

What is the significance of reporting skewness and kurtosis in statistical analysis?

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Reporting skewness and kurtosis is significant in statistical analysis as it provides important information about the shape and distribution of a dataset. Skewness measures the asymmetry of the data, indicating whether the majority of the values are concentrated on one side or if they are evenly distributed. Kurtosis, on the other hand, measures the degree of peakedness or flatness of the data. These measures help to identify any outliers or deviations from a normal distribution, which can affect the accuracy of statistical tests and conclusions. By reporting skewness and kurtosis, researchers can better understand and interpret their data, leading to more reliable and meaningful results. Additionally, these measures are useful for comparing different datasets and identifying any potential biases or discrepancies. Therefore, reporting skewness and kurtosis is an important aspect of statistical analysis that allows for a more thorough and comprehensive understanding of the data.

The Complete Guide: Report Skewness & Kurtosis

In statistics, skewness and kurtosis are two ways to measure the shape of a distribution.

Skewness is a measure of the asymmetry of a distribution. This value can be positive or negative.

Negative skew indicates that the tail is on the left side of the distribution, which extends towards more negative values. Positive skew indicates that the tail is on the right side of the distribution, which extends towards more positive values. A value of zero indicates that there is no skewness in the distribution at all, meaning the distribution is perfectly .

Kurtosis is a measure of whether or not a distribution is

heavy-tailed or light-tailed relative to a normal distribution.

The kurtosis of a normal distribution is 3. If a given distribution has a kurtosis less than 3, it is said to be *platykurtic*, which means it tends to produce fewer and less extreme outliers than the normal distribution. If a given distribution has a kurtosis greater than 3, it is said to be *leptokurtic*, which means it tends to produce more outliers than the normal distribution.

Note: Some formulas (Fisher's definition) subtract 3 from the kurtosis to make it easier to compare with the normal distribution. Using this definition, a distribution would have kurtosis greater than a normal distribution if it had a kurtosis value greater than 0.

When reporting the skewness and kurtosis of a given distribution in a formal write-up, we generally use the following format:

The skewness of was found to be $-.89$, indicating that the distribution was left-skewed.

The kurtosis of was found to be 4.26 , indicating that the

distribution was more heavy-tailed compared to the normal distribution.

Keep in mind the following when reporting the results:

Round the values for skewness and kurtosis to two decimal places. Drop the leading 0 when reporting the values (e.g. use .79, not 0.79)

The following example shows how to use this format in practice.

Example: Reporting Skewness & Kurtosis

Suppose we're analyzing the distribution of exam scores among students at a certain university.

Using statistical software, we calculate the values for the skewness and kurtosis of the distribution to be:

Skewness: -1.391777 Kurtosis: 4.170865

We would report these values as follows:

The skewness of the exam scores was found to be -1.39, indicating that the distribution was left-skewed.

The kurtosis of the exam scores was found to be 4.17, indicating that the distribution was more heavy-tailed compared to the normal distribution.

Additional Resources

The following tutorials explain how to calculate skewness and kurtosis in different statistical software:

The following tutorials explain how to report other statistical results:

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