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Final Portfolio

DATA73200: Interactive Data Visualization

(Spring 2020 | 64845)

Project Exploratory Data Viz:

https://daryabrytun.github.io/Interactive-Data-Vis-Sp2020/Project1/

Final Project : Narrative Data Viz:

 https://daryabrytun.github.io/Interactive-Data-Vis-Sp2020/narrative_grid/

I choose the topic of Life expectancy for the visualization, health of the nations and the factors which influence on it, because it is a relevant topic in the world today. Why is this important? Life expectancy is a measure that is often used to gauge the overall health of a community. Life expectancy at birth measures health status across all age groups. Shifts in life expectancy are often used to describe trends in mortality. Being able to predict how populations will age has enormous implications for the planning and provision of services and support. Small increases in life expectancy translate into large increases in the population.

Also I did a research for my course Econometrics last semester about Happiness score in the World, according that research Life expectancy of the country and region is one of the main factors, besides Economic in the country (GDP per capita), which influences on Happiness Score.

The intended audience is general public. The main audience would not be scholars seeing as it is not very academic and simplifies what it might be found in an actual scientific article. It is simple enough for the general population to understand, but informative at the same time.

## Prospectus Sketches and Mockups

For my first project, I decided to repeat my own version of a Hans Rosling's visualization (https://www.youtube.com/watch?v=jbkSRLYSojo&t=2s), showing how life expectancy has been increasing over the years with GDP per capita. The animated "Bubble charts," contains five dimensions of data: income (x-axis), lifespan (y-axis), population (circle size), geography (circle color) and time (movement).

So I want to see how the income (GDP per capita) influences on the life expectancy and how this dependence looks in different regions and how it's changing during the years.At the beginning of the project I draw three sketches to express how I can visualize this data in different ways:

• The first one (which I eventually choose) shows us the dynamic of live expectancy during the years and in contract to others sketches gives us the dependence between Life Expectancy and GDP.

- The second one, describes the life expectancy by sex, so we can see the difference by gender during the years and regions.
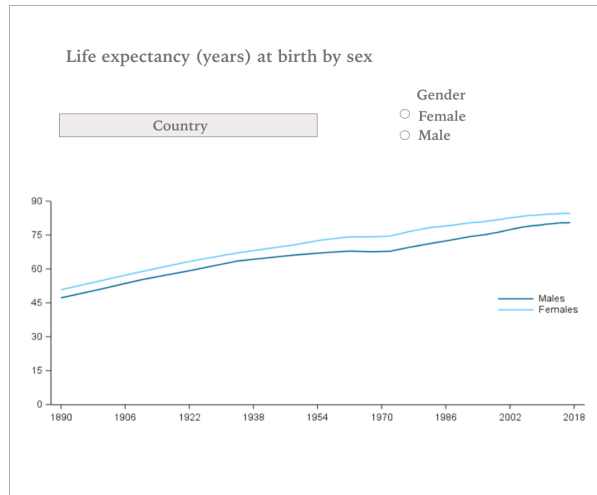
- The last one puts the accent on how different from continent by continent the level expectancy was during the years.
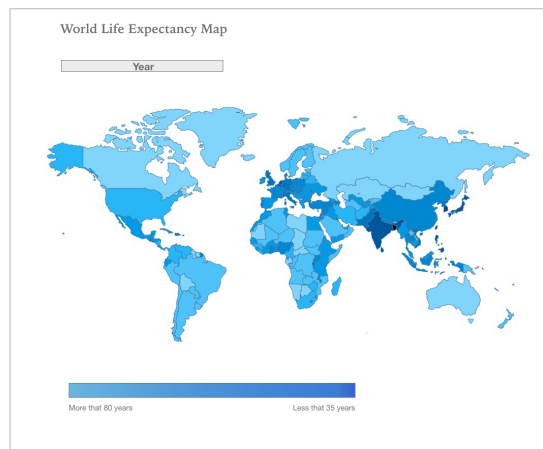
On my first project, I used a table chart with different color displaying regions of the country, and different size of the dots reflecting the population of the country.

UI elements to the page:

* hover activity to my circles with text annotations on tooltip;
* two dropdown with option to choose the needed region and the year
* the slider for a year. It was a great idea and a tip of instructor Ellie Frymire.

For me was the most challenging here is to connect two filters for regions and years.. Fortunately, Ellie explained it to me. My dots worked incorrectly, but with Ellie's help, it was handled: the **+** operator before state.selectedYear returns the numeric representation of the object.

```
149    }
150
151    /* DRAW FUNCTION */
152    function draw() {
153      let filteredData = state.data;
154
155      if (state.selectedRegion !== "null" && state.selectedYear !== "null") {
156        filteredData = state.data.filter(d => d.Region === state.selectedRegion && d.Year === +state.selectedYear  )
157      }
158
```

Narrative data Visualization:

I used four different visualizations for my Narrative Project.

1. The world map showing the life expectancy across the world. Here I used tooltip with the name of the country, legend for the different colors. This
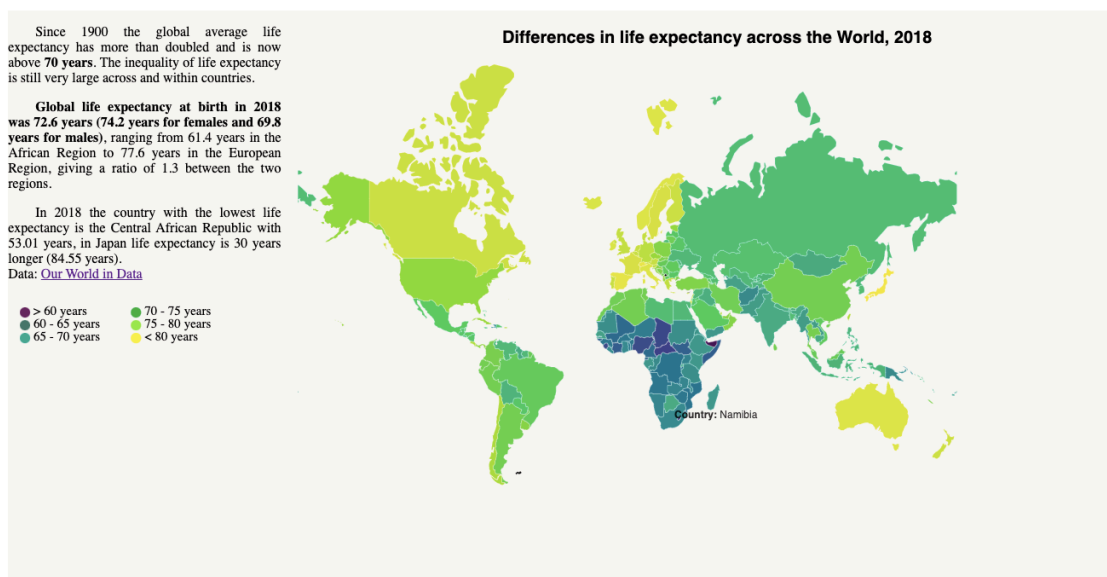
visualization was challenging at the begging, I didn't understand how two different data files (csv and json) can be connected. However, after Ellie's explanation during the narrative 1:1 call this was made clear.

