# COVID-19 VACCINE BY COUNTRY

## Team : Analyzers

**Team :**
**Neha Rani**
**Mohd. Badar Uz Zama**
**Harsha Adithya**

## Appendix

# INTRODUCTION

The COVID-19 pandemic has had far-reaching consequences on global health, economies, and societies. As the world grapples with this unprecedented crisis, vaccination has emerged as a critical tool in combating the spread of the virus. In this presentation, we will delve into the vaccination strategies employed by various countries to mitigate the impact of COVID-19. Our analysis draws upon two key datasets, namely "country_vaccination.csv" and "country_vaccination_by_manufacturer," which provide valuable insights into the types of vaccines utilized by different nations and their progress in terms of vaccination coverage. By examining this data, we can gain a comprehensive understanding of the diverse approaches taken by countries worldwide in their fight against the pandemic.

# Dataset Overview

The dataset is obtained from a public source, Kaggle.
**Sourcelink :** https://www.kaggle.com/datasets/gpreda/covid-world-vaccination-progress

Our primary focus will be on two crucial datasets: **"country_vaccination.csv"** and **"country_vaccination_by_manufacturer."** These datasets provide us with valuable insights into the vaccination strategies adopted by various countries, as well as the specific vaccine types administered. By delving into this information, we can gain a deeper understanding of how different vaccines have been employed to tackle the COVID-19 crisis on a global scale. Throughout this presentation, we will examine the distribution of vaccines across countries, identifying regions that have excelled in vaccination campaigns and those that require further support. We will analyze the efficacy of different vaccine types, their respective administration rates, and the impact they have had on reducing infection rates and hospitalizations.

**Rows/Items:** The number of rows/items in the dataset varies over time as new data is added. As of my knowledge cutoff date of September 2021, the dataset had over 69,000 rows, with each row representing a specific country's COVID-19 vaccination data for a specific date.

**Variables and their types in the Dataset :**
**Country:** Categorical variable indicating the country for which the vaccination information is provided.
**Country ISO Code:** Categorical variable indicating the ISO code for the country.
Date: Temporal variable indicating the date for the data entry.
**Total number of vaccinations:** Numerical variable indicating the absolute number of total immunizations in the country.
**Total number of people vaccinated:** Numerical variable indicating the number of people who have received at least one dose of the vaccine in the country.
Total number of people fully vaccinated: Numerical variable indicating the number of people who have received all recommended doses of the vaccine in the country.
**Daily vaccinations (raw):** Numerical variable indicating the number of vaccinations for that date/country.
**Daily vaccinations:** Numerical variable indicating the number of vaccinations for that date/country.

**Total vaccinations per hundred:** Numerical variable indicating the ratio (in percent) between vaccination number and total population up to the date in the country.
Total number of people vaccinated per hundred: Numerical variable indicating the ratio (in percent) between population immunized and total population up to the date in the country.
Total number of people fully vaccinated per hundred: Numerical variable indicating the ratio (in percent) between population fully immunized and total population up to the date in the country.
**Number of vaccinations per day:** Numerical variable indicating the number of daily vaccination for that day and country.
**Daily vaccinations per million:** Numerical variable indicating the ratio (in ppm) between vaccination number and total population for the current date in the country.
Vaccines used in the country: Categorical variable indicating the total number of vaccines used in the country (up to date).
**Source name:** Categorical variable indicating the source of the information (national authority, international organization, local organization, etc.).
**Source website:** Categorical variable indicating the website of the source of information.
Note: The second dataset mentioned (country vaccinations by manufacturer) has similar variables but with an additional variable for the vaccine type.

