VISUALIZATION MINI PROJECT – 1

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Project URL: link (http://allv28.all.cs.stonybrook.edu:8080/skancharla/USArrests/)

I have worked on the USA Arrests data. It consists of arrests information for 4 different kinds of crimes: Murder, Assault, UrbanPop and Rape for all the 50 states of USA.

Task 1:

First task is cleaning the data and grouping them into bins. For this, I have grouped the states into 9 bins based on their geographic location. I have written a script(*csv.js*) for reading the csv file and converting it to a ***json object*** with ***label*** and ***count*** fields.

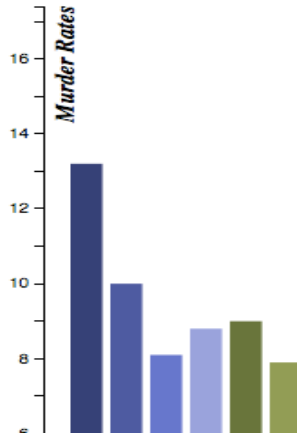
This function generates a json based on "region" or "states" parameter, selected from the html page. If "region" is chosen, then dataset will have 9 bins and if the "state" is selected, the dataset will contain 50 objects.

So, the ***extra credit*** – which says when mouse moves from left to right, the number of bins should increase, is implemented here. On the HTML page, if you move from Regions to States, the number of bins will increase from 9 regions to 50 states.

Regions / States (slide)

Task 2:

A bar chart is plotted using the json generated from the data. This is implemented in the *barchart.js* file. **X-axis** and **Y-axis** are plotted as well to show the range of the data. The type of the crime is shown as label on the Y-axis.



Task 3:

There are 4 variables in the dataset and they are Murder, Assault, UrbanPop and Rape. To cycle through the variables, I have used buttons on the HTML page. So, you can select each button to see the changes in their frequencies.

Task 4:

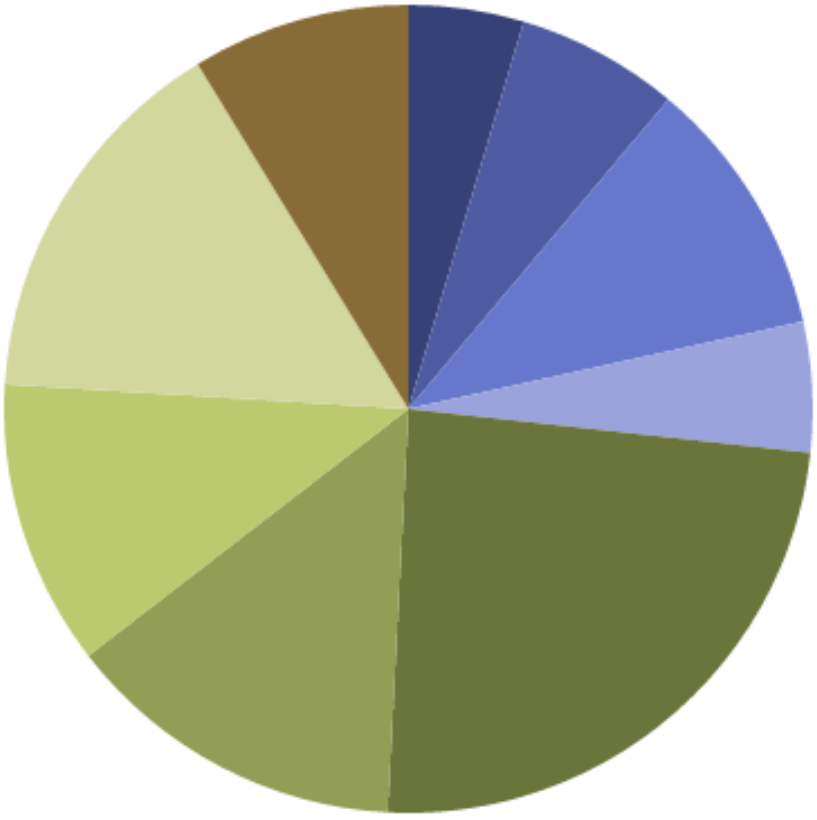
The mouse-over function is implemented to show the values on the top of the bar. Also the bar is highlighted with Orange color when the mouse moves over it.

Task 5:

The mouse-over function also implements the increase in bar width and height. Various bins are represented with different colors based on their frequency values.

