Project Documentation

Design Process:

The central design element for this entire project was simplicity. This served several purposes, first was to allow the functionality to be built in the required time and also to allow easy navigation by the users.

Three main tabs were envisioned as a way to navigate between the components of the project. Each tab would launch a presentation layer that included drop down options menus and a button to display the desired data visualization.

First was the single graph (see sketch below):

This was the simplest page of the project and most of the objectives were achieved in the final code. The only real adjustment was the relocation of the video and documentation tabs to be in line with the other project tabs. This was to clean up the design and prevent any navigation confusion.
The second tab would provide the ability to compare datasets in a single graph. The design called for a second variable choice to be displayed so that a comparison graph could be created. It also became clear at this stage of the design process that a button graying would be useful so the user would understand where they are in the application.

Here code had to be written to erase any previously drawn objects before the new frame selected was drawn, or else you would end up with multiple graphs layered on top of each other in the same screen.

The original intent in the sketch seen below was to be able to display bar and line graphs on the same chart. However to maintain the focus on simplicity this was not implemented in the final code.

The third and final visualization component was intended to be an animated scatter plot chart. This proved very difficult to implement and the code was not available in time for this project submission.
The original sketch for this, seen below, was intended to include selection boxes for three values that could be aligned on the x, y axis as well to the size of each scatterplot point. A selection drop down for countries and starting year would also be available. There would be three buttons in this section, to draw the chart as well as start and pause the animation. The concept for the animation was to cycle through a new frame for each year, with some animation functions included to transition the plots and scale bars as needed.

Again the rationale behind all of the design choices were to allow simplicity. After a user makes a tab selection the data input choices are displayed immediately below with the graph output immediately to the right. The color selections were kept as simple as possible both in the text font of the labels, mouse-over animations.

Analysis:

This tool provides an interesting way to visualize the raw data provided on this topic. As an example if you wanted to investigate petroleum production in the UK you could produce a chart as shown below:
This would naturally lead to questions about why there was a sudden drop in production in the 1990's. A quick change to the dropdown and redraw would allow the user to evaluate petroleum consumption during the same period as shown below:

This chart shows no significant change in UK consumption during the same period. The user could then switch to the comparison tab and continue to explore data connected to this phenomenon by directly comparing data sets from neighboring countries during the same time period.
As seen in the comparison graphs above, Norway’s petroleum production was rising as the UK’s was in decline. Even though consumption for both countries was fairly consistent. The inferences that can be made here without any additional research point to some possible disruption in North Sea production. This hypothesis could be explored further by comparing other countries in the region or if available utilizing the scatterplot with another variable included.