



COVID-19 VACCINATION ANALYSIS

Phase4 submission Document

Project: COVID-19-Vaccination

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The aim of this project is to analyse the global trend of COVID-19 vaccinations and provide insights on the progress of vaccinations across different countries based on people who have vaccinated and fully vaccinated in the year 2021 - 2022.

Introduction:

The COVID-19 pandemic has brought about unprecedented challenges to the world. One of the most effective ways to control the spread of this disease is through the development and distribution of vaccines. Vaccines are essential in building immunity against the virus and preventing future outbreaks.

This project focuses on analysing the trend of COVID-19 vaccinations worldwide. The objective is to identify any patterns or trends in the data.

Problem Statement:

This project aims to analyse the trend of COVID-19 vaccinations globally and identify any patterns, insights, or trends that could help policymakers make informed decisions in different Countries based on “how many people are Vaccinated or fully Vaccinated” and “Total Vaccination per hundred”, “People Vaccination per hundred”, and “Daily vaccinations per Million” in 2021 and 2022.

Methodology:

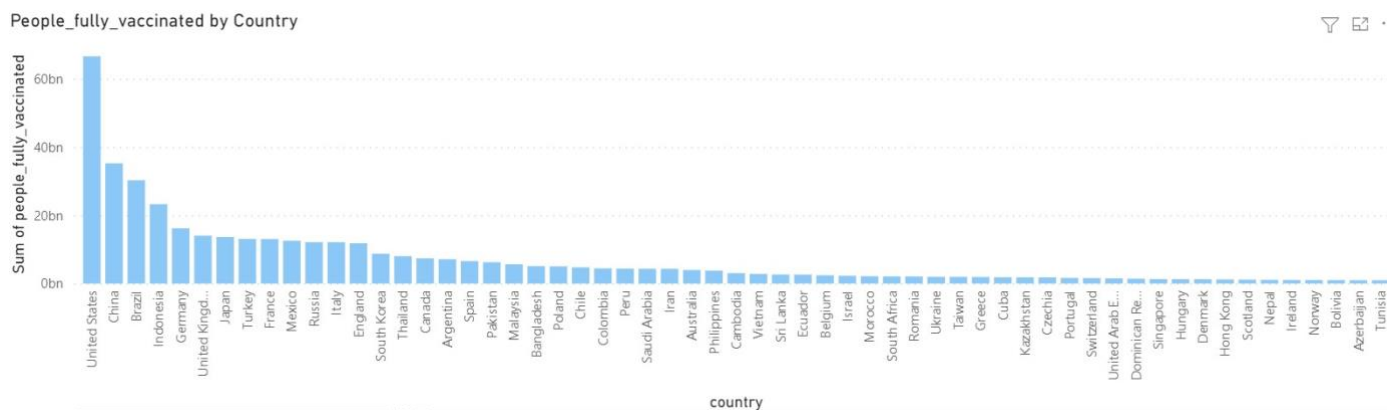
The methodology for this project involves the following steps:

1. Data Importing: The given dataset of COVID-19 Country Vaccinations data was collected and loaded to Power BI Desktop.
2. Data cleaning: The data was cleaned and pre-processed by removing the missing values, duplicates. The columns contained null values have been replaced by 0 with the use of replace functions and started working on the data.
3. Data visualization: The data was visualized using Power BI Desktop software to identify trends and patterns using different kinds of charts, graphs, cards and table.
4. Data analysis: The data was analysed to identify insights and recommendations.

Visualization and Analysis:

The COVID-19 vaccination trend data was analysed using Power BI.

- Below Bar chart shows that “The People Fully Vaccinated” by “Country”. In which “US” has highest People who are Fully Vaccinated.



- Below Tree map shows “The Total Vaccinations” by “Country” and details of the source. In which “US” has highest Total Vaccinations.