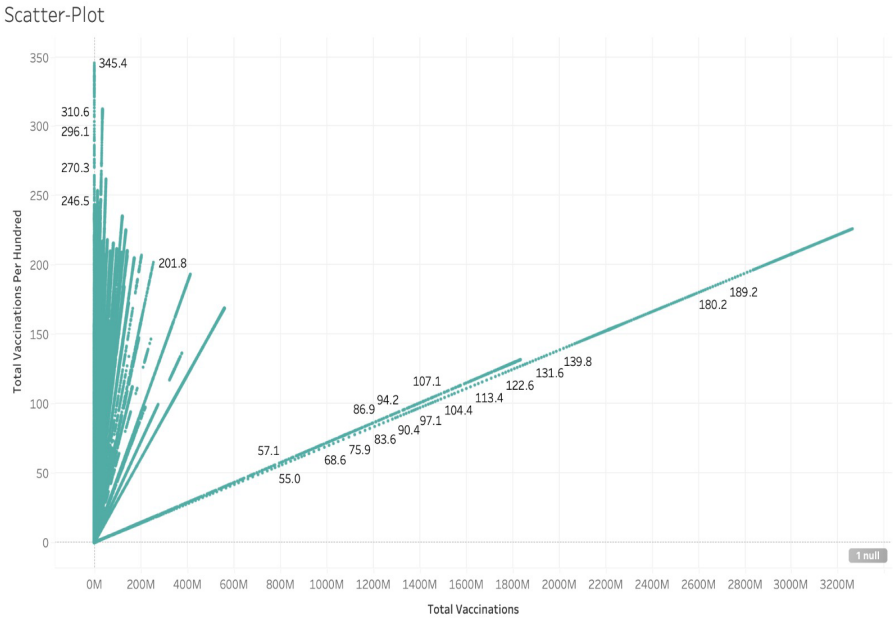
# Final Plan for Visualization

- To effectively present our analysis, we have developed a comprehensive plan for visualizing the data.
- Our goal is to provide clear and informative visual representations of the vaccination strategies across countries.
- We will utilize a variety of graphs and charts to showcase key insights.
- Scatter plots will be used to depict the correlation between vaccination rates and COVID-19 case rates, helping us understand the impact of vaccinations on the spread of the virus.
- Bar graphs will enable us to compare vaccination rates and doses administered among different countries, facilitating a comprehensive analysis of vaccination coverage.
  •The mosaic plot visually displays the distribution of vaccines across different locations. Each rectangle represents a combination of location and vaccine, with its area proportional to the number of observations. Colors indicate the "total_vaccinations" variable, and values show counts or proportions. This plot helps analyze vaccine distribution patterns quickly and effectively.
- these visualizations, we aim to provide a visually engaging and informative overview of the vaccination strategies employed by various countries.

# Visualizations – Plots and Graphs

## Scatter Plot

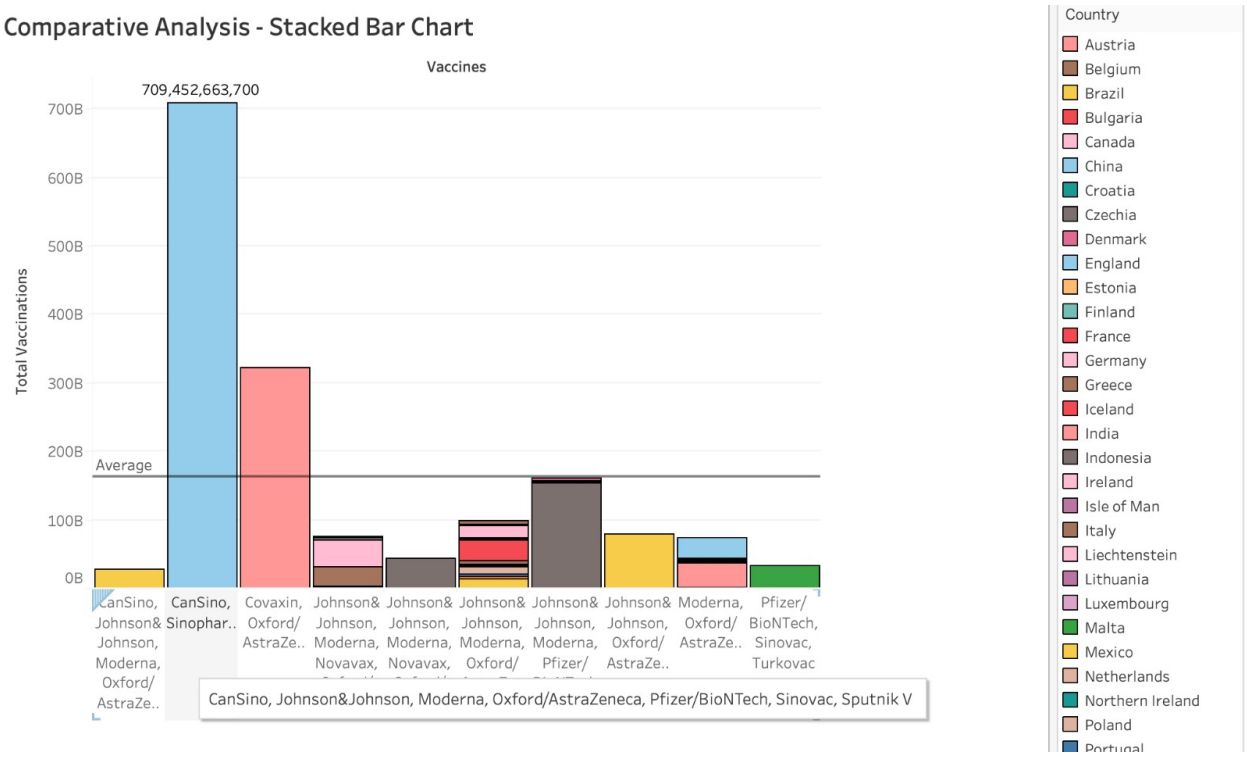
- The scatter plot will provide valuable insights into the relationship between two variables, X and Y.
- Variable X will be represented along the x-axis, while variable Y will be represented along the y-axis.
- Each data point from the dataset will be plotted on the scatter plot, with its corresponding X and Y values determining its position.
- If applicable, we may incorporate the use of size or color to represent an additional variable.
- The scatter plot will include clear axis labels, a descriptive title, and appropriate scaling to ensure easy interpretation and understanding.



