

Olympics Participation and Economic Trends

**A comparative study of GDP and Olympic
performance**

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Introduction



Our goal is to explore the relationship between Olympic success and economic factors, using a combined Olympic and GDP dataset to uncover patterns in participation, performance, and representation

Objectives:



Do wealthier countries consistently dominate the Olympics, or are there exceptions where lower-income nations excel?



What regional differences exist in Olympic performance, and how do economic and cultural factors contribute?



Are there sports where countries with fewer resources consistently perform well?



How has Olympic performance evolved for nations as their economies have changed over time?



Which countries consistently dominate across multiple sports?

Data Overview

Data Sources:

Olympic Data:

- ❑ Sourced from Kaggle.
- ❑ Contains information on athletes, events, teams, and medals from 1960 to 2023.

GDP Data:

- ❑ Sourced from World Bank.
- ❑ Provides annual GDP data by country from 1960 to 2023.

Olympic Data Structure

id	name	sex	age	height	weight	team	noc	games	year	season	city	sport	event	medal
15	Arvo Ossian Aaltonen	M	30	NA	NA	Finland	FIN	1920 Summer	1920	Summer	Antwerpen	Swimming	Swimming Men's 200 metres Breaststroke	Bronze
15	Arvo Ossian Aaltonen	M	30	NA	NA	Finland	FIN	1920 Summer	1920	Summer	Antwerpen	Swimming	Swimming Men's 400 metres Breaststroke	Bronze
15	Arvo Ossian Aaltonen	M	34	NA	NA	Finland	FIN	1924 Summer	1924	Summer	Paris	Swimming	Swimming Men's 200 metres Breaststroke	NA
16	Juhamatti Tapio Aaltonen	M	28	184	85.0	Finland	FIN	2014 Winter	2014	Winter	Sochi	Ice Hockey	Ice Hockey Men's Ice Hockey	Bronze
17	Paavo Johannes Aaltonen	M	28	175	64.0	Finland	FIN	1948 Summer	1948	Summer	London	Gymnastics	Gymnastics Men's Individual All-Around	Bronze
17	Paavo Johannes Aaltonen	M	28	175	64.0	Finland	FIN	1948 Summer	1948	Summer	London	Gymnastics	Gymnastics Men's Team All-Around	Gold
17	Paavo Johannes Aaltonen	M	28	175	64.0	Finland	FIN	1948 Summer	1948	Summer	London	Gymnastics	Gymnastics Men's Floor Exercise	NA

