STAT679, 2022 Fall
Problem Set 2
Haoyang Yan

October 21, 2022

Note: All the codes of Problem set 2 can be found in github
https://github.com/haoyangyan/679PS2

1 Interactive German Traffic

1.1 a,b

Link of the Shiny App
https://haoyangyan.shinyapps.io/german_traffic/

1.2 c

We can also use the facet line plot to show the traffic change in different cities. It will seperate the data from different cities more clearly, but harder to compare data among different cities.

2 NYC Rentals

2.1 a,b,c

Link of the Shiny App
https://haoyangyan.shinyapps.io/nyc_rental/

2.2 d

Rental price in South West of Manhattan is much higher than in North East.

3 Random Point Transitions

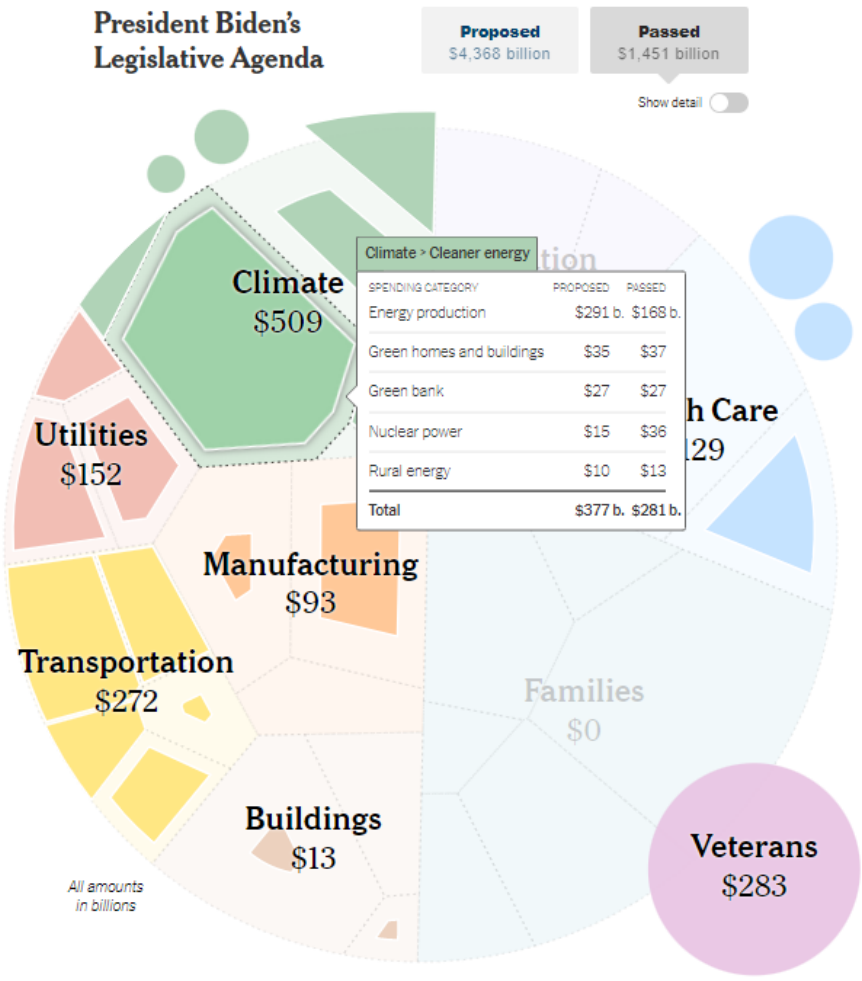
https://github.com/haoyangyan/679PS2/tree/main/Random%20Point%20Transitions

4 Bar Chart Transitions

https://github.com/haoyangyan/679PS2/tree/main/Bar%20Chart%20Transitions

5 Transition Taxonomy

5.1 a



For this visualization from the New York Times Upshot, when I move my pointer, it shows the detailed information in the category. This is a kind of

View Transformation. When I click it, the colored area of the pie chart changed between the proposed budget and the passed budget. This is a kind of Filtering.

