Investigation 8: Crash tests? (assigned on Thur Feb 9, due on Tues Feb 14)
You may work with in a group of as many as three students on this assignment, handing in one report with all names, provided that you all contribute to the work. You must submit a word-processed report, with computer output integrated into your report as appropriate.

Consider again the data on crash test results in the Minitab worksheet crash.mtw, available from our course webpage. Now consider investigating possible differences in head injury measurements based on the type of protective device(s) in the vehicle.

a) Examine (and submit) dotplots to compare head injury measurements among the different categories of protective devices. Also calculate (and submit) means and SDs of the head injury measurements for each group. Comment on what the graphs and statistics reveal.

Before continuing with the analysis, make two modifications to the dataset:
- Because there were only 4 vehicles in the study with airbags for both driver and passenger, delete those vehicles from the analysis. (You can simply delete their information in the “protection” column.)
- Because the distributions of head injury measurements are skewed to the right, apply a log (base 10) transformation to this variable. (Type `let c15 = logten(c5)` at the MTB > prompt in the Session window.)

b) Repeat a) on the log-transformed data.

c) Comment on whether the technical conditions for the ANOVA F-test are satisfied for the log-transformed data.

d) Produce (and submit) the ANOVA table for this analysis.

e) State the appropriate hypotheses, and report the test statistic and p-value. Summarize your conclusion.

f) Produce (and submit) simultaneous 95% confidence intervals for pairwise differences in population means. Summarize your conclusions from this analysis.

Now apply the log transformation to the other three response variables in this dataset, related to extent of injury to the chest, left leg, and right leg.

g) Repeat the analysis to investigate whether the extent of injury on these other body parts is related to the type of protective device(s) used in the vehicle. Submit the ANOVA table and the Tukey intervals for each analysis. Summarize your conclusion, particularly about whether your findings for the head injuries are similar for the other kinds of injuries.