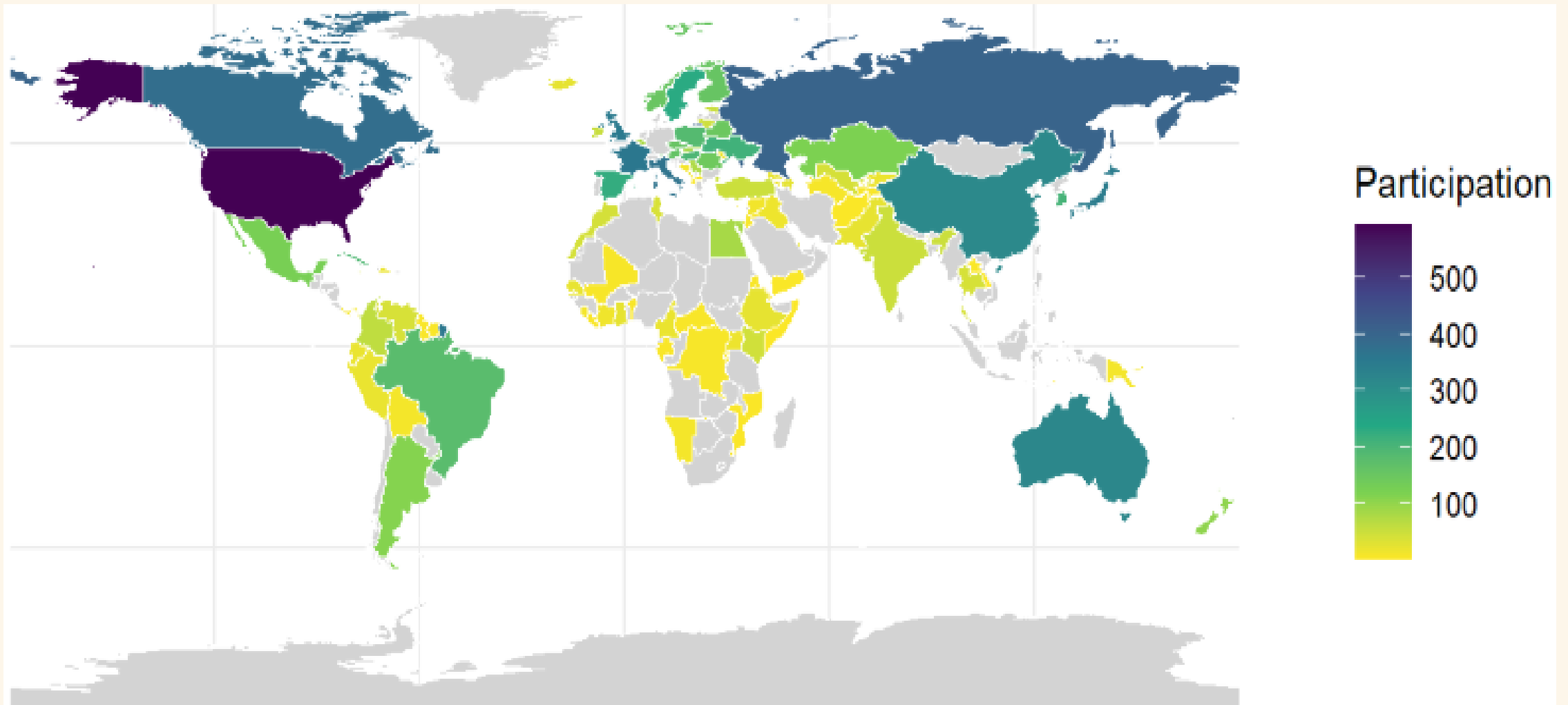
GDP Data Structure

Country Name	Country Code	Year	Value
Afghanistan	AFG	2004	5.224897e+09
Afghanistan	AFG	2005	6.203257e+09
Afghanistan	AFG	2006	6.971758e+09
Afghanistan	AFG	2007	9.747886e+09
Afghanistan	AFG	2008	1.010930e+10
Afghanistan	AFG	2009	1.241615e+10

Methodology

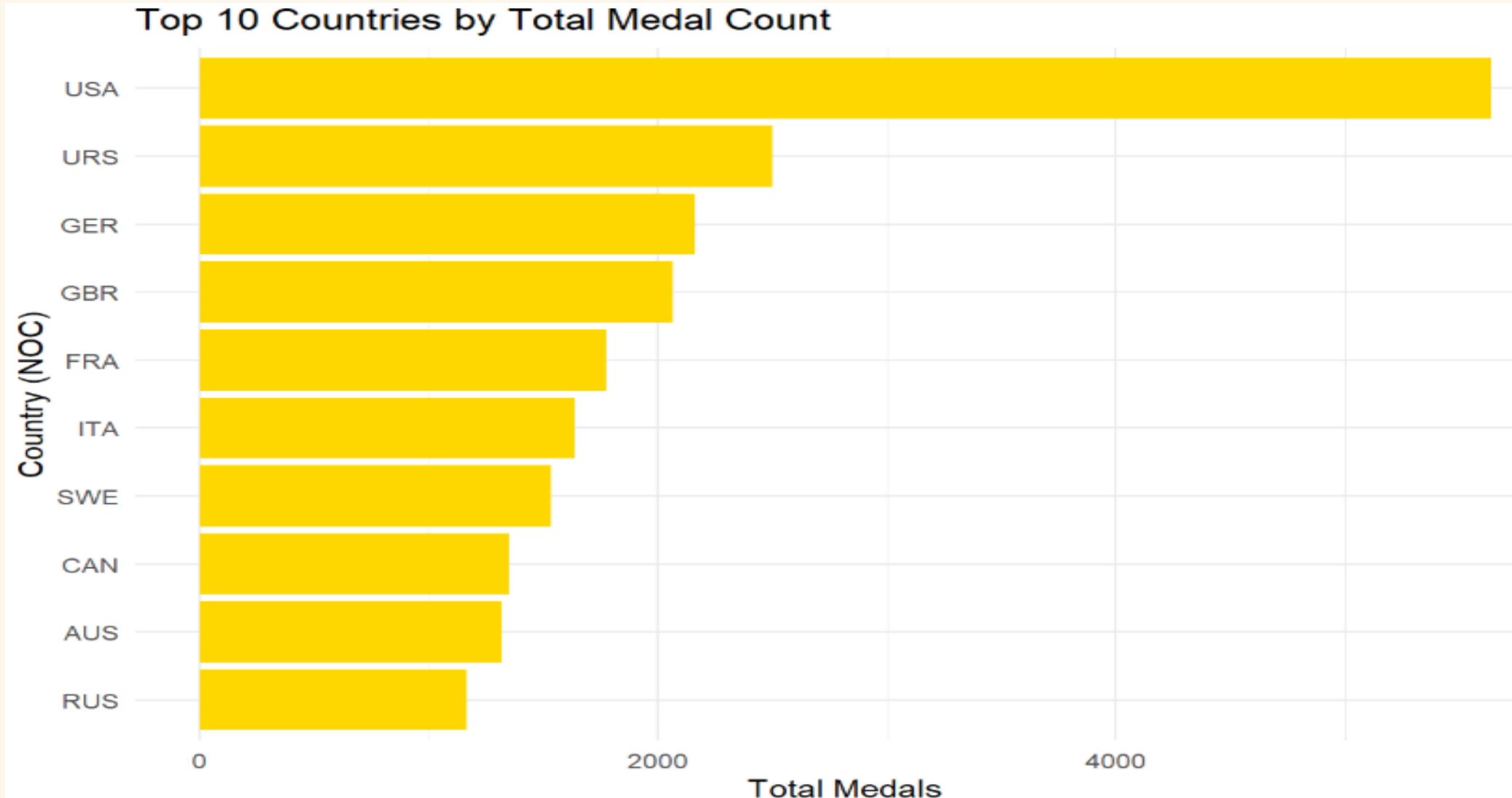
- Used R for Data Analysis and Visualization
- Exploratory Analysis lead to seeing gaps in early years of the data
 - Filtered data to include 1960 onward to avoid as many NAs as possible
- Various filtering was needed for certain graphs
 - Sorting by highest medal counts for some country and sports graphs
 - Exploratory sorting by Olympics seasons (Winter/Summer)
- Merged GDP data to compare against medal earnings for countries and pinpoint trends
 - This required renaming countries to have uniform names between the data sets

