CIS – 568-01

DATA VISUALISATION
Project Report
On
"Olympics Data Analysis"

Under the Guidance of

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By

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Section 1: Why and How

A) WHAT: What data is being visualized?

The ancient Olympic game was held at Olympia, Greece, from 776 BC through 393 AD. It returned after 1503 years. The first modern Olympics was held in Athene, Greece in 1896.

The 'modern Olympics' dataset comprises all the Games from Athens 1896 to Beijing 2022. Baron Pierre de Coubertin presented the idea in 1894.

There are two long periods without any Games between 1912-1920 and 1936-1948, corresponding to WWI and WWII

An Analysis needs to be finished by every country to assess the past measurements which will identify the missteps which they have made beforehand and willlikewise help them in future turn of events. An examination should likewise be possible by the hostcountry to figure out the mix-ups in the courses of action of the Event which will help them in conquering these missteps and host the occasion precisely.

The fundamental target of this study is to examine the different variables referenced above which play an imperative job in the advancement of the Olympic Games throughout the long term. The Analysis will incorporate the representation and clarification of the adjustment of patterns of the different variables throughout the long term which will assist with foreseeing the data of future Olympic Games. As the Olympic Games are perhaps the main game across the world, every nationand every player attempt to give their best exhibition on the occasion. To work on their execution,each nation ought to perform such an Analysis which would help them in the improvement of theirarrangements and systems by giving current insights.

B) WHY: What are the tasks (Action/Target) of the visualizations

1: (Action: Derive – Target: Displays number of Editions, Hosts, Sports, Events, Athletes, and nations in previous years.

2: (Action: Present – Target: Trend) Ranking of countries is given Concerning the total number of medals won and is categorized by the number of gold, silver, and bronze medals respectively.

3: (Action: Search-Locate – Target: Trends-Outliers-Features) Line Graph for the number of countries participating in the editions.

4: (Action: Annotate – Target: Extremes) Line Graph for the number of Athletes participating over the editions and by selecting sports.

5: The number of events in each Sport will be visualized using Heatmap, which describes the number of events in allsports over the editions.

C) **HOW: The final visualization will contain:**

1. **Viz1: Visualization of Task 1**
   Scatterplot: Analyses data of athletes w.r.t age of participants vs GDP vs medals which shows the plotting on the axis on which we can hover through over the years.
2. **Viz2: Visualization of Task 2**
   Tree Map: Analyses data of athletes for particular sports and the medals won in each of them and also, we have visualized the gender gap for each country.
3. **Viz3: Visualization of Task 3**
   Line graph: Visualized the total medals won by a country over the years. We have plotted the number of medals won which we can see by placing our mouse cursor over the lines and the points.
4. **Viz4: Visualization of Task 4**
   Bar Graph: Shows the total number of medals won by each country over the years.

The main objective of this study was to analyse and visualize the various factors that have contributed to the Evolution of the Olympic Games over the years. These types of Analysis are very helpful as this type of Analysis can be performed by any Country or Player which can help them in analysing their performance so that they can improve their performance by changing their strategies. Increase in the number of participating countries in both Summer and Winter Olympics,the Average age of players in the Olympic Games, the increase in the participation of the females in both Summer and Winter Olympics over time, the Total number of medals won by various participating countries over the years, Average height and the weight of Players who contributes to victory of Games in the event. Apart from these, there are many more factors that depict the Evolution of the Olympic Games over time.

Section 2: Design

Figure 1:

Scatterplot:

Analyses data of athletes w.r.t age of participants vs GDP vs medals which shows the plotting on the axis on which we can hover through over the years.

Table Chart:

This table showcases information on the number of medals (gold, silver, bronze) won by each country in each sport. All the columns can be sorted.

This table is linked to year slider, it fetches information of a particular year.

Initially only aggregated values of medals won by a country are shown as bars, on clicking a specific country, we can see a drop-down listing information related to each and every sport played by that country and also respective country is highlighted in scatterplot.

