CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)

Brady M. Elliott

Project Number

38822

Project Title

All in the Numbers: A Mathematical Analysis of Current Boston Marathon Qualifying Standards

Abstract

Objectives/Goals

The objective and goal of my science project was to test if the Boston Marathon Qualifying Standards are accurate for both male and female participants of all ages. The question that I formulated was; are the current qualifying standards to run the Boston Marathon an accurate reflection of the times being run by the top age group athletes completing in four largest marathons in the United States?

Methods/Materials

Method- 1.Go to the official websites for the New York, Los Angeles, and Marine Corps Marathons 2. Calculate the top 5% of each age group participants. 3. Use ruler to make a scatter plot graph to plot participants.Materials- 1. 2019 Boston Marathon Qualifying Standards 2. Marathon Participants race results 3. graph paper 4. straight edge

Results

I formulated that the middle aged participants age 21 to 74 for both male and female are an accurate reflection of the times being run by all of the participants in this age group. However, I was correct since the younger and older aged participants were inaccurate. I formulated that the 18 to 20 age group time should be lowered and the 75+ age group should be lowered.In fact, the under 20 male runners had a qualifying standard where only 12 runners qualified.

Conclusions/Discussion

My science fair project was to test if the current Boston Marathon qualifying standards are an accurate reflection of the times being run by the top 5% of the age group runners. My hypothesis, based on my research, was that the qualifying standards to run the Boston Marathon are inaccurate for male and females of all ages. My hypothesis was proven partially incorrect after graphing the times of the Boston Marathon participants. I was proven partially incorrect since the middle aged participants age 21 to 74 for both male and female are an accurate reflection of the times being run by the participants in this section of age.I was correct since the younger and older aged participants were inaccurate. I formulated that the 18 to 20 age group time should be lowered and the 75+ age group should be lowered. In fact, the under 20 male runners had a qualifying standard where only 12 runners qualified, and 45 runners failed to qualify.Lastly, this project could help humanity since many people are questioning the accuracy of the Boston Marathon qualifying standards without doing the research. My project could help conclude the complaining and show the true accuracy of the Boston Marathon.

Summary Statement

I proved the inaccuracy of younger and older participant qualifying times, while proving the middle aged qualifying standards to be an accurate reflection of the times being run.

Help Received

Mrs. Rodriguez:Science teacher Mrs. Elliott: English teacher Mr. Elliott: Math teacher

Preliminary