Using Excel to find the p-values for t test statistics

There is no table to look up p-values for t test statistics. This is because there is a different t distribution for every degree of freedom, so you would need to carry around a book of different t-tables to have them all. Instead, you can use Excel to look up tail probabilities for t test statistics.

1. For an **upper tail test** with the t test statistic = and degrees of freedom = use the **t.dist.rt()** function in Excel to get the upper tail p-value.

*Example*. Find the upper tail p-value of

Type this into Excel: **=t.dist.rt(2.31, 12)**. You get the upper tail p-value = 0.01974.

1. For a **lower tail test** with the t test statistic = and degrees of freedom = use the **t.dist(, TRUE)** function to get the lower tail p-value. Note: the third argument has to be the word “true” because that tells Excel to use the cumulative t distribution which gives the probability from the left up to That is the LT p-value you need here.

*Example*. Find the lower tail p-value of

Type this into Excel: **=t.dist(-1.83, 59, TRUE)**. You get the lower tail p-value = 0.03615.

1. For a **two-tailed test** with the t test statistic = and degrees of freedom = , you need to identify which tail of the t distribution your is in, like this:

* **If is positive,** then it is in the **upper tail.** To get the 2T p-value, multiply the upper tail p-value of by two. (Calculate the UT p-value using the function from #1 above).

*Example*. Find the two-tailed p-value of

Type into Excel: **=2\*t.dist.rt(1.49, 104)** and you get the two-tailed p-value = 0.1393.

* **If is negative,** then it is in the **lower tail.** To get the 2T p-value, multiply the lower tail p-value of by two. (Calculate the LT p-value using the function from #2 above).

*Example*. Find the two-tailed p-value of

Type into Excel: **=2\*t.dist(-2.67, 11, TRUE)** and you get the two-tailed p-value = 0.02179.