Shri Vile Parle Kelavani Mandal's
DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
(Autonomous College Affiliated to the University of Mumbai)
NAAC Accredited with "A" Grade (CGPA : 3.18)

Department of Computer Science and Engineering (Data Science)

Lab Manual

Subject: Foundations of Data Analysis Laboratory (DJ19DSL303)

Semester: III

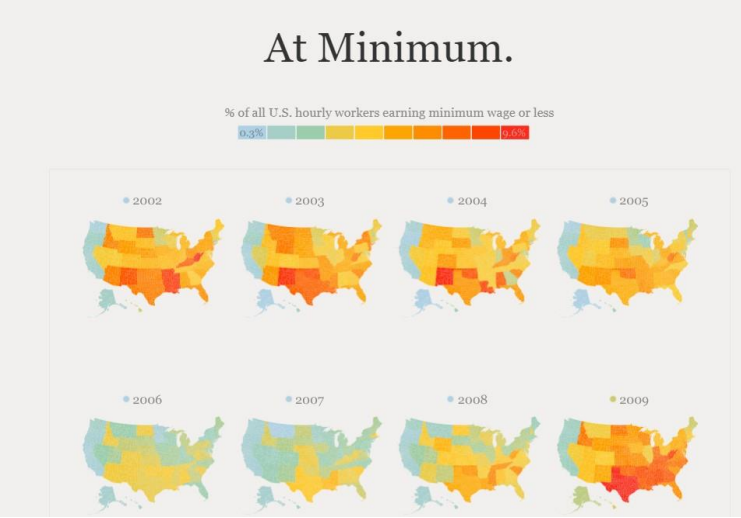
Experiment 3

(Data Visualization)

Aim: Apply maps, scatter plots on a given dataset and create a dashboard

Theory:

With technology advancements, content on maps and the maps themselves became digital, interactive, and more appealing as they're incorporated in data analysis and reporting. Seeing location data mapped and included in visualizations has both enhanced understanding by more audiences and offered a valuable, new context. Maps share geographic context that can be important to visualize results, something traditional bar charts and graphs fail to depict.



The scatter diagram graphs pairs of numerical data, with one variable on each axis, to look for a relationship between them. If the variables are correlated, the points will fall along a line or curve. The better the correlation, the tighter the points will hug the line.

Scatter Plots are often used to show additional numeric data in the form of Colours and Sizes, in which case they plot up to 4-dimensional data.

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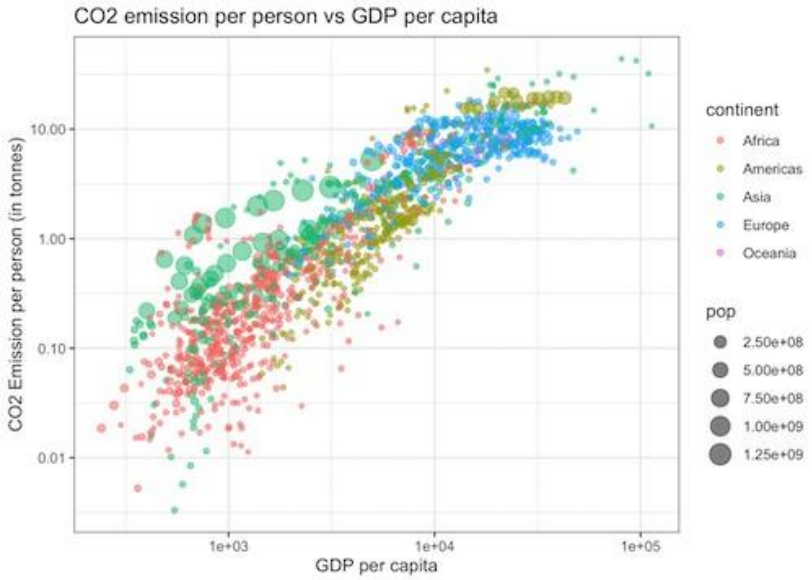


Lab Assignments to complete in this session

Use the given dataset and perform the following tasks:

Dataset: https://covid19.who.int/who-data/vaccination-data.csv https://basic-csv-wdc.herokuapp.com/

