Statistical Analysis of Ultra Trail Marathon Organizations in Turkey

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ABSTRACT

In this study, some basic statistics were calculated by using the data of the participants of Ultra trail marathon organizations. Ultra trail marathon events have been held in Turkey for 10 years. These organizations provide a significant social-economic contribution to the region where it is arranged. The data about the participants of these organizations were collected, compiled, and analyzed in this study. As a result of the study, basic data required for more comprehensive data analysis are proposed.

KEYWORDS: Running, marathon, ultra trail marathon, sports participation, basic statistics

1. Introduction

Statistics are used extensively in the modern world by institutions or individuals, especially in making strategic decisions. The use of statistics can appear in different names in the literature. Although the meaning of the word analytics corresponds to the processes of making and interpreting useful results in making decisions from appropriate data, it is known that analytics is heavily dependent on statistical methods. Analytics developed for businesses are named as business analytics and health-related ones such as health analytics. Sports analytics likewise defines the use of appropriate statistics to improve the performance of a team or athlete (Wikipedia). There are several types of running organizations in the world. The most popular in recent years are ultra-trail marathons organizations. These organizations in Turkey attract attention in recent years. In this study, some statistics for organizations and participants calculated from the data collected from ultra-trail marathon organizations between the years of 2010 and 2019 in Turkey. Since such organizations are quite new, it is thought that such a study will benefit organizers and participants to make better decisions in future organizations. In this way, a study on data collection, compilation, and inference has not been found in the literature. Some studies that may be related to the subject in the literature are summarized below.

Andrew, Pedersen, and McEvoy (2020) describe statistical and research methods that can be used in sports management. Saaynab and Saayman (2014) examined the social and economic effects of sports organizations between 1990 and 2014. Malchrowicz-Mosko and Poczta (2018) examined small-scale sports organizations in terms of the tourism industry. Carvalho, Sousa, Paipe, Bavaresco, and Felipe (2018) conducted an economic impact analysis by examining the expenditures of half marathon participants in Portugal. Baumann and Matheson (2017) examined the effect of sports organizations held in Hawaii between 2004 and 2015 on the number of daily flights. Agrusa, Lema, Kim, and Botto (2009) investigated the economic impact of the 2007 Honolulu Marathon on the city. Corrion, Morales, Bergamaschi, Massiera, Morin, and d'Arripe-Longueville (2018) have tried to determine the psychological effects of ultramarathoners dropping outs. By using the structural equation model, Genç, Kaya, Eren, Genç, & Yıldırım (2019) determined the effects of the participants' participation decision on the features of the place where the running activities were performed.

Studies on the socio-economic impact of the place where running organizations are held and physical and psychological studies for the performances of the participants are widely covered in the literature.

The next part of the study that is planned as follows: Chapter 2 provides information about the development of running organizations in Turkey. In Chapter 3, explanations about the material and method followed in this study are given. Chapter 4 consists of results and some explanations about results. The last chapter is about conclusions and discussions.

2. Running Organizations in Turkey

Many running organizations organized and pioneered by the Turkish athletics federation have been held regularly for years. The first running or athletic race in Turkey was held on September 5, 1924, Eskisehir (Turkish Athletic Federation). The first Great Atatürk run was held in Ankara Dikmen Valley in 1936. The Eurasia Marathon, today's Istanbul marathon, was first run in 1979 (Istanbul Marathon). Marathon, half marathon, and shorter distance road races where professional athletes and people who wish to run can participate together have organized regularly in various places of Turkey, such as Mersin, Antalya, Trabzon, Kars, Gelibolu, etc.
Running race distances are classified as follows:
1. Short distances (less than 21kms)

2. Half marathons (21.6kms)
3. Marathons (42.1kms)
4. Ultramarathons (more than 42.1kms)

If the running event is organized mostly in terrain path conditions, whatever the race distance is, trail adjectives should be added to the name such as the Istanbul trail marathon or Istanbul Trail ultra-marathon.

Wikipedia gives some definitional, organizational, individual best records about ultramarathon organizations all over the world. In Turkey the first ultra-marathoner is a woman, her name is Bakiye Duran which is author of the book "Cesaret Yalnızdır-Bir ultra maratoncunun hikayesi" (Courage Is Alone - The story of an ultra marathonist).

There is no source about the first ultra trail marathon in Turkey. In my research, I found the first ultra-marathon is Lycian Way Ultra Marathon which is indeed a multiday running marathon in 2010 (Lycian Way Ultra Marathon). In my research, my main source is an international trail running association (ITRA) that has a list of ultra trail marathon organizations list from all over the world. I've also used each organization's internet page to get race participants and results from the information. I think here is the best place in this study to give chronological rank for ultra trail marathon organizations in Turkey.

1. 2010-Lycian Way Ultra Marathon
2. 2011- Deer Running
3. 2012-Cekmekoy Ultra Marathon
   2012-Iznik Ultra Marathon
   2012-Run fire Cappadocia Ultra Marathon
4. 2013-Istiklal Way Ultra Marathon
5. 2014-Cappadocia Ultra Trail Marathon
6. 2015-Aladaglar Sky Trail Marathon
   2015-Kackar Ultra Marathon
   2015-Tahtalı Run to Sky Trail Marathon
7. 2016-Bodrun Ultra Marathon
   2016-Erciyes Sky Trail Marathon
   2016-Ida Ultra Trail Marathon
   2016-Manavgat Ultra Marathon
   2016-Longest Night Run
   2016-Taurus Challenge Marathon
8. 2017-Ephesus Ultra Marathon
   2017- Ecological Artvin Ultra Marathon
   2017- Phrygian Ultra Marathon
   2017-Run Fire Salt Lake Ultra Trail Marathon
   2017-Sapanca Ultra Marathon

2017-Uludag Ultra Trail Marathon
9. 2018-Alanya Ultra Trail Marathon
10. 2019-Istanbul Ultra Trail Marathon
    2019-Latmos Ultra Marathon
    2019-Kyzikos Ultra Marathon
    2019-Pamukkale Ultra Marathon

There might be some ultra-marathon organizations that have internet pages or any ITRA record in Turkey. These have been excluded from the work.

In this study, available information about the participants has been collected year by year since the first year of the organizations and useful information is explored from this data. The steps from data collection to analysis are explained in the section below.

3. Material and Methods

In this section, how the data is collected, compiled, and analyzed. Names and first year of ultra marathons organizations in Turkey were given above. There are 27 organizations in total and some of them continue their activities while others do not or the name has changed.

Some organizations have very well-organized internet pages that one can find race results and participant's information. The format that some organizations offer race results cannot directly be exported to excel. File types can be in the picture, pdf, word, or other formats. The basic program I use is Microsoft Excel, so all the data in these formats have been converted to Excel that is very labor-intensive work. In this study, for each race and each runner, names, ages or age categories, nationality, finished total time information was obtained in this way. However, not every organization provided all this information. Therefore, the information obtained for each organization, the participant's name, surname, gender, and completion time. As we will suggest in the conclusion and discussion section, the fact that each organization provides basic information of participations such as gender, age, countries, and cities, finish time, will facilitate those who want to do academic or organizational research in this regard. As in Itra, standard outcome disclosure information is also recommended at the end of this study.

The organizations do not have the same distances exactly. Each has different courses that have different distances. Distances are categorized as short, medium, and ultra as follows:

	Distances
Short	Less than 21km
Medium	Between 22km and 42km
Ultra	More than 42 km

After the data provided by each organization was obtained and transferred/converted to excel, data manipulation was done since the names and genders of the participants from the organization to the organization were written in a different format or incomplete. Then the data transfer to the SPSS software. The data analyzes were carried out using SPSS and excel.

Since the available data is very limited (name, gender, organization year, and distance) and categorical, a descriptive and complementary analysis method has been followed with frequency distribution, table, and graphic methods. As a result of this study, if the data to be suggested about the participants are provided, researchers and organizers will be able to make good decisions by making more useful analyses that can shed light on further.

