CS573 Final Project Proposal

U.S. Terrorism Trends

A data visualization work to reveal the truth of Terrorism in U.S.

Basic Information

Project repository: https://github.com/cissymtt/USTerrorismTrends

Team members:

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Background and Motivation

Terrorism has been a severe threat to world's safety for years. In the world's big picture, after several years of study and debate, although there are still people who tend to blame it on religion, but it turned out that terrorism is more a Middle East problem than Islamic problem, due to a very complex colonial history which is even longer than modern terrorism itself, and multilateral economic interests between their former colonial countries. Knowing that country leaders around the world are wisely taking actions and seeking cooperation to prevent terrorism from separation. From internal affairs point view, U.S. government has been fighting terrorism for years, especially after 9.11. Same as the world situation, the reasons for domestic terrorism are very complex, and this is what our project trying to figure out. Our project is focused on the terrorism trends in the United States. By looking into the data of past attacks, we are trying to find the pattern of terrorism, and hope to counter terrorism in a better way.

Project Objectives

There are several aspects for us to understand the trends of terrorism in the U.S., including when the happened, what's the target, what's the motive, how they did it, in micro aspect and number, the frequency of attacks as time change in a macro aspect. Is U.S. government effectively fighting the terrorism? What states or cities are easy to become the target? Where is the most vulnerable targets that police

need to protect most, like school, public transportation? What terrorist groups are most active that should be destroyed urgently? These are the questions we want to answer.

Data

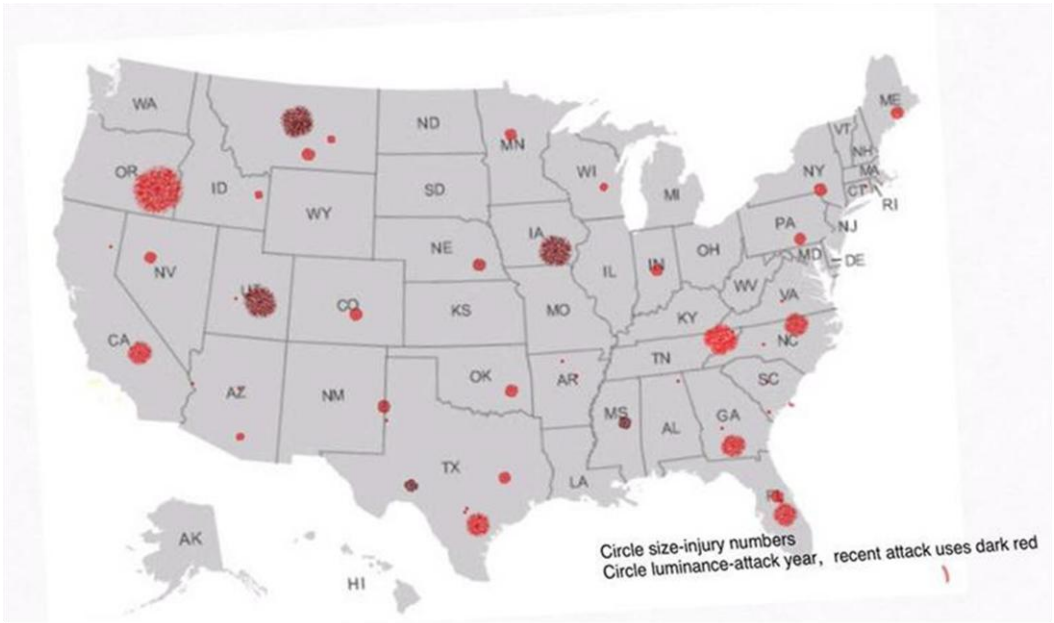
We find the data from website global terrorism dataset which is led by The National Consortium for the Study of Terrorism and Responses to Terrorism (http://www.start.umd.edu/gtd/about/; http://start.umd.edu/).

Data Processing

The original data includes global attacks from 1970s-to 2015, which is about 130MB. We will focus on the attacks in the U.S. Many data around the 1970s is missing, and we care more about the recent pattern of terrorism, so we will focus on the data from recent 20 years.

