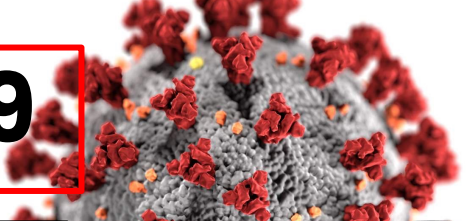
The Story of COVID-19



Background

A novel strain of coronavirus — SARS-CoV-2 — was first detected in December 2019 in Wuhan, a city in China's Hubei province with a population of 11 million, after an outbreak of pneumonia without an obvious cause. The virus has now spread to a vast majority of countries and territories across the globe and is characterized as a pandemic by the World Health Organization. COVID-19 took a toll on the world population since the first case was found.

Techniques/Approach

In the study we look at how the world been effected by and adjusted to the COVID-19 pandemic. From the increased amount of deaths, to the the effect the virus has had on the world's economy, we look at all aspects of the diseases – Past – present – future to get an idea on what we did wrong and what we need to do right to ensure innocent people do not lose their lives to such a deadly diseases.

Tools/Skills

- Exploratory analysis through visualizations (scatterplots, correlation heatmaps, pair plots and categorical plots)
- Geospatial analysis using a shapefile - Regression analysis
- Cluster analysis - Time-series analysis
- Multi-visualization studio including dynamic dashboards, custom story-board designs and organization.
- Organization of visuals, graphs, tables and presentation in an understandable format using gifs, animations and word art.

Key Questions

- Which Countries have the highest amount of Deaths due to the virus ?
- Where are the highest incidence of COVID-19 populations?
- How has the pandemic effected the world's economy?
- What is the future of the COVID-19 if left un-checked?

The Data

COVID-19 Dataset

Unemployment Data

GitHub Repository

Tableau Presentation Link

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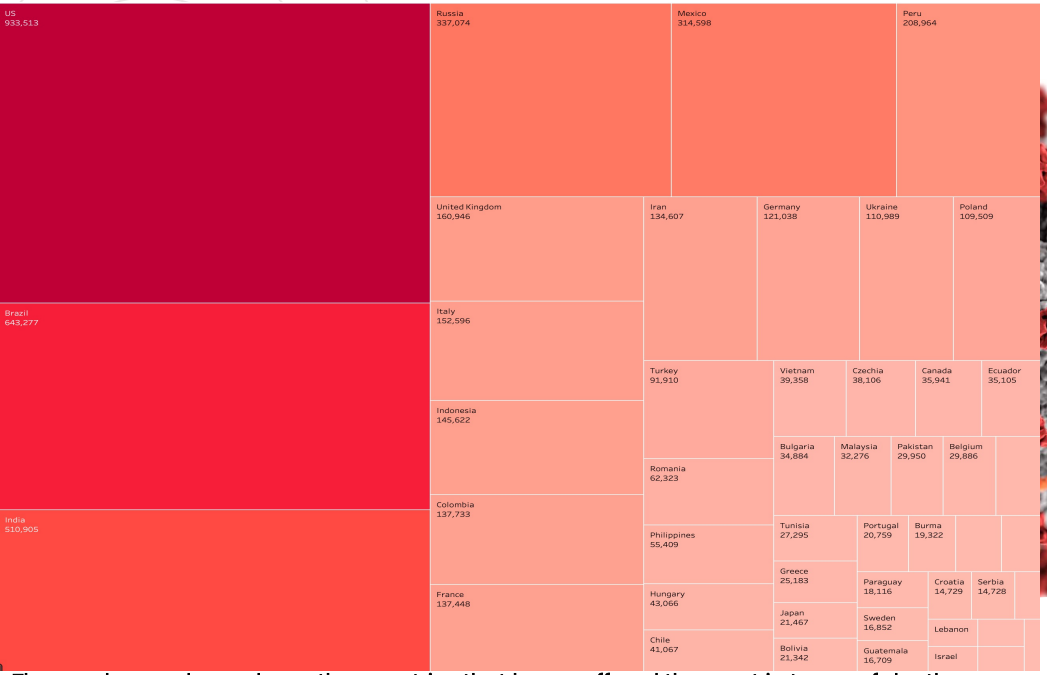
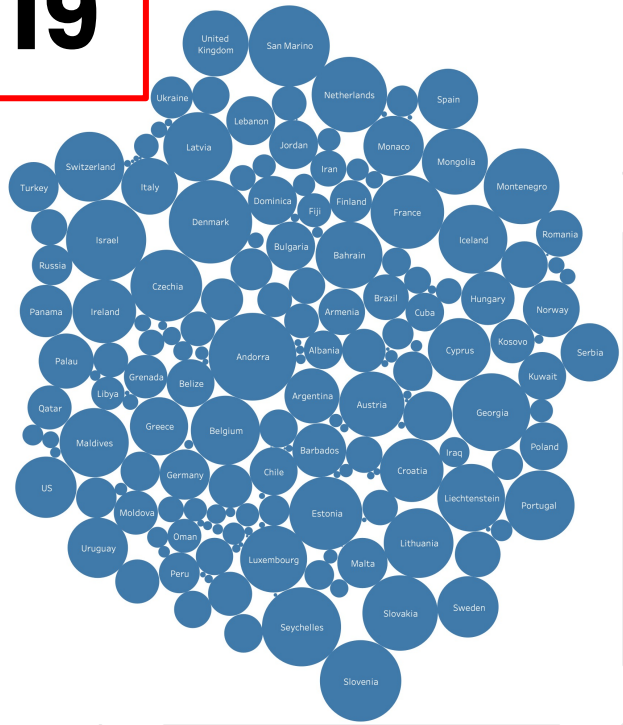


