

I will provide you with some data from my track and field athletes, specifically my shot put throwers. In this Exploration LAB, you will be required to complete a statistical analysis of the data to determine which thrower is the “best” thrower on the team. You must use data to make a case for what “the best” means. There may not be an obvious right or wrong answer, only good or bad use of data.

PART A - STATISTICAL ANALYSIS

Your statistical analysis will include the following components:

1. An appropriate frequency table and a frequency histogram of the data for each thrower.
2. Use of “measures of center” (mean, median, mode) for each thrower.
3. Use of “measures of spread” (box-and-whisker plot, standard deviation) for each thrower.
4. Some form of an appropriate graph that allows you to compare the data from the three throwers on the same graph.

Once you have completed the required statistical analysis, you must make a decision as to which thrower is the best. First, you must decide upon what it means to “be the best” thrower. Then you will tell me who is the best and WHY you think that they are the best (your reasoning must be STATISTICALLY based!)

THE THROWERS’ DATA:

Thrower #1	8.74	8.94	9.66	10.01	10.01	8.43	10.25	10.14	9.04	9.30	8.69
	8.85	9.25	9.46	10.23	8.95	9.65	8.79	10.62	9.78	9.26	9.39
Thrower #2	10.39	10.86	10.94	9.00	9.15	9.35	9.35	8.25	8.85	8.95	9.10
	10.20	9.53	8.76	8.03	8.96	9.25	9.98	10.82	10.10	8.96	9.68
Thrower #3	8.79	9.39	9.94	11.47	9.72	8.49	9.63	9.49	9.83	8.82	9.24
	9.13	9.56	9.94	9.75	9.12	8.96	8.83	9.25	9.38	9.62	9.98

PART B - Revising in light of new information

In the table below you gain new information about the throwers' performances. Update your analysis given the new information and then revise your conclusion, if necessary. Your analysis should include new tables, calculations and graphs. You must be able to STATISTICALLY JUSTIFY your revised conclusion (or your choice to NOT revise your selection.)

REVISION #1 - The following addition to the data now comes into consideration: the weeks of the training schedule were also taken into account and so the 22 data "points" for the 3 throwers is now shown in comparison to the weeks of training:

Training Week	Thrower #1	Thrower #2	Thrower #3
Week 2	8.43, 8.74, 8.69, 8.79, 8.85	10.39, 10.86, 10.94, 9.00, 9.15	8.79, 9.39, 9.94, 8.83, 9.72
Week 4	8.94, 9.04, 9.26, 8.95	9.35, 9.35, 8.25, 8.85	8.49, 9.63, 9.49, 9.83,
Week 6	9.25, 9.39, 9.30, 9.66	8.95, 9.10, 10.20, 9.53	8.82, 9.24, 9.13, 9.56
Week 8	10.01, 9.65, 9.46, 10.01	8.76, 8.03, 8.96, 9.25	9.94, 9.75, 9.12, 8.96
Week 10	9.78, 10.14, 10.23, 10.62, 10.25	9.98, 10.82, 10.10, 8.96, 9.68	11.47, 9.25, 9.38, 9.62, 9.98

You are now required to make **an appropriate statistical data analysis (complete with appropriate CALCULATIONS, TABLES & GRAPHS or other VISUALIZATIONS)** given this new information and then revise your conclusion, if necessary. You must be able to JUSTIFY your revised conclusion (or your choice to NOT revise your selection.)

PART C - Further Revisions

REVISION #2 - The following addition to the data now comes into consideration. The throwers also competed in 5 competitions during 12 weeks of the track & field season. The data from the competitions is listed in the table below.

Note: during a competition, all throwers get three throws. If at that point they place in the top eight, they are awarded an additional 3 throws.

Competition	Thrower #1	Thrower #2	Thrower #3
Competition #1	8.84, 9.04, 9.76	10.45, 10.76, 10.84, 10.50, 10.78	9.13, 9.72, 9.49
Competition #2	10.05, 10.15, 9.43	9.12, 9.05, 9.42	8.48, 8.80, 9.12
Competition #3	9.43, 10.45, 10.16, 10.26, 10.42, 10.56	9.61, 8.35, 8.97	9.75, 9.70, 9.92
Competition #4	10.04, 9.30, 9.68	10.28, 9.83, 9.76	9.25, 10.62, 10.06, 10.25, 10.61
Competition #5	9.46, 10.67, 9.87, 10.25, 10.26, 9.39	10.85, 10.15, 9.96, 10.68, 10.49, 10.25	10.52, 10.98, 11.26, 10.34, 11.45, 11.02

You are now required to make **an appropriate statistical data analysis (complete with appropriate CALCULATIONS, TABLES & GRAPHS or other VISUALIZATIONS)** given this new information and then revise your conclusion, if necessary. You must be able to JUSTIFY your revised conclusion (or your choice to NOT revise your selection.)