UNIVERSIDAD TECNOLÓGICA DEL PERÚ

FORMULARIO DE ESTADÍSTICA INFERENCIAL

<table>
<tr><th colspan="2">CASOS</th><th colspan="3">DISTRIBUCIÓN MUESTRAL DE LA MEDIA</th></tr>
<tr><td colspan="2" rowspan="2">σ^2 conocida</td><td colspan="3">$\bar{X} \sim N(\mu_{\bar{X}}, {\sigma^2}_{\bar{X}}) \rightarrow Z = \frac{\bar{X}-\mu_{\bar{X}}}{\sigma_{\bar{X}}} \sim N(0,1)$</td></tr>
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<tr><td rowspan="3">σ^2 desconocida</td><td rowspan="2">$n \geq 30$
(Población normal o no normal)</td><td colspan="3">$\bar{X} \approx N(\mu_{\bar{X}}, {\hat{\sigma}^2}_{\bar{X}}) \rightarrow Z = \frac{\bar{X}-\mu_{\bar{X}}}{\hat{\sigma}_{\bar{X}}} \approx N(0,1)$</td></tr>
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<tr><td colspan="3" rowspan="2">${\sigma_1}^2$ y ${\sigma_2}^2$ son conocidas</td><td colspan="2">$\bar{X}_1-\bar{X}_2 \sim N\left(\mu_{\bar{X}_1-\bar{X}_2}, {\sigma^2}_{\bar{X}_1-\bar{X}_2}\right) \rightarrow Z = \frac{(\bar{X}_1-\bar{X}_2)-(\mu_1-\mu_2)}{\sqrt{\frac{{\sigma_1}^2}{n_1}+\frac{{\sigma_2}^2}{n_2}}} \sim N(0,1)$</td></tr>
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<tr><td>$n < 30$ (Población normal)</td><td colspan="2">$IC(\mu, 1-\alpha) = \left[\bar{X} - t_{\left(1-\frac{\alpha}{2}, n-1\right)}\hat{\sigma}_{\bar{X}} \; ; \; \bar{X} + t_{\left(1-\frac{\alpha}{2}, n-1\right)}\hat{\sigma}_{\bar{X}}\right]$</td></tr>
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	$\hat{\sigma}_{\bar{X}} = \frac{s}{\sqrt{n}}$	$\hat{\sigma}_{\bar{X}} = \frac{s}{\sqrt{n}}\sqrt{\frac{N-n}{N-1}}$
TAMAÑO DE MUESTRA	$n = \left(\frac{Z_{1-\frac{\alpha}{2}}\,\sigma}{e}\right)^2$	$n = \frac{\sigma^2 N}{\sigma^2 + (N-1)\left(\frac{e}{Z_{1-\frac{\alpha}{2}}}\right)^2}$

INTERVALO DE CONFIANZA PARA LA PROPORCIÓN	$\boldsymbol{IC(p\,, 1-\alpha) = [\,\bar{p} - Z_{1-\frac{\alpha}{2}}\,\hat{\sigma}_{\bar{p}}\,;\ \bar{p} + Z_{1-\frac{\alpha}{2}}\,\hat{\sigma}_{\bar{p}}\,]}$	
	$\hat{\sigma}_{\bar{p}} = \sqrt{\frac{\bar{p}(1-\bar{p})}{n}}$	$\hat{\sigma}_{\bar{p}} = \sqrt{\frac{\bar{p}(1-\bar{p})}{n}}\sqrt{\frac{N-n}{N-1}}$
TAMAÑO DE MUESTRA	$n = \left(\frac{Z_{1-\frac{\alpha}{2}}\sqrt{\bar{p}(1-\bar{p})}}{e}\right)^2$ Si $\bar{p}$ es desconocida se estima por 0.5	$n = \frac{\bar{p}(1-\bar{p})N}{\bar{p}(1-\bar{p}) + (N-1)\left(\frac{e}{Z_{1-\frac{\alpha}{2}}}\right)^2}$

INTERVALO DE CONFIANZA PARA LA VARIANZA	$\boldsymbol{IC(\sigma^2, 1-\alpha) = \left[\frac{(n-1)s^2}{\chi^2_{\left(1-\frac{\alpha}{2}, n-1\right)}}\,;\ \frac{(n-1)s^2}{\chi^2_{\left(\frac{\alpha}{2}, n-1\right)}}\right]}$

