

# What is the Chi-Square Critical Value in Python?

Authored by  
**stats writer**

December 25, 2025

## RECOMMENDED CITATION

stats writer (2025). *What is the Chi-Square Critical Value in Python?*. PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=108720>

The Chi-Square Critical Value in Python is a function used to calculate the critical value of the Chi-Square distribution for a given degree of freedom and confidence level. This function is used in hypothesis testing to determine if the results of an experiment are statistically significant or not. It is important to note that the Chi-Square Critical Value is based on the null hypothesis, meaning that it assumes that the observed data follows the expected distribution. If the Chi-Square value is greater than the critical value, then the null hypothesis is rejected and the results of the experiment are considered statistically significant.

When you conduct a Chi-Square test, you will get a test statistic as a result. To determine if the results of the Chi-Square test are statistically significant, you can compare the test statistic to a **Chi-Square critical value**. If the test statistic is greater than the Chi-Square critical value, then the results of the test are statistically significant.

The Chi-Square critical value can be found by using a or by using statistical software.

To find the Chi-Square critical value, you need:

A significance level (common choices are 0.01, 0.05, and 0.10)

Degrees of freedom

Using these two values, you can determine the Chi-Square value to be compared with the test statistic.

## How to Find the Chi-Square Critical Value in Python

To find the Chi-Square critical value in Python, you can use the , which uses the following syntax:

```
scipy.stats.chi2.ppf(q, df)
```

where:

**q**: The significance level to use

**df**: The degrees of freedom

This function returns the critical value from the Chi-Square distribution based on the significance level and degrees of freedom provided.

For example, suppose we would like to find the Chi-Square critical value for a significance level of 0.05 and degrees of freedom = 11.

```
import scipy.stats
```

```
#find Chi-Square critical value  
scipy.stats.chi2.ppf(1-.05, df=11)
```

19.67514

The Chi-Square critical value for a significance level of 0.05 and degrees of freedom = 11 is **19.67514**.

Thus, if we're conducting some type of Chi-Square test then we can compare the Chi-Square test statistic to **19.67514**. If the test statistic is greater than 19.67514, then the results of the test are statistically significant.

Note that smaller values of alpha will lead to larger Chi-Square critical values. For example, consider the Chi-Square critical value for a significance level of **0.01**, and degrees of freedom = 11.

```
scipy.stats.chi2.ppf(1-.01, df=11)
```

24.72497

```
scipy.stats.chi2.ppf(1-.005 df=11)
```

26.75685

*Refer to the for the exact details of the `chi2.ppf()` function.*