Regression Models Course Project

Alexander Cherkashin

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Summary

In this paper we will look at the data set of a collection of cars that is built in in R (`mtcacars`) and explore the relationship betweeen a set of variables and miles per gallon (MPG). We will find is automatic (A/T) or manual (M/T) transmission is better for MPG and how much better (higher MPG is better).

Exploratory data analysis

The dimensions of `mtcars` are 32, 11 we have 32 different cars and 11 variables. Descrition of variables is available by `?mtcars`. The mean MPG for A/T is 17.15 and for M/T is 24.39. Looks like M/T is better for MPG, but there are other variables that could affect MPG and thus adjust the transmission effect.

Relationship between variables and MPG. Model selection.

The simpliest regression model would be just take in account transmission factor variable (`am`): `lm(mpg ~ am, mtcars)` which yields us the intercept coefficients for M/T and A/T. They are just the mean values from previous paragrath. This model is like two horizontal parralell lines at their intersepts with the difference `lm(mpg ~ am, mtcars)$coef[2]` = 24.39 - 17.15 = 7.24.

The correlation coefficients between MPG and other variables are: cyl: -0.85, disp: -0.85, hp: -0.78, drat: 0.68, wt: -0.87, qsec: 0.42, vs: 0.66, am: 0.6, gear: 0.48, carb: -0.55

Clearly transmission type has some correlation with MPG, but there are ##Is an automatic or manual transmission is better for MGP