4. Data Analysis Results

The data we compiled from ultra-marathon organizations organized between 2010 and 2019 consists of the date of organization, distance, the name, and gender of the participants. Graphical information about the number of participants can be requested according to the most basic or first years that come to mind.

4.1. The number of Participants for Each Gender (2010-2019)

The development of the number of participants year by year for each gender is important statistics for the organizers. It gives information about how the target audience has grown in terms of years. One can say from the chart below that the Turkish ultra trail marathoner's participation has grown exponentially in the last 10 years. When the increase in the number of male and female participants is examined, it is possible to say that the number of male participants increased slightly more than females. If the Covid-19 pandemic did not occur, the expectation that the number of ultra trail marathon participants would increase significantly in 2020 and later years could come true. However, it is not possible to say that the results of this pandemic will affect the running organizations positively or negatively.

Graph 1. The Number of Participants for Each Gender (2010-2019)

The Number of Participants For Each Gender (2010-2019)
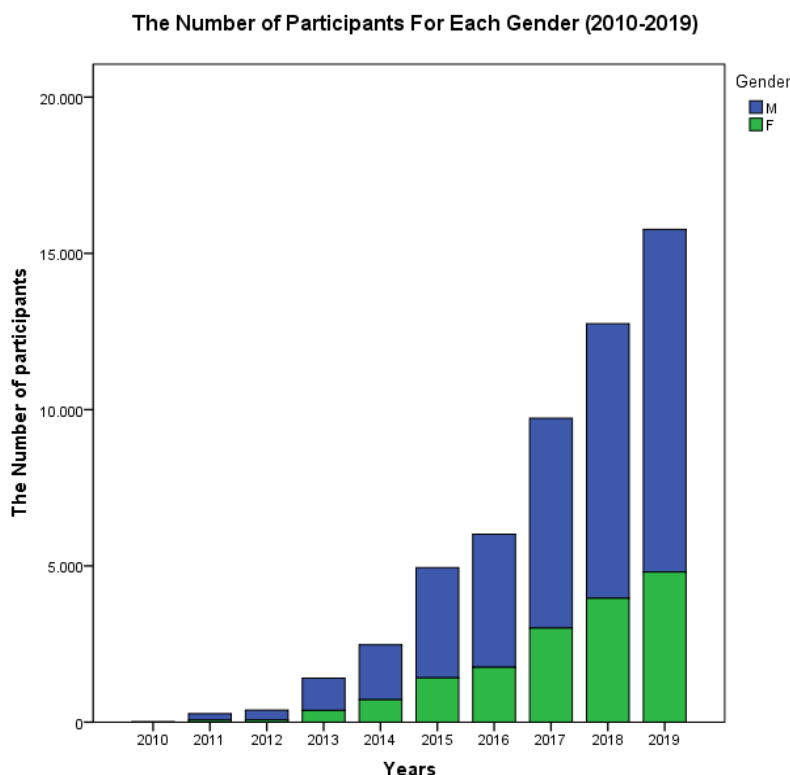
In the previous section, the list of organizations according to the first years of activity was given. It can be said that the increase in the number of organizations from 2010 to 2019 is in line with the increase in the number of participants.

4.1. Distance Preference of the Participants

One of the important statistics may be the distance preference of the races or the participants. As mentioned in the previous section, distances are not the same in each organization. Therefore, it has classified the distances as short, medium, and ultra. The demands for these distances by years are given in Graph 2.

