Multiple Regression Applications

YOUR NAME

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Exercises

1. The `mtcars` dataset contains average mileage (mpg) and other information about specific makes and models of cars. (This dataset is built-in to `R`; for more information about this dataset, reference the documentation with `?mtcars`).

   a. Build and interpret the coefficients of a model fitting `mpg` against displacement (`disp`), horsepower (`hp`), rear axle ratio (`drat`), and weight in 1000 lbs (`wt`).

   b. Given your model, what is the expected mpg for a vehicle with a displacement of 170, a horsepower of 100, a `drat` of 3.80 and a wt of 2,900 lbs. Construct a 95% confidence interval and prediction interval for that expected mpg.

   c. Repeat part (b) with a bootstrap for the confidence interval.

2. Is that the best model for predicting mpg? Try a variety of different models. You could explore higher order terms or even interactions. One place to start is my using the `pairs()` function on `mtcars` to plot a large pairwise scatterplot. How high could you get adjusted R-squared? Keep in mind that is only one measure of fit.