The word map above shows the countries that have suffered the most in terms of deaths since the start of the COVID-19 pandemic to today. USA, Brazil and India stand out as the highest number of deaths overall and places where economies have suffered just as much as the people.



This illustration above shows us which countries have the highest incidence of COVID-19. Andorra, Denmark, San Marino and Georgia are notable as having an increased number of individuals with active disease. This can be the result of increased testing and awareness of the disease, by getting more people tested, more individuals can be found to have the disease, quarantine and help decreased the spread.

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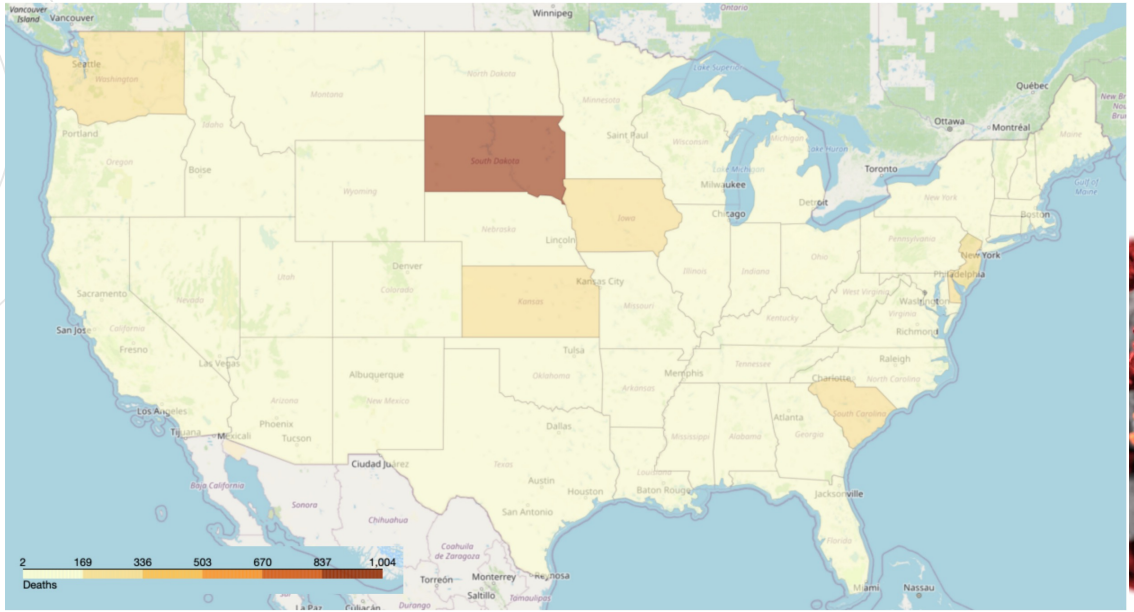

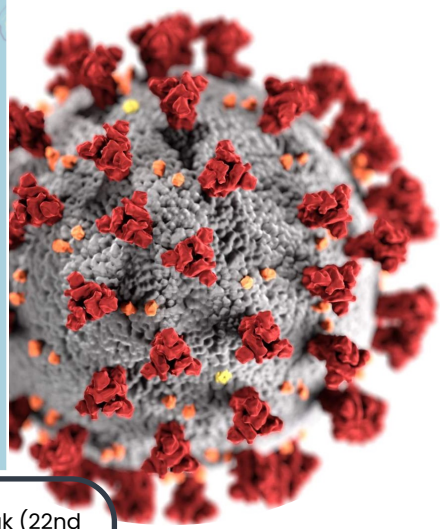

The python generated *choropleth* map above indicates that during the early stages of the the COVID-19 outbreak (22nd January to 27th July 2020) within the U.S. where South Dakota, Iowa, Kansas, Washington, New Jersey and South Carolina were among the hardest hit in terms of mortality count.

Based on this information, we see that the U.S. was not severely affected with the Pandemic but the spread of COVID-19 virus was ramapant with no safety controls in place.

