

Design & Data Analysis II. Partial 2. Type A.

January, 2020

1)

	x_1	x_2	\bar{y}
High	1	0	80
Medium	0	0	100
Low	0	1	70

$$\hat{y} = b_0 + b_1 x_1 + b_2 x_2$$

1. $100 = b_0 + b_1 \cdot 0 + b_2 \cdot 0$

2. $80 = 100 + b_1 \cdot 1 + b_2 \cdot 0$

2. $b_1 = -20$

3. $70 = 100 - 20 \cdot 0 + b_2 \cdot 1$

3. $b_2 = -30$

4. $\hat{y} = 100 - 20x_1 - 30x_2$

$$e = y - \hat{y}$$

$$e_{\text{low}} = 100 - 70 = 30$$

13. $r_{y_1}^2 = \frac{20 \cdot 0.28}{70}$ $r_{y_2}^2 = \frac{30 \cdot 0.43}{70}$ $R_{y,12}^2 = \frac{50}{70} = 0.71$

14. $R_y^2(1.2) = R_{y,12}^2 - r_{y_2}^2 = 0.71 - 0.43 = 0.28$

15. $R_y^2(2.1) = R_{y,12}^2 - r_{y_1}^2 = 0.71 - 0.28 = 0.43$

$$SS_{\text{exp } x_1} = 20$$

$$SS_{\text{exp } x_2} = 30$$

$$SS_{\text{exp } x_1, x_2} = 50$$

$$SS_{\text{res } x_1, x_2} = 20$$

$$SS_T = SS_{\text{exp}} + SS_{\text{res}} = 50 + 20 = 70$$