Olympic Participation by Country



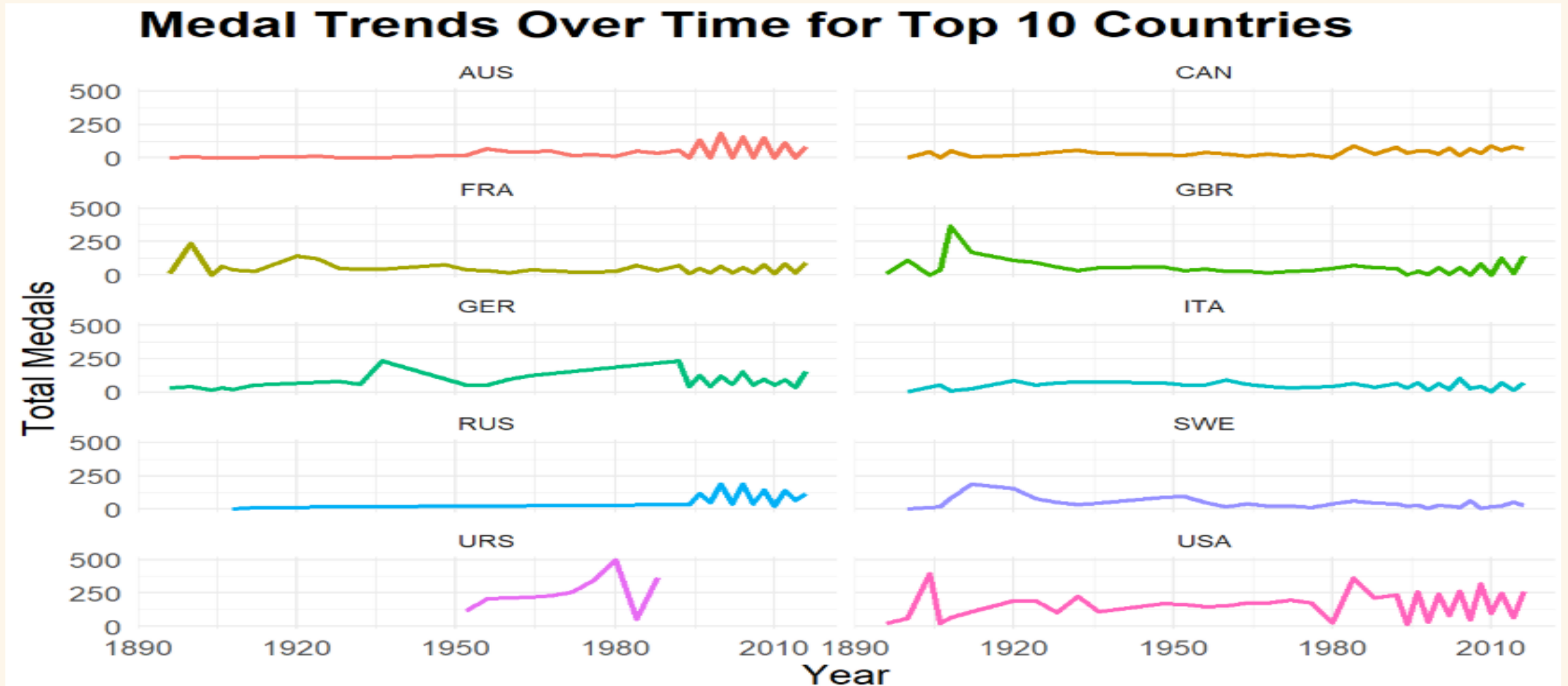
- This map highlights disparities in Olympic participation, with darker shades indicating higher levels of participation, typically seen in wealthier nations, while lighter shades and grey represent lower or missing data.

Top 10 Countries by Medals Over Time



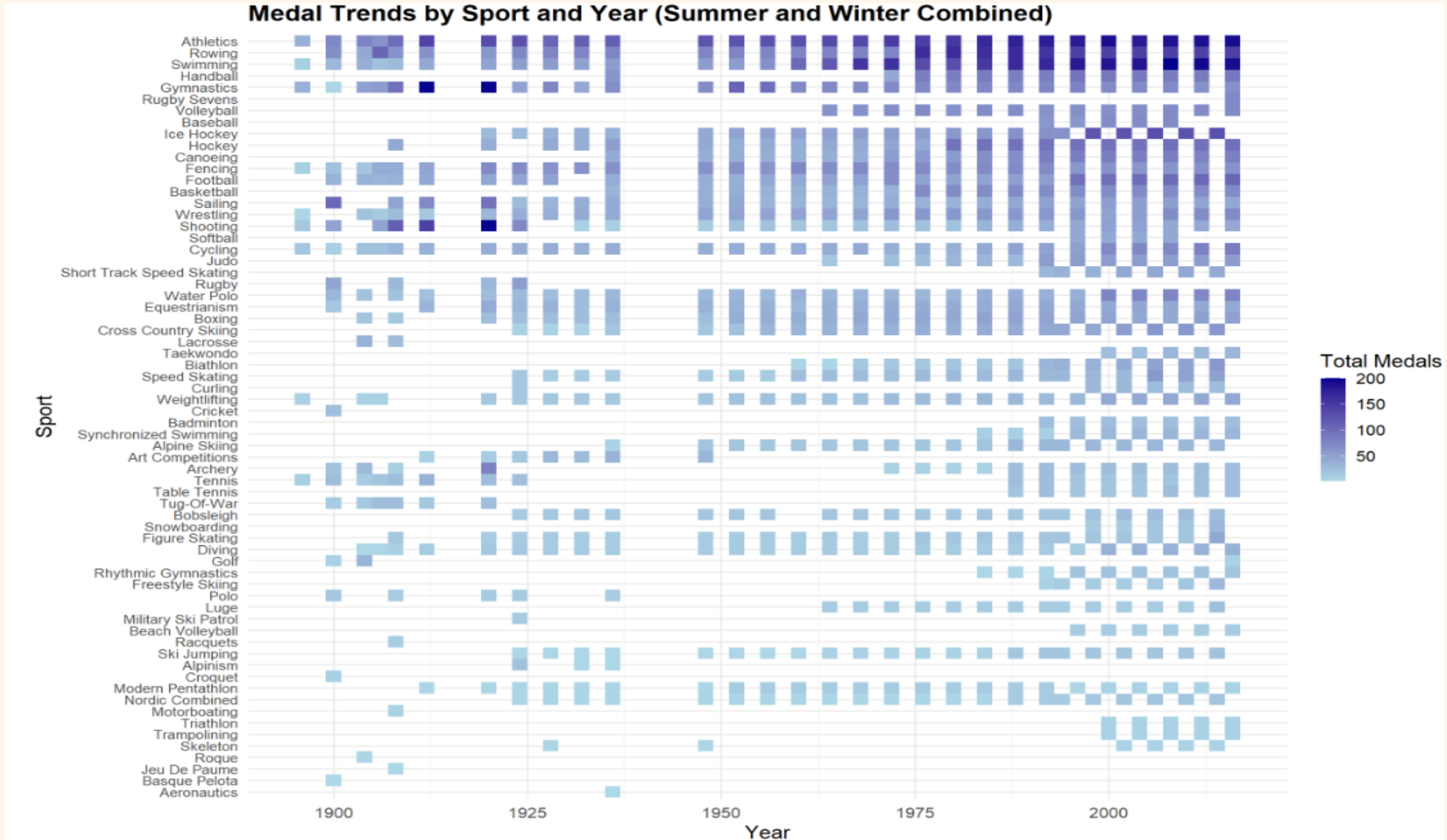
- This bar chart showcases the top 10 countries with the highest Olympic medal counts, highlighting the USA's dominance, followed by the USSR, Germany, and Great Britain, reflecting their consistent athletic success over time.

