Project Two Assignment for Statistics 371 in Fall 2013

November 5, 2013

The project assignment is described below. You must submit a written report for your project. You may work alone or as a member of a team of three or fewer persons. If you work as a team, only one report should be submitted by the team (remember to include everyone’s name on the report!) and all members of the team will receive the same grade. Neither my expectations for nor grading of reports is influenced by the size of the team.

Please submit legible reports. For many of you, this will mean words typed, and “nonwords” (e.g. tables, figures, formulas, and computations) drawn by hand.

I want you to perform/observe 100 dichotomous trials under fixed conditions; i.e., this project covers the materials in Chapters 11, 12 and 14, not Chapters 15 and 16. When you define your trials and conditions, attempt to make choices so that your total number of successes in 100 trials is between, say, 25 and 75. In other words, don’t make the trials too easy and don’t make them too difficult. If you obtain fewer than 25 [more than 75] successes, you won’t have as much fun analyzing your data! (I will, however, accept your report regardless of the number of successes you obtain; i.e., you don’t need to repeat your study.)

Your report should include the following information.

1. Before you collect data, make a conjecture on the value of \( p \); call it \( p_c \).

2. List your 100 responses in the order they were obtained. Following the terminology in Chapter 11, calculate the observed values of R, V and W and comment. In particular, does your sequence look like Bernoulli trials? Do not attempt to calculate a P-value for your data.

3. Obtain the 95% confidence interval estimate of \( p \) two ways:
   - Use the approximate method, even if our conditions for its use are not met.
   - Use the website to obtain the ‘exact’ confidence interval.

   Compare your two confidence intervals and comment. What do your CIs tell you about your conjecture \( p_c \)?

4. Use the data from your 100 trials to obtain the 90% prediction interval for the total number of successes you would obtain in \( m = 100 \) future trials.