

Interpret Skewness in Statistics (With Examples) ?

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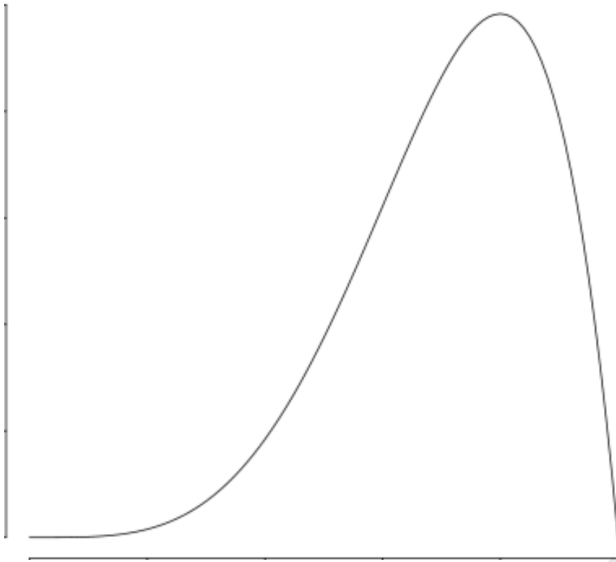
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In the field of statistics, we use **skewness** to describe the symmetry of a distribution.

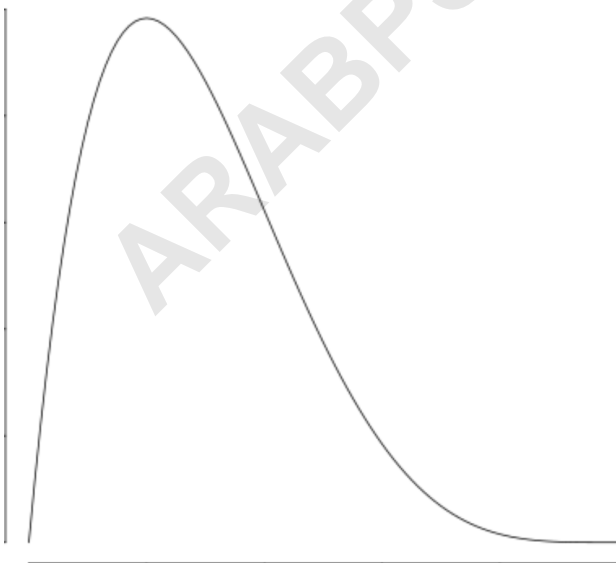
We say that a distribution of data values is **left skewed** if it has a "tail" on the left side of the distribution:

Left Skewed Distribution

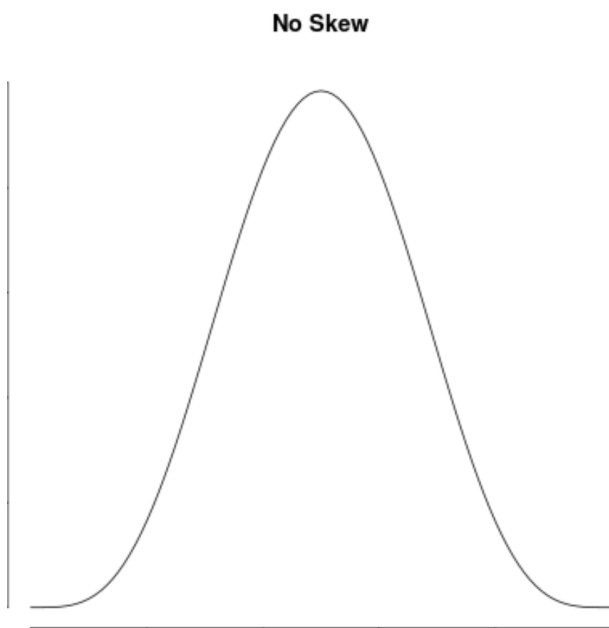


We say that a distribution is **right skewed** if it has a "tail" on the right side of the distribution:

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.

