How can I calculate sample and population variance in Excel?

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Calculating sample and population variance in Excel can be done using the built-in functions and formulas available in the software. To calculate sample variance, you can use the formula "=VAR.S(range)" where "range" represents the cells containing the sample data. This formula will return the variance of the sample data set.

To calculate population variance, you can use the formula "=VAR.P(range)" where "range" represents the cells containing the population data. This formula will return the variance of the population data set.

In both cases, it is important to ensure that the data is organized in a column or row format and that any missing values are represented with either a blank cell or a "0". Additionally, it is recommended to use a large enough sample size to accurately represent the population.

By using these formulas, you can easily calculate the sample and population variance in Excel, providing valuable insights into the variability of the data set. This information can be used for statistical analysis and making informed decisions in various fields such as finance, economics, and research.

Calculate Sample & Population Variance in Excel

The variance is a way to measure of values in a dataset.

The formula to calculate population variance is:

$\sigma 2 = \Sigma (xi - \mu)2 / N$

where:

Σ: A symbol that means "sum"μ: Population meanxi: The ith element from the populationN: Population size

The formula to calculate sample variance is:

s2 = Σ (xi - x)2 / (n-1)

where:

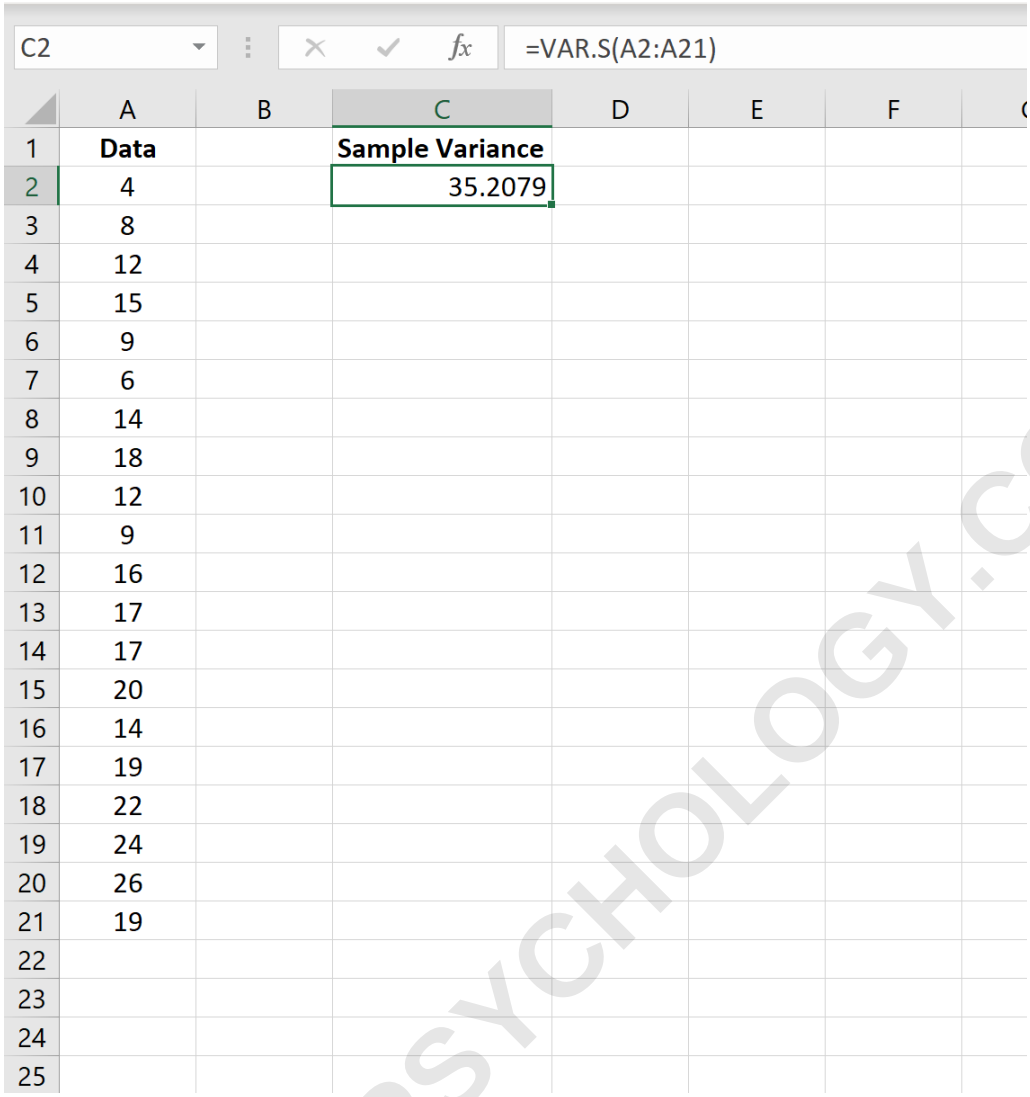
x: Sample meanxi: The ith element from the samplen: Sample size

We can use the VAR.S() and VAR.P() formulas in Excel to quickly calculate the sample variance and population variance (respectively) for a given dataset.