Medals Over Time by Top 10 Countries

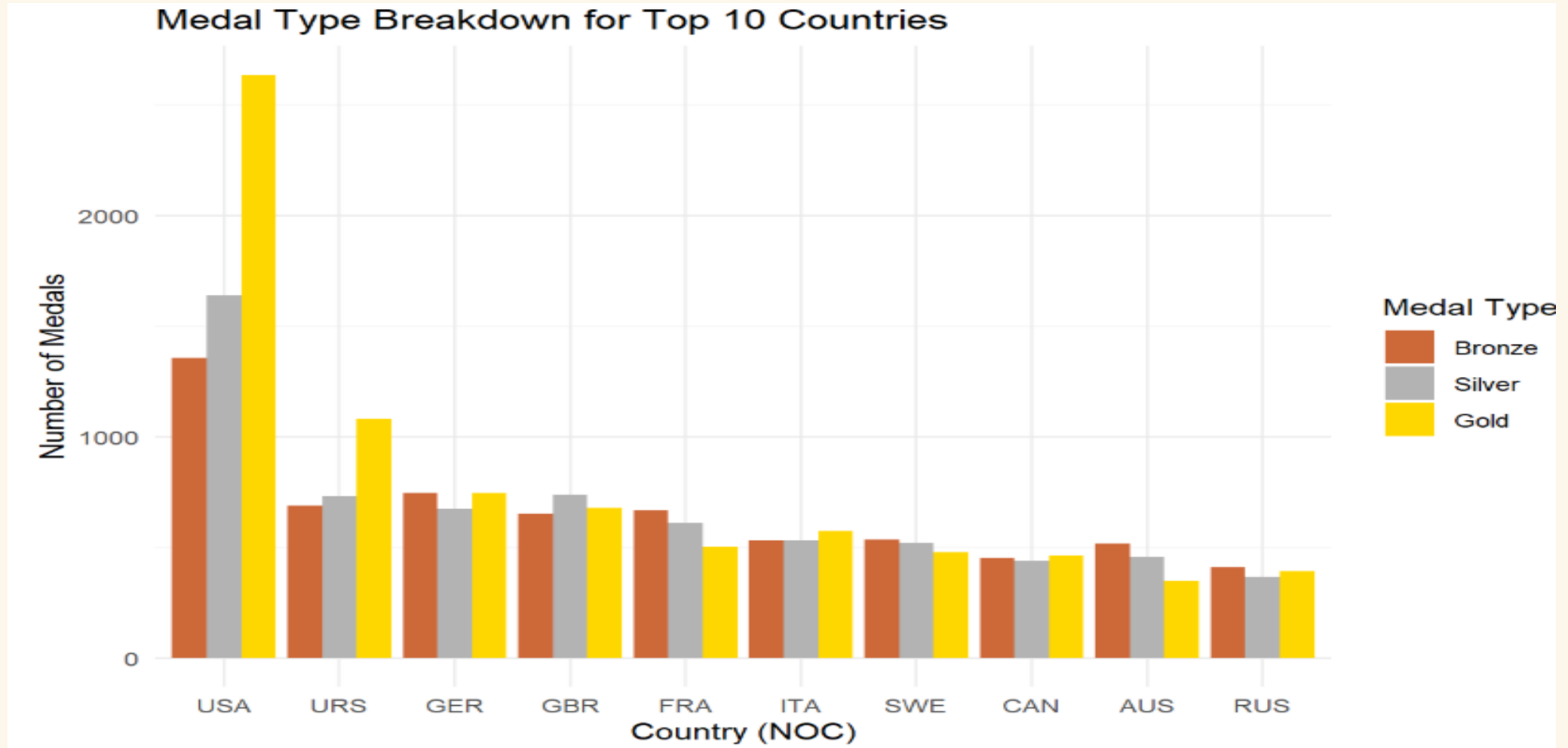


- This line graph illustrates the trends in Olympic medal counts over time for the top-performing countries, revealing shifts in dominance and consistency in medal achievements across different eras.