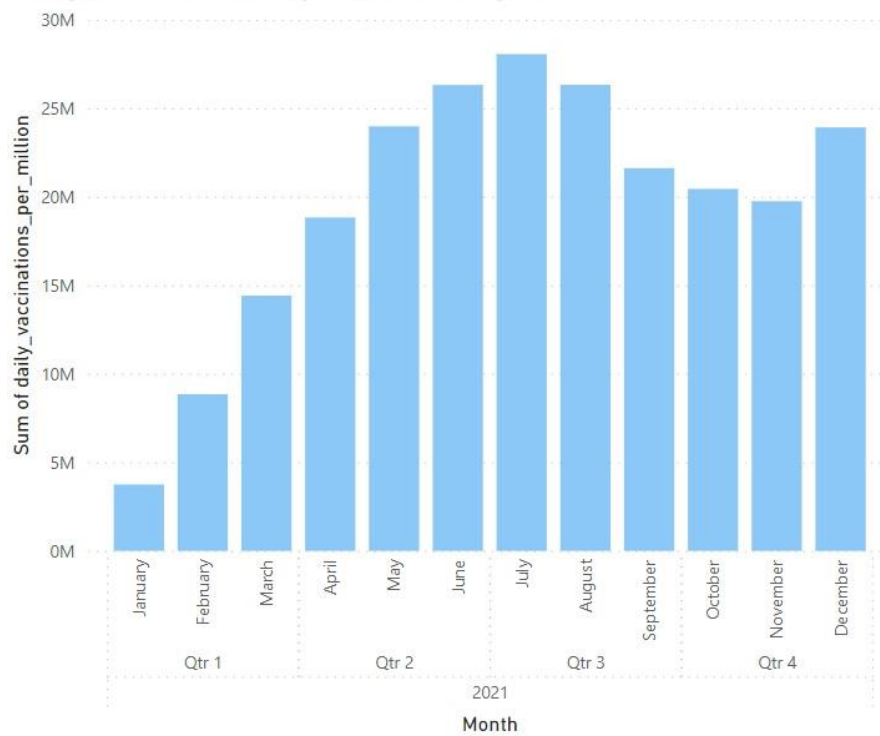


- Below Area Chart shows the Daily vaccinations vs Date. We can see that July-2021, Aug-2021, Sept-2021, Jan-2022 highest no. of vaccinations. Trend line shows as the time(months) passed the daily vaccination rate has increased.



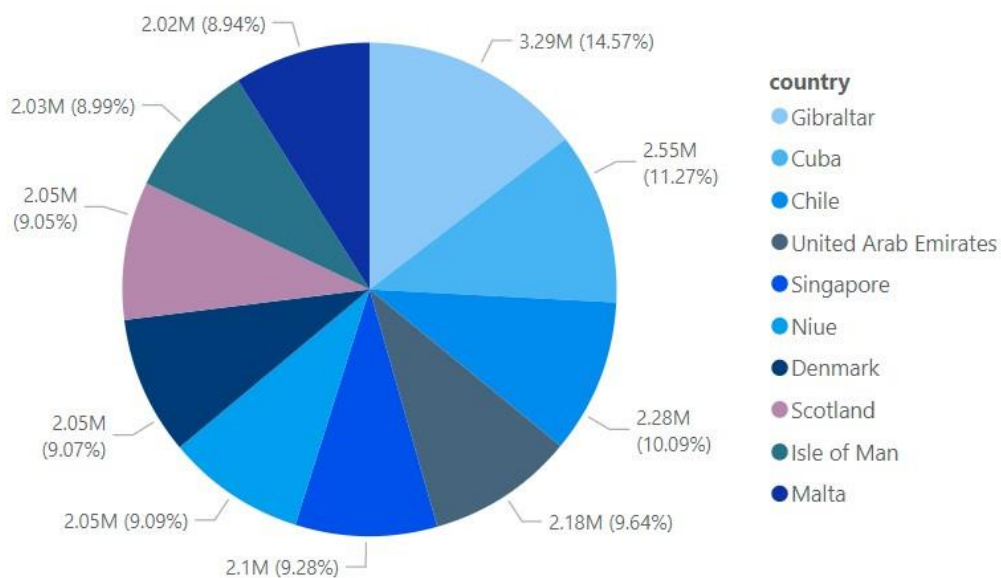
- Below Bar Chart shows the Daily vaccinations per million vs Date. We can see that July-2021 highest no. of vaccinations per million.

