Course 2 Section 3.3 - LINEAR REGRESSION MODELS

Jiaying Wu

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Continue to better your understanding of linear regression models by responding to one or more of the following questions:

Q1.The following model of y does not have an intercept term: $y = \beta_1 x_1 + \epsilon$. Is this still a simple linear regression model?

Yes, it's still a simple linear regression model.

Q2.Is $y = \beta_0 + \beta_1 x_1^2 + \epsilon$ a simple linear regression model?

Yes, the model is still linear in the parameters even though the predictor variable is squared. If we can rewrite a model in a form that is linear in parameters, then it's a linear model. In this case, We can rewrite $x_2 = x_1^2$, then the model is linear in the parameters β_0 and β_2, $y = \beta_0 + \beta_2 x_2 + \epsilon$.

Q3.Can a multiple linear regression model contain non-linear independent variables?

Yes, a multiple linear regression model can contain non-linear independent variables.

Q4.Is it true that y and x_1 are positively correlated for the following fitted simple linear regression model? $\hat{y} = -2 + 9x_1$

Yes, y and x_1 are positively correlated.

Q5.Is it true that y and x_2 are positively correlated for the following fitted multiple linear regression model? $\hat{y} = -2 - 7x_1 + 3x_2$

Holding x_1 to be constant, this fitted model tells us that if x_2 increases by one unit, y will increase by 3 units.