Measures of Dispersion

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Range

The range is the simplest measure of dispersion, representing the difference between the highest and lowest values in a data set. It provides an overview of the spread but does not account for the distribution.

Interquartile Range

The interquartile range focuses on the middle 50% of the data, making it less sensitive to extreme values. It helps identify the spread around the median and is useful when dealing with heavily skewed data.

Variance

Variance measures how far each value in a data set is from the mean. By squaring the deviations from the mean, it gives more weight to outliers. Variance is widely used in various statistical analysis and decision-making processes.

Standard Deviation

The standard deviation provides an estimate of the average distance between each data point and the mean. It allows for a more comprehensive understanding of the dispersion and is often used to measure risk and uncertainty in finance and research.

Coefficient of Variation

The coefficient of variation standardizes the dispersion relative to the mean. It is particularly useful for comparing the variability of different data sets with different means. It is commonly used in fields such as finance and economics.

Skewness

Skewness measures the asymmetry of the distribution. Positive skewness indicates a longer right tail, while negative skewness indicates a longer left tail. Understanding skewness helps in assessing the shape and characteristics of the data.

Kurtosis

Kurtosis quantifies the degree of peakedness or flatness of a distribution relative to the normal distribution. High kurtosis implies heavy tails and more extreme values, while low kurtosis suggests a flatter curve. It helps in identifying outliers and deviations from normality.