Sports Over Time Heat Map (Combined Seasons)

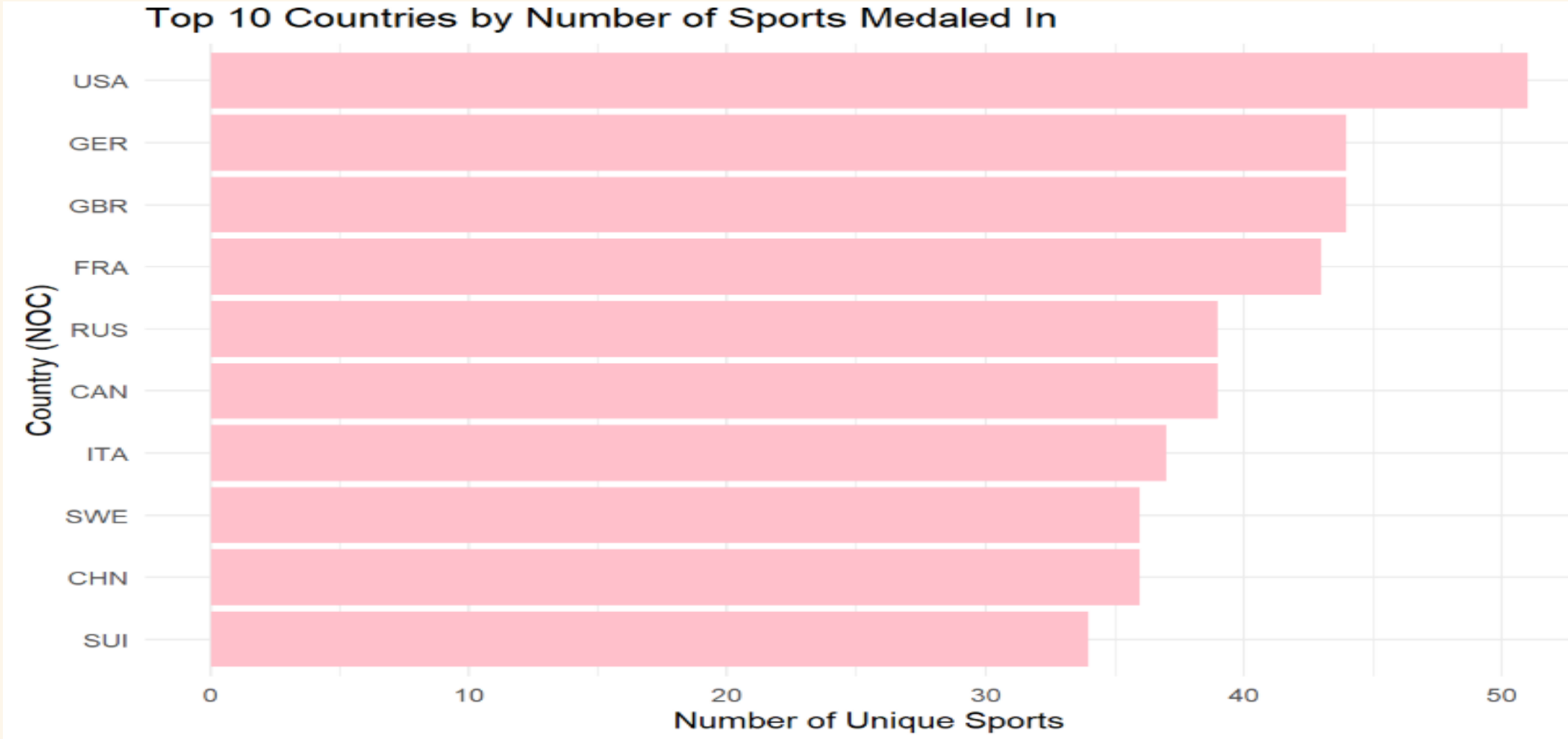


Medal Type Breakdown by Top Countries



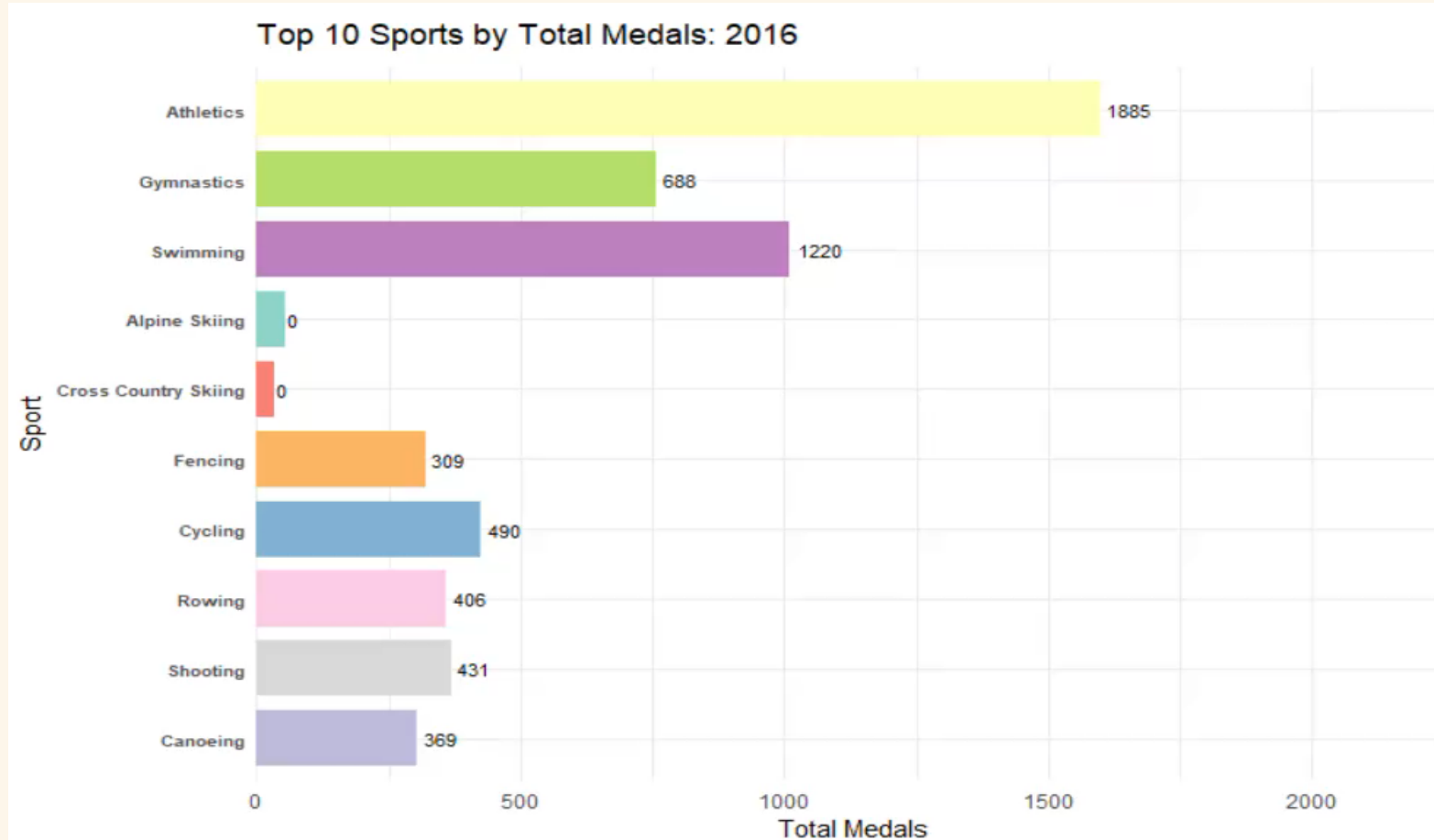
- This bar chart breaks down the medal types (gold, silver, bronze) for the top 10 countries, highlighting disparities in the quality of medals won, such as the USA's dominance in golds versus Australia's tendency towards silver and bronze.

