

Data Analysis on the Results of the 4*200m Freestyle Relay in Olympic Swimming

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Abstract:

The 4*200m Freestyle Relay has been established as an Olympic event for many years and is welcomed by many audiences. The data visualization and analysis in this report are based on the 4*200m Freestyle Relay data from 1984 to 2020. Firstly, the overall situation of this Olympic event is presented. The data and charts show that a few teams in the world own the medals for the 4*200m, and in these teams, the USA and Australia are especially prominent, so one could almost say they are dominant. In comparison between these two teams, the USA was more dominant in the early years, but in recent years, the gap between Australia and the USA has narrowed. From the aspect of different sexes, male athletes in Team USA are more competitive, while female athletes in Team Australia are more competitive. In addition, teams with better performances in the 200m Freestyle are more likely to be brilliant in the 4*200m Freestyle Relay. The conclusions of this research bring some inspiration. For national teams, it is necessary to bring up enough athletes who are excellent in the 200m Freestyle if they want a brilliant performance in the 4*200m Freestyle Relay. For the Olympic Swimming audiences, more exciting 4*200m Freestyle Relay matches, and more teams that win medals in this event can be expected.

Keywords: 4*200m Freestyle Relay, Olympic Swimming, competition, teams

1 Introduction

The 4*200m Freestyle Relay--an event which requires each of the four athletes in a team to swim for 200 meters using freestyle--is a popular Olympic Swimming event. In each Olympic, many fans of swimming games pay attention to this event because it is exciting, with excellent teams competing simultaneously. The 4*200m Freestyle Relay demands the great capacity of each athlete in one team and the brilliant collaboration between them. In recent years, the general level of this event has increased, and the competition is getting more and more fierce. If people want to find the best teams and predict future trends in this event, analyzing the data from the past Olympics is necessary. In this research, the database is the records of the 4*200m Freestyle Relay in the Olympics

from 1984 to 2020.

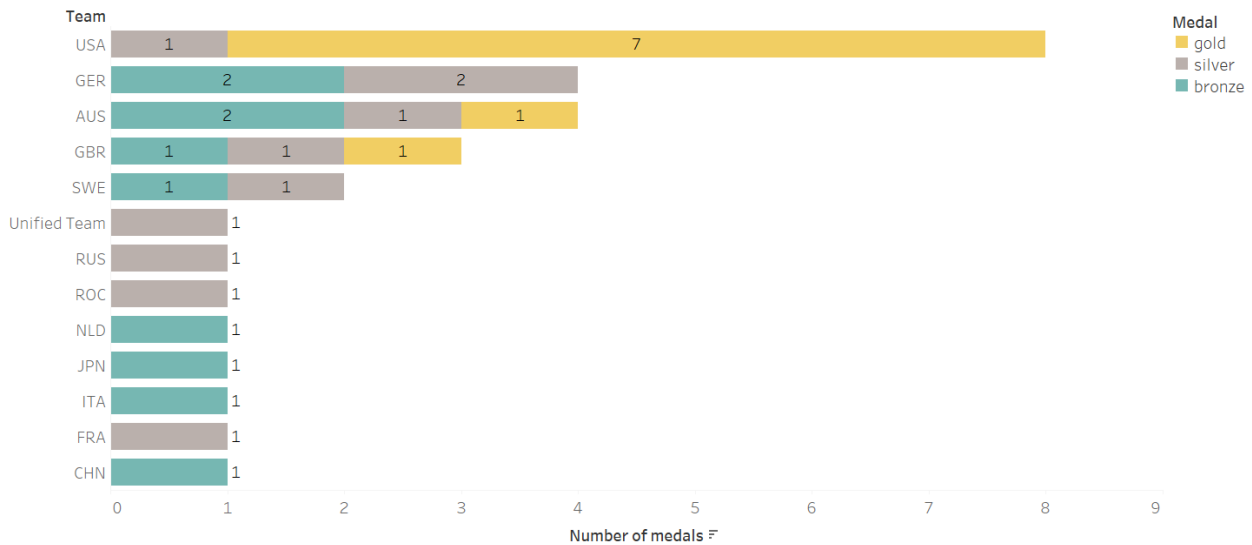
2 The overall situation of all teams in the 4*200m Freestyle Relay from 1984 to 2020

The 4*200m Freestyle Relay has been established as an Olympic event for a long time, and there is plenty of data for analysis. To find the best teams and to predict the future trends on the 4*200m Freestyle Relay, it is necessary to present an overall situation of different teams in the world of this event. Two aspects are taken into consideration.

