

NIGERIA COVID-19 ANALYSIS



EXECUTIVE SUMMARY

INTRODUCTION

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, state-wide lockdown, curfews, and reviving its economy.

PURPOSE OF REPORT

To employ data science & analytics skills to collect data;

Explore the data;

Perform analysis;

Create visualizations;

and Generate insights.

REASON FOR THE REPORT(Objectives)

Understand data collection process, in this case web scraping, and importing from data sources

- Understand the data cleaning and manipulation process.
- Develop data wrangling skills & data intuition.
- Know how to ask the right questions & find ways to provide answers.
- Develop visualization skills through the use of open-source libraries in Python.
- Generate insights from analysis.

SUMMARY

This analysis will collect data from multiple sources and clean it to suit the required specifications and make good use of Pandas method and functions, use of visualization tools to communicate insights and arrive at a valid conclusion after analysis in order to support analysis with detailed summary of findings on Covid19 in Nigeria.

BODY

DATA OVERVIEW

The data source is divided into different parts, and you will combine the data to perform analysis and provide insights.

1. The Nigeria Centre for Diseases Control (NCDC) monitors the country's COVID-19 situation, and releases data on metrics across all the 37 states in the country. From NCDC COVID-19 [official website](#), you will obtain the data by performing a web extraction or web scraping.

2. The Johns Hopkins University Center for Systems Science and Engineering (JHU CSSE) publishes daily data on confirmed, death and recovered cases across different countries. You will access the daily data for Nigeria from their [repository](#) and derive related insights. Steps on how to do this will be provided in the starter code.

3. Nigeria Community Vulnerability Index data

The vulnerability index was computed by considering several factors such as socio-economic status, population density, housing type, transportation, epidemiological, health system etc, these factors are known as themes. Each theme was broken into subthemes, and data was gathered from them to compute the overall vulnerability index score by weighing equally each theme. You can use the index data with datasets related to the pandemic such cases, deaths etc to determine relationships and correlations in your analysis.

Note that:

- The term "vulnerability" refers to the impact of the virus on a community after the virus arrives.
- It ranks from Very Low(0) to Very High(1+)

Refer to the [Data Dictionary](#) for more information.

Resource Link - Click [Here](#)

4. Real Domestic Gross Product Data

We have provided data on the Real Domestic Gross Product(GDP) data for Nigeria. This will help you determine the impact of COVID-19 on the economy. You can achieve this by comparing the Real GDP(Pre-COVID-19) with Real GDP(During COVID-19).

- Read more <https://www.aljazeera.com/news/2020/11/21/nigeria-slips-into-recession-blamed-on-covid-19-and-oil-prices>

- <https://www.pwc.com/ng/en/assets/pdf/economic-alert-october-2020.pdf>

5. State Budget Data

States across the country reduced their initial budget due to the impact of COVID-19 on the economy. We have provided you with data on this, and you can also use this to determine the impact of COVID-19 on the economy.

METHODS

Data wrangling from NCDC website using BeautifulSoup

Import all libraries like pandas, matplotlib, csv etc.

Save the data to a DataFrame object; the NCDC scrapped data was saved into **data**,

data from the John Hopkins Repository was saved in its order respectively as

confirmedC; **recoveredC** and **deathC** .

The external data was saved as **covidext** from covid_external.csv, **budgetd** from Budget data.csv, **RealGDP** from RealGDP, **Cnig** from Covidnig.csv

From the information obtained, there is need to fix the data format to the correct datatypes, objects were changed to integers also.

Data Visualizations can be seen in barplots, lineplots, regplots

ANALYSIS AND INSIGHTS

The Analysis made with various methods above can be seen in the following images below and their insights

1.NCDC

	states	Lab_Confirmed_Cases	Cases on admission	Discharged	Deaths
0	Lagos	102,332	979	100,582	771
1	FCT	28,949	167	28,533	249
2	Rivers	17,252	383	16,715	154
3	Kaduna	11,402	88	11,225	89
4	Oyo	10,311	49	10,060	202

Insight

From the table above is a scrapped data gotten from the NCDC website, the table from the analysis, Lagos is the state with the highest Lab Confirmed cases in Nigeria, Cases on admission and deaths with Kogi having the least number of cases.

