Visualization Project Report

Introduction:

This project focuses on exploring and analyzing data from the **Paris 2024 Olympic Games**, uncovering insights about athlete performances, medal distributions, and event highlights. By integrating and transforming diverse datasets, visual dashboards were created to present key findings, such as medal tallies, country dominance, and trends across newly introduced sports. The goal was to provide an interactive and data-driven narrative of the world's largest sporting event, showcasing the power of analytics in storytelling.

Page 1: Athletes

Question 1: The Great Divide: Is there a noticeable gender imbalance in athlete participation?
Answer: Looking at the pie chart, there is no gender imbalance with the female athlete participation around 49% to the male athlete participation which is at approximately 51%. This indicates a fair distribution between genders in the olympics.

Question 2: Geo-Hotspots: Which regions contribute the most athletes to the event?
Answer: Based on the intensity of the blue color on the map, Europe and USA appear to be the regions with the highest density of athletes, with a lot of participation of athletes from East Asia and the middle east. This suggests that these regions are major contributors to athlete participation. If a specific country is chosen it is possible to check its participation geographically by a zoom in the map on it.

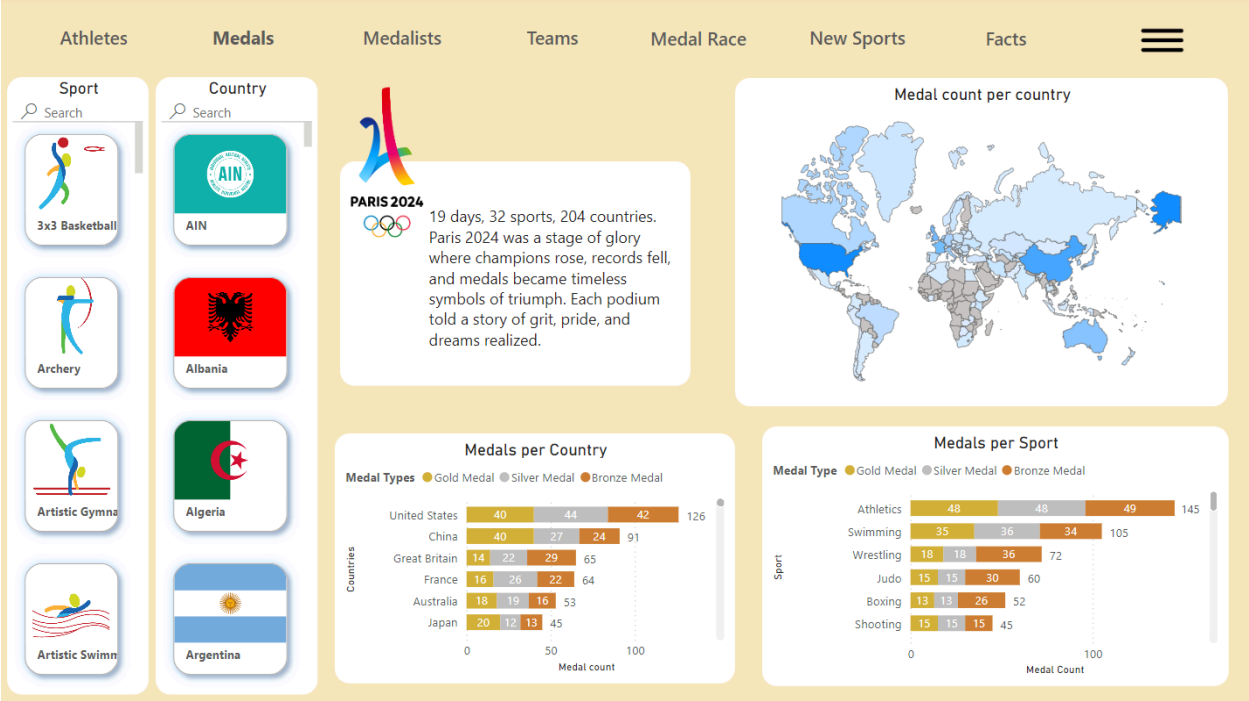
Question 3: Sport participation: Which sport has the highest number of participating athletes?
Answer: By examining the length of the bars on the bar chart on the bottom right we can tell which sport has the most participating athletes, if no filter is applied, swimming will have the highest number of athletes.

