**Tokyo Olympic 2020 Olympics - Insight Analysis**

**I. Medal Distribution Analysis:**

* **Top 10 Countries that achieving the most gold medals:**

**A graph with a number of yellow bars

Description automatically generated**

**Overview Analysis:**

* **United States' Gold Lead:** With 39 gold medals, the United States not only leads in the total medal count but also in the highest tier of Olympic honors. This underscores the country's ability not just to podium but to win events.
* **China's Close Competition:** China is very close behind with 38 gold medals, indicating a high conversion rate of potential medal finishes into golds, which points to the effectiveness of their athlete preparation for peak performance.
* **Japan's Strong Gold** Performance: Japan has a significantly higher number of gold medals (27) relative to their total medal count, emphasizing the nation's effectiveness in winning events outright, which could be bolstered by the advantage of competing on home soil.
* **Great Britain and ROC:** Great Britain with 22 and the ROC with 20 gold medals show a strong finish in the highest valued medal category, reaffirming their positions as leading sporting nations.
* **High Gold-to-Total Medal Ratio**: Australia, with more gold medals than some countries with a higher overall medal tally, shows a high gold-to-total ratio, indicating success in key events.
* **European Countries:** The Netherlands, Italy, Germany, and France, each with 10 gold medals, show that while their overall medal tallies are lower than some other leading nations, they still maintain the capacity to achieve top podium finishes in their strongest disciplines.

* **Top 10 Countries That Achieving the Most Medals:**

A graph with blue bars

Description automatically generated**A graph of different colors

Description automatically generated**

Those charts provided appears to show the total medal tally for the top 10 countries at the Tokyo 2020 Olympic Games:

**Enhanced Combined Analysis with Hypothetical Data:**

* **United States' Comprehensive Success**:
  + Gold Medals: 39 out of 113 (34.5% of their total medals are gold).
  + The U.S. showcases not just quantity with the highest total medal count but also quality, with over a third of their total being gold medals. This indicates success across a wide array of events, not just making the podium but often finishing first.
* **China's Gold Efficiency**:
  + Gold Medals: 38 out of 88 (43.2% of their total medals are gold).
  + China has a slightly higher efficiency in winning gold medals compared to the U.S., with nearly half of their medals being gold. This may reflect a focused strategy on achieving the top spot in disciplines where they have a competitive advantage.
* **ROC's Balanced Achievement**:
  + Assuming an equal distribution of 71 medals across all three types, the ROC shows a balanced performance with roughly 33% efficiency in each medal category.
  + This balance indicates that ROC athletes are consistently reaching the podium across a broad range of sports.
* **Great Britain's Sporting Excellence**:
  + Gold Medals: 22 out of 65 (approximately 33.8% of their total medals are gold).
  + Great Britain's distribution suggests a strong ability to convert final appearances into victories, reflecting the effectiveness of their Olympic preparation.
* **Japan's Home Advantage:**
  + Gold Medals: 27 out of 58 (nearly 46.5% of their total medals are gold).
  + Japan demonstrates a significant home advantage, with almost half of their medals being gold, suggesting that they not only competed well but also capitalized on key events.
* **Australia's Competitive Edge**:
  + Gold Medals: 17 out of 46 (around 37% of their total medals are gold).
  + Australia's strategy appears to pay off with a high percentage of gold medals, indicating targeted success in events like swimming and team sports.
* **European Nations' Strategic Wins**:
  + Countries like the Netherlands and Italy have 10 gold medals each, which may represent a significant percentage of their overall count, showing their strategic focus on events where they are most competitive.
* **Overall Analysis:**

1. **Performance Insights:** A comparison reveals that while the United States and China dominate both charts, certain countries like Japan have a more prominent position when considering gold medals alone, highlighting their capacity to not just compete but to win.
2. **Strategic Focus:** The emphasis on gold medals may reflect a country's strategic focus on excelling in specific sports or events, potentially prioritizing quality over quantity in their Olympic strategies. Therefore, we can delve deeper into why the USA & China are at the top through the chart about athletes in part II.

**II. Discipline Analysis by Gender:**

* **Females:**

**A graph of a number of people

Description automatically generated with medium confidence**

* **Athletics Dominance:** The discipline of athletics shows the highest participation of female athletes, which is typically one of the most inclusive disciplines, offering a wide range of events for competitors.
* **Swimming Participation**: Swimming also demonstrates significant female participation. This is expected as swimming, like athletics, has many events and is traditionally a gender-balanced sport.
* **Team Sports Variability**: Team sports such as Football, Hockey, and Handball show notable female representation, which points towards a trend of inclusivity in team events. However, there is variability among different team sports.
* **Artistic Gymnastics**: Artistic Gymnastics also has a considerable number of female athletes, which aligns with the popularity and competitive nature of the discipline among female competitors.
* **Combat Sports Representation**: Disciplines like Judo and Taekwondo show a healthy number of female athletes, indicative of the growing inclusivity in combat sports.
* **Lower Participation in Certain Disciplines**: Some disciplines such as Greco-Roman Wrestling have a lower count of female athletes, which may be due to the fact that this style of wrestling is traditionally male-only at the Olympics.
* **Water and Racket Sports:** Sports like Water Polo, Tennis, and Badminton show good female participation, suggesting a balanced gender representation in these disciplines.
* **Equestrian and Shooting Sports**: Disciplines such as Equestrian events and Shooting show female participation as well, which may be due to these sports not relying on physical strength alone, providing an equitable competitive platform.
* **Males:**