2. John Hopkins Repository Data

Confirmed Cases

	Province/State	Country/Region	Lat	Long	1/22/20	1/23/20	1/24/20	1/25/20	1/26/20	1/27/20	...	7/21/22	7/22/22	7/23/22	7/24/22	7/25/22
0	NaN	Afghanistan	33.93911	67.709953	0	0	0	0	0	0	...	184224	184360	184473	184587	184819
1	NaN	Albania	41.15330	20.168300	0	0	0	0	0	0	...	301394	302767	303925	304890	305123
2	NaN	Algeria	28.03390	1.659600	0	0	0	0	0	0	...	266654	266700	266772	266839	266916
3	NaN	Andorra	42.50630	1.521800	0	0	0	0	0	0	...	45326	45326	45326	45326	45326
4	NaN	Angola	-11.20270	17.873900	0	0	0	0	0	0	...	102209	102301	102301	102301	102301

5 rows × 925 columns

Recovered Cases

	Province/State	Country/Region	Lat	Long	1/22/20	1/23/20	1/24/20	1/25/20	1/26/20	1/27/20	...	7/21/22	7/22/22	7/23/22	7/24/22	7/25/22
0	NaN	Afghanistan	33.93911	67.709953	0	0	0	0	0	0	...	7738	7738	7738	7738	7738
1	NaN	Albania	41.15330	20.168300	0	0	0	0	0	0	...	3521	3523	3525	3527	3529
2	NaN	Algeria	28.03390	1.659600	0	0	0	0	0	0	...	6875	6875	6875	6876	6876
3	NaN	Andorra	42.50630	1.521800	0	0	0	0	0	0	...	153	153	153	153	153
4	NaN	Angola	-11.20270	17.873900	0	0	0	0	0	0	...	1912	1912	1912	1912	1912

5 rows × 925 columns

Death Cases

	Province/State	Country/Region	Lat	Long	1/22/20	1/23/20	1/24/20	1/25/20	1/26/20	1/27/20	...	7/21/22	7/22/22	7/23/22	7/24/22	7/25/22
0	NaN	Afghanistan	33.93911	67.709953	0	0	0	0	0	0	...	7738	7738	7738	7738	7738
1	NaN	Albania	41.15330	20.168300	0	0	0	0	0	0	...	3521	3523	3525	3527	3529
2	NaN	Algeria	28.03390	1.659600	0	0	0	0	0	0	...	6875	6875	6875	6876	6876
3	NaN	Andorra	42.50630	1.521800	0	0	0	0	0	0	...	153	153	153	153	153
4	NaN	Angola	-11.20270	17.873900	0	0	0	0	0	0	...	1912	1912	1912	1912	1912

Insight

The John Hopkins Data was able to provide daily data on countries around the world based on Confirmed Cases, Recovered Cases and Death Cases giving the opportunity for each country to see the daily records of other countries.

3. External Data

3. Covid External

	states	region	Population	Overall CCI Index	Age	Epidemiological	Fragility	Health System	Population Density	Socio-Economic	Transport Availability	Acute IHR
0	FCT	North Central	4865000	0.3	0.0	0.9	0.4	0.6	0.9	0.6	0.2	0.79
1	Plateau	North Central	4766000	0.4	0.5	0.4	0.8	0.3	0.3	0.5	0.3	0.93
2	Kwara	North Central	3524000	0.3	0.4	0.3	0.2	0.4	0.2	0.6	0.7	0.93
3	Nassarawa	North Central	2783000	0.1	0.3	0.5	0.9	0.0	0.1	0.6	0.5	0.85
4	Niger	North Central	6260000	0.6	0.0	0.6	0.3	0.7	0.1	0.8	0.8	0.84

4. Budget Data

	states	Initial_budget (Bn)	Revised_budget (Bn)
0	Abia	136.60	102.70
1	Adamawa	183.30	139.31
2	Akwa-Ibom	597.73	366.00
3	Anambra	137.10	112.80
4	Bauchi	167.20	128.00

