

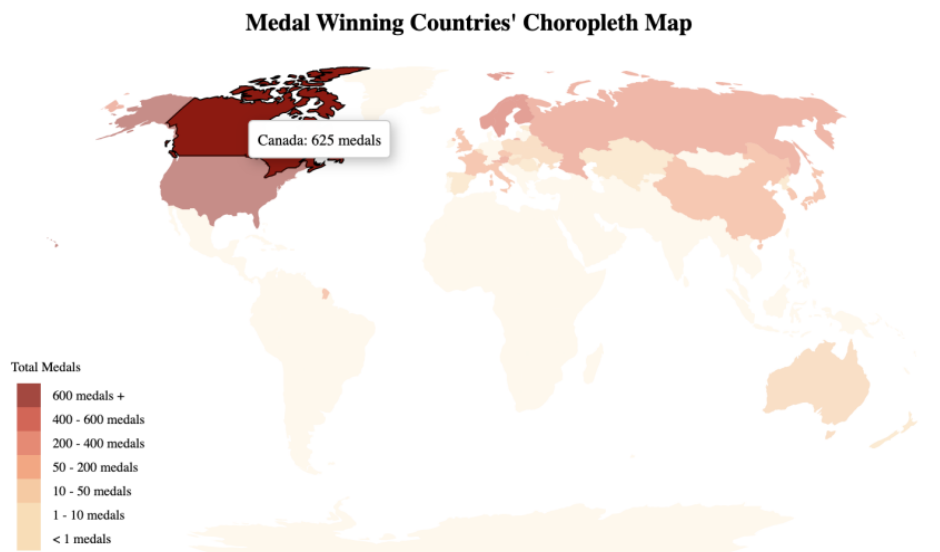
Exercise 01 Report: *Winter Olympics Above the Tropic of Cancer*

Adelle Driker, Bo Yan, Yuan Hu

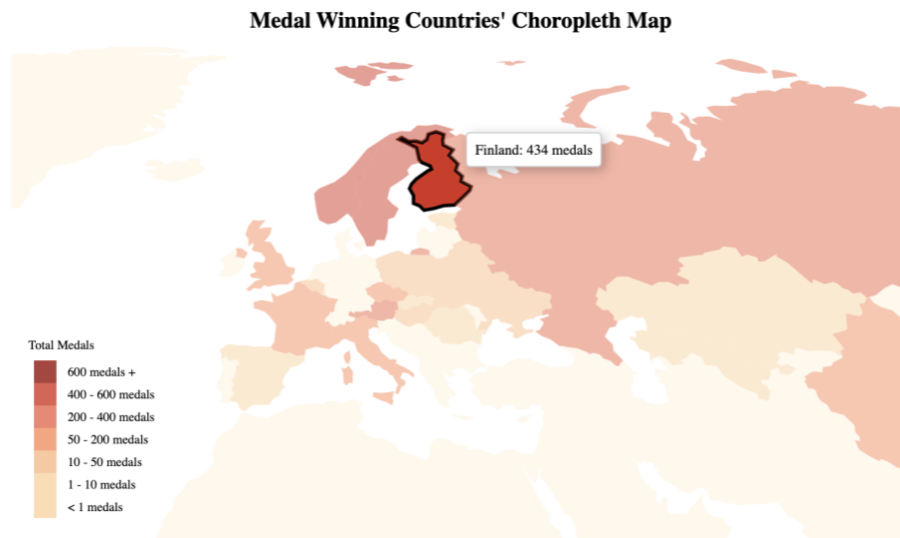
Motivation: The Winter Olympics is an international multi-sport event, with competitions held on snow and ice. With the first set of Winter Olympic Games celebrated in Chamonix, France in 1924, the event has been traditionally held every four years except in 1940 and 1944 due to the Second World War. Since their inception, the Winter Olympic Games have grown in the variety of sports events that are offered and in the medley of nationalities and athletes that compete in them. The diversity and longevity qualities of the data lend themselves to further exploration at the level of attributes such as sport, geography, and top competitors.

Tasks: Given almost a century's worth of Winter Olympic data, some questions may arise regarding the trends: What are the total Medal distributions by Country? Using this information, can we identify a geographic reason as to which countries tend to win more medals? What are the Top Seven Countries that have accumulated the most Medals? How did the Top Seven Countries perform within the various Sports categories?

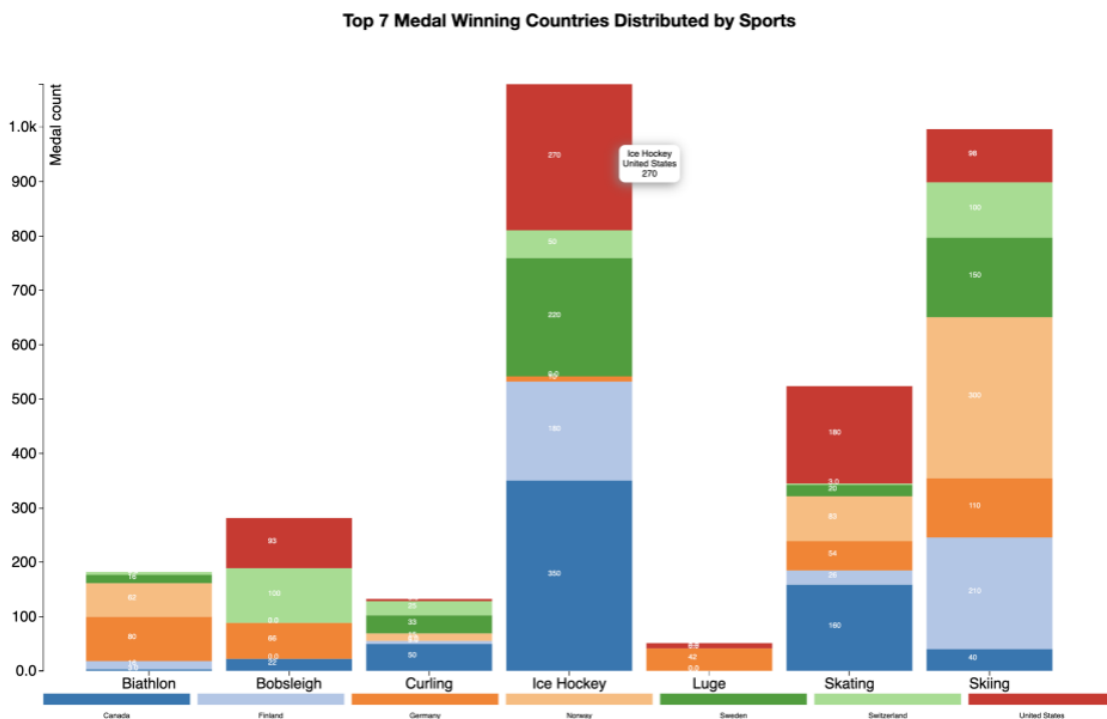
Visualization:



In order to effectively display the visualization solution, two interconnected figures are illustrated. One of the charts that the user will notice is the map of the world, where not only medal totals by country are displayed but also a color code is included so that a rough comparison of medal totals around the world may be gauged. The decision to use the world map instead of another type of graph was based on the need to help show the geographic distributions of athletes. The user may additionally hover over each country area to view exact totals across all years that the country had participated in the Games. In conjunction with viewing medal totals by country, the visualization also helps view which countries are geographically more predisposed to send well-trained athletes to compete in the winter sports. In order to view smaller sections of the map, the user may use a Zoom-In feature to change the map view.



Another visualization available to the user is a stacked bar chart, which portrays the distribution of medal totals across the sports played in the Winter Olympics for the top seven all-time medalling countries. Each stacked rectangle's length is scaled to the proper ratio of medals for each respective country by sport. A vibrant color scheme of seven distinct colors is incorporated to distinguish between each country as well. The top seven medalling countries are displayed in alphabetical order within the legend, and the sports are also listed in alphabetical order on the x axis.



Omitted Data and Visualization: Additional information within this dataset includes the name of the city where the Games were hosted, names of athletes, name of athlete's country, and the discipline & event that a sport belongs to. Furthermore, the discipline and event attributes do not display the most granular level of information related to the sport that an athlete participates in and were therefore omitted. Since the main objective of the visualization is to display the totals by country, the names of the cities where the Games were previously hosted and names of the athletes have been omitted as well.

Improvements: The report is currently able to show several non-trivial views of the Winter Olympics dataset; however, some improvements may still be made. One such improvement would be to add a slider for the Year that the Olympics are held in so that the user can choose an individual Year of interest to track trends over time. Additionally, the world map visualization may be updated to incorporate some currently-omitted data such as host City names. Finally, a potential improvement to the visualization would be to display both figures on the same webpage so that the user may be able to draw conclusions with the figures together.

Conclusions: Based on the visualization, several conclusions may be drawn about the data. The world map, for instance, suggests that athletes who represent countries with colder, more wintry climates, specifically above the Tropic of Cancer, tend to win more medals. Additionally, countries with larger populations such as the US, Russia, and China for example, have higher medal totals. Shifting to the stacked bar graph, Luge seems to be the least popular sport, most likely due to the fact that it was incorporated into the Winter Olympics later than the other sports displayed. On the other hand, the stacked bar chart shows that Ice Hockey, Skiing, and Skating are the top three most popular sports by a large margin among the Top Seven Medalling Countries.