Daily_vaccinations_per_million by Year



5. Below Pie Chart shows the Daily vaccinations per million vs Top 10 Country. We can see that Gibraltar has done highest no. of vaccinations per million.

Daily_vaccinations_per_million by Country



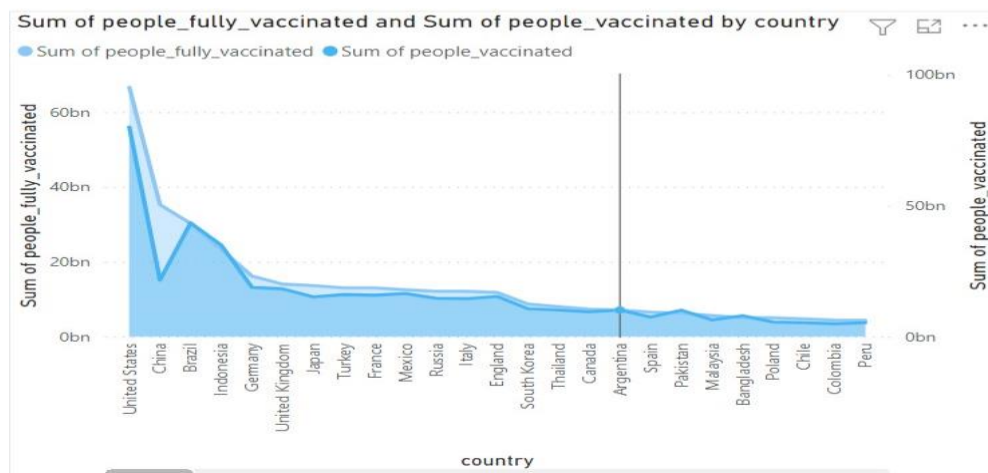
6. Below Area line Chart Shows Sum of people vaccinated and Sum of people fully vaccinated for individual country. United States had the highest Sum of people fully vaccinated and Pitcairn had the lowest Sum of people fully vaccinated.

