Intervalos de confianza (se asume una distribución Normal de los datos)

Parámetro	Varianza conocida	Estimador	Límite inferior	Límite superior
μ	Si	$Z = \frac{\bar{X} - \bar{x}}{\sigma/\sqrt{n}}$	$L_i = \bar{x} - z_{\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}}$	$L_s = \bar{x} + z_{\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}}$
	No $n \geq 30$	$Z = \frac{\bar{X} - \bar{x}}{s/\sqrt{n}}$	$L_i = \bar{x} - z_{\frac{\alpha}{2}} \frac{s}{\sqrt{n}}$	$L_s = \bar{x} + z_{\frac{\alpha}{2}} \frac{s}{\sqrt{n}}$
	No $n < 30$ Distribución Normal	$t_{n-1} = \frac{\bar{X} - \bar{x}}{s/\sqrt{n}}$	$L_i = \bar{x} - t_{\frac{\alpha}{2}, n-1} \frac{s}{\sqrt{n}}$	$L_s = \bar{x} + t_{\frac{\alpha}{2}, n-1} \frac{s}{\sqrt{n}}$
p	-	$Z = \frac{\hat{P} - \hat{p}}{\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}}$	$L_i = \hat{p} - z_{\alpha/2} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$	$L_s = \hat{p} + z_{\alpha/2} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$
σ^2	No	$\chi^2(n-1)$	$L_i = \frac{(n-1)s^2}{\chi^2_{\frac{\alpha}{2}, n-1}}$	$L_s = \frac{(n-1)s^2}{\chi^2_{1-\frac{\alpha}{2}, n-1}}$

Siendo:

$z_{\frac{\alpha}{2}} = cuantil\left(1 - \frac{\alpha}{2}\right)$ de Z:N(0,1) $\rightarrow P\left\{Z < z_{\frac{\alpha}{2}}\right\} = 1 - \frac{\alpha}{2}$ (Tabla A4)

$t_{\frac{\alpha}{2}, n-1} = cuantil\left(1 - \frac{\alpha}{2}\right)$ de T: Student(n-1) $\rightarrow P\left\{T < t_{\frac{\alpha}{2}, n-1}\right\} = 1 - \frac{\alpha}{2} \rightarrow P\left\{T > t_{\frac{\alpha}{2}, n-1}\right\} = \frac{\alpha}{2}$ (Tabla A5)

${\chi^2}_{\frac{\alpha}{2}, n-1} = cuantil\left(1 - \frac{\alpha}{2}\right)$ de χ^2: Chi-cuadrado(n-1) $\rightarrow P\left\{\chi^2 < {\chi^2}_{\frac{\alpha}{2}, n-1}\right\} = 1 - \frac{\alpha}{2} \rightarrow P\left\{\chi^2 > {\chi^2}_{\frac{\alpha}{2}, n-1}\right\} = \frac{\alpha}{2}$ (Tabla A6)

${\chi^2}_{1-\frac{\alpha}{2}, n-1} = cuantil\left(\frac{\alpha}{2}\right)$ de χ^2: Chi-cuadrado(n-1) $\rightarrow P\left\{\chi^2 < {\chi^2}_{1-\frac{\alpha}{2}, n-1}\right\} = \frac{\alpha}{2} \rightarrow P\left\{\chi^2 > {\chi^2}_{1-\frac{\alpha}{2}, n-1}\right\} = 1 - \frac{\alpha}{2}$ (Tabla A6)

$s^2 = \frac{1}{n-1} \sum_{i=1}^{n} (x_i - \bar{x})^2$

Intervalos de confianza (se asume una distribución Normal de los datos)

Diferencia de parámetros	Varianzas conocidas	Límite inferior	Límite superior
$\mu_X - \mu_Y$	Si	$L_i = \bar{x} - \bar{y} - z_{\frac{\alpha}{2}}\sqrt{\frac{\sigma_X^2}{n} + \frac{\sigma_Y^2}{m}}$	$L_s = \bar{x} - \bar{y} + z_{\frac{\alpha}{2}}\sqrt{\frac{\sigma_X^2}{n} + \frac{\sigma_Y^2}{m}}$
	No $n, m \geq 30$	$L_i = \bar{x} - \bar{y} - z_{\frac{\alpha}{2}}\sqrt{\frac{s_X^2}{n} + \frac{s_Y^2}{m}}$	$L_s = \bar{x} - \bar{y} + z_{\frac{\alpha}{2}}\sqrt{\frac{s_X^2}{n} + \frac{s_Y^2}{m}}$
	No $n, m < 30$ $\sigma_X = \sigma_Y$	$L_i = \bar{x} - \bar{y} - \left(t_{\frac{\alpha}{2}, n+m-2}\right)(s_p)\sqrt{\frac{1}{n} + \frac{1}{m}}$	$L_s = \bar{x} - \bar{y} + (t_{\frac{\alpha}{2}, n+m-2})(s_p)\sqrt{\frac{1}{n} + \frac{1}{m}}$
	No $n, m < 30$ $\sigma_X \neq \sigma_Y$	$L_i = \bar{x} - \bar{y} - t_{\frac{\alpha}{2}, \nu}\sqrt{\frac{s_X^2}{n} + \frac{s_Y^2}{m}}$	$L_s = \bar{x} - \bar{y} + t_{\frac{\alpha}{2}, \nu}\sqrt{\frac{s_X^2}{n} + \frac{s_Y^2}{m}}$
	Muestras pareadas $n \geq 30$	$L_i = \bar{d} - z_{\frac{\alpha}{2}}\frac{s_D}{\sqrt{n}}$	$L_s = \bar{d} + z_{\frac{\alpha}{2}}\frac{s_D}{\sqrt{n}}$
	Muestras pareadas $n < 30$	$L_i = \bar{d} - t_{\frac{\alpha}{2}, n-1}\frac{s_D}{\sqrt{n}}$	$L_s = \bar{d} + t_{\frac{\alpha}{2}, n-1}\frac{s_D}{\sqrt{n}}$
$p_1 - p_2$	$n, m \geq 30$	$L_i = \hat{p}_1 - \hat{p}_2 - z_{\frac{\alpha}{2}}\sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}}$	$L_s = \hat{p}_1 - \hat{p}_2 + z_{\frac{\alpha}{2}}\sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}}$

Siendo:

$$s_p = \sqrt{\frac{(n-1)s_X^2 + (m-1)s_Y^2}{n+m-2}} \qquad \nu = \frac{\left(\frac{s_X^2}{n} + \frac{s_Y^2}{m}\right)^2}{\frac{s_X^4}{n^2(n-1)} + \frac{s_Y^4}{m^2(m-1)}} \qquad D = X - Y \qquad s_X^2 = \frac{1}{n-1}\sum_{i=1}^{n}(x_i - \bar{x})^2 \qquad s_Y^2 = \frac{1}{m-1}\sum_{i=1}^{m}(y_i - \bar{y})^2$$