Question 4: How does the gender distribution shift when you filter by a specific region/country?
Answer: By filtering by a specific country from the country flag filter we can observe whether the gender distribution is different from the overall gender distribution, as in most cases the male participation will be more than the female participation but the percentages change and this shows how the gender distribution is different according to the country or region we are analyzing. Especially in the Middle East and Africa, the percentage of male athletes is higher than females.

Question 5: Does age preserve a normal distribution among athletes?
Answer: By looking at the histogram we will find that the age among different athletes preserves the normal distribution with a mode class of age 25 . However different sports have different distribution characteristics. Skating for example has an average age of 15.

Question 5: Do countries who have many athletes usually participate in many sports?
Answer: Yes, France, USA, Canada and China all have many athletes and participate in many sports. By clicking on the dark blue countries, we notice that the more athletes a country has, the more sports the country is likely participating in. The only country to participate in all sports is the host country France.

Page 2: Medals



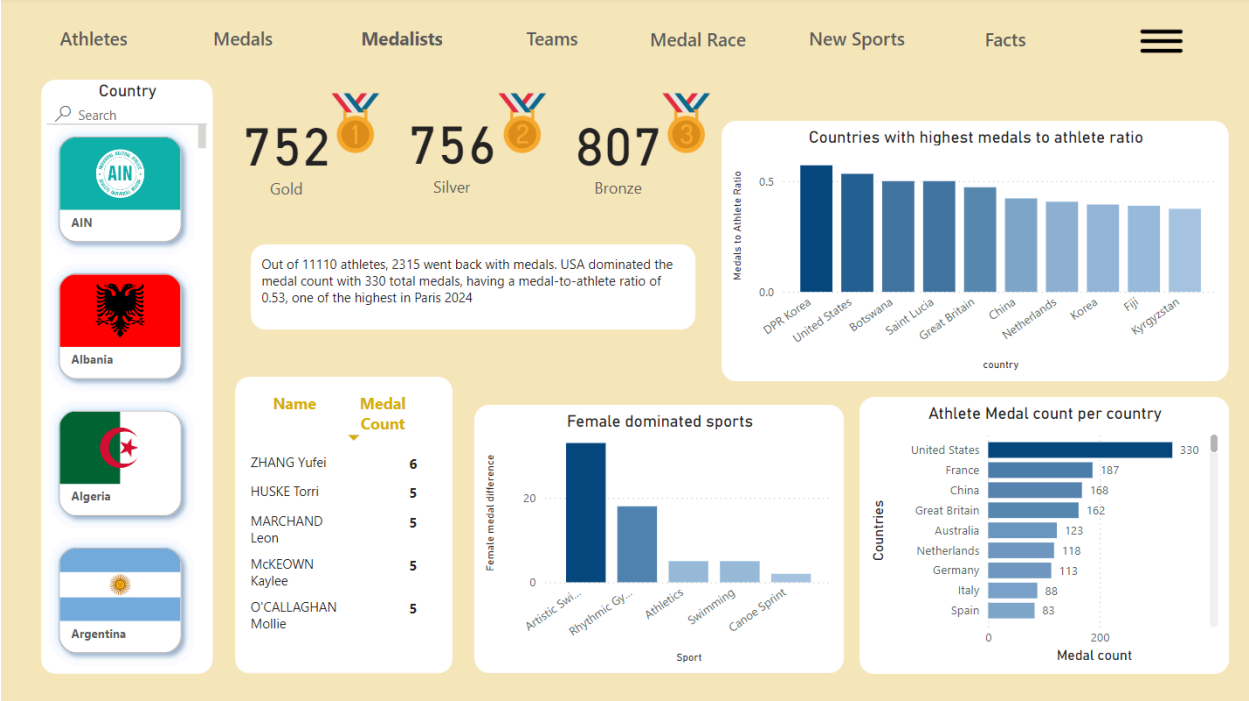
Question 1: Medal Leaders: Which nations dominate the medal count and how is their medal distribution?
Answer: Based on the "Medal per country" bar chart, we can identify the countries with the most medals. The height of the bars reveals the ranking. If no filter is applied USA has won 126 medals. Examining the left bar chart we can see how their medals are distributed between gold, silver, and bronze.

