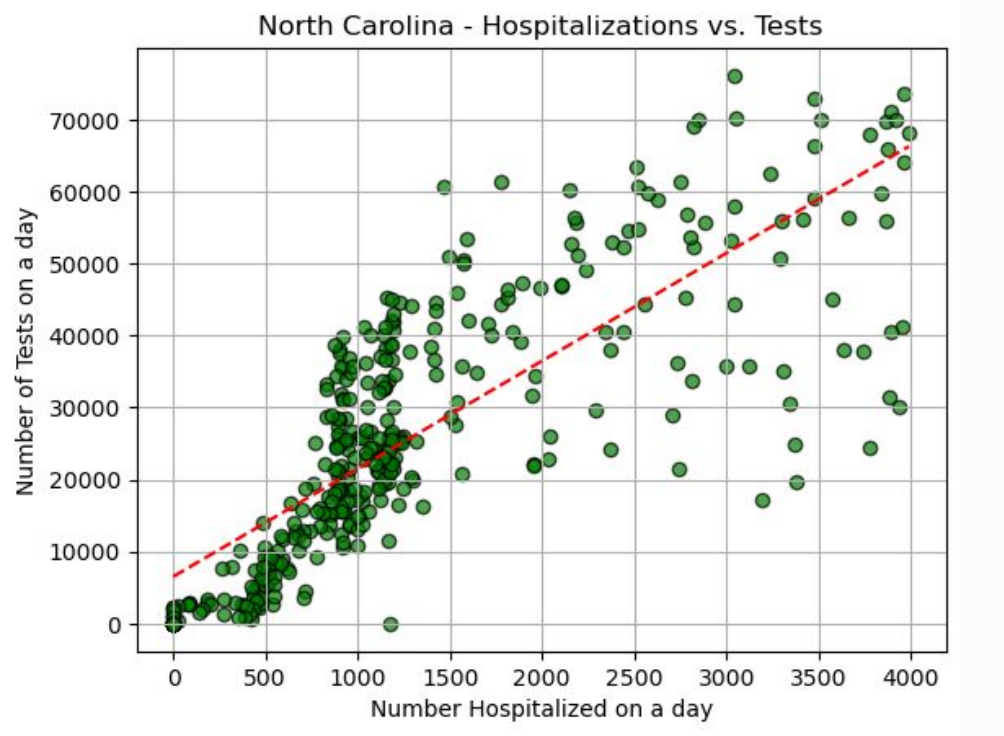
NC vs. US Over Time



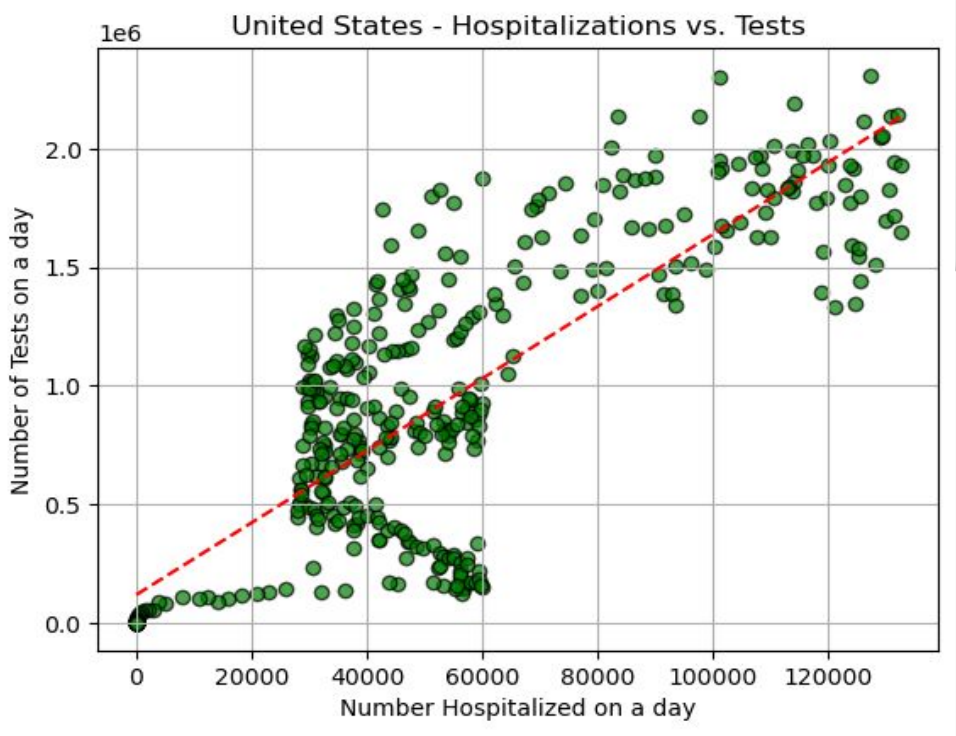


Was there a correlation between testing rates and hospitalizations?

Hospitalizations vs. Testing Rates



