

What is the process for calculating standard deviation in Google Sheets for both sample and population data?

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Standard deviation is a statistical measure that indicates the amount of variation or dispersion in a set of data. In Google Sheets, the process for calculating standard deviation for both sample and population data involves using the built-in function "STDEV" or "STDEVP", depending on the type of data. For sample data, the formula would be "`=STDEV(data range)`", while for population data, it would be "`=STDEVP(data range)`". This function calculates the standard deviation by taking the square root of the sum of squared differences between each data point and the mean of the data set. The result is a numerical value that can be used to analyze the spread of the data and make comparisons between different data sets.

Standard Deviation in Google Sheets (Sample & Population)

Standard deviation is one of the most common ways to measure the in a dataset.

There are two different types of standard deviations you can calculate, depending on the type of data you're working with.

1. Population standard deviation

You should calculate the population standard deviation when the dataset you're working with represents an entire population, i.e. every value that you're interested in.

The formula to calculate a population standard deviation, denoted as σ , is:

$$\sigma = \sqrt{\sum (x_i - \mu)^2 / N}$$

where:

Σ : A symbol that means "sum"

x_i : The i th value in a dataset

μ : The population mean

N : The population size

2. Sample standard deviation

You should calculate the sample standard deviation when the dataset you're working with represents a sample taken from a larger population of interest.

The formula to calculate a sample standard deviation, denoted as s , is:

$$s = \sqrt{\sum (x_i - \bar{x})^2 / (n - 1)}$$

where:

Σ : A symbol that means "sum"

x_i : The i th value in a dataset

$\bar{x}$: The sample mean

n : The sample size

The following examples show how to calculate the sample and population standard deviation in Google Sheets.

Example 1: Calculating Sample Standard Deviation in Google Sheets

Suppose a biologist wants to summarize the standard deviation of the weight of a particular species of turtles so she collects a of 20 turtles from the population.

The following screenshot shows how to use the STDEV.S() function to calculate the sample standard deviation:

C2		<i>fx</i>	=STDEV.S(A2:A21)			
	A	B	C	D	E	
1	Weights					
2	300		11.910			
3	298					
4	267					
5	288					
6	288					
7	289					
8	304					
9	307					
10	300					
11	312					
12	295					
13	267					
14	289					
15	304					
16	295					
17	296					
18	297					
19	300					
20	304					
21	309					
22						

The sample standard deviation turns out to be 11.91.

Note that STDEV() will also return the sample standard deviation.

Example 2: Calculating Population Standard Deviation in Google Sheets

Suppose a basketball coach wants to summarize the standard deviation of points scored by the 12 players on his team.

Since he is only interested in the points scored by his players and not any other players on any other team, he can calculate the population standard deviation.

The following screenshot shows how to use the STDEV.P() function to calculate the population standard deviation:

C2	∇	<i>fx</i>	=STDEV.P(A2:A13)		
	A	B	C	D	
1	Points Scored				
2	13		7.331		
3	7				
4	15				
5	18				
6	22				
7	6				
8	4				
9	7				
10	29				
11	18				
12	9				
13	7				
14					
15					
16					
17					
18					
19					
20					

The population standard deviation turns out to be 7.331.

The following tutorials offer additional information about standard deviation:

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

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