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Exercise #1 Report: Top – 10 Countries All time Winter Olympics

Motivation

The first official Olympic (Summer) Games date back to April 1896 and it was not until 30 years following, that the Winter Games were finally introduced. The Winter Olympics brought about a fresh crop of competitors and new opportunities to succeed, with a heightened advantage for snow-centric countries.

Considering a relatively more modern timeframe, we wanted to explore the top ten countries of all time over the last century. Not only did we want to visualize countries that have maintained dominance over the years, but also if any unexpected outliers occurred. A major aspect we wanted to visualize is if any unexpected countries were grouped in the top 10. With this, we ultimately wanted to explore whether dominance is obtained with consistency over time, or with exceptional performance in a short duration.

Data Augmentation

To prepare the dataset for this analysis, we pivoted the data in a table that captured the three key pieces we wanted to visualize: year, country, and medal. To achieve this, we utilized the pandas library within python to group by year and country— this allowed us to treat year and country as rows. We then unstacked medal which treated medal values (bronze, silver, gold) as individual columns – aggregating these values per year and country in each row.

Tasks

We wanted to explore the Winter Olympics dataset to provide solutions for the following questions:

- What countries have been consistently done well in Winter sports over the last century?
- What dictates dominance – consistency or exceptional years?
- In what ways are countries succeeding in the Olympics – what is the distribution of medals per each year over time?
- Do dominate countries always have the most gold medals?
- Are there countries that made the top 10 list that no longer exist?

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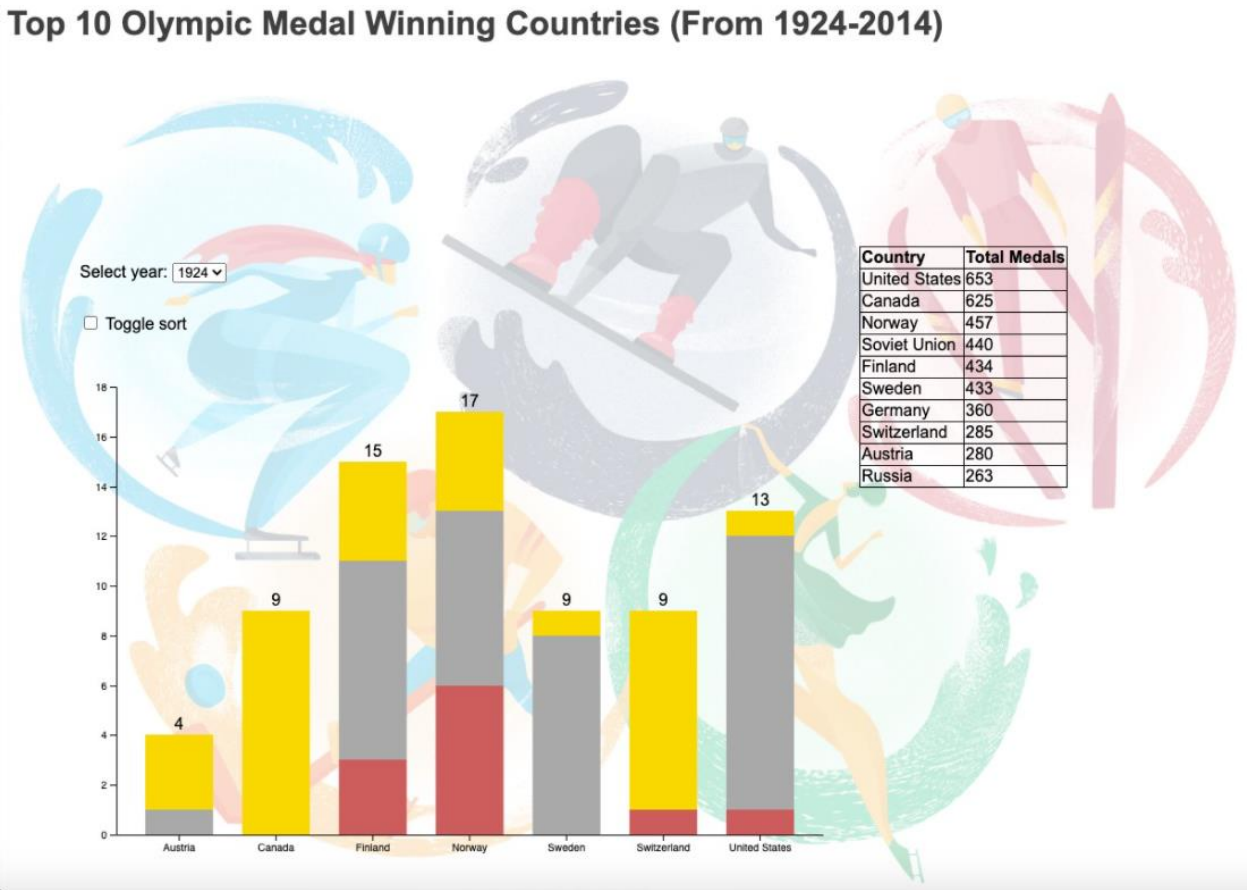

Expressiveness of Design

To satisfy the expressiveness principle, we wanted to adhere to the Olympic theme, incorporating symbols to make the visualization noticeable. To capture the first goal, an opaque background of the Olympic rings was added. The rings incorporate shapes of Winter sports that remind us of the dataset we are exploring. Olympic symbols were also captured by the medal count, broken down by country and represented by medal color shade in each bar.

Additionally, we tried to use intuitive colors, choosing a schematic with known and easily associated meaning in the culture of the target audience. In this case, gold, silver, and bronze medals. In reality, these colors might not be the most pleasant for visualization. As such, we decided to use a background to complement the data and attribute more meaning to this visualization, while also taking advantage of sense of vision to make these colors revealing.

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Effectiveness of the Solution

We aimed to achieve an effective visualization by incorporating the most pertinent channels for the task. The channels we wanted to leverage were the identity channels to highlight categorical attributes. With this in mind, we focused on spatial region, hue, motion, and shape.

First, spacing the bars in our visual was key in designing a clear and pleasing picture of the data. Hue and shape also work together in our visualization: hue functions as a legend indicating the type of medals earned by each country, while shape quantifies the total medals through the length of each bar. Finally, we incorporated the motion channel through the interactive feature of sorting the countries from most medals won, to least. The use of this channel allowed us to include movement while not distracting the viewer from what is important in the visual.

Interaction

To provide an interactive feature for this visualization, we added a drop-down feature and a toggle switch that create two separate animations. The first option is selecting the year – though the dominate countries are stagnant attributes (save one exception of the Soviet Union and Russia), the medal count changes year over year. Once you select a new year, a fluid transition occurs with a new medal stack.

The second option to select “sort” shifts the data to sort from left to right, the countries with the most medals. This provides an additional view that allows us to see clearly the medal counts and the comparison of such between each country.

Conclusions

Exploring this dataset allowed us to visualize conclusions that would not otherwise be apparent in a data frame. In answering the question “what dictates dominance?” it is clear that though consistency over time is important, it is not absolutely necessary. We see that both Soviet Union and Russia made the top 10 as separate entities, even though both countries were not present for the entire duration of the data. We are able to also visualize the breakdown of medals per each year and realize that dominate countries do not always win the most gold medals in a given year. Aggregating the totals over time enabled us to conclude that Austria, Canada, Finland, Norway, Sweden, Switzerland, Russia, and Soviet Union were the best performing

countries in the Winter Olympics over a period of 90 years. Overall, this visualization not only allowed us to see the top 10 Winter Olympic competitors, but also allowed us to discover unique features about the countries and medal counts in a given year.