

How do I use the NORM.DIST function in Excel?

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The NORM.DIST function in Excel is a statistical function that calculates the probability density of a given value in a normal distribution. To use this function, the user must first enter the value they want to calculate the probability for, followed by the mean and standard deviation of the distribution. This function can be useful in analyzing and understanding data sets that follow a normal distribution. It can be accessed through the "Formulas" tab in Excel and is commonly used in various fields such as finance, economics, and science. By utilizing the NORM.DIST function, users can quickly and accurately analyze data and make informed decisions.

Returns the normal distribution for the specified mean and standard deviation. This function has a very wide range of applications in statistics, including hypothesis testing.

Syntax

NORM.DIST(x,mean,standard_dev,cumulative)

The NORM.DIST function syntax has the following arguments:

X Required. The value for which you want the distribution.

Mean Required. The arithmetic mean of the distribution.

Standard_dev Required. The standard deviation of the distribution.

Cumulative Required. A logical value that determines the form of the function. If cumulative is TRUE, NORM.DIST returns the cumulative distribution function; if FALSE, it returns the probability density function.

Remarks

If mean or standard_dev is nonnumeric, NORM.DIST returns the #VALUE! error value.

If standard_dev ≤ 0, NORM.DIST returns the #NUM! error value.

If mean = 0, standard_dev = 1, and cumulative = TRUE, NORM.DIST returns the standard normal distribution, NORM.S.DIST.

The equation for the normal density function (cumulative = FALSE) is:

$$f(x; \mu, \sigma) = \frac{1}{\sqrt{2\pi}\sigma} e^{-\left(\frac{(x-\mu)^2}{2\sigma^2}\right)}$$

When cumulative = TRUE, the formula is the integral from negative infinity to x of the given formula.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Data	Description	
42	Value for which you want the distribution	
40	Arithmetic mean of the distribution	
1.5	Standard deviation of the distribution	
Formula	Description	Result
=NORM.DIST(A2,A3,A4,TRUE)	Cumulative distribution function for the terms above	0.9087888
=NORM.DIST(A2,A3,A4,FALSE)	Probability mass function for the terms above	0.10934