Graph 2. Distance Preferences of the Participants by years

Distance Preferences of the Participants by Years
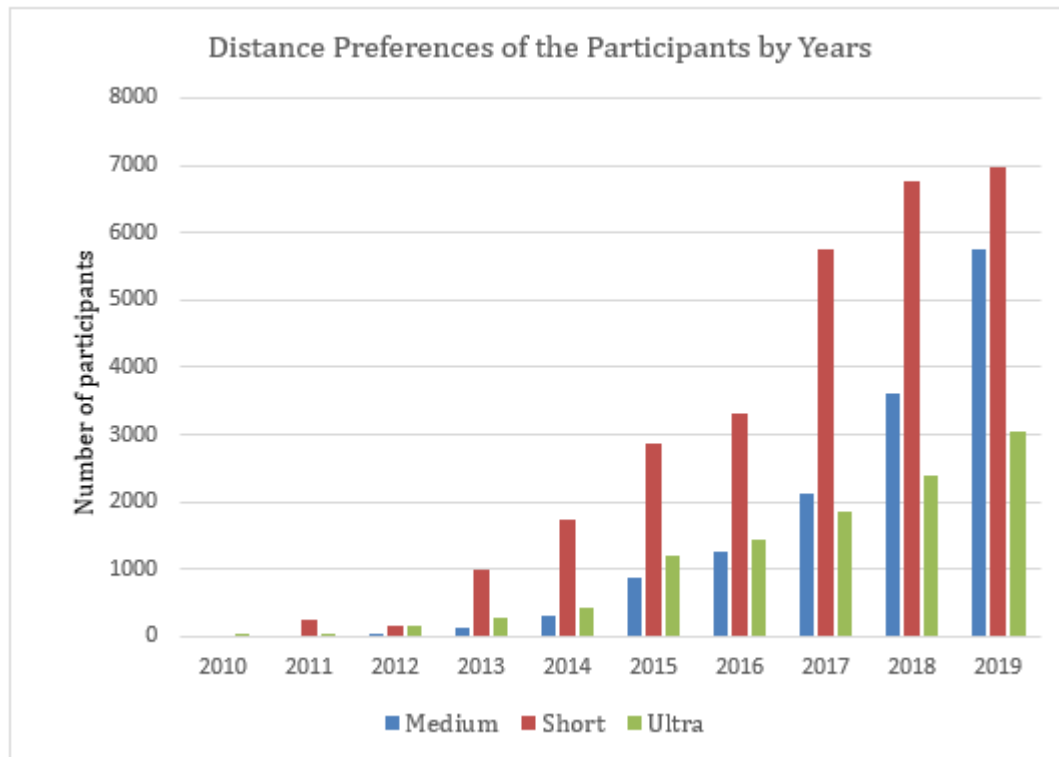
Looking at Chart 2, the demand for short and long-distance increased faster, except for long distances. It can be said that the number of long-distance runners has increased steadily and created an important demand.

Some participants go to at least one organization every year in the past 10 years. Therefore, statistics about this regular group of runners can provide information about the future of the ultra trail marathons. The distribution of runner's preference for running at different distances for 10 years is given in the table below.

Table 1. Frequency Distribution of Distance Preferences of Participants

	Frequency	Percent
Only 1 Distance	18262	82,3
2 Distances	2904	13,1
3 Distances	1033	4,7
Total	22199	100

The majority of the 22199 participants participated in the race of only 1 distance type in these 10 years. 1033 participants, which were considerable, competed in 3 distance types. It can be understood from the table above that the rate of runners considering diversifying the running distance is about 18%.

Table 2. Single Distance Runners

	Frequency	Percent
Short	3490	19,1
Medium	12308	67,4
Ultra	2464	13,5
Total	18262	100

The table above only gives information about those running in the same distance category. The majority of the participants prefer to run medium distances only.

4.3. Distribution of Regular Participants for Last 10 Years

Table 3. Frequency Distribution of Regular Participants

		Frequency	Percent
Number of Years	1	15723	70,80
	2	3670	16,50
	3	1509	6,80
	4	708	3,20
	5	358	1,60
	6	142	0,60
	7	59	0,30
	8	21	0,10
	9	9	0,00
	Total	**22199**	**100**

Table 1 provides important information. It shows the frequency of 22199 different participants joining the organizations at least once in 10 years. 15723 of the 22199 participants participated in at least one organization in only a year in 10 years. It is worth mentioning that there were only one organization and 10 participants in 2010. It is observed that approximately 88% of all ultra trail marathon participants attended at least one or two years, while the remaining 12% attended at least one organization in three or more years.

