José Alberto Salgado Román

Ejercicio 1 Datos

$\mu = 110€ \quad \sigma = 20€ \quad n = 100$

Intervalo de Confianza al 90%

$(\mu)_{1-\alpha} = \bar{X} \pm Z_{\alpha/2} \frac{S}{\sqrt{n}}$ 0.9

$\alpha = 1 - 0.9 = 0.1$

$\alpha/2 = \frac{0.1}{2} = 0.05 \quad Z_{\alpha/2} = 1.96$

$\mu_{90\%} = 110 \pm 1.96 \times \frac{20}{\sqrt{100}} = 110 \pm 1.96 = 111.96$
$110 - 1.96 = 108.04$

Intervalo de Confianza
$= \langle 108.04, 111.96 \rangle$ a)

Error Maximo

$Z_{\alpha/2} \cdot \frac{S}{\sqrt{n}} =$

$1.96 \cdot \frac{20}{\sqrt{100}} = 3.92$

Error Maximo

b) 3.92

$S^2 \frac{\sum x_i^2 f_i}{N} - \bar{X} = \frac{167}{20} - 2.55^2$

$x_i^2 f_i = x_i (x_i f_i)$

$\% (Z > 0.5) = 0.3085$

$\% (Z < 0.5) = 1 - 0.3085 = 0.6915$

$Z = 1.96$ (0.025)

c) La sig. muestra debe ser de 10

$n = 100/10 = 10$

a) ■ b) ■ c) ■

Ejercicio 3

Datos $\sigma = 60$

Intervalo de Confianza $\langle 388.68, 407.32 \rangle$ al 98%

$388.68 + 407.32 = 796/2 = 398$

$\alpha = 1 - 0.98 = 0.02$

$\alpha/2 = 0.02/2 = 0.01$

$Z\,0.01 = 2.33$

Ejercicio 2 a)

$n=10$ $\bar{X}=\frac{x_1+x_2\dots x_n}{n}=\frac{1}{n}\sum_{i=1}^{} x_i$ $\bar{X}=\frac{39+54+55+62+67+68+70+72+82+97}{10}$

$\sigma=15$ $=\bar{X}=\frac{660}{10}=66$

$\bar{X}=\bar{P}(66)$ Intervalo de Confianza al 90%

$\mu=66$ $\mu 1-\alpha=\bar{X}\pm Z\alpha/2\frac{S}{\sqrt{n}}$ $\alpha=1-0.9=0.1$ $\alpha/2=\frac{0.1}{2}=0.05$ $Z\frac{\alpha}{2}=1.96$

90% $\mu(66)-0.1=66\pm1.96\cdot\frac{15}{3.1622}$ $66+1.96=67.96$ Intervalo de Confianza

$n=10$ $66-1.96=64.04$ $<64.04, 67.96>$

b) $\mu 1-\alpha=\bar{X}\pm Z\alpha/2\frac{S}{\sqrt{n}}$ $\alpha=1-0.95=0.05$ $\alpha/2=0.05/2=0.0025$ $Z=0.4013$

$1-0.4013$

$n=3$

$\sigma=5$ $\mu 1-0.05=66\pm1.96\cdot\frac{5}{1.732}$ $66+1.96=67.96$ Intervalo de Confianza $=0.5987$

$66-1.96$ 64.04 $<64.04, 67.96>$

μ 95% Muestra minima $=3$ a $(145+70+85/2)=(200/2)=100$ Media Minima $=100$

Error Minimo

$Z\alpha/2\cdot\frac{S}{\sqrt{n}}=1.96\cdot\frac{5}{1.732}=1.96\cdot2.886=5.65656$

Ejercicio 3

Datos

$\sigma = 60$

$\bar{X} = ?$

$n = ?$

Intervalo de Confianza

$\langle 388.68, 407.32 \rangle$ al 98%

$388.68 + 407.32 = 796/2 = 398$

$398 + 2.33 = 400.33$

$398 - 2.33 = 395.67$

$\alpha = 1 - 0.98 = 0.02$

$\alpha/2 = 0.02/2 = 0.01$

$Z\,0.01 = 2.33$

$\mathcal{N}$

98%

$$\hat{p} \pm Z \cdot \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} = 0.5 \pm 2.33 \cdot \sqrt{\frac{0.5(0.5)}{n}} \leq 0.02 = \frac{0.5}{\sqrt{n}} \leq \frac{2}{100} = 2 = 2/2.33$$

$$(0.5)\frac{\sqrt{n}}{0.5} \quad \frac{2.33}{2} = 116.5\,(0.5) = 58.25$$

$$= \sqrt{n} \leq 58.25$$

$$n \leq 58.25^2 = 3393.06$$

$n = 3393.06 / 10$

$\bar{X} = 339.306$