STAT 602 Modern Applied Statistics

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2019-01-18

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Collaboration: none

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1 Question 1 (3.7.5 pg 121)

Consider the fitted values that result from performing linear regression without an intercept. In this setting, the ith fitted value takes the form

$$\hat{y}_i = x_i \hat{\beta}, \tag{1}$$

where

$$\hat{\beta} = \left(\sum_{i=1}^{n} x_i y_i \right) / \left(\sum_{i'=1}^{n} x_{i'}^2 \right). \tag{2}$$

show that we can write

$$\hat{y}_i = \sum_{i'=1}^{n} a_{i'} y_{i'} \tag{3}$$

What is $a_{i'}$?

Note: We interpret this result by saying that the fitted values from linear regression are linear combinations of the response values.

1.1 Solution to Question 1

2 Quesion 2 (3.7.10 pg 123)

2.1 Solution to Question 2

3 Question 3 (3.7.15 pg 126)

3.1 Solution to Question 3