Question 2: Gold standard: Is it possible to tell if countries are strong in a particular type of medal?
Answer: Absolutely. The first bar chart lets us drill down into each medal type. We can immediately see the top countries in each medal type. For example, some countries might have a high count of gold medals with low counts of the others while others might have an overall balanced number between all medal types so if we filtered by the gold we will find Japan as the third country dispute its the 5th overall.

Question 3: Are there a sport with a high athlete count but a low medal count or the inverse?
Answer: Yes. Comparing the height of the bars in the athlete count chart in the first page with the height of the bars in the medals chart, it's possible to find discrepancies between a sport having a high number of athletes but low medals or vice-versa. Where the top five in athletes are swimming, football, rowing, hockey and handball and only swimming is in the high medal count but this also is due to the fact that most of these sports are team sports so it has high count and swimming as a sport has more medals to win than any other sport.

Question 4: Is there any relationship between medal distribution and geographical location?
Answer: By analyzing the map and the medals bar chart we can see if there is any connection between the geographical location of the countries and their medal count. Generally speaking, there is a connection between the medal count and the location on the map, as Europe and USA have a large number of medals and the same locations are geographically the most active regarding athletes participating in the games.

Page 3: Medalists



Question 1: What are the countries that preserve a high medals to athlete ratio?
Answer: DPR Korea, USA, Botswana and Saint Lucia.

Question 2: What is the pattern among the countries with highest medals to athlete ratio?
Answer: Botswana, Saint Lucia, Fiji are all small countries that do not participate with a huge amount of athletes. When they win a medal, it is considered an extraordinary achievement in their country. This is what happened with the case of Saint Lucia, which only sent 2 athletes and Julien Alfred won the 100m race in athletics.

Question 3: Who are the athletes with the most medals?
Answer: ZHANG Yufei, HUSKE Torri, MARCHAND Leon, McKEOWN Kaylee

Question 4: Do counties preserve a close margin to each other with respect to medals won?
Answer: No, where USA took the lead early by around double of its closest country. The USA won 330 medals and the closest one is France with only 187 medals. This is because the USA dominated both individual and team sports, giving it an edge over others?

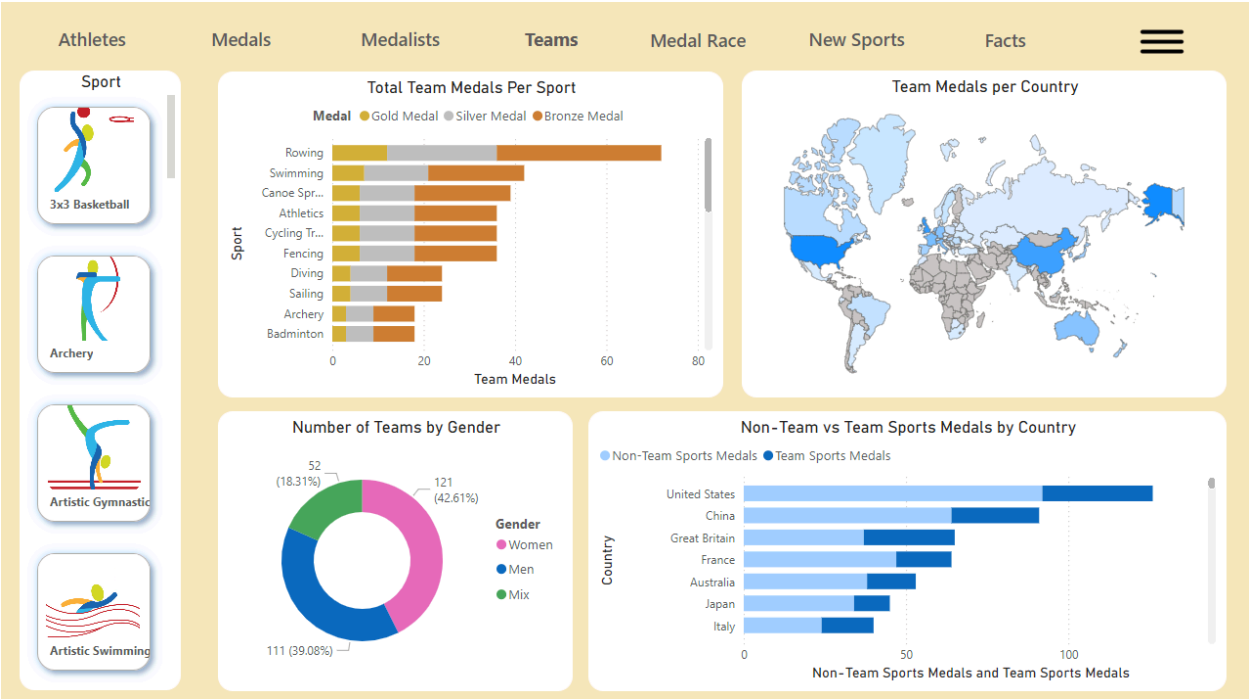
Question 5: Does the country's position in the overall medal race reflect its position in the medalists race?
Answer: No. Since China does not win a lot in team sports, it dropped a position. On the other side, France, which is 4th overall, is 2nd in medalists because it won in a lot of team sports.

