

EXAMEN

PARCIAL#1

ESTADISTICA

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IDENTIFICACION DEL ESTUDIANTE

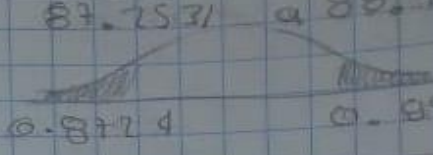
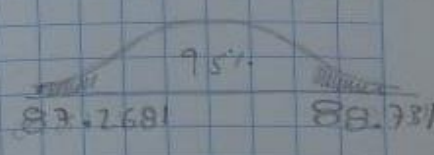
Credencial de Estudiante o INE



Evidencia de la Solución de Problemas

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Problema 1

<p>1= Analisis Promedio</p> <p>2= Datos $n=142$ $\bar{y}=88\%$ $S=4.5\%$</p> <p>3= Evaluacion de tamaño $n \geq 30$ $142 \geq 30$</p> <p>4= Estimador $\bar{y}=11$ $\mu=88$</p> <p>5= Desviacion estandar $\sigma_y = \sigma/\sqrt{n}$ $\frac{4.48}{\sqrt{142}} = 0.3734$ 11.9103</p> <p>6= Cota o varianza del error $2\sigma_y = 2 \sigma/\sqrt{n}$ $2\sigma_y = 2(0.3734)$ $2\sigma_y = 0.7468$</p>	<p>7= Intervalo de la cota $\mu \pm 2\sigma_y$ 88 ± 0.7468 87.2531 a 88.7468</p>  <p>0.872531 0.887468</p> <p>8= Intervalo de confianza $(1-\alpha) 95\%$ $\alpha = 0.05$ $\alpha/2 = 0.025$ $1 - 0.025 = 0.975$ $z_{\alpha/2} = 1.96$ $\bar{y} \pm z_{\alpha/2} \sigma_y/\sqrt{n}$ $88 \pm 1.96(0.3734)$ 87.2681 a 88.7318</p>  <p>87.2681 88.7318</p>
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Evidencia de la Solución de Problemas

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Problema 2

Analisis

Diferencia de medias

H M

$n_1 = 40$ $n_2 = 35$

$y_1 = 1.70m$ $y_2 = 1.60m$

$s_1 = 170cm$ $s_2 = 160cm$

$s_1 = 15cm$ $s_2 = 18cm$

Diferencia estimador

$\bar{y}_1 - \bar{y}_2 = 170cm - 160cm$

$\bar{y}_1 - \bar{y}_2 = 10cm$

Desviación

$$s_{y_1 - y_2} = \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$$

$$s_{y_1 - y_2} = \sqrt{\frac{(15)^2}{40} + \frac{(18)^2}{35}}$$

$$s_{y_1 - y_2} = \sqrt{5.625 + 9.2571}$$

$$s_{y_1 - y_2} = 3.857738$$

Cota

$$2s_{y_1 - y_2} = 2(3.857738)$$

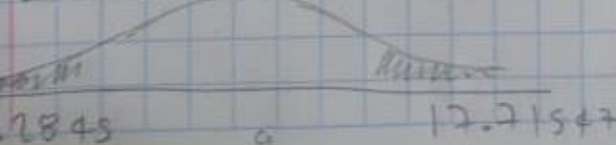
$$2s_{y_1 - y_2} = 7.71547$$

Intervalo de la cota

$$\bar{y}_1 - \bar{y}_2 \pm 2s_{y_1 - y_2}$$

$$10 \pm 7.71547$$

$$2.2845 \text{ a } 17.71547$$



Intervalo de Conf.