A graph of different sizes and colors

Description automatically generated

* **Athletics Participation**: Athletics stands out with the highest number of male participants, which is expected due to the large number of events within the discipline. This suggests a widespread interest and investment in athletics among male athletes globally.
* **Swimming Popularity**: Swimming also shows a significant number of male athletes, reflecting its status as a major Olympic sport with broad international participation and a large number of medal events.
* **Team Sports**: Sports like Football, Basketball, and Handball show substantial participation, which aligns with their global popularity and the presence of men's leagues around the world.
* **Combat Sports**: Judo and Boxing have notable male participation, indicating a strong tradition and interest in these sports among men.
* **Gymnastics and Aquatics**: Artistic Gymnastics and Diving show lower participation than some other sports but are still significant. This could be due to fewer events or more stringent qualification standards.
* **Racket Sports**: Badminton and Tennis have a healthy representation of male athletes, suggesting these sports have a strong global appeal and accessibility.
* **Cycling Disciplines**: Various cycling disciplines, including Road, Track, and BMX, show a moderate level of participation, reflecting the sport's niche yet solid presence in the Olympics.
* **Water Sports**: Rowing and Canoe Sprint, which require significant physical strength, show a considerable number of male athletes, which is in line with the physical demands of these sports.
* **Equestrian and Shooting**: While traditionally not gendered, these sports show male participation, demonstrating the diverse interests of male athletes across Olympic events.
* **Lower Participation in Some Disciplines**: Certain disciplines like Greco-Roman Wrestling, which are traditionally male-only, have lower participation numbers, potentially due to the specialized nature of the sport and the limited number of weight classes.
* **Overall Analysis:**
* The participation in disciplines like Athletics and Swimming is relatively balanced between males and females, likely due to the equal opportunities and events available to both.
* In team sports, cultural preferences, popularity, and development programs for men's and women's sports could influence the number of athletes.
* Combat and strength-based sports may have higher male participation, although there's an increasing trend of inclusivity and growth in women's events in these areas.
* Gymnastics, despite being a historically strong discipline for women, also has a significant number of male athletes, showing its universal appeal.
* The disparity in certain sports could be due to historical, cultural, or policy reasons, which are changing over time as the Olympic movement pushes for gender equality.

**III. Discipline Analysis by Countries:**

A graph with blue bars

Description automatically generated

* **Athletics and Swimming Lead**: Athletics and swimming are the disciplines with the highest number of participating countries, with athletics leading at 195 and swimming at 181. This broad participation reflects the universal appeal and accessibility of these sports. Athletics and swimming events are foundational to the Olympic program and typically include a wide range of competitions that attract a diverse group of athletes.
* **Judo's Global Reach**: Judo is the third most participated discipline with 123 countries. The widespread practice of judo across the world and its inclusion in many countries' sports curricula may contribute to this high level of participation.
* **Shooting and Rowing's Popularity**: Shooting and rowing both have significant participation, with 100 and 79 countries respectively. This suggests that these sports have well-established international federations that have been successful in promoting participation across a wide range of countries.
* **Boxing's Consistent Draw**: Boxing, tied with rowing at 79 countries, remains a popular discipline at the Olympic level, attracting a large number of countries. Its historical presence and the universal nature of the sport contribute to its ongoing popularity.
* **Weightlifting's Strong Following**: Weightlifting sees 75 countries participating, indicative of the sport's appeal and the existence of grassroots programs around the world that feed into elite competition.
* **Cycling and Sailing's Selective Participation**: Cycling road and sailing have a moderately high number of countries participating, with 67 and 65 respectively. These numbers may reflect both the specialized nature of these sports and their global reach.
* **Wrestling's Niche Community**: Wrestling has the participation of 60 countries, which, while lower than other sports on the list, still demonstrates a solid community and interest level, particularly given the sport's ancient ties to the Olympic tradition.

**IV. Conclusion:**

* **United States' Overall Dominance:** The United States leads in both gold medal wins and total medal tally, underlining the country's successful Olympic strategy and extensive support for athletes across a multitude of disciplines.
* **China's Gold Medal Focus:** China's near parity with the U.S. in gold medals while having a lower total medal count suggests a strategic emphasis on clinching the top spot in events where they are historically strong or have invested heavily.
* Japan's Advantage: Japan capitalized on the home ground advantage, securing a higher ratio of gold medals, highlighting effective preparation and performance in key disciplines.
* **Great Britain and ROC's Strong Performance:** Both countries displayed a solid gold medal count, indicating successful athlete development programs and the ability to excel in competitive events.
* Australia's Strategic Wins: Australia's high gold-to-total medal ratio suggests a targeted approach in sports where they have competitive strengths, particularly swimming and team sports.
* **European Countries' Podium Finishes:** The Netherlands, Italy, Germany, and France, despite fewer overall medals, managed to secure a substantial number of gold medals, demonstrating their ability to perform at the highest level in their strongest sports.
* **Gender Distribution Equilibrium**: Athletics and swimming showed a balanced gender distribution, reflecting equal opportunities for male and female athletes in these globally popular sports.
* **Diverse Global Participation:** Judo, shooting, and rowing were among the disciplines with high participation from countries worldwide, indicating their universal appeal and the inclusive nature of these sports.
* **Combat Sports Growth:** An increasing trend in female participation in combat sports like judo and boxing is evident, showcasing the breaking of traditional gender barriers in these disciplines.
* **Cultural and Policy Influences**: The analysis recognizes historical, cultural, and policy factors that contribute to the observed gender distribution in various sports, with ongoing efforts to achieve gender equality.

**GITHUB LINK:** [**https://github.com/tpham45/Tokyo-Olympic-Analytics-DE-DS**](https://github.com/tpham45/Tokyo-Olympic-Analytics-DE-DS)

**PLEASE READ** THE Readme.md file for understanding the methodology.