

Marathon

Data Analysis Project

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OUTLINE



Introduction

Methodology

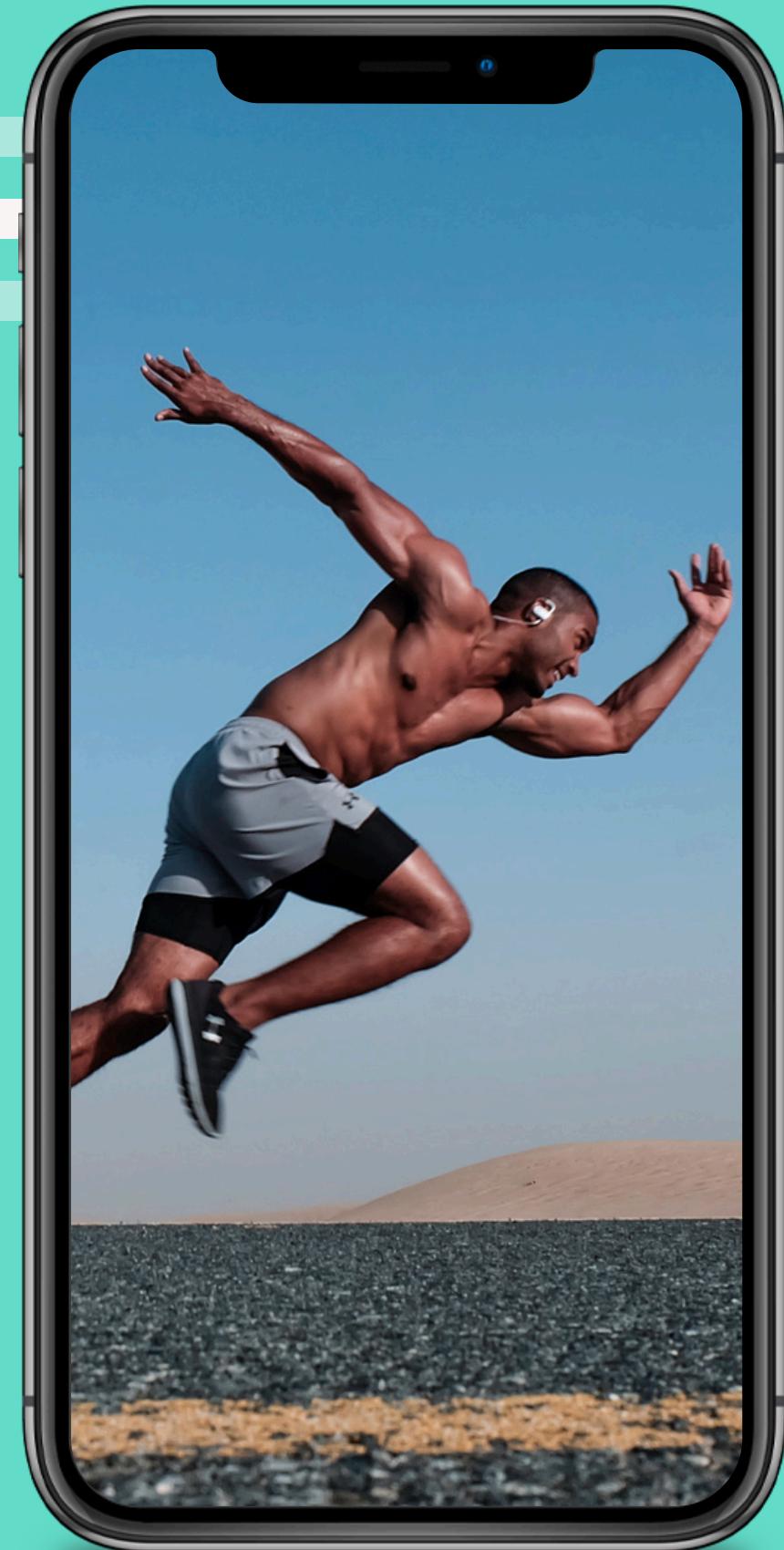
Analysis and findings

Conclusion

Introduction

Client wants to host a marathon in USA, so the client wants to identify and understand the trends of previous marathons taken place in USA so that the target audience and participants can be catered

