



Nigeria COVID-19 Data Analysis using Python

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Project Overview

- Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus, and it has affected major parts of the world. Nigeria, a West-African country, has also been affected by the COVID-19 pandemic after recording its first case on 27th February 2020.
- Nigeria is a country with 37 states - Federal Capital Territory included- and a fast-growing economic environment with about 200 million citizens. COVID-19 has affected several country activities as the country steadily progressed from its first case to shutting down major airports, statewide lockdown, curfews, and reviving its economy.
- In this project, we will employ data science & analytics skills to collect data, explore the data, perform analysis, create visualizations, and generate insights.

Data Sources

- [The Nigeria Centre for Diseases Control \(NCDC\)](#)
 - monitors the country's COVID-19 situation, and releases data on metrics across all the 37 states (including FCT) in the country.
- [The Johns Hopkins University Center for Systems Science and Engineering \(JHU CSSE\)](#)
 - publishes daily data on confirmed, death and recovered cases across different countries.
- **Nigeria Community Vulnerability Index data**
 - The vulnerability index was computed by considering several factors such as socioeconomic status, population density, housing type, transportation, epidemiological, health system
- **Real Domestic Gross Product Data**
- **State Budget Data**

Data Collection

- [NCDC website](#) was scraped using the python library called BeautifulSoup.
- John Hopkins Data were imported from their [GitHub repository](#)
- Vulnerability index data, Budget data and GDP data were made available locally by the Ustacky Team.



DATA AND FEATURES

NCDC

- States Affected
- No. of Cases (Lab Confirmed)
- No. of Cases (on admission)
- No. Discharged
- No. of Deaths

John Hopkin's Repository

- Global confirmed cases
- Global recovered cases
- Global death cases

Community Vulnerability Index

- states
- Region
- Population
- Overall CCVI Index
- Age
- Epidemiological
- Fragility
- Health System
- Population Density
- Socio-Economic
- Transport Availability
- Acute IHR