5. Real GDP

	Year	Q1	Q2	Q3	Q4
0	2014	15438679.50	16084622.31	17479127.58	18150356.45
1	2015	16050601.38	16463341.91	17976234.59	18533752.07
2	2016	15943714.54	16218542.41	17555441.69	18213537.29
3	2017	15797965.83	16334719.27	17760228.17	18598067.07
4	2018	16096654.19	16580508.07	18081342.10	19041437.59

6. Covidnig

	States Affected	No. of Cases (Lab Confirmed)	No. of Cases (on admission)	No. Discharged	No. of Deaths
0	Lagos	26,708	2,435	24,037	236
1	FCT	9,627	2,840	6,694	93
2	Kaduna	4,504	579	3,877	48
3	Plateau	4,262	280	3,948	34
4	Oyo	3,788	368	3,374	46

7. Nigeria Daily Cases

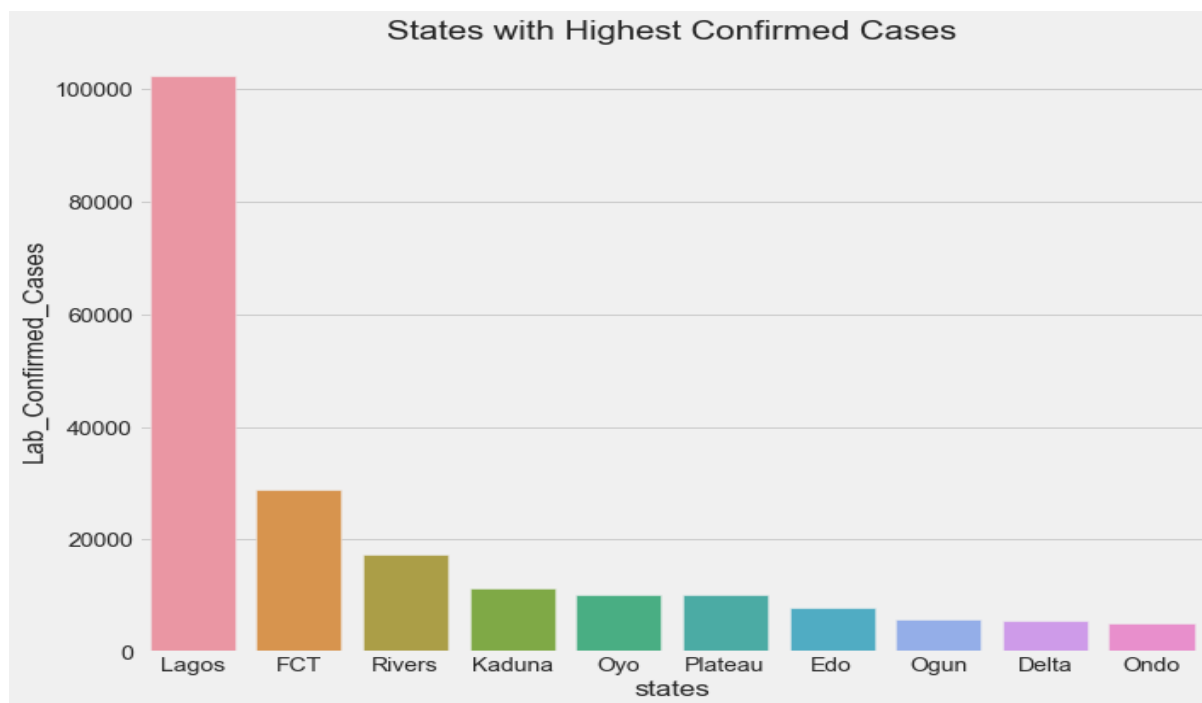
	Dates	Confirmed	Recovered	Deaths
915	2022-07-26	260764	0	3147
916	2022-07-27	260764	0	3147
917	2022-07-28	260977	0	3147
918	2022-07-29	260977	0	3147
919	2022-07-30	260977	0	3147

