Skewness

Skewness can be determined using a formula:

$$Skewness = \frac{3(Mean - Median)}{StandardDeviation}$$

Consider the following data list for days of absences in a class of 10 students:

Days of absences = { 1, 2, 2, 3, 3, 3, 3,4, 4, 5}

Median is the middle number which is 3.

Mean is the sum of all numbers divided by 10:

1 + 2 + 2 + 3 + 3 + 3 + 3 + 4 + 4 + 5 = 30

Mean = 30/10 = 3

Sample standard deviation = $s = \sqrt{\frac{(x_1-\bar{x})^2+(x_2-\bar{x})^2+\ldots+(x_n-\bar{x})^2}{n-1}}$ = 1.155

Skewness = 3(Mean - Median)/Standard Deviation = 3 (3 - 3)/1.155 = 0

This skewness example has zero skewness, meaning it has symmetry and is shaped like a bell curve.

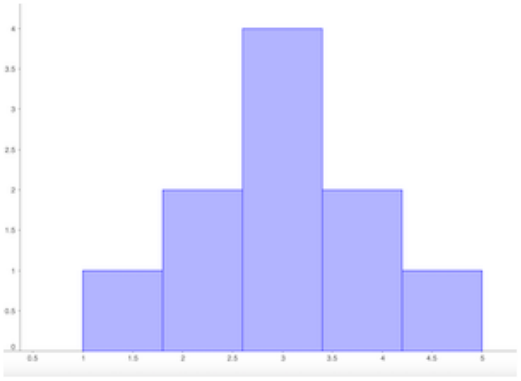

Fig. 2 Histogram showing zero skewness from example 1 data set.

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

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.