2. For the next visualization I decided to look up on the factors what drives improvements in life expectancy, as health expenditure. I used the babble chart which is very similar to the graph from the Project 1.But for x-axis I used health expenditure per capita and added the color legend for illustrative purpose.
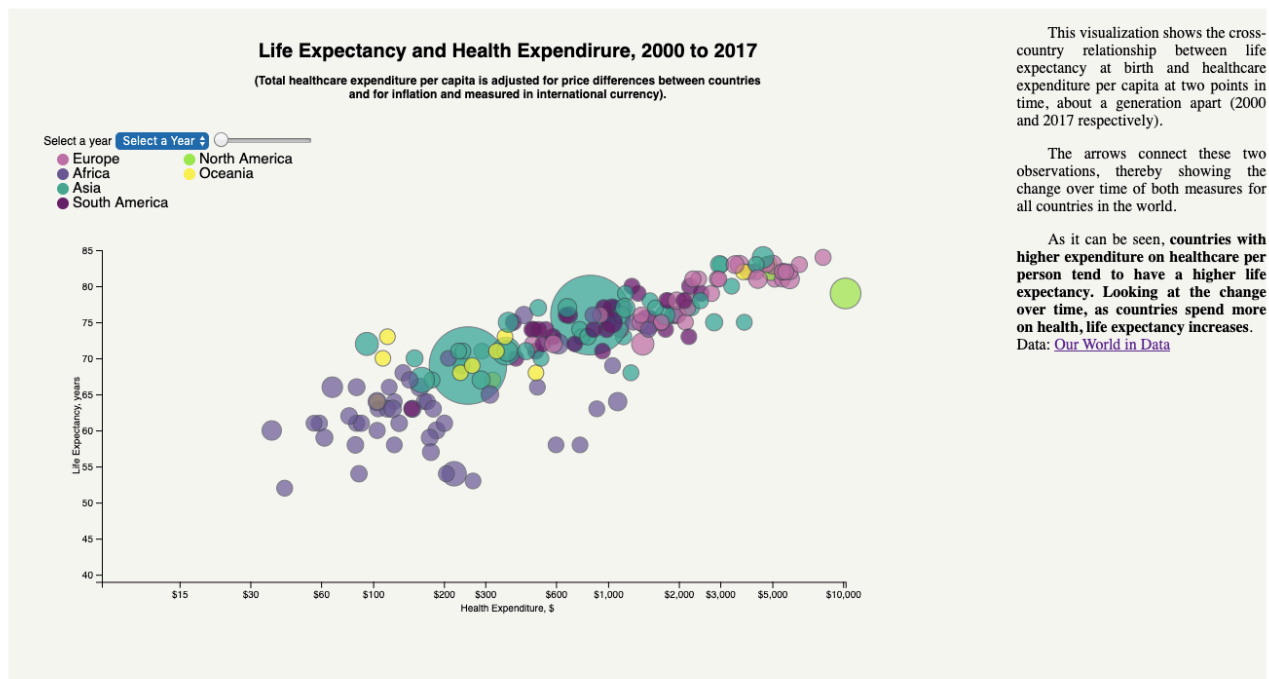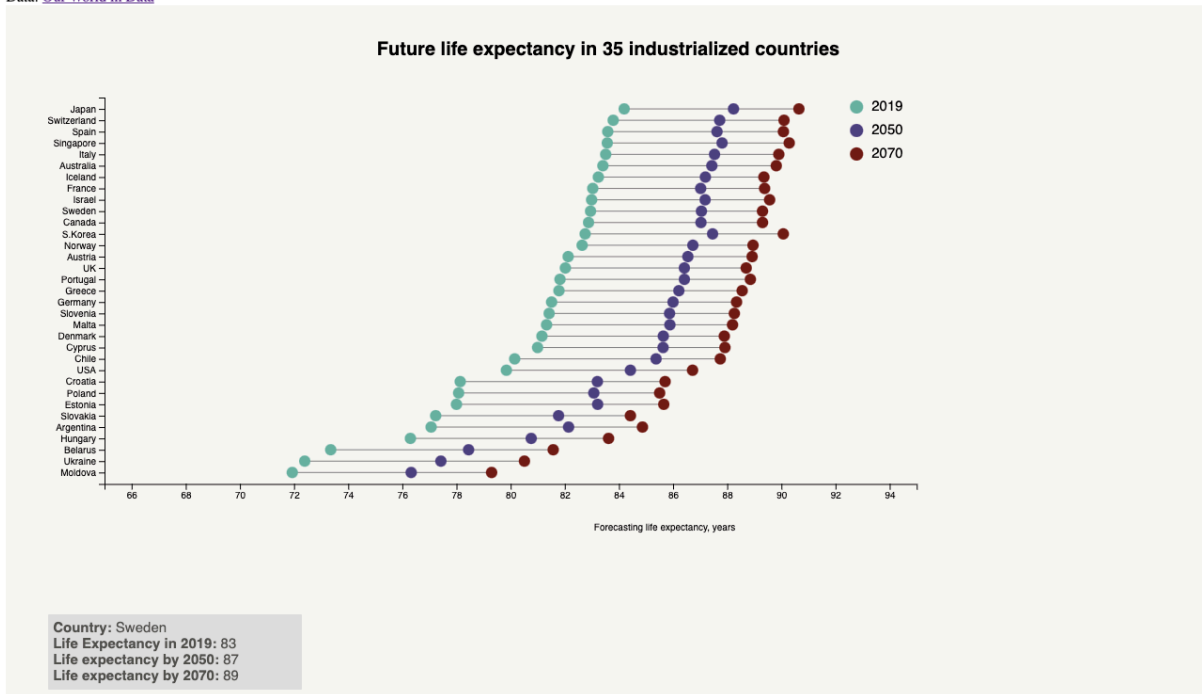

3. During my work on the graph 2 and reading other articles about it (https://ourworldindata.org/life-expectancy), I decided to implement the graph showing the health expenditure of the countries with the highest life expectancy. It wasn't my plan at the begging, but I found that interesting how different the amount of the expenditure on the health for each country. I fount a great example of sorted bar chart of Mike Bostock https://observablehq.com/@d3/sortable-bar-chart. I found it very useful and interesting how we can play with code to sort the data differently.