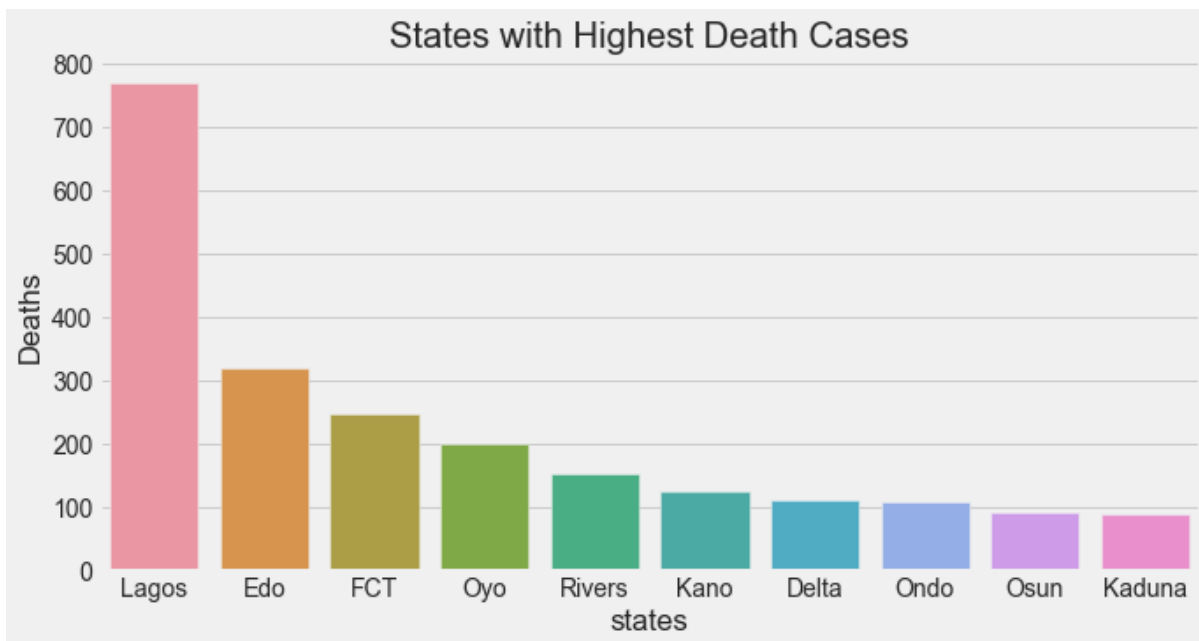
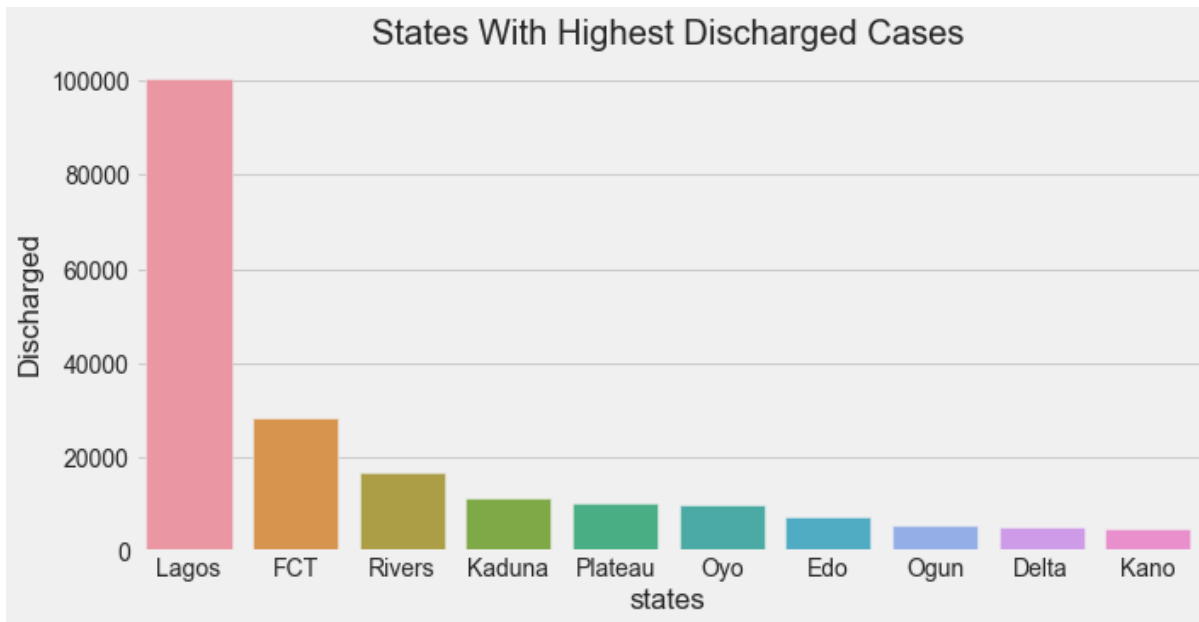
Insight