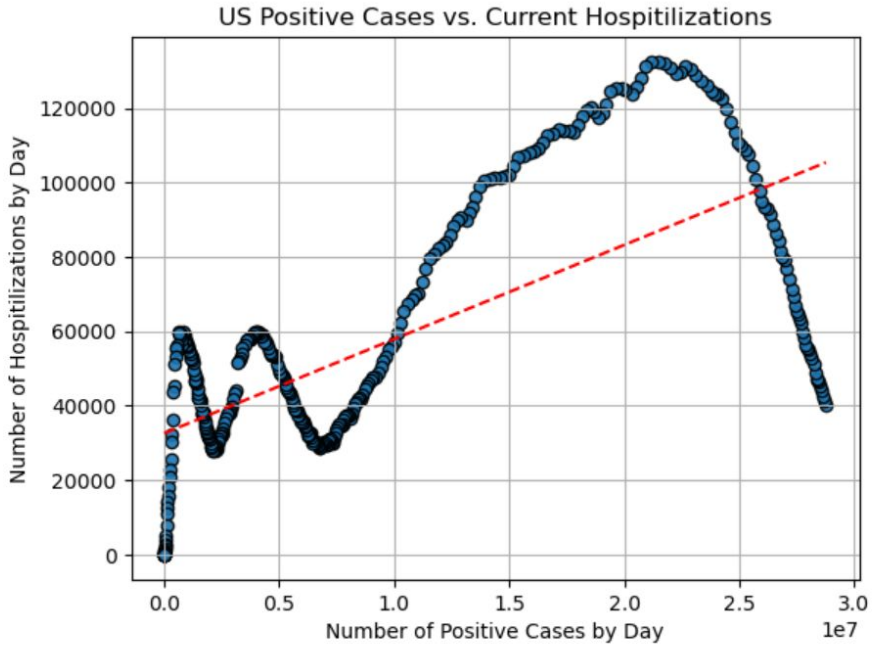
Correlation Coefficient: 0.80



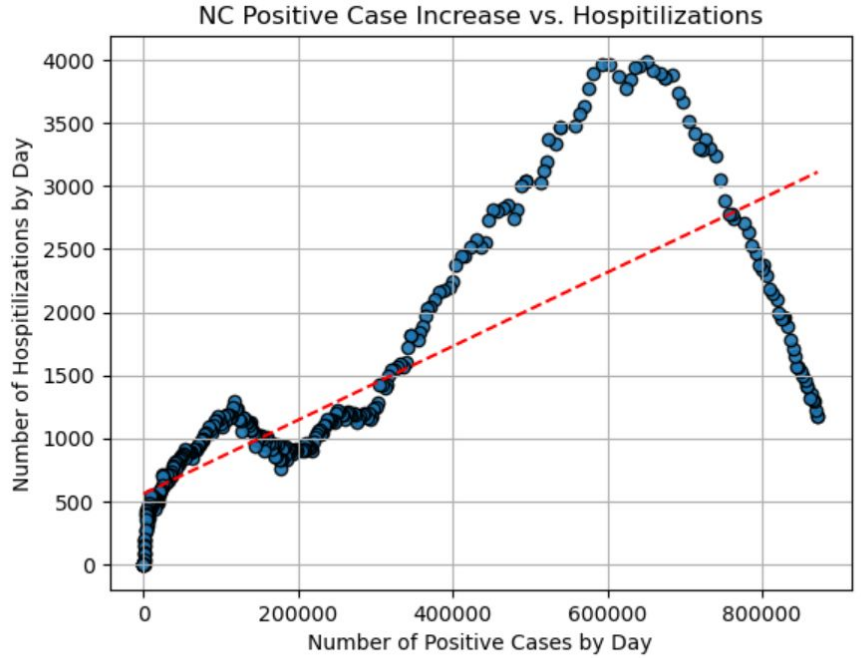
Correlation Coefficient: 0.83

In North Carolina and the US, was there a correlation between positive COVID tests and hospitalizations?

Hospitalizations vs. Positive Tests



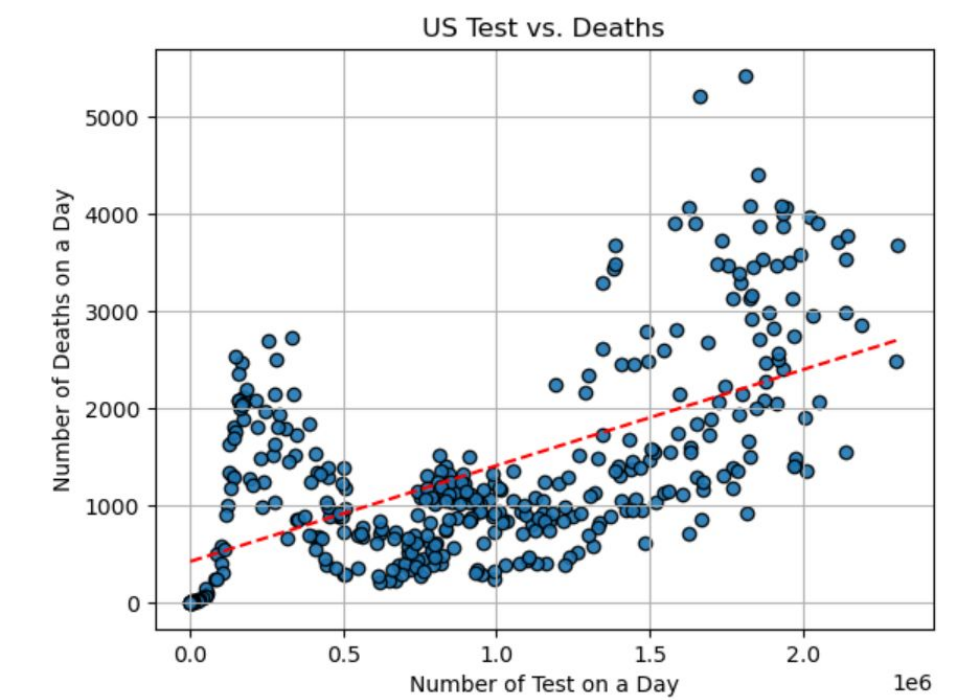
Correlation Coefficient: 0.73



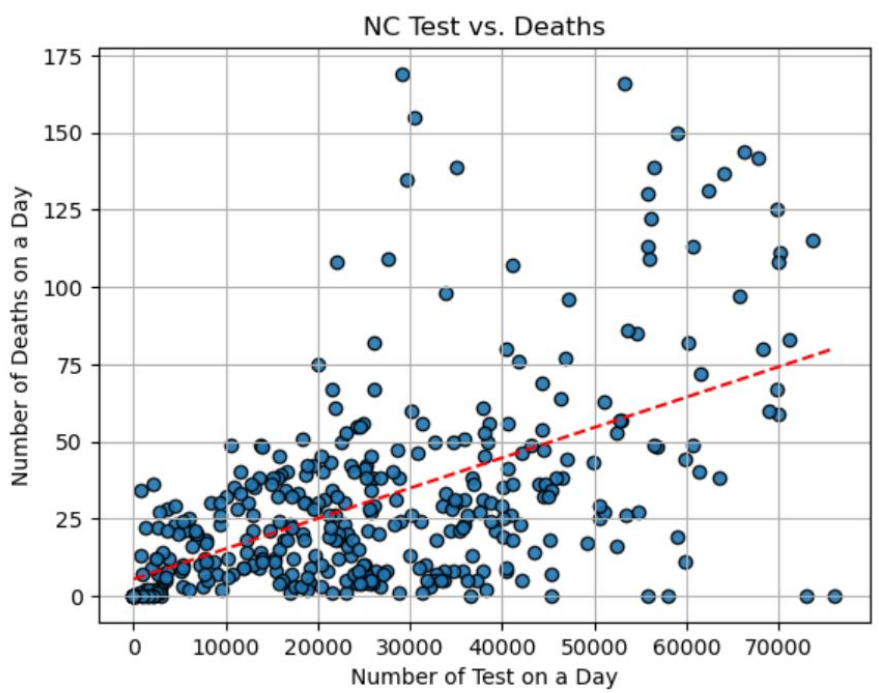
Correlation Coefficient: 0.79

In North Carolina and the US, was there a correlation between positive COVID tests and deaths?

Number of Tests vs. Deaths



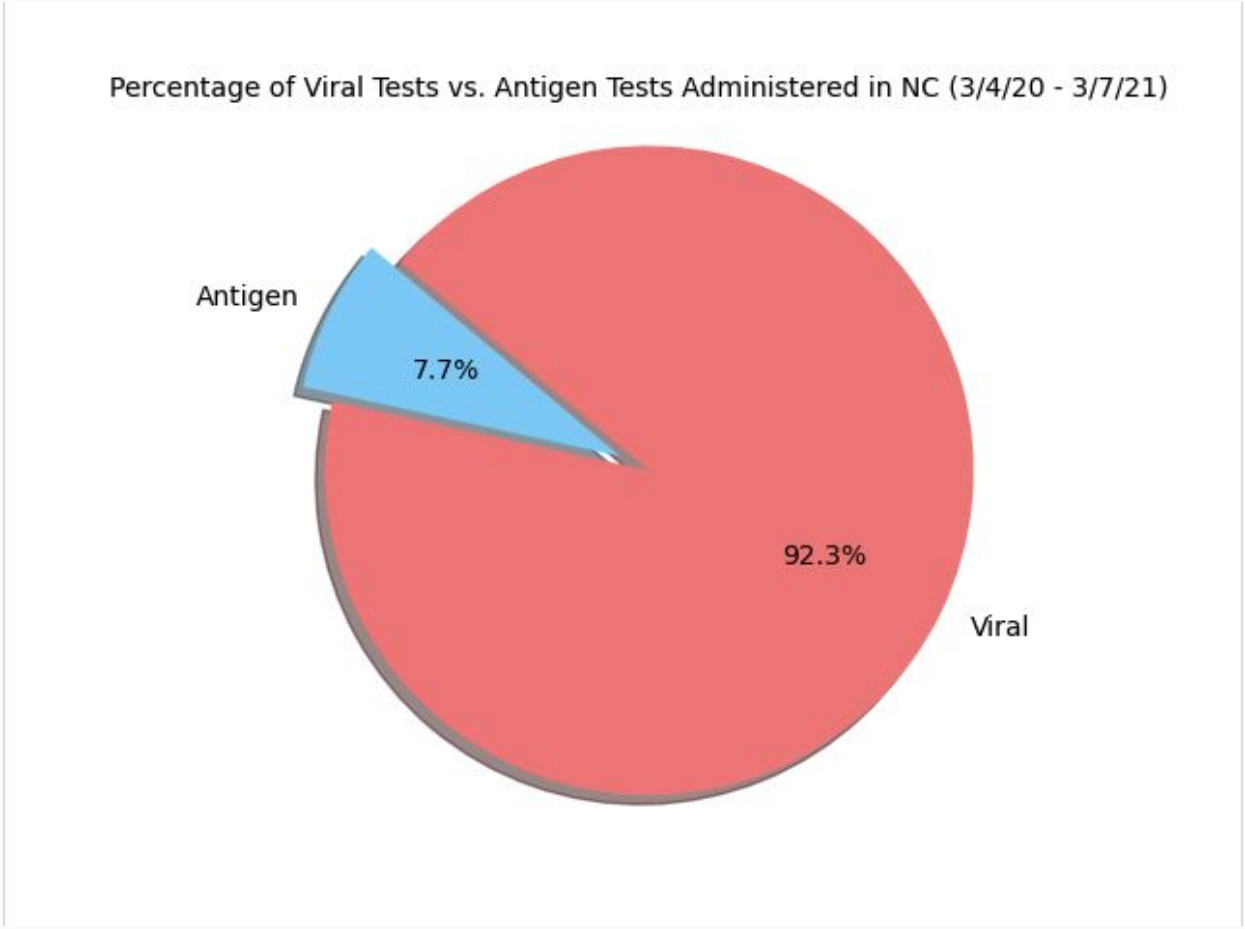
Correlation Coefficient: 0.67



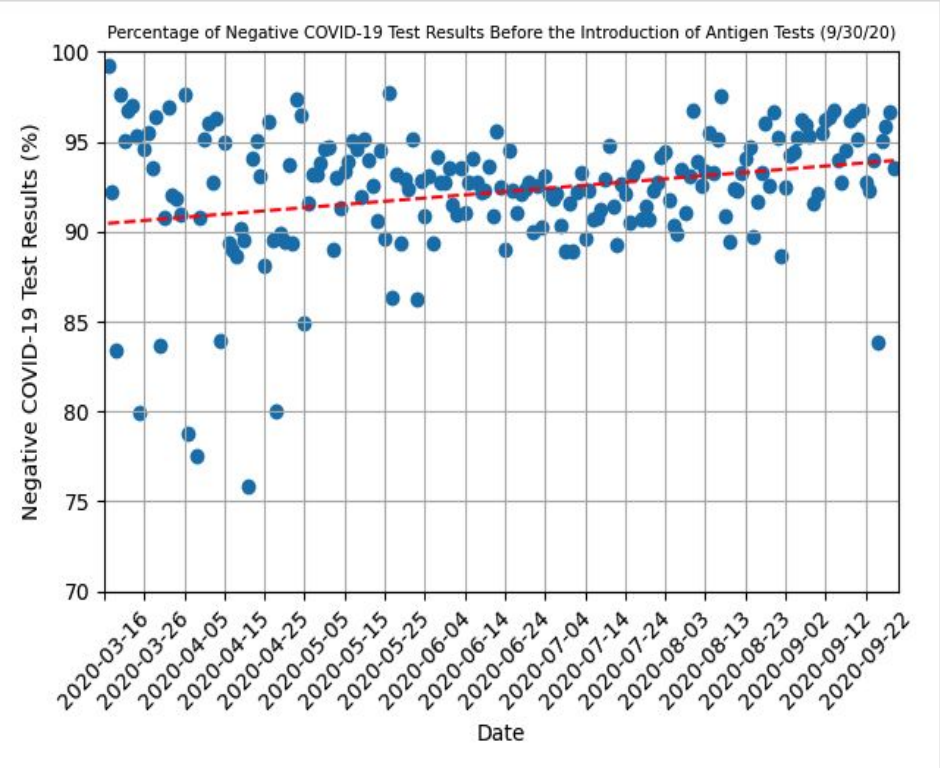
Correlation Coefficient: 0.55

A deeper dive into North Carolina's COVID-19 data

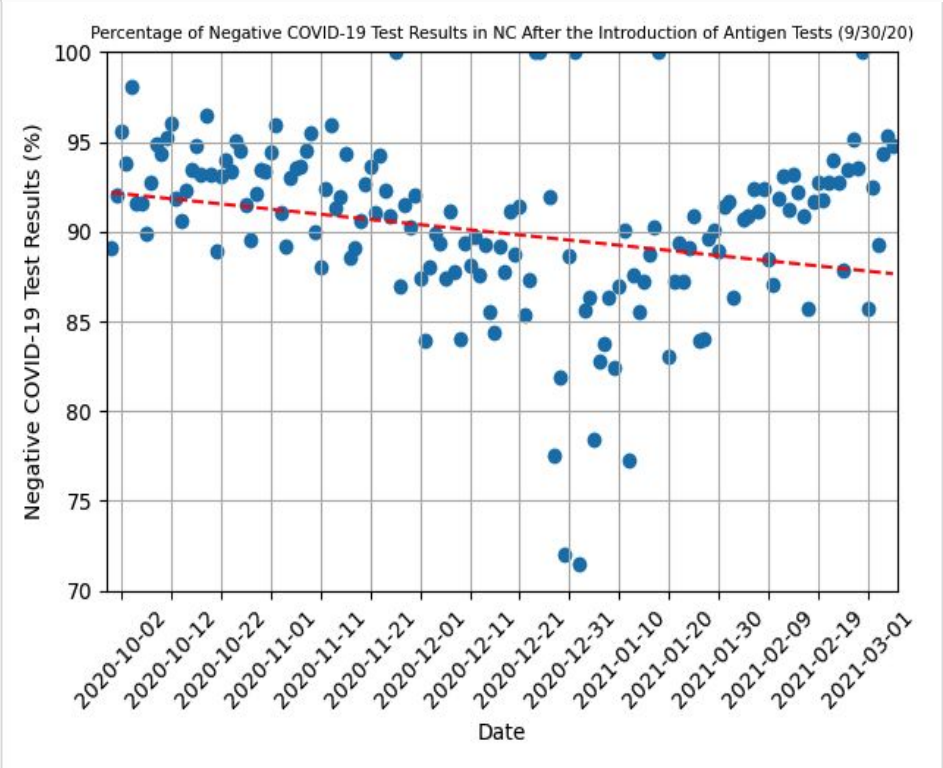
Viral vs. Antigen Testing in NC



Viral vs. Antigen Testing in NC

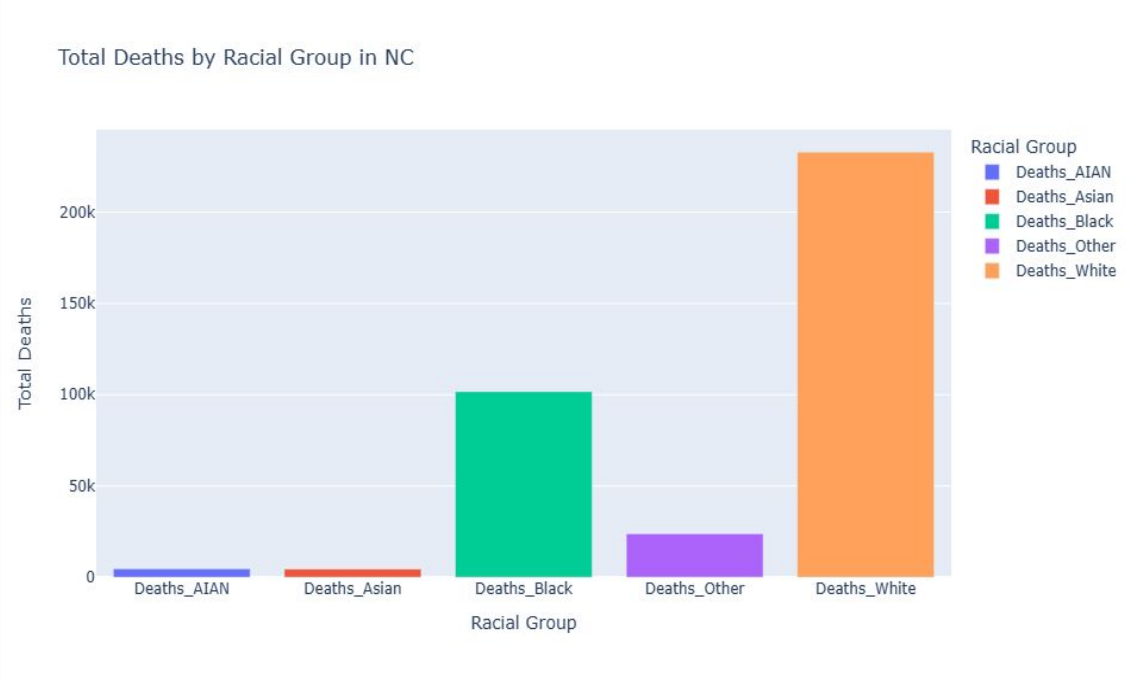


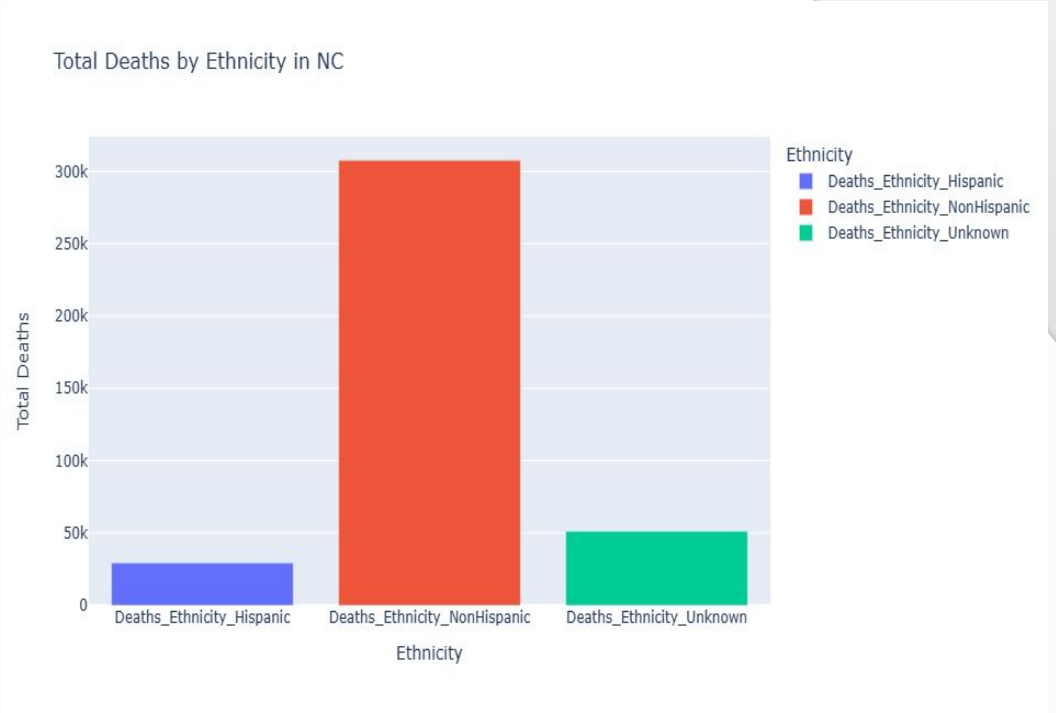
Correlation coefficient: 0.24



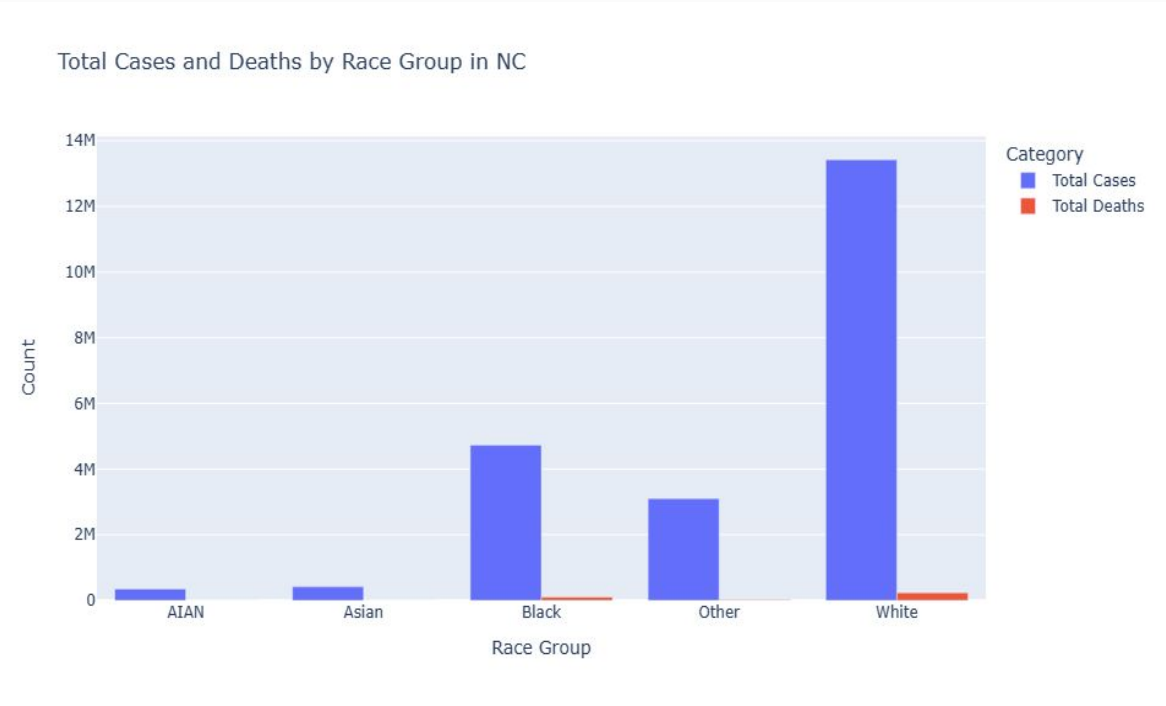
Correlation coefficient: -0.22

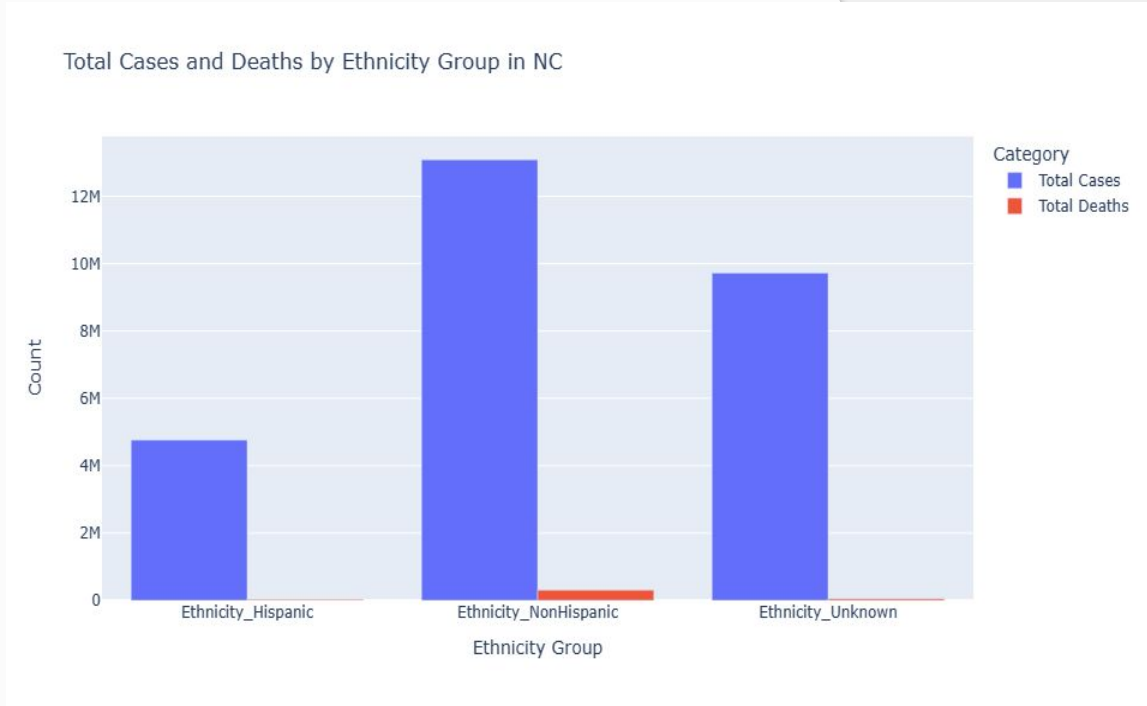
NC Mortality Rates by Racial and Ethnic Groups





Total Cases Vs Deaths by Racial and Ethnic Groups





Data Limitations

We were not able to get a date estimation for every day from the US Census, so every day in 2020 had the same population, and every day in 2021 had the same population.

Positive/negative test results in North Carolina were not broken down into “viral” and “antigen” categories.

We were not able to get the historical temperatures average using the OpenWeather API. The key that allows us to obtain this information is paid.

Conclusions

NC COVID-19 numbers were slightly better than the US as a whole, excluding a couple months where our numbers were worse.

The percentage of negative tests in North Carolina actually decreased following the introduction of antigen testing, but it is likely that the spike in positive cases around the 2020 holiday season and increased access to testing played major roles in this shift.

The data shows that “Deaths_Ethnicity_NonHispanic” and “Death_White” exhibit higher counts, which suggest a disproportionate burden on these communities. Examining the correlation between case-to-death ratios in the racial group “Black” had the second highest amount of cases and experienced a significant impact, with a notable number of deaths.

Credits.

Presentation Template: SlidesMania

Image: Unsplash

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