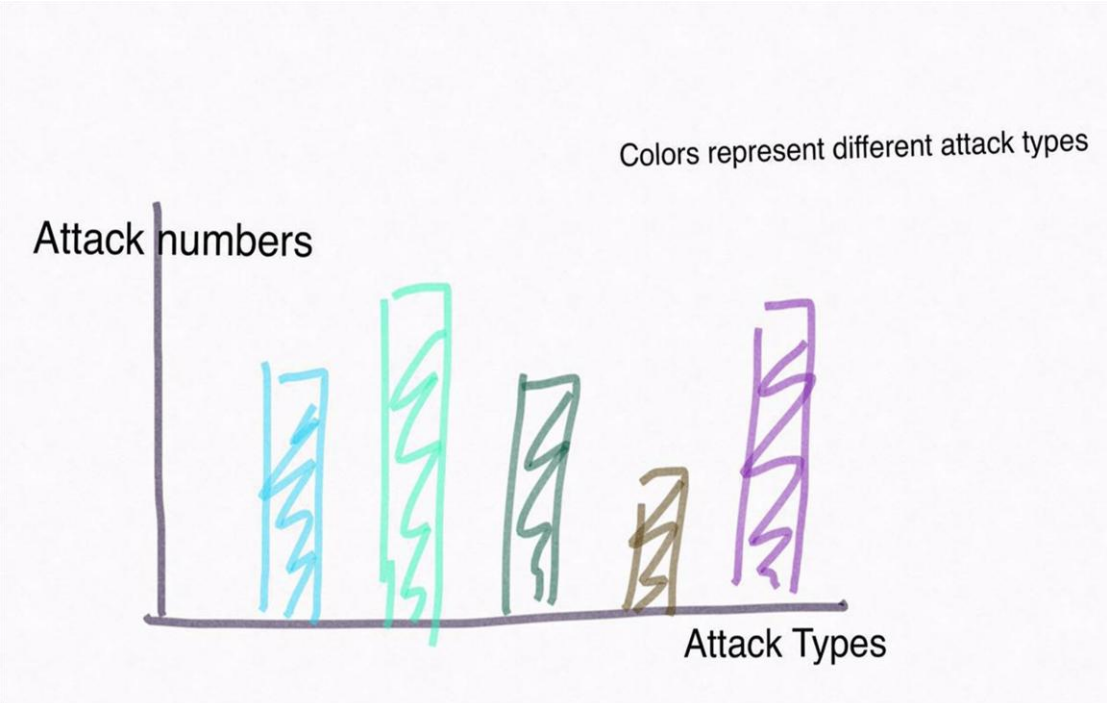
Visualization Design

For this dataset, we want to visualize at least these information to the audience: How many terrorism occur in each year, and in recent 5-10 years? What are the trends? Do they happen more and more frequently or less frequently? Where was these attacks taken place? A map is a perfect way to visualize locations of attacks as well as attack numbers. As shown in sketch 1, red dots will be used to encode the occurrence of each attack, the dot size shows the number of injuries. And we also consider using color luminance to present the occurrence time of attacks, dark red dot means the attack happened recently. If applicable, animation or interactive can be used to show attacks in specific one year or several years according to the audience choice. And the time duration function in D3 may help to produce the visualization of how these change as time passed.

