

EE23010 NCERT Exemplar

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Question 61.2023

Using the Ordinary Least Squares (OLS) method, a researcher estimated the relationship between initial salary (S) of MBA graduates and their cumulative grade point average (CGPA) as

$$\hat{S}_i = \hat{\beta}_0 + \hat{\beta}_1 \text{CGPA}_i, i = 1, 2, \dots, 100$$

where $\hat{\beta}_0 = 4543$ and $\hat{\beta}_1 = 645.08$. The standard errors of $\hat{\beta}_0$ and $\hat{\beta}_1$ are 921.79 and 70.01, respectively. The t-statistic for testing the null hypothesis $\beta_1 = 0$ is

Solution:

the t-statistic for testing the null hypothesis β_0 is given by,

$$t_{\hat{\beta}_1} = \frac{\hat{\beta}_1 - \beta_1}{SE(\hat{\beta}_1)} \quad (1)$$

Given that $\hat{\beta}_1 = 645.08$ and $SE(\hat{\beta}_1) = 70.01$, we get

$$t_{\hat{\beta}_1} = \frac{645.08 - 0}{70.01} \quad (2)$$

$$t_{\hat{\beta}_1} = 9.21 \quad (3)$$