IC 95%

$(1 - \alpha) 95\%$

$\alpha = 0.05$

$\alpha/2 = 0.05/2 = 0.025$

$1 - 0.025$

$= 0.975$

$\therefore z_{\alpha/2} = 1.96$

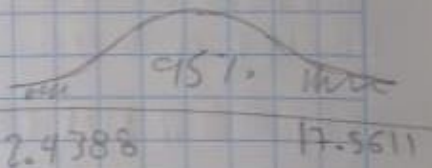
IC

$$\bar{y}_1 - \bar{y}_2 \pm z_{\alpha/2} \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$$

$$\bar{y}_1 - \bar{y}_2 \pm 1.96(3.857738)$$

$$10 \pm 7.561166$$

$$2.4388 \text{ a } 17.5611$$



Evidencia de la Solución de Problemas

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Problema 3

Análisis
Proporción

Datos

$$n=40$$

$$y=25$$

El Tamaño

$$n \geq 30$$

$$40 \geq 30$$

$$\hat{p} = \frac{y}{n}$$

$$\hat{p} = \frac{25}{40}$$

$$p = 0.625$$

$$\hat{q} = 1 - p$$

$$\hat{q} = (1 - 0.625) = 0.375$$

Desviación

$$\delta p = \sqrt{\frac{pq}{n}}$$

$$\delta p = \sqrt{\frac{(0.625)(0.375)}{40}}$$

$$\delta p = 0.07654$$

Cota o varianza de error

$$2\delta p = 2 \sqrt{\frac{pq}{n}}$$

$$2\delta p = 2(0.07654)$$

$$2\delta p = 0.153093 \text{ -- error}$$

Intervalo de la cota

$$\hat{p} \pm 2\sqrt{\frac{pq}{n}}$$

$$0.625 \pm 0.153093$$

$$0.47407 \text{ a } 0.778093$$



Intervalo de
Confianza

$$(1 - \alpha) 95\%$$

$$\alpha = 0.05$$

$$\alpha/2 = 0.025$$

$$1 - 0.025 = 0.975$$

$$Z_{P/2} = 1.96$$

$$\hat{p} \pm Z_{P/2} \sqrt{\frac{pq}{n}}$$

$$0.625 \pm 1.96(0.07654)$$

$$0.625 \pm 0.147794$$

$$0.4772 \text{ a } 0.7727$$



Evidencia de la Solución de Problemas

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Problema 4

Análisis

Diferencia de proporciones

Proporciones

Datos

$$n_1 = 400 \quad n_2 = 600$$

$$y_1 = 100 \quad y_2 = 300$$

Ev. Tamaño

$$n \geq 30$$

$$n_1 = n_2$$

$$400 \geq 30$$

Estimador

$$\hat{p}_1 = y_1/n$$

$$= \frac{100}{400} = 0.25$$

$$q_1 = 1 - 0.25 = 0.75$$

$$p_2 = \frac{300}{600} = 0.5$$

$$q_2 = 1 - 0.5 = 0.5$$

Diferencia de proporciones

$$\hat{p}_1 - \hat{p}_2 = 0.25 - 0.5 = -0.25$$

Desviación estándar

$$\sigma_{\hat{p}_1 - \hat{p}_2} = \sqrt{\frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}}$$

$$\sigma_{\hat{p}_1 - \hat{p}_2} = \sqrt{\frac{(0.25)(0.75)}{400} + \frac{(0.5)(0.5)}{600}}$$

$$\sigma_{\hat{p}_1 - \hat{p}_2} = 0.029755$$

Cota o varianza error

$$2(\hat{p}_1 - \hat{p}_2) = 2 \sqrt{\frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}}$$

$$2(\hat{p}_1 - \hat{p}_2) = 2(0.029755)$$

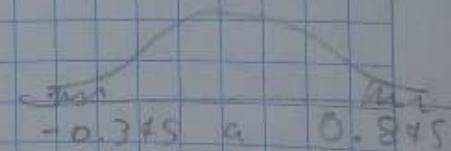
$$2(\hat{p}_1 - \hat{p}_2) = 0.0595$$

Intervalo

$$\hat{p}_1 - \hat{p}_2 \pm 2 \sqrt{\frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}}$$

$$0.25 \pm 0.0595$$

$$-0.345 \text{ a } 0.345$$



Evidencia de la Solución de Problemas

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Intervalo de confianza

$(1-\alpha) 99\%$

$$\alpha = 0.1$$

$$\alpha/2 = 0.005$$

$$1 - 0.005 = 0.995$$

$$Z_{\alpha/2} = 2.575$$

$$\hat{p}_1 - \hat{p}_2 \pm Z_{\alpha/2} \sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}}$$

$$0.25 \pm 2.575 (0.029755)$$

$$0.25 \pm 0.08182$$

$$0.1682 \text{ a } 0.33182$$