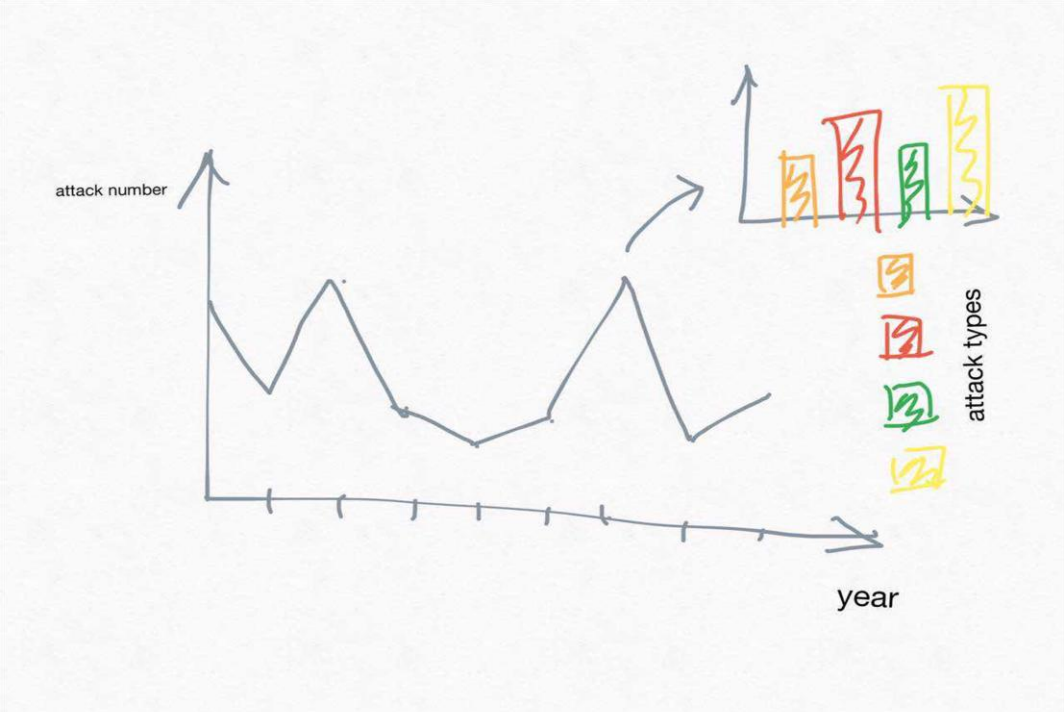


Sketch 1

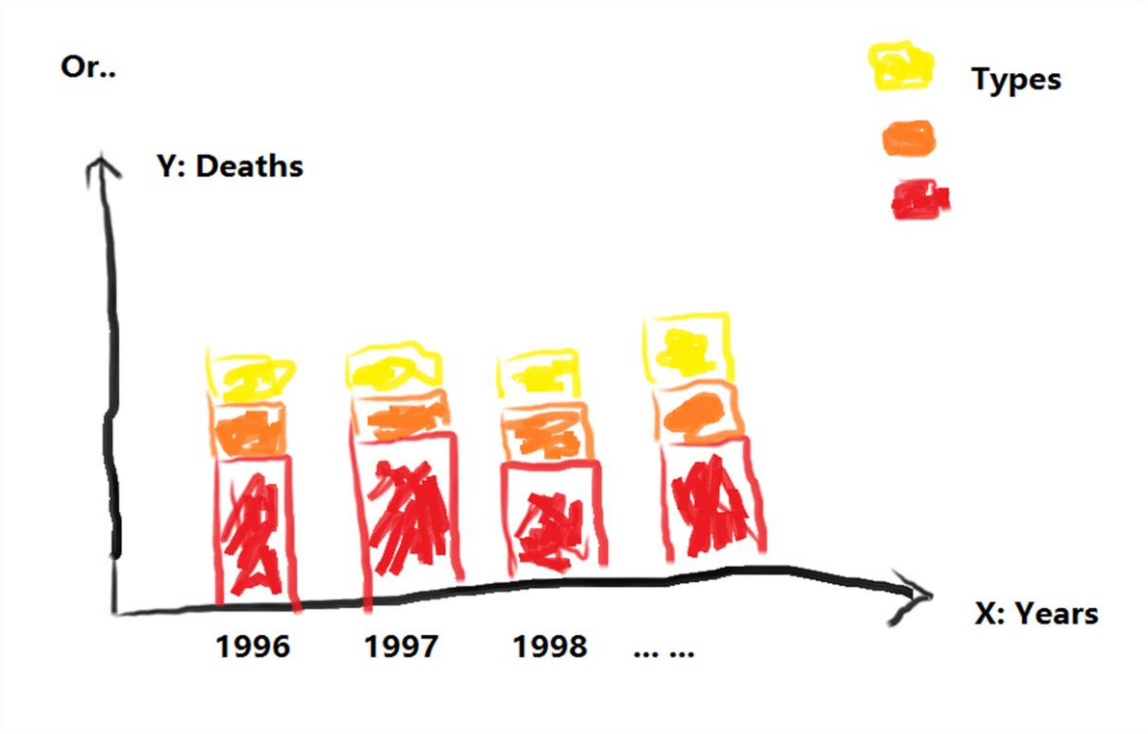
To address the attack type information like Armed Assault, bombing or kidnapping, we consider about using a bar chart to plot the total number of these types, as shown in sketch 2. Or use a steam graph to show the same thing without interaction. As in sketch 3, we are able to plot trends as well as each year's information, and when mouse hovering on the point, it will show a bar chart with attack types. Finally, we decide to use stack bar chart shown in sketch 4 because it can represent in sketch 3 without hovering, and it is easy for the audience to compare attack types changes in different years.



