

Information Visualization Assignment 4

Seongouk Kim - zjqvp@unist.ac.kr

Submission Due: 2024. 06. 9. (Sun) 23:59

In this assignment, you will implement **a brush interaction within a bubble chart and a line chart**. After you unzip assignment4.zip you will see 2 directories: **js** and **data**. You will see **index.js**, **main.js**, **barchart.js**, **bubblechart.js**, and **linechart.js**. in the **js** directory. You should write all your codes at **the designated part in barchart.js, bubblechart.js and linechart.js annotated as [your code Here]** (You should not edit other parts!! -4pts deduction if you edited other parts). You can also add your styles at **styles.css**.

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 Implementing Brush Interaction (36pts)

After you finish the setting and turn on the server, you will see a bubble chart and a stacked bar chart from coding session 3. But unlike coding session 3, there is no zoom interaction in the bubble chart (And the code will be slightly different). Instead, you will implement a brush interaction like figures below and an example video. You have to implement the brush interaction following the instructions below:

- You have to implement brushing within the bubble chart. You should be able to draw, resize, move and delete the brush area. (4pts)
- Brush interaction must happen within the chart. You can **not** brush at the outside of the chart. Refer the Figure 1 (The red area) (4pts)
- You should be able to select the bubbles with the brush interaction. Selected bubbles mean the bubbles whose center are in the brush area. (4pts)
- You should show the selected bubbles by changing the outline of the bubbles into blue, and 3px outline. (4pts)
- You should update the bar chart with the brush interaction.
 - The updated bar chart should show Top 15 countries (Top N if number of selected countries N is smaller than 15) of the selected bubbles. (8pts)
 - If none of the bubbles are selected, the bar chart should show the Top 15 countries of all bubbles in the current bubble chart. (4pts)
 - If the bubbles are hidden by continent filter, they should not be brushed. (8pts)

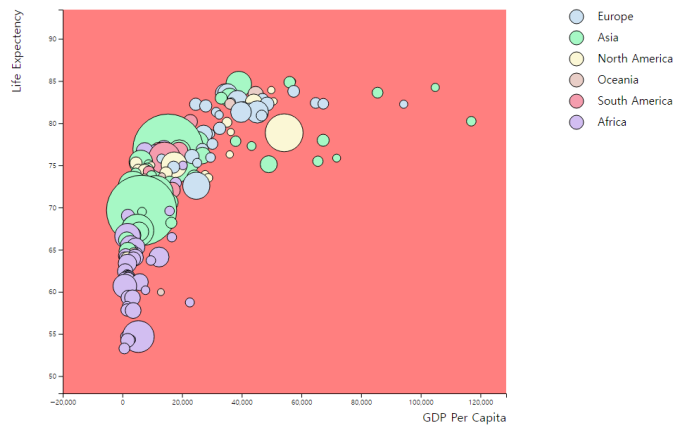


Figure 1: The allowed area for brush interaction

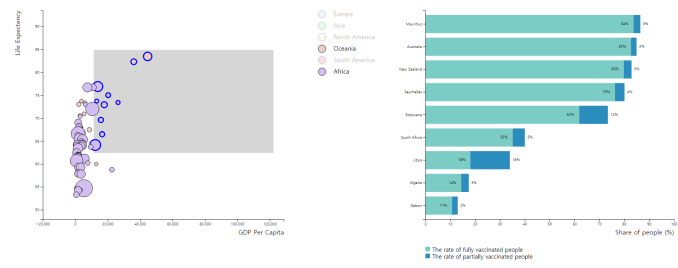


Figure 2: The example of brush interaction

After you implement, you will be able to brush the bubbles like Figure 2

2 Implementing Line Chart (16pts)

In this section, you will implement the line chart, which shows the increment of the total_cases (total confirmed cases of COVID-19). You have to implement a line chart following the instructions below:

- You have to implement line chart of one country about total cases. You should draw the line with 2px-width and #8bc3a1 color. (2pts)
- When the page is loaded at first, you should show the line chart of Afghanistan. (2pts)
- You should be able to update the line chart by clicking the bubbles in the bubble chart and the bars in the bar chart. (-50% if one of two doesn't work)
 - When the user clicks the bubbles or the bars, it should delete the previous line. (2pts)
 - After deleting the line, it should draw the new line of the clicked country. (4pts)
- Your line chart should include the label of X-axis (Date), Y-axis (Total Cases), and the legend. The legend should consist of the circle with the #8bc3a1 color and the text with the selected country. (2pts each)

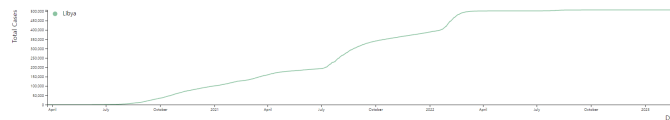


Figure 3: The example of line chart

After you implement, you will be able to see the line chart like [Figure 3](#)

3 Writing a Report (8pts)

As written in the syllabus, the coding assignments require you to use ChatGPT for self-directed and meta-learning. To verify that you utilized ChatGPT, you should write a report about the usage of ChatGPT.

In the report, you should include at least one screenshot that contains your queries about the assignment and ChatGPT's answer. You don't have to upload all queries.

Then, you should write your analysis about how you utilized ChatGPT to solve problems, and what you learned. You should write at least 10 sentences.

Containing the contents above, your report must be up to 2 pages.

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
│   ├── barchart.js
│   ├── bubblechart.js
│   ├── index.js
│   ├── linechart.js
│   └── main.js
├── example.mp4 (Not essential)
├── example4-1.jpg (Not essential)
├── example4-2.jpg (Not essential)
├── example4-3.jpg (Not essential)
├── index.html
├── package.json
├── Report.docx
├── styles.css
└── Instruction.pdf (Not essential)
```

You should upload this file via Blackboard.

4.1 Late Submission

When you miss the due date, you will get 20% penalty if you submit within an hour, and 50% penalty if you submit within a day. After that, we won't accept any late submissions.