

## ΕΛΕΓΧΟΙ ΥΠΟΘΕΣΕΩΝ

Παράμετρος Πληθυσμού	Προϋποθέσεις	Ελεγχοσυνάρτηση	Υποθέσεις	Περιοχή Απόρριψης $H_0$
Μέσος ( $\mu$ )	$\sigma^2$ : Γνωστή $n$ : Οτιδήποτε	$z = \frac{\bar{X} - \mu_0}{\sigma/\sqrt{n}} \sim N(0,1)$	$H_0: \mu = \mu_0$ vs $H_1: \mu \neq \mu_0$	$ z  \geq z_{a/2}$
			$H_0: \mu = \mu_0$ vs $H_1: \mu > \mu_0$	$z \geq z_a$
			$H_0: \mu = \mu_0$ vs $H_1: \mu < \mu_0$	$z \leq -z_a$
	$\sigma^2$ : Άγνωστη $n < 30$	$T = \frac{\bar{X} - \mu_0}{S/\sqrt{n}} \sim t_{n-1}$	$H_0: \mu = \mu_0$ vs $H_1: \mu \neq \mu_0$	$ T  \geq t_{n-1, a/2}$
			$H_0: \mu = \mu_0$ vs $H_1: \mu > \mu_0$	$T \geq t_{n-1, \alpha}$
			$H_0: \mu = \mu_0$ vs $H_1: \mu < \mu_0$	$T \leq -t_{n-1, \alpha}$
$\sigma^2$ : Άγνωστη $n \geq 30$		$z = \frac{\bar{X} - \mu_0}{S/\sqrt{n}} \xrightarrow{d} N(0,1)$	$H_0: \mu = \mu_0$ vs $H_1: \mu \neq \mu_0$	$ z  \geq z_{a/2}$
			$H_0: \mu = \mu_0$ vs $H_1: \mu > \mu_0$	$z \geq z_a$
			$H_0: \mu = \mu_0$ vs $H_1: \mu < \mu_0$	$z \leq -z_a$

<b>Ποσοστό (<math>p</math>)</b>	$n\hat{p} \geq 5$ $n(1 - \hat{p}) \geq 5$	$z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1 - p_0)}{n}}} \xrightarrow{d} N(0,1)$	$H_0: p = p_0$ vs $H_1: p \neq p_0$	$ z  \geq z_{a/2}$
			$H_0: p = p_0$ vs $H_1: p > p_0$	$z \geq z_a$
			$H_0: p = p_0$ vs $H_1: p < p_0$	$z \leq -z_a$
<b>Διακύμανση (<math>\sigma^2</math>)</b>		$X^2 = \frac{(n - 1) s^2}{\sigma_0^2} \sim \chi_{n-1}^2$	$H_0: \sigma^2 = \sigma_0^2$ vs $H_1: \sigma^2 \neq \sigma_0^2$	$X^2 \geq \chi_{n-1, a/2}^2$ ή $X^2 \leq \chi_{n-1, 1-a/2}^2$
			$H_0: \sigma^2 = \sigma_0^2$ vs $H_1: \sigma^2 > \sigma_0^2$	$X^2 \geq \chi_{n-1, a}^2$
			$H_0: \sigma^2 = \sigma_0^2$ vs $H_1: \sigma^2 < \sigma_0^2$	$X^2 \leq \chi_{n-1, 1-a}^2$
<b>Λόγος Διακυμάνσεων <math>\left(\frac{\sigma_1^2}{\sigma_2^2}\right)</math></b>		$F = \frac{s_1^2}{s_2^2} \frac{1}{\alpha} \sim F_{n_1-1, n_2-1}$	$H_0: \frac{\sigma_1^2}{\sigma_2^2} = a$ vs $H_1: \frac{\sigma_1^2}{\sigma_2^2} \neq a$	$F \geq F_{n_1-1, n_2-1, a/2}$ ή $F \leq F_{n_1-1, n_2-1, 1-a/2}$
			$H_0: \frac{\sigma_1^2}{\sigma_2^2} = a$ vs $H_1: \frac{\sigma_1^2}{\sigma_2^2} > a$	$F \geq F_{n_1-1, n_2-1, \alpha}$
			$H_0: \frac{\sigma_1^2}{\sigma_2^2} = a$ vs $H_1: \frac{\sigma_1^2}{\sigma_2^2} < a$	$F \leq F_{n_1-1, n_2-1, 1-\alpha}$
<b>Διαφορά Μέσων (<math>\mu_1 - \mu_2</math>)</b>	$\sigma_1^2, \sigma_2^2: \text{Γνωστές}$ $n_1, n_2: \text{Οτιδήποτε}$	$z = \frac{\bar{x}_1 - \bar{x}_2 - k}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}} \sim N(0,1)$	$H_0: \mu_1 - \mu_2 = k$ vs $H_1: \mu_1 - \mu_2 \neq k$	$ z  \geq z_{a/2}$
			$H_0: \mu_1 - \mu_2 = k$ vs $H_1: \mu_1 - \mu_2 > k$	$z \geq z_a$