Sketch 2

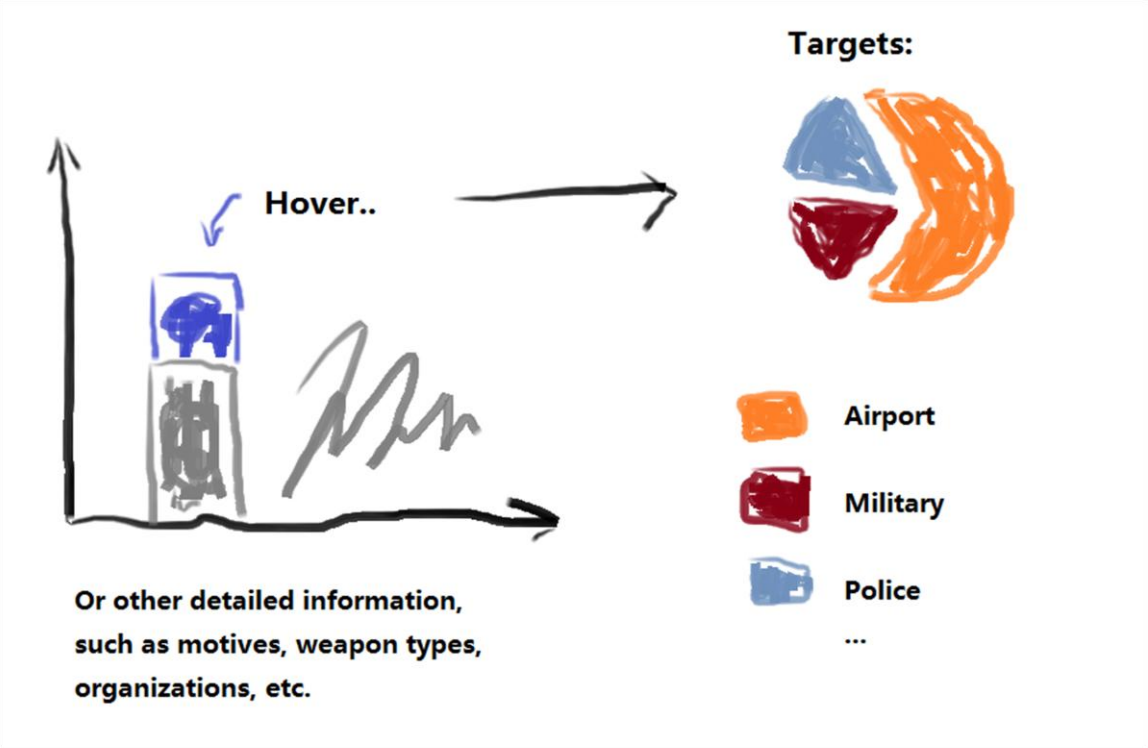


Sketch 3



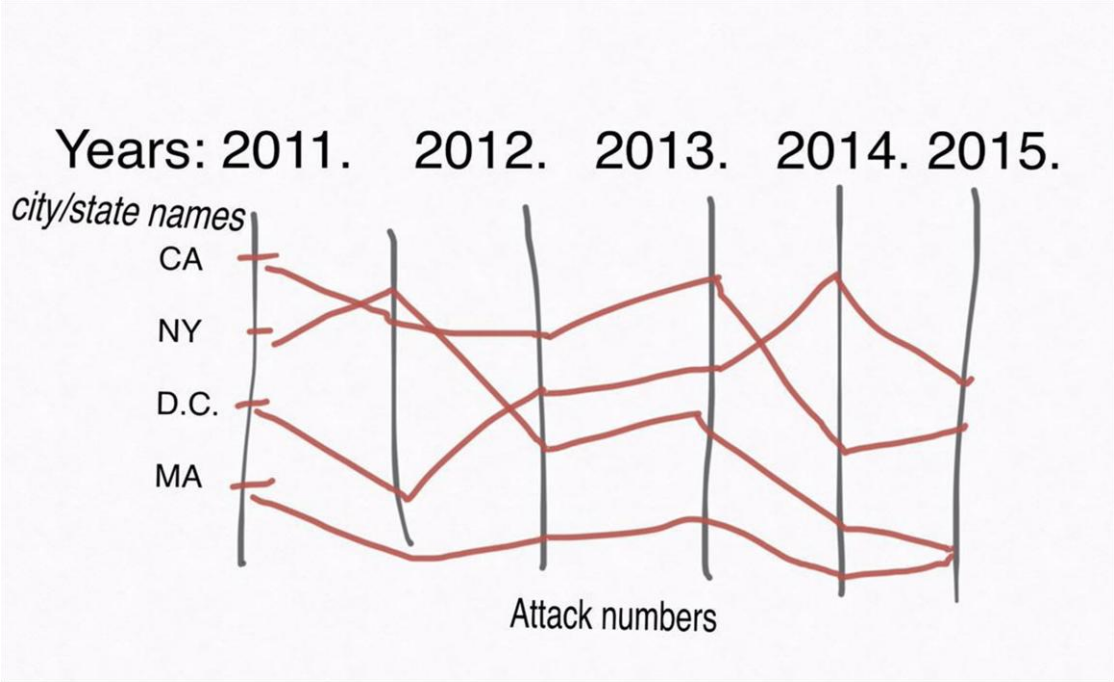
Sketch 4

And the feature in sketch 5 can be added to sketch 4: when a mouse is hovering on a bar of a certain year, a pie chart will show the portion of different attacked targets.

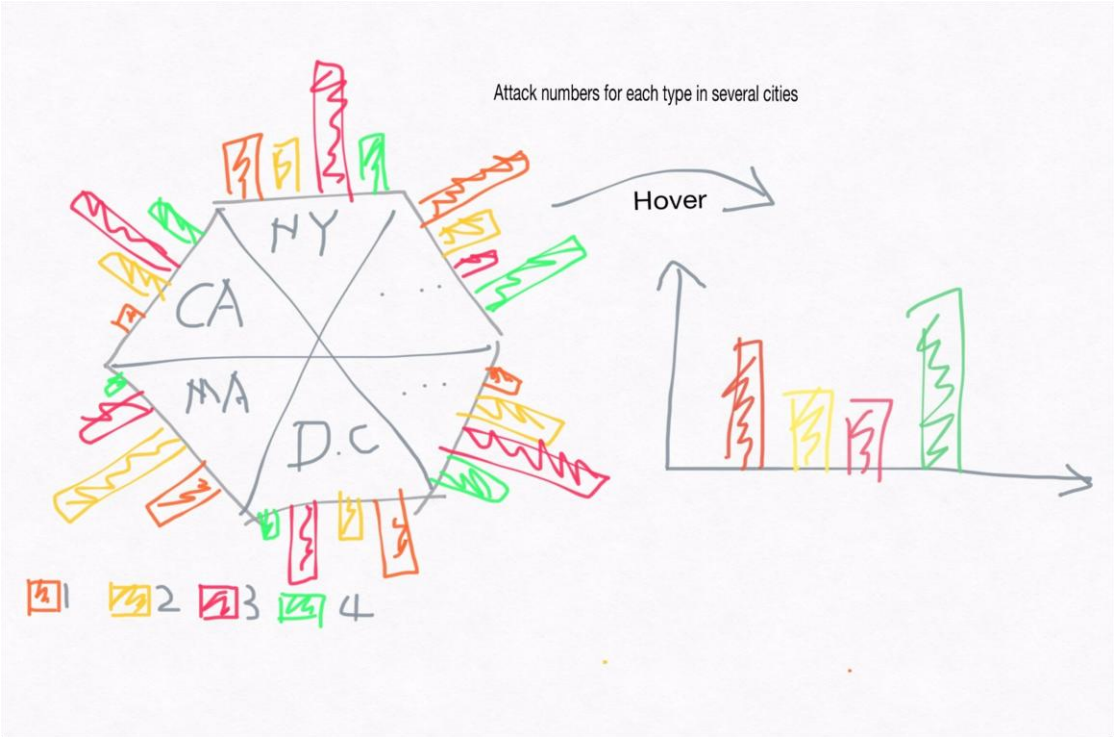


Sketch 5

For sketch 6 and 7, we plan to pick top 6 or 8 states or cities that were attacked most, use a parallel coordinates plot to present the attacked trends in each state for each year or every 5 years. And use a group bar chart to show the attack types in each state during a certain time, one year or 5 years. Sketch 7 is an optional feature, since attack type in a single state may not be that important, but still be nice to have one.