# BAR GRAPH

We created a stacked bar chart to visualize the distribution of vaccine types across different countries. The chart displayed a set of bars, with each bar representing a country and the segments within the bar representing different vaccine types. Each segment's height indicated the proportion of vaccinations attributed to a specific vaccine.

By examining the stacked bar chart, We could identify the dominant vaccine types in each country based on the segment heights. This visualization enabled me to compare the prevalence of different vaccines across countries and gain insights into the global distribution of vaccine types.

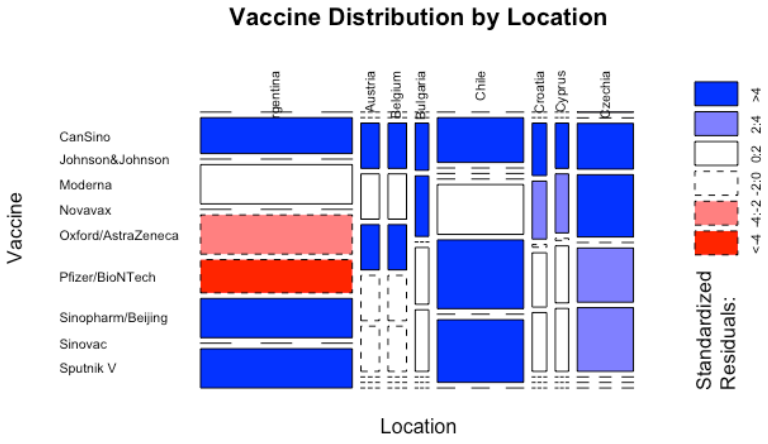


# MOSAIC PLOT

The mosaic plot visually displays the distribution of vaccines across different locations. Each rectangle represents a combination of location and vaccine, with its area proportional to the number of observations. Colors indicate the "total_vaccinations" variable, and values show counts or proportions. This plot helps analyze vaccine distribution patterns quickly and effectively.

