Do economic factors affect Olympic Wins?

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Introduction

The Olympic Games is one of the most prestigious international sports events that attract athletes from different parts of the world. The event provides an opportunity for athletes to showcase their talent and compete with the best in the world. It is a major international multi-sport event featuring thousands of athletes from around the world competing against each other in various sports. The modern Olympic Games, inspired by the ancient Greek Olympics, began in 1896 and have since been held every four years, with the exception of a few cancellations due to wars.

The Olympics feature both summer and winter games, with the summer games being the more well-known and popular of the two. In this project, I aim to investigate two research questions:

(1) How do economic factors affect the performance of countries in the Olympics?

(Human Development Index- The HDI is a summary composite measure of a country's average achievements in three basic aspects of human development: health, knowledge and standard of living.

Per Capita GDP- GDP per capita is the sum of gross value added by all resident producers in the economy plus any product taxes (less subsidies) not included in the valuation of output, divided by mid-year population.

Per Capita Income- Gross National Income (GNI) per capita is the dollar value of a country's final income in a year divided by its population using Atlas methodology.)

(2) How does the gender distribution of athletes vary by sports in the Olympics?

(3) Does BMI(calculated from height and weight) and Economic factors have any correlation?

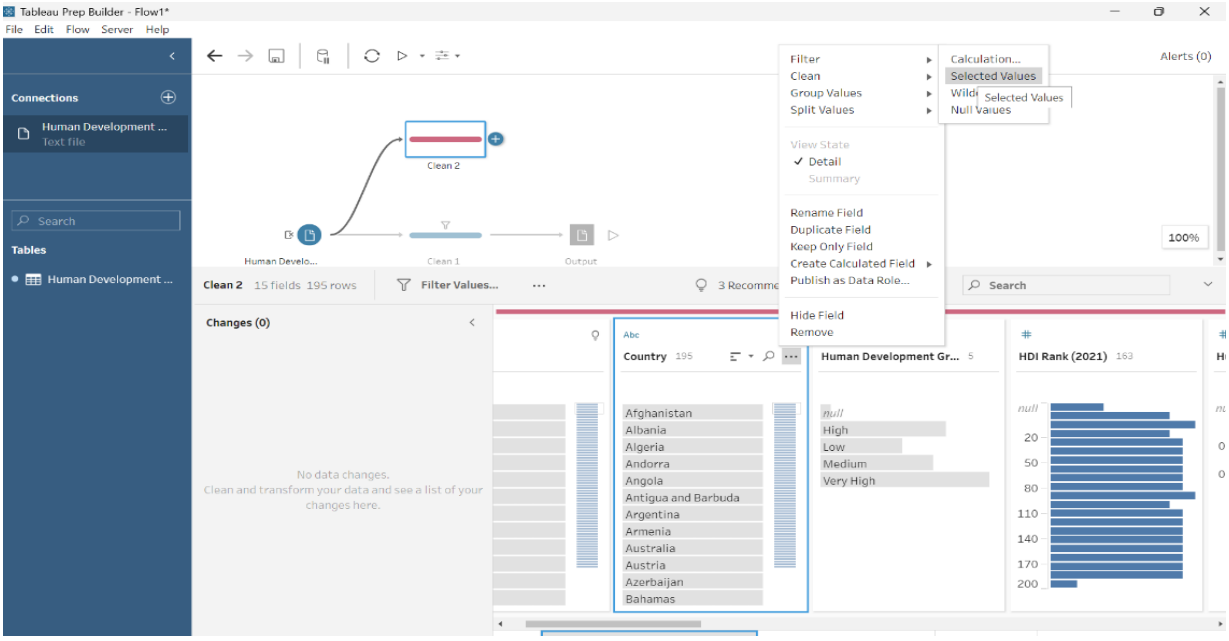
Methodology

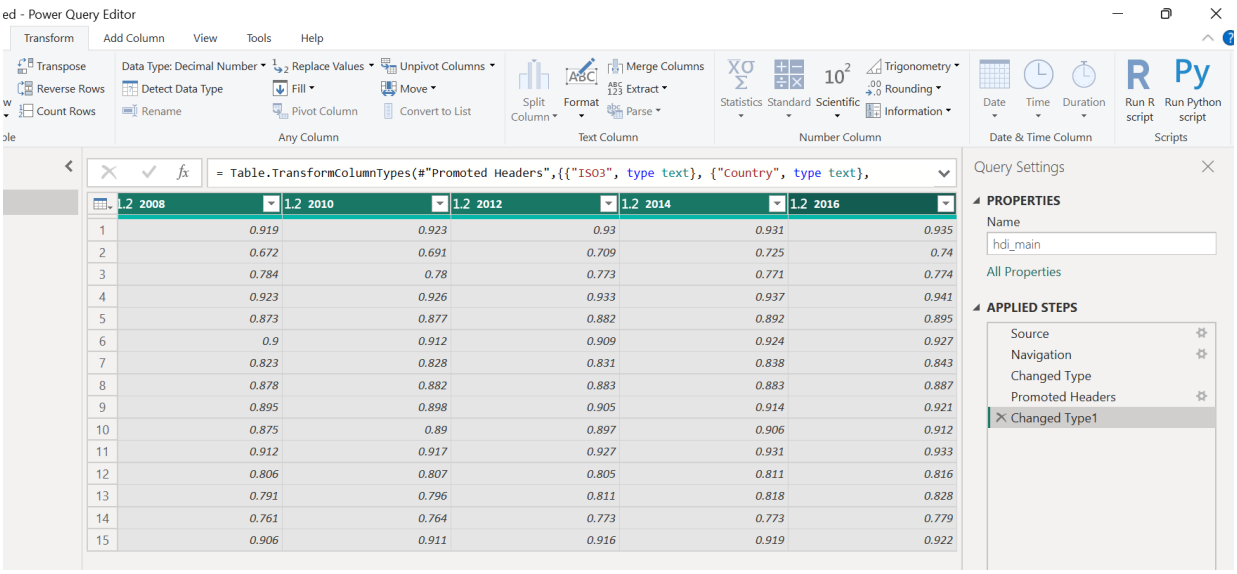
For this project, I sourced data from various publicly available datasets, including Kaggle and World Bank Open Data. The datasets used for this project include an Olympics dataset with columns such as ID, Name, Sex, Age, Height, Weight, Country, NOC, Year, Season, City, Sport, Event, and Medal. Additionally, I used various Economic Indicator datasets from a variety of sources that provided country/year wise data for per capita GDP, Gross national Income per capita and Human development index. I chose the datasets in this way so that I could join the tables by a common column set (country and year). I filtered the data using functions from Excel, Power Bi and Tableau Prep builder as the data was large and I chose to visualize trends for 20 years for which there were no missing values. I chose countries based on their performance for the last 30 years. This includes averages which are calculated based on the total number of medals won by each country in each Olympic Games from 1992 to 2020, divided by the number of Olympic Games during that period (i.e. 8). The top 15 countries were used for the analysis over the period of 1996-2016. I used Tableau to create visualizations and reports to analyze the data and answer the research questions.

https://www.kaggle.com/datasets/heesoo37/120-years-of-olympic-history-athletes-and-results

https://data.worldbank.org/

https://www.kaggle.com/datasets/iamsouravbanerjee/human-development-index-dataset