Real Domestic Gross Product

- Year
- Q1
- Q2
- Q3
- Q4

State Budget Data

- States
- Initial budget
- Final budget

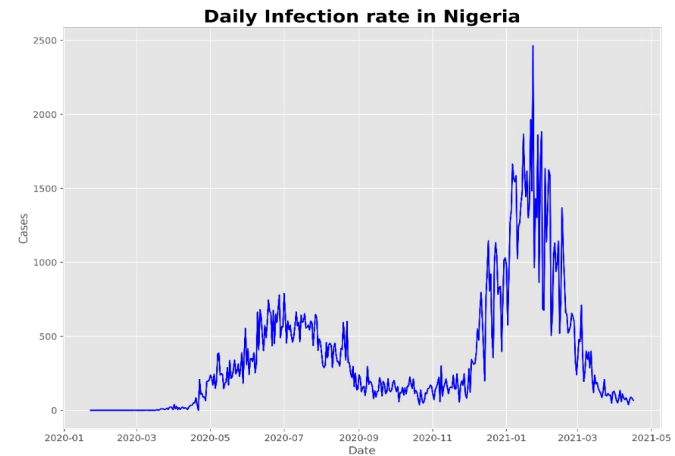
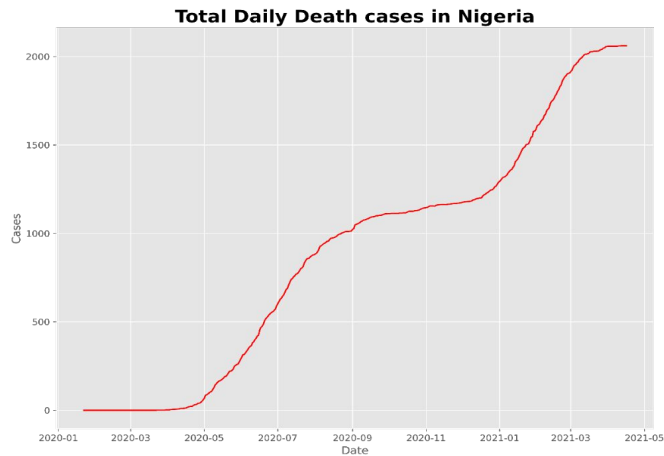
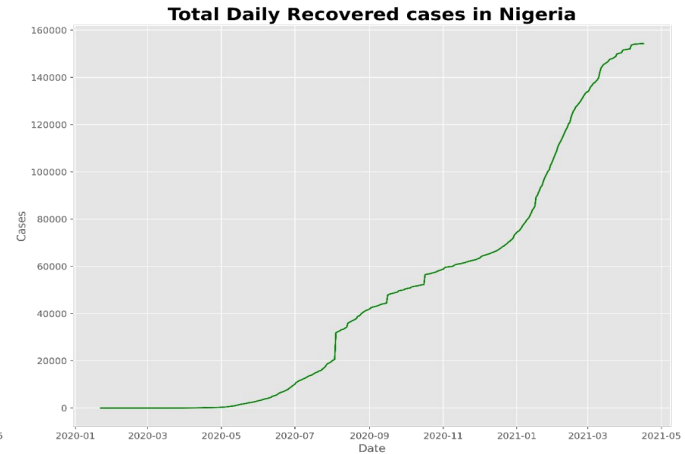
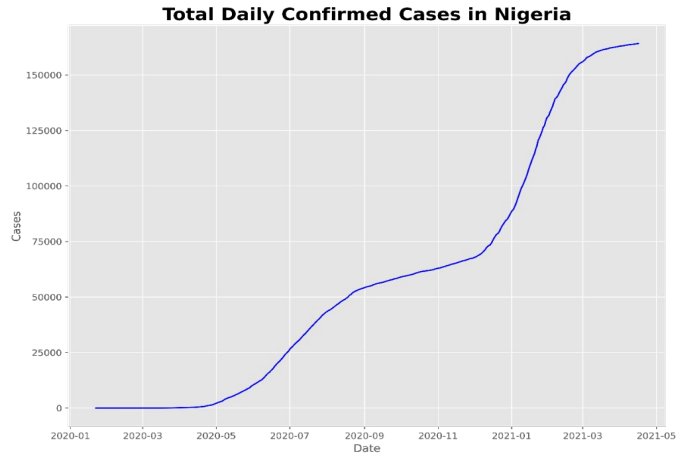
Analysis and Visualization

- Trends in Confirmed, Admitted, Discharged and Death Cases
- Relationship Between Confirmed Cases and Community Vulnerability

