STAT 110: Quiz #8 Name(s): SOLUTION
Spring 2018
Points: 20

The Fool's Five is a major regional fundraising event for cancer. Fool's Five raises tens of thousands of dollars each year for cancer research.

Race results are provided online

The results from the 2018 Fools Five race are provided on our course website. Download this file. The Pace variable will be the primary variable of interest for this quiz.

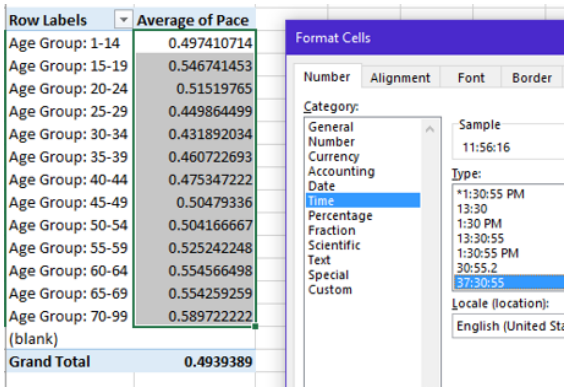
	A	B	C	D	E	F	G	H	I	J	K
1	Rank	Name	BibNum	Time	Pace	Hometown	State	Division	Division_Gender	Division_AgeGroup	DivRank
2	1	Josiah Swanson	2099	0:29:22	5:55:00	Rochester, MN	MN	MALE 25-29	MALE	Age Group: 25-29	1
3	2	John Killen Jr	2492	0:30:01	6:03:00	Winona, MN	MN	MALE 20-24	MALE	Age Group: 20-24	1
4	3	Garet Grant	2051	0:30:32	6:09:00	Winona, MN	MN	MALE 15-19	MALE	Age Group: 15-19	1
5	4	Ryan Ping	2664	0:30:57	6:14:00	Winona, MN	MN	MALE 40-44	MALE	Age Group: 40-44	1
6	5	Jamison Ping	2665	0:31:00	6:15:00	Winona, MN	MN	MALE 1-14	MALE	Age Group: 1-14	1
7	6	Jeff Erickson	2385	0:31:28	6:20:00	Lewiston, MN	MN	MALE 30-34	MALE	Age Group: 30-34	1
8	7	Joey Furst	2611	0:31:36	6:22:00	Rochester, MN	MN	MALE 25-29	MALE	Age Group: 25-29	2
9	8	Laura Edlund Miller	2549	0:31:43	6:23:00	Saint Charles, MN	MN	FEMALE 30-34	FEMALE	Age Group: 30-34	1

1. Compute the average Pace for each age group. Fill in the following table. (5 pts)

Age Group	Average Pace
Age Group: 1-14	11:56:16
Age Group: 15-19	13:07:18
Age Group: 20-24	12:21:53
Age Group: 25-29	10:47:48
Age Group: 30-34	10:21:55
Age Group: 35-39	11:03:26
Age Group: 40-44	11:24:30
Age Group: 45-49	12:06:54
Age Group: 50-54	12:06:00
Age Group: 55-59	12:36:21
Age Group: 60-64	13:18:35
Age Group: 65-69	13:18:08
Age Group: 70-99	14:09:12

Getting cell formatting correct in Excel

1) Specify Average under Value Field Settings
2) Change cell format to Time



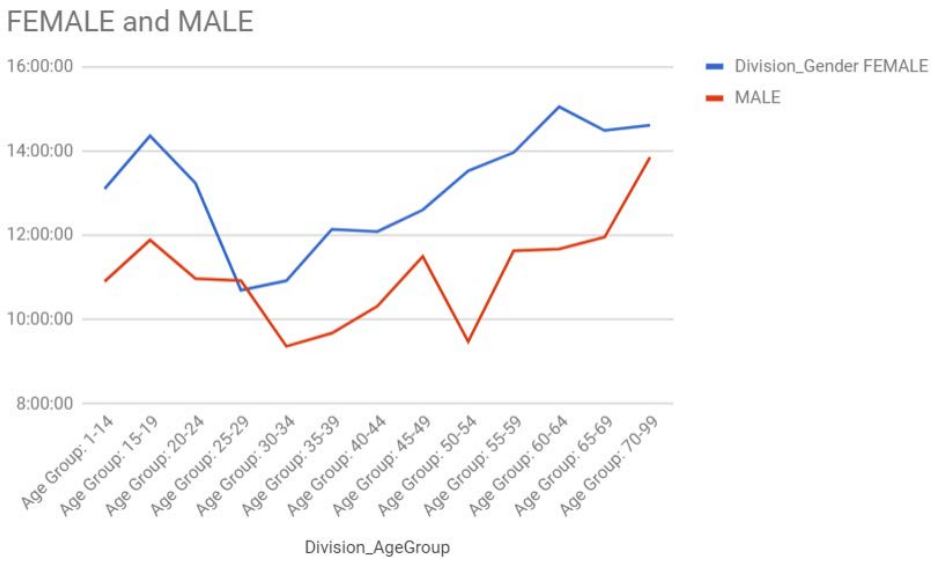
2. What Age Group had the fastest Pace? (2 pts) 30-34

