

Video 6 Standard Deviation

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

Montreal's precipitation is consistent. Portland's precipitation is much more variable. Montreal has less spread than Portland month to month.

2. Why don't we measure spread about the mean by simply averaging $x - \bar{x}$, the deviations of individual data values from their mean? Some of the deviations are negative numbers and they need to be squared to make them positive.

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

It tells me that South Coast Plaza is much more consistent. The Manhattan beach location varies much more due to the location being dependent on good weather so it has a bigger spread.

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

No. The deviations are squared so that they are positive. Also the standard deviation number tells you how much higher from the mean and how much lower from the mean so the number needs to be expressed as a positive.

Video 7 Normal Curves

1. Describe the characteristic shape of a normal curve.
A normal curve is symmetric in shape. It is low at the edges and tall and bulky in the middle.
2. How can you spot the mean of a normal curve?

The mean of a normal curve can be found in the middle of the curve, or at its peak.

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

The low and spread out normal curve has more standard deviation.

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?

The mean arrival date in year 33 has decreased and shifted to the left which makes the mean occur earlier.

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?

Decreased from 10% to 4%

Video 8 Normal Calculations

1. What is another name for the Empirical rule?

The 68-95-99.7 Rule.

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

70 inches (5'-10").

3. How do you calculate a z-score?

The z score tells us how many standard deviations the observation falls from the mean and in which direction.

X minus the mean divided by one standard deviation gives you the z score.

In the case of z score for women's height requirement

70 inches (requirement) minus 63.8 (mean of women's height) divided by 4.2 (standard deviation) gives you 1.48

In this case this means that the height requirement for women is 1.48 standard deviations more than the mean for women's heights.

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

Women's z score is half a standard deviation more than the males. Which means less of the women's population is eligible, making it more difficult for women to get in.