Question 6: Were there any sports dominated by Females?
Answer: Yes females showed a really impressive work at paris 2024 where the dominated Artistic swimming and rhythmic gymnastics. Artistic and rhythmic swimming are an all female sport while swimming and canoe sprint usually have more events for women.

Question 7: What is the pattern among the top medal earning athletes?
Answer: Almost all of them are swimmers. This is because in swimming an athlete can join as many events as he likes, giving them the opportunity to collect more medals than others. The likes of Zhang Yufei, Marchand Leon, Huske Torri and the rest of the top 5 are all swimmers.

Page 4: Teams

Note: This page included data integration.



Question 1: Which sports have the most team medals?
Answer: Rowing, Swimming, Canoe Sprint, Athletics, Cycling Track.

Question 2: In which countries do teams contribute to a lot of medals?
Answer: Great Britain, Netherlands, Germany, New Zealand, Spain.

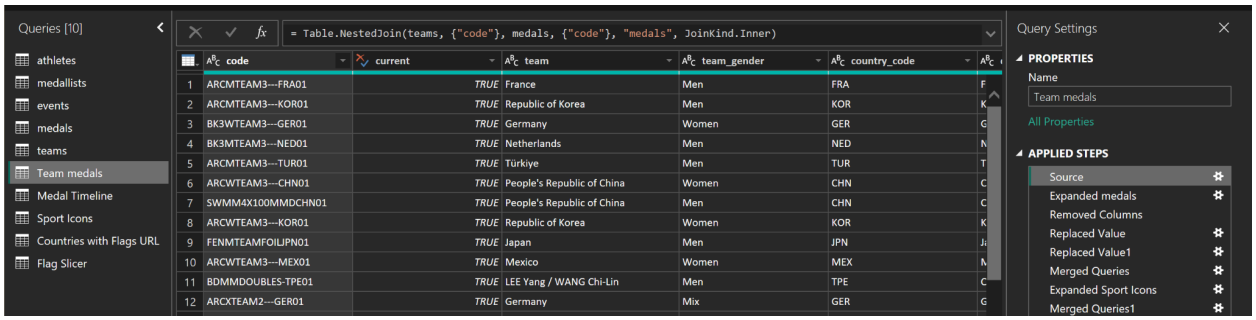
Question 3: In what sports did the top 4 team-medal winning countries take part in?
Answer: USA: swimming, athletics, tennis, volleyball
China: rowing, badminton, diving, shooting, table tennis (all chinese dominant games)
Great britain: rowing, athletics, diving, cycling track
Australia: swimming, canoe sprint, cycling track, athletics

Question 4: Do individual games bring more team medals than team games?
Answer: Yes, because individual games allow for a lot of different combinations. Swimming for example has many events, for both genders, and also for mix. Same for rowing. The individuality of these games allows for the creation of double and team events.

Question 5: Which team sports have the highest number of mixed-gender teams?
Answer: Equestrian, Shooting, Athletics, Sailing