Consistency of Top 10 Countries Across Sports



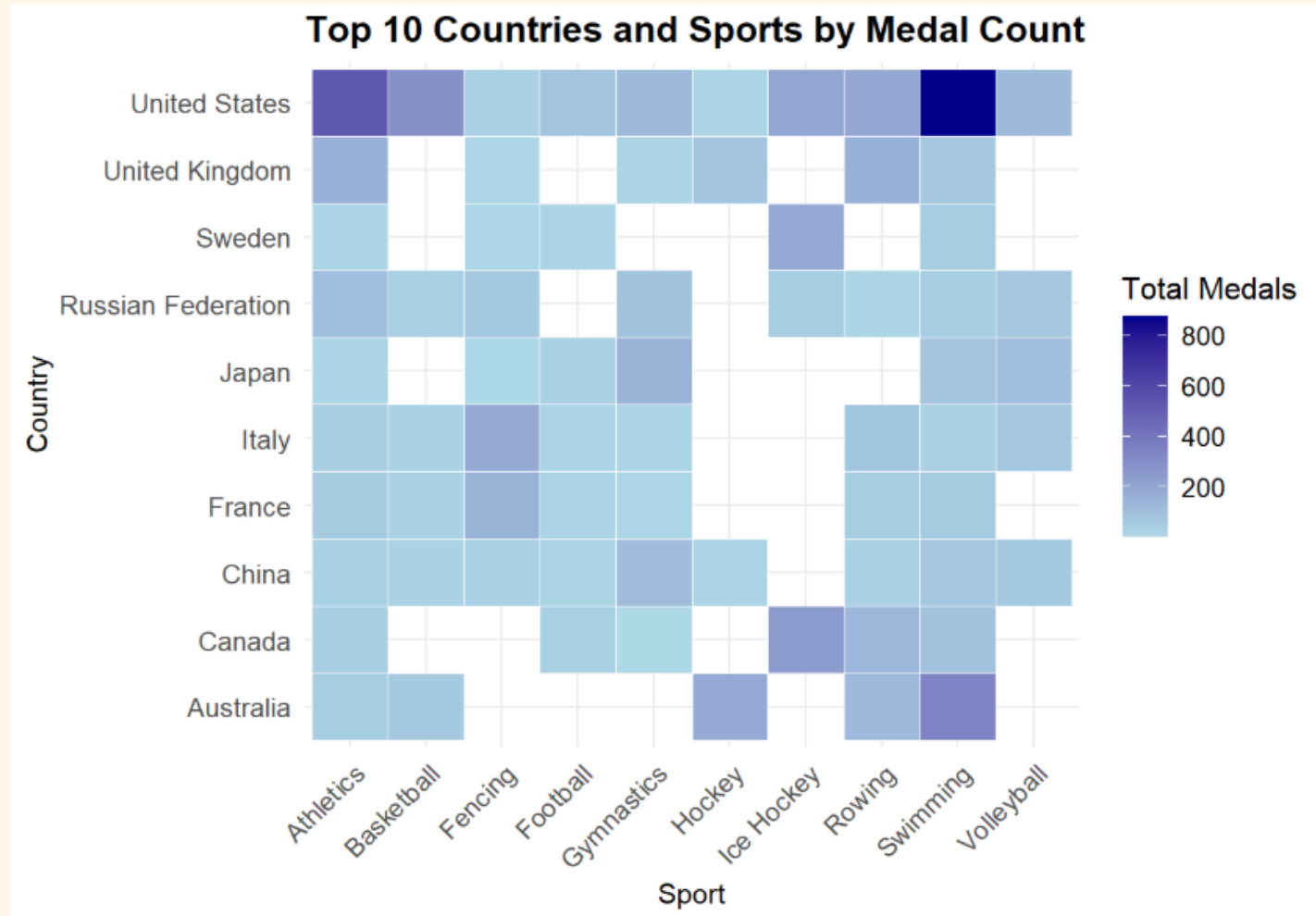
- This bar chart highlights the number of unique sports in which the top 10 countries have medaled, showcasing the USA's exceptional versatility, followed by Germany and Great Britain, which also demonstrate consistent success across various sports.

