Using Excel to find the p-values for test statistics

There is no table to look up p-values for test statistics. Instead, you must use Excel to look up tail probabilities for test statistics.

1. For an **upper tail test** with the test statistic = and degrees of freedom = use the **CHISQ.DIST.RT ( )** function in Excel to find the upper tail p-value.

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

Type into Excel: **=CHISQ.DIST.RT(32.5, 18)** and you get upper tail p-value = 0.01917.

1. For a **lower tail test** with the test statistic = and degrees of freedom = use the **CHISQ.DIST( , TRUE)** function with the cumulative argument set to TRUE in Excel to find the lower tail p-value.

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

Type into Excel: **=CHISQ.DIST(14.3, 22, TRUE)** and you get the lower tail p-value = 0.1095

1. For a **two-tailed test** with the test statistic = and degrees of freedom = , you must first determine which tail your test statistic is in. The mean of a chi-square distribution is the degrees of freedom! So, if your test statistic is greater than *df*, then it is in the upper tail. Likewise, if your test statistic is less than the *df*, then it is in the lower tail.

* **If ,** then it is in **upper tail.** To get the 2T p-value, multiply the upper tail p-value of by two.
  + *Example.* Calculate the two-tailed p-value of

Since 49.4 > 43, is in the upper tail, so the two-tailed p-value will be **=2\*CHISQ.DIST.RT(49.4,43)**, which is 0.4656

* **If ,** then it is in **lower tail.** To get the 2T p-value, multiply the lower tail p-value of by two.
  + *Example.* Find the two-tailed p-value of

Since 26.35 < 43, is in the lower tail, so the two-tailed p-value will be **=2\*CHISQ.DIST(26.35, 43, TRUE)**, which is 0.04286