

What are the values of t that correspond to a significance level of $\text{Alpha}/2$?

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The values of t that correspond to a significance level of Alpha/2 refer to the critical values of the t-distribution that divide the area under the curve into two equal parts, with each part representing an area of Alpha/2. These values are used in hypothesis testing to determine the rejection region for a two-tailed test, where the null hypothesis will be rejected if the calculated t-statistic falls outside of this region. In other words, the values of t that correspond to a significance level of Alpha/2 provide a threshold for determining the level of significance in a statistical test.

Find t Alpha/2 Values

Whenever you come across the term $t_{\alpha/2}$ in statistics, it is simply referring to the t critical value from the t-distribution table that corresponds to $\alpha/2$.

This tutorial explains the following:

How to find $t_{\alpha/2}$ using a z table. How to find $t_{\alpha/2}$ using a calculator. How to use $t_{\alpha/2}$ values.

Let's jump in!

How to find $t_{\alpha/2}$ using a t table

Suppose we want to find $t_{\alpha/2}$ for some test that is using the following values:

Alpha Level: 0.10 Types of test: Two-tailed Degrees of freedom: 20

Using a t-distribution table, we can find that the t critical

value is 1.725:

	P						
one-tail	0.1	0.05	0.025	0.01	0.005	0.001	0.0005
two-tails	0.2	0.1	0.05	0.02	0.01	0.002	0.001
DF							
1	3.078	6.314	12.706	31.821	63.656	318.289	636.578
2	1.886	2.92	4.303	6.965	9.925	22.328	31.6
3	1.638	2.353	3.182	4.541	5.841	10.214	12.924
4	1.533	2.132	2.776	3.747	4.604	7.173	8.61
5	1.476	2.015	2.571	3.365	4.032	5.894	6.869
6	1.44	1.943	2.447	3.143	3.707	5.208	5.959
7	1.415	1.895	2.365	2.998	3.499	4.785	5.408
8	1.397	1.86	2.306	2.896	3.355	4.501	5.041
9	1.383	1.833	2.262	2.821	3.25	4.297	4.781
10	1.372	1.812	2.228	2.764	3.169	4.144	4.587
11	1.363	1.796	2.201	2.718	3.106	4.025	4.437
12	1.356	1.782	2.179	2.681	3.055	3.93	4.318
13	1.35	1.771	2.16	2.65	3.012	3.852	4.221
14	1.345	1.761	2.145	2.624	2.977	3.787	4.14
15	1.341	1.753	2.131	2.602	2.947	3.733	4.073
16	1.337	1.746	2.12	2.583	2.921	3.686	4.015
17	1.333	1.74	2.11	2.567	2.898	3.646	3.965
18	1.33	1.734	2.101	2.552	2.878	3.61	3.922
19	1.328	1.729	2.093	2.539	2.861	3.579	3.883
20	1.325	1.725	2.086	2.528	2.845	3.552	3.85
21	1.323	1.721	2.08	2.518	2.831	3.527	3.819
22	1.321	1.717	2.074	2.508	2.819	3.505	3.792
23	1.319	1.714	2.069	2.5	2.807	3.485	3.768
24	1.318	1.711	2.064	2.492	2.797	3.467	3.745
25	1.316	1.708	2.06	2.485	2.787	3.45	3.725
26	1.315	1.706	2.056	2.479	2.779	3.435	3.707

How to find $t_{\alpha/2}$ using a calculator

We can also use the Inverse t Distribution Calculator to find $t_{\alpha/2}$ for some test.

For example, suppose we once again want to find $t_{\alpha/2}$ for some test that is using the following values:

Alpha Level: 0.10
Types of test: Two-tailed
Degrees of freedom: 20

We can enter the following values into the calculator and find that the t critical value is 1.7247:

Degrees of freedom

20

Confidence level

0.90

CALCULATE

One-sided t-Score: **1.3253**

Two-sided t-Score: **1.7247**

This matches the t critical value that we found in the t distribution table.

How to Use $\alpha/2$ Values

The basic process for doing so is as follows:

Step 1: Calculate the test statistic using raw data.

Step 2: Compare the test statistic to the t critical value

$(t_{\alpha/2})$.

Step 3: Reject or fail to reject the null hypothesis of the test.

If the absolute value of the t test statistic is greater than the t critical value, then we can reject the null hypothesis of the test.

Otherwise, if the absolute value of the t test statistic is less than the t critical value, then we fail to reject the null hypothesis.