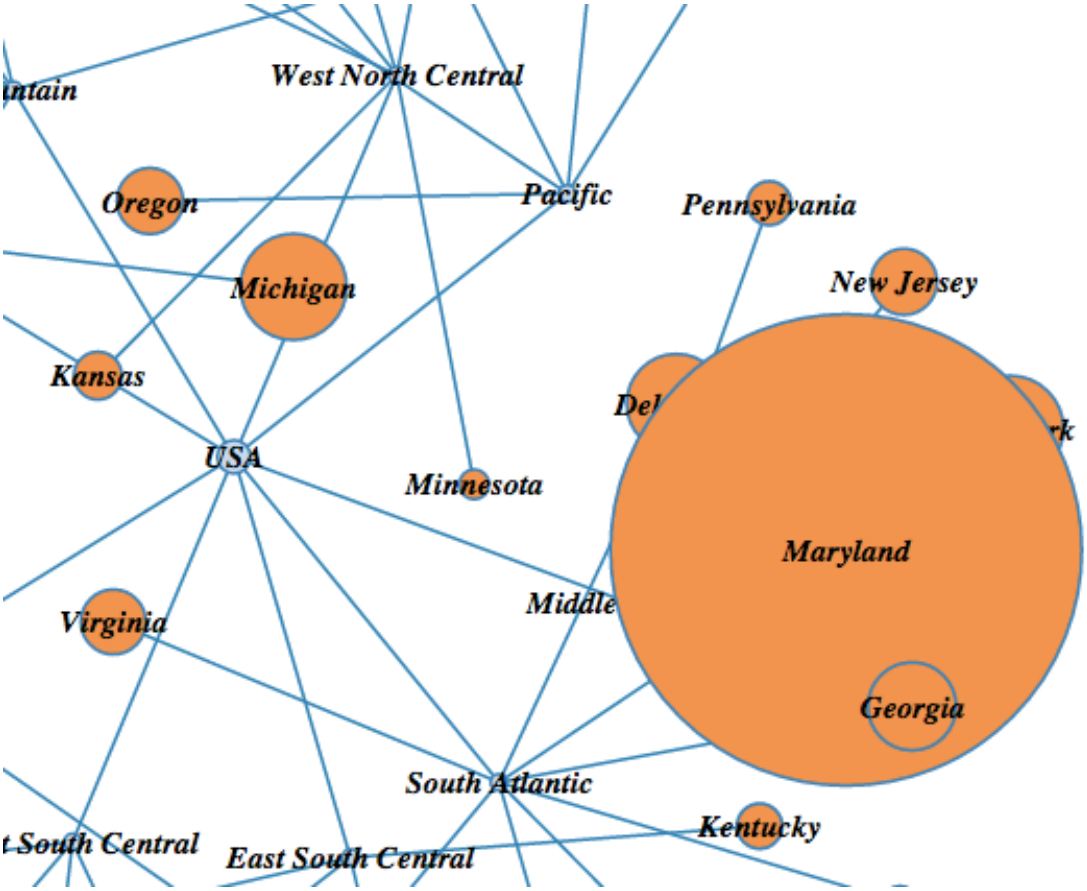
Task 6:

On mouse click, the bar chart transforms into pie chart(*piechart.js*). You can see two different pie charts for states and regions. On hover of a slice, it highlights the arc as well as shows the value and label of the arc in an angle appropriate to that arc.



Task 7:

On click of the "force-layout" button on the html page, it goes to the *force_layout.html* page. There are again 4 buttons on this page to iterate over the 4 variables. The **tree** layout is chosen to show the complete tree of the USA, their regions and the corresponding states. The leaf nodes represent the states and their size/radius denotes the frequency of that crime in that state. For eg, **Assault** crime is observed maximum in **Maryland** state. The json files are created in Java and stored in the data/ folder. These files are read in the d3 script and parsed recursively to iterate over the complete tree from USA(root) to the leaf nodes(states).



Extra Credit Task:

Two parts are implemented for this:

1. When mouse moves from left to right on a bar, the bar width increases. When mouse moves from right to left, the bar width decreases. Also the height of the bar increases to highlight it.
2. The total number of bins reduces from 50 to 9 implies the bin width increases when mouse moves from right to left. Slide over the text ***Regions / States*** to see this happen. When mouse moves from left to right, bin width decreases and number of bins increases.