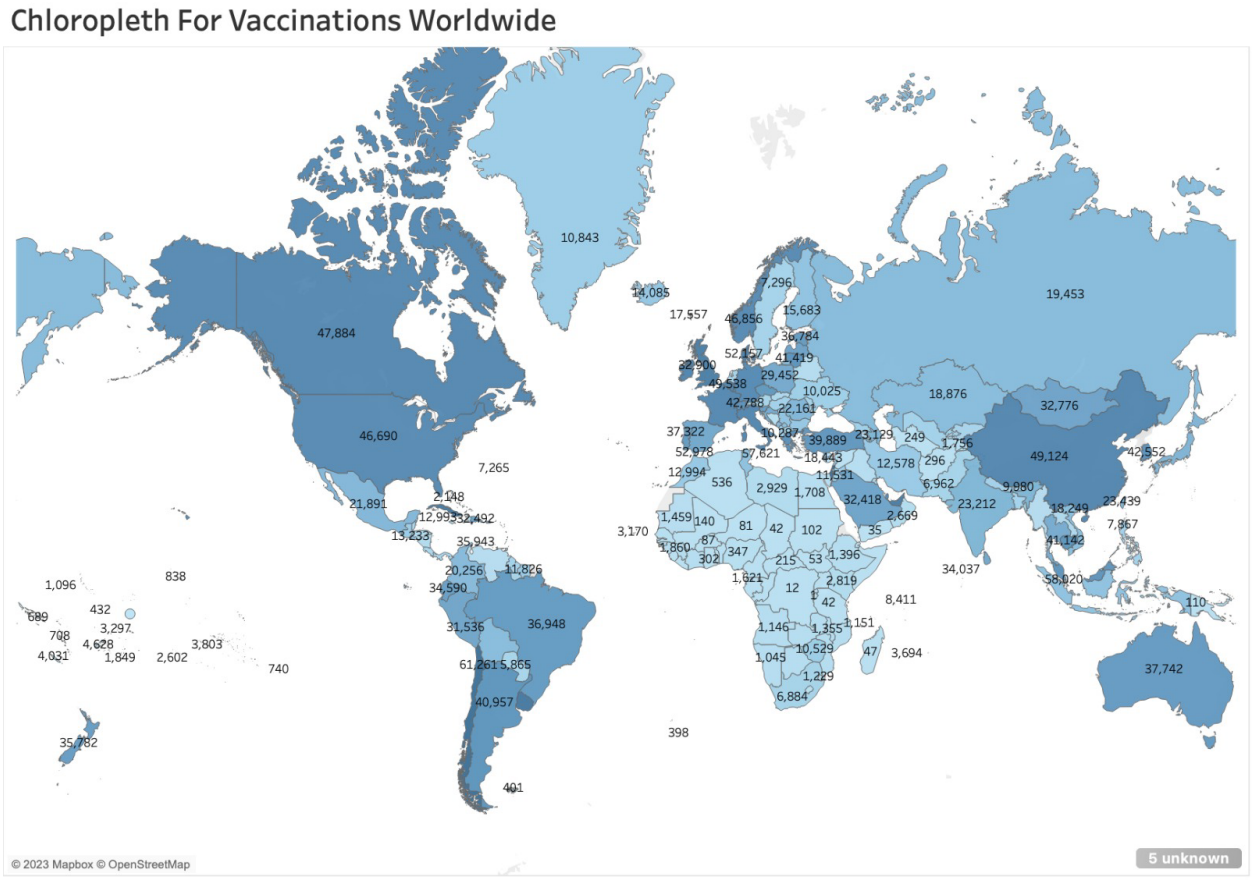
Here's what you'll find in the mosaic plot:

- Title: The plot's title is "Vaccine Distribution by Location". It tells us what the plot is about.
- Axes: The plot has two axes: the x-axis for "Location" and the y-axis for "Vaccine". The x-axis label is "Location" and the y-axis label is "Vaccine". The x-axis labels are turned vertically for better readability.
- Color: The plot uses colors to represent the "total_vaccinations" variable. Each rectangle is colored based on the value of "total_vaccinations". This helps us understand the relative amount of total vaccinations for different location and vaccine combinations.
- Size: The size of each rectangle represents the number of observations in that category. Larger rectangles mean more observations for that specific location and vaccine combination.
- Values: The plot also includes values displayed within each rectangle. These values show the count or proportion of observations for each location and vaccine combination. They give us more information and make it easier to understand the plot.



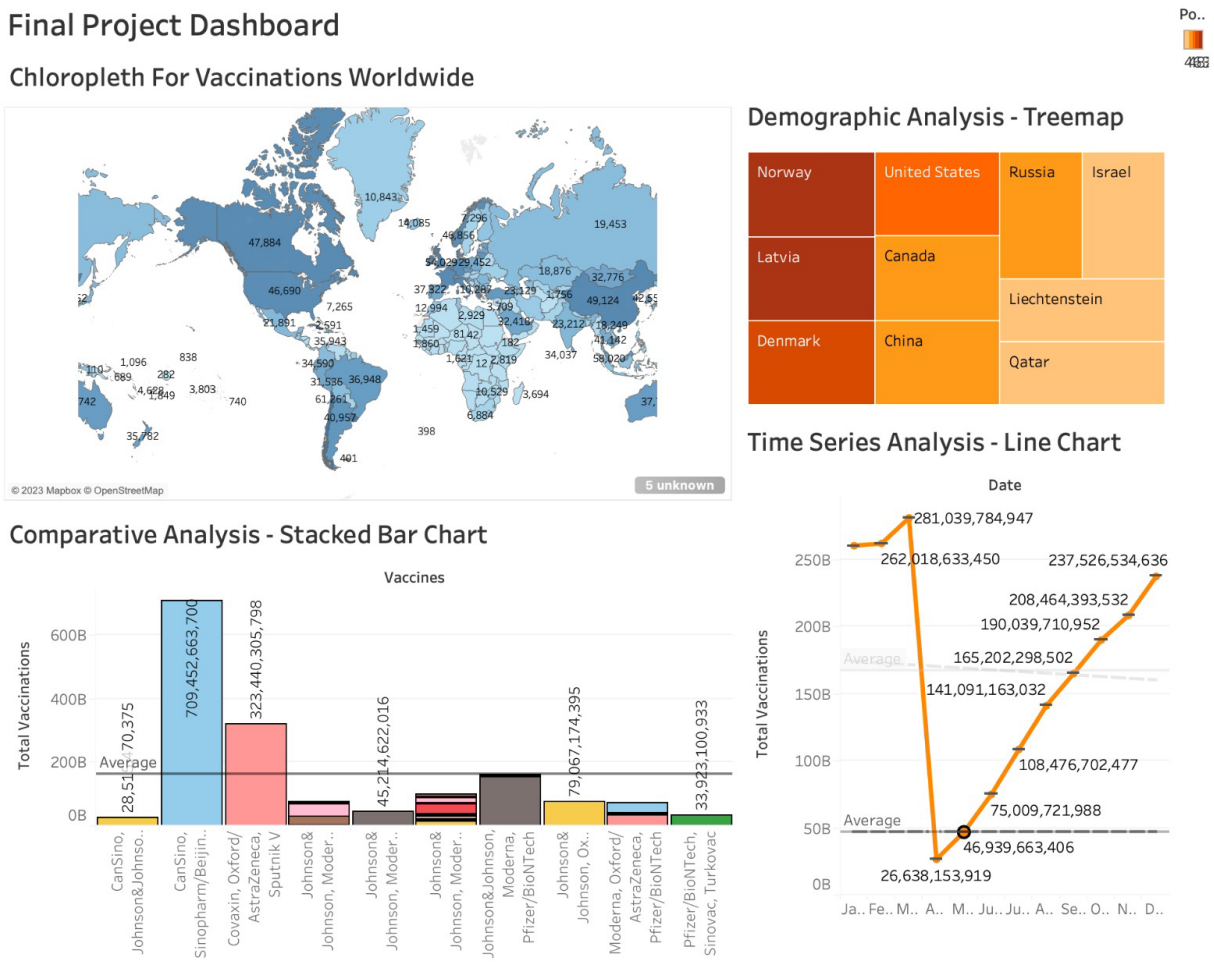
# Choloropleth for Vaccinations WorldWide

1. The map illustrates global COVID-19 vaccination rates, represent the percentage of the total population vaccinated in a country.
2. Each country has been dotted with a mark and as an example the data Some countries, such as the, Canada, Argentina, south africa the Maldives, and Germany have been displaying the values of totally vaccinated as an example.
3. These countries have prioritized vaccination campaigns and effectively administered vaccines to a significant portion of their populations.
4. However, certain regions, particularly in Africa, parts of Asia, and developing areas, display lighter shades on the map, suggesting lower vaccination rates.
5. Challenges like limited vaccine access, distribution issues, vaccine hesitancy, and socioeconomic factors contribute to the slower vaccination progress in these regions.
6. It's important to note that the map provides a snapshot of the vaccination progress at a specific time and that the situation can change rapidly as vaccination efforts intensify and new strategies are implemented.