Index

- Impact of Covid-19 on States Budget
- Impact of Covid-19 on Nigeria's Real GDP

Trends



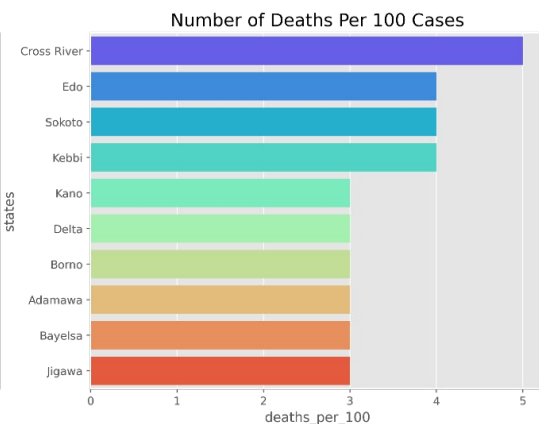
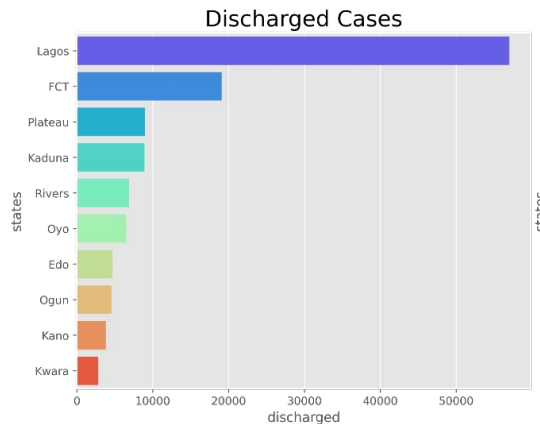
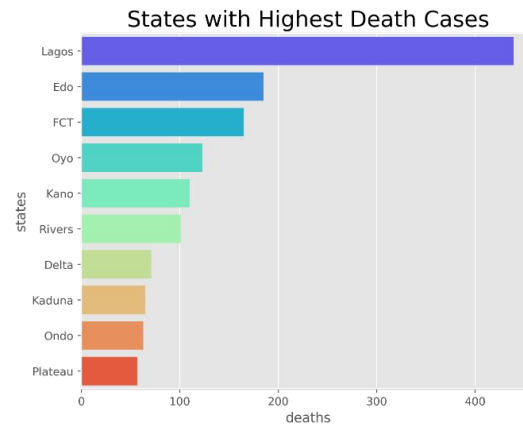
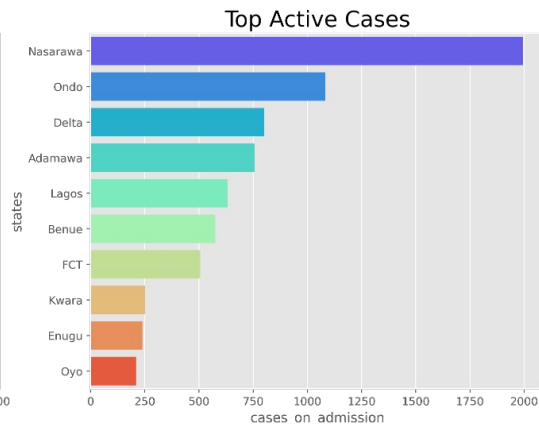
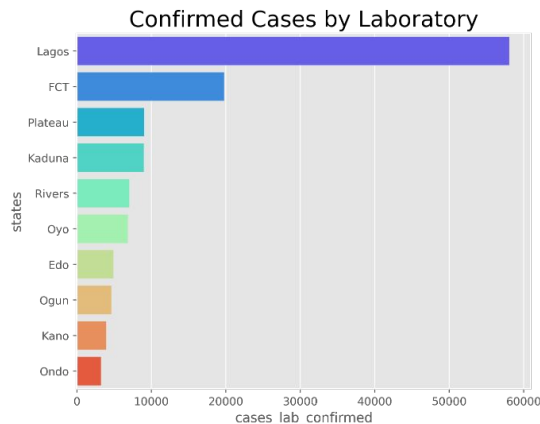
Deductions



