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Tema: intervalo de confianza

Parcial: 2

Materia: estadística inferencial

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Licenciatura: Psicología

Cuatrimestre: 4

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Tema: Intervalo de confianza para la diferencia entre medias

Ejercicio 1:

$$\text{Formula: } IC = (\bar{x}_1 - \bar{x}_2) \pm z \left[\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} \right]$$

Datos 1 Datos 2

$$\bar{x}_1 = 60$$

$$\bar{x}_2 = 50$$

$$s_1 = 3$$

$$s_2 = 2$$

$$n_1 = 130$$

$$n_2 = 130$$

$$z = 1.96$$

$$z = 1.96$$

$$IC = (60 - 50) \pm 1.96 \left[\frac{(3)^2}{130} + \frac{(2)^2}{130} \right]$$

$$IC = 10 \pm 1.96 \left[\frac{9}{130} + \frac{4}{130} \right]$$

$$IC = 10 \pm 1.96 \sqrt{0.0692 + 0.0307}$$

$$IC = 10 \pm 1.96 \sqrt{0.0999}$$

$$IC = 10 \pm 1.96 [0.3146]$$

$$IC = 10 \pm 0.6166$$

$$IC = 10 - 0.6166 = 9.3834$$

$$IC = 10 + 0.6166 = 10.6166$$

= respuesta

Ejercicio 2

Datos 1

Datos 2

$$\bar{x}_1 = 5,000$$

$$\bar{x}_2 = 3,500$$

$$s_1 = 600$$

$$s_2 = 700$$

$$n_1 = 40$$

$$n_2 = 40$$

$$z = 2.33$$

$$z = 2.33$$

$$IC = (5,000 - 3,500) \pm 2.33 \left[\sqrt{\frac{600^2}{40} + \frac{700^2}{40}} \right]$$

$$IC = 1500 \pm 2.33 \left[\sqrt{15 + 17.5} \right]$$

$$IC = 1500 \pm 2.33 \left[\sqrt{32.5} \right]$$

$$IC = 1500 \pm 2.33 \left[5.7008 \right]$$

$$IC = 1500 \pm 13.2828$$

$$IC = 1500 - 13.2828 = 1486.7172$$

$$IC = 1500 + 13.2828 = 1513.2828$$

Respuesta: IC = 1486.7172 y 1513.2828

Respuesta

Tema: Intervalo de confianza para la diferencia entre Proporciones

Formula: $IC = (p_1 - p_2) \pm z \left[\sqrt{\frac{p_1(1-p_1)}{n_1} + \frac{p_2(1-p_2)}{n_2}} \right]$

Ejercicio 3

Datos 1

Datos 2

$n_1 = 150$

$n_2 = 150$

$p_1 = 90/150 = 0.6$

$p_2 = 75/150 = 0.5$

$q_1 = 1 - 0.6 = 0.4$

$q_2 = 1 - 0.5 = 0.5$

$z = 1.645$

$z = 1.645$

$IC = (0.6 - 0.5) \pm 1.645 \left[\sqrt{\frac{0.6(0.4)}{150} + \frac{0.5(0.5)}{150}} \right]$

$IC = 0.1 \pm 1.645 \left[\sqrt{\frac{0.24}{150} + \frac{0.25}{150}} \right]$

$IC = 0.1 \pm 1.645 \left[\sqrt{0.0016 + 0.0016} \right]$

$IC = 0.1 \pm 1.645 \left[\sqrt{0.0032} \right]$

$IC = 0.1 \pm 1.645 \left[0.0565 \right]$

$IC = 0.1 \pm 0.0929$

$IC = 0.1 - 0.0929 = 0.0071 \times 100 = 0.71 = 71\%$

$IC = 0.1 + 0.0929 = 0.1929 \times 100 = 19.29\%$

Ejercicio 4

Datos 1

Datos 2

$$n_1 = 800$$

$$n_2 = 400$$

$$p_1 = 679/800 = 0.848$$

$$p_2 = 260/400 = 0.65$$

$$q_1 = 1 - 0.848 = 0.152$$

$$q_2 = 1 - 0.65 = 0.35$$

$$z = 1.88$$

$$z = 1.88$$

$$IC = (0.848 - 0.65) \pm 1.88 \left[\sqrt{\frac{0.848(0.152)}{800} + \frac{0.65(0.35)}{400}} \right]$$

$$IC = 0.198 \pm 1.88 \left[\sqrt{\frac{0.1288}{800} + \frac{0.2275}{400}} \right]$$

$$IC = 0.198 \pm 1.88 \left[\sqrt{0.0001 + 0.0005} \right]$$

$$IC = 0.198 \pm 1.88 \left[\sqrt{0.0006} \right]$$

$$IC = 0.198 \pm 1.88 \left[0.0244 \right]$$

$$IC = 0.198 \pm 0.0458$$

$$IC = 0.198 - 0.0458 = 0.1522 \times 100 = 15.22\%$$

$$IC = 0.198 + 0.0458 = 0.2438 \times 100 = 24.38\%$$

$$P_{50} - P_{50} = 0.01 \times 100 = 1\%$$

Resultados:

① $IC = 9.3834$ A 10.6166

② $IC = 11486.7172$ A $1,513.2828$

③ entre 0.71% y 19.29% .

④ entre 15.22% y 24.38% .