Dataset: <https://www.kaggle.com/datasets/aiaiaidavid/the-big-dataset-of-ultra-marathon-running?resource=download>



METHODOLOGY

1. Data Profiling

- Understanding of the data
- What all columns are present
- How many entries are there
- How many null values are present

2. Filtering the data:

- As client wants to host only 50km and 50mi marathon, only that data has been kept
- The data is filtered only for year 2020
- The marathons that took place only in USA has been kept

3. Cleaning the Data:

- Removing unneeded information
- Dropping columns
- Clearing null values
- Clearing duplicates
- Resetting index
- Fixing datatypes

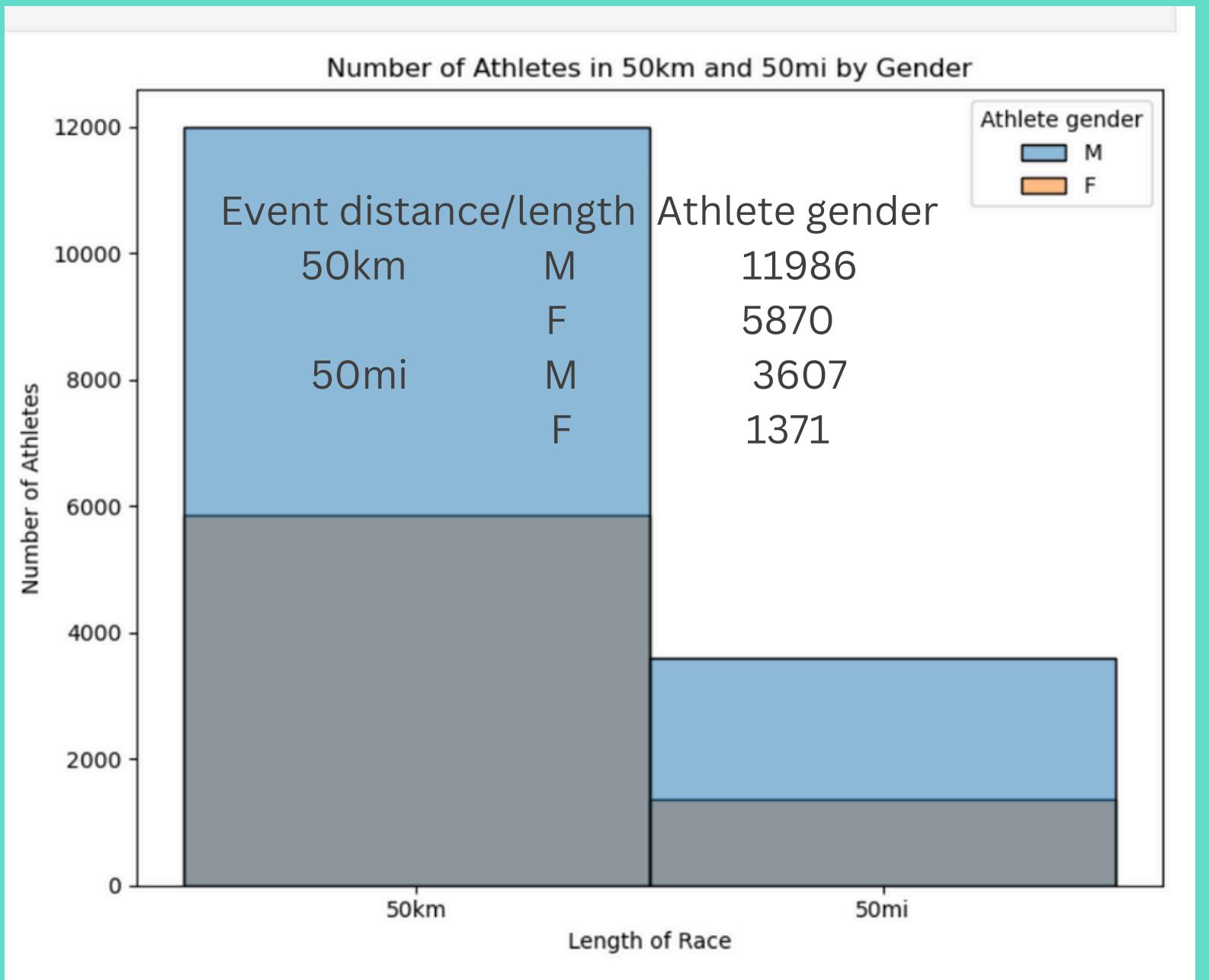
4. Data Visualisation and insights

- The data is represented in form of charts and graphs so that it can be inferred clearly
- Relevant insights have been taken to cater particular audience

