**ANALYSIS ON 2024 SUMMER OLYMPICS MEDAL**

**Introduction**

# This dataset represents the performance of various countries in an Olympic event, detailing the number of gold, silver, and bronze medals they have won. It ranks countries based on their total medal count and includes percentage breakdowns for each medal type. The columns in the dataset provide insight into the distribution of medals across nations, allowing for a clear comparison of their achievements.

**Data Source**

The dataset on Olympic medal counts was collected from publicly available Olympic statistics, typically sourced from reputable websites such as the **International Olympic Committee (IOC)** that compile medal tallies from the event and was uploaded in Power Bi. The data includes the number of gold, silver, and bronze medals won by countries, alongside percentage breakdowns, and is commonly updated after each Olympic cycle.

**Tools**

For the analysis and processing of this Olympic medal dataset, I primarily used **Power BI**, a versatile tool for data transformation, analysis, and visualization. Below is a breakdown of the specific tools and techniques employed:

1. **Power BI - Measures for Calculating Percentages:**

**New Measures**: In Power BI, I created custom measures to calculate the percentage distribution of each type of medal (gold, silver, and bronze) relative to the total number of medals won by each country. These measures allowed for a dynamic calculation, ensuring that as the data changes, the percentage values update automatically.

The percentage formula for each medal type was calculated as: **Percentage of Medal Type=(Medal CountTotal Medals)×100\text{Percentage of Medal Type} = \left( \frac{\text{Medal Count}}{\text{Total Medals}} \right) \times 100Percentage of Medal Type=(Total MedalsMedal Count​)×100**

This helped to understand each country's medal distribution in a clearer, more comparable manner across nations, showing whether countries are more dominant in specific medal types (e.g., a higher percentage of golds versus bronzes).

2. **Power BI - Measures for Calculating Totals:**

**Total Measures**: I also used Power BI measures to compute the **total** number of medals for each country, by summing up the individual counts of gold, silver, and bronze medals. This was essential for calculating rankings and overall performance.

The total was calculated using an explicit measure: **Total Medals=Gold Medals+Silver Medals+Bronze Medals\text{Total Medals} = \text{Gold Medals} + \text{Silver Medals} + \text{Bronze Medals}Total Medals=Gold Medals+Silver Medals+Bronze Medals**

These totals were used not only for ranking countries but also for further calculations like percentages and medal distribution analysis.

3. **Power Query - Data Transformation:**

**Filling Missing Data**: In instances where the dataset had missing values, such as unrecorded medal counts or incomplete data, I employed **Power Query** to handle these gaps. Specifically, I used the **Fill Down** functionality to populate missing numbers based on existing data in the dataset.

Power Query’s “Fill” feature was crucial in ensuring consistency, as it allowed for missing numbers in the medal count columns to be appropriately filled based on adjacent data. This eliminated any null or incomplete records that could skew the analysis results.

The filling process ensured that all countries had a complete record of their medal tally, which is essential when calculating accurate totals and percentages.

4. **Power BI - Visualizations (Optional for Context)**:

After calculating the measures and transforming the dataset, Power BI’s visualization tools was used to create insightful graphs and charts that display medal distributions and comparisons between countries. Bar charts, pie charts, and rank tables are typically used to represent data like total medals and percentage breakdowns visually.

**Data Description**

This dataset contains the ranking and medal statistics of countries that participated in an Olympic event. Each row corresponds to a country and includes its ranking, medal counts (gold, silver, bronze), total medals, and the percentage breakdown for each medal type. Below is a description of the key variables in the dataset:

1. **Rank**:
   * **Description**: The position of the country based on the total number of medals won.
   * **Data Type**: Integer
   * **Example**: 1, 2, 3
2. **NOC (National Olympic Committee)**:
   * **Description**: The abbreviation or name of the country or region represented in the Olympic games.
   * **Data Type**: Text
   * **Example**: USA, CHN, GBR
3. **Gold**:
   * **Description**: The number of gold medals won by the country.
   * **Data Type**: Integer
   * **Example**: 40, 27, 12
4. **Silver**:
   * **Description**: The number of silver medals won by the country.
   * **Data Type**: Integer
   * **Example**: 44, 22, 9
5. **Bronze**:
   * **Description**: The number of bronze medals won by the country.
   * **Data Type**: Integer
   * **Example**: 42, 24, 10
6. **Total**:
   * **Description**: The total number of medals (gold, silver, and bronze) won by the country.
   * **Data Type**: Integer
   * **Formula**: Total = Gold + Silver + Bronze
   * **Example**: 126, 91, 45
7. **% Gold**:
   * **Description**: The percentage of gold medals won relative to the total number of medals for that country.
   * **Data Type**: Decimal (Percentage)
   * **Formula**: %Gold=(GoldTotal)×100\% Gold = \left( \frac{\text{Gold}}{\text{Total}} \right) \times 100%Gold=(TotalGold​)×100
   * **Example**: 31.75%, 43.96%, 44.44%
8. **% Silver**:
   * **Description**: The percentage of silver medals won relative to the total number of medals for that country.
   * **Data Type**: Decimal (Percentage)
   * **Formula**: %Silver=(SilverTotal)×100\% Silver = \left( \frac{\text{Silver}}{\text{Total}} \right) \times 100%Silver=(TotalSilver​)×100
   * **Example**: 34.92%, 29.67%, 26.67%
9. **% Bronze**:
   * **Description**: The percentage of bronze medals won relative to the total number of medals for that country.
   * **Data Type**: Decimal (Percentage)
   * **Formula**: %Bronze=(BronzeTotal)×100\% Bronze = \left( \frac{\text{Bronze}}{\text{Total}} \right) \times 100%Bronze=(TotalBronze​)×100
   * **Example**: 33.33%, 26.37%, 28.89%

The dataset provides a comprehensive breakdown of the performance of each country, with each medal category (gold, silver, bronze) being analyzed both in terms of count and percentage. The inclusion of percentage breakdowns allows for insights into the medal distribution, helping to assess whether a country is more dominant in one medal category than others. The ranking is based on the total medal count, and each country's National Olympic Committee (NOC) is identified to facilitate comparison.