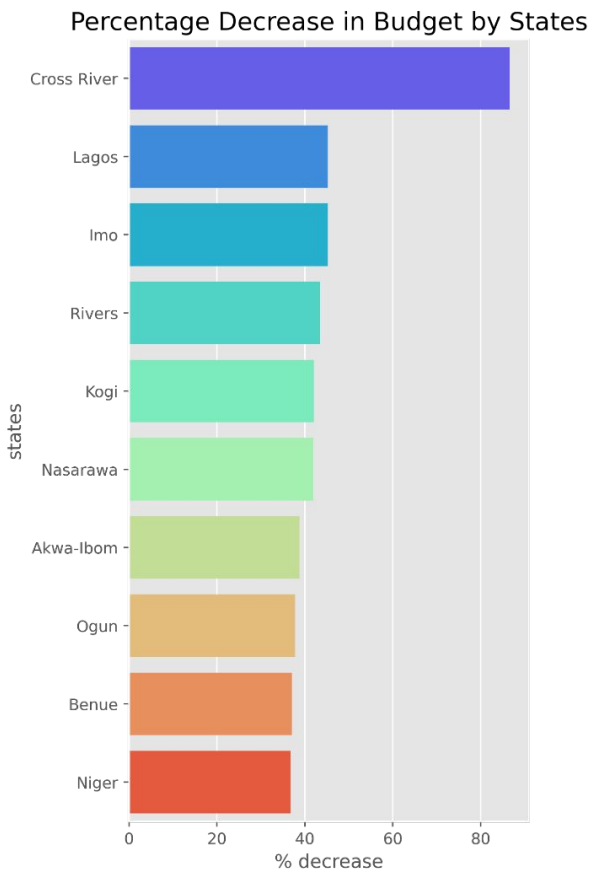
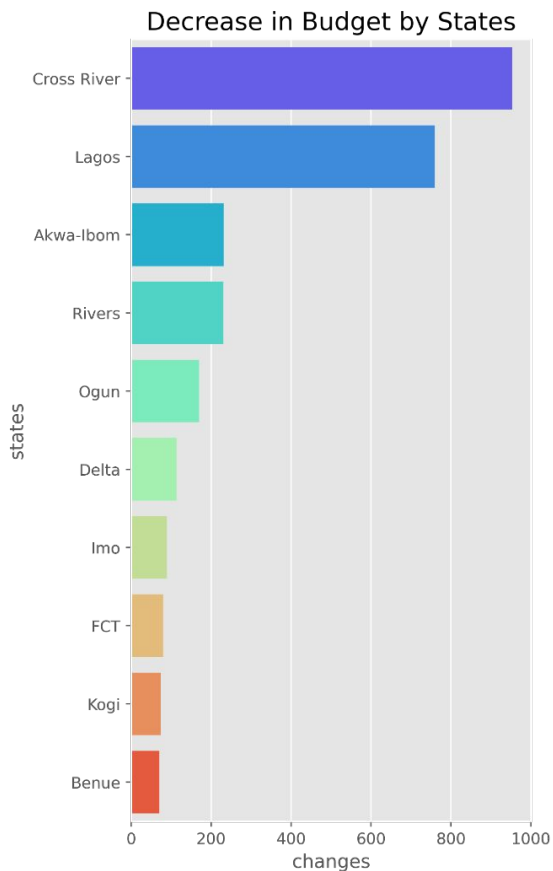
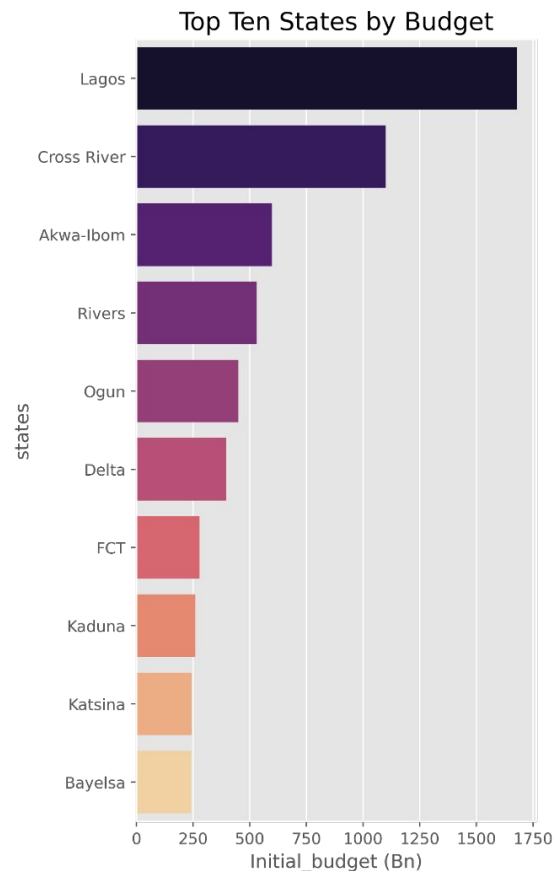
- The number of confirmed cases, discharged cases, and recorded deaths, generally follow similar trends.
- The rates are reduced as trends tend to flatten as people start to normalize covid-19 preventive protocols.
- However, as the festive period draws close, lockdown measures are relaxed, and activities increase, the trend line starts to go upwards.
- The maximum infection rate was recorded on the 17th of December, 2020.



