

**PSYC 4330**  
**Seminar in Statistics**

**Exercise #4**

A researcher was interested in determining if the weight of a vehicle (*wt*) mediates the relationship between the horsepower (*hp*) and the miles per gallon (*mpg*). In other words, is the relationship between *hp* and *mpg* partially controlled by *wt*.

Run the above mediation analyses using the 'mtcars' dataset within R, including:

- 1) a statistical test of the indirect effect using the percentile bootstrap method (100 bootstrap samples)
- 2) an interpretation of the meaning of the unstandardized indirect effect
- 3) both the proportion mediated and upsilon (completely standardized indirect effect) effect size measures for the mediation
- 4) a plot of the raw *hp* -> *mpg* relationship, as well as a plot of the *hp* -> *mpg* relationship, after controlling for *wt*.