Day 24 of #100daysofmathandstats: Data sampling Concepts(Contd...)

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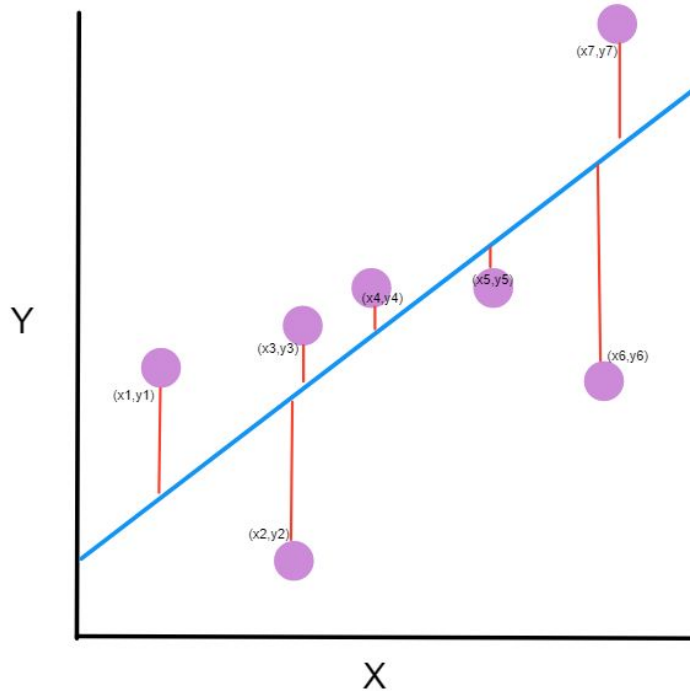
Outline

- Error
- Standardize
- Z-score

Error

- The difference between a data point and a predicted or average value.

Standardize

- Subtract the mean and divide by the standard deviation.

$$z = \frac{X - \mu}{\sigma} =$$

Example of standardize

Example question: A hot dog stand has mean daily sales of $420 with a standard deviation of $50. The income has a normal distribution.

What is the standardized value for daily sales of $520?

Step 1: Identify the observation (X), the mean (μ) and the standard deviation (σ) in the question.

- X = 520
- μ = 420
- σ = 50

Step 2: Plug the values from Step 1 into the formula:

Standardized value = X – μ / σ = 520 – 420 / 50.

Step 3: Use a calculator and solve:

520 – 420 / 50 = 100/50 = 2.

The standardized value is 2.

Z-score

- The result of standardizing an individual data point.

- Simply put, a z-score (also called a standard score) gives you an idea of how far from the mean a data point is. But more technically it's a measure of how many standard deviations below or above the population mean a raw score is.

Real life use of Z-score

The z-score in the center of the curve is zero. The z-scores to the right of the mean are positive and the z-scores to the left of the mean are negative. If you look up the score in the z-table, you can tell what percentage of the population is above or below your score. The table below shows a z-score of 2.0 highlighted, showing .9772 (which converts to 97.72%). If you look at the same score (2.0) of the normal distribution curve above, you'll see it corresponds with 97.72%.

Thank you

Github Link: https://github.com/harsh9898/100daysofstatandmath
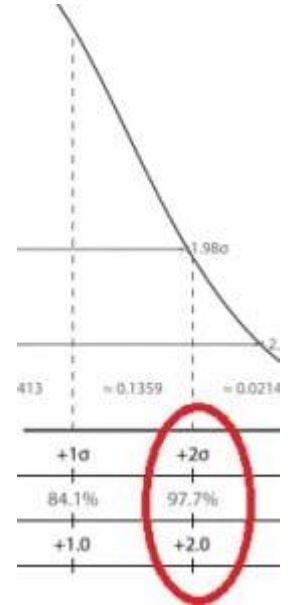
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