# Problem Set 3: Visualization

## ECON833

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## 1 Data

Since one of my research topics is innovation, I got a data set about patenting outcomes for children born in 1980-1984 by state in which they grew up, gender, and parent income. The data source is https://opportunityinsights.org/, which is the same one that was shown in the class. With this data set, I visualize the distribution of top inventors by state and the relationship among top inventors, state, and parent income.In this data set, top inventors are defined as inventors who are among the 5% inventors with the most patent citations. The variable of top inventor rate is share of children with patent citations in top 5% of their birth cohort, using total number of citations

## 2 Figures and Description
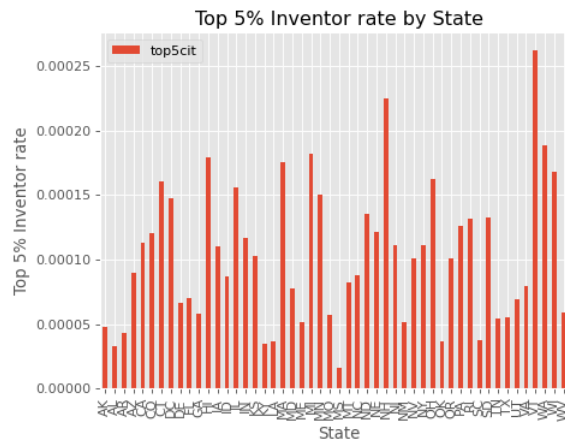


Vermont has the highest top inventor rate, followed by New Hampshire, and Michigan while Mississippi has the lowest one. One distinct feature shown in the figure is that the variation across states looks somewhat great. To see geographical features, I create a color map below.

Top 5% Most Cited Inventor Childhood state
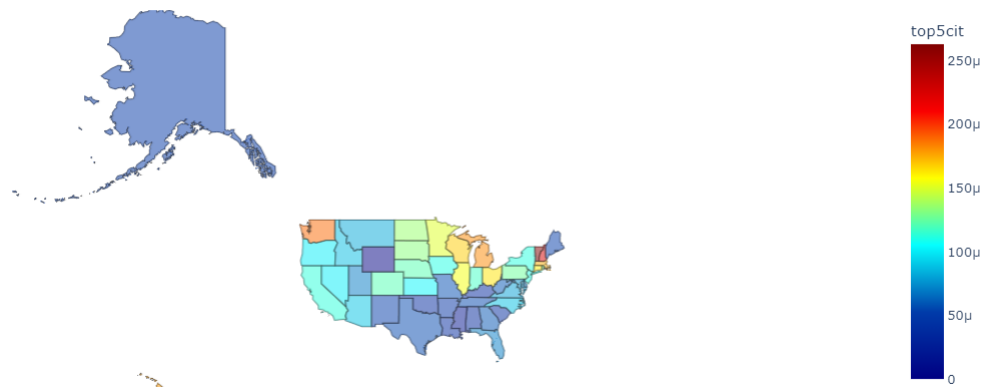


I find that overall north eastern states, Hawaii, and Washington have relatively higher top inventor rate while southern states have a lower rate.

lost Cited Inventor Rate and relation to State and Parental Incon
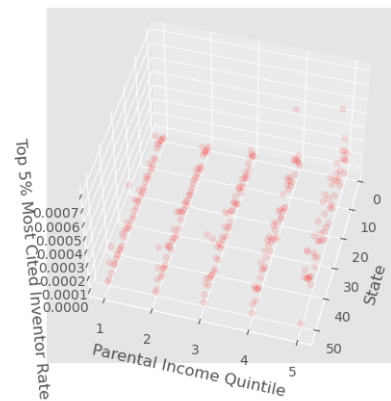


It may be natural to see the correlation between the inventor rate and parent income because children from high income family are more likely to be more educated. The figure right above doesn't show the exact distribution I want to look at. But once I turn the 3d plot on Jupyter Notebook, I can see a positive correlation between parent income and top inventor rate across the states.