

“What is the interpretation of skewness in statistics and can you provide examples?”

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Skewness is a measure of the asymmetry or lack of symmetry in a dataset. In statistics, it is used to describe the distribution of a set of data points around its mean. A positive skewness indicates that the tail of the distribution is longer on the right side, while a negative skewness indicates a longer tail on the left side. A perfectly symmetrical distribution will have a skewness of zero.

To understand the concept of skewness better, consider the following examples:

1. Height of a population: The height of a population is usually distributed symmetrically, with a mean around the average height. However, if we consider the height of professional basketball players, the distribution will be positively skewed as there are a few exceptionally tall players.
2. Income distribution: In most populations, the distribution of income is positively skewed, with a few individuals earning significantly higher incomes than the rest.
3. Test scores: In a perfectly designed test, the distribution of scores will be symmetrical with a peak at the mean. However, if the test is too easy, the distribution will be negatively skewed as most students will score high marks, and if the test is too difficult, the distribution will be positively skewed as most students will score low marks.

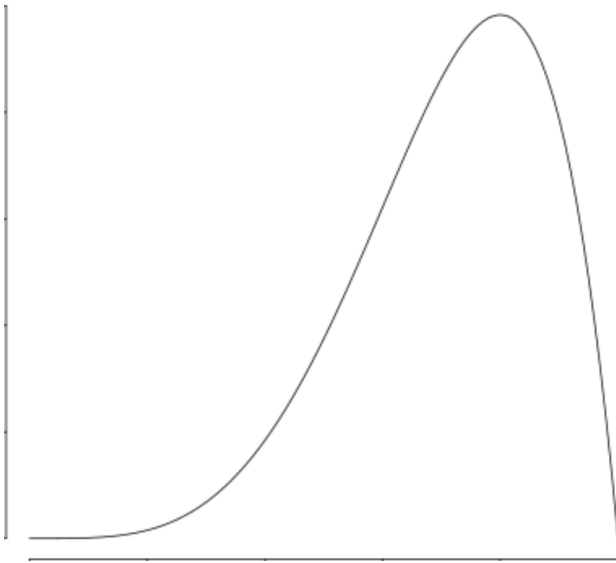
In conclusion, understanding skewness in statistics is crucial as it helps us to identify the shape and characteristics of a dataset, which in turn aids in making more accurate and informed decisions.

Interpret Skewness in Statistics (With Examples)

In the field of statistics, we use skewness to describe the symmetry of a distribution.

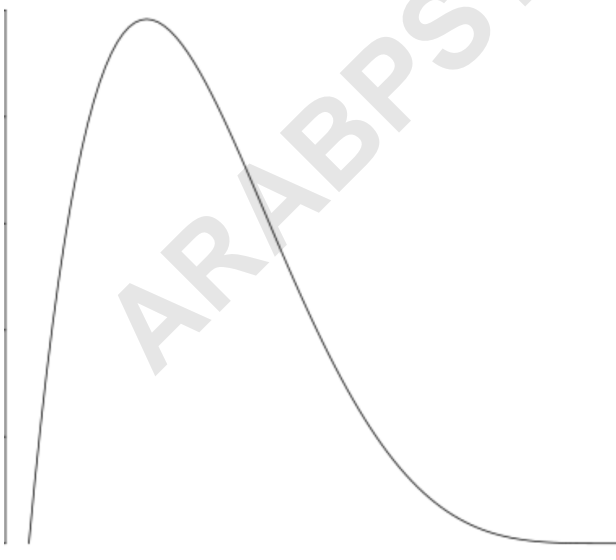
We say that a distribution of data values is left skewed if it has a "tail" on the left side of the distribution:

Left Skewed Distribution



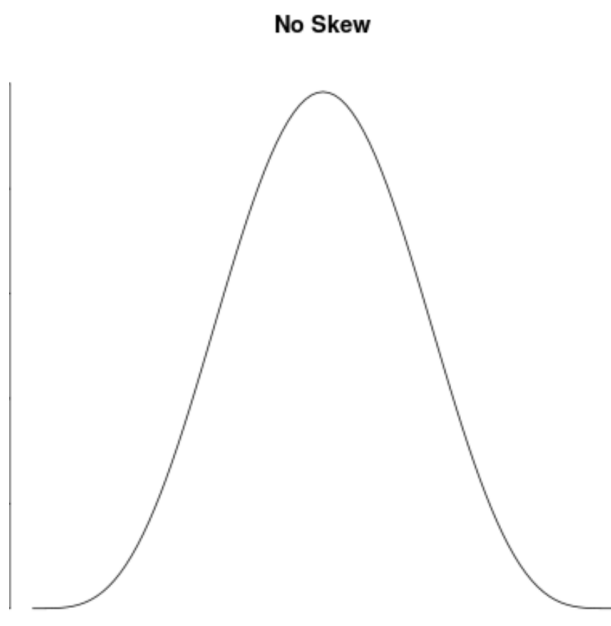
We say that a distribution is right skewed if it has a "tail" on the right side of the distribution:

Right Skewed Distribution



And we say a distribution has no skew if it's

symmetrical on both sides:



How to Interpret Skewness

The value for skewness can range from negative infinity to positive infinity.