Analysis and Findings



Participants in 50 km and 50 mi races by gender



- The number of athletes participating in both the 50km and 50mi marathons appears to be higher overall for the men than for the women.
- There seems to be a larger increase in the number of male athletes participating in the 50km marathon compared to the 50mi marathon.

- The number of female athletes participating in the 50km marathon appears to be relatively flat compared to the number participating in the 50mi marathon.
- The ratio of male to female participants is almost equal (2:1) for both 50km and 50miles races so in general gender is not the factor affecting the popularity of 50km race

RECOMMENDATIONS TO INCREASE PARTICIPANTS

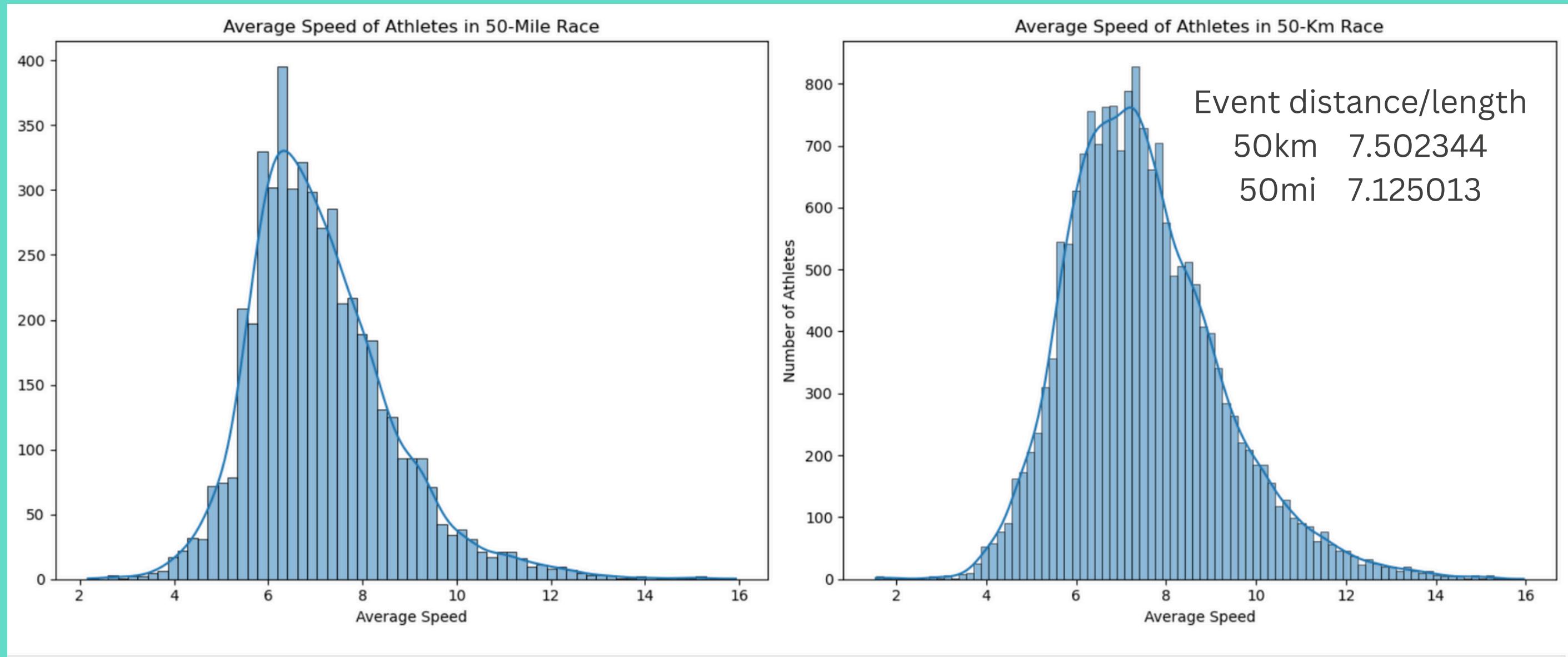
1. Offer a variety of distances:
Include shorter distances like a 5K or 10K alongside the marathon to cater to runners of all abilities. This makes it a more inclusive event and allows people to build up to the full marathon distance.