On one hand, the data of different teams of the 4*200m Freestyle Relay definitely needs to be analyzed. The two charts below show the number of medals each team has won in the Men's/Women's 4*200m Freestyle Relay.

Which team do best in Men's 4*200m relay?

Team USA and AUS have made great achievement in Men's 4*200m relay.

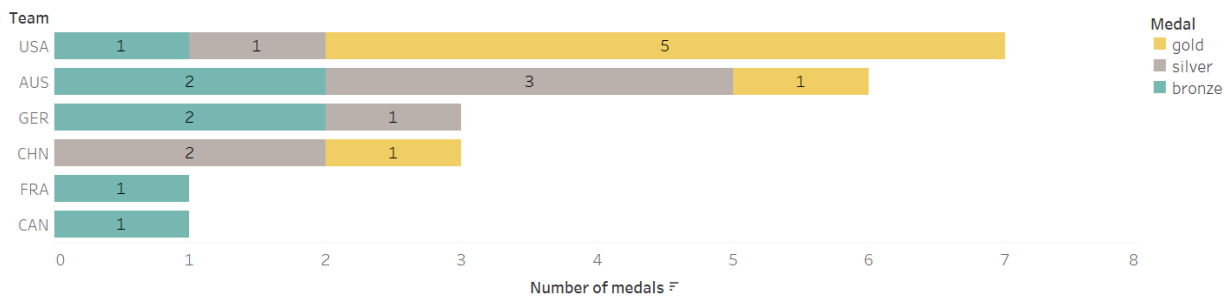


Emma Peng(2024)|Source:<https://olympics.com/en/olympic-games>

Chart 1 The achievements of Men's 4*200m Freestyle Relay

Which team do best in Women's 4*200m relay?

Team USA and AUS have the largest number of medals in Women's 4*200m relay, significantly more than other teams.



Emma Peng(2024)|Source:<https://olympics.com/en/olympic-games>

Chart 2 The achievements of Women's 4*200m Freestyle Relay

In Chart 1 and Chart 2, it is obvious that only a few teams in the world---such as the USA, Australia, Germany, China, and Great Britain---have won medals in the 4*200m Freestyle Relay, especially in the women's Relay. This phenomenon suggests that a few fixed teams usually achieve achievements. Among these teams, the USA and Australia(hereafter referred to as AUS) have the most medals, far more than the other teams. In the event of men, the USA has seven gold medals, while other teams have at most 1. In the event of women, the USA has five gold medals, while other teams have at most 1. The total number of medals owned by Team USA also leads.