5.2 b

For graphical marks of Filtering, sometimes we highlight the filtered data by color or size.For example, we can use $.attr("fill","red")$ in SVG.

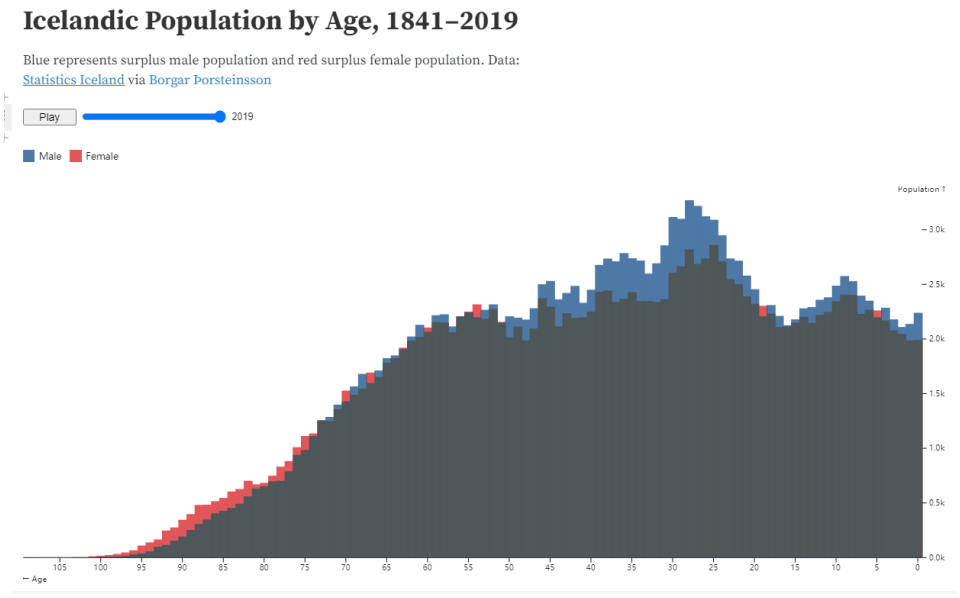
5.3 c

For implementation of Filtering, I would use the $data.filter$ function in SVG.

6 Icelandic Population Analysis

6.1 a

Explain how to read this visualization. What are two potential insights a reader could takeaway from this visualization?



Bars emerge from the right side, which means the number of birth. Bars becomes shorter while moving leftwards, which means the number of death. The whole graph is moving with timestep transition. The colored bar at the upside means the difference between two genders, where blue means males is more than females and red means females is more than males.
insights:
1. There's a big population increase between 1940s and 1960s

2. There's usually more young males than females, but more old females than males. And the gender ratio of male/famale is increasing in the past 60 years. For people who are in their 20s to 40s nowadays, there are much more males than females.

6.2 b

What does this code do? What purpose does it serve within the larger visualization?

```
rect = rect
  .data(data.filter(d => d.year === year), d => `${d.sex}:${d.year - d.age}`)
```

Filter the data by a specific year. Return the population of different ages and genders

6.3 c

When the bars are entered at Age = 0, they seem to "pop up," rather than simply being appended to the end of the bar chart. How is this effect implemented?

```
const t = svg.transition()
    .ease(d3.easeLinear)
    .duration(delay);
```

by the ".duration(delay)" here

6.4 d

Suppose that you had comparable population-by-age data for two countries. What queries would be interesting to support? How would you generalize the current visualization's design to support those queries?

To compare population-by-age data for two countries, I would suggest to plot a graph with two sides. The upper side is exactly same with the current interactive visualization of Ireland, while the lower side is a mirrored bar plot of the other country.

To implement this, I would use the same code of the current design. Only change the y factor to let the bar growing downward while plotting the lower side.