2. Strong social media presence:
Share training tips, runner stories, and behind-the-scenes content to build excitement and a sense of community.

3. Create a training program:
Partner with local running groups or coaches to offer training plans for different experience levels. This can help potential runners feel prepared and supported.

4. Offer flexible registration options:
Consider tiered pricing or early-bird discounts to make registration more affordable. Additionally, explore virtual participation options for those who can't be there in person.

Average speed of Athletes in 50 miles and 50 km race



Athletes run the 50km race at a faster average speed than the 50-mile race. This is likely because a 50km race is a shorter distance and requires less endurance than a 50-mile race.

There is a greater variability in average speeds in the 50-mile race compared to the 50km race. The spread of data points in the 50-mile race graph is larger than in the 50km race graph..

The 50km race might attract runners who are training for shorter distances and prioritize speed, whereas the 50-mile race might attract runners who are focused on endurance rather than speed

RECOMMENDATIONS TO INCREASE PARTICIPANTS

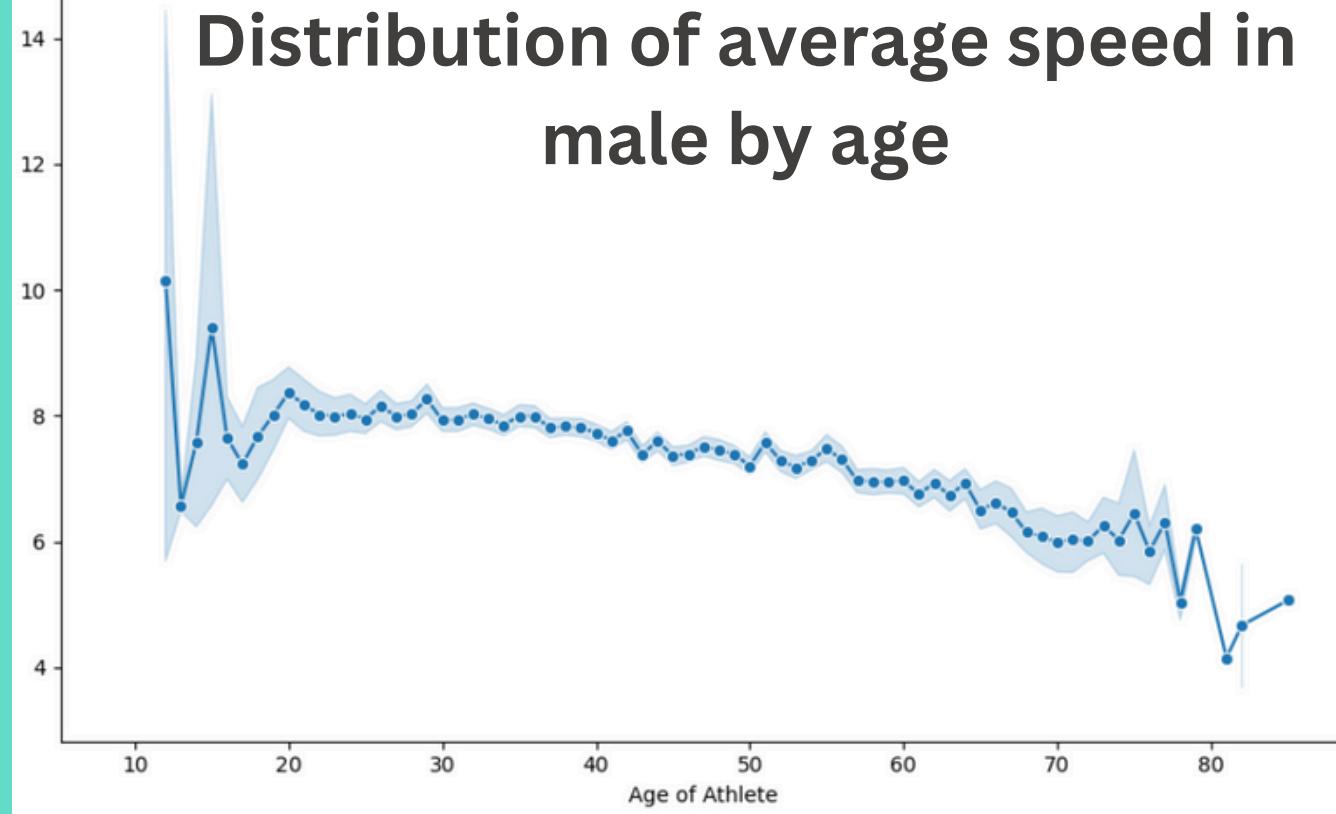
1. Cater to Speed Demons:
Since the 50km runners prioritize speed, consider incorporating a "Fastest Time" or age-group category awards to attract competitive runners.