		$H_0: \mu_1 - \mu_2 = k$ vs $H_1: \mu_1 - \mu_2 < k$	$z \leq -z_a$
$\sigma_1^2, \sigma_2^2:$ Άγνωστες $n_1 \geq 30,$ $n_2 \geq 30$	$z = \frac{\bar{x}_1 - \bar{x}_2 - k}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \xrightarrow{d} N(0,1)$	$H_0: \mu_1 - \mu_2 = k$ vs $H_1: \mu_1 - \mu_2 \neq k$	$ z  \geq z_{a/2}$
		$H_0: \mu_1 - \mu_2 = k$ vs $H_1: \mu_1 - \mu_2 > k$	$z \geq z_a$
		$H_0: \mu_1 - \mu_2 = k$ vs $H_1: \mu_1 - \mu_2 < k$	$z \leq -z_a$
$\sigma_1^2 = \sigma_2^2:$ Άγνωστες $n_1 < 30,$ $n_2 < 30$	$T = \frac{\bar{x}_1 - \bar{x}_2 - k}{\sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2} \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$ $\sim t_{n_1 + n_2 - 2}$	$H_0: \mu_1 - \mu_2 = k$ vs $H_1: \mu_1 - \mu_2 \neq k$	$ T  \geq t_{n_1 + n_2 - 2, a/2}$
		$H_0: \mu_1 - \mu_2 = k$ vs $H_1: \mu_1 - \mu_2 > k$	$T \geq t_{n_1 + n_2 - 2, a}$
		$H_0: \mu_1 - \mu_2 = k$ vs $H_1: \mu_1 - \mu_2 < k$	$T \leq -t_{n_1 + n_2 - 2, a}$
$\sigma_1^2 \neq \sigma_2^2:$ Άγνωστες $n_1 < 30,$ $n_2 < 30$	$T = \frac{\bar{x}_1 - \bar{x}_2 - k}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \sim t_{df}$ $df = \frac{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}\right)^2}{\frac{\left(\frac{s_1^2}{n_1}\right)^2}{n_1 - 1} + \frac{\left(\frac{s_2^2}{n_2}\right)^2}{n_2 - 1}}$	$H_0: \mu_1 - \mu_2 = k$ vs $H_1: \mu_1 - \mu_2 \neq k$	$ T  \geq t_{df, a/2}$
		$H_0: \mu_1 - \mu_2 = k$ vs $H_1: \mu_1 - \mu_2 > k$	$T \geq t_{df, a}$
		$H_0: \mu_1 - \mu_2 = k$ vs $H_1: \mu_1 - \mu_2 < k$	$T \leq -t_{df, a}$
Εξαρτημένα Δείγματα	$T = \frac{\bar{D} - k}{S_D / \sqrt{n}} \sim t_{n-1}$	$H_0: \mu_D = k$ vs $H_1: \mu_D \neq k$	$ T  \geq t_{n-1, a/2}$

	$\begin{pmatrix} D_i = X_{1,i} - \\ X_{2,i} \\ i = 1, 2, \dots, n \end{pmatrix}$ <p><math>n &lt; 30</math></p>		$H_0: \mu_D = k$ <i>vs</i> $H_1: \mu_D > k$	$T \geq t_{n-1,\alpha}$
	<p>Εξαρτημένα Δείγματα</p> $\begin{pmatrix} D_i = X_{1,i} - \\ X_{2,i} \\ i = 1, 2, \dots, n \end{pmatrix}$ <p><math>n \geq 30</math></p>	$z = \frac{\bar{D} - k}{S_D/\sqrt{n}} \xrightarrow{d} N(0,1)$	$H_0: \mu_D = k$ <i>vs</i> $H_1: \mu_D > k$	$ z  \geq z_{a/2}$
			$H_0: \mu_D = k$ <i>vs</i> $H_1: \mu_D < k$	$z \geq z_a$
			$H_0: \mu_D = k$ <i>vs</i> $H_1: \mu_D < k$	$z \leq -z_a$
<b>Διαφορά Πισσοστών (<math>p_1 - p_2</math>)</b>	$n_1 \hat{p}_1 \geq 5,$ $n_2 \hat{p}_2 \geq 5$ $n_1(1 - \hat{p}_1) \geq 5,$ $n_2(1 - \hat{p}_2) \geq 5$	$z = \frac{\hat{p}_1 - \hat{p}_2 - k}{\sqrt{\frac{\hat{p}_1(1 - \hat{p}_1)}{n_1} + \frac{\hat{p}_2(1 - \hat{p}_2)}{n_2}}} \xrightarrow{d} N(0,1)$	$H_0: p_1 - p_2 = k$ <i>vs</i> $H_1: p_1 - p_2 \neq k$	$ z  \geq z_{a/2}$
			$H_0: p_1 - p_2 = k$ <i>vs</i> $H_1: p_1 - p_2 > k$	$z \geq z_a$
			$H_0: p_1 - p_2 = k$ <i>vs</i> $H_1: p_1 - p_2 < k$	$z \leq -z_a$