

Information Visualization Assignment 3

Juwon Kim - juwona@postech.ac.kr

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In this assignment, you will implement **a stacked bar chart about vaccination rates of the Top 15 countries in Asia**. After you unzip assignment3.zip you will see 2 directories: **js** and **data**. You will see **index.js** and **main.js** in the **js** directory. You should write all your codes at **the designated part in main.js (You should not edit other files!! -4pts deduction if you edited other files)**. If you have any questions about this assignment, please ask TA via the PLMS discussion board or email.

0 Setting Development Environment (0pts)

Before starting this assignment, you need to set the development environment to run the local server with Express. Express is a Node.js web application framework. To set up the environment and run a local server with the given files, you should follow these steps.

1. Install Node.js at <https://nodejs.org/en>

After installing, you can check by running **node -v** and **npm -v** on the terminal. They will show the version of Node.js if it is installed properly.

2. Turn on the terminal and move to the directory where you unzip the assignment. Then, run **npm install** command.
3. Run **npm start** command on the same directory. It will run the local server. If you see the message *Local server with port 3000 opened!*, you successfully set up the environment. Now, you can check your implementation at <http://localhost:3000>.

1 Data Processing (16pts)

In this section, you will process the dataset so that it can be used for drawing a stacked bar chart. We provide an international COVID-19 dataset from Our World in Data. In this dataset, you will mostly handle the variables below:

Name of the variable	Description
country _{code}	ISO 3166 Country code of the country where the datum is collected
continent	The continent of the country where the datum is collected
location	The country where the datum is collected
date	The date when the datum is collected
population	The population of the country
people_vaccinated	The number of people who received at least one dose of vaccines
people_fully_vaccinated	The number of people who received all doses of vaccines

This dataset contains missing values, inappropriate values, and other impurities. To remove them, you have to process the dataset. Here is the to-do list for data processing.

1. Exclude data that contain missing values on columns you need. (2pts)
2. Exclude data all data except the data where the continent is Asia. (2pts)
3. Calculate the rate of fully vaccinated people over the population, partially vaccinated people over the population, and the total rate of vaccinated people over the population. (1pt each)
4. Exclude data where the total rate of vaccinated people is over 100%. (2pts)
5. Exclude all data except the latest data for each country. (3pts)
6. Sort the data in descending order by total number of vaccinated people. (2pts)
7. Extract Top 15 countries. (2pts)

I recommend you to follow the order of this list. If you change the order, it may change the result of the processing. **If that happens and your result is different from what we demand, we will give -3pts deduction on your score.**

2 Implementing Stacked Bar chart (16pts)

In this section, you will draw a stacked bar chart with your processed data. Here is the to-do list for implementing the chart.

- Create a scale for the x-axis. You should set the x-axis range from 0 to 100 percent with evenly spaced ticks. (2pts)
- Create a scale for the y-axis. You should Display the top 15 countries on the y-axis. (2pts)
- Draw a horizontal stacked bar of the rate of fully vaccinated people (left) and the bar represents the rate of partially vaccinated people (right). (6pts)
- Create a color scale and color the left bar '#7bccc4' and color the right bar '#2b8cbe' (2pts, -1pt deduction if you used different color)
- Label the percentage of each bar.

The label of the left bar should be inside and at the right end of the bar. (2pt)

The label of the right bar should be outside and right to the bar. (2pt)

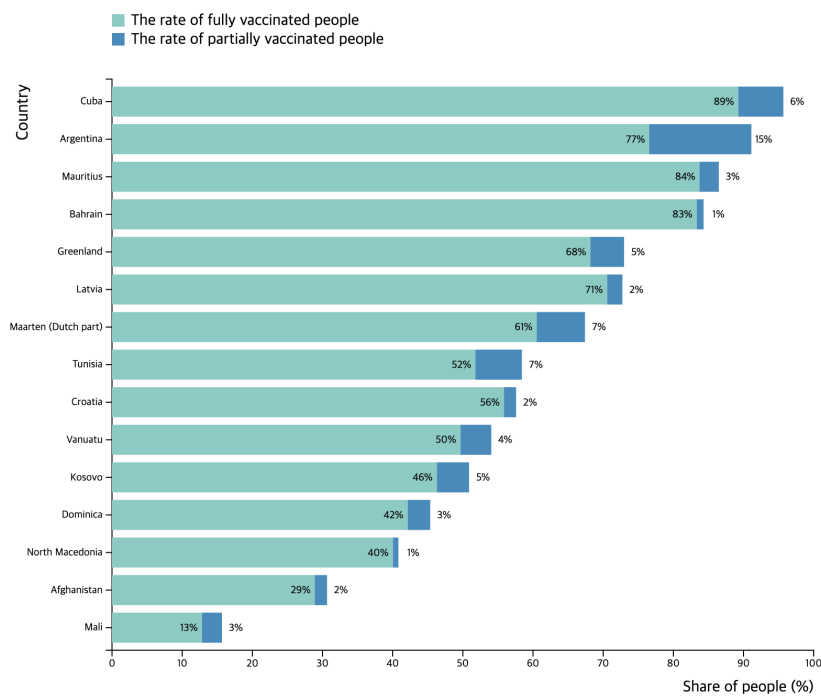


Figure 1: Sample stacked bar chart. The actual result will be different from this.

After you finish the tasks, you will see a chart similar to Figure 1.

3 Writing a Report (8pts)

Write a brief report summarizing your experience with Assignment 1-1 and Assignment 1-2. Your report should describe the challenges you faced while implementing the tasks and how you resolved them. You must include at least **two challenges and their solutions**.

Your report should be written in English or Korean, with a length of **at least 10 sentences and no more than 2 pages** (-4pts if you violate).

4 Submission

After you complete tasks, you should zip all the files into **YourStudentId_YourName.zip**. (e.g. 20251234_JohnDoe). Your file must look like this:

```
YourStudentId_YourName.zip
├── data
│   └── owid-covid-data.csv
├── js
│   ├── index.js
│   └── main.js
├── example.png (Not essential)
├── index.html
├── package.json
├── Report.docx
└── Instruction.pdf (Not essential)
```

You should upload this file via PLMS. Late submissions will be penalized by **a 20% deduction per day**.