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EDG500: Educational Research and Statistics

Week 4 Video Assignment

Video 6 Standard Deviation

1. In comparing monthly precipitation for Portland, Oregon, and Montreal, Canada, why was comparing the mean monthly precipitation rates insufficient?

Comparing the mean monthly precipitation rates for Portland, Oregon, and Montreal, Canada, is insufficient because the weather patterns are entirely different. Montreal's pattern is consistent, while Portland's pattern is more variable with extremes. In other words, Montreal has less spread month to month or a lower standard deviation than Portland.

2. Why don't we measure the spread about the mean by simply averaging $x\ x -$, the deviations of individual data values from their mean?

We don't measure the spread about the mean by simply averaging the deviations of individual data values from their mean because it is important to know the distribution of center to get the full picture.

3. What did the four-week sales data standard deviation tell you about the two Wahoo's Taco locations, Manhattan Beach and South Coast Plaza?

The four-week sales data standard deviation indicates that the two Wahoo's tacos locations at Manhattan Beach and South Coast Plaza have very different spreads for their sales month to month. The Manhattan Beach store is influenced by weather and has a greater spread

of $31,000, while the South Coast Plaza store has less variation indoors with a standard deviation of $17,000 monthly.

4. Can the standard deviation of a set of observations be $s = -1.5$? Explain.

A standard deviation of a set of observations cannot be -1.5. A standard deviation has to be non-negative since it is based on the square root of the variance. It will always be positive or zero.

Video 7 Normal Curves

1. Describe the characteristic shape of a normal curve.

The characteristic shape of a normal curve is a symmetrical bell with one center peak.

2. How can you spot the mean of a normal curve?

The mean of a normal curve is in the center of the curve at the median.

3. If one normal curve is low and spread out and another is tall and skinny, which curve has the larger standard deviation?

If one normal curve is low and spread out and another is tall and skinny, the curve with the larger standard deviation is the lower, more spread out curve.

4. Focus on the distribution of arrival times for the Eastern Towhee for Years 1 and 33. Has the mean arrival date in Year 33 increased, decreased, or remained the same as the mean in Year 1?

According to the distribution of arrival times for the Eastern Towhee for years 1 and 33, the arrival date remained the same.

5. The mean of the arrival times for the Blackpoll Warbler passing through Manomet in Years 1 and 33 is roughly the same. In Year 33 has the percentage of birds that have arrived by day 56 increased, decreased or remained the same as what it was in Year 1?

In year 33, the percentage of Blackpoll Warblers passing through Manomet by day 56 decreased from year 1.

Video 8 Normal Calculations

1. What is another name for the Empirical rule?

Another name for the Empirical Rule is the 68-95-99.7 Rule which stands which equates to 68% of the data falling within 1 standard deviation of the mean, 95% of the data falling within 2 standard deviations of the mean, and 99.7% of the data falling within 3 standard deviations of the mean.

2. How tall must a woman be to join the Boston Beanstalks Club?

A woman must be 5’10” to join the Boston Beanstalks Club.

3. How do you calculate a z-score?

A z-score, or the standard value of any observation, converts a normal distribution into a standard normal distribution by setting the mean at 0.00 and the standard deviation at 1.00.

4. Based on z-scores, are eligibility requirements to join the Boston Beanstalks more difficult to meet for men or for women?

Based on z-scores, the eligibility requirements to join the Boston Beanstalks are more difficult to meet for women than men.