# COVID-19 analysis



COVID-19 is a disease caused by a virus and was discovered in December 2019 in Wuhan, China. The pandemic has affected people across the world in many ways for the past 2.5 years. In this analysis, we will explore the spread of COVID-19 across the United States as well as the effect of vaccines.

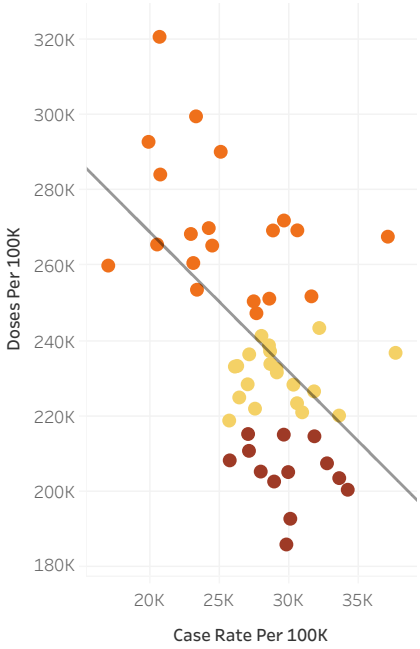
Through this analysis, the following questions were investigated:
- How are COVID-19 cases and deaths distributed over the United States?
- How do vaccines impact COVID-19 cases?
- How do vaccines impact deaths from COVID-19?
- How do vaccines effect hospitalizations?

The hypothesis is that if we increased COVID-19 vaccinations we will decrease the case rate, death rate, and hospitalization rate.

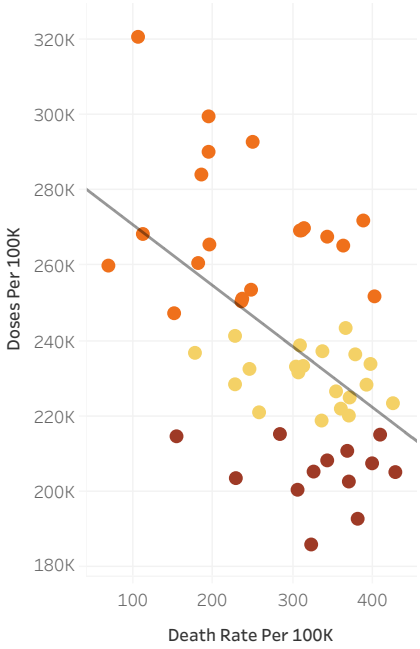
# COVID-19 analysis



## Correlation between Case Rate and Vaccine Dose Rate




## Correlation between Death Rate and Vaccine Dose Rate



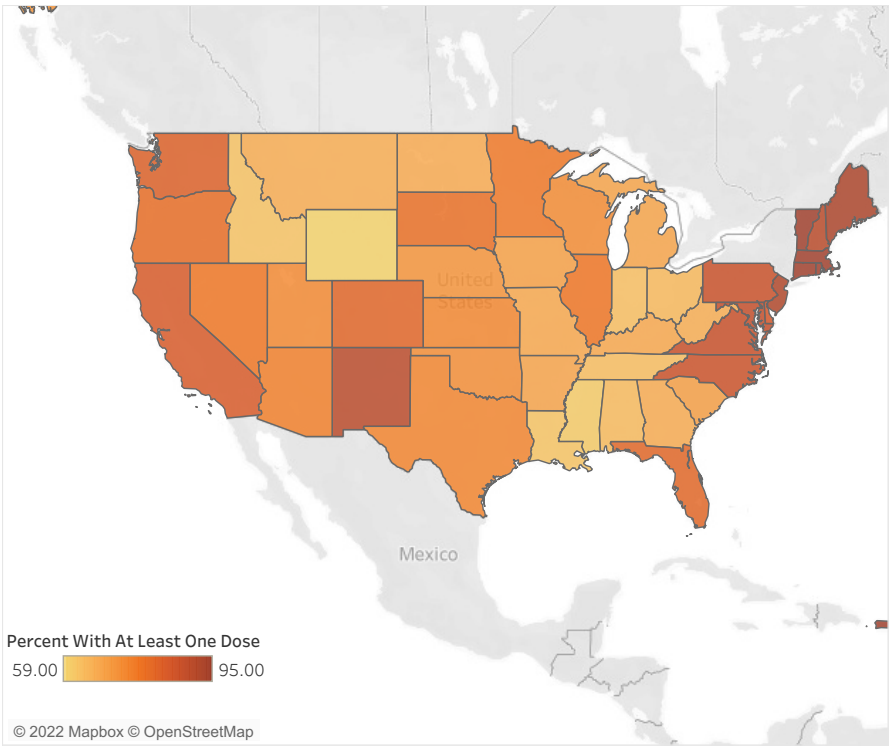

The data points from each cluster appear on the high case rate and high death rate side, however data from the dark orange cluster which represents the highest vaccination rate is present in the lower case rate. This enforces the hypothesis that higher vaccination rate will yield a lower COVID-19 case rate and death rate.

Through further analysis, not visualized here, it was determined that these correlations were significant. It was also determined that there was no significant correlation between vaccination rates and hospitalizations.