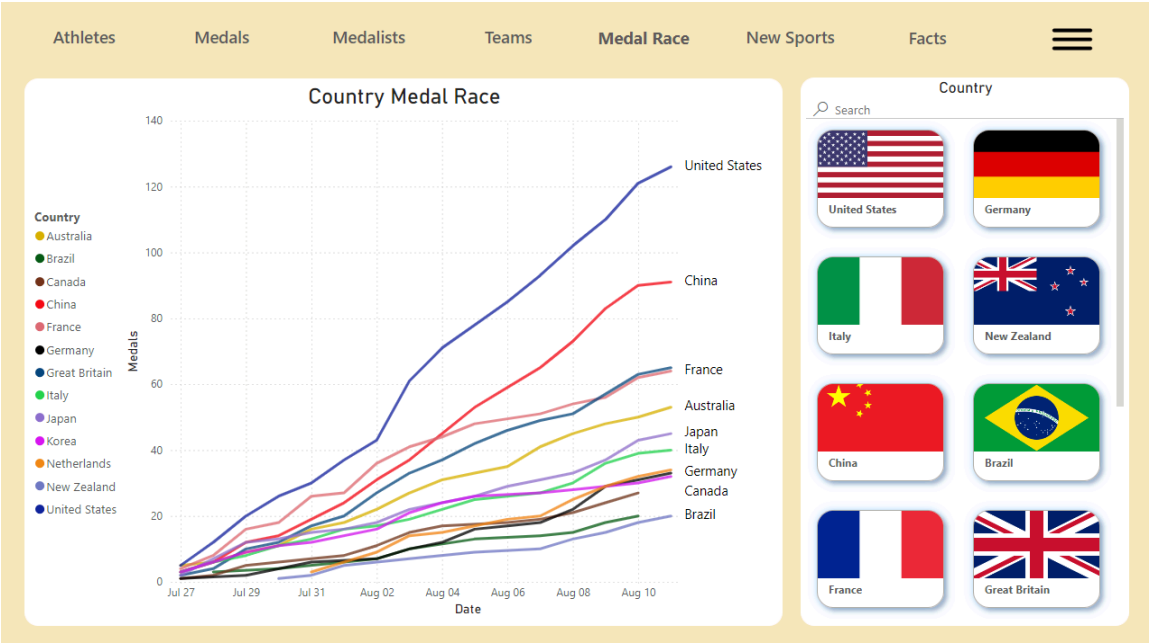
Data Integration:

The tables: ‘teams’ & ‘medals’ were joined using ‘inner join’ on the ‘code’ column to create a new table that gives more info about the medals of the teams.



Page 5: Medal Race

Note: This page included feature engineering



Question1: Was the leaderboard of the country medal race clear throughout the olympics period?
Answer: The first place was clearly held by the USA from day one until the end however other leaderboard positions were not as clear. China was clearly the 2nd from August 4th onwards. France and Britain fought for the 3rd place until the end when Great Britain won the position. Australia was clearly the 5th since the end of July and after that there is a lot of overlap and close calls in the spots.

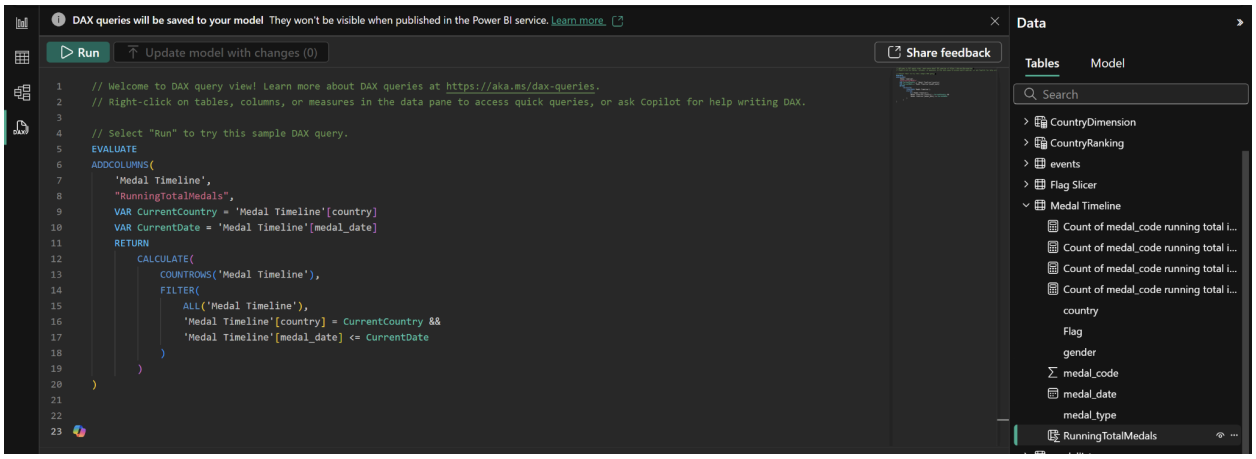
Question 2: What defines the final positions? Why did Korea drop down in positions after a good start?
Answer: Because the games distribution at the beginning fitted Korea better than Netherlands and germany. At the end of the games, Netherlands won a lot of medals in athletics, jumping up in the leaderboard. Same happened with germany. Usually athletics and team games are always at the end, and since we saw that Germany and Netherlands have an almost 50-50 individual vs team rate, we can see why they jumped in positions at the end since the finals of team events are always in the last 3-4 in the competition.

