

# How do you find the P-value for a correlation coefficient in Excel?

Authored by  
**stats writer**

April 17, 2024

## RECOMMENDED CITATION

stats writer (2024). *How do you find the P-value for a correlation coefficient in Excel?*. PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=136289>

The P-value for a correlation coefficient in Excel is calculated using the function "CORREL". This function takes two data sets as inputs and calculates the correlation coefficient between them. To find the P-value for this correlation coefficient, the function "TTEST" is used. This function takes the correlation coefficient as the input and calculates the P-value using a t-distribution. The result of the "TTEST" function is the P-value for the correlation coefficient, which indicates the probability of obtaining the observed correlation coefficient by chance alone. A lower P-value indicates a stronger correlation between the two data sets. This method allows users to easily find the P-value for a correlation coefficient in Excel, providing a reliable measure of the strength of the relationship between two variables.

## Find the P-value for a Correlation Coefficient in Excel

**One way to quantify the relationship between two variables is to use the , which is a measure of the linear association between two variables.**

**It always takes on a value between -1 and 1 where:**

**-1 indicates a perfectly negative linear correlation between two variables  
0 indicates no linear correlation between two variables  
1 indicates a perfectly positive linear correlation between two variables**

**To determine if a correlation coefficient is statistically significant, you can calculate the corresponding t-score and p-value.**

**The formula to calculate the t-score of a correlation coefficient (r) is:**

$$t = r\sqrt{(n-2)} / \sqrt{(1-r^2)}$$

The p-value is calculated as the corresponding two-sided p-value for the t-distribution with n-2 degrees of freedom.

The following example shows how to calculate a p-value for a correlation coefficient in Excel.

#### P-Value for a Correlation Coefficient in Excel

The following formulas show how to calculate the p-value for a given correlation coefficient and sample size in Excel:

	A	B	C	D
1	Correlation coefficient (r)	0.56		
2	Sample size (n)	14		
3				
4	t	<b>2.341478</b>	=B1*SQRT(B2-2)/SQRT(1-B1^2)	
5				
6	p-value	<b>0.037285</b>	=T.DIST.2T(B4, B2-2)	
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				

**For a correlation coefficient of  $r = 0.56$  and sample size  $n = 14$ , we find that:**

**t-score: 2.341478 p-value: 0.037285**

**Recall that for a correlation test we have the following null and alternative hypotheses:**

**The null hypothesis ( $H_0$ ): The correlation between the two variables is zero.**

**The alternative hypothesis: ( $H_a$ ): The correlation between the two variables is *not* zero, e.g. there is a statistically significant correlation.**

**If we use a significance level of  $\alpha = .05$ , then we would reject the null hypothesis in this case since the (0.037285) is less than .05.**

**The following tutorials explain how to perform other common tasks in Excel:**