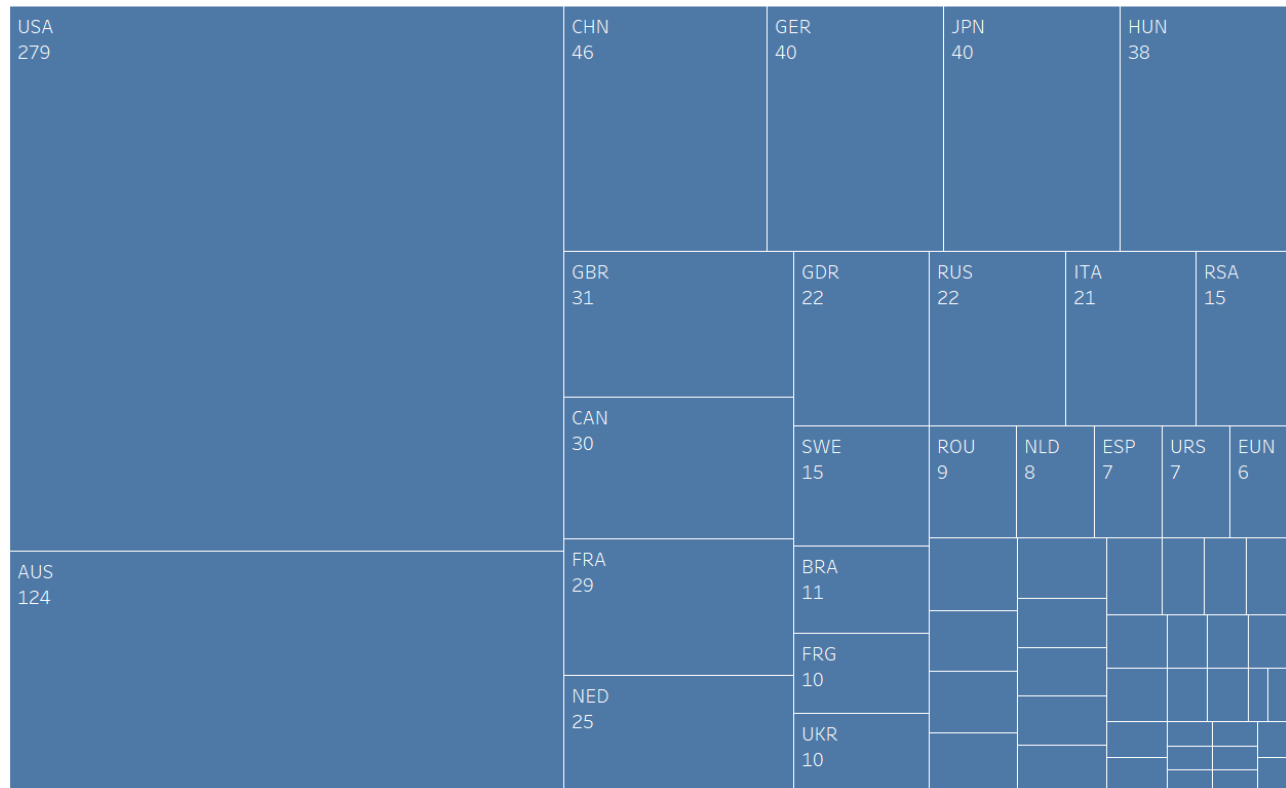
For men's and women's 4*200m Freestyle Relay, USA and AUS are in the top three in terms of the total number of medals. In conclusion, to a certain extent, these two teams are dominant in the 4*200m Freestyle Relay. The achievements of the USA are particularly numerous. On the other hand, the data of different teams of the 200m Freestyle---an individual event requiring athletes to swim for 200 meters using freestyle--- is also worth analyzing. The reason is that the 4*200m Freestyle Relay is an event that requires teamwork. Therefore, each team member is important. A national team with more excellent athletes in 200m Freestyle may perform better in the 4*200m

Freestyle Relay because they have a higher possibility of building a relay team with no one left behind. Chart 3 shows the statistics of the total numbers of ranks 1 to 5

each team has won in the 200m Freestyle. A larger number corresponds to a larger area.

Which team do best in 200m Freestyle?

For the time period included in our dataset, team USA and AUS are dominant in this event.



Emma Peng(2024)|Source:<https://olympics.com/en/olympic-games>

Chart 3 The achievements of 200m Freestyle

Viewing Chart 3, the relation between the performance of 200m Freestyle and 4*200m Freestyle Relay can be verified. Chart 1 and Chart 2 show that the medals of 4*200m Freestyle are usually won by a few teams, and Chart 3 indicates that these teams---- such as USA, AUS, China, Germany, and Great Britain---- have great performances in 200m Freestyle as well. Athletes from these teams have reached rank 1 to 5 more times.

According to Chart 3, it is apparent that the USA and AUS have won far more numbers of rank 1 to 5 than any other teams. These two teams are dominant in the 200m Freestyle, and this conclusion can partly explain why they are also brilliant in the 4*200m Freestyle Relay.

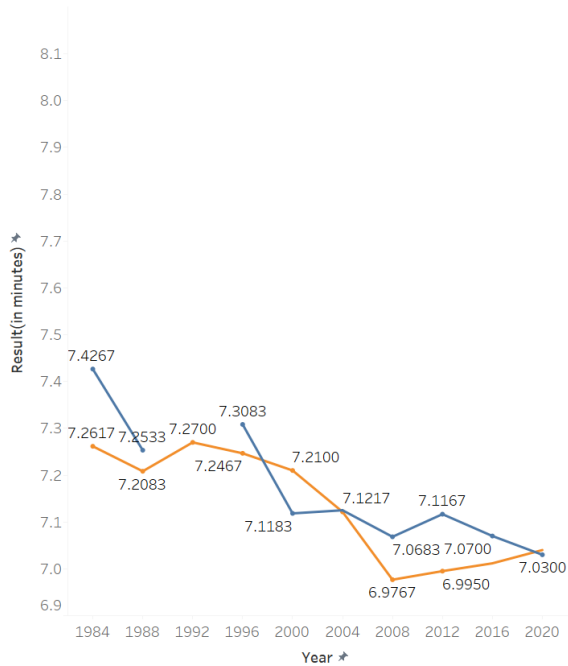
3 The characteristics of team USA and AUS on 4*200m Freestyle Relay from 1984 to 2020

Based on the analysis above, USA and AUS are the most competitive teams on the 4*200m Freestyle Relay. Therefore, this section focuses on the specific situation of the USA and AUS. The analysis focuses on the results of these two teams in each Olympics and concerns the trends over time.