Animated Graph of Medals by Sports Over Time



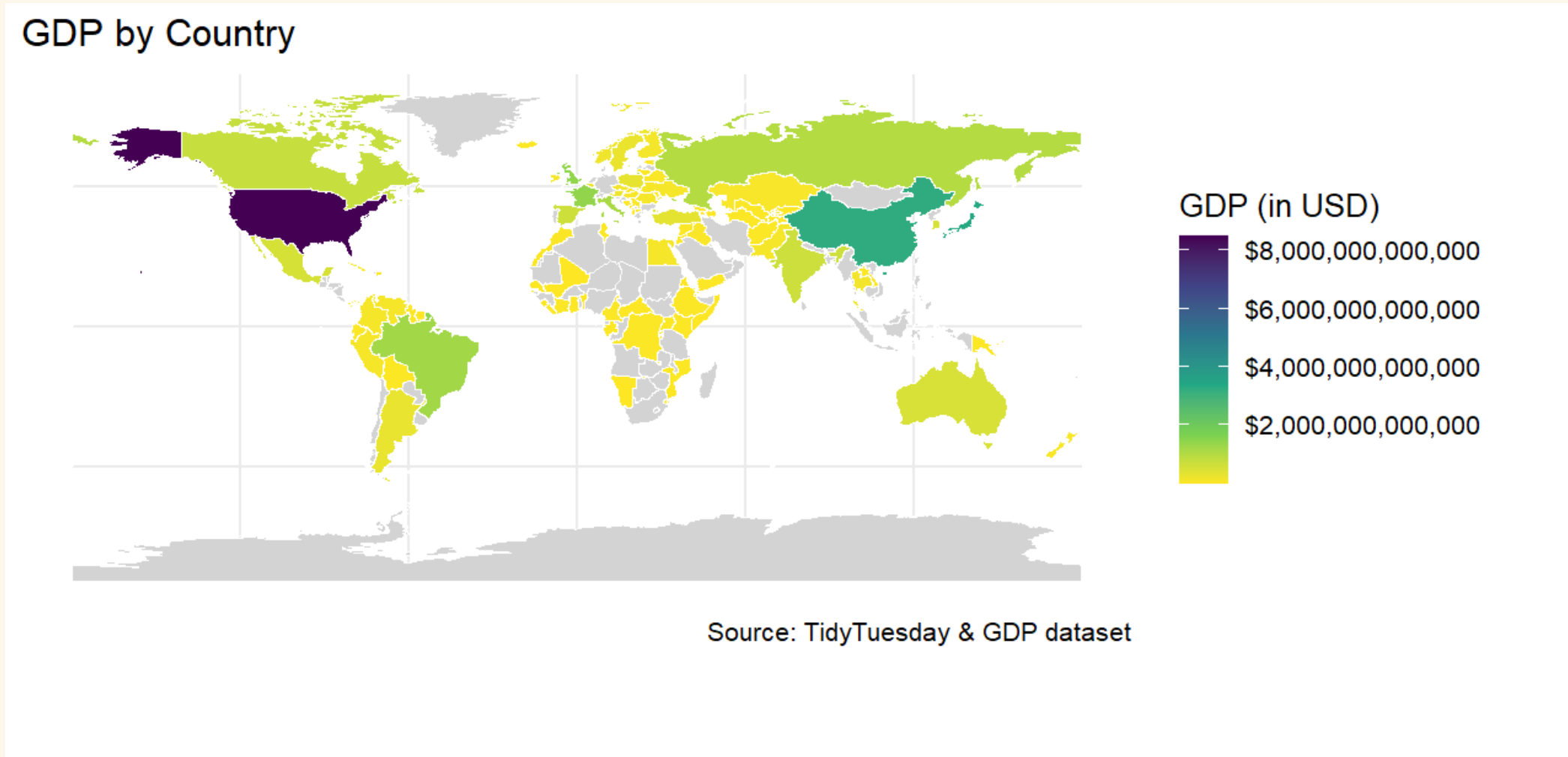
- This animated bar graph shows the top 10 sports by total medal counts from 1960 to 2016, highlighting the consistent dominance of sports like Gymnastics, Athletics, and Swimming. Winter sports like Alpine Skiing and Cross Country Skiing also appear prominently.
- The animation captures the evolution of Olympic sports, illustrating how different disciplines have risen and fallen in prominence over time, providing a dynamic view of the Games' development.