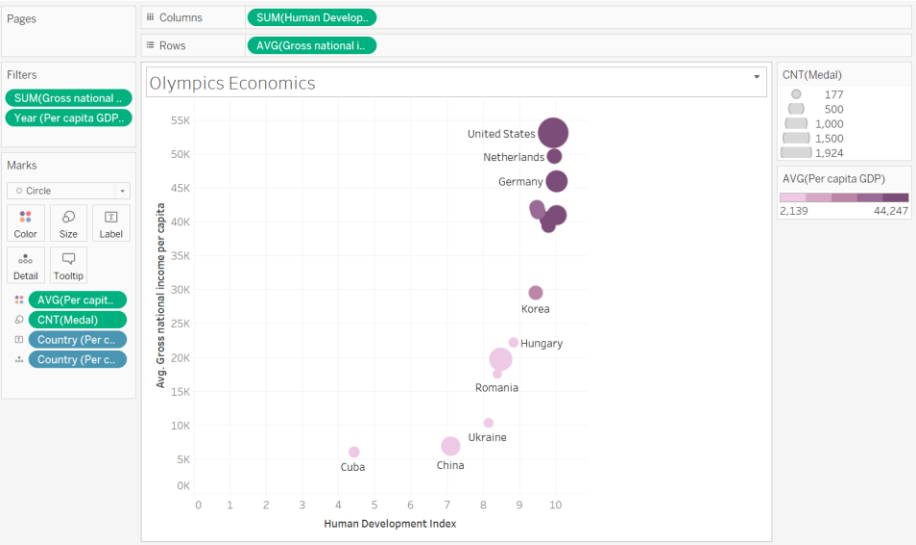




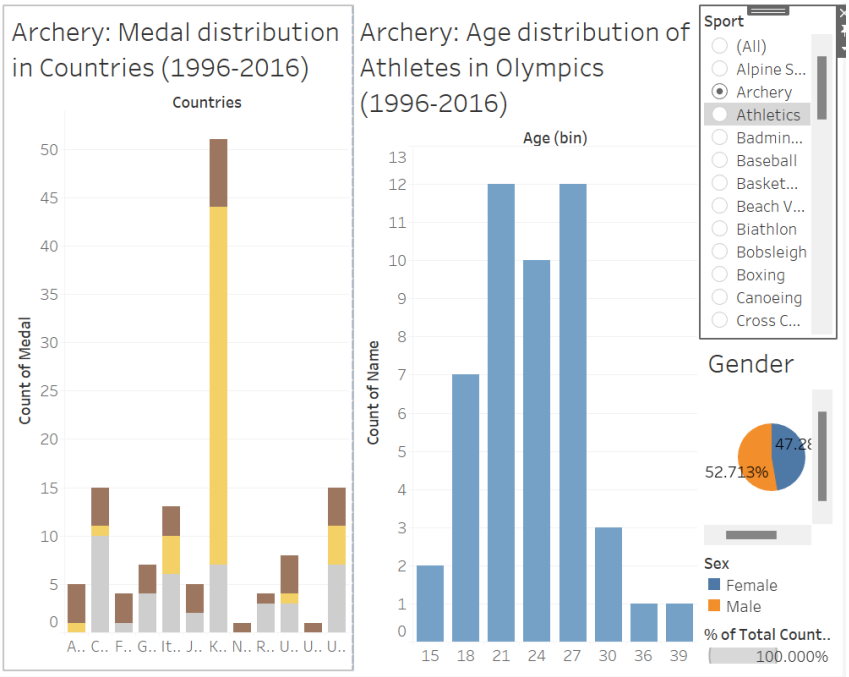
	1.2 2008	1.2 2010	1.2 2012	1.2 2014	1.2 2016
1	0.919	0.923	0.93	0.931	0.935
2	0.672	0.691	0.709	0.725	0.74
3	0.784	0.78	0.773	0.771	0.774
4	0.923	0.926	0.933	0.937	0.941
5	0.873	0.877	0.882	0.892	0.895
6	0.9	0.912	0.909	0.924	0.927
7	0.823	0.828	0.831	0.838	0.843
8	0.878	0.882	0.883	0.883	0.887
9	0.895	0.898	0.905	0.914	0.921
10	0.875	0.89	0.897	0.906	0.912
11	0.912	0.917	0.927	0.931	0.933
12	0.806	0.807	0.805	0.811	0.816
13	0.791	0.796	0.811	0.818	0.828
14	0.761	0.764	0.773	0.773	0.779
15	0.906	0.911	0.916	0.919	0.922