From the above we were able to get daily confirmed, recovered and death cases of Nigeria.

With the current record as of 30th July 2022, Nigeria has 260977 Confirmed cases; 0 Recovered Cases and 3147 Deaths.

Analysis of Charts:





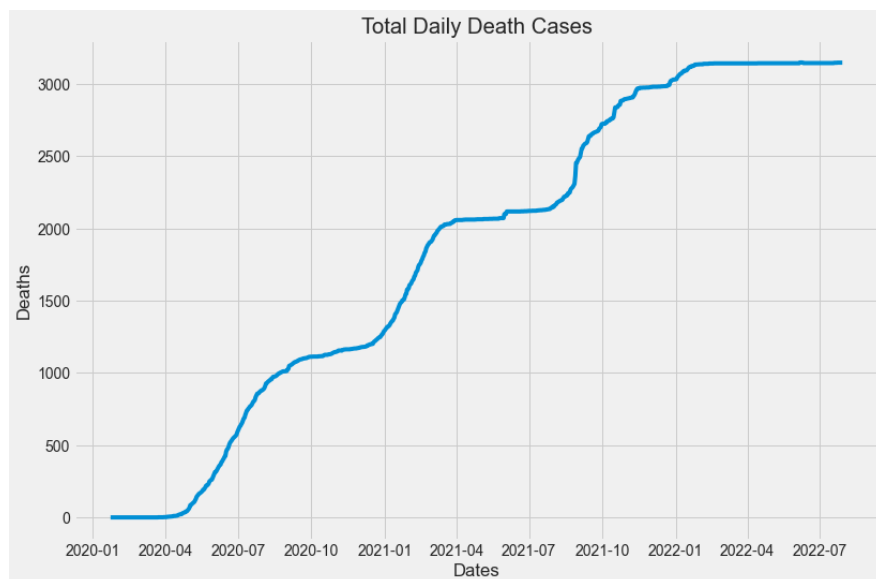
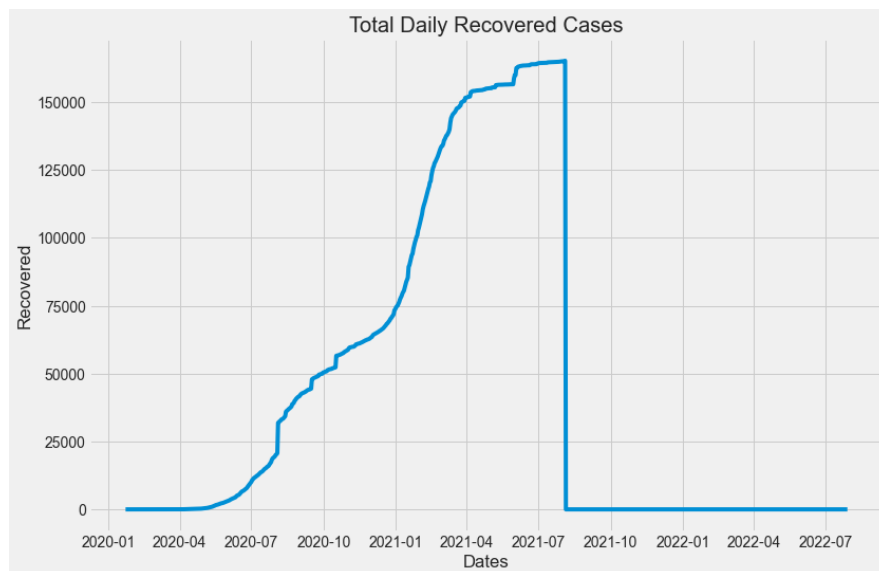
Insight

