CSE 512 Assignment 3: Storyboard/Writeup

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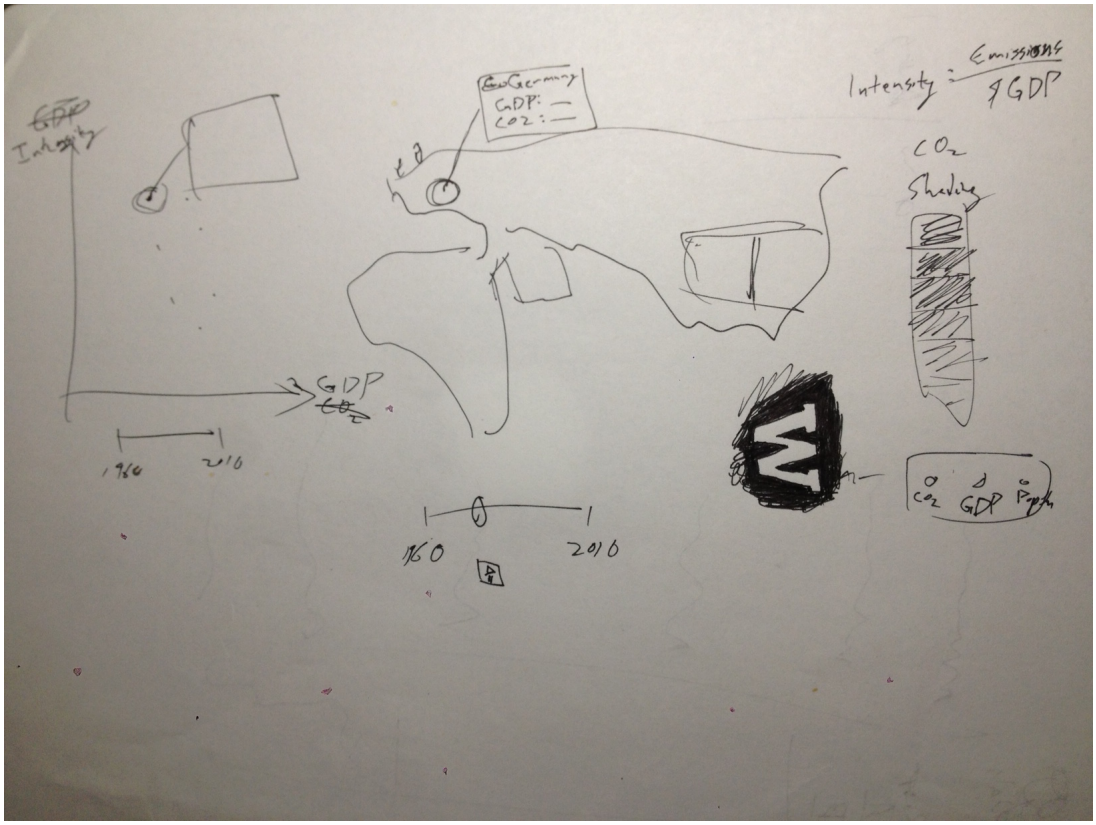
This is a combined storyboard and writeup, because we did not have a clear understanding of the differences between the two of them.

We started off thinking of a way of viewing carbon emissions by country. This choice was motivated by one of us (Alec) using this data in our research, and hoping to gain a better understanding of the data. The dataset we used combines CO_2 emissions data from the Global Carbon Budget, GDP data from the Maddison Project, and population data comes from the UN World Population Prospects, 2012 edition. A goal of the research is to understand how CO_2 emissions vary over time as well as with some very basic social indicators for different countries, so we used these other datasets as well as CO_2 emissions data.

We thought that a map would be a good way of displaying information by country in a way that makes geographic patterns transparent. The time dimension for this data is important, so we wanted to display the data across different time periods as well. Since the use of a map makes it difficult to display multiple variables at a time without the visualization becoming overwhelming. We decided that showing additional information about a country when hovering over a country would be the best way to display more usable information in a single visualization.

Below is a photograph of our original plan. We also considered doing a moving scatterplot like Rosling charts, but we decided on a map for two reasons. First, interactivity would be more useful for a map, especially after doing the reading the Robertson et al. [1] paper which argued against a moving scatterplot without narration. Second, viewing geographic patterns of CO_2 emsisions (or, more specifically, CO_2 intensity, as we chose to focus on in the paper) is an interesting question that is more difficult to explore with built in tools like D3, while it is much easier to look at scatterplots of data.

[1] Effectiveness of Animation in Trend Visualization. Robertson, Fernandez, Fisher, Lee, Stasko. InfoVis 2008



As can be seen, our visualization is very similar to our initial plan. Thoughts of showing two variables, CO_2 and GDP, simultaneously were rejected as leading to too complicated a display.

We put in a slider for selecting the year of data to be displayed. After interacting with a working version of this map, we thought that putting in a play button would be useful for helping to interact with the map. Unfortunately, we were unable to get this working before the deadline.

Taking cues from class, we discretized levels of intensity to bin countries. The divisions for the bins were based on equally spaced quantiles.

Something else we had to consider later was missing data. We originally displayed countries with missing data in black, but changed this because it looked like an extension of the scale, corresponding to extremely high emitting countries. This choice was important because data is missing for USSR countries for all years prior to 1989 except for 1973, where 1973 was a quirk of the dataset.

Further details about the data are included on the visualization page, index.html.