Exercise 2 Report: Gender Opportunities in the Winter Olympics

Motivation

In the world of sports, there is the issue of underrepresentation of female athletes. This is especially true in the case of the Olympics, an event that is considered to be one of the pinnacles of human athletic achievement in the world. Several gains have been made for females in the Olympics: more countries are allowing women to represent their country and more sports are available for women to participate in. The increase in women's participation can be seen through how many females have won Olympic medals over time.

Problem Statement / Task Description

A variety of questions can be answered from a dataset that contains information about every medal won in the Winter Olympics from 1924 to 2006. Through the Olympics, has there been equal representation of males and females? Do female athletes from certain countries dominate the leaderboard? Has this dominance change over time?

Visualization

To effectively view increased female participation in the Olympics, the visualizations focus on gender, a categorical attribute, and medal count, an ordered attribute. The identity channel of color hue and the magnitude channels of position on a common scale, length, and color saturation are utilized in the visualization.

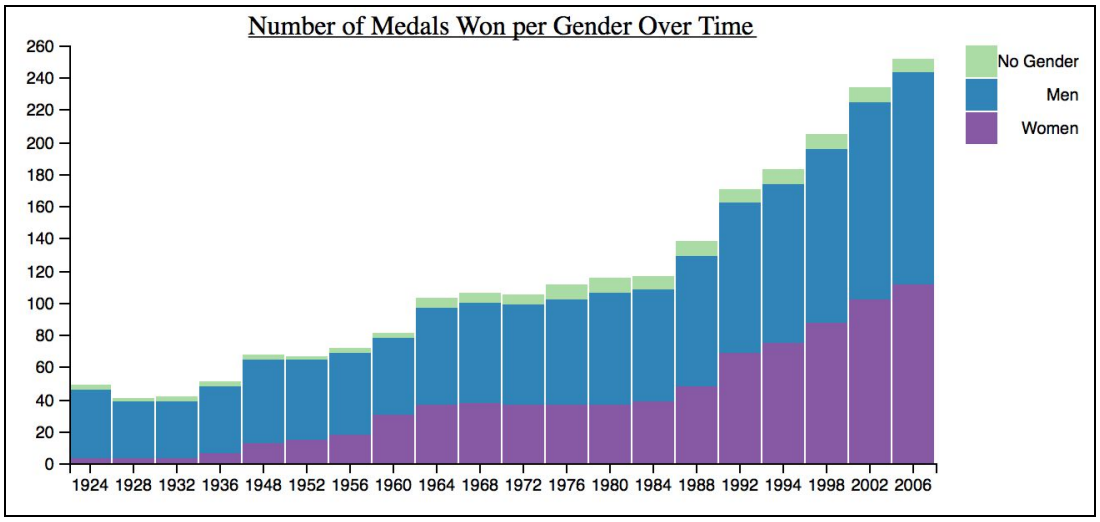

Figure 1: Stacked Bar Chart Displaying Categorical and Ordered Attributes

Figure 1, shows the first visualized object, a stacked bar chart. This object shows the number of medals won in each Winter Olympics based on gender. Gender is encoded through color hue, which is shown to the user in the legend. The magnitude channels of position on a common scale and length are utilized in

this object. The utilization of the common scale, highlights the increase in female medals won across time. Length is employed to increase the length of the bar, when more medals are won per gender. The bars are stacked ontop of eachother to show the number of total medals that were won in the Olympics, regardless of gender. When the user mouses over a bar in the chart, there is a tooltip that displays the number of medals won by that gender for that year.

The second visualization object is a heatmap as shown below in Figure 2. It is a heatmap of the number of medals won by each country for each year based on total medal count, female medal count, or male medal count. The user is able to pick which data will be displayed on the heatmap by pressing one of the button options. The ordered data encoding that is being employed is color saturation.

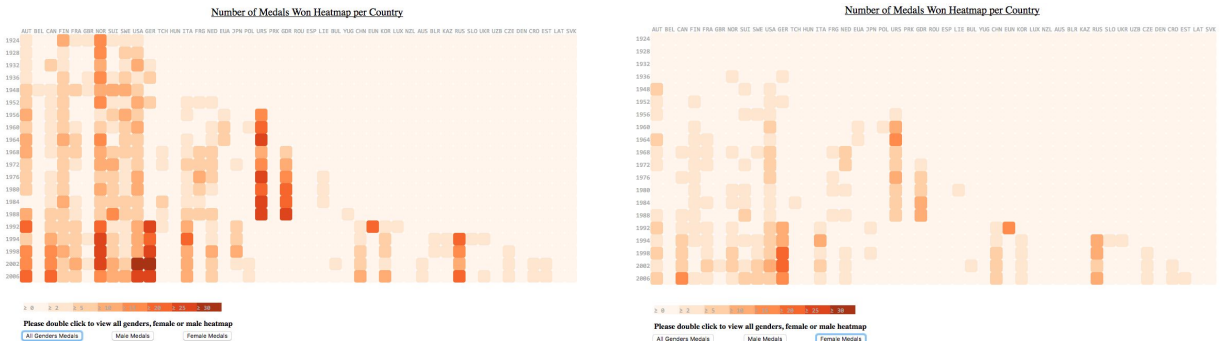

Figure 2a: Total All Genders **Figure 2b: Female**

Figure 2: Heat Map Displaying Categorical and Ordered Attributes

The more medals a country has won for a particular year, the more saturated the box for that entry is. As time increases, it is clear in which countries females are dominating the olympics. The color scheme used in the heat map was provided by colorbrewer2.org. Similarly to the tooltip functionality of the bar chart, when the user mouses over a section of the heat map, the number of medals won by that gender in that country for that year is displayed.

Omitted Data and Improvements

The data originally contained the full name of the countries as well as NOC country abbreviations. For conciseness within the visualization, NOC abbreviations are used. Attributes including city, sport, discipline, event, and medal color are excluded from the visualization. Potential improvements to the visualization include adding interactive features such as selection boxes to allow a users to filter and view results for specific areas of interest. Additionally, enhancements to the tooltips can be made to allow users to see both total medal count and medal count broken down by medal color when mousing over a visual,

Conclusion

The increased lengths of bars across the x-axis in Figure 1 and increased saturation of color across the y-axis in Figure 2a and 2b send a clear message to those viewing the figures. While it is easy to see the rise in medal count over time for females in the Olympics, it is also easy to see that there is a significant rise in total combined medal count over time for all genders. More importantly, the visuals clearly show that females now represent close to 50% of medal winners in the Olympics, compared to their less than 5% in 1924, and can no longer be considered underrepresented.