From the chart, it is evident that the top 10 states with the most confirmed cases are: Lagos, FCT, Rivers, Kaduna, Oyo, Plateau, Edo, Ogun, Delta and Ondo, while the top 10 states with;

the most discharged cases are: Lagos, FCT, Rivers, Kaduna, Plateau, Oyo, Edo, Ogun, Delta and Kano, also;

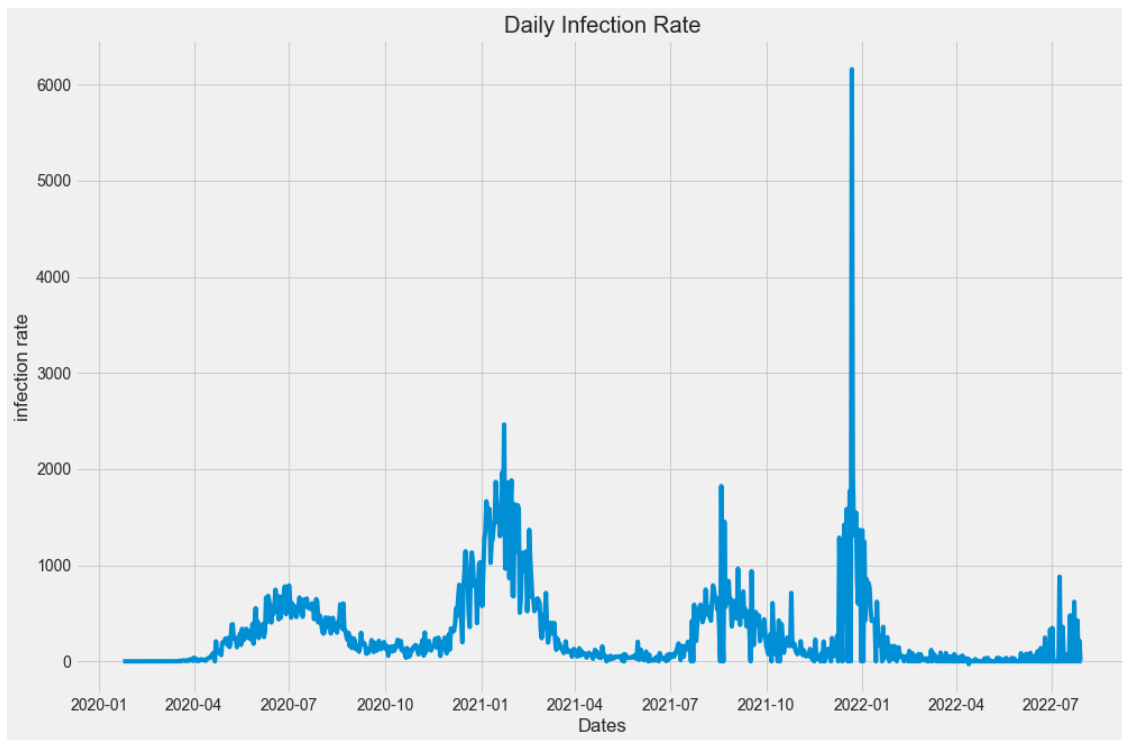
the top 10 states with death cases are: Lagos, Edo, FCT, Oyo, Kano, Rivers, Kano, Delta, Ondo, Osun and Kaduna.

It should be noted that most of the states with the most lab confirmed cases have the most discharged cases and death cases.



Insight

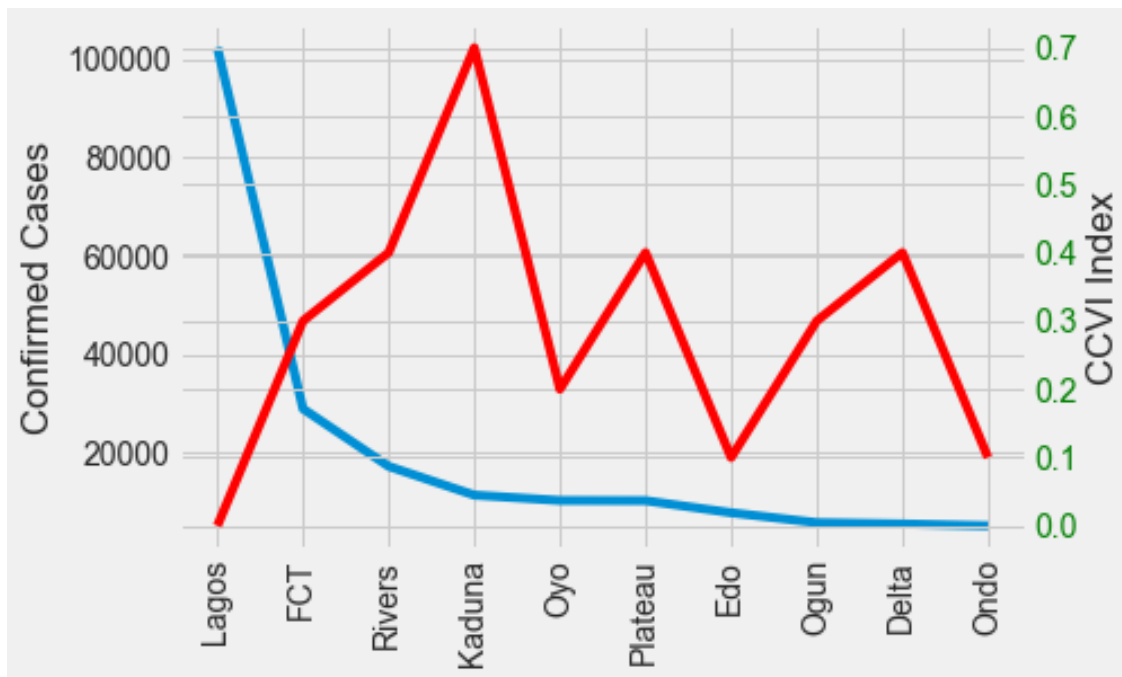
From these line plots, it is evident that the rate of daily confirmed cases moves in almost the same rate as daily recovered cases until July 2021 where there was a drop but the death cases also kept increasing in correlation with rise in number of confirmed Cases.