Tool Used:

Tableau Public 2021.3

Visualizations:

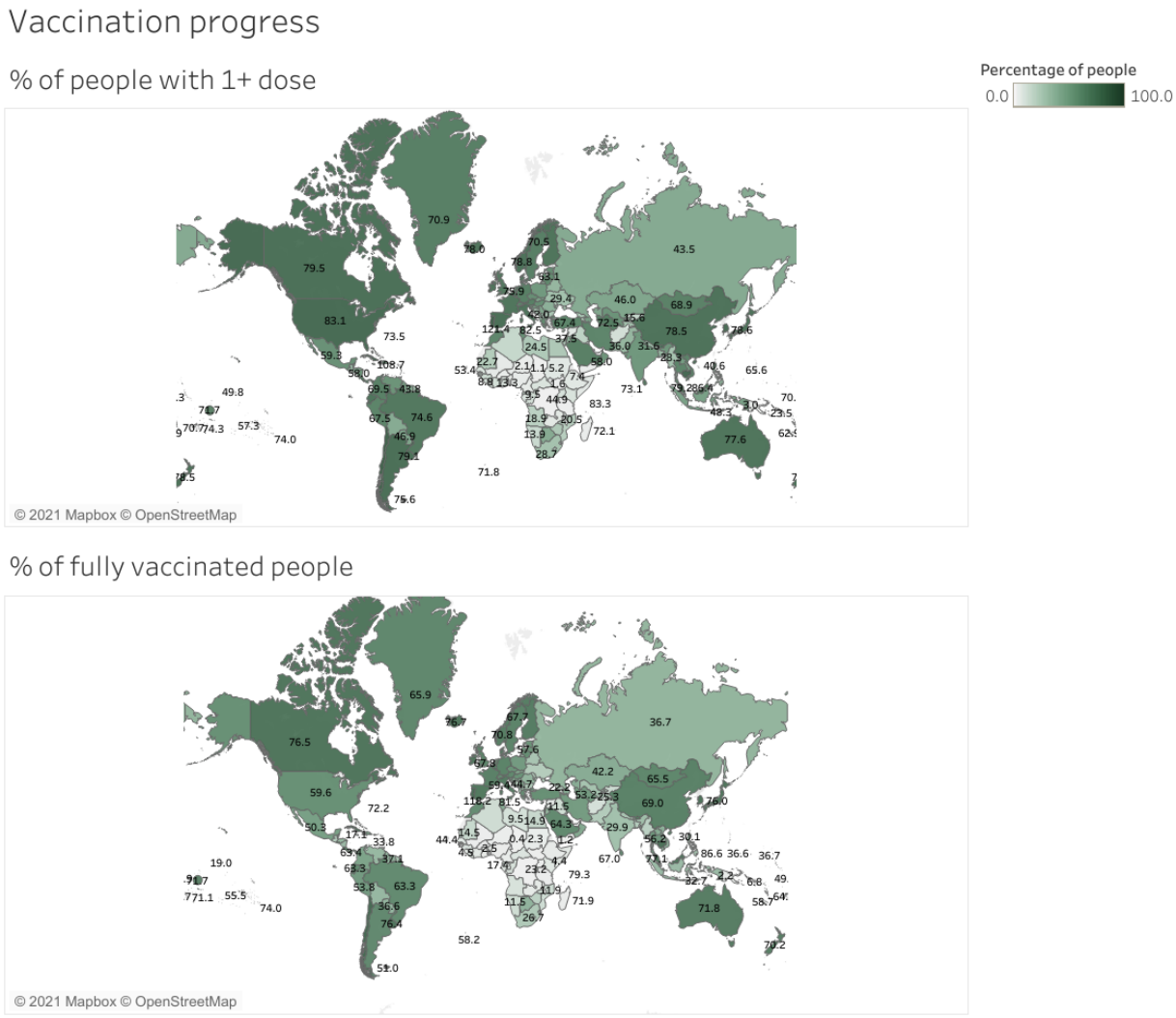
a) **The United Nations wants you to build a dashboard containing an overview of the vaccination progress, specifically 1+ doses and fully vaccinated individuals, as a percentage of population vaccinated.**