Analysis

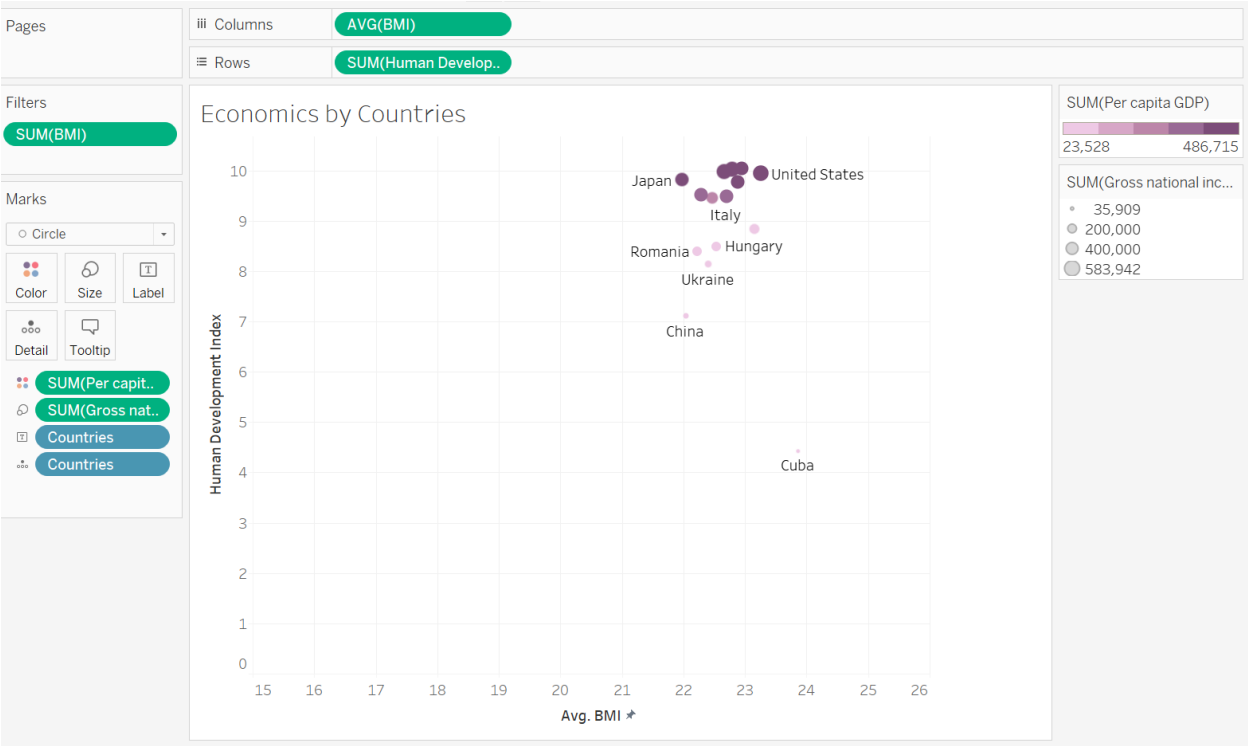
To investigate the first research question, I created a scatter plot using Tableau that shows the relationship between GDP per capita and the total number of medals won by a country. The visualization indicated that there is a positive correlation between the two variables, which suggests that countries with higher GDP per capita, Human Development Index and Gross Income per capita tend to perform better in the Olympics with higher medal count.



To investigate the second research question, I created a dashboard that shows the variation of the gender distribution of athletes in the Olympics by each sport. The chart indicated that although there seems to be no noticeable gender difference in participation of athletes across countries, it becomes clear when looked at sport wise.



To answer the third question, I created a scatter plot for all the economic factors and BMI. This visualization depicts that countries with higher Human development index and per capita GDP have athletes with almost perfect BMI.



Conclusion

Based on our analysis, I can conclude that economic factors do affect the performance of countries in the Olympics. Countries with higher GDP per capita tend to perform better in the Olympics. Additionally, our analysis indicates that the gender distribution of athletes in the Olympics varies significantly by sport. Possible explanations for these trends could be that some sports require more strength and skill which might vary by gender.

Some additional Future Research Questions related to this project:

1.How do political and cultural factors impact a country's success in the Olympics?

2.How have advancements in technology and sports science impacted the performance of athletes over time?

Overall, this project helped me understand and answer my question ‘whether economy of a nation affects its Olympic win’ with the help of reliable data sources and visualizations.