



OLYMPIC GAMES MEDAL ANALYSIS USING POWER BI

The domain of the Project
Olympic Games Medal
analysis using Power BI

Under the guidance of
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By
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Period of the project
March 2025 to April 2025



SURE TRUST PUTTAPARTHI,
ANDHRA PRADESH



DECLARATION

The project titled “Olympic Games Medal Analysis” has been mentored by Mrs. Siddhika Shah and organized by SURE Trust from March 2025 to April 2025. This initiative aims to benefit educated unemployed rural youth by providing hands-on experience in industry-relevant projects, thereby enhancing employability.

I, Sk.Ayesha, hereby declare that I have solely worked on this project under the guidance of my mentor. This project has significantly enhanced my practical knowledge and skills in the domain.

Name

Sk.Ayesha

Signature

Mentor

Mrs. Siddhika Shah

Signature

Seal & Signature

Prof. Radhakumari

Executive Director & Founder
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Executive Summary

This project delivers a detailed analysis of Olympic Games data through a dynamic and interactive Power BI dashboard, aimed at uncovering valuable insights into medal trends, athlete demographics, and global sports participation. The dataset leverages thousands of Olympic records, enriched with details such as athlete name, age, gender, country, medal count, and sports category.

The dashboard was developed with the goal of helping sports analysts, enthusiasts, and historians interpret key Olympic trends and performance through visual storytelling and calculated insights.



Introduction

Background and Context

The Olympic Games showcase athletic excellence and international unity. However, despite wide global interest, structured visual insight into trends — such as gender-based medal distributions, athlete ages, and seasonal performance — remains underutilized. This project leverages data analysis to bridge this gap.

Problem Statement

Global Olympic data is rich but complex. Without visualization, detecting patterns in medal count, gender participation, and age dynamics is challenging. This project delivers a visual tool that simplifies this analysis.

Scope

- Analyze Olympic Games data globally.
- Study medal distribution by sport, age, and gender.
- Develop interactive dashboards for intuitive exploration.
- Present dynamic insights on global and seasonal trends.



Limitations

- Based on historical static data, without predictive modeling.
- Personal factors like training, injury, and political scenarios are beyond the scope.
- Focused primarily on medal and participation statistics.

Innovation

The project delivers an interactive Power BI dashboard highlighting key KPIs, including age group segmentation, medal distribution by gender, seasonal trends, and sport-wise medal achievements.



Project Objectives

Project Objectives:

The primary objective of this project is to analyze the Olympic Games medal data to uncover meaningful insights into the performance trends of athletes, teams, and countries over the years. The project aims to develop a clear understanding of historical and seasonal performance, demographic patterns, and the evolution of sports achievements. Using Power BI as the visualization and analytical tool, the objective is to design intuitive dashboards that make complex datasets easy to interpret and support data-driven decision-making for sports analysts, historians, and enthusiasts.

Specific Objectives:

To analyze the distribution of medals across different countries, sports, and seasons (Summer and Winter).

To identify top-performing athletes and their contributions over time.

To visualize age and gender patterns of Olympic medalists.

To uncover the relationship between physical attributes like height and sports events.

To create interactive dashboards for real-time filtering and insights.

To improve data storytelling through professional and appealing visual design using Power BI.



Methodology and Results

- This project follows a structured analytical methodology involving the following steps:
- Data Collection:
- Raw Olympic medal data was sourced from trusted datasets, containing information on athletes, countries, medals, sports categories, and historical timelines.
- Data Cleaning:
- Datasets were cleaned using Microsoft Excel and Power Query to remove inconsistencies, duplicates, and errors. Null values were handled appropriately, and data formats were standardized.
- Data Transformation:
- Using Power BI's transformation capabilities, data fields were organized, new calculated columns were introduced, and measures were created for accurate aggregations and comparisons.
- Data Visualization:
- Power BI's rich visualization suite was used to create dashboards such as:
- Medal distribution by country, season, and team.
- Trend analysis over years by sex and team contribution.
- Analysis & Interpretation:
- Patterns were observed and conclusions were drawn about which teams, sports, and athletes have dominated historically, how demographics influenced results, and which countries showed consistent growth.

Tools/Software Used

Microsoft Power BI:

Used as the primary tool for data transformation, modeling, visualization, and report building. Power BI allowed for interactive dashboards with slicers, charts, maps, and filters.

Power Query Editor:

Assisted in cleaning and reshaping data within Power BI, including merging, appending, and creating calculated columns.

DAX (Data Analysis Expressions):

Used for creating advanced measures, calculations, and KPIs to enable in-depth analysis within the Power BI environment.



Data Collection Approach

The data was sourced from reliable and authentic Olympic Games datasets, which typically contain information such as:

Athlete Name, Country Names, Gender and Age, Sport Category and Event, Medal Type (Gold, Silver, Bronze), Year and Season (Summer/Winter)

The collected raw data was then subjected to a cleaning process to eliminate duplicates, handle missing values, and ensure consistency. This was followed by transformation and loading into Power BI for analysis and visualization.