The following examples show how to use each function in practice.

Example 1: Calculating Sample Variance in Excel

The following screenshot shows how to use the VAR.S() function to calculate the sample variance of the values in column A:

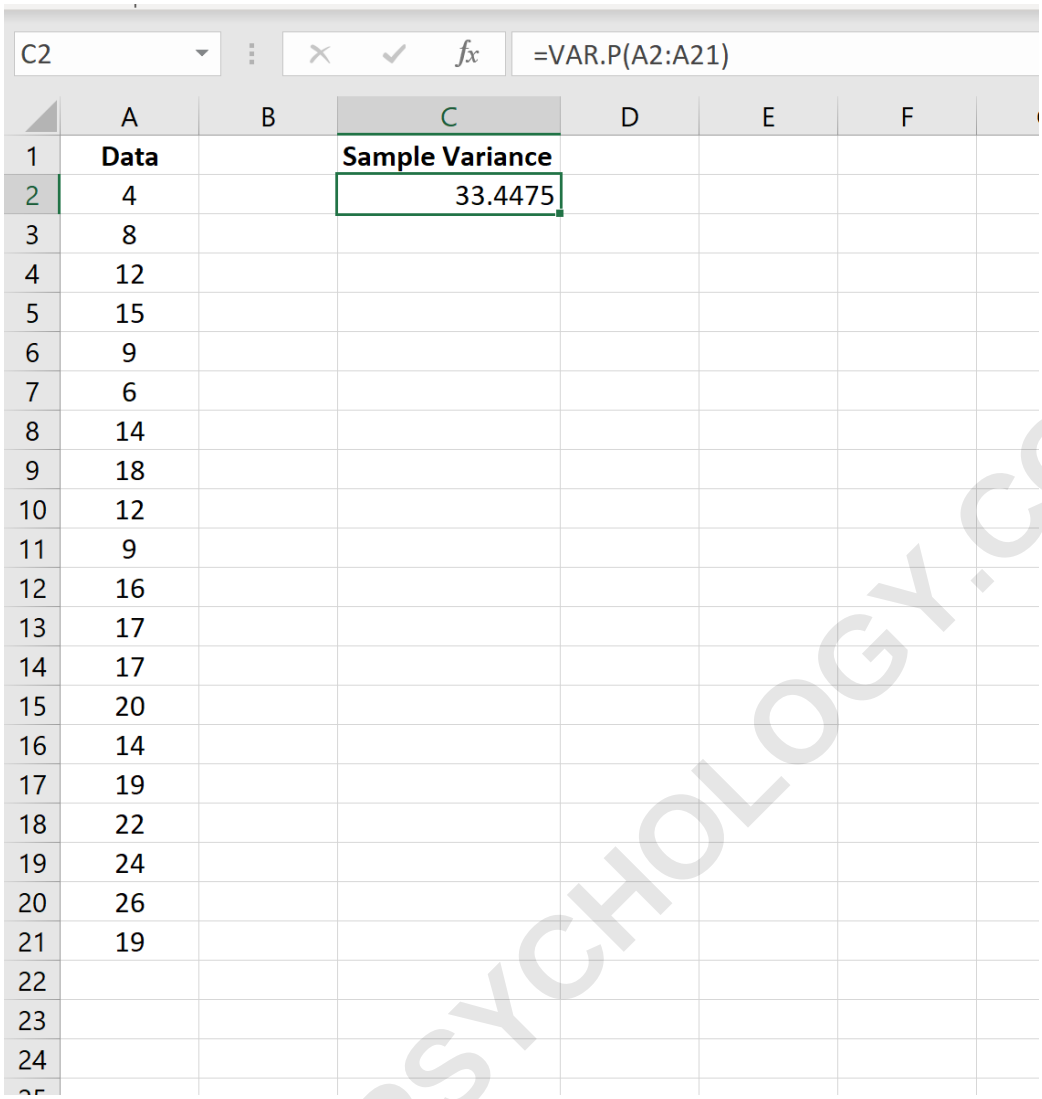


	A	B	C	D	E	F
1	Data		Sample Variance			
2	4		35.2079			
3	8					
4	12					
5	15					
6	9					
7	6					
8	14					
9	18					
10	12					
11	9					
12	16					
13	17					
14	17					
15	20					
16	14					
17	19					
18	22					
19	24					
20	26					
21	19					
22						
23						
24						
25						

The sample variance turns out to be 35.2079.

Example 2: Calculating Population Variance in Excel

The following screenshot shows how to use the VAR.P() function to calculate the population variance of the values in column A:



The population variance turns out to be 33.4475.

Notes on Calculating Sample & Population Variance

Keep in mind the following when calculating the sample and population variance:

You should calculate the population variance when the dataset you're working with represents an entire

population, i.e. every value that you're interested in.You should calculate the sample variance when the dataset you're working with represents a a sample taken from a larger population of interest.The sample variance of a dataset will always be larger than the population variance for the same dataset because there is more uncertainty when calculating the sample variance, thus our estimate of the variance will be larger.

The following tutorials explain how to calculate other measures of spread in Excel: