Assignment 3 - Building a Custom Visualization

In this assignment you must choose one of the options presented below and submit a visual as well as your source code for peer grading. The details of how you solve the assignment are up to you, although your assignment must use matplotlib so that your peers can evaluate your work. The options differ in challenge level, but there are no grades associated with the challenge level you chose. However, your peers will be asked to ensure you at least met a minimum quality for a given technique in order to pass. Implement the technique fully (or exceed it!) and you should be able to earn full grades for the assignment.

Ferreira, N., Fisher, D., & Konig, A. C. (2014, April). Sample-oriented task-driven visualizations: allowing users to make better, more confident decisions. (https://www.microsoft.com/en-us/research/wp-content/uploads/2016/02/Ferreira_Fisher_Sample_Oriented_Tasks.pdf) In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 571-580). ACM. (video (https://www.youtube.com/watch?v=BI7GAs-va-Q))

In this paper (https://www.microsoft.com/en-us/research/wp-content/uploads/2016/02/Ferreira_Fisher_Sample_Oriented_Tasks.pdf) the authors describe the challenges users face when trying to make judgements about probabilistic data generated through samples. As an example, they look at a bar chart of four years of data (replicated below in Figure 1). Each year has a y-axis value, which is derived from a sample of a larger dataset. For instance, the first value might be the number votes in a given district or riding for 1992, with the average being around 33,000. On top of this is plotted the 95% confidence interval for the mean (see the boxplot lectures for more information, and the yerr parameter of barcharts).