431.86bn

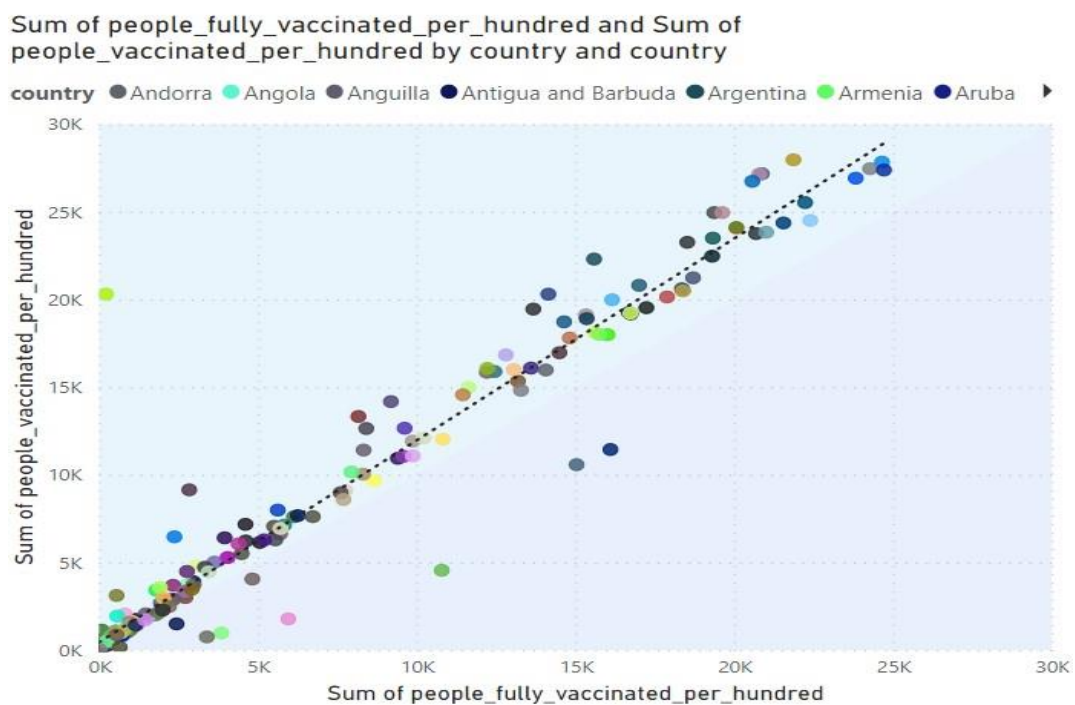
Sum of people_fully_vaccinated

524.91bn

Sum of people_vaccinated

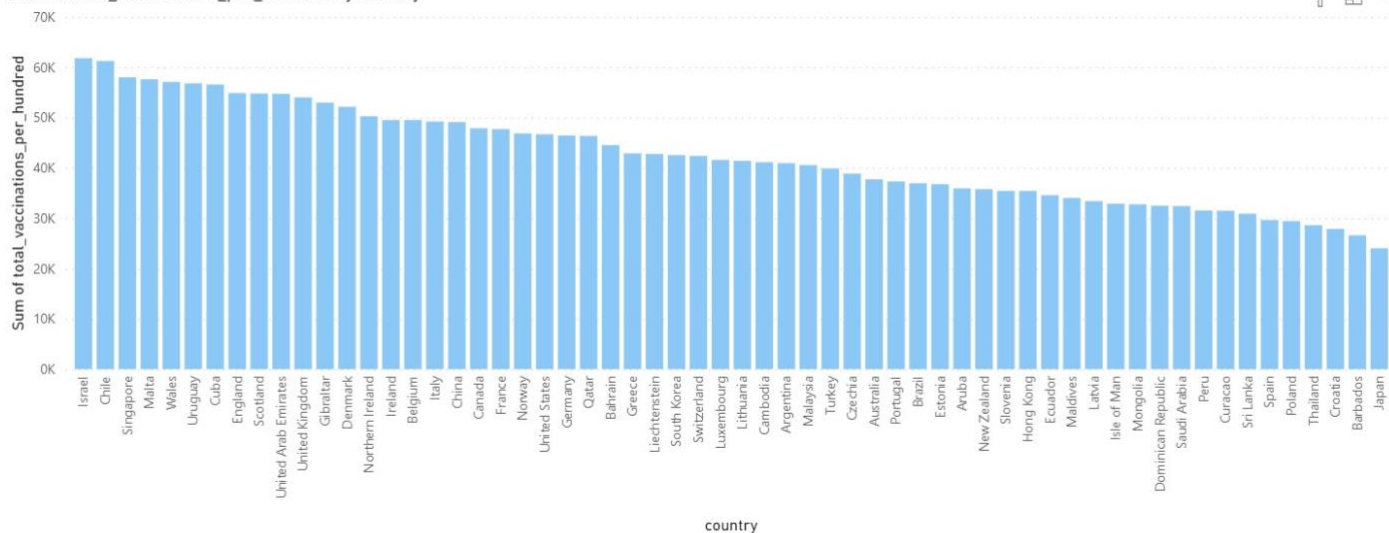


7. Below Scatter Chart shows the sum of people vaccinated per hundred and Sum of people fully vaccinated per hundred for individual country. Malta had the highest Sum of people fully vaccinated per hundred and Wales had the highest Sum of people vaccinated per hundred.



8. Below Bar chart shows “The Total Vaccinations per Hundred” by “Country”. In which “Israel” has highest Total Vaccinations per Hundred.