Top States Affected

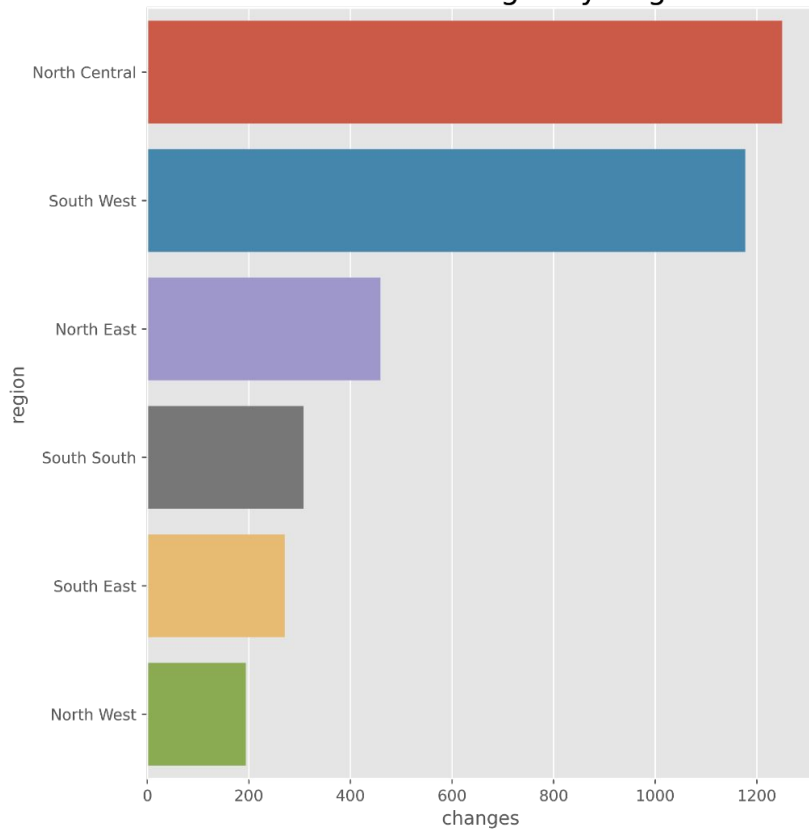


Impact of Covid-19 on Budget

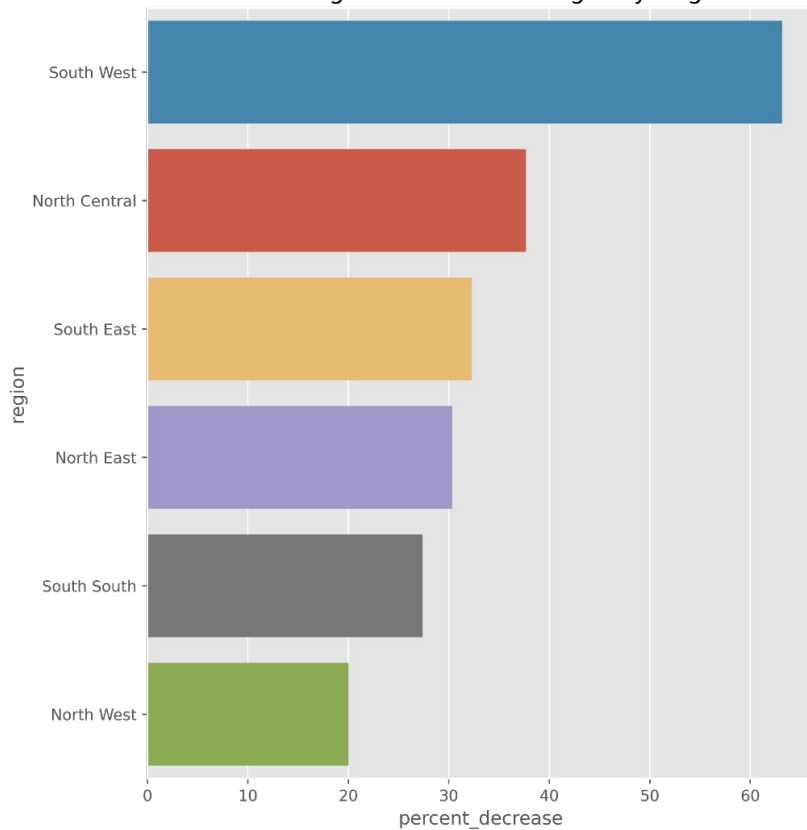




Decrease in Budget by Region



Percentage Decrease in Budget by Region

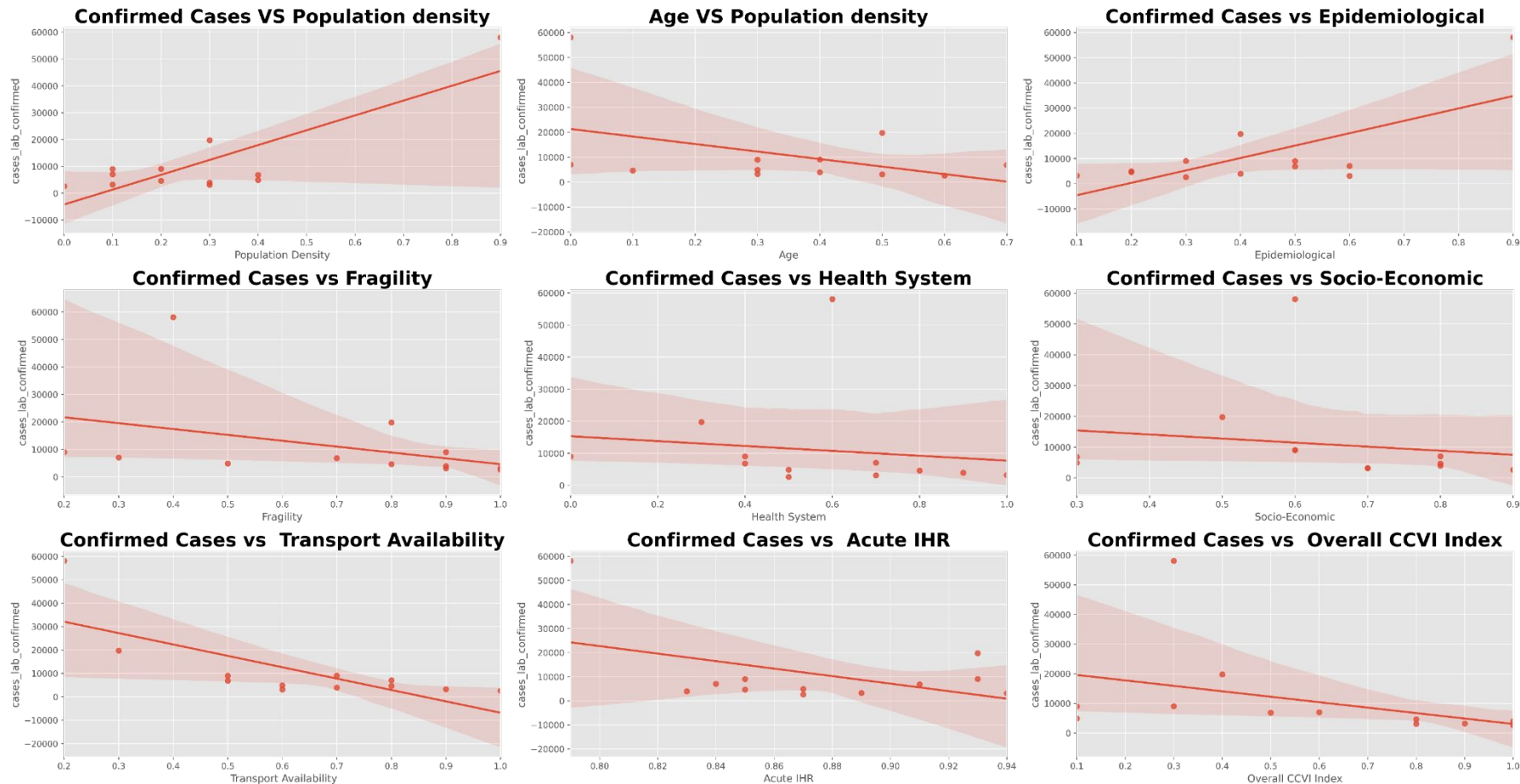