Firstly, the results of Team USA and AUS in the 4*200m Freestyle Relay in each Olympics from 1984 to 2020 are shown in Chart 4. Two instances of missing data in the chart are necessary for the explanation. First, team AUS did not get ranked 1 to 5 in the Men's 4*200m Freestyle Relay in 1992; therefore, the result of team AUS that year is unavailable. Second, the Women's 4*200m Relay was not established as an Olympic event until 1996. Therefore, there is no data on women before 1996.

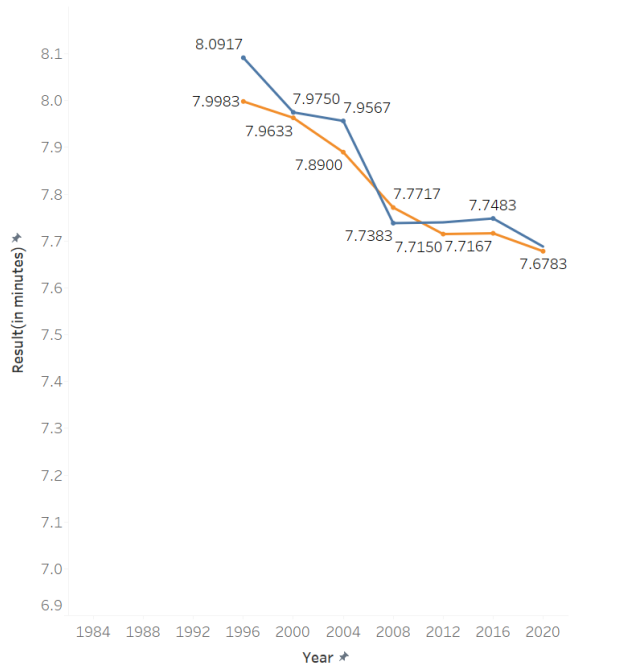
For USA and AUS, which team is better in 4*200m relay?

Men



Emma Peng(2024)|Source:<https://olympics.com/en/olympic-games>

Women



Emma Peng(2024)|Source:<https://olympics.com/en/olympic-games>

Chart 4 The results of USA and AUS in 4*200m Freestyle Relay

According to Chart 4, there are some discoveries. First, both the USA and AUS are improving in the 4*200m Freestyle Relay during the period. Compared to men, women have made more progress because their lines have a larger absolute value of the slope. Second, the USA has better results in general. Third, AUS has made greater progress, especially regarding women's results. Before 2008, the USA's result in Women's 4*200m Freestyle Relay was usually better. But after that time, the competition has become more fierce, and the gap between AUS and USA is narrowing. For Men's 4*200m Freestyle Relay,

there was a relatively large gap between AUS and USA until 2020. Viewing the data for 2020, both the results of the men and women of team AUS and USA are close in the 4*200m Freestyle Relay. All these phenomena lead to a prediction that in the future, the competition of the 4*200m Freestyle Relay may become more exciting, and the result would be more suspenseful.

Secondly, Chart 5 shows the total number of ranks 1 to 5 of the USA and AUS in the 4*200m Freestyle Relay in each Olympics from 1984 to 2020.

For USA and AUS, which team is better in 200m Freestyle?

Before 1996, apparently USA is better. But in recent years, the gap between the two teams is shrinking.

