

Example Analysis Write-Up

This should be done on a separate piece of paper in an organized, detailed, and well thought-out manner.

Scenario

The coach for the swim team is considering two different lineups for her relay team. Below are the times in minutes for each lineup. Which lineup should she choose?

Lineup A				
4.25	4.31	4.19	4.40	4.23
4.18	4.71	4.56	4.32	4.39

Lineup B				
4.47	4.68	4.25	4.41	4.49
4.18	4.27	4.69	4.32	4.44

12.4 Example of Comparing 2 Data Sets

Step 1: Record the actual data.

Lineup A				
4.25	4.31	4.19	4.40	4.23
4.18	4.71	4.56	4.32	4.39

Lineup B				
4.47	4.68	4.25	4.41	4.49
4.18	4.27	4.69	4.32	4.44

Step 2: Find the mean/standard deviation and the 5-number summary.

$$\bar{x}=4.354$$
$$\sigma_x=0.1609$$

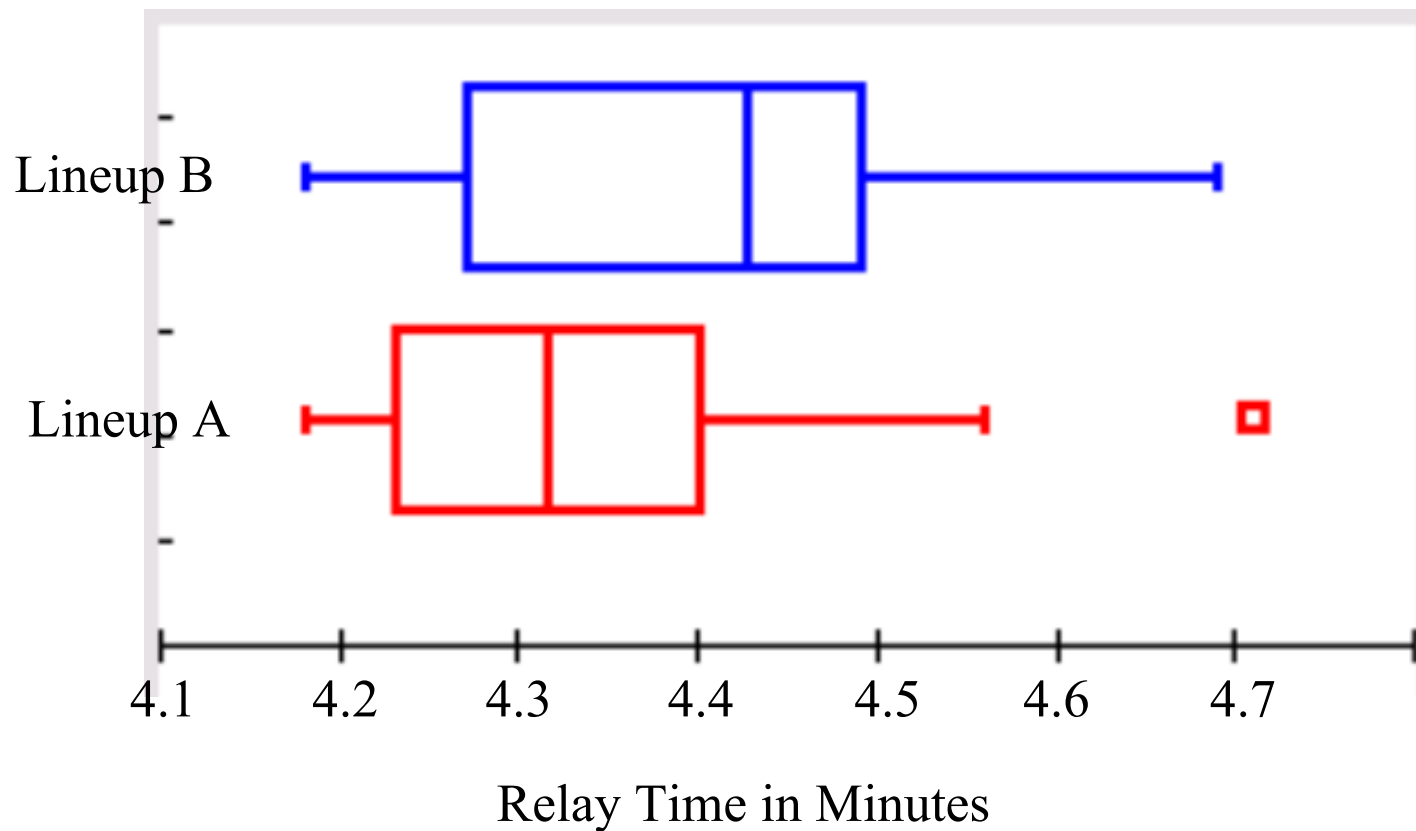
$$\bar{x}=4.42$$
$$\sigma_x=0.1635$$

$$\min X=4.18$$
$$Q_1=4.23$$
$$\text{Med}=4.315$$
$$Q_3=4.4$$
$$\max X=4.71$$

$$\min X=4.18$$
$$Q_1=4.27$$
$$\text{Med}=4.425$$
$$Q_3=4.49$$
$$\max X=4.69$$