On Dashboard:

Above: Number of people per 100 who have taken 1+ dose

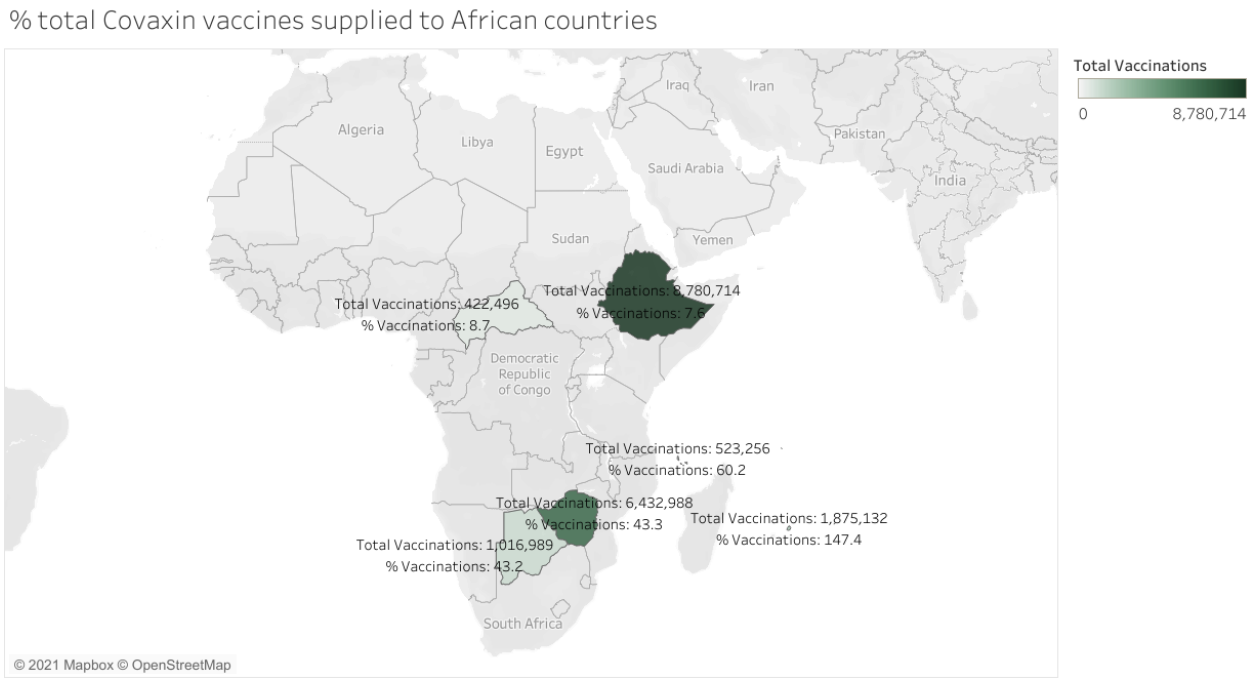
Below: Number of people per 100 who are fully vaccinated

This dashboard gives us an overview of the vaccination progress, giving us the percentage of people who have taken 1+ doses and are fully vaccinated in each country.

