Exercise 2 Report: Interactive Charts for Winter Olympics Medal Analysis

Motivation

Analyzing Winter Olympics statistics using the data in a csv file is time consuming and hard to explain. Our motivation is to develop an interactive tool that provides Visualization of Olympic medal count with filters on countries, medal type, sport type, gender. Such tool is very helpful to study and compare the performance of countries, performance of male vs female athletes, dominance of countries in specific sports, the changes in the trends and visualize and capture some unexpected observations.

Problem Statement / Task Description

Our goal is to develop an interactive data exploratory visualization tool to answer questions such as: How do countries compare at various level: overall, in specific sport category, by gender, type of medal awarded? Which country is showing steady performance over all years? Did performance of a country change significantly? What are the countries which have won at least 'n' medals? How are the total medals are split across seven sports categories? Can see the trend of total medals in each sports category for a specific country? did more events got added over time?

Visualization

The plot graphs the number of medals won for each winter Olympics games since 1924. This solution is highly interactive allowing you to filter the data by gender, type of medal awarded, category of sport and country. It was important that data bifurcation be interactive to support analysis comparing performance of different Genders, Sports or Countries. It was also determined that a threshold for having at least X # medals would be expressive. To accommodate personal preference the plot can be adjusted to only display the data points (Figure 2.)

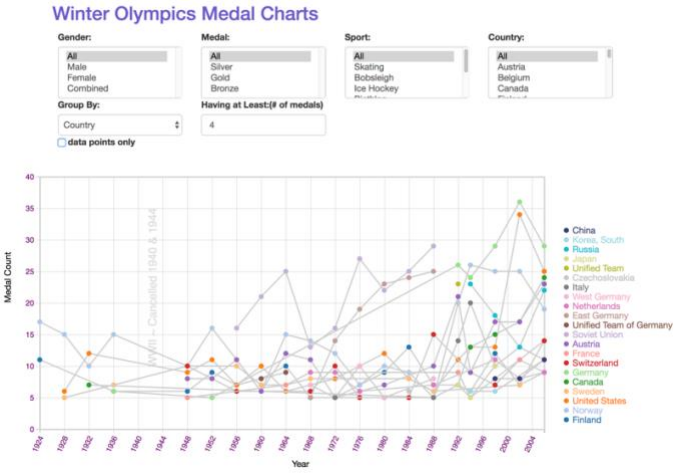

fig 1. Performance of Countries (Line plot)

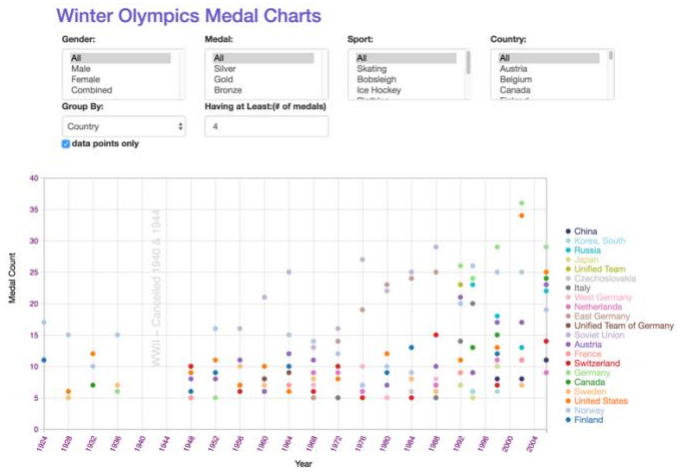

fig 2. Performance of Countries (Scatter plot)

Performance of USA in Winter Olympics

The interactive chart provides flexibility to plot three key metric for any country that we select, 1) overall performance, 2) performance in each sports category and 3) performance in men, women and mixed events. Below charts show overall performance and the breakdown per sports category for USA. Gold and Silver medals contribute the most to the total medal count. In the sports category skating and skiing are the main contributors to the total medal count.

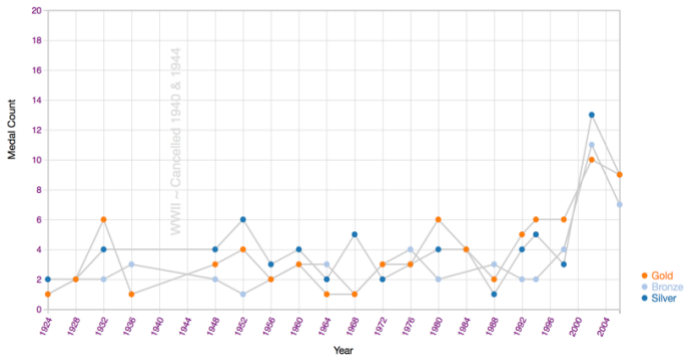

fig 3: USA overall performance

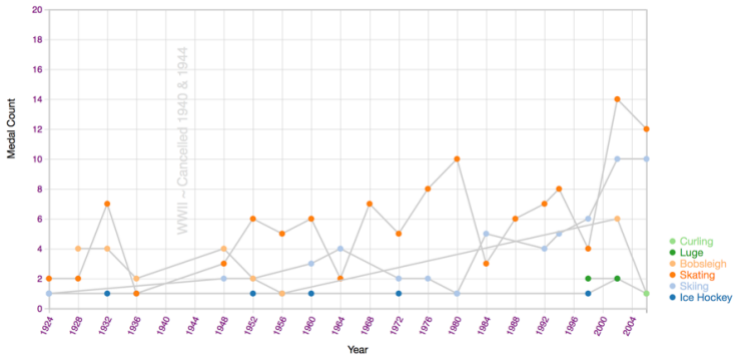

fig 4: USA performance in specific sports categories

Performance of Male Vs Female Athletes from USA and Norway

We can compare the performance of male vs female athletes from two top performing countries USA and Norway. Chart show that USA women athletes performed better than men in 1960, 1968-76 and 1988-98. However, the same chart for Norway shows that men are consistently performing better than women across all years. Charts also show that USA performed better than Norway in mixed events and Norway never won a medal in mixed events. We can analyze this data for any specific sports category by selecting that category in interactive plot. We can also get this data for any specific country.

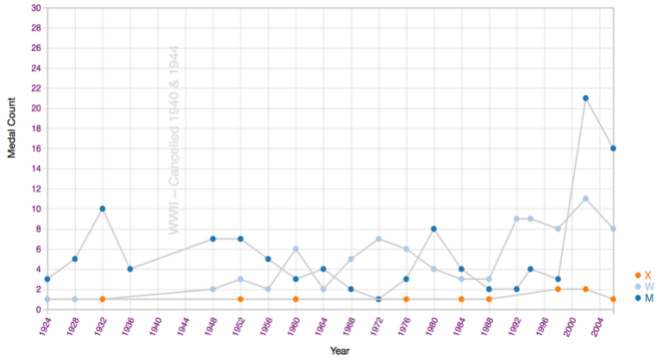

fig 5: USA performance

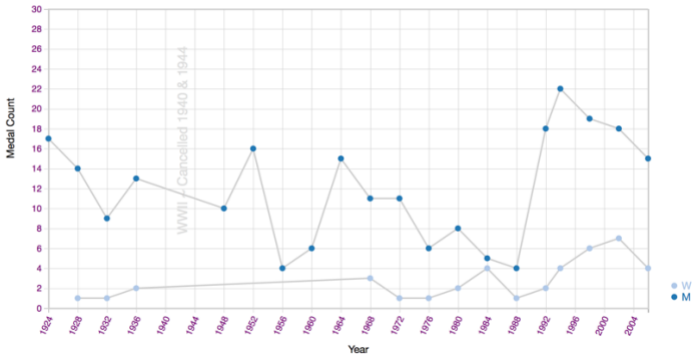

fig 6: Norway performance

Conclusion

Interactive chart is much better tool for Visualization of winter Olympics statistics compared to analyzing the same data using csv files in the areas of comparative study/competitive analysis or trend analysis. It is extremely useful in two aspects 1) Easy to analyze and compare different statistics and capture some interesting/unexpected observations, 2) Our observations can be easily explained to anyone with various plots. The interactive chart provides flexibility to visualize data in several ways and draw conclusions. Due to space limitations we could not include all possible comparative studies such as performance of all countries post WWII, performance of Russia compared to when it was USSR, performance of Asian countries etc.