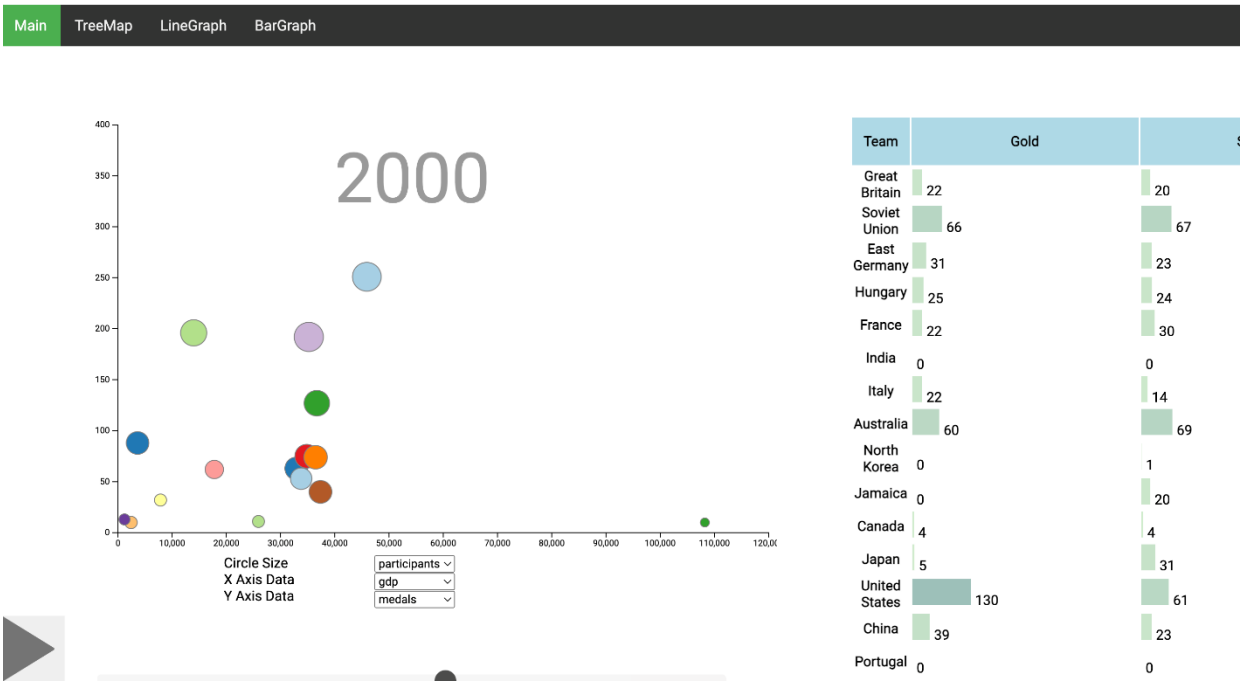


Figure 2:

Tree Map: Analyses data of athletes for particular sports and the medals won in each of them and also, we have visualized the gender gap for each country.