# DATA VISUALISATION DASHBOARD

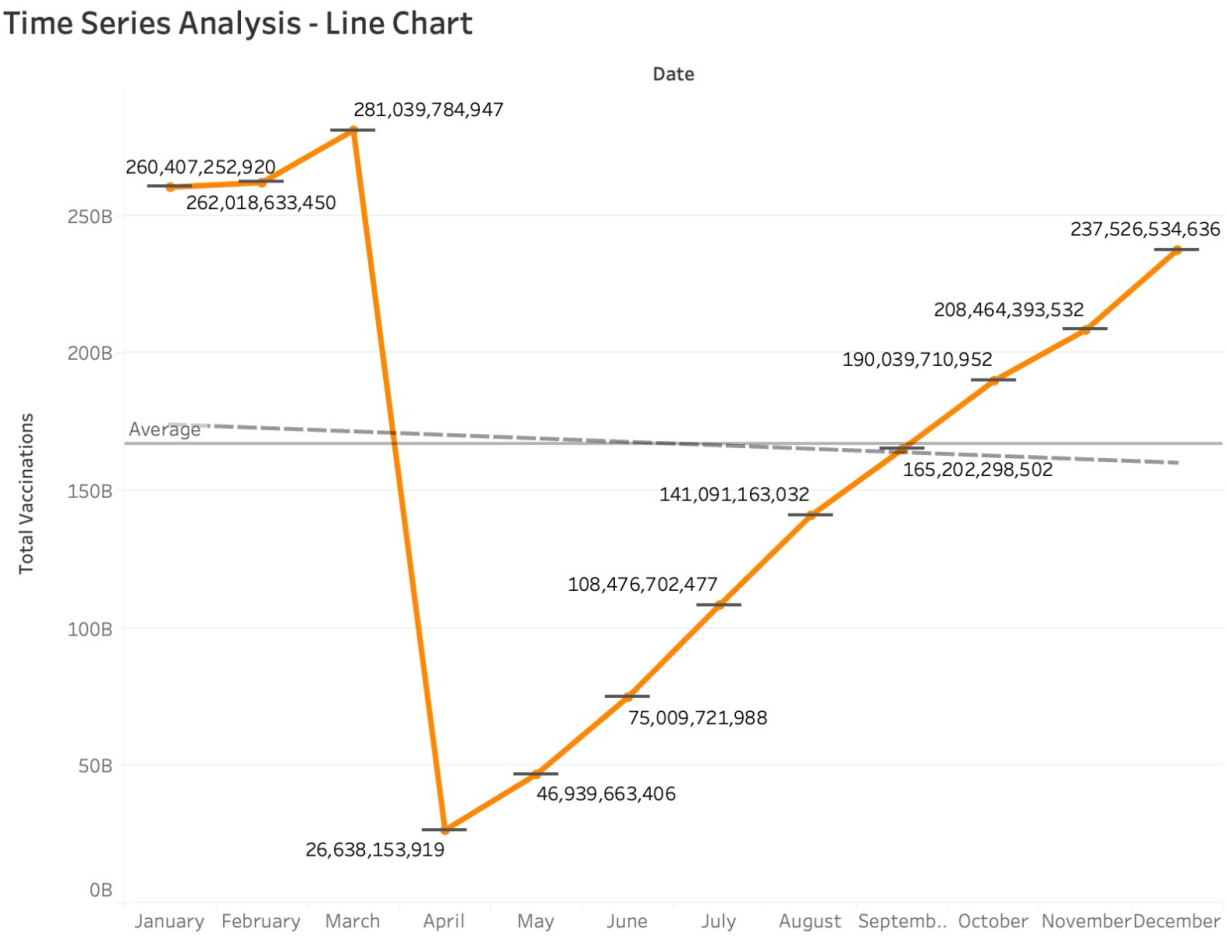
The Data Visualization dashboard contains all of the visualizations developed for this project.



# Line Chart

A line chart was created to analyze the daily vaccination trends over time for a specific country. The x-axis represented the dates, and the y-axis displayed the number of vaccinations administered on each corresponding date.

By observing the line chart, I could identify any trends or patterns in the daily vaccination numbers. Steeper inclines indicated periods of rapid vaccination, while flatter sections might indicate a slowdown or change in vaccination efforts. This visualization allowed me to track the progress of vaccinations over time and understand the temporal dynamics of vaccination  campaigns.



# Conclusion and Key Findings

In conclusion, our project has provided valuable insights into the COVID-19 vaccination strategies employed by different countries. By analyzing the "country_vaccination.csv" and **"country_vaccination_by_manufacturer"** datasets, we have gained a deeper understanding of the global vaccination landscape.

Key findings from our analysis include:

1. Variations in vaccination rates: We observed significant differences in vaccination rates among countries, highlighting the diverse approaches and priorities in vaccine distribution.
2. Distribution of COVID-19 vaccines: The **"country_vaccination_by_manufacturer"** dataset allowed us to examine the distribution of vaccines from different manufacturers across countries, shedding light on the availability and utilization of various vaccine types.
3. Impact on COVID-19 case rates: Through scatter plots and statistical analysis, we explored the correlation between vaccination rates and COVID-19 case rates, providing insights into the effectiveness of vaccination efforts in mitigating the spread of the virus.
4. Vaccination campaigns and progress: Time series plots showcased the progress of vaccination campaigns over time, illustrating the increasing rates of doses administered and the impact of vaccination efforts on population coverage.