Unit 8, Lesson 19

Comparing Populations with Friends

Let's ask important questions to compare groups.

19.1 Features of Graphic Representations

Dot plots, histograms, and box plots are different ways to represent a data set graphically.

Which of those displays would be the easiest to use to find each feature of the data listed here?

1. the mean

2. the median

3. the mean absolute deviation

4. the interquartile range

5. the symmetry

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19.2 Info Gap: Comparing Populations

Your teacher will give you either a problem card or a data card. Do not show or read your card to your partner.

If your teacher gives you the problem card:

1. Silently read your card and think about what information you need to answer the question.
2. Ask your partner for the specific information that you need. "Can you tell me _____?"
3. Explain to your partner how you are using the information to solve the problem. "I need to know _____ because . . . ."

   Continue to ask questions until you have enough information to solve the problem.
4. Once you have enough information, share the problem card with your partner, and solve the problem independently.
5. Read the data card, and discuss your reasoning.

If your teacher gives you the data card:

1. Silently read your card. Wait for your partner to ask for information.
2. Before telling your partner any information, ask, "Why do you need to know _____?"
3. Listen to your partner's reasoning and ask clarifying questions. Only give information that is on your card. Do not figure out anything for your partner!

   These steps may be repeated.
4. Once your partner says they have enough information to solve the problem, read the problem card, and solve the problem independently.
5. Share the data card, and discuss your reasoning.

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Are you ready for more?

Is there a meaningful difference between top sports performance in two different decades? Choose a variable from your favorite sport (for example, home runs in baseball, kills in volleyball, aces in tennis, saves in soccer, etc.), and compare the leaders for each year of two different decades. Is the performance in one decade meaningfully different from the other?

19.3 Comparing to Known Characteristics

1. A college graduate is considering two different companies to apply to for a job. Acme Arithmetic Corporation lists this sample of salaries on their website:

   $45,000 $55,000 $140,000 $70,000 $60,000 $50,000

   What typical salary would Summit Slope Systems need to have to be meaningfully different from Acme Arithmetic Corporation? Explain your reasoning.

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2. A factory manager is wondering whether they should upgrade their equipment. The manager keeps track of how many faulty products are created each day for a week and records the numbers here:

   6 7 8 6 7 5 7

   The new equipment guarantees an average of 4 or fewer faulty products per day. Is there a meaningful difference between the new and old equipment? Explain your reasoning.

Lesson 19 Summary

When using samples to compare two populations, there are a lot of factors to consider.

- Are the samples representative of their populations? If the sample is biased, then it may not have the same center and variability as the population.
- Which characteristic of the populations makes sense to compare—the mean, the median, or a proportion?
- How variable is the data? If the data is very spread out, it can be more difficult to make conclusions with certainty.

Knowing the correct questions to ask when trying to compare groups is important to correctly interpret the results.