

The horse drawing

The end goal of the project is to visualize some pattern of Asian Oil Import and Export data while incorporating the information about current status of their different energy sources. To see if there is a common theme among the nations on how reliant they are on oil, and how they are doing in transition to renewable energy sources. Like the horse drawing Veronique pulled out during her final presentation, honestly, I think the project came short of the imagination I put forth from the ideation stage. But I did have some of those moments during this project that got me hooked on programming in the first place back in my college days and on data visualization later in my career. I am talking about those endorphin release moments at the end of problem-solving iterations when something finally works the way I intended and envisioned. I am proud of my product, though I humbly admit that there are lots of rooms for improvement. These are my reflections on my final project.

I knew what it should look like, but contents came later

I went backwards on this. I knew what I wanted the project to look like without knowing what I wanted to show really. From the ideation stage, I knew I wanted a map of Asia because I wanted the oil data to be linked with the geographical information. While I was reading the book that gave me the motivation to this project, the absent superpower, I had the map opened by the side trying to link the content of the book with the locations of the nations. As long as I wanted to describe the geographical pattern, I needed a map. So, I went on and see if I can build the map of Asia and make it interactable. I had some idea of what I wanted to show, but it was only later I realized I did not really understand the data. In other words, narrative or context I wanted to deliver through the visualization and the map was missing from the start. If I knew beforehand the exact content and narrative before building, I would have had more time to think carefully about the appropriate mediums and tools.

After looking through the data, I had to rethink everything

The pattern is clear. Asia relies heavily on oil as their primary energy source. Asia is both the biggest oil buying continent and oil selling continent. East and Southeast Asian countries are big buyers and West Asian countries, or the “middle east”, are big sellers of oils. The poorer countries are forced to resort to cheaper and less efficient alternative sources like hydro power. The original sketches I drew out, a map of Asia with an information panel with a mouse hover action was not going to drive this narrative home. The story deserved more context. So, I had to rethink the layout and information I needed to put in it.

Pie chart + Bar plot did not work out, bar plot + table are more like it

Originally, I planned to use pie chart and bar plot together to provide enough contextual information so that anyone can spot out a patterns of Asian countries energy state. But again, this was before learning about the data, so when put into action pie chart and bar plot seemed redundant and was only speaking one common them. Asia is heavily dependent on Fossil fuel. And the hover action only provided one information at a time, so it was somewhat awkward to make observations among different regions of Asia when I was only able to see one panel at a time. Some thinking was given to how to organize the data and information and what I decided as the final model emanated from the visualization put together by Johns Hopkins on Covid-19 data. What I consider as more of contextual data like total dollars spent on import and export of crude oil were to be provided in separate div to give an idea how a nation in Asia fits to the common theme of Asia as a whole. Ranked list of biggest spenders and earners of oil money in Asia were also to be provided the side while user may alternate the between the two tables of import and export. While this contextual information was to be placed in more of an undeviating state, bar plot of each nation's energy consumption along with a brief information of its economical category should be re-rendered as user interacts with the map in the center. Along with the tables, total dollars spent and earned, the information of each nations fit better to the theme, and it was also easier to get to.

Those moments I code for

There were few bumps, but the implementation went smooth for the most part. But in my opinion, these are the most fun part of the job. Getting through the obstacles and make things work the way you want and awarded with that moment of triumph. The very first challenge was to get the grid layout look right and have it responsive to window resize. I used border-box display with each div with contents set to in-line display with percentage value width and height. The next challenge was getting the table responsive to the mouse hover on the map with a brief flash to highlight the responding row. For this I used nation's name as a key for each row in the table. Nations with space in the names like "South Korea" or "Saudi Arabia" were not responding to the action. Finding this out took some time, but solution was simple: take out the whitespaces in names when setting key for the rows and take out the whitespaces when getting the nation name with the action. This way key values won't have the whitespaces, but when used as text for display it will still have the separation.

Future works

Though it is short of my own imagination, I take some pride in my work. I tried to make the interaction help to connect dots to see the pattern in the data with the best reactive tools I can think of. For future works, couple of things can be improved in seeing this more clearly. The import heavy and export heavy region is clearly divided in the data, but this is not apparent directly from the map. A colorscale will surely help to see this pattern immediately and may make it easier to see. The challenge here is that each nation has two values both import and export but needs to be factored to a single number representing both. Division may do the trick

so that if denominator being bigger will create a float less than 1 can be implied import or export heavy region depending on what is used as the denominator. This is a theory so it may not look all that great when implemented. Then other methods may need to be explored. Other possible future work may be to extend the dataset to other part of the world not just Asia. The map then will have to be more interactive, giving users ability to move around the globe, zoom in and out, etc.

Closing

Just like anything in life, practice makes it better. The project gave me an opportunity to better understand the mechanisms of D3 by getting the hands dirty. In the beginning of the implementation, I wasn't as competent in working in D3 as I am now at the end of the implementation. I gained working knowledge of data binding and chaining to make interaction chained with interactive tools, and I am competent in my abilities to go further and create sophisticated plots with interactions using D3. Next time I just need to remember to have a firm understanding of the data and narrative before planning out the visualization scheme.