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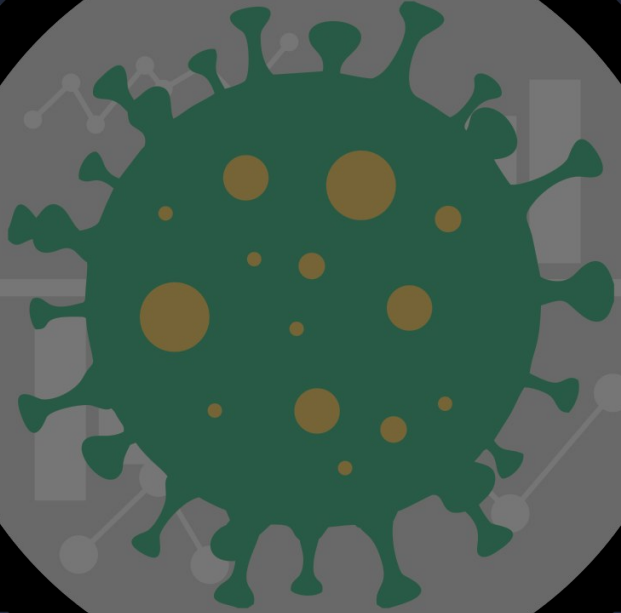


- Total budget reduced by about 40% across states. However some states are more affected.
- Generally, states with the highest budgets are most affected. Cross River (highly dependent on tourism), oil producing states, and Lagos (Nigeria's commercial epicenter) are impacted most by the budget cuts.
- The unproductive period of these revenue-generating states, due to lockdown, was felt across the nation.

