**Technology Discussion**

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Overall this D3 lab is a challenge for me. I haven’t used this tool before. D3 is flexible, useful and powerful to implement dynamic and interactive graphic form. This lab, I completed a choropleth map of energy production, consumption , expenditure and their rankings in each state in United States. During this lab, I came across some difficulties in the following three operations;

1 Changing the horizontal choropleth into vertical one:

In the example, the choropleth is horizontal, yet in my project, the variables increases and has 51 variables. Using horizontal choropleth will end up a very narrow bar, which may hard to see and click on. In order to achieve this, I swap the x coordinate and y coordinate of the bar and width and length setting, and finally changed the horizontal choropleth into vertical one.

2 Wrapping the text/label in D3

Thanks to the help of Carl, I wrapped my long label in D3. It seems easy to implement in CSS using <br>, yet kind of complicated in D3. By comparing the label length with the width, it *push* the letter into next line. After this lab, I am able to wrap the long labels and dynamically changing lines.

3 Changing attributes, Changing numeric scale and color

For different attributes, the number range is different. For example, expenditure per capital (dollar ) range is from 10484 to 3327, while the production share is from 0.1 to 18. If using the same numeric scale, the display will be either too big nor too small for the attribute. So for different situation, I used *if*  to treat each attribute differently. Inhence, I applied same method to apply various color to different data set.

I learned a lot from this lab. I should thank Carl and Robert gave us this opportunity to know this powerful tool. I will work hard to explore and use this tool to create more interesting interactive maps in the future.