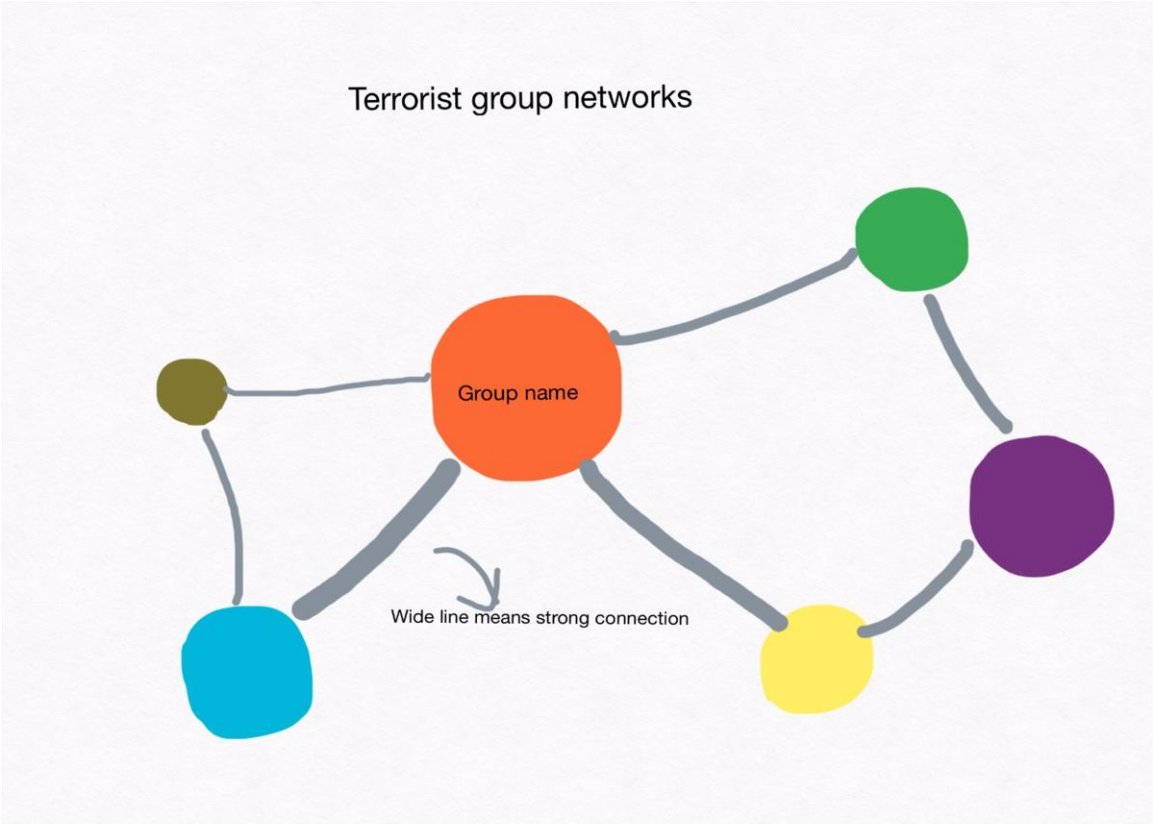


Sketch 6



Sketch 7

Another optional visualization is the links between different terrorist groups, as shown in sketch 8. It would be nice to looking to the dataset to find the networks if possible.



Sketch 8

Must-Have Features

Our visualization will include at least a map with all happened attacks in U.S. in recent 10 or 20 years, in this map, we plant to use different sizes of dots to represent the severity of the injury.

Also a bar chart, group or stack bar chart should be used to show the number and type of attack in each year.

And states or cities with top attacks numbers should be chosen to show the attack trends using a group chart.

Attacked target information should be included either in a single visualization or in an interactive chart.

Optional Features

For the map visualization, it would be great to represent it as animation or the map has interactive features that let the audience to choose which year's' data they want to explore.

And we will look into data to see if there is any terrorist group linked to each other that we can use network chart to show. It would be great to present in an interactive way.

Project Schedule

Feb16-Feb 23: Clean up data. Validate the 3 must-have visualizations, may not be completed but basic function should work. Prepare process book and presentation.

Feb 24-March 2: Adjust the previous work on details and add other favorable features if applicable. Edit the project video and process book.