CASOS		**INTERVALO DE CONFIANZA PARA LA DIFERENCIA DE MEDIAS**
$\boldsymbol{\sigma_1^2\ y\ \sigma_2^2}$ **son conocidas**		$\boldsymbol{IC(\mu_1 - \mu_2, 1-\alpha) = [\,(\bar{X}_1 - \bar{X}_2) - Z_{1-\frac{\alpha}{2}}\,\sigma_{\bar{X}_1-\bar{X}_2}\,;\ (\bar{X}_1 - \bar{X}_2) + Z_{1-\frac{\alpha}{2}}\,\sigma_{\bar{X}_1-\bar{X}_2}\,]}$ $\sigma_{\bar{X}_1-\bar{X}_2} = \sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}$
$\boldsymbol{\sigma_1^2\ y\ \sigma_2^2}$ **desconoci-das**	$\boldsymbol{n_1 \geq 30\ y\ n_2 \geq 30}$ **(Poblaciones normales y no normales)**	$\boldsymbol{IC(\mu_1 - \mu_2, 1-\alpha) = [\,(\bar{X}_1 - \bar{X}_2) - Z_{1-\frac{\alpha}{2}}\,\hat{\sigma}_{\bar{X}_1-\bar{X}_2}\,;\ (\bar{X}_1 - \bar{X}_2) + Z_{1-\frac{\alpha}{2}}\,\hat{\sigma}_{\bar{X}_1-\bar{X}_2}\,]}$ $\hat{\sigma}_{\bar{X}_1-\bar{X}_2} = \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$
	$\boldsymbol{n_1 < 30\ y\ n_2 < 30}$ **(Poblaciones normales)**	**Si** $\boldsymbol{\sigma_1^2 = \sigma_2^2}$ $\boldsymbol{IC(\mu_1 - \mu_2, 1-\alpha) = [(\bar{X}_1 - \bar{X}_2) - t_{\left(1-\frac{\alpha}{2}, n_1+n_2-2\right)}\,\hat{\sigma}_{\bar{X}_1-\bar{X}_2}\,;\ (\bar{X}_1 - \bar{X}_2) + t_{\left(1-\frac{\alpha}{2}, n_1+n_2-2\right)}\,\hat{\sigma}_{\bar{X}_1-\bar{X}_2}]}$ $\hat{\sigma}_{\bar{X}_1-\bar{X}_2} = \sqrt{\frac{s_c^2}{n_1} + \frac{s_c^2}{n_2}}$, donde $s_c^2 = \frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1+n_2-2}$
		Si $\boldsymbol{\sigma_1^2 \neq \sigma_2^2}$ $\boldsymbol{IC(\mu_1 - \mu_2, 1-\alpha) = [\,(\bar{X}_1 - \bar{X}_2) - t_{\left(1-\frac{\alpha}{2}, r\right)}\,\hat{\sigma}_{\bar{X}_1-\bar{X}_2}\,;\ (\bar{X}_1 - \bar{X}_2) + t_{\left(1-\frac{\alpha}{2}, r\right)}\,\hat{\sigma}_{\bar{X}_1-\bar{X}_2}\,]}$ $\hat{\sigma}_{\bar{x}_1-\bar{x}_2} = \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$ y $r = \frac{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}\right)^2}{\frac{\left(\frac{s_1^2}{n_1}\right)^2}{n_1-1} + \frac{\left(\frac{s_2^2}{n_2}\right)^2}{n_2-1}}$

INTERVALO DE CONFIANZA PARA LA DIFERENCIA DE PROPORCIONES	$\boldsymbol{IC(p_1 - p_2, 1-\alpha) = [\,(\bar{p}_1 - \bar{p}_2) - Z_{1-\frac{\alpha}{2}}\,\hat{\sigma}_{\bar{p}_1-\bar{p}_2}\,;\ (\bar{p}_1 - \bar{p}_2) + Z_{1-\frac{\alpha}{2}}\,\hat{\sigma}_{\bar{p}_1-\bar{p}_2}\,]}$ $\hat{\sigma}_{\bar{p}_1-\bar{p}_2} = \sqrt{\frac{\bar{p}_1(1-\bar{p}_1)}{n_1} + \frac{\bar{p}_2(1-\bar{p}_2)}{n_2}}$

INTERVALO DE CONFIANZA PARA LA RAZÓN DE DOS VARIANZAS	$\boldsymbol{IC\left(\frac{\sigma_1^2}{\sigma_2^2}, 1-\alpha\right) = \left[\frac{s_1^2}{s_2^2}F\left(\frac{\alpha}{2}; n_2-1, n_1-1\right)\,;\ \frac{s_1^2}{s_2^2}F\left(1-\frac{\alpha}{2}; n_2-1, n_1-1\right)\right]}$ $F\left(\frac{\alpha}{2}; r_2, r_1\right) = \frac{1}{F\left(1-\frac{\alpha}{2};\ r_1, r_2\right)}$