

How can I find the Chi-Square critical value in Python?

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The process of finding the Chi-Square critical value in Python involves using the "scipy.stats" module to import the Chi-Square distribution, specifying the degrees of freedom, and then using the "ppf" function to calculate the critical value. This value represents the point on the Chi-Square distribution where the probability of obtaining a value equal to or greater than it is equal to the chosen significance level. By obtaining the Chi-Square critical value, one can determine the statistical significance of their data and make informed decisions in their analysis.

Find the Chi-Square Critical Value in Python

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 `scipy.stats.chi2.ppf`, 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.