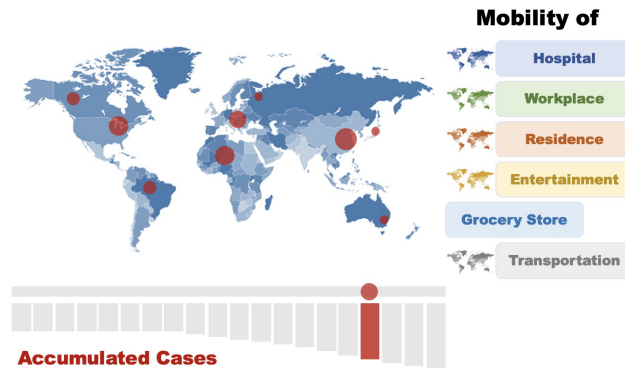


Data Visualization

Milestone 2 - IKUN

Sketches of Visualization



We intend to create a visualization that shows the correlation between population mobility and COVID-19 spread on a global scale. Our visualization consists of two parts. The first part visualizes the mobility of people in different countries, with different colors representing various types of mobility, such as transportation, entertainment, and grocery shopping. In the second part, we plan to use transparent red circles to indicate the accumulated COVID-19 cases, where the size of each circle represents the number of cases. This will allow us to examine the relationship between COVID-19 propagation and people's mobility in different countries. Additionally, we plan to include a time bar and a histogram under the map, which will not only allow us to observe changes in people's mobility data and regional COVID-19 spread over time but also provide data on how total global cases are increasing. If time allows, we will also implement two more extra visualizations, which would be a radar chart and a ranking chart to provide more information and will be discussed in detail later.

Core Visualization

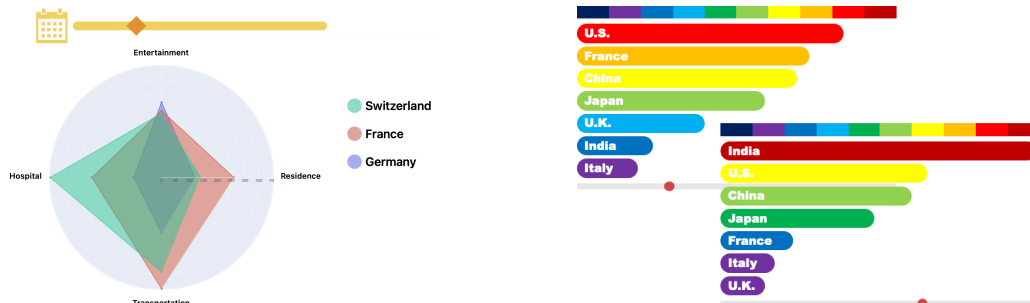
In the core part of the visualization, we will show our theme, which is to explore the relationship between the development of the Covid-19 epidemic and the mobility of people in different places. The main body of the display will be based on an interactive map of the world with several layers on the map.

The first layer will show the cumulative number of confirmed Covid-19 cases around the world or the number of new cases in a given time period with circles of different sizes. The larger the circle at a given location, the greater the number of cases. As the map scale is scaled up and down, the circles are adaptively merged and split to fit the current map scale and to increase the readability of the data visualization. The second layer actually contains a set of several sub-layers. We will use the heat map to show the activity of people in different places with color changes, such as hospital, residence, work place, etc., and each type of place will correspond to a layer. Users can check multiple layers at the same time to see the activity change of multiple places at the same time. There is a sliding timeline at the bottom of the map, and all the information on the map will change with the time on the timeline, so that the epidemic and the activity of people can be observed over time.



Extra Visualization

We plan to provide two additional data visualization graphs. The first will allow users to select a specific country and region, which will then display a radar chart for that region to show people's activity in different places, so that they can more visually see how activity varies relative to each other between places. The second is to let users select a type of place of interest and we will display a descending/ascending ranking of all countries and regions in the world regarding the activity of that place. This allows the user to observe the change in activity for a certain type of place in different regions at different stages of the epidemic. Similar to the core visualization, both additional visualizations each provide a sliding timeline, with information in the graph changing accordingly over time.



Visualization Tools

| Visualization Work | Related Lectures | Tools |
|---------------------------------|----------------------|---------------------------|
| World map of covid-19 cases | Lecture 4.2 8.1 11.1 | D3.js |
| World map of people mobility | Lecture 4.2 8.1 11.1 | D3.js |
| Dynamic ranking | Lecture 11.1 | D3.js |
| Color selection of Page and map | Lecture 6.1 | |
| Web page structure | Lecture 2 3 | html, css, js |
| Data preprocessing | Lecture 4.1 | Pandas, scikit-learn, EDA |
| Story telling | Lecture 12 | |