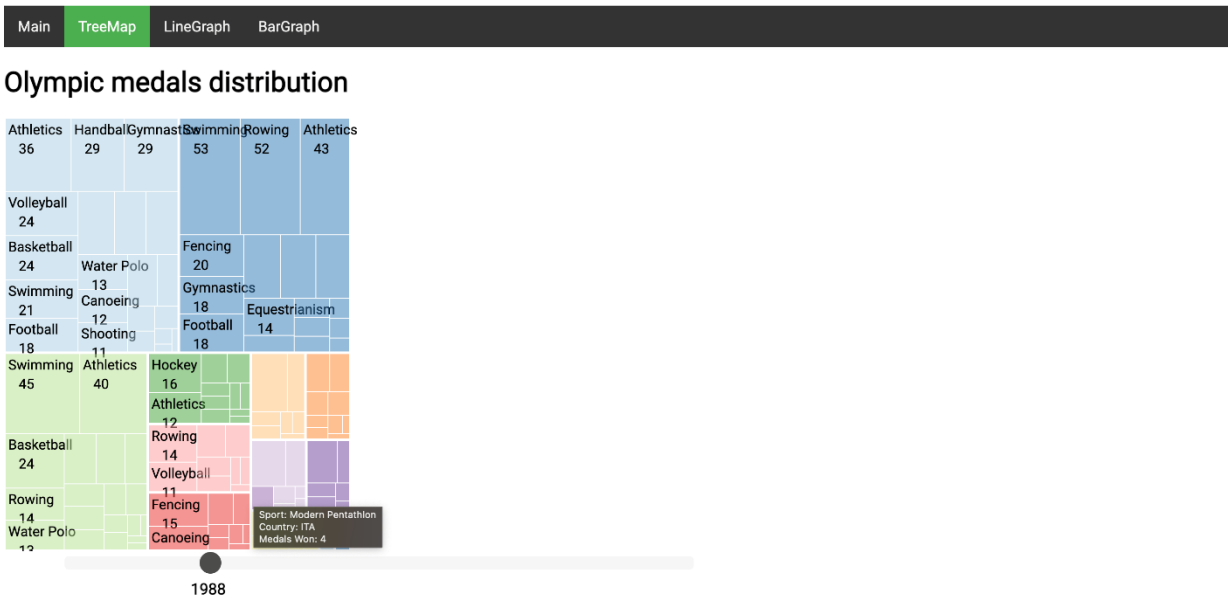


Figure 3:

Line graph: Visualized the total medals won by a country over the years. We have plotted the number of medals won which we can see by placing our mouse cursor over the lines and the points.

- This Line graph shows the total number of medals won by all the countries through the years 1980 to 2016.
- When you hover over a line, the name of the country is displayed on the graph and the line is highlighted.
- When you hover over the circles, the count of medals won by that country in that year is presented.
- This graphs helps in understanding which country started participating in which year and how they improved or decreased number of medals won over the years.

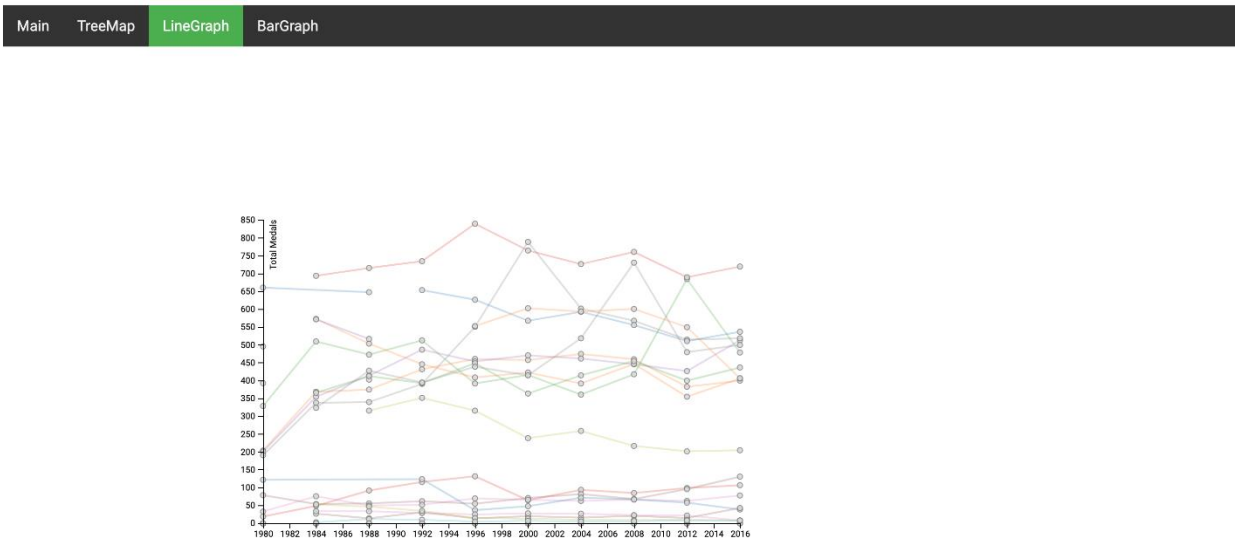
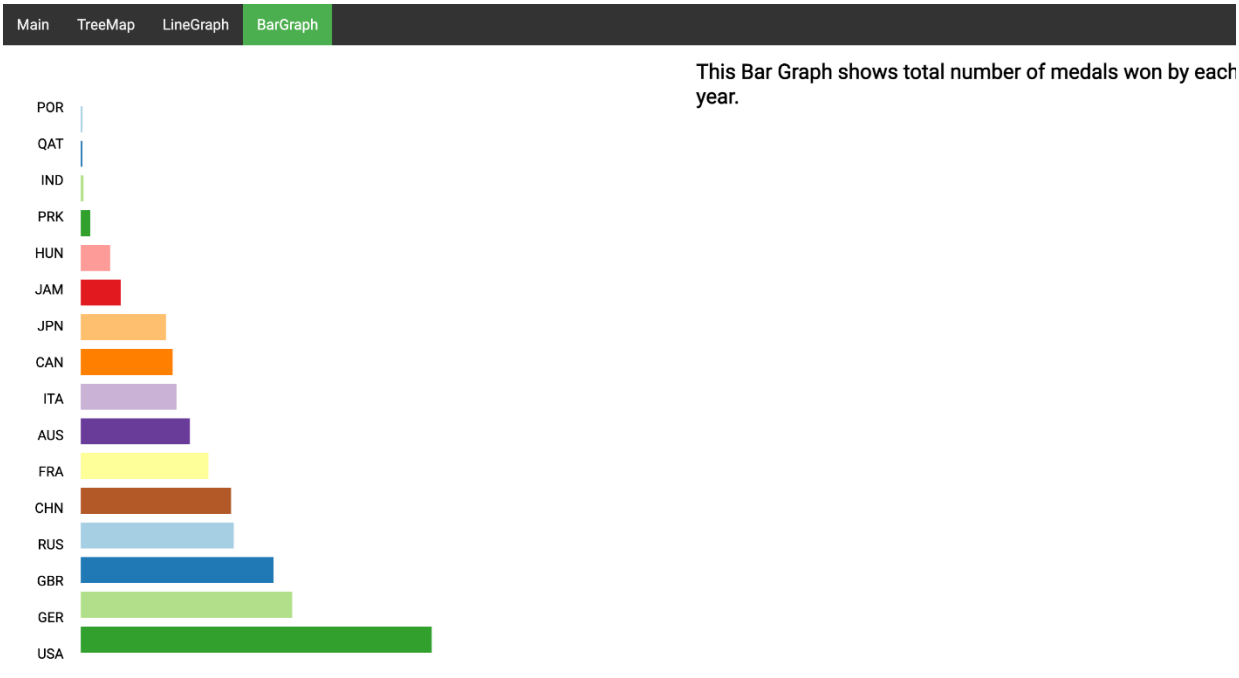


