# **COVID-19 Vaccine Tracking**



**Project Report**

Submitted by

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## **Introduction**:

Before beginning any project there are some basic questions which need to be considered before setting goals. Here in visualization, which is art of representing such humongous data in the form of graph, animations, chart etc., the questions become more customer oriented. Therefore, the basic research questions considered were, “who is my targeted audience?”, “What is the best topic to reflect my skills of data visualization?” and “How I can put my knowledge and efforts to upliftment of society?”[1]. Heeding to all these questions I have chosen the hot topic “COVID-19 vaccine tracking”.

Out of all research questions, the foremost and important is, “How many vaccines were administered globally and at which rate?”. This question aims to provide data of cumulative vaccine doses given to people around the world and in which region and country, maximum and minimum doses were given. Additionally, it also reveals trends like rate at which vaccine dose were administered globally, which can indicate the any halts in vaccination. Another one is, “What percent population partially and fully vaccinated, means people who received at least one dose of vaccine. It reflects the percentage of population vaccinated partially and completely. Additionally, merging this data with GDP and GDP per capita of country, relation of country’s economy and vaccination drive can be visualized.

Since the project reflects the latest covid data, the project is highly ambitious because data is still inchoate and highly dynamic based on different countries which makes it an appropriate challenge for my visualization skills. Moreover, it can help in fight against the COVID-19 by providing data to scientists and health workers who are doing their work developing and making people immune to this virus. Socially, it can help to aware people regarding the progress governments are making all around the world. Additionally, the visualization combined with additional data like daily new cases can help to evaluate the effectiveness of one dose or both and the effectiveness of brand of vaccine.

Overall, the project shows visualizations of vaccination records around the world for all the countries. It represents the data of total vaccines administered, percentage and absolute value of people given single dose and people fully vaccinated with respect to the date, country, region and GDP.

## **Methodology:**

The data was extracted from multiple sources based on the need, between dates December, 2020 and July, 2021. The vaccination data was obtained from website “www.ourworldindata.org” where global data is uploaded on daily basis[2, 3]. The data is used in finding answers for both questions mentioned above. Specifically, data from this source is used to answer first question which is cumulative doses of vaccines given globally. Secondly, the population and GDP data for past and current year for each country is taken from world bank official website[3]. Using all sources mentioned above percentage of population vaccinated with one dose, percentage of population vaccinated with both doses, total vaccines administered, and daily vaccines administered are visualized for two levels, global region and country respectively. The data obtained from both sources is corrected based on non-reporting of data, wrong data reporting and human error.

## **Analysis:**

The raw vaccination data is recalculated to find daily doses of vaccines administer for first dose, second dose and total doses administered. Similarly, Population is segregated based on the GDP. Population is divided into four groups for every quarter percentile and named as “Low Income”. “Lower Middle Income”, “Upper middle Income” and “High Income”. Therefore, excel was used to categorize the raw data according to our questions.

Visualizations are made to answer the questions comprehensively. Figure 1. shows current count of vaccines administered by countries on a world map. In the lower images, daily doses and total doses administered in a region are represented. Filters are applied to check for specific country data. With this representation, our first question is answered comprehensively. Moreover, animation trail has been implemented for total doses administered by date and daily doses administered by date. Similarly, specific trail can be implemented for each country.

For the next question visualizations are made on two different dashboards. Fig 2. represents the dashboard which reflects the share of people vaccinated with at least one dose. It also depicts the percentage of people that received just one dose and percentage who are fully vaccinated. Here also additional filters were applied to check the data for specific country. Additionally, region to country drill down has been implemented. Similarly, figure 3. represents the total vaccinations by country’s GDP. Countries have been segregated based on the GDP as mentioned above and relation has been drawn between GDP and Total vaccines administered.

Most appropriate and up-to-date data was used to represent the vaccination data. Data was sourced from respected organizations as mentioned above. All visualizations appropriately answers the questions mentioned in the beginning of the report.

Map

Description automatically generated

Fig 1. Visualization representing current, cumulative and daily vaccine doses administered.

Map

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Fig 2. Visualization representing total percentage of people vaccinated, with at least one dose, only one dose and both doses.

Map

Description automatically generated

Fig 3. Visualization representing covid vaccines administered by country’s GDP.

## **Conclusion:**

## **References**

1. Klecha, K. *Data Visualization: questions you should ask before. What we’ve discovered working on the Map of Polish Composers.* 2019; Available from: <https://uxplanet.org/data-visualisation-questions-you-should-ask-before-6fd635dbba82>.

2. *Coronavirus (COVID-19) Vaccinations.* Available from: <https://ourworldindata.org/covid-vaccinations>

3. *World Bank Open Data.* Available from: [https://data.worldbank.org](https://data.worldbank.org/)