3. Determine whether or not the Age Group specified above was the fastest for both Females and Males. (2 pts)

AVERAGE of Pace	*Division_Gender*		
Division_AgeGroup	FEMALE	MALE	Grand Total
Age Group: 1-14	13:05:53	10:54:11	11:56:16
Age Group: 15-19	14:21:23	11:53:14	13:07:18
Age Group: 20-24	13:14:08	10:58:18	12:21:53
Age Group: 25-29	10:41:50	10:55:27	10:47:48
Age Group: 30-34	10:55:23	9:22:03	10:21:55
Age Group: 35-39	12:08:29	9:40:53	11:03:26
Age Group: 40-44	12:05:08	10:19:08	11:24:30
Age Group: 45-49	12:36:00	11:29:43	12:06:54
Age Group: 50-54	13:31:41	9:28:55	12:06:00
Age Group: 55-59	13:57:37	11:37:50	12:36:21
Age Group: 60-64	15:02:45	11:40:32	13:18:35
Age Group: 65-69	14:28:53	11:57:17	13:18:08
Age Group: 70-99	14:36:30	13:51:00	14:09:12
Grand Total	**12:40:38**	**10:51:27**	**11:51:16**

- Fastest Age Group for Females: `25-29 | 10:41:50`
- Fastest Age Group for Males: `30-34 | 9:22:03`

4. Use PivotTables and Charts to create a plot that allow us to compare the average Pace times across the Age Groups for Females and Males separately. Delete my sample plot and paste your plot in its place. (4 pts)



5. Use PivotTable to determine which Age Group has the most consistent pace times. Which Age Group is this? (2 pts)

   Most consistent equates to the smallest standard deviation. The age group with the smallest standard deviation (change the Values to STDEV) is 70-99.

   Note: The default output from Pivot table does not use the correct format, if you change the format of the cells to Time, you can see that the standard deviation is 1:43:07 for the 70-99 age group.

The default output

Division_AgeGroup	STDEV of Pace
Age Group: 1-14	0.1365588532
Age Group: 15-19	0.1713012752
Age Group: 20-24	0.1709297748
Age Group: 25-29	0.1605329079
Age Group: 30-34	0.1267116934
Age Group: 35-39	0.1495593534
Age Group: 40-44	0.1451931683
Age Group: 45-49	0.1552937409
Age Group: 50-54	0.1549415378
Age Group: 55-59	0.1573401042
Age Group: 60-64	0.148165873
Age Group: 65-69	0.1345069839
Age Group: 70-99	0.07160961099
Grand Total	**0.1516506289**

