Project Report

Data-Driven Insights On Olympic Sports Participation And Performance

1. Introduction:

1.1. *Overview*:

The modern Olympic Games or Olympics are leading international sporting events featuring summer and winter sports competitions in which thousands of athletes from around the world participate in a variety of competitions. The Olympic Games are considered the world's foremost sports competition with more than 200 nations participating. The Olympic Games are held every four years, with the Summer and Winter Games alternating by occurring every four years but two years apart.

The evolution of the Olympic Movement during the 20th and 21st centuries has resulted in several changes to the Olympic Games. Some of these adjustments include the creation of the Winter Olympic Games for snow and ice sports, the Paralympic Games for athletes with a disability, the Youth Olympic Games for athletes aged 14 to 18, the five Continental games (Pan American, African, Asian, European, and Pacific), and the World Games for sports that are not contested in the Olympic Games. The Deaflympics and Special Olympics are also endorsed by the IOC. The IOC has had to adapt to a variety of economic, political, and technological advancements. As a result, the Olympics has shifted away from pure amateurism, as envisioned by Coubertin, to allowing participation of professional athletes. The growing importance of mass media created the issue of corporate sponsorship and commercialisation of the Games. World wars led to the cancellation of the 1916, 1940, and 1944 Games. Large boycotts during the Cold War limited participation in the 1980 and 1984 Games. The latter, however, attracted 140 National Olympic Committees, which was a record at the time.

The total number of events in the Olympics is 339 in 33 sports. And for every event there are winners. Therefore various data is generated. So, by using Cognos Analytics we will analyze this data and find the insights.

1.2. Purpose:

The Olympic Games have been a popular topic of research in the fields of sports science, economics, and sociology. Several studies have analyzed Olympic data to understand patterns and trends in the medal counts, individual athlete performance, and news coverage.

In terms of medal counts, several studies have looked at the historical development of the Olympic Games and the countries that have been most successful in these competitions. For example, one study analyzed medal counts from the Summer Olympics from 1896 to 2012 and found that the United States and Soviet Union/Russia have consistently been among the top medal-winning countries, but there has been a shift in the distribution of medals over time, with China and other countries rising to become major competitors (Jones, 2015). Other studies have looked at the impact of host country advantage on medal counts (Fennell, 2014) and the relationship between a country's economic development and its Olympic performance (Dunning & Rojek, 2017).

In terms of individual athlete performance, several studies have analyzed the factors that affect an athlete's chances of winning a medal. For example, one study found that older athletes are more likely to win medals in endurance events, while younger athletes tend to be more successful in power and speed events (Werner, 2012). Another study found that the home advantage can be a significant predictor of individual athlete performance (Schücker, 2018) News

coverage has also been a topic of research, with one study looking at the relationship between media coverage and the performance of countries in the Olympics (Burdon, 2016).

This study found that the media coverage of a country is often correlated with the performance of the country and that the countries with the best performances tend to receive more media coverage. This research builds on the existing literature by providing a comprehensive analysis of Olympic data, including medal counts, individual athlete performance, and news coverage over the past century. We used advanced analytics methods and Exploratory Data Analysis techniques that uses different kinds of plots and charts to show any information, to analyze data, providing new insights into the Olympic Games and nations participation in it.