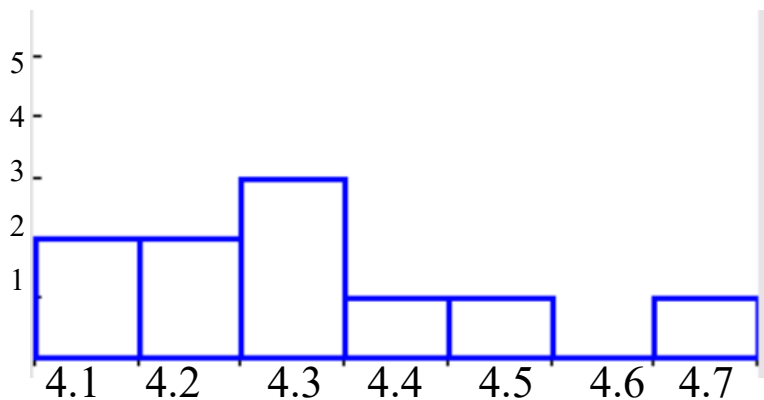
12.4 Example of Comparing 2 Data Sets

Step 3: Make two box and whisker plots on the same graph.

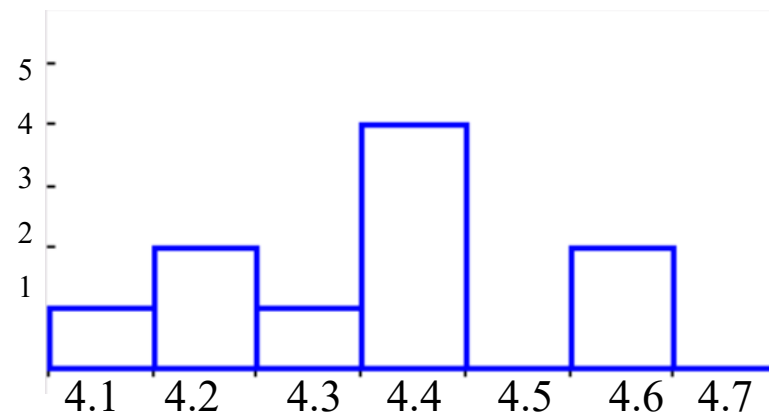


12.4 Example of Comparing 2 Data Sets

Step 4: Make two side-by-side histograms.



Lineup A's Time (min)



Lineup B's Time (min)

Step 5: Summarize your findings and make a conclusion.

Conclusion: Both lineups had nearly identical standard deviations of 0.16 minutes but Lineup A had a mean of 4.35 minutes whereas Lineup B had a mean of 4.42 minutes. However, both lineups were positively skewed, so we should rely more on the 5-number summary when comparing.

Lineup A had a median time of 4.31 compared to Lineup B's median of 4.42 minutes. In observing the box and whisker plot, we see that 75% of Lineup A's times occurred below the median (50%) of Lineup B's times. Because of the evidence stated above, the coach should select Lineup A as that team has a faster mean and median time.