A.1: Distribution tables

Tables of common probability distributions

The appendix provides critical values and probabilities for a few of the most common probability distributions. The tables were generated by appropriate functions in R. Code is provides with each statistical table

Table of Z of standard normal probabilities

Table of Chi-square critical values

Table of Critical values of Student's t-distribution

Table of Critical values of F-distribution

Interpolating p-values

We have a calculated test statistic of 3.333 from a chi-square test; how likely is it that our test statistic value of 3.333 and the null hypothesis are true? (Remember, "true" in this case is a shorthand for our data was sampled from, for example, a population in which the Hardy-Weinberg expectations hold). When I check the table of critical values of the chi-square test for the "exact" p-value, I find that our test statistic value falls between a p-value of 0.10 and 0.05 (represented in the table below). How can I find our exact p-value, u (unknown)?

statistic	p-value
3.841	0.05
3.333	u
2.706	0.10

Short answer, use R. In the case of interpolating to find u. If we assume the change in probability between 2.706 and 3.841 for the chi-square distribution is linear (it's not, but it's close), then we can do so simple interpolation.

We set up what we know on the right hand side, equal to what we don't know on the left hand side of the equation:

$$\frac{u - 0.10}{0.05 - 0.10} = \frac{3.333 - 2.706}{3.841 - 2.706}$$

and solve for u. Then, u is equal to 0.0724.

R function `pchisq()` gives a value of P = 0.0679. Our interpolated value is close, but not the same. Of course, you should go with the result from R; we mention how to get the approximate p-value by interpolation for completeness, and, in some rare instances, you might need to make the calculation.