

EXERCICIO 1

Ganancia 14 de Julio del 2017

(X)

$E1 = 10$

$\frac{S_e^2}{S_v^2} = 0,3 \rightarrow S_e^2 = 0,3 S_v^2 \rightarrow S_x^2 = S_v^2 + S_e^2 = S_v^2 + 0,3 S_v^2 = 1,3 S_v^2$

(Z)

$E1 = 15$

$r_{xx'} = 0,8$

$R_{xx'} = 0,94$

$r_{xx'} = \frac{S_v}{S_x} = \frac{S_v}{1,3 S_v} = \frac{1}{1,3} = 0,59$

$n = \frac{R_{xx'} (1 - r_{xx'})}{r_{xx'} (1 - R_{xx'})} = \frac{0,94 (1 - 0,59)}{0,59 (1 - 0,94)} = \frac{0,3146}{0,0542} = 58,04 \approx 58$

$n = \frac{EF}{E1} \rightarrow 58 = \frac{EF}{10} \rightarrow EF = 580 \approx 580 \text{ items}$

(Z)

$n = \frac{R_{xx'} (1 - r_{xx'})}{r_{xx'} (1 - R_{xx'})} = \frac{0,94 (1 - 0,8)}{0,8 (1 - 0,94)} = \frac{0,188}{0,0512} = 3,67 \approx 4$

$n = \frac{EF}{E1} \rightarrow 4 = \frac{EF}{15} \rightarrow EF = 60 \approx 60 \text{ items}$

$58 < 127$ Tendríamos que elegir el test Z

EJERCICIO 2

				Q_1	Q_3 mdn		
X_i	1	2	3	4	5	6	7
f_i	0	0	10	50	100	30	10
F_i	0	0	10	60	160	190	200

a)

$$mdn = L_i + \frac{1}{f_i} \left(\frac{n}{2} - F_i \right) = 4.5 + \frac{1}{100} (100 - 60) = 4.9$$

$$n/2 = \frac{200}{2} = 100$$

b) $CA = Q_3 - Q_1 = 5.4 - 4.3 = 1.1$

$$Q_3 = L_i + \frac{1}{f_i} \left(\frac{3n}{4} - F_i \right) = 4.5 + \frac{1}{100} (150 - 60) = 5.4$$

$$\frac{3n}{4} = \frac{3 \cdot 200}{4} = \frac{600}{4} = 150$$

$$Q_1 = L_i + \frac{1}{f_i} \left(\frac{n}{4} - F_i \right) = 3.5 + \frac{1}{50} (50 - 10) = 4.3$$

$$n/4 = \frac{200}{4} = 50$$



EJERCICIO 3

$$A = X_1$$

$$B = X_2$$

$$r_{X_1, Y} = 0.79$$

$$r_{X_2, Y} = 0.3$$

$$r_{X_1, X_2} = 0.65$$

$$R^2_{Y, X_1, X_2} = \frac{r^2_{YX_1} + r^2_{YX_2} - 2r_{YX_1}r_{YX_2}r_{X_1X_2}}{1 - r^2_{X_1X_2}}$$

$$R^2_{Y, X_1, X_2} = \frac{0.79^2 + 0.3^2 - 2 \cdot 0.79 \cdot 0.3 \cdot 0.65}{1 - 0.65^2}$$

$$R^2_{Y, X_1, X_2} = \frac{0.62 + 0.09 - 0.31}{1 - 0.42} = \frac{0.4}{0.58} = 0.69$$

El 69% de la variabilidad en la calidad de la redacción puede predicarse con la comprensión lectora y la fluidez verbal.

EJERCICIO 4

$$N = 400$$

$$\bar{X} = 46$$

$$S^2_x = 36 \rightarrow S_x = \sqrt{36} = 6$$

$$r_{xx'} = \frac{S^2_v}{S^2_x} = 0.71$$

$$a) r_{xx'} = 0.71$$

$$r_{xu} = \sqrt{r_{xx'}} = \sqrt{0.71} = 0.84$$

$$b) S_e = S_x \sqrt{1 - r_{xx'}} = 6 \sqrt{1 - 0.71} = 6 \cdot \sqrt{0.29} = \\ = 6 \cdot 0.54 = 3.24$$

c)

$$z_x = 1.5$$

$$NC 99\% \Rightarrow z_c = 2.58$$

$$Lim = u' \pm E_{max} = 6.39 \pm 7.02 \begin{matrix} 13.41 \\ -0.63 \end{matrix}$$

$$u' = V - \bar{V} = 52.39 - 46 = 6.39 \\ \hookrightarrow \bar{V} = \bar{X}$$

$$V = r_{xx'}(x - \bar{x}) + \bar{x} = 0.71(55 - 46) + 46 = 0.71 \cdot 9 + 46 = 6.39 + 46 = 52.39$$

$$z_x = \frac{x - \bar{x}}{S_x} \rightarrow 1.5 = \frac{x - 46}{6} \rightarrow 1.5 \cdot 6 = x - 46 \\ 9 = x - 46$$

$$55 = 9 + 46 = x$$

$$E_{max} = z_c \cdot S_{vx} = 2.58 \cdot 2.72 = 7.02$$

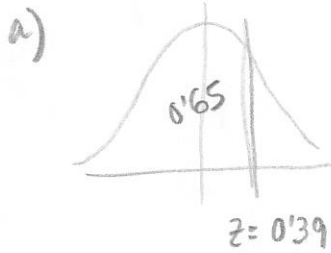
$$S_{vx} = S_e \sqrt{r_{xx'}} = 3.24 \sqrt{0.71} = 3.24 \cdot 0.84 = 2.72$$

EXERCISE 5

$$N=400$$

$$\bar{X}=15$$

$$S_x=5$$



$$z = \frac{X - \bar{X}}{S_x} \rightarrow 0.39 = \frac{X - 15}{5}$$

$$1.95 = X - 15$$

$$1.95 + 15 = X$$

$$\boxed{16.95 = X}$$

b)

$$\bar{Y} = 20$$

$$X^* = Y = X - \bar{X} + \bar{Y} = 16.95 - 15 + 20 = 21.96$$