Modelo de Regressão Linear Múltipla

Modelo:

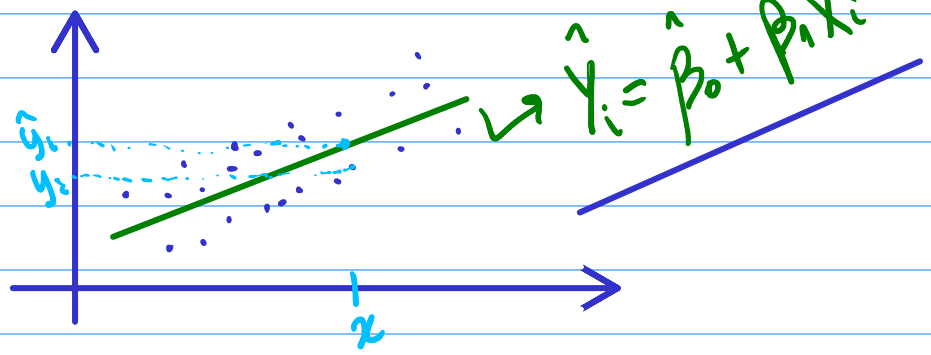
$$Y_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \cdots + \beta_p X_{ip} + \varepsilon_i,$$

onde $i = 1, 2, \ldots, n$.

MRLS: $Y_i = \beta_0 + \beta_1 X_i + \varepsilon_i$ ~~$\varepsilon_i \sim N(0, \sigma^2)$~~

$$\sum_{i=1}^{n} \varepsilon_i^2 = \sum_{i=1}^{n} \left(Y_i - (\beta_0 + \beta_1 X_i)\right)^2$$

n obs.: $(X_1, Y_1), (X_2, Y_2), \ldots, (X_n, Y_n)$



$$\frac{\partial \sum_{i=1}^{n} \varepsilon_i^2}{\partial \beta_0 \partial \beta_1} = \sum_{i=1}^{n} \left(Y_i - (\beta_0 + \beta_1 X_i)\right)^2 = 0$$

PM $\Rightarrow$

$$\begin{cases} \hat{\beta}_1 = SPXY / SQX \\ \hat{\beta}_0 = \bar{Y} - \hat{\beta}_1 \bar{X} \end{cases}$$

$$\begin{cases} SQXY = \sum XY - \dfrac{(\sum X_i)(\sum Y_i)}{n} \\ SQX = \sum X^2 - \dfrac{(\sum X_i)^2}{n} \end{cases}$$