2. Bridge to the Marathon:
If you also have a marathon distance, use the 50km race as a feeder event. Offer discounts or early-bird registration bundles for runners who sign up for both.

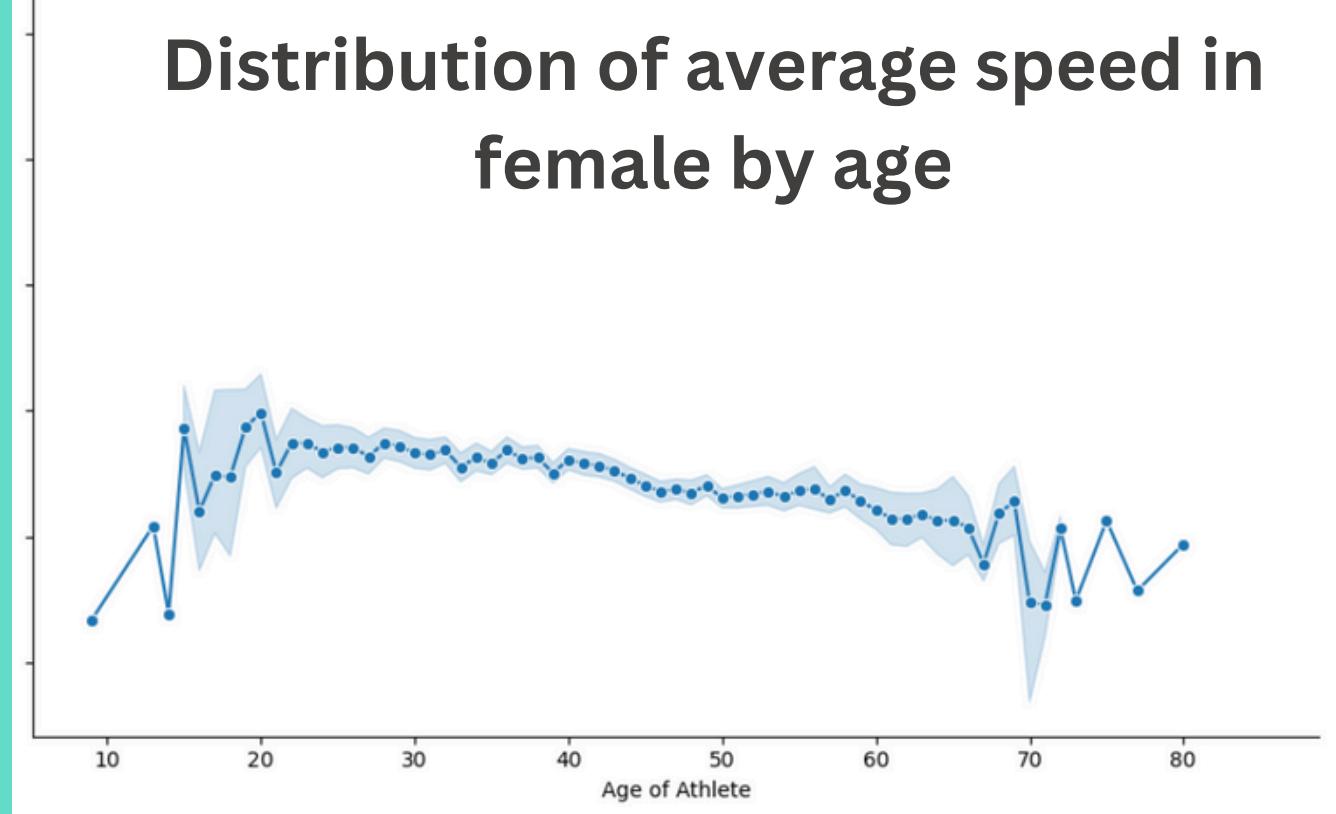
3. Highlight Scenic Routes:
Leverage the graphs showing higher speed variability – if the 50-mile course is scenic, promote the beautiful landscapes or unique locations to attract runners who might prioritize experience over pure speed.