Insight

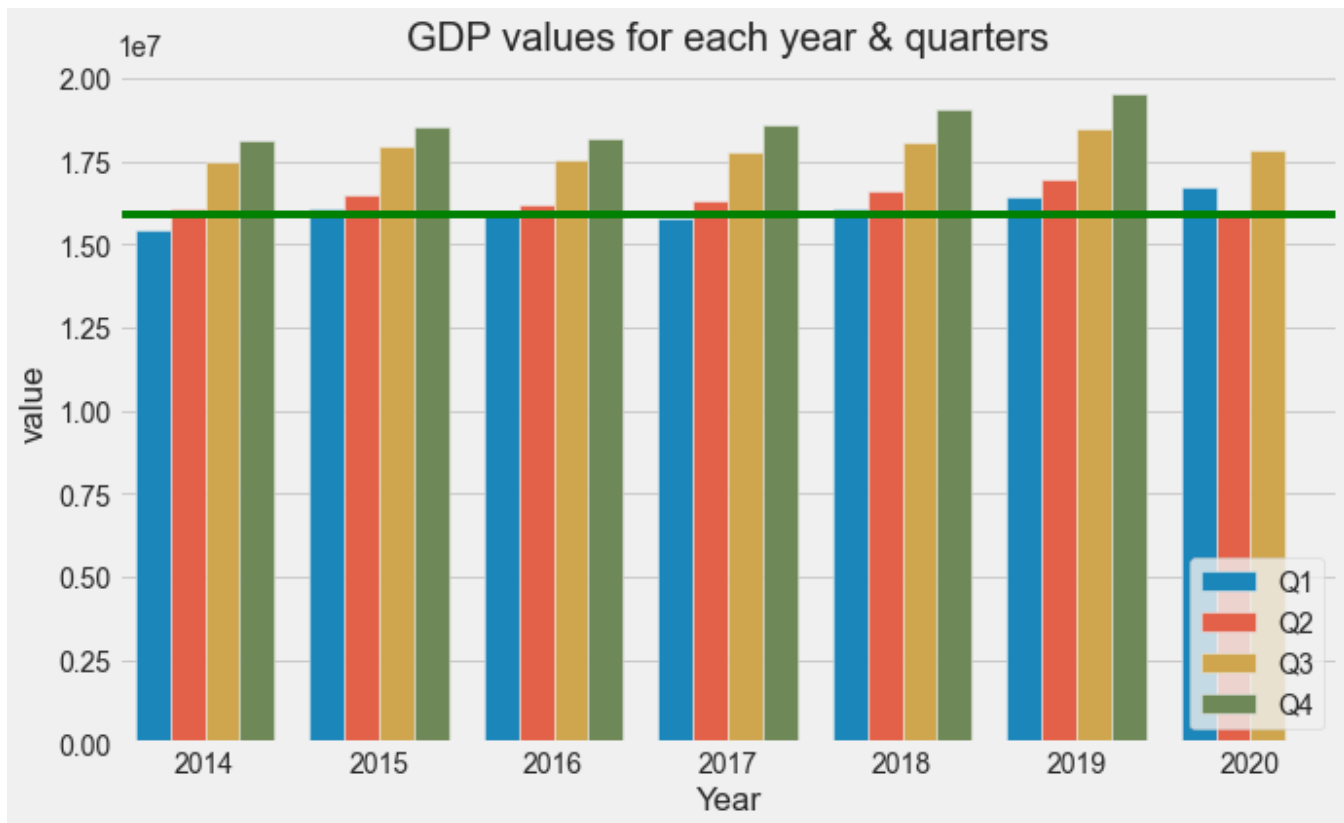
From this line plot, it is evident that the rate of daily infection began to rise around April 2020, then slows down for a while, then again, speeds up in December 2020 till after which, the rate of daily infection keeps slowing down up with the highest rise in December 2021 up to this time of analysis.

The maximum infection rate for a day in Nigeria is 6158.0
The date of maximum infection rate is 22nd December, 2021



Insight:

This line plot shows the top 10 states with Confirmed COVID19 Cases and their Overall Community Vulnerability Index (CCVI). From the plot, the following observations are from the graph; Lagos with highest number of confirmed cases has least ccvi index, Edo and Ogun with low number of confirmed Cases also have low ccvi index, Kaduna has the highest ccvi index with low confirmed cases hence there is no direct correlation to explain.



Insight

The year 2020 recorded its lowest Real GDP as of the time of this analysis, in its second quarter(Q2) which is the lowest Real GDP for Q2 recorded from the Year 2014 till 2020 and this could be associated with the effect of the pandemic on the country as at the time, since the Real GDP of Nigeria Pre-COVID19, especially during the second quarters (Q2) is higher than the present Q2 for 2020.

CONCLUSION

A good understanding of data collection process, in this case web scraping, and importing from data sources including data cleaning and manipulation process, Also had the opportunity to Know how to ask the right questions & find ways to provide answers with data analyses including but not limited to the Highest Infection rate date and number etc. The ability to Develop visualization skills through the use of open-source libraries like seaborn and matplotlib etc. finally also able to generate insights from analysis and thus asked questions like;

Why would states with very low Overall CCVI Index be among the top 10 states with Confirmed COVID19 Cases?

Nigeria is recording a decline in infection rate but still there is an immense need for Nigeria to really equip adequate facilities, upgrade health system and also provide immediate emergency response team to COVID19 Cases. Also, there is a need for people to still practice COVID19 safety measures, by regular handwashing, use of nose mask and avoiding crowded space. It is also advisable that all Nigerians should go and be administered with the Covid 19 Vaccine.