Project Architecture

The project architecture follows the standard data analysis pipeline:

Data Source Layer:

Olympic historical datasets (CSV, Excel, or online APIs) form the raw data input.

Data Preparation Layer:

Using Power Query and Excel, the data is cleaned, reshaped, and filtered to remove inconsistencies and ensure readiness for visualization.

Data Modeling Layer:

Data tables are loaded into Power BI, and relationships between tables (e.g., Athlete ↔ Medal ↔ Sport ↔ Country) are created. Measures and calculated columns are added using DAX.

Visualization Layer:

Interactive dashboards are created using various visual elements like:

Bar Charts

Pie Charts

Donut Charts

Line Charts

Maps

Tables

Insights & Sharing Layer:

The dashboards are published to Power BI Service for sharing with stakeholders and for real-time analysis.



DATA ANALYSIS & INTERPRETATION:

The analysis led to several interesting insights:

Medal Dominance by Countries:

The United States consistently holds the lead in medal counts across gold, silver, and bronze, followed by France, Great Britain, and Germany.

Seasonal Variation:

Summer Olympics account for an overwhelming majority of medals compared to the Winter Olympics, showcasing the broader range of sports and participation in summer events.

Gender Distribution:

Male athletes account for 71.71% of total medals, while female athletes account for 28.29%, highlighting gender evolution over time.

Age Group Insights:

The majority of medals are earned by athletes aged between 20-30, confirming the peak performance period for Olympic-level competition.

Sport-wise Contribution:

Athletics and Swimming are the top sports for medal distribution, followed by Cycling and Rowing, reflecting the diversity and longevity of these disciplines in Olympic history.

Physical Attributes:

Height distribution revealed an interesting spread, suggesting physical conditioning and sport-specific body optimization contribute to medal success.



Insights from Dashboard - Results

Top Performing Nations:

The United States leads in the total medal tally, with France, Great Britain, Germany, and the Soviet Union also emerging as medal-rich teams.

Seasonal Contribution:

Summer Olympics account for a majority of the medals, indicating wider participation and variety in sporting events compared to Winter Olympics.

Age Analysis:

Athletes aged between 20 to 30 years dominate medal winnings, confirming this as the optimal age group for peak performance.

Gender Distribution:

Male athletes earned around 71.71% of total medals while female athletes earned 28.29%, which also reflects the historical expansion of female representation over the decades.

Sport Analysis:

Athletics, Swimming, and Cycling were the top sports that contributed to the highest number of medals across different Olympic editions.

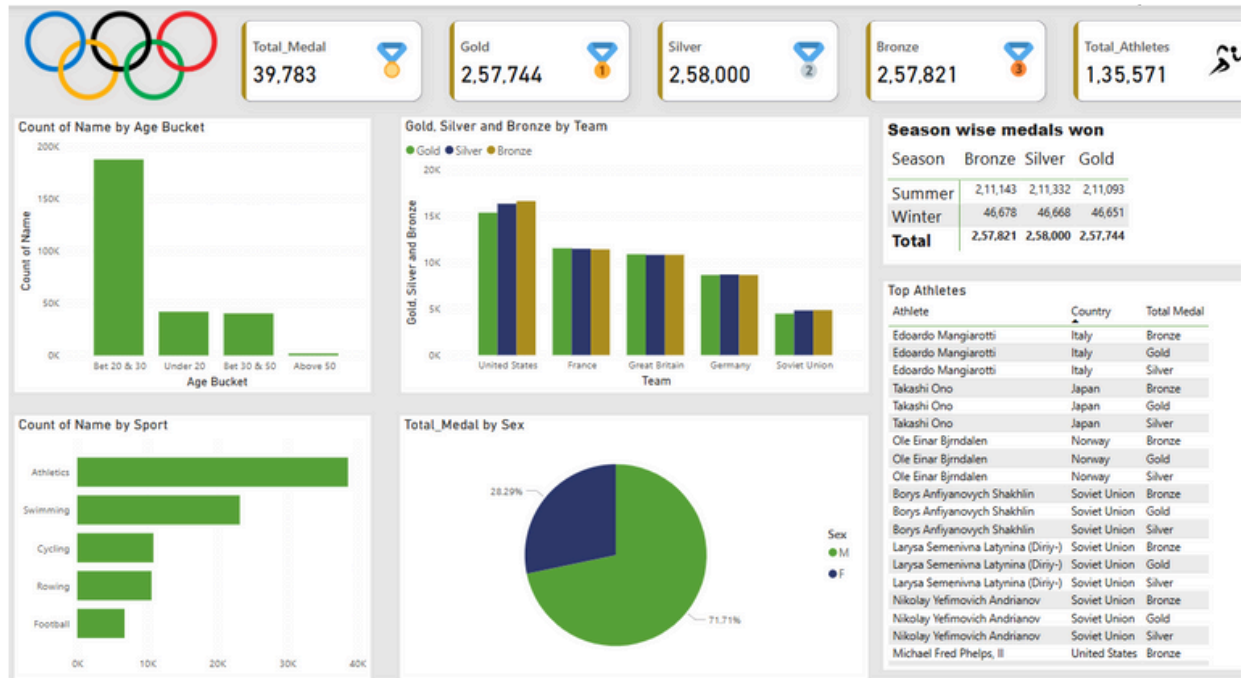
Geographical Spread:

The world map visualization shows that developed nations have a higher representation in Olympic medal tallies, underlining the importance of sports infrastructure and investment.

