Lecture Outlines:

* Large Sample Confidence Interval for a Population Proportion (Sec 7.2)
* Small Sample Confidence Interval for (Sec 7.3).

1. Large Sample Confidence Interval for a Population Proportion (Sec 7.2).

Let denote the proportion of “success” in a population (i.e., the proportion of individuals who graduated from college). A random sample of individuals is to be selected, and is the number of successes in the sample. The point estimate of is the sample proportion . When is large, approximately has the normal distribution with mean and variance . From this fact, the confidence interval can be derived as (please read p.266 of the textbook for details)

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1. Small Sample Confidence Interval for

Here we assume that a random sample is from a normal distribution and the sample size . We will use the following fact to construct the confidence interval for :

has a distribution with degrees of freedom. The critical values are provided in Table A.5. It follows that the confidence interval is

Note that the critical value corresponds to degrees of freedom. For example, for a sample size 16, the critical value for the 95% confidence interval is from Table A.5.

Please read Example 7.11 on page 273.