2. Literature Survey:

2.1. **Existing Problem:**

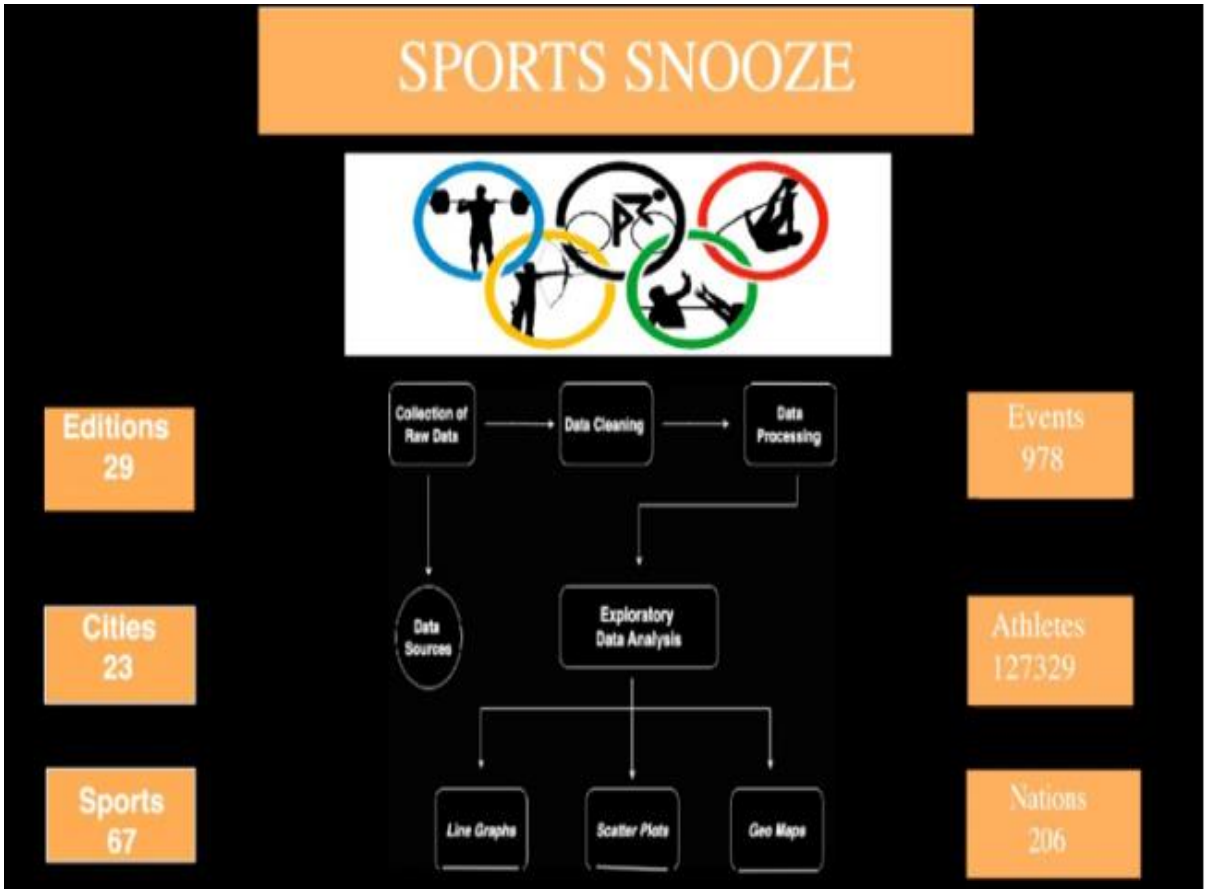
The main problem in the given data is to find number of medals won by each player or to find in regions according to medal count. Due to this we cannot find exactly the medal count based on gender or based on sports or based on country or based on events winning both Gold and Silver medal.

2.2. Proposed Solution:

To overcome this problem we introduced the new column called **“Medal Count”.** With the help of the this we can easily find out the exact medal count based on gender or based on sports or based on country or based on events winning both Gold and Silver medal.

3. THEORITICAL ANALYSIS:

3.1:Block Diagram:



3.2:Hardware/Software Designing:

Functional Requirements: Python Libraries:- Numpy, Pandas, Plotly, Matplotlib, Seaborn,GeoPandas.