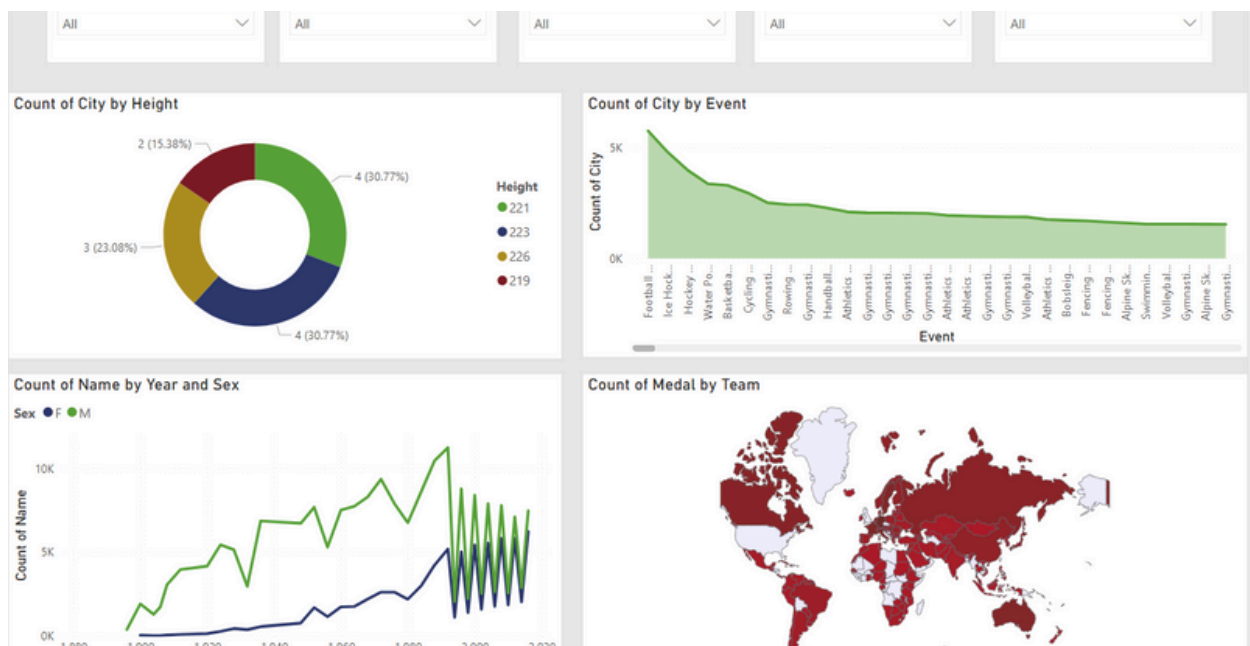


Final Project Working Screenshots

Dashboard - olympic analysis



Dashboard – Bike Performance-metrics





Learning and Reflection

This project enhanced my knowledge in multiple areas:

Power BI Proficiency:

I learned to use Power BI from data import, cleaning, modeling, to visualization, mastering both basic and advanced features.

Data Analysis Mindset:

I developed the skill to convert raw data into meaningful insights using statistical thinking and visual representation.

Report Design and Storytelling:

I learned how to structure visual dashboards that narrate stories clearly, making complex datasets accessible and decision-friendly.

Real-World Problem Solving:

Working with Olympic data offered me practical exposure to handling real-world datasets and understanding patterns, anomalies, and visual communication.



Conclusion and Future Scope

Conclusion

This project successfully demonstrated the power of data analysis and visualization using Power BI in understanding Olympic Games performance. The dashboards provided clear, comprehensive, and interactive insights into the demographics, country-wise performance, sports specialization, and individual athlete achievements.

This analysis not only helps sports enthusiasts and professionals make sense of the data but also aids in identifying trends and areas for future improvements in training, athlete selection, and resource allocation for national sports federations.

Through this internship project, I developed a strong foundation in Power BI, data visualization best practices, and real-world data interpretation skills, which are crucial for any aspiring data analyst.

Future Scope

This project opens doors for several potential future enhancements:

1. Predictive Analysis:

Machine Learning models can be applied to predict future medal winners based on athlete performance, country investments, and training data.

2. Expanded Datasets:

Incorporating additional data such as athlete fitness, injury records, training history, and socio-economic factors for deeper insights.



3.Dynamic Dashboards:

Using Power BI Service, dashboards can be linked to real-time data feeds for live Olympic event monitoring and reporting.

4.Integration with Other Tools:

Linking Power BI with advanced statistical software like R or Python to improve data modeling and prediction capabilities.

5.Mobile-Optimized Reports:

Developing device-responsive dashboards for accessibility on smartphones and tablets, useful for coaches and analysts during live events.