Practice questions

Q1

For A., we have

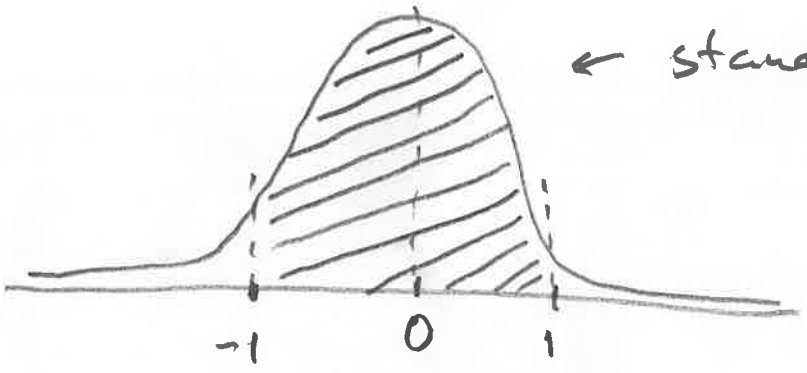
$$\widehat{(\text{Wage} \mid \text{Exper} = 1)} = 42.60 + 2.40 \cdot 1 - 0.05 \cdot 12$$
$$= 44.50$$

$\Rightarrow$ A not correct.

Find that alternative C. is correct.

Q2

Find $P(-1 < Z < 1)$



$$P(-1 < Z < 1) = P(Z < 1) - P(Z < -1)$$
$$0.8413 \quad - 0.1587$$
$$= 0.6826$$

B

Q3

A

Q4

Y : 1 1 0 0 0 1 0 0 0 1

$\bar{Y} = \frac{4}{10} = 0.40$ C

Q5

$\log\left(\frac{p}{1-p}\right) = B_0$ (given no predictors)

$\Rightarrow \log\left(\frac{\hat{p}}{1-\hat{p}}\right) = b_0$

From Q4, we have $\bar{Y} = \hat{p} = 0.40$

$\Rightarrow \log\left(\frac{0.40}{1-0.40}\right) = b_0$

$= \approx 0.4055$ B

Q7

$$460\,000 \cdot (1 + 0{,}061) = 488\,060$$

D

Q8

A. ok

B. ok

C. ok

D right answer

Q9

$$Y = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + \varepsilon$$

Restriction is $B_2 = B_3$

=> Restricted model

$$Y = B_0 + B_1 X_1 + B_3 \cdot X_2 + B_3 X_3 + \varepsilon$$

$$= B_0 + B_1 X_1 + B_3 (X_2 + X_3) + \varepsilon$$

D

Q10

$df = n - k - 1$

$= 33 - 3 - 1$

$= 29$

Two-tailed test

$\Rightarrow$ p-value $= 2 \cdot P(T \geq |t| \mid H_0)$

$P(T \geq 2.4)$ (given H_0)

≈ 0.012 (a little more than 1%)

$\Rightarrow$ My p-value is a number a little larger than 2%

B

Q11

$n = 14$

$df = n - 1$

$= 14 - 1$

$= 13$

In the table, we find

$P(T \geq 2.16) = 0.025$

= frequency of rejection is then 5 out of 200

C

Q12

D

Q14

$$Y = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + \varepsilon$$

Restricted model

$$Y^* = B_0 + B_2 X_2 + \varepsilon$$

$$Y - X_3 = B_0 + B_2 X_2 + \varepsilon$$

$$\Rightarrow \quad Y = B_0 + B_2 X_2 + X_3 + \varepsilon$$

$$\Rightarrow \quad Y = B_0 + \underset{\uparrow}{0} \cdot X_1 + B_2 X_2 + \underset{\uparrow}{X_3} + \varepsilon$$

$B_1 = 0$ $\qquad$ $B_3 = 1$

$\subseteq$

Q15

$$P(F > 4.71) = 0.01$$

B