Question 3: Which countries had the closest calls in their top leaderboard race?
Answer: The fiercest close calls were on the following:

- **3rd & 4th** place between Great Britain & France
- **6th & 7th** place between Japan & Italy
- **8th, 9th & 10th** places between Netherlands, Germany, ad Korea

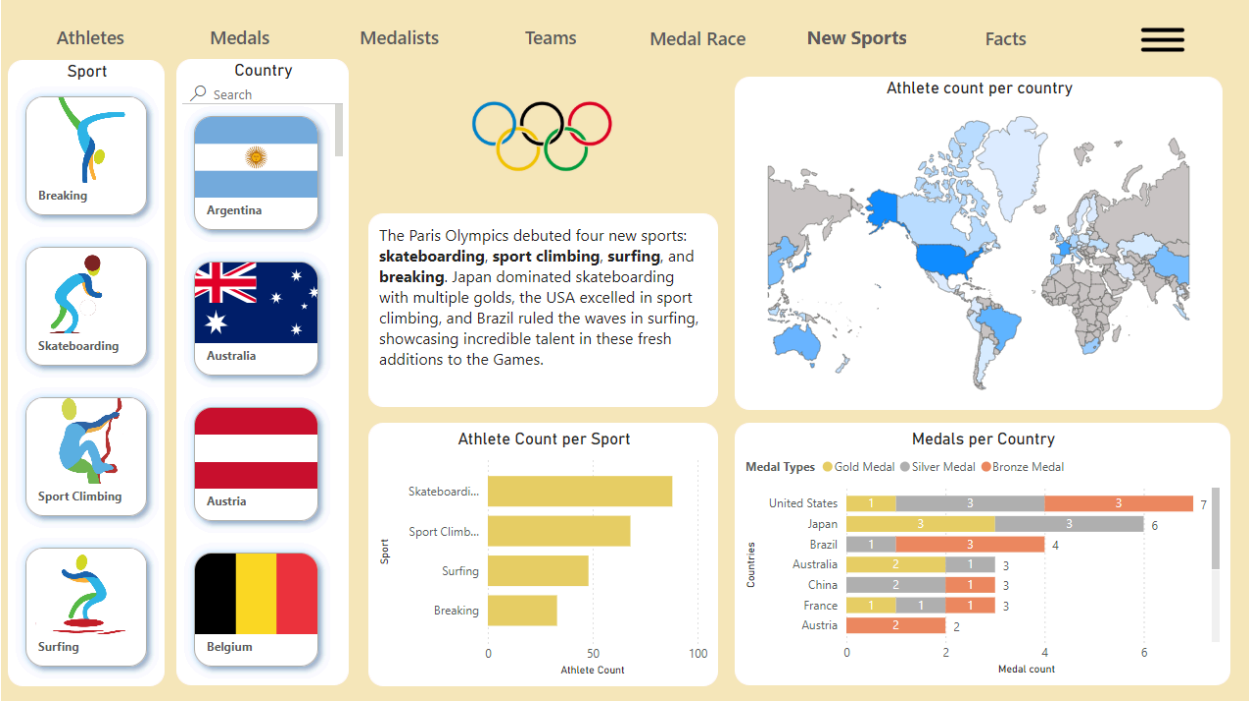
Feature Engineering:

For each country, keep track of medals each day during the olympics. For example, USA day 1 was 5, day 2 was 12. The medals are calculated cumulatively.



Note: This feature was very useful in visualizing the positions of the top performing countries over time. Showing on each day of the competition the leaderboard of countries by medals obtained. Plotting this on a line graph where each line represents a country was very beneficial in the insights gathered.

