

# How can I find the P-value from a t-score using Python?

Authored by  
**stats writer**

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The process of finding the P-value from a t-score using Python involves utilizing the statistical functions and modules available in the Python programming language. This includes importing the necessary libraries, calculating the t-statistic using the given data, and then using the appropriate function to determine the corresponding P-value. By following these steps, one can accurately and efficiently find the P-value associated with a specific t-score using Python.

## Find a P-Value from a t-Score in Python

Often in statistics we're interested in determining the associated with a certain t-score that results from a . If this p-value is below some significance level, we can reject the null hypothesis of our hypothesis test.

To find the p-value associated with a t-score in Python, we can use the , which uses the following syntax:

```
scipy.stats.t.sf(abs(x), df)
```

where:

**x:** The t-score **df:** The degrees of freedom

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

Left-tailed test

Suppose we want to find the p-value associated with a

**t-score of -0.77 and df = 15 in a left-tailed hypothesis test.**

```
import scipy.stats
```

```
#find p-value
```

```
scipy.stats.t.sf(abs(-.77), df=15)
```

```
0.2266283049085413
```

**The p-value is 0.2266. If we use a significance level of  $\alpha = 0.05$ , we would fail to reject the null hypothesis of our hypothesis test because this p-value is not less than 0.05.**

**Right-tailed test**

**Suppose we want to find the p-value associated with a t-score of 1.87 and df = 24 in a right-tailed hypothesis test.**

```
import scipy.stats
```

```
#find p-value
```

```
scipy.stats.t.sf(abs(1.87), df=24)
```

```
0.036865328383323424
```

The p-value is 0.0368. If we use a significance level of  $\alpha = 0.05$ , we would reject the null hypothesis of our hypothesis test because this p-value is less than 0.05.

Two-tailed test

Suppose we want to find the p-value associated with a t-score of 1.24 and  $df = 22$  in a two-tailed hypothesis test.

```
import scipy.stats

#find p-value for two-tailed test
scipy.stats.t.sf(abs(1.24), df=22)*2

0.22803901531680093
```

The p-value is 0.2280. If we use a significance level of  $\alpha = 0.05$ , we would fail to reject the null hypothesis of our hypothesis test because this p-value is not less than 0.05.

*You can also use this online to find p-values.*