

How do I perform an F-Test in Google Sheets?

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April 29, 2024

RECOMMENDED CITATION

stats writer (2024). *How do I perform an F-Test in Google Sheets?*. PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=140987>

An F-Test is a statistical test used to compare the variances of two sets of data. To perform an F-Test in Google Sheets, begin by organizing your data into two columns. Then, select the two columns and go to the "Data" tab, followed by "Data Analysis." In the pop-up window, select "F-Test: Two-Sample for Variances" and click "OK." This will generate the F-Test results, including the F-Statistic and p-value, which can be used to determine if the variances of the two data sets are significantly different. This test can be helpful in determining the significance of a change or difference between two sets of data.

F-Test in Google Sheets (Step-by-Step)

The F-test is used to determine whether or not two population variances are equal.

The F-test uses the following null and alternative hypotheses:

H₀: The population variances are equal ($\sigma_1^2 = \sigma_2^2$)
H_A: The population variances are not equal ($\sigma_1^2 \neq \sigma_2^2$)

If the p-value of the test is less than some significance level (e.g. $\alpha = .05$) then we can reject the null hypothesis and conclude that the population variances are not equal.

The following step-by-step example shows how to perform the F-test in Google Sheets.

Step 1: Enter the Data

First, let's enter the data values for two samples:

	A	B	C	D	E
1	Group 1	Group 2			
2	9	13			
3	12	14			
4	14	15			
5	14	16			
6	16	16			
7	19	18			
8	22	19			
9	23	20			
10	24	21			
11	26	21			
12	27	23			
13	29				
14					
15					
16					
17					
18					
19					
20					

Note: The sample sizes do not have to be equal between the two groups to perform the F-test.

Step 2: Perform the F-Test

Next, we will use the =FTEST(sample1, sample2) function to perform the F-test:

	A	B	C	D	E
D2	=fptest(A2:A13, B2:B12)				
1	Group 1	Group 2			
2	9	13		0.0367	
3	12	14			
4	14	15			
5	14	16			
6	16	16			
7	19	18			
8	22	19			
9	23	20			
10	24	21			
11	26	21			
12	27	23			
13	29				
14					
15					
16					
17					
18					

The p-value of the test turns out to be .0367.

Since this p-value is less than $\alpha = .05$, we will reject the null hypothesis.

This means we have sufficient evidence to say that the variances between the two populations that the samples came from are not equal.

Note: The p-value returned by the FTEST() function represents the two-tailed p-value.

Thus, if you were performing a one-tailed test ($H_A: \sigma_1^2 > \sigma_2^2$)

< σ_1^2 or $H_A: \sigma_1^2 > \sigma_2^2$) then you could simply multiply the resulting p-value by two to get the one-tailed p-value.

The following tutorials explain how to perform other common tasks in Google Sheets:

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