

Untitled

Jiyeon Clover Jeong

9/6/2017

R Markdown

Some mnath notation

- (a) Show that under these circumstances,

$$B_{Y|X} = B_{X|Y} = r_{XY}$$

where $B_{Y|X}$ is the least-squares slope for the simple regression of Y on X ; $B_{X|Y}$ is the least-squares slope for the simple regression of X on Y ; and r_{XY} is the correlation between the two variables. Show that the intercepts are also the same, $A_{Y|X} = A_{X|Y}$.

Code chunk

I chose to investigate the relationship between `mpg`, `displacement` (i.e. engine size) and `horsepower` because the latter two variables have a large correlation (1), while also seeming to trend quite tightly with `mpg` (correlation of -0.8042028 between `mpg` and `displacement` and of -0.8042028 between `mpg` and `horsepower`). However, as the plots indicate, conditioning on either one does not induce any sort of independence between `mpg` and the other. On the other hand, there does seem to be only a slight amount of dependence between `mpg` and `acceleration` once you condition on `horsepower`.