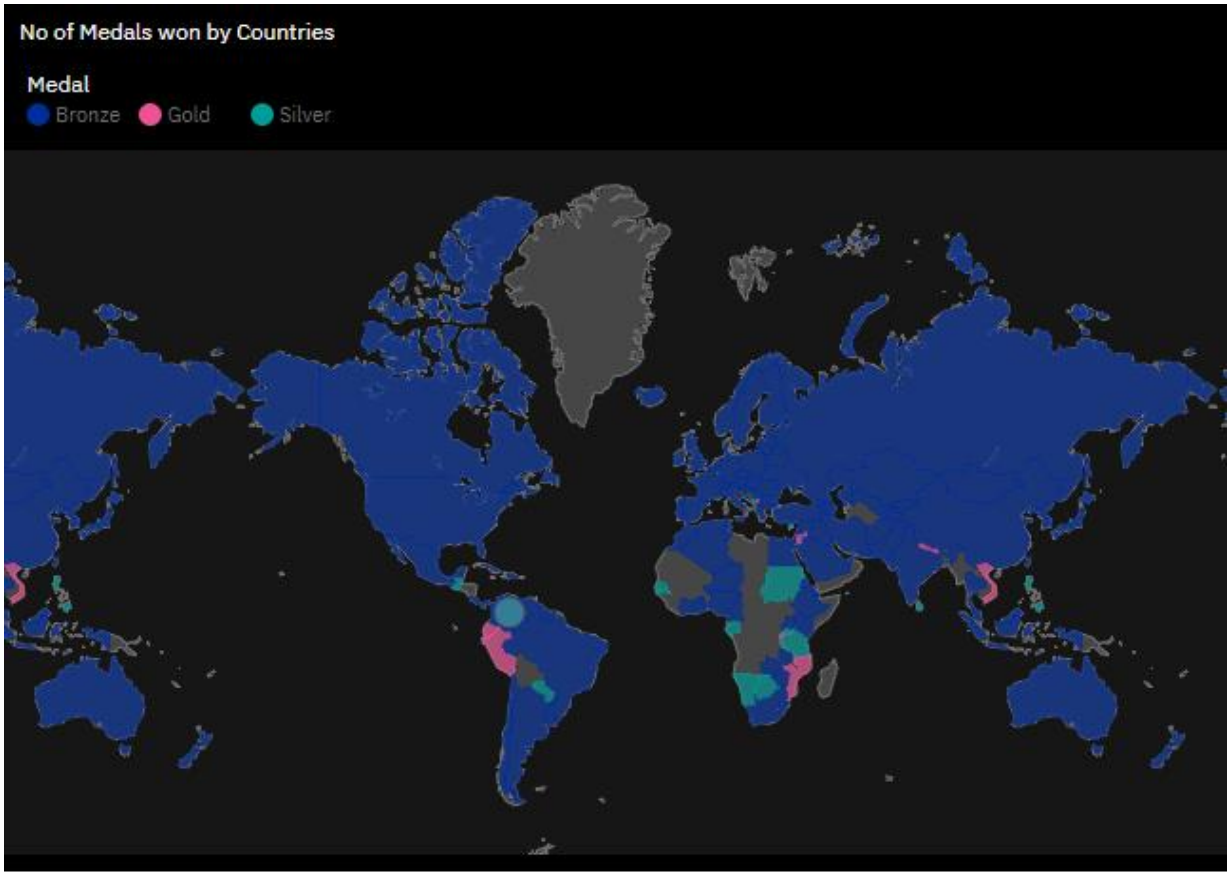
Development Environment: MS Excel, Pycharm, Jupyter Notebook.

External Interface Required: Google News API, Streamlit.

Operating Environment: MacOS, Windows.

Deployment Environment: Streamlit.

Medal Count: A table containing the order of the nations along with total number of medals won by them over the years, Gold medals, Silver medals and Bronze medals is shown which helps us to know the ranking of any nation in comparison to other nations . Number of medals are plotted on a World Physical map like the image shown below.