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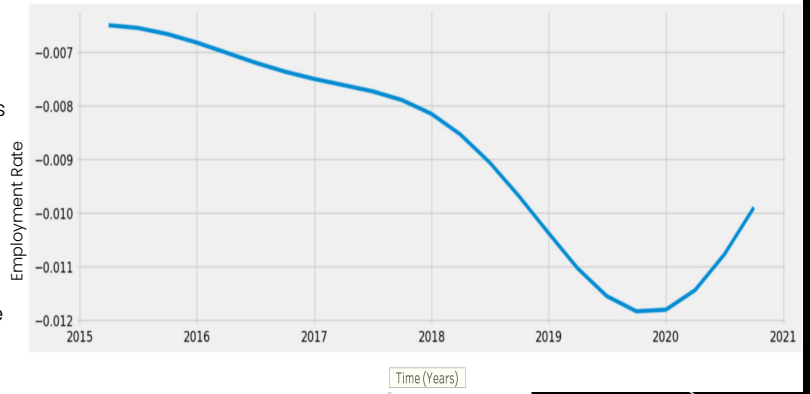
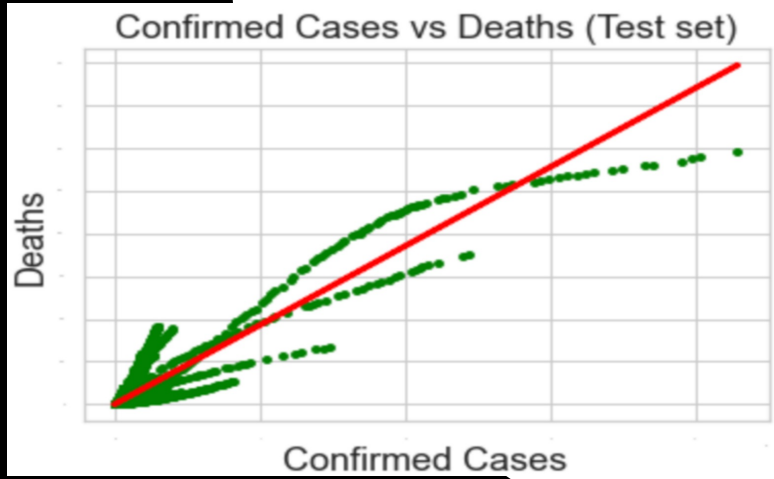
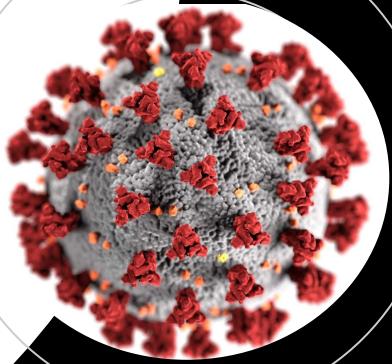
By doing a time series analysis using python, we can study the effect COVID-19 has had on the un-employment rate in the world.
The un-employment rate, one of the indicators of economic status among various countries of the world, has seen a upward trend since the start of the pandemic in late 2019/early 2020.
Although the un-employment data was showing a (-) negative trend before the pandemic as seen in the time series plot on the right, we clearly note an upward curve due to the COVID-19 pandemic.





Looking to the future of the pandemic, using a supervised machine learning linear regression model, trained and tested in python, we can see that if enough people get tested and have confirmed (+) COVID-19 tests, and increased number deaths will result. Although this does not prove a cause and effect relationship it does gives us the opportunity to makes the necessary changes such as wearing masks, vaccinating and following safety guideline set by the CDC to "curve the spread" of this deadly killer.



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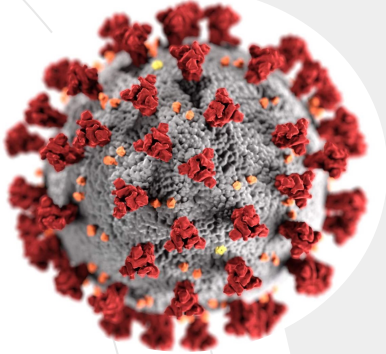

The Covid-19 pandemic has taken a heavy toll on the human population overall in the world.

Countries that lack up-to-date medical supplies and technologies as well as hospital access are the ones that have the highest mortality rates.

In the early stages of COVID-19 spread, the U.S. noted near exponential increases in cases leading to deaths.

The economic toll that COVID-19 took on the world economy is significant leading to decreases in jobs, decreased incomes and a overall down-turn of consumer spending.

If left un-checked, the future battle against controlling the COVID-19 pandemic looks bleak in terms of the potential deaths the virus can cause.

Virus awareness and education is still needed in countries that lack proper care and preventative measures to help further "curve the spread" and decreases possible mutations that may "escape" the vaccination protocol.