Problem Chosen	2024 MCM/ICM Summary Sheet	Team Control Number
A		00000

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Summary

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Keywords: --, --, --, --

Contents

1. Introduction

1.1. Background

During the 2024 Summer Olympics in Paris, spectators and the media will focus on individual event performances and pay close attention to each country's overall medal table ranking. The medal table reflects not only the efforts of individual athletes and teams but also the overall strength and competitiveness of countries in the field of sports.

Before the start of the Olympic Games, many organizations and experts try to predict the outcome of the medal table. These predictions are usually based on historical data, recent event performances, athlete rosters, and the advantages of the host country. However, accurate medal predictions are not an easy task as they require a combination of complex factors such as athlete status, unforeseen circumstances during the competition, and changes in the program settings.

Medal predictions can help us to provide a basis for national sports planning, helping to rationally allocate resources, optimize project development, and enhance overall sports strength. At the same time, it can motivate athletes and coaches to set clear goals, adjust training strategies, and enhance confidence. It can promote the development of the sports industry. It also provides a reference for sports research and analysis, revealing the trend of changes in sports strength and potential influencing factors of various countries.

1.2. Literature Review

Develop a model of the total number of medals for each country.

- Based on your model, predict the prediction intervals for all outcomes of the 2028 Summer Olympics medal table in Los Angeles, USA. Analyse which countries are most likely to improve and which countries will perform worse.
- Predict how many countries will win their first medals at the next Olympics, giving the chances of this estimate being accurate.
- Analyse which sports are most important to each country based on the model. Analyze the impact of the sports chosen by the host country on the outcome of the competition.
- Study the data for evidence of changes that may be caused by the"great coach" effect. Estimate the contribution of this effect to the number of medals. Select three countries and identify the sports in which they should consider investing in "great" coaches and estimate the effect.
- Analyse what other factors may affect Olympic medal counts based on the modeling model

10. Further Discussion

10.1. Different Distribution of Inflow Faucets

10.2. Model Application

References

Appendices

Appendices A First appendix

In addition, your report must include a letter to the Chief Financial Officer(CFO) of the Goodgrant Foundation, Mr. Alpha Chiang, that describes the optimal investment strategy, your modeling approach and major results, and a brief discussion of your proposed concept of a return-on-investment (ROI). This letter should be no more than two pages in length.

Here are simulation programmes we used in our model as follow.

```
function [t,seat,aisle]=OI6Sim(n,target,seated)
pab=rand(1,n);
for i=1:n
  if pab(i)<0.4
    aisleTime(i)=0;
  else
    aisleTime(i)=trirnd(3.2,7.1,38.7);
  end
end
```

Appendices B Second appendix