Figure 4:

This bar graph shows, ranking of different countries based on the number of medals won by them until that particular year. It is also synchronized by year slider with other views showing data until a particular year. Y-axis represents the country name and X-axis represents the number of medals won. It also encodes male and female medal winner in the bar graph using color, basically it is a stacked bar graph.



Section 3: Discussion

Relation between Visualizations:

- We will visualize our data only in a Graphical format. We can also describe the data in other formats like Geographical format where we can depict the countries on the World map.
- We can also perform Correlation Analysis on the data set and analyse the relation between two continuous variables.
- This research work aims to analyse and represent the various factors that havecontributed to the Evolution of the Olympics over time in Graphical Format and perform a comparative study between the various factors.
- We have analyzed many factors (fields) present in the dataset andplotted various graphs that clearly depict the change in the trends of the Olympic Games over the years.

Visualizations:

1. Scatter plot and Table chart: Choosing scatter plot from 1st design, as it can easily incorporate GDP data and number of participants. Also choosing table chart from 1st design as it acts as a support for the scatter plot as it gives more information like medals won by a country in specific sports category.
2. Treemap: Treemap shows distribution of medals among different countries. If there is enough space, name of the sport and medals won by a particular country in that sport is displayed if not it is blank.
3. Line Chart: The first line chart shows number of female and male participants over the years all over the world. Red line represents male participants, blue line represents female participants.

4. The second one shows the total number of medals won by all the countries through the years 1980 to 2016. When you hover over a line, the name of the country is displayed on the graph and the line is highlighted.
5. Bar Graph: This bar graph shows all the countries performance in number of medals won until that year. A year slider is provided to move across all the years.

Marks and Channels

- Color represents the country name.
- Size of the circle represents the total number of participants in the Olympics from that particular country
- The position of the circle encodes the number of medals won by the country and its GDP per capita.
- Year slider fetches information for that particular year.

Mandatory Features:

1. To show a comparison of countries participating and the number of medals they won.
2. To compare the number of medals in each sport category.
3. To show the gender inequality in different categories of sports.
4. To show changes in ranking of top-performing countries over the years.

Future Outcome:

1. To show sports subcategory players information.

2. World map for representing top players.