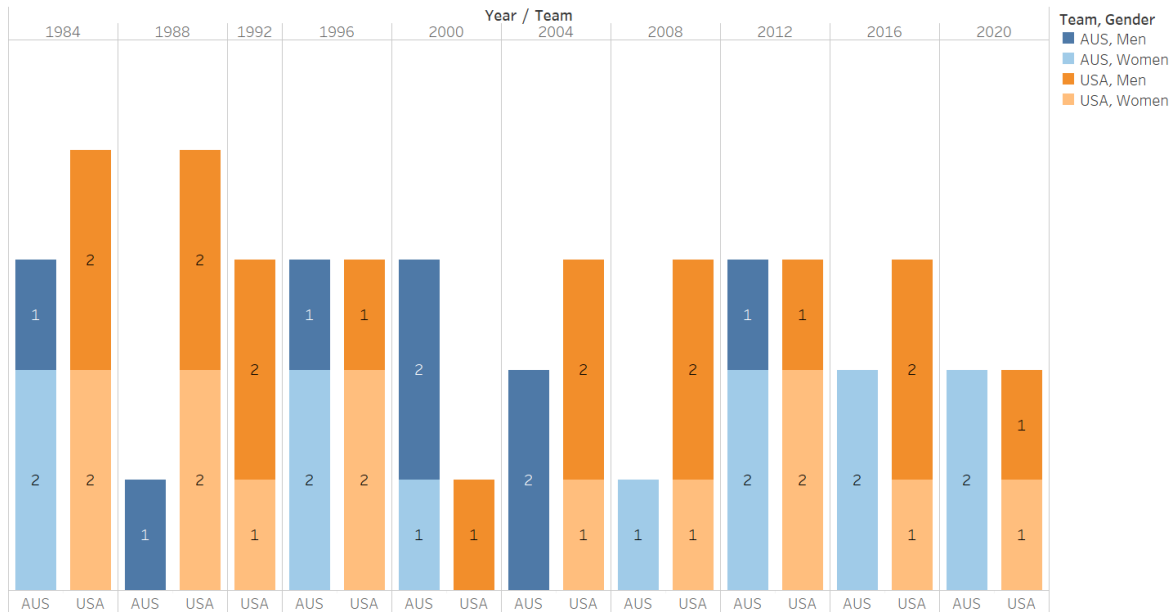


Chart 5 The results of USA and AUS in 200m Freestyle

According to Chart 5, it is shown that in the early years, team USA had far more achievements than AUS. But after 1996, although the numbers fluctuated, the gap between the two teams is narrowing. In recent Olympics, the total number of ranks 1 to 5 for the two teams in 200m Freestyle are close, which shows that the USA and AUS tend to have matching strengths in 200m Freestyle. Chart 5 also gives information on the characteristics of these two teams. Compared to USA and AUS, the male athletes in Team USA are more competitive, while the female athletes in Team AUS are more competitive in 200m Freestyle. The trends of USA and AUS in 200m Freestyle are basically the same as the trends of these two teams in 4*200m Freestyle Relay. Therefore, the above findings can explain and support the theories in Chart 4.

4 Conclusion

In summary, there are four findings about the data of the 4*200m Freestyle Relay from 1984 to 2020 during the data visualization and analysis.

Firstly, the medals of the 4*200m Freestyle Relay are usually won by a few teams such as the USA, Australia, Germany, China, and Great Britain. The USA and Australia are especially prominent in this Olympic event. Secondly, in comparison between team USA and Australia, the USA had a better performance in the 4*200m Freestyle Relay in the early years, but in recent years, the competition between these two teams has become more fierce. The male athletes in Team USA are more competitive, while the

female athletes in Team Australia are more competitive. Finally, for each team, there is a correlation between the performance of the 4*200m Freestyle Relay and the performance of the 200m Freestyle. Relatively, a team with more achievements in the 200m Freestyle is more likely to be brilliant in the 4*200m Freestyle Relay because this kind of team has more excellent athletes in the 200m Freestyle. Thus, they are more likely to build a relay team with no one left behind.

For athletes and their coaches of the national teams, it is a real problem that if they want to have a better performance in the 4*200m Freestyle Relay, the basis is to make sure they have enough athletes with great ability in the 200m Freestyle. Due to the disequilibrium of financial situation and training conditions in different countries, it may be difficult for many teams to meet the requirements above, and this phenomenon may be a reason why a few teams usually own the medals of the 4*200m Freestyle Relay. For the Olympic Swimming audiences, it can be supposed that there will be more exciting matches of 4*200m Freestyle Relay in the future, with better records and more unpredictable results. In addition, there may be more teams getting the medals in the 4*200m Freestyle Relay relying on their competence, which is also worth the expectation.

References

Source of data: <https://olympics.com/en/olympic-games>