4. Offer Pacing Support: Given the wider range of speeds in the 50-mile, consider offering pacer groups for different target times. This can help less-experienced runners achieve their goals and feel supported throughout the race.

Distribution of Average Speed in Males by Age



Distribution of Average Speed in Females by Age



Age Group Average Speed (Female) Average Speed (Male)

0	0-19	7.072667	7.777124
1	20-29	7.411247	8.086040
2	30-39	7.229417	7.904663
3	40-49	6.946565	7.529374
4	50-59	6.658715	7.249285
5	60-69	6.291424	6.732165
6	70-79	5.442154	6.042600
7	80-89	5.882000	4.640500

- There appears to be a wider range of speeds among younger females compared to older females. The data points are more spread out in the younger age groups (14-29) compared to the older age groups (60-70) in the female distribution graph. This suggests that there is a larger difference in speeds between the fastest and slowest runners in the younger age groups.

- Younger females tend to run faster than older females in the marathon. The peak of the distribution curve leans towards the left side of the graph (younger ages) for females.

RECOMMENDATIONS TO INCREASE PARTICIPANTS

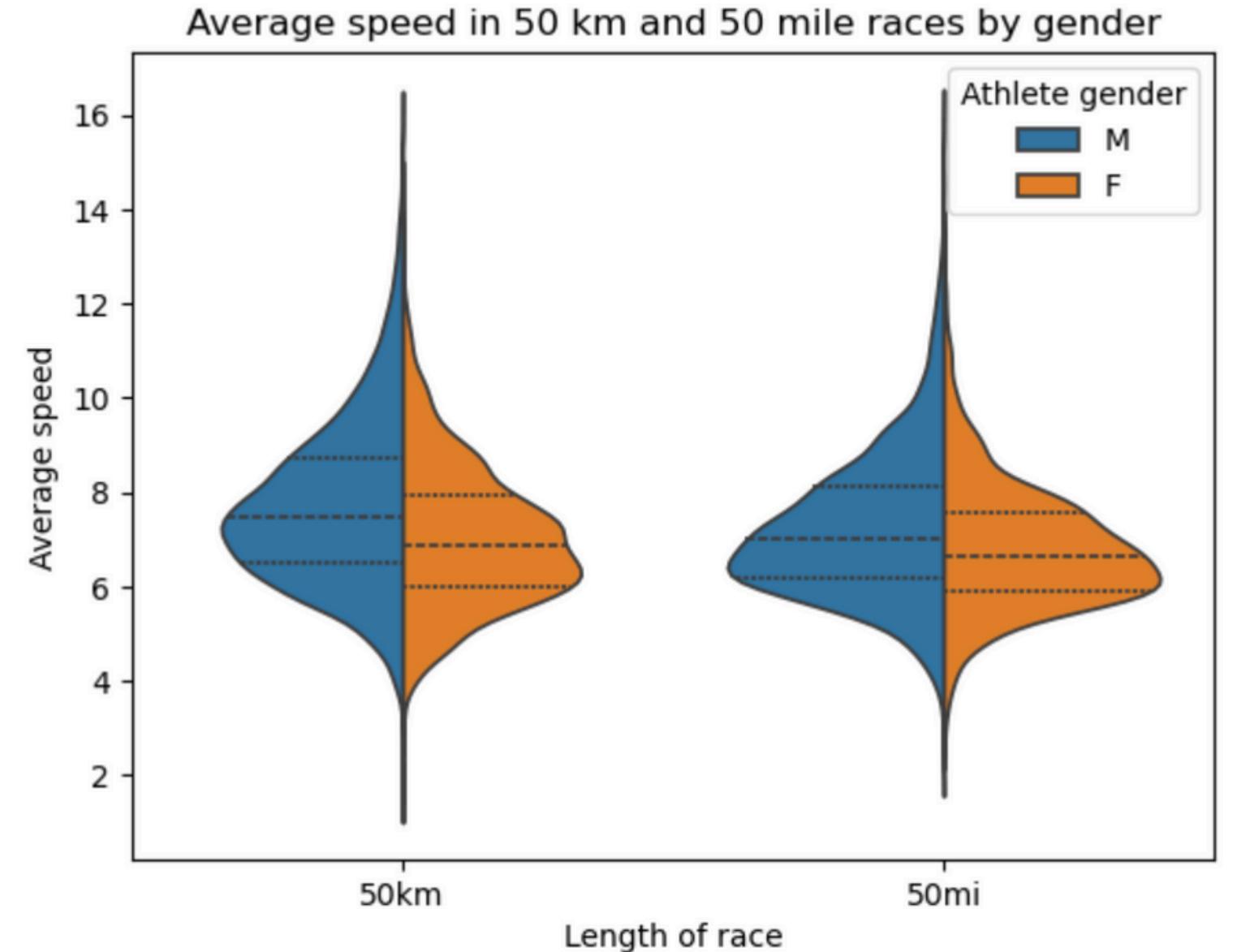
1. Highlight social aspects:
Promote the marathon as a fun and social event for younger women.
Partner with running groups or universities to organize training groups specifically for younger runners.

2. Student discounts:
Offer significant discounts for students to make the marathon more financially accessible.

3. Celebrate diversity:
Showcase a variety of female runners of all ages in your marketing materials and highlight stories of women who overcame challenges to participate.

4. Focus on achievement, not competition:
Emphasize the accomplishment of finishing a marathon for younger runners who might not be aiming for top speeds. Share inspiring stories of first-time marathoners on social media.

Average Speed of Athletes in 50 km and 50 mi races by gender



Event distance/length	Athlete gender	Average speed
50km	F	7.053849
	M	7.721989
50mi	F	6.820359
	M	7.240810

- Men appear to run both 50km and 50 mile races at a faster average speed than women. This could be due to physiological differences between men and women, or it could be that men are more likely to participate in these races if they are competitive runners.
- There seems to be a larger variability in average speeds in the women's races compared to the men's races. The spread of data points in the women's graphs is larger than in the men's graphs. This suggests that there is a bigger difference in speeds between the fastest and slowest female runners compared to the male runners.
- The races might attract a different mix of genders. Men who participate might be more focused on competition, leading to a smaller spread in times. Women, on the other hand, might have a wider range of motivations for participating, including fitness or personal challenge.

RECOMMENDATIONS TO INCREASE PARTICIPANTS

1. Women-specific training programs:
Partner with female coaches or running groups to develop training plans tailored for women's physiology and common concerns.

2. Ambassador program: Recruit female marathon veterans to represent the race and share their stories. This can inspire and motivate potential participants.

3. Pacer groups:
Provide pacer groups specifically for women aiming for different finish times. This can help less-experienced runners achieve their goals and feel supported throughout the race.

4. Focus on individual goals:
Encourage women to set personal goals beyond just speed. This could be completing the race within a certain time frame, raising money for charity, or simply experiencing the challenge.



CONCLUSION

Focus on Inclusivity: Promote the marathon as a welcoming challenge for all abilities, emphasizing the sense of accomplishment, community, and the experience itself.

Develop Training Programs: Partner with coaches to offer training plans tailored to different experience levels, addressing common concerns like building endurance and preventing injuries.

Targeted Marketing: Utilize visuals and messaging that resonate with specific demographics, like women or younger runners.

Social Media Engagement: Build a strong online presence showcasing positive participant experiences and fostering a sense of community.