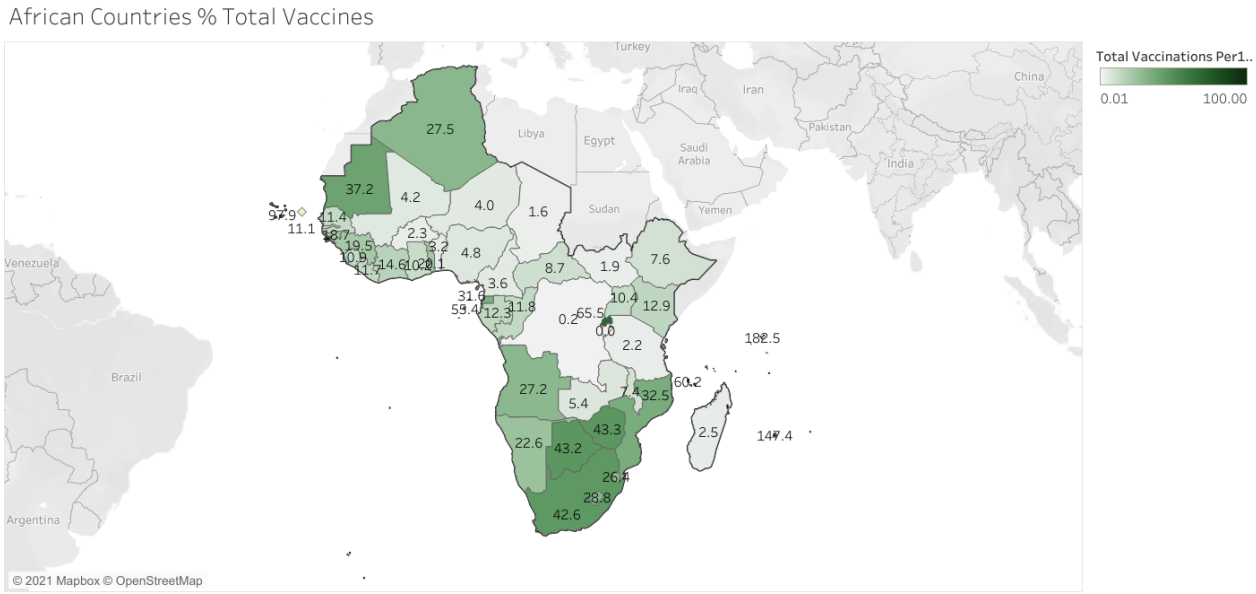


b) **The COVAX vaccine scheme was used to supply vaccines to poorer countries like Africa. Has the scheme proven to be effective? - https://www.bbc.com/news/56100076**

This graph shows the countries that were supplied Covaxin and the number of vaccines they received per 100 people of their population.