Page 6: New Sports

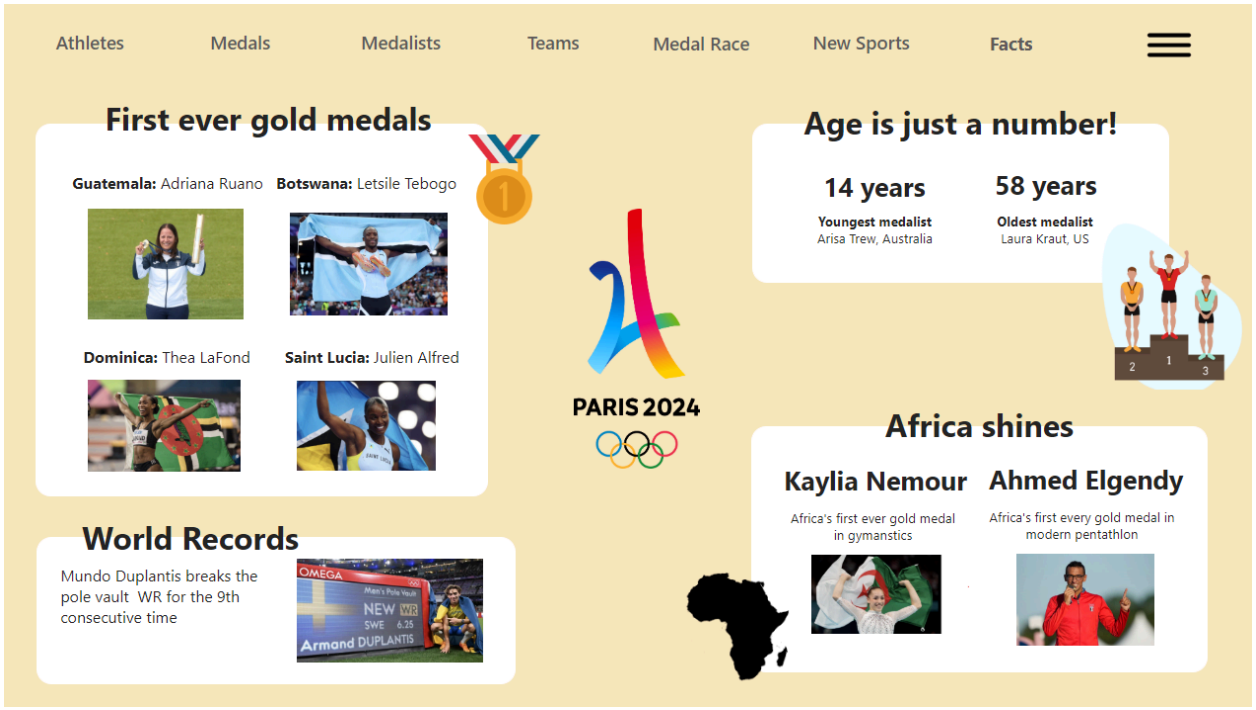


Question 1: Which countries dominate in the new sports added to the olympics?
Answer: USA, Japan, Brazil, Australia, China, France, Austria, Great Britain (In order)

Question 2: Who dominates skateboarding and why? Who dominates surfing and why?
Answer:
Japan: Because of its geographical size, street skating doesn't really exist in Japan that it does elsewhere. Most of them come up skating in skate parks which isn't to say that it's institutionalised, but they learn the basics earlier in a way that isn't necessarily true in the rest of the world. Japan has a modern infrastructure built for skateboarding.
The Americas:The pacific and atlantic coasts give the americas an advantage over others when it comes to surfing

Question 3: How many athletes have joined the new sports? Which new sport has the most athletes among new sports and why?
Between 30 and 90 for each new sport. Skateboarding has the highest count since it is considered a very attractive sport for younger generations, which is why the average age for contestants is around 15 year-olds. It is also the sport with most athletes since skateboarding is a relatively easy sport to do in comparison to surfing for example, and since skateboarding is very well known and was popular by young adults before it became an olympic sport, it is the sport that had the most athletes among the newly added sports in Paris 2024.

Page 7: Facts



The **Paris 2024 Olympics** is a celebration of groundbreaking achievements and historic milestones. From first-ever gold medals for countries like Guatemala and Botswana to record-breaking performances and Africa's rising stars, the Games showcase triumph, diversity, and inspiration across all ages and sports.