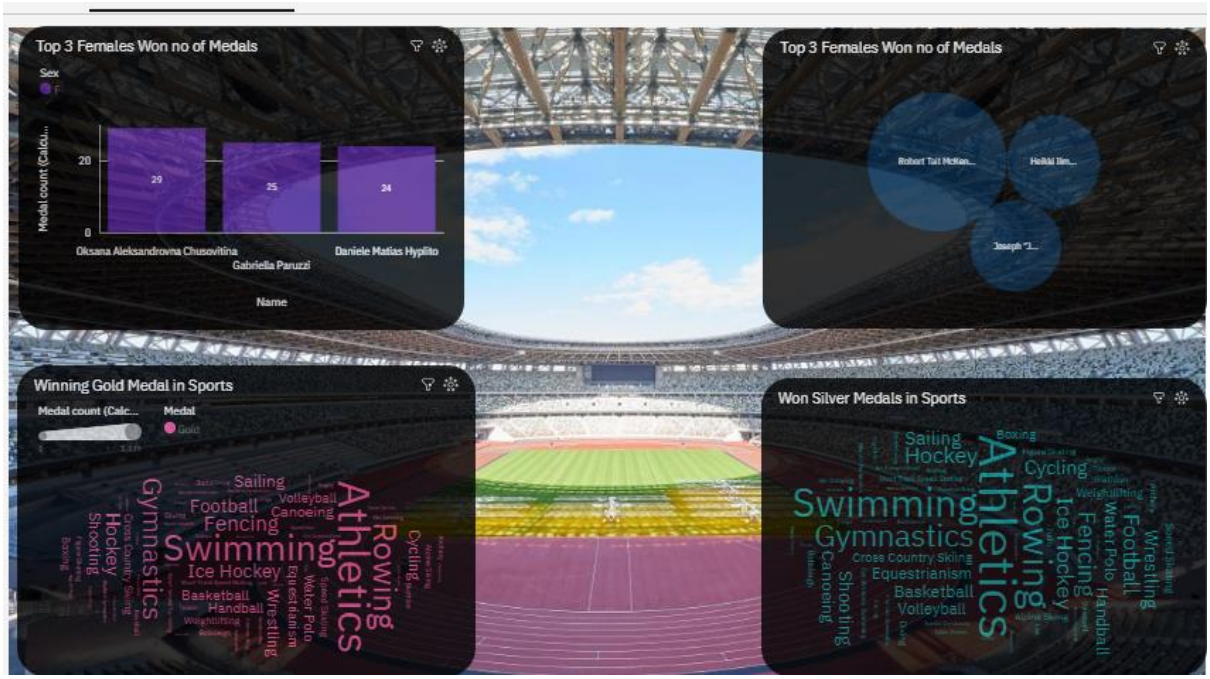


This Map shows the number of medals won by country.