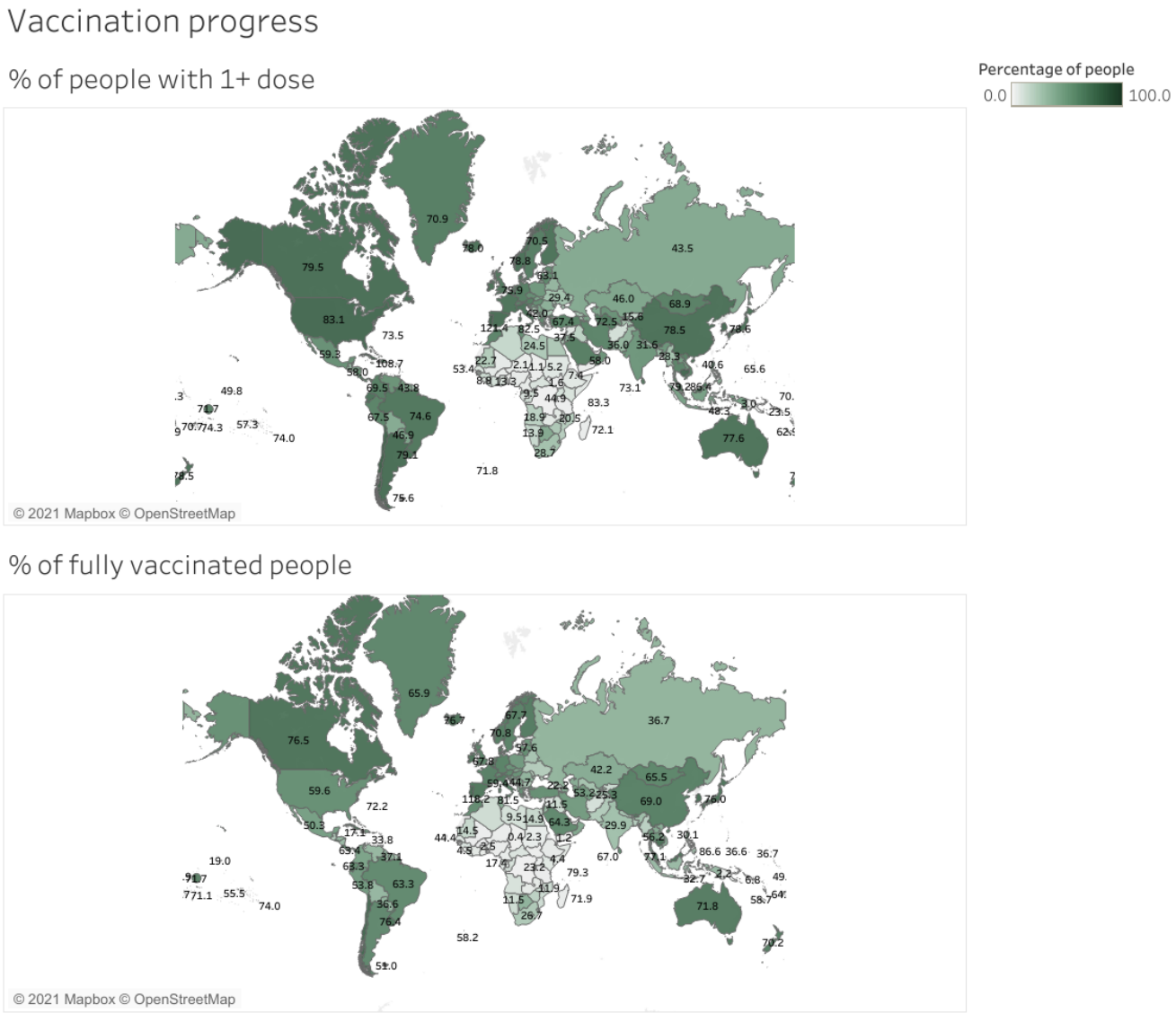


The graph below shows all countries that fall within the WHO defined AFRO region and shows the number of vaccines each country received per every 100 people of their population. We can clearly see that the supply hasn't been sufficient and consistent. Hence, we can safely say that the COVAXIN scheme was not successful.



c) **Use Maps to visualize the number of people vaccinated per 100 population to visualize the countries and regions in dire need of vaccines. It should be noted that the data only covers WHO approved vaccines.**

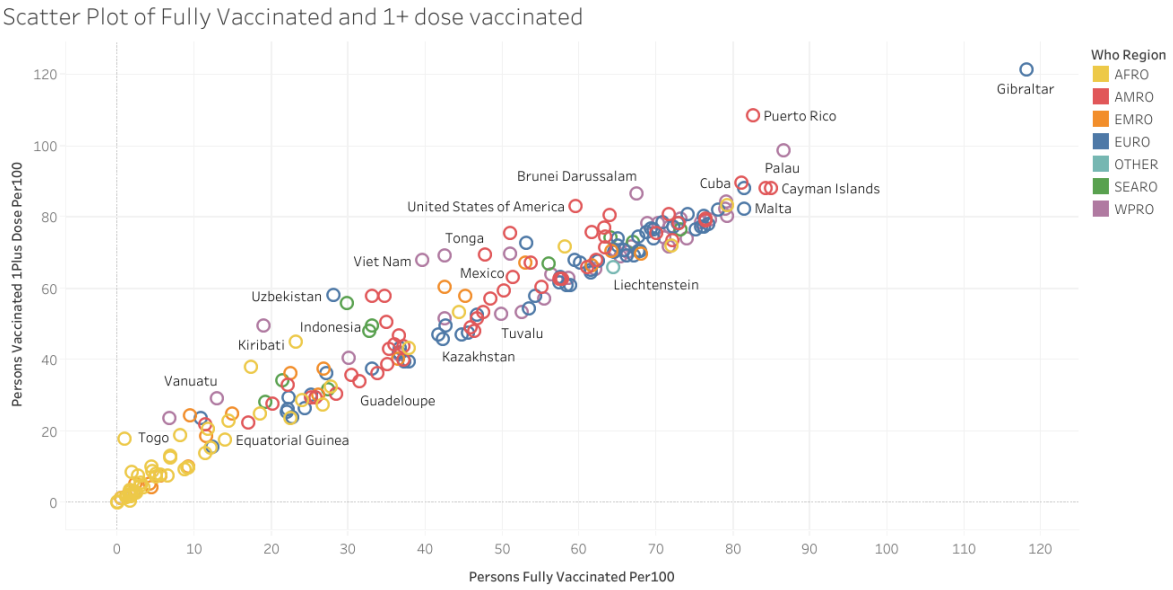
We have the percentage of people vaccinated with 1 + dose and percentage of people who are fully vaccinated in the below dashboard. We can see that the lighter the countries are shaded the more is the need of vaccines. Mostly, countries in Africa have not been supplied with enough vaccines according to the figure below.



