How can I use the VAR.P function in Excel to calculate the population variance of a dataset?

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The VAR.P function in Excel is a statistical tool that allows users to calculate the population variance of a dataset. This function takes into account all the data points in the dataset, making it a more accurate measure of variability compared to the sample variance. To use the VAR.P function, simply input the dataset values into the designated cells and use the function to calculate the population variance. This function is useful for analyzing large datasets and determining the spread of data points around the mean. By using the VAR.P function, users can obtain a comprehensive understanding of the variability within the population dataset.

Calculates variance based on the entire population (ignores logical values and text in the population).

Syntax

VAR.P(number1,,...)

The VAR.P function syntax has the following arguments:

Number1 Required. The first number argument corresponding to a population.

Number2, ... Optional. Number arguments 2 to 254 corresponding to a population.

Remarks

VAR.P assumes that its arguments are the entire population. If your data represents a sample of the population, then compute the variance by using VAR.S.

Arguments can either be numbers or names, arrays, or references that contain numbers.

Logical values, and text representations of numbers that you type directly into the list of arguments are counted.

If an argument is an array or reference, only numbers in that array or reference are counted. Empty cells, logical values, text, or error values in the array or reference are ignored.

Arguments that are error values or text that cannot be translated into numbers cause errors.

If you want to include logical values and text representations of numbers in a reference as part of the calculation, use the VARPA function.

The equation for VAR.P is:

$$\frac{\sum(x-\bar{x})^2}{n}$$

where x is the sample mean AVERAGE(number1,number2,...) and n is the sample size.

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.

Strength		
1,345		
1,301		
1,368		
1,322		
1,310		
1,370		
1,318		
1,350		
1,303		
1,299		
Formula	**Description**	**Result**
=VAR.P(A2:A11)	Variance of breaking strengths for all the tools, assuming that only 10 tools are produced (the entire population is used).	678.84
=VAR.S(A2:A11)	The variance, using the VAR.S function, which assumes only a sample of the population is tested. The result is different from VAR.P.	754.27