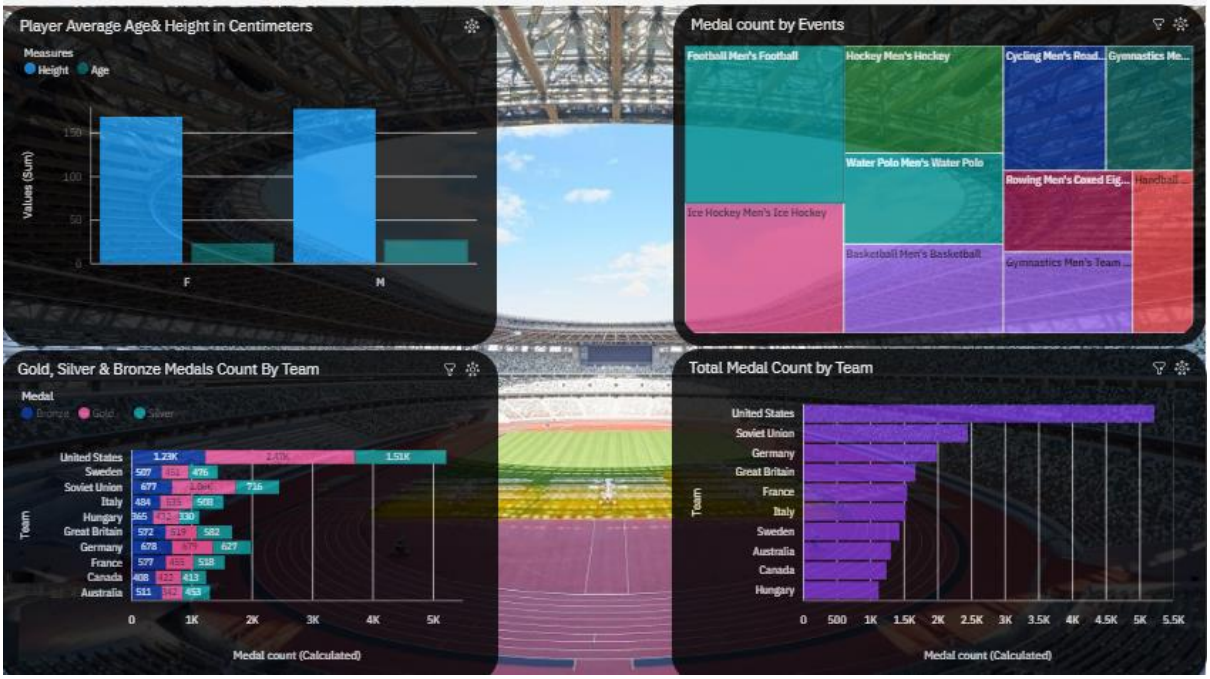
4. Result:

To gain a more comprehensive understanding of the data, we performed an overall analysis on Olympics.

This shows that overview of the project data in graphical ways.



This shows that medals by gender and sports based on medal count.



This shows the average Age, Height and medals by Event, Team.

We found that the number of nations and regions participating in the Olympic games shows an increase in every edition. The events of various sports played in the Olympics also increases at a good rate every edition. We have showed the overall best players in the history of Olympics in a tabular form which informed us that Michael Fred Phelps of USA have won the most medals in history of Olympics in swimming and his medal count totals to 28 medals. User can see top players of a particular sport in the application itself. We came to know that chances of medal win is directly proportional to the number of players participating in the Olympics event. For instance, USA has won most medals till date ans the number of player participating is also the highest.

In summary, the overall analysis provides a comprehensive understanding of the Olympic Games over the past century,

including the historical development of the games, the countries that have been most successful, and the factors that affect the performance of athletes and countries. These insights can help researchers, sports organizations, and policymakers to better understand the dynamics of Olympic Games and the nations that participate in them.

Country Wise Analysis: We performed Analysis on the basis of the Country. Every country have a different line plot of the medal won over the years as the number of medals won and the edition in which they were won were different for every country. Strong sports of the countries are represented in form of Heatmap plots . This plot makes it easier to understand the information .Users can see the top players of the particular country in the form of a table.

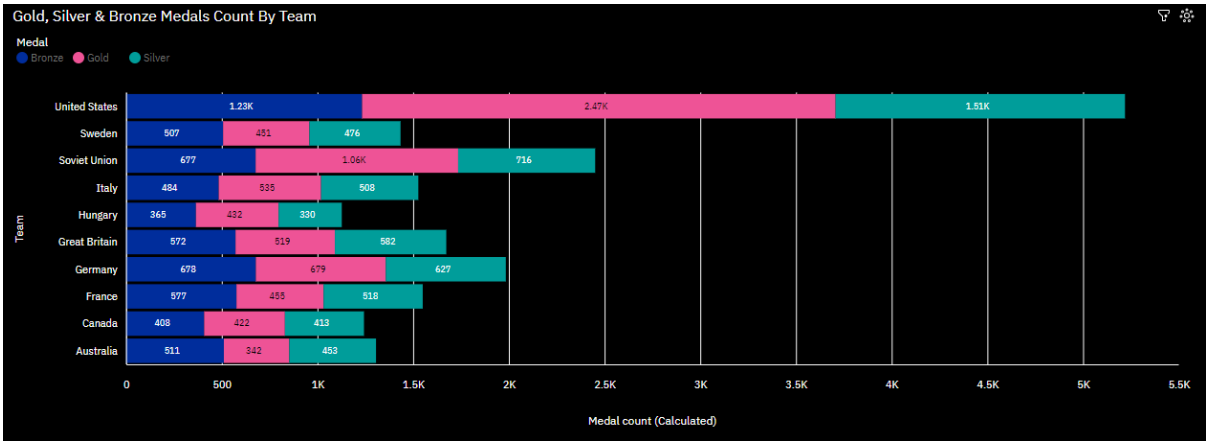
Athlete Wise Analysis: We performed Analysis on the basis of the Athletes. We came to know that young athletes and players