Sum of total_vaccinations_per_hundred by country



16,78,76,11,80,010.00

Sum of total_vaccinations

34,62,450.54

Sum of total_vaccinations_per_hundred

9. Below table shows the Country wise Source for vaccination.

Country: All		
country	source_name	source_website
Andorra	World Health Organization	https://covid19.who.int/
Angola	World Health Organization	https://covid19.who.int/
Anguilla	World Health Organization	https://covid19.who.int/
Antigua and Barbuda	Ministry of Health	https://covid19.gov.ag
Argentina	Ministry of Health	https://covidstats.com.ar/
Armenia	World Health Organization	https://covid19.who.int/
Aruba	Government of Aruba	https://www.government.aw
Australia	Government of Australia via CovidBaseAU	https://covidbaseau.com/
Austria	Ministry of Health	https://www.ecdc.europa.eu/en/publ
Azerbaijan	Government of Azerbaijan	https://koronavirusinfo.az
Bahamas	Pan American Health Organization	https://ais.paho.org/imm/IM_DosisAc
Bahrain	Ministry of Health	https://covid19.who.int/

Insights:

The analysis of the COVID-19 vaccination trend data provides the following insights:

- The vaccination efforts vary widely across different countries and regions.

- Some countries have made significant progress in vaccination, while others are lagging behind.
- We can see the Analyse of the sum of daily vaccinating details, fully vaccinating and vaccinating people details based on different countries and Date from the visualization.

Recommendations:

Based on the insights gained from the analysis, the following recommendations can be made:

- Improve the efficiency of the vaccination program in countries with low vaccination rates.
- Increase public awareness of the importance of vaccination and address any concerns or misconceptions about vaccines.
- Collect day to day reports for better analysis.
- Like this dataset we can perform operations with various categories, city-wise or regionwise.
- Collect city-wise and region-wise data to analyse, to get more in-depth insights.

Program:

```
Import numpy as np
```

```
Import pandas as pd
```

```
Import matplotlib.pyplot as plt
```

```
Data = pd.read_csv('case_time_series.csv')
```

```
Y = data.iloc[61:,1].values
```

```
R = data.iloc[61:,3].values
```

```
D = data.iloc[61:,5].values
```



```
X = data.iloc[61:,0]
```

```
Plt.figure(figsize=(25,8))
```

```
Ax = plt.axes()
```

```
Ax.grid(linewidth=0.4, color='#8f8f8f')
```

```
Ax.set_facecolor("black")
```

```
Ax.set_xlabel('\nDate',size=25,color='#4bb4f2')
```

```
Ax.set_ylabel('Number of Confirmed Cases\n',
```

```
Size=25,color='#4bb4f2')
```

```
Plt.xticks(rotation='vertical',size='20',color='white')
```

```
Plt.yticks(size=20,color='white')
```

```
Plt.tick_params(size=20,color='white')
```

```
For l,j in zip(X,Y):
```

```
Ax.annotate(str(j),xy=(l,j+100),color='white',size='13')
```

```
Ax.annotate('Second Lockdown 15th April',
```

```
    xy=(15.2, 860),
```

```
    xytext=(19.9,500),
```

```
    color='white',
```

```
    size='25',
```

```
    arrowprops=dict(color='white',
```

```
        linewidth=0.025))
```

```
Plt.title("COVID-19 IN : Daily Confirmed\n",
```

```
        size=50,color='#28a9ff')
```

```
Ax.plot(X,Y,
```

```
        color='#1F77B4',
```

```
        marker='o',
```

```
        linewidth=4,
```

Markersize=15,

Markeredgecolor='#035E9B')

Output:



Conclusions:

The analysis of the COVID-19 vaccination trend data provides valuable insights into the progress of vaccination across different countries. The analysis shows that vaccination efforts vary widely, and there is a need to improve the efficiency of the vaccination program in some regions. The analysis also highlights the critical role of public awareness in promoting vaccination efforts. Overall, this project demonstrates the importance of monitoring and analysing vaccination trend data to identify trends, patterns, and insights that can inform policy decisions and improve vaccination efforts.