Total healthcare expenditure per capita, USD
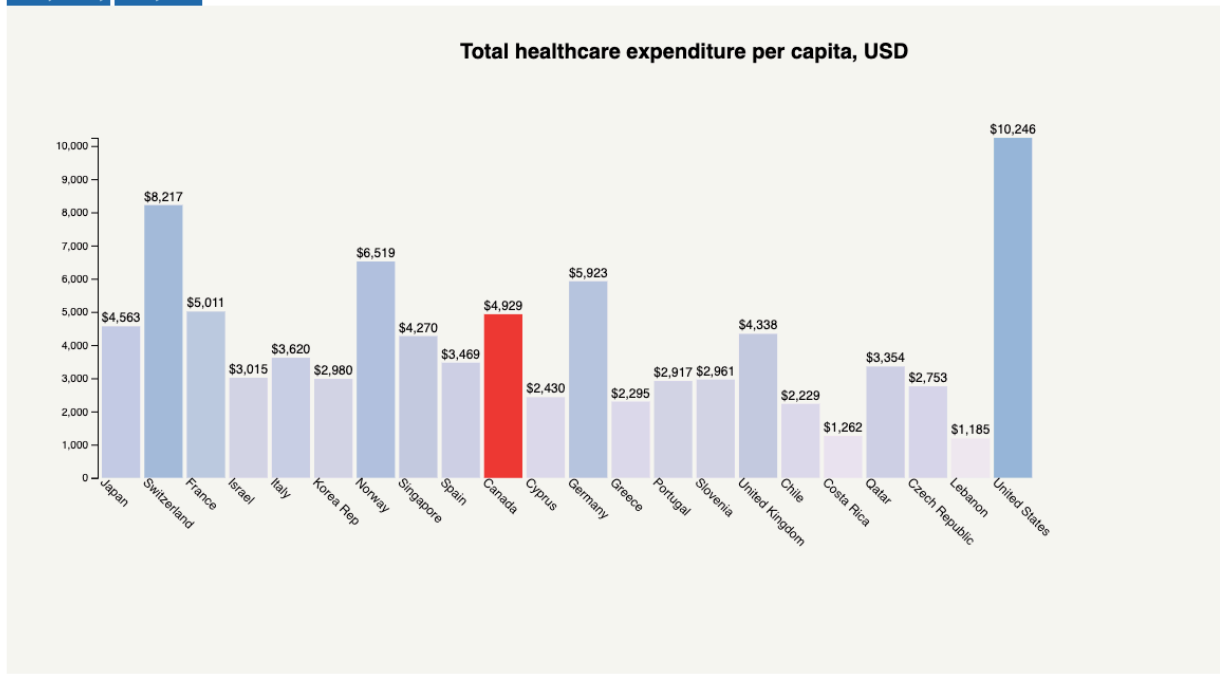
4. The last graph is about projection of life expectancy for 35 industrialized countries. I was inspired for this graph by the work of the researchers at Imperial College London and the WHO, and published in the *Lancet*, a medical journal (https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)32381-9/fulltext)

Data: Our World in Data

Future life expectancy in 35 industrialized countries

Forecasting life expectancy, years

Country: Sweden
Life Expectancy in 2019: 83
Life expectancy by 2050: 87
Life expectancy by 2070: 89

I was thinking a lot which type of the graph I want to use. But my classmate helped here. On the critique session he showed us the lollipop graph and realized that it can be a good addition for my project. But I decided to implement for three variable, the prediction of life expectancy for three different years: 2019, 2050 and 2070.

- • Technical documentation and researches:

During this projects I learned a lot about how to search for source and how to better navigate data, especially big ones. Actually, it was enough difficult because the data was really extensive (all countries for more than 200 years). At the beginning it was challenging enough to manage it. . However, the first thing I did was go on the website of World Health Organization and GHO data repository, which contains an extensive list of indicators, which can be selected by theme or through a multi-dimension query functionality. It is the World Health Organization's main health statistics repository. This strategy ended up woking for me. https://www.who.int/gho/mortality_burden_disease/life_tables/situation_trends_text/en/

Also I found a lot of useful data here: https://ourworldindata.org/life-expectancy.

These projects helped me to put everything in its place and to understand deeper which part of the code is responsible for. At the begging is was really challenging, but all tutorial were very helpful. It was a really interesting experience to put your thoughts in the code and implement them in the visualization. I loved this course very much and very thankful for my instructor Ellie for useful and clear tutorials. I think it's really challenging course, I am very proud of myself, taking into account that I have never had any experience with D3.js and Java Script. But in this short and unusual (the pandemic time) I acquired this knowledge and I hope I will continue working on this direction.