It is understood from the table above and the histogram below that the number of regular participants have a skewed structure to the right. It seems this skew will reach the asymmetrical structure over time, considering the increase in the number of participants.

Graph 3. Histogram of Regular Participants
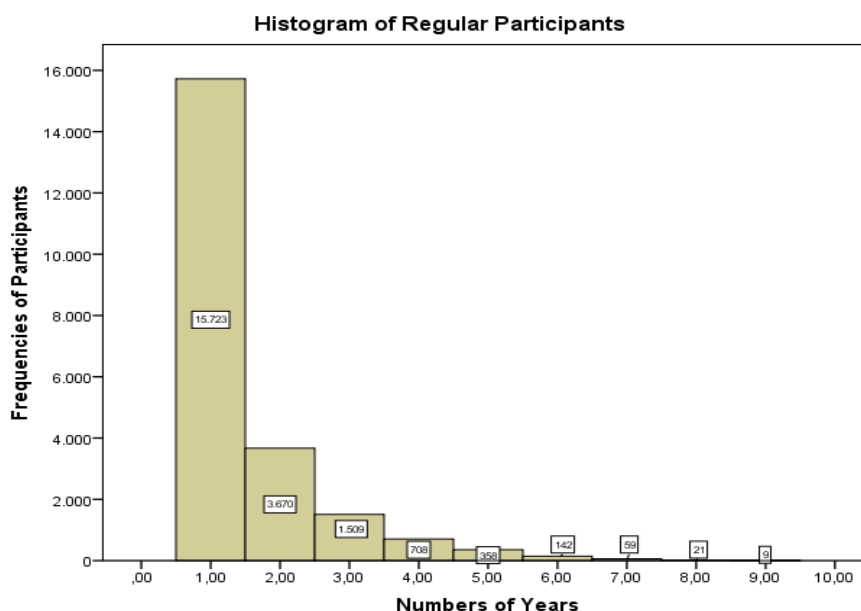
From the collected data, races were organized at 55 different distances in 10 years. The participation distribution of the runners is given in Table 2 below. It was mentioned above that 12% of the participants attended at least one organization. It is concluded from Table 2 that these participants participated in at least 5 races for 10 years.

Table 4. Frequency Distribution of Number of Races Participated in 10 Years

		Freq.	%			Freq.	%			Freq.	%			Freq.	%
	1	13908	62,7		13	63	0,3		25	20	0,1		38	2	0
	2	3244	14,6		14	72	0,3		26	8	0		40	2	0
	3	1496	6,7		15	59	0,3		27	12	0,1		41	2	0
Number of Races	4	908	4,1	Number of Races	16	47	0,2	Number of Races	28	9	0	Number of Races	42	1	0
	5	606	2,7		17	43	0,2		29	3	0		43	1	0
	6	406	1,8		18	30	0,1		30	3	0		45	2	0
	7	310	1,4		19	26	0,1		31	1	0		46	1	0
	8	230	1		20	24	0,1		32	3	0		47	1	0
	9	198	0,9		21	24	0,1		33	2	0		49	1	0
	10	147	0,7		22	16	0,1		34	8	0		50	1	0
	11	125	0,6		23	15	0,1		35	2	0		55	1	0
	12	102	0,5		24	13	0,1		37	1	0		Total	22199	100

In general, we provided the Turkish Ultra trail marathon basic statistics using the available data. The following section provides statistics on an organization that has been organized annually for a long time.

4.4. Statistics for a Single Organization

Most of the ultra trail marathon events are held every year in Turkey. One of these is selected as an example and using the data of this organization, different statistics for organizations are introduced.

This organization has been organized since 2012. Since then, the distribution of the number of participants (by gender) is shown in the table below. It is observed that the number of participants has increased rapidly over the years, but due to the special situation in the country in 2016, the rate of increase in the next 1-2 years slowed down and recaptured the old increase rate in 2019 with new distances and tracks. However, how the COVID 19 pandemic in 2020 will affect this rate will be seen in the future. This study also provides an opportunity to make comparisons on this subject.

Table 5. The Distribution of the Number of Participants by Gender and Years

Years	Distances	Male	Female	Total		Years	Distances	Male	Female	Total
		Number of Participants						**Number of Participants**		
	60	39	10	49			**5**	108	65	173
2012	**120**	32	4	36			**15**	195	129	324
	Total	71	14	85		**2017**	**50**	193	38	231
	10	190	92	282			**90**	48	11	59
	42	73	29	102			**140**	63	3	66
2013	**80**	65	7	72			**Total**	607	246	853
	130	38	5	43			**15**	173	127	300
	Total	366	133	499			**30**	134	69	203
	10	354	169	523			**50**	169	33	202
	42	127	53	180		**2018**	**90**	59	8	67
2014	**80**	58	10	68			**140**	69	5	74
	130	47	3	50			**Total**	604	242	846
	Total	586	235	821		**2019**	**5**	141	97	238

2015	**10**	500	275	775	**20**	219	155	374
	42	178	62	240	**35**	141	45	186
	80	74	8	82	**55**	163	28	191
	130	77	7	84	**90**	66	4	70
	Total	829	352	1181	**160**	73	10	83
2016	**5**	223	128	351	**Total**	803	339	1142
	15	111	56	167	**Total**	4491	1815	6306
	50	161	58	219				
	80	76	8	84				
	130	54	4	58				
	Total	625	254	879				

An important statistic for each organization is the number of runners who regularly participate in one of the races within this organization. The name of these statistics can be a loyal runner to the organization.

A total of 4309 different runners participated in this organization in 8 years and only 5 of them can be called 100% loyal participants. A total of 4309 different runners participated in this organization in 8 years and only 5 of them can be called 100% loyal participants. 5% of all participants ran for 4 or more years under this organization.

Table 6. The Distribution of the Loyal Runners for an Organization

Number of Participation in 8 years	Frequency	Percent
1	3157	73,3
2	694	16,1
3	261	6,1
4	114	2,6
5	50	1,2
6	21	0,5
7	7	0,2
8	5	0,1
Total	4309	100

The distribution of the course preferences of the participants in this organization is given in the table below.

Table 7. The Distribution of the Course Preferences of the Runners for an Organization

	Short		Medium		Ultra	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
0	1443	33,5	3949	91,6	2918	67,7
1	2379	55,2	331	7,7	871	20,2
2	369	8,6	29	0,7	255	5,9
3	91	2,1			135	3,1
4	19	0,4			70	1,6
5	7	0,2			35	0,8
6	1	0			14	0,3
7					6	0,1
8					4	0,1
Total	4308	100	4308	100	4308	100

When the table above is examined, it is concluded that the short courses of this organization are preferred more. At the same time, it can be said that those running on long courses attend regularly the organization for many years.

Important statistics that can be drawn from the data that can be compiled for 10 years from the Turkish ultra path marathon community are given here.

5. Conclusion and Discussion

Turkish ultra trail marathon organizations have been developing rapidly for the last 10 years. Many towns or city administrators believe that such organizations have significant social and economic contributions to their regions. Therefore, the importance of information about organizations has increased. In this study, available data from different sources about the Ultra Trail marathon organizations held in Turkey collected, organized, and analyzed. The results are given in the section above. These results were obtained using very limited data. Each organization presents the results in different information and formats. Even the results sent to ITRA may be incomplete. Organizations need to give participants names, surnames, age or age categories, gender, country, and city in which they live, time to arrive at aid stations, the time to complete the course. If each organization present their results this way, it will be very easy for academics or stakeholders of these organizations can draw important conclusions from this data. The interpretation of the statistics presented in this study may change according to the perspectives of the organization stakeholders. These results can contribute to realistic and important policies/strategies in terms of marketing, communication, and organization management related to the future.

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