

Hypothesis tests:

Test	Null Hypothesis	Test Statistic
One-sample z-test for means	$\mu = \mu_o$	$z = \frac{\bar{x} - \mu_o}{\frac{\sigma}{\sqrt{n}}}$
One-sample t-test for means	$\mu = \mu_o$	$t = \frac{\bar{x} - \mu_o}{\frac{s}{\sqrt{n}}}; df = n-1$
Matched Pairs t-test	$\mu_D = \mu_{D_o}$	$t = \frac{\bar{x}_D - \mu_{D_o}}{s / \sqrt{n}}; df = n - 1$
One-sample z-test for proportions	$p = p_o$	$z = \frac{\hat{p} - p}{\sqrt{\frac{p(1-p)}{n}}}$
Two-sample t-test for means	$\mu_1 - \mu_2 = 0$ or $\mu_1 = \mu_2$	$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}; df = \min(n_1, n_2) - 1$
Two-sample z-test for proportion	$p_1 - p_2 = 0$ or $p_1 = p_2$	$z = \frac{(\hat{p}_1 - \hat{p}_2) - (p_1 - p_2)}{\sqrt{\left(\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}\right)}}$
χ^2 Goodness of fit test	no change	$\chi^2 = \sum \frac{(\text{observed} - \text{expected})^2}{\text{expected}}$

Confidence IntervalsGeneral formula: *statistic* \pm *margin of error*

One-sample z-test: $\bar{x} \pm z * \frac{\sigma}{\sqrt{n}}$

Two-proportion z-test: $(\hat{p}_1 - \hat{p}_2) \pm z * \sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}}$

One-sample t-test: $\bar{x} \pm t * \frac{s}{\sqrt{n}}$

One-proportion z-test: $\hat{p} \pm z * \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$

Two-sample z-test: $(\bar{x}_1 - \bar{x}_2) \pm z * \sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}$

Two-sample t-test: $(\bar{x}_1 - \bar{x}_2) \pm t * \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$