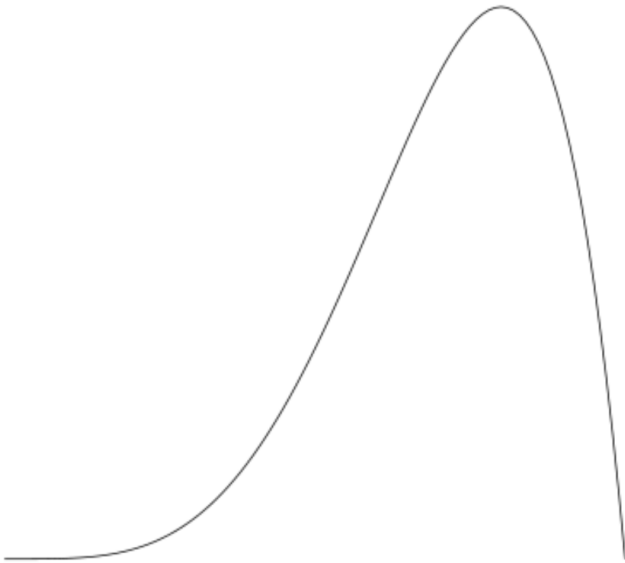
The following examples show how to interpret skewness values in practice.

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:

Age of Death



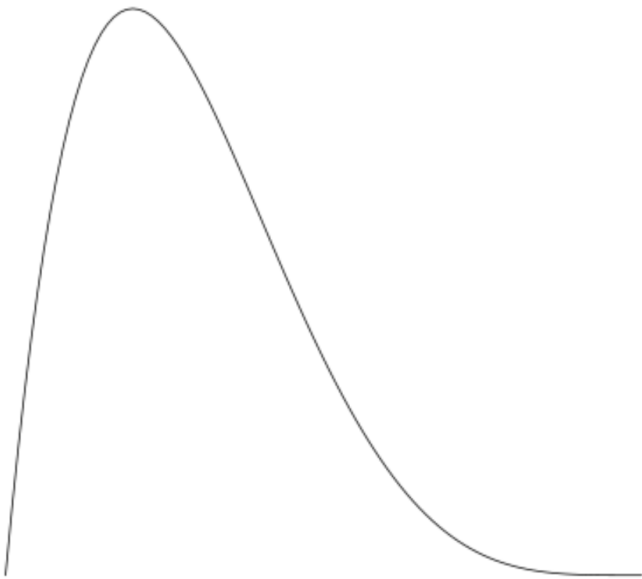
Suppose we calculate the skewness for this distribution and find that it is **-1.3225**.

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:

Distribution of Household Incomes



Suppose we calculate the skewness for this distribution and find that it is **2.0043**.

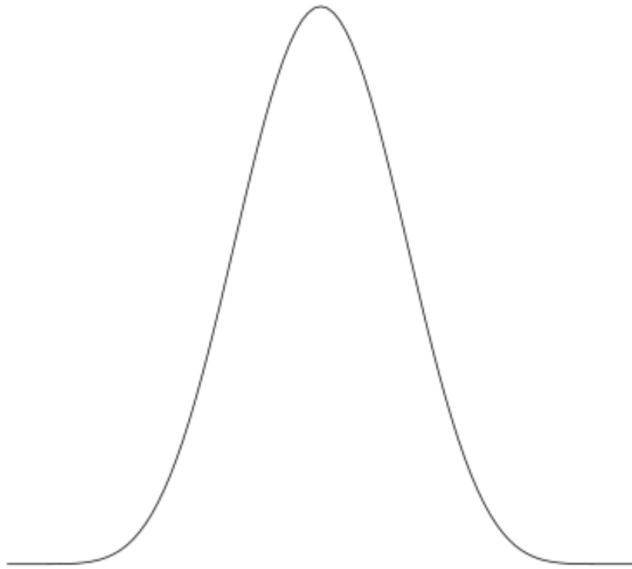
Since this value is positive, we interpret this to mean that the distribution is right-skewed, which means the tail extends to the right side of the distribution.

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.

The following tutorials provide additional information about skewness in statistics: