What are the critical values in R for finding t?

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Critical values in R refer to the specific cut-off values used to determine the statistical significance of a t-test. These values are based on the degrees of freedom (sample size minus one) and the desired level of significance, typically $\alpha = 0.05$. The critical values are located on a t-distribution table and are used to compare the calculated t-value from the sample data to determine if the difference between two means is statistically significant. In R, the critical values can be obtained using the qnorm() function, with the arguments for the desired level of significance and degrees of freedom. These critical values play a crucial role in hypothesis testing and aid in making informed decisions about the significance of the results obtained from a t-test.

Find t Critical Values in R

Whenever you conduct a t-test, you will get a test statistic as a result. To determine if the results of the t-test are statistically significant, you can compare the test statistic to a t critical value.

If the absolute value of the test statistic is greater than the t critical value, then the results of the test are statistically significant.

The t critical value can be found by using a or by using statistical software.

To find the t critical value, you need to specify:

A significance level (common choices are 0.01, 0.05, and 0.10)The degrees of freedom

Using these two values, you can determine the t critical

value to be compared with the test statistic.

How to Find the T Critical Value in R

To find the T critical value in R, you can use the qt() function, which uses the following syntax:

qt(p, df, lower.tail=TRUE)

where:

p: The significance level to usedf: The degrees of freedomlower.tail: If TRUE, the probability to the left of p in the t distribution is returned. If FALSE, the probability to the right is returned. Default is TRUE.

The following examples illustrate how to find the t critical value for a left-tailed test, right-tailed test, and a two-tailed test.

Left-tailed test

Suppose we want to find the t critical value for a left-tailed test with a significance level of .05 and degrees of freedom = 22:

#find t critical value

qt(p=.05, df=22, lower.tail=TRUE)

-1.717144

The t critical value is -1.7171. Thus, if the test statistic is less than this value, the results of the test are statistically significant.

Right-tailed test

#find t critical value
qt(p=.05, df=22, lower.tail=FALSE)

1.717144

The t critical value is 1.7171. Thus, if the test statistic is greater than this value, the results of the test are statistically significant.

Two-tailed test

Suppose we want to find the t critical values for a two-tailed test with a significance level of .05 and degrees of freedom = 22:

#find two-tailed t critical values

qt(p=.05/2, df=22, lower.tail=FALSE)

2.073873

Whenever you perform a two-tailed test, there will be two critical values. In this case, the T critical values are 2.0739 and -2.0739.

Thus, if the test statistic is less than -2.0739 or greater than 2.0739, the results of the test are statistically significant.

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