Specifying Time as the format for the cells

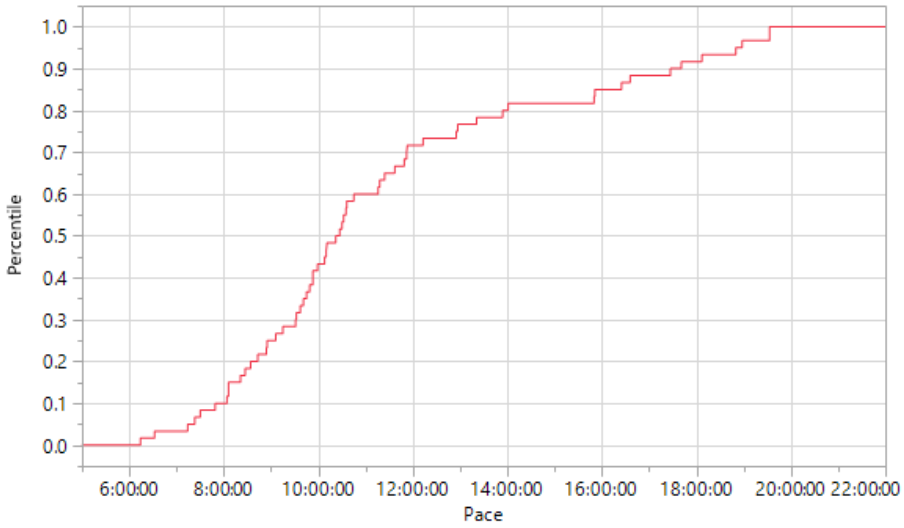
Division_AgeGroup	STDEV of Pace
Age Group: 1-14	3:16:39
Age Group: 15-19	4:06:40
Age Group: 20-24	4:06:08
Age Group: 25-29	3:51:10
Age Group: 30-34	3:02:28
Age Group: 35-39	3:35:22
Age Group: 40-44	3:29:05
Age Group: 45-49	3:43:37
Age Group: 50-54	3:43:07
Age Group: 55-59	3:46:34
Age Group: 60-64	3:33:22
Age Group: 65-69	3:13:41
Age Group: 70-99	1:43:07
Grand Total	**3:38:23**

6. Is the Age Group with the most consistent pace times the same for both genders? Briefly discuss. (2 pts)

   Yes, the smallest standard deviation for both genders is the Age Group 70-99. The Females have a standard deviation of 1:50:55 and Males have a standard deviation of 1:43:45.

STDEV of Pace	*Division_Gender*		
Division_AgeGroup	FEMALE	MALE	Grand Total
Age Group: 1-14	3:04:41	3:08:08	3:16:39
Age Group: 15-19	3:21:41	4:32:24	4:06:40
Age Group: 20-24	4:08:58	3:48:51	4:06:08
Age Group: 25-29	3:21:19	4:30:31	3:51:10
Age Group: 30-34	3:07:56	2:39:48	3:02:28
Age Group: 35-39	3:43:47	2:55:35	3:35:22
Age Group: 40-44	3:41:21	2:52:40	3:29:05
Age Group: 45-49	3:31:08	3:59:31	3:43:37
Age Group: 50-54	3:41:18	1:59:23	3:43:07
Age Group: 55-59	3:23:26	3:48:02	3:46:34
Age Group: 60-64	2:50:01	3:27:05	3:33:22
Age Group: 65-69	3:13:25	2:52:02	3:13:41
Age Group: 70-99	1:50:55	1:43:45	1:43:07
Grand Total	**3:35:34**	**3:26:54**	**3:38:23**

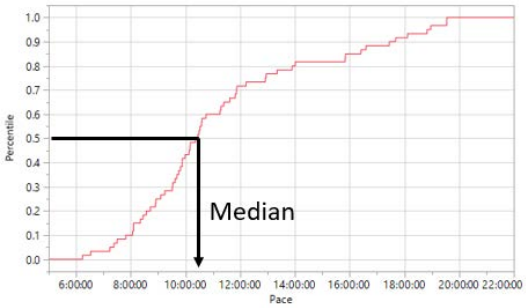
7. Consider the following CDF plot for Gender = Males, Age Group = 40-44.



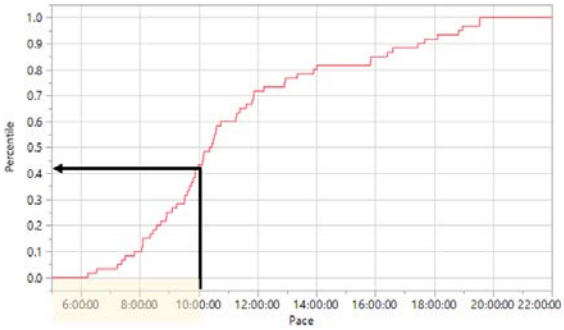
Answer the following (1 pt each)

a. The median pace time is about a little over 10 mins, maybe 10:20 or so
b. About a little over 40% of the people in this group had a pace time under 10 minutes.
c. About about 40% of the people in this group had a pace time between 10 and 14 minutes.

a. Getting the median



b. a little over 40%



c. about 40%