

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

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The CONFIDENCE.NORM function in Excel is a statistical tool that allows users to calculate the confidence interval for a population mean. It is useful in situations where the sample size is large and the population standard deviation is unknown. To use this function, users need to input the desired confidence level and the sample size, and the function will return the confidence interval for the mean. This information can be used to make more accurate and reliable decisions when analyzing data. The CONFIDENCE.NORM function is a valuable tool for conducting statistical analysis in Excel and can be easily accessed through the program's formula bar.

Returns the confidence interval for a population mean, using a normal distribution.

Description

The confidence interval is a range of values. Your sample mean, x , is at the center of this range and the range is $x \pm \text{CONFIDENCE.NORM}$. For example, if x is the sample mean of delivery times for products ordered through the mail, $x \pm \text{CONFIDENCE.NORM}$ is a range of population means. For any population mean, μ_0 , in this range, the probability of obtaining a sample mean further from μ_0 than x is greater than alpha; for any population mean, μ_0 , not in this range, the probability of obtaining a sample mean further from μ_0 than x is less than alpha. In other words, assume that we use x , standard_dev , and size to construct a two-tailed test at significance level alpha of the hypothesis that the population mean is μ_0 . Then we will not reject that hypothesis if μ_0 is in the confidence interval and will reject that hypothesis if μ_0 is not in the confidence interval. The confidence interval does not allow us to infer that there is probability $1 - \alpha$ that our next package will take a delivery time that is in the confidence interval.

Syntax

`CONFIDENCE.NORM(alpha,standard_dev,size)`

The CONFIDENCE.NORM function syntax has the following arguments:

Alpha Required. The significance level used to compute the confidence level. The confidence level equals $100 \times (1 - \alpha)\%$, or in other words, an alpha of 0.05 indicates a 95 percent confidence level.

Standard_dev Required. The population standard deviation for the data range and is assumed to be known.

Size Required. The sample size.

Remarks

If any argument is nonnumeric, CONFIDENCE.NORM returns the #VALUE! error value.

If $\alpha \leq 0$ or $\alpha \geq 1$, CONFIDENCE.NORM returns the #NUM! error value.

If $\text{standard_dev} \leq 0$, CONFIDENCE.NORM returns the #NUM! error value.

If size is not an integer, it is truncated.

If $\text{size} < 1$, CONFIDENCE.NORM returns the #NUM! error value.

If we assume alpha equals 0.05, we need to calculate the area under the standard normal curve that equals $(1 - \alpha)$, or 95 percent. This value is ± 1.96 . The confidence interval is therefore:



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