d) **Build a scatter plot to view the trend between 1+ Dose vaccinated and fully vaccinated population, so the UN can advise countries that deviate from the recommended values to focus on getting a higher percentage of population fully vaccinated, or vice versa.**

Scatter plot:
On X-axis: Number of people per 100 vaccinated with 1+ dose
On Y-axis: Number of people per 100 fully vaccinated in each country

We can observe the trend from the below scatter plot. This plot will give UN a better idea upon which countries have been deviating from the required values and guide them to get back on track.



e) **The Dashboard should allow vaccine monitoring and filtering via WHO regions, allowing filtering for multiple regions.**

On Dashboard:
Scatter plot – Number of people per 100 vaccinated with 1+ dose versus number of fully vaccinated people per 100.

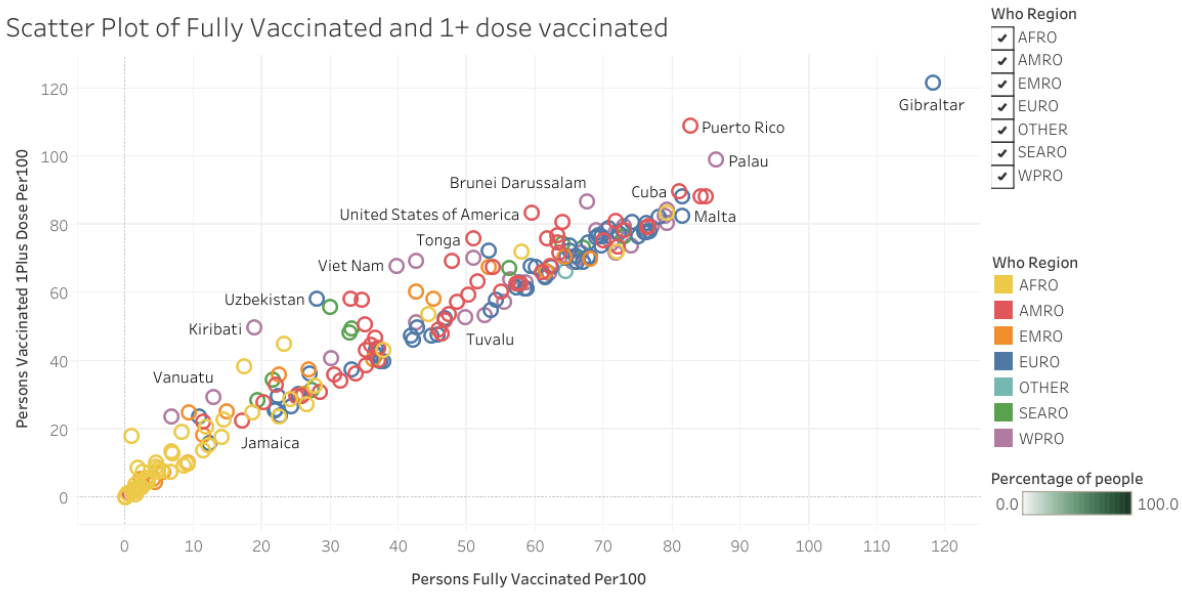
Number of people per 100 people from the population who have taken 1+ dose

Number of people per 100 people who have been fully vaccinated.

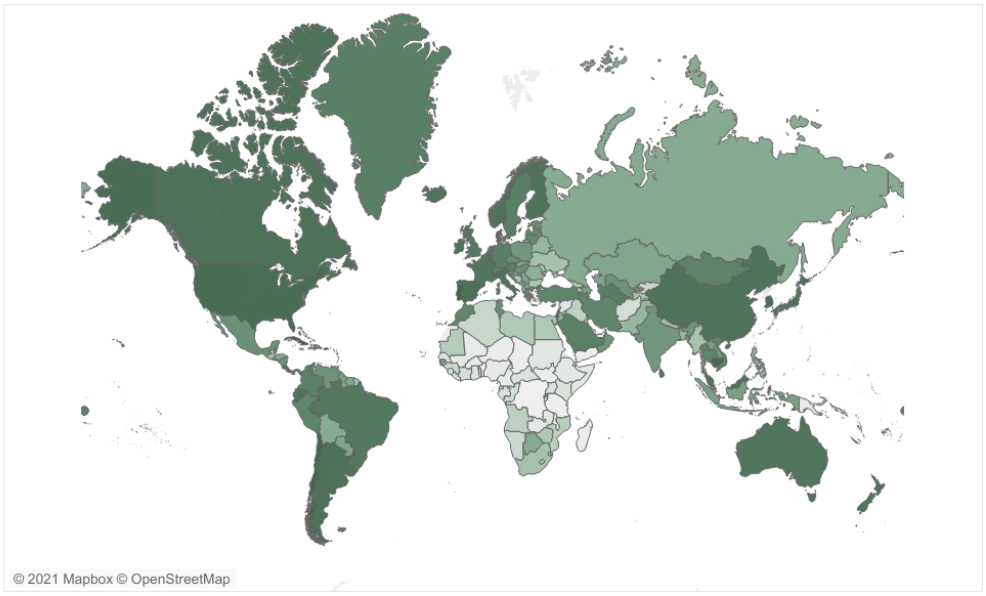
The first figure includes all the regions. The second picture includes AMRO, EMRO and SEARO regions only. We can select multiple regions as per convenience from the filter.

Vaccine monitoring as per WHO regions

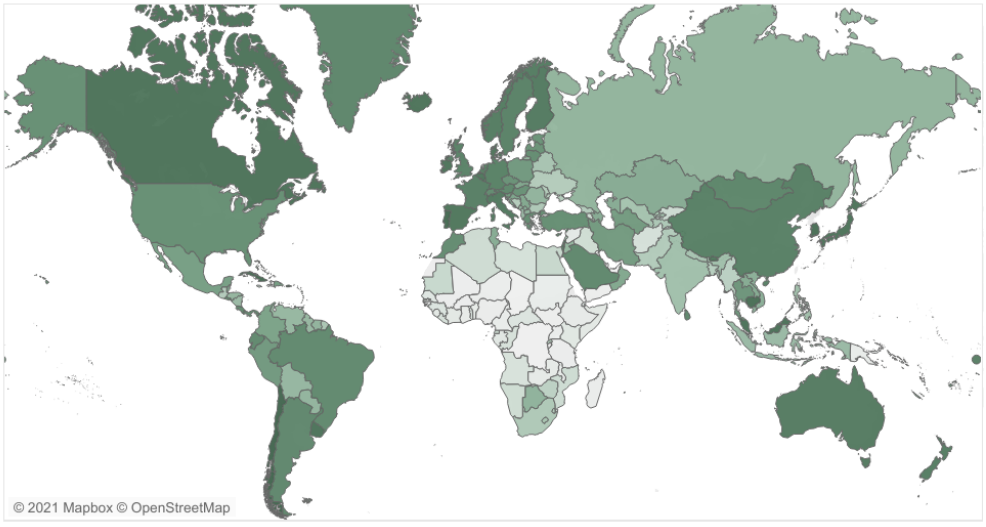
Scatter Plot of Fully Vaccinated and 1+ dose vaccinated



Percentage of 1+ dose vaccinated people

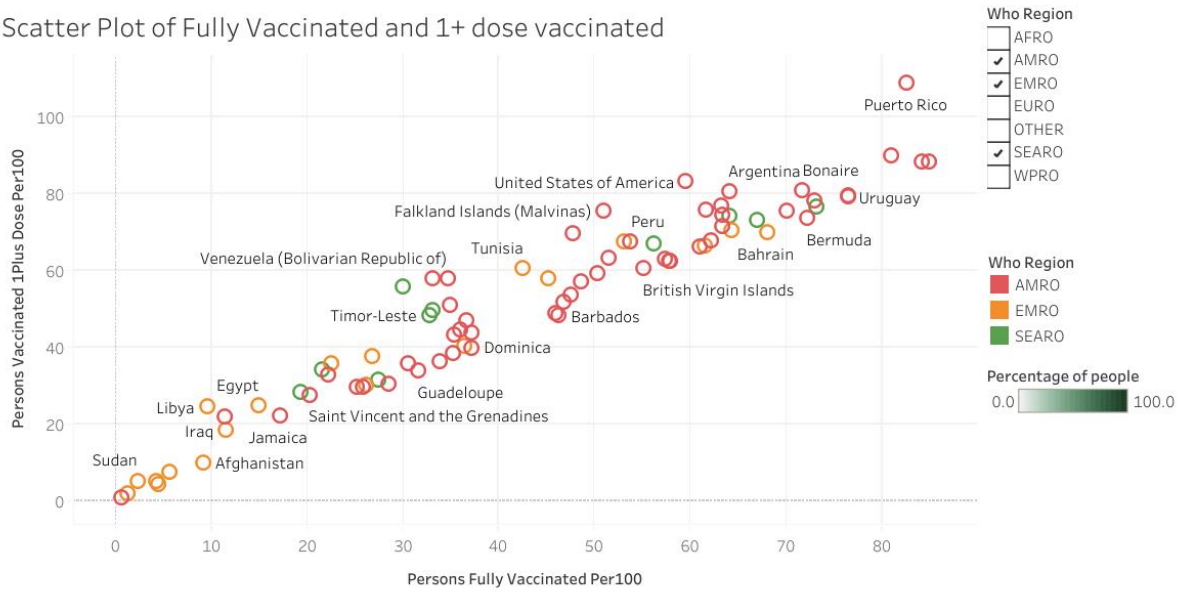


Percentage of fully vaccinated people

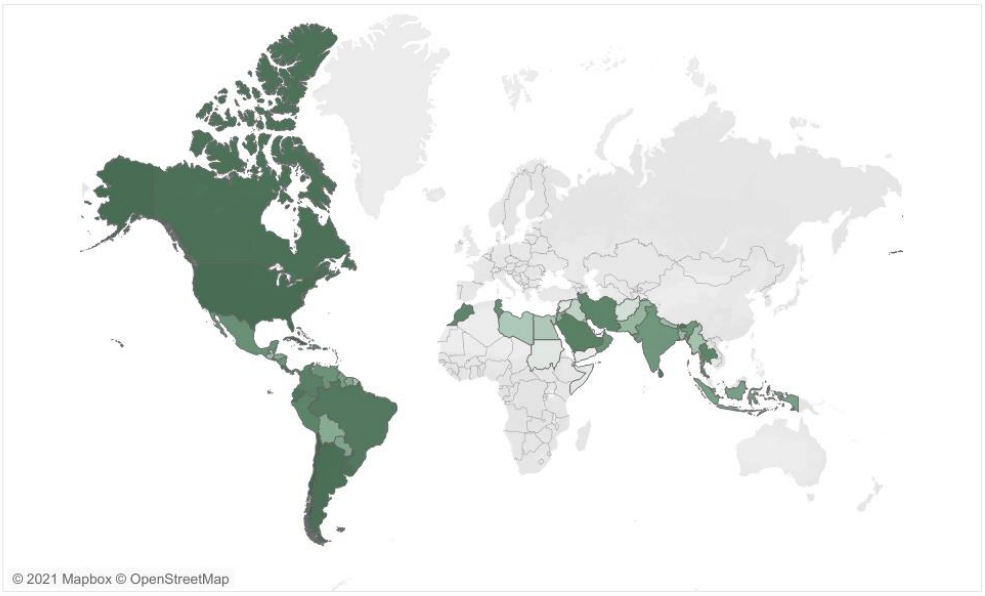


Vaccine monitoring as per WHO regions

Scatter Plot of Fully Vaccinated and 1+ dose vaccinated



Percentage of 1+ dose vaccinated people



Percentage of fully vaccinated people