had the highest chances of winning a medal whether a gold,silver or bronze medal. So any person who wants to participate in Olympics should participate at a young age. Most of the medal winning participants age between 15 and 30.

A gradual increase in the participation by women athletes is seen. Every edition the number of women participants are increasing and increase is regular . Our analysis tells us that prime age to win a gold medal is between 18 and 30 for almost all the sports.

Winning Gold Medals in sports

Winning Silver Medals in Sports



Gold, Silver & Bronze Medals Count By Team.

5. Advantages & Disadvantages:

Advantages:

Other statistics may be collected to investigate an individual player's performance, such as successful dribbles, passes, and interceptions. Analysis of this data provides coaches and players with greater insight into the strengths and weaknesses of their game, which is useful for their development.

Disadvantages:

The data's predictions can create an imbalance in the team, and it can further be difficult to handle the situations. It does not always depend on the numbers. A player's mental or emotional state also matters when these transfers are made, which cannot be analyzed in systems.

6. Applications:

- By using Data analysis, the number of medals received by countries can be classified and can be displayed.

- Can determine which country hosted the Olympics in which year.

- Athletes can study which age group is best to excel in their game and is more likely to win the medal.

- Can determine which country is best in which sport.

- Can determine the number of games a country is participating in and participated in past years.

- Can determine which sport event started in which year.

- Can determine the number of events increasing or decreasing over the years.

7. Conclusion:

The Olympic Games are a global sports event that has been held every four years since 1896. In this study, we analyzed data from the Olympic Games over the past century to understand patterns and trends in the medal counts, individual athlete performance, and news coverage.

Our results show that the medal counts have changed over time, with some countries becoming more dominant. In the country-wise analysis, we observed that the performance of countries varies over time and is heavily influenced by the sports they participate in. In the athlete-wise analysis, we found that individual performance of athletes is not always correlated with the overall success of their country. This study provides a comprehensive analysis of Olympic data and offers insights into the historical development of the Olympic Games, as well as giving context to how different nations have performed over the years. Our findings have implications for researchers, sports organizations and policymakers who are interested in

understanding the dynamics of Olympic Games and the nations that participate in it.

We believe that this study will make a valuable contribution to the existing literature on Olympic data analysis and we hope that our results will inspire future research in this field. Furthermore, this research can inform policy makers about the strengths and weaknesses of their countries in sport and also for sport organizations on how to prepare for future Olympics.

8. Future Scope:

Our Project contains some imperfections and weakness. We plan to overcome some of these weaknesses in future answers see these limitations as future scope. These are:

- No Prediction is done - We have used the data related to Olympics and analyzed it thoroughly but have not predicted anything. So we can feed this analyzed data to Machine Learning Algorithms to Predictive something related to the same.
- We have only added information regarding Olympics in Sports Snooze, other major sporting events like Common wealth games, Asian games etc can be made a part of Sports Snooze.
- We can update live scores during the events itself, addition of text commentary feature etc.