Here's how to interpret skewness values:

A negative value for skewness indicates that the tail is on the left side of the distribution, which extends towards more negative values. A positive value for skewness 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

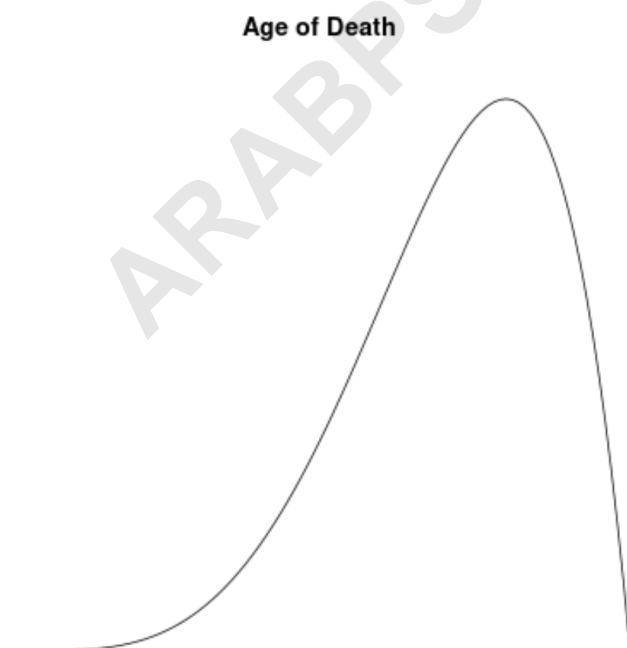
skewness in the distribution at all, meaning the distribution is perfectly symmetrical.

The following examples show how to interpret skewness values in practice.

Example 1: Left-Skewed Distribution

The distribution of the age of deaths in most populations is left-skewed. Most people live to be between 70 and 80 years old, with fewer and fewer living less than this age.

If we created a to visualize the distribution of values for age of death, it might look something like this:

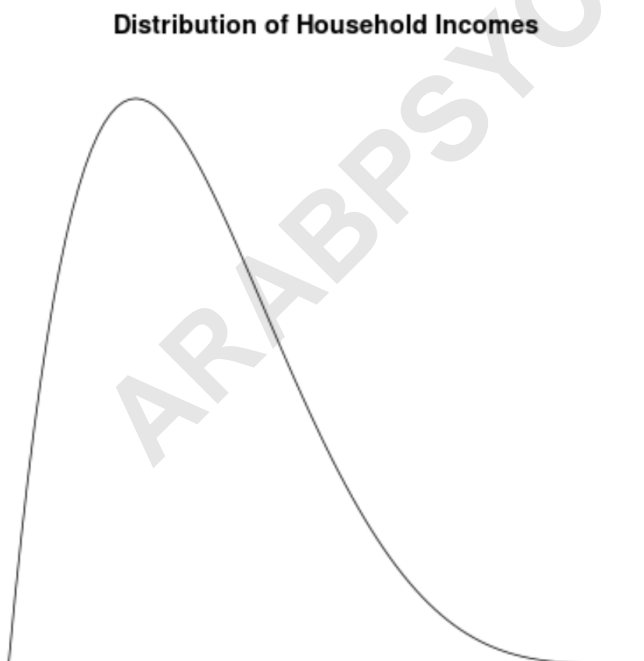


Suppose we calculate the skewness for this distribution and find that it is -1.3225.

Example 2: Right-Skewed Distribution

The distribution of household incomes in the U.S. is right-skewed, with most households earning between \$30k and \$70k per year but with a long right tail of households that earn much more.

If we created a density plot to visualize the distribution of values for household income, it might look something like this:



Suppose we calculate the skewness for this distribution

and find that it is 2.0043.

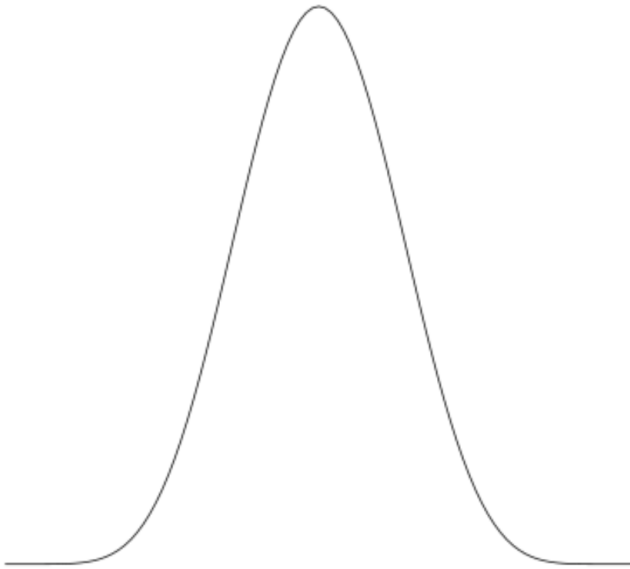
Since this value is positive, we interpret this to mean that the distribution is right-skewed, which means the tail extends to the right side of the distribution.

Example 3: No Skew

The height of males is roughly normally distributed and has no skew. For example, the average height of a male in the U.S. is roughly 69.1 inches. The distribution of heights is roughly symmetrical, with some being shorter and some being taller.

If we created a density plot to visualize the distribution of male heights in the U.S. it might look something like this:

Distribution of Male Heights



Suppose we calculate the skewness for this distribution and find that it is 0.0013.

Since this value is close to zero, we interpret this to mean that the distribution has basically no skew, which means the tails on either side of the distribution are about equal.

Additional Resources

The following tutorials provide additional information about skewness in statistics: