Stat 452
Spring 2021

Homework 3, due Fri, Feb. 26 by midnight

Please do this assignment in R Markdown and submit the Rmd file in Moodle. Include `warning=FALSE` and `message=FALSE` in your knitr options. Reduce size of plots to make a readable report. Clearly label where a problem starts. Interleave R code and output with text.

1. Problem R.7.12, p. 903. Data set is NuclearPlants.csv

2. This problem uses the file Logging.csv with variables `group`, `trees`, and `species`. Researchers compared forest plots in Borneo that had never been logged (group 1) with nearby plots that had been logged 1 year earlier (group 2) and 8 years earlier (group 3). The authors claimed that the plots could be viewed as independent random samples of plots from the different logging types. Evaluate whether the data provide evidence that the mean number of species and the mean number of trees are different across the three populations. Include appropriate graphical and numerical summaries as well as the assessment of assumptions, appropriate analyses, interpretations and pairwise confidence intervals. Include rank tests and permutation tests also for comparison to ANOVA.

3. What types of conclusions can we make about the effects of logging from a study like the one in problem 2? Suppose you were faced with designing a similar study under two different scenarios: 1) the logging has not taken place yet but you have no control over which areas will be logged, 2) the logging has not taken place and you can decide which areas will be logged.