Top 10 Countries by Sports Heatmap



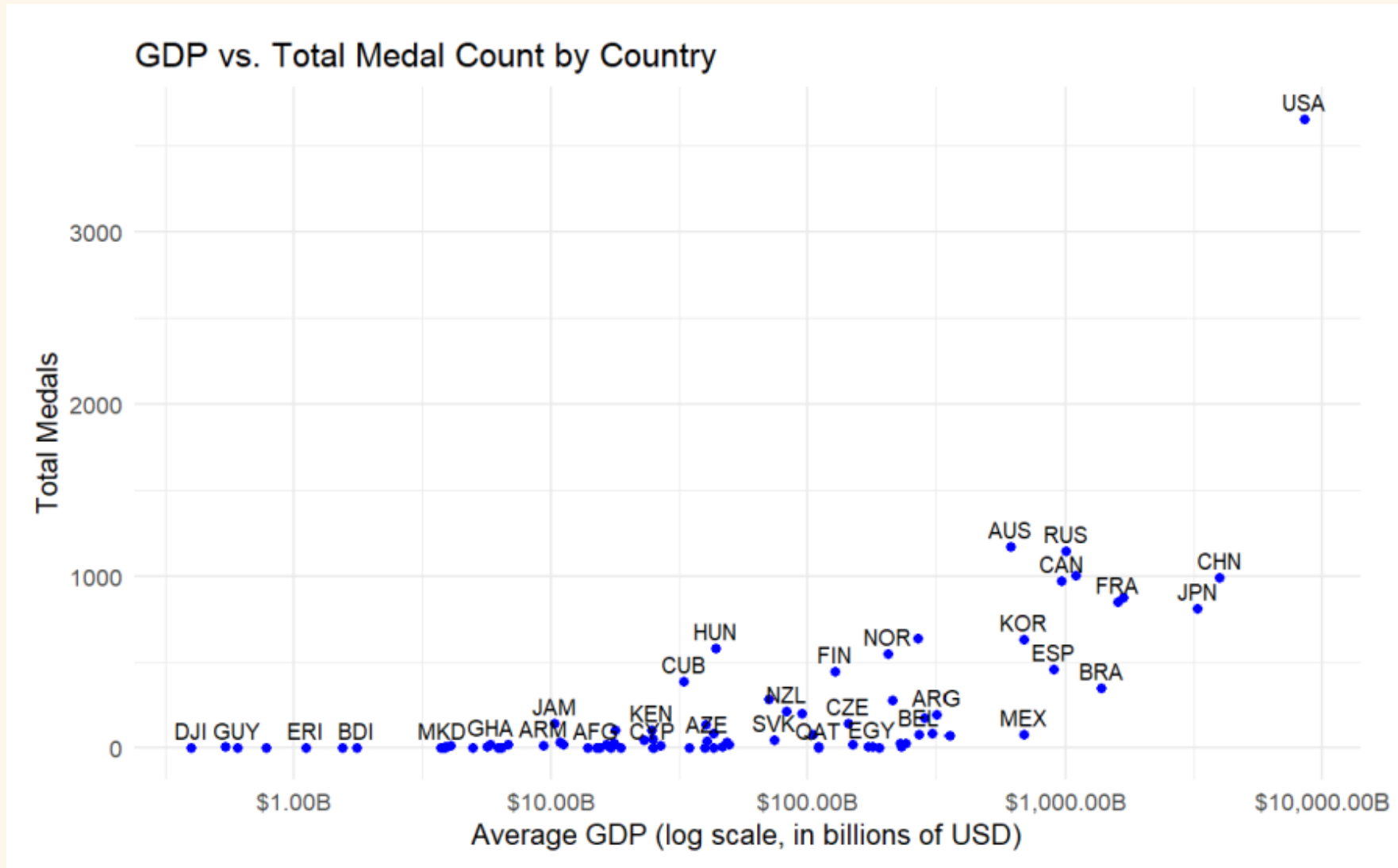
- This heatmap displays the top 10 countries' total Olympic medals across the top 10 sports, highlighting the USA's dominance in swimming and athletics while showcasing more balanced distributions in sports like gymnastics and hockey.

GDP by Country



- This choropleth map uses a 'viridis' color scale to show global GDP, where darker shades indicate higher GDP levels, emphasizing the economic differences across countries.

Scatterplot of GDP vs. Total Medal Count



- The scatterplot illustrates the positive correlation between GDP and total medal count, showing that wealthier countries, like the USA and China, typically excel in Olympic performance, with the USA as a clear outlier due to its high GDP and medal count.

Conclusion

- Our analysis reveals a clear link between economic factors and Olympic success, with wealthier countries generally performing better.
- However, there are notable exceptions, showing that factors like investment in sports infrastructure, culture, and government support can also play significant roles.
- Understanding these dynamics can help policymakers and Olympic committees target resources to maximize athletic potential, regardless of a country's economic status.

Future Scope & Exploration Ideas

- Future analysis of this data set could dive deeper into the following key areas:
 - Gender in the Olympics with a look into how this changed over the years
 - Seasonal differences between Winter and Summer Olympics and participation
 - Further analysis of medal types and events
 - Trends with world events and the Olympics
- Some potential data sets that could be merged to add further context:
 - Education data for each country
 - Population data
 - Further exploration of GDP
 - Sports interaction data
 - Cultural data

A large, irregular splash of teal and light blue watercolor paint serves as a background for the text. The splash is centered on the page and has a soft, painterly texture with varying shades of blue and green.

THANK YOU



ANY
QUESTIONS