CONTRASTES DE COMPARACIÓN DE MEDIAS

Casuística

Contraste de hipótesis

$H_0 : m_x = m_y$
$H_1 : m_x \neq m_y$

Estimador: $\theta = \frac{(\overline{x}-\overline{y})-(m_x-m_y)}{W}$. En H_0, $\theta = \frac{(\overline{x}-\overline{y})}{W}$

VARIANZAS CONOCIDAS

Varianzas iguales: $W = \sigma\sqrt{\frac{1}{n_x} + \frac{1}{n_y}}, \quad \Rightarrow \quad \theta \equiv N(0,1)$

Varianzas distintas: $W = \sqrt{\frac{\sigma_x^2}{n_x} + \frac{\sigma_y^2}{n_y}}, \quad \Rightarrow \quad \theta \equiv N(0,1)$

VARIANZAS DESCONOCIDAS

Varianzas iguales: $W = R\sqrt{\frac{1}{n_x} + \frac{1}{n_y}}$, donde $R^2 = \frac{{S_x^*}^2(n_x-1)+{S_y^*}^2(n_y-1)}{n_x+n_y-2}$,

$$\Rightarrow \quad \theta \equiv t_{n_x+n_y-2}$$

Varianzas distintas: $W = \sqrt{\frac{{S_x^*}^2}{n_x} + \frac{{S_y^*}^2}{n_y}}, \quad \Rightarrow \quad \theta \equiv t_\eta$, donde

$$\eta = \frac{\left(\frac{{S_x^*}^2}{n_x}+\frac{{S_y^*}^2}{n_y}\right)^2}{\frac{{S_x^*}^4}{n_x^2(n_x-1)}+\frac{{S_y^*}^4}{n_y^2(n_y-1)}} \qquad \text{(Test de Welch)}$$