Confirmed Cases VS Vulnerability Index



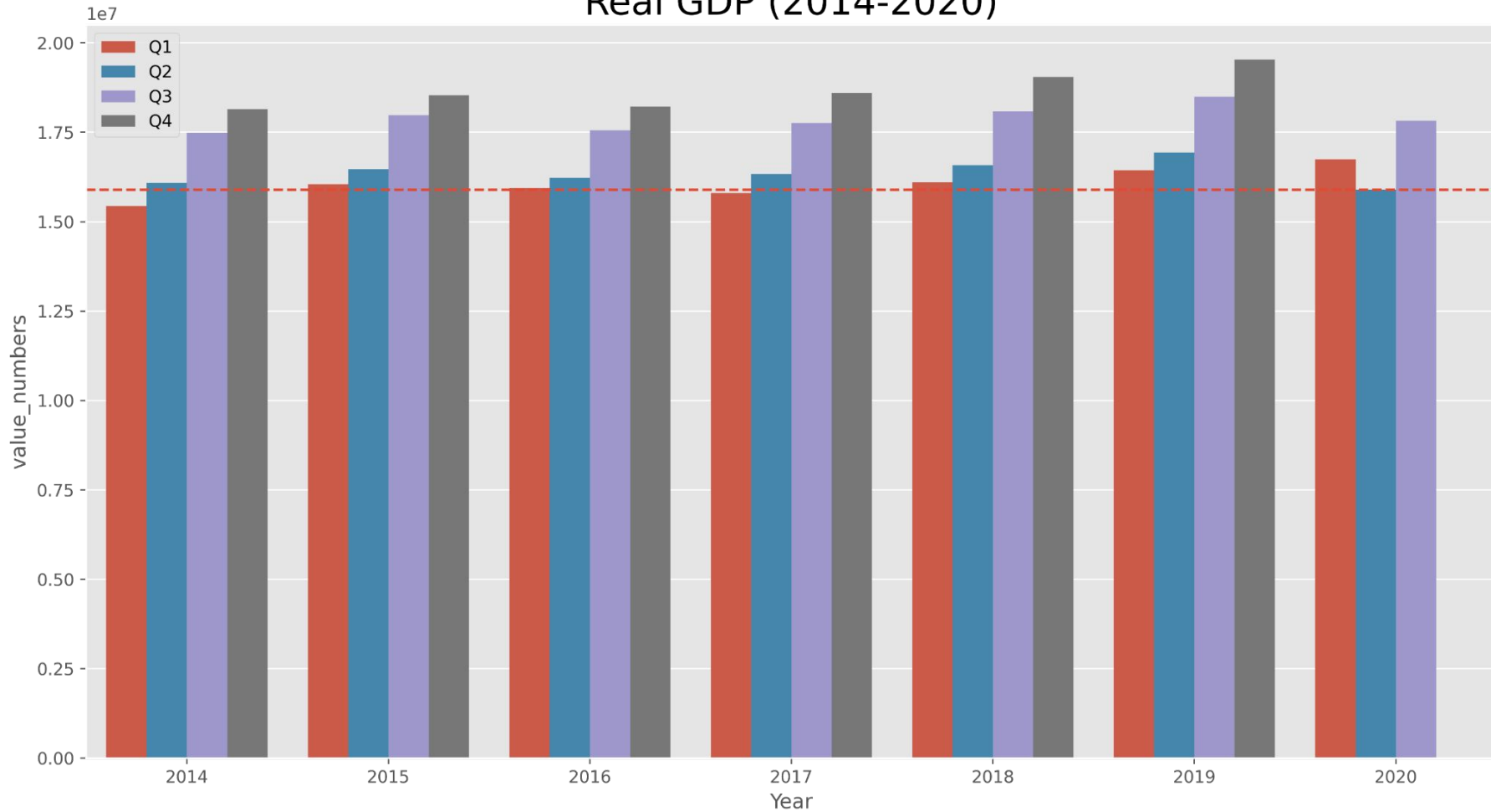
Deductions



- Since this analysis was carried out for states that account for 80% of total confirmed cases, the sample size(12) means only high correlating pairs are statistically significant.
- The correlation plots show strong relationships between confirmed cases and population density, epidemiological index, and transport availability.
- From the correlation plot of the overall CCVI index against total confirmed cases, we can see the indexes' intricate relationship. A weak correlation suggests that how one index affects a state is different from another, depending on the effects of other indexes.
- Each state, therefore, needs to be studied for their specific situations.



Real GDP (2014-2020)




Deductions



- The GDP in 2020, especially for Q2 when total lockdown was observed, was at a record low.
- The impact of the lockdown on the major economic states resulted in Nigeria slipping into her [worst recession since the 1980s](#).
- Although growth in GDP was experienced in the third quarter- which signifies economy recovery post lockdown- the rate is low when compared to GDP of 2019 Q3.



Summary

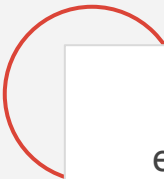


There is a positive correlation between states' population and the number of cases confirmed, emphasizing the contact-dependent nature of covid-19 transmission.


The lockdown enforced by the emergence of this virus had a big impact on revenue-generating states' economy, which eventually led to Nigeria's economy slipping into its worst recession since the 1980s.

The government should make continuous efforts to ensure citizens continue to abide by the preventive guidelines to avoid another lockdown and health crises.

Recommendations

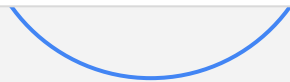


Government should continue to enforce strict covid-19 prevention protocols as another total lockdown will have an adverse effect on the Economy



A time-series analysis should be carried out in future studies to forecast future trends in cases and deaths

The effect of covid-19 vaccine on these trends should also be studied



Age and other relevant data of covid-19 patients should be made available for better understanding of trends.

