Create a Tableau Story - Education as Opportunity Equalizer?

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Summary:

The primary purpose of this Tableau story is:

- show the comparative average academic performance of students pooled across grade 3 - 8 from the year of 2009 to 2016, both on state and county level.
- show the correlation of academic performance with pupil-teacher ratios
- show the correlations of academic performance with district median family income, percent of adults with at least a BA degree, and the overall SES compositie index.

Design:

Three different plot types were used to visualize the data and their relationships:

- A dot plot was used to compare the relative average academic performance between states. Dots are generally better at showing and comparing when there are a lot of values being compared (in this case, 50 states plus D.C.). Alternatively, a bar chart could be used, however, the areas of the bars are redundant and do not convey additional useful information. In other words, bar charts have a lower data-ink ratio.
- Map plots were used to show the average academic performance of each county. With over 3,000 counties, it is impossible to compare them using a bar/dot chart. Also, using map plots can also show how academic performances differ across geographic locations.
- Scatter plots were used to show the relationships academic performance with other variables, such as pupil-teacher ratio, median family income, and SES. With scatter plots, any positive, negative, or even non-existent correlations between the variables can be observed visually.

Additionally, a common coloring scheme was applied to all plots. Academic performances below the mean were represented by blue, and above the mean by orange. Reference lines were added if appropriate to indicate the average levels.

In general, the Tableau story was designed to first show the audience the comparative academic performance between states and counties, then the correlations of academic performance with different variables, and lastly, as a conslusion slide, the map plot of academic performance of each county is displayed alongside with the scatterplot of academic performance vs. SES composite index. These two plots were linked together so that highlighting observations in one plot will automatically highlight the related observations in the other. This interactivity was designed to emphasize the relationship between academic outcome and SES, and highight the average SES of different counties. Districts or counties with lower SES tend to have lower educational outcome.

Link to version before revision: https://public.tableau.com/profile/lok.heng.chau#!/vizhome/Udacity_1_3/Story1

Revisions

Revisions were made according to the feedback from one of the Udacity reviews (see detailed in the feedback section).

Link to version after revision: https://public.tableau.com/profile/lok.heng.chau#!/vizhome/Udacity_2_1/Story1

Feedback:

Summary of feedback received:

What do you notice in the visualization?

- The story progresses in a logical way.
- The story has a clearly goal of showing the correlations between academic performance and SES related variables.
- The use of color is good and consistent.

What relationships do you notice?

- The strong relationships between academic performance and family income, district educational level, and SES composite index can be clearly seen.
- It can also be clearly observed that overall, no correlation exists between pupil-teacher ratio and academic performance

What do you think is the main takeaway from this visualization?

- SES related variables are correlated with educational outcome.
- The final slide also shows which states/counties have low SES, and how it is related below average academic performance.

Is there something you don't understand in the graphic?

- None.

What do you think will make the visualizations better?

- People familiar with the subject will generally understand or agree with the message being conveyed. SES does correlate with academic outcome.
- If possible, more non SES releated data (such as school level variables)should be included to make it more compelling/interesting.

Feedback from reviewer

- Rescale the size so that the charts show up properly and without overlap in the labels on the x and y axis
- Edit the tooltips
- Reverse the color scheme so that red actually means problematic educational performance (below average)
- Include titles to each plot, and rewrite captions as commentary or explanations of how to interpret the plots.
- Rescale and include Alaska and Hawaii in the map.

Resources:

The data is retrieved from Standford Education Data Archive.