

How do I find the P-Value of a Chi-Square Statistic in Excel?

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To find the P-value of a Chi-Square statistic in Excel, follow these steps:

1. Input the observed values and expected values for the data set into separate columns.
2. Use the formula =CHISQ.TEST (observed values, expected values) in a blank cell to calculate the Chi-Square statistic.
3. The result will display the P-value associated with the Chi-Square statistic.
4. Alternatively, you can use the CHITEST function to calculate the P-value without calculating the Chi-Square statistic first.
5. The P-value will indicate the probability of obtaining a Chi-Square statistic equal to or more extreme than the observed value.
6. A low P-value (typically less than 0.05) suggests that the observed data significantly deviates from the expected values and can be considered statistically significant.

In conclusion, utilizing the appropriate Excel functions can easily help determine the P-value of a Chi-Square statistic, providing valuable information in statistical analysis.

Find the P-Value of a Chi-Square Statistic in Excel

Whenever you conduct a Chi-Square test, you will end up with a Chi-Square test statistic. You can then find the p-value that corresponds to this test statistic to determine whether or not the test results are statistically significant.

To find the p-value that corresponds to a Chi-Square test statistic in Excel, you can use the CHISQ.DIST.RT() function, which uses the following syntax:

=CHISQ.DIST.RT(x, deg_freedom)

where:

x: The Chi-Square test statistic
deg_freedom: The degrees of freedom

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

Example 1: Chi-Square Goodness of Fit Test

A shop owner claims that an equal number of customers come into his shop each weekday. To test this hypothesis, an independent researcher records the number of customers that come into the shop on a given week and finds the following:

Monday: 50 customers
Tuesday: 60 customers
Wednesday: 40 customers
Thursday: 47 customers
Friday: 53 customers

After performing a χ^2 test, the researcher finds the following:

Chi-Square Test Statistic (χ^2): 4.36

Degrees of freedom: (df): 4

To find the p-value associated with this Chi-Square test statistic and degrees of freedom, we can use the following formula in Excel:

=CHISQ.DIST.RT(4.36, 4)

Here's what that looks like in Excel:

	A	B	C	D	E	F
1	p-value	formula				
2	0.359472	=CHISQ.DIST.RT(4.36, 4)				
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						

The p-value turns out to be 0.359472. Since this p-value is not less than 0.05, we fail to reject the null hypothesis. This means we do not have sufficient evidence to say that the true distribution of customers is different from the distribution that the shop owner claimed.

Example 2: Chi-Square Test of Independence

Researchers want to know whether or not gender is associated with political party preference. They take a simple random sample of 500 voters and survey them on their political party preference. After performing a , they find the following:

Chi-Square Test Statistic (X²): 0.8642

Degrees of freedom: (df): 2

To find the p-value associated with this Chi-Square test statistic and degrees of freedom, we can use the following code in Excel:

=CHISQ.DIST.RT(0.8642, 2)

Here's what that looks like in Excel:

	A	B	C	D	E	F
1	p-value	formula				
2	0.649144	=CHISQ.DIST.RT(0.8642, 2)				
3						
4						
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The p-value turns out to be 0.649144. Since this p-value is not less than 0.05, we fail to reject the null hypothesis. This means we do not have sufficient evidence to say that there is an association between gender and political party preference.

You can find more Excel tutorials .