# COVID-19 analysis



## Percent of people with at least one dose of COVID-19 Vaccine in the USA

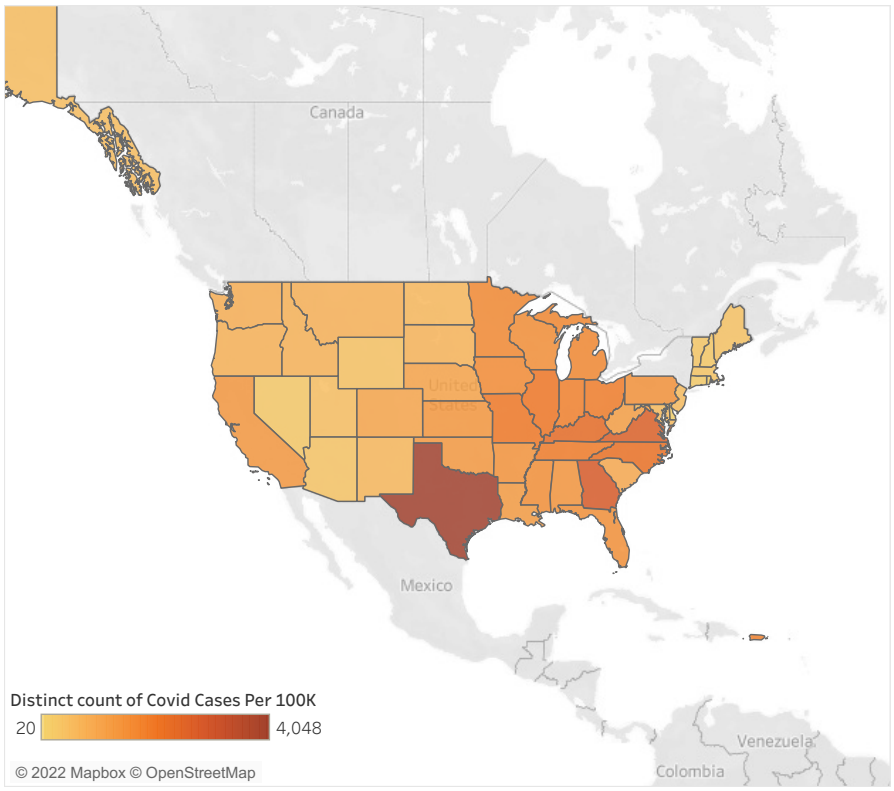



The map shows the states with this highest percentage of people with at least one dose of the vaccine. The northeast states and New Mexico have the highest percentage of vaccinated people.

# COVID-19 analysis



## COVID-19 Cases per 100k in the USA

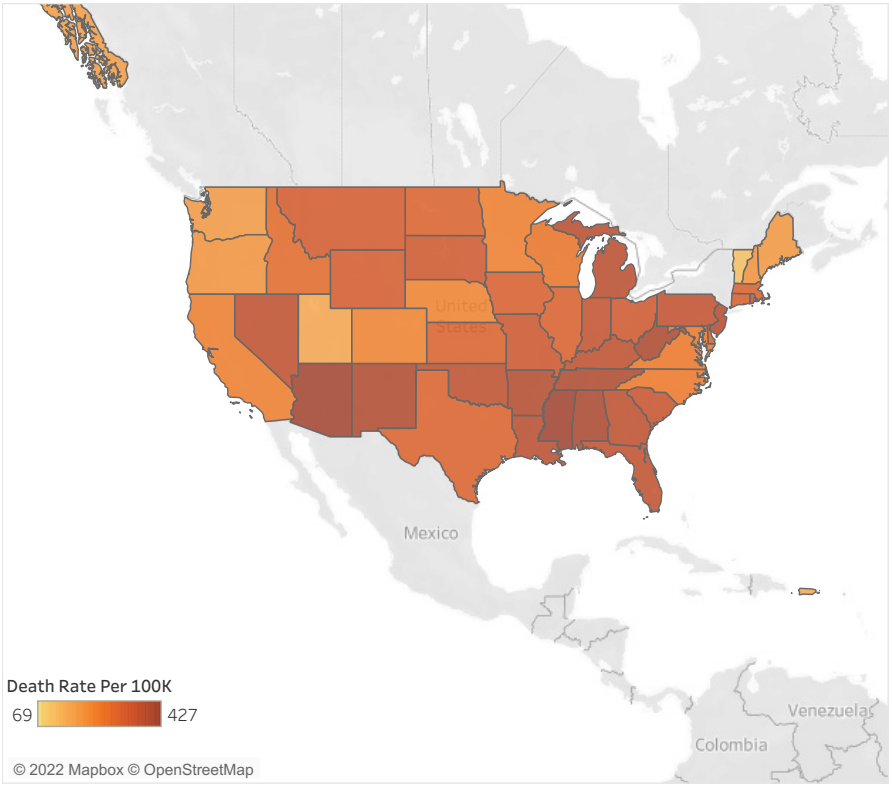



The map shows the most COVID-19 cases per 100k are in Virginia, West Virginia, Oklahoma, Louisiana, and North Dakota.

# COVID-19 analysis



## COVID-19 Death Rate per 100k in the USA




The map shows highest COVID-19 deaths per 100k. The southern states and Michigan have the highest death rate.

# COVID-19 analysis



We determined a significant correlation between increasing vaccination rates yielding decreased COVID-19 case rates and death rates. Hospitalization rates were deemed not significantly correlated to vaccination rates.

We can determine from the maps above that COVID-19 cases rate is relatively low around the US at this point apart form West Virginia. The death rate per 100k from COVID-19 is highest in the southern states and Michigan. We can compare these two maps to the vaccination map, it appears that most of the states with high vaccination rates are less affected by COVID-19 cases and deaths.

To further gain insight on the affects of COVID-19 vaccinations on case rates, death rates, and hospitalizations we can analyze various different variables such as population size, preexisting conditions, and political views.

(click image below for data source)