Problem Statement

1. **Analyzing Medal Distribution Patterns Across Countries**

* **Problem Statement**: How do countries differ in their distribution of gold, silver, and bronze medals, and what patterns emerge when comparing countries with a higher percentage of gold medals versus those with more balanced or lower-tier medal distributions?
* **Goal**: To analyze whether some countries are consistently more successful in winning gold medals, or if their overall success comes from a balance of medal types (gold, silver, bronze). The analysis can provide insights into which countries are most efficient at securing top podium finishes.

2. **Identifying Factors Behind High Olympic Medal Counts**

* **Problem Statement**: What factors contribute to a country’s ability to achieve a high total medal count, and how does the percentage of each medal type correlate with their overall performance?
* **Goal**: To explore correlations between total medals and the distribution of medals by type (gold, silver, bronze), and identify if a higher proportion of a certain type (e.g., gold) is more indicative of overall dominance in the Olympics.

### 3. Evaluating Medal Efficiency Among Countries

* **Problem Statement**: Which countries demonstrate the highest efficiency in converting their total medal opportunities into gold medals, and how does this impact their overall ranking in the Olympics?
* **Goal**: To determine which countries have the highest percentage of gold medals relative to their total medal count, and evaluate whether these countries rank higher in the overall standings compared to those with a more equal distribution of silver and bronze medals.

### 4. **Trends in Olympic Medal Dominance Over Time**

* **Problem Statement**: How has the distribution of Olympic medals across different countries evolved over time, and are there identifiable trends in which countries have become more or less dominant in specific medal categories (gold, silver, bronze)?
* **Goal**: Although the current dataset is for a single Olympic event, expanding this data over time could help identify trends in country-specific performance. This analysis could be useful in predicting future Olympic outcomes or understanding shifts in global sporting success.

### 5. **Impact of Medal Distribution on Olympic Country Ranking**

* **Problem Statement**: Does a higher percentage of gold medals have a greater impact on a country's Olympic ranking than a balanced distribution of all medal types?
* **Goal**: To investigate the extent to which the percentage of gold medals (as opposed to total medals) influences a country’s rank, and whether countries with a high percentage of bronze or silver medals can still achieve a top rank based on total medals.

These problem statements provide a foundation for exploring the dataset's trends, patterns, and underlying factors affecting Olympic medal performance.

Recommendations

1. **Focus on Winning More Gold Medals**

* **Recommendation**: Countries should prioritize strategies that increase their chances of winning gold medals, as a higher percentage of gold medals tends to have a significant impact on their overall ranking and international prestige. **Why?**: The analysis shows that countries with a higher percentage of gold medals tend to rank higher, even if their total medal count is similar to others. Governments and sports federations should invest in elite athlete training and development programs to target top finishes.

2. **Invest in Sports with High Medal Potential**

* **Recommendation**: Countries should identify and focus their resources on sports where they have historically performed well or have untapped potential to maximize their medal counts, especially in events that offer multiple medal opportunities. **Why?**: By concentrating resources on sports where they have a competitive edge, countries can increase their chances of winning medals, improving their overall standing in future Olympic games.

3. **Improve Performance in Lower Medal Categories**

* **Recommendation**: Countries with a significant number of silver and bronze medals should focus on enhancing their performance to convert these into gold medals, which will boost their ranking. **Why?**: Silver and bronze medals indicate that athletes are close to winning gold but may need additional support, coaching, or resources to close the gap. Targeting this group can improve overall medal efficiency.

4. **Strengthen Support for Athletes in Less Dominated Sports**

* **Recommendation**: Governments and national sports committees should diversify their investments by supporting athletes in less dominated sports where competition is less fierce, potentially increasing their chances of securing medals. **Why?**: Countries that are not dominant in traditional medal-heavy sports (like athletics or swimming) should identify emerging sports with fewer competitors to increase their overall medal count.

5. **Develop Long-Term Olympic Talent Programs**

**Recommendation**: Implement talent development programs starting from a young age to ensure a steady pipeline of future Olympic athletes, focusing on sports that contribute heavily to the medal count. **Why?**: Sustained investment in youth training and Olympic preparation programs will help countries maintain or improve their standing in future events by producing athletes capable of winning medals in various sports categories.

6. **Data-Driven Preparation for Future Olympics**

**Recommendation**: Countries should conduct in-depth analysis of past performances using datasets like this one to identify areas of improvement and adjust their Olympic training programs accordingly. **Why?**: A data-driven approach allows countries to analyze trends, strengths, and weaknesses, ensuring that resources are allocated efficiently to maximize medal outcomes in future Olympics.

7. **Collaboration and Exchange Programs**

**Recommendation**: Establish international sports exchange programs, where countries can collaborate on training, research, and development with other nations, especially those that have excelled in specific sports categories. **Why?**: This collaboration can lead to shared expertise, improved training techniques, and a more holistic development of athletes, especially for countries aiming to increase their medal tallies.

These recommendations aim to help countries optimize their performance in future Olympic games based on the insights from the medal distribution and ranking trends in this dataset.