Confidence Intervals and Hypothesis Tests

$(1-\alpha)100\%$ Confidence Interval:

$$(\text{point estimate}) \pm (\text{critical value}) \times (\text{standard error})$$

Test Statistic:

$$\frac{\text{point estimate} - \text{null value}}{\text{standard error}}$$

H_0	Case	Distribution	Standard Error
$p = p_0$	$np \geq 10$ and $n(1-p) \geq 10$	Z	$\sqrt{\frac{p(1-p)}{n}}$
$p_1 - p_2 = \text{diff}_0$	n_1p_1, $n_1(1-p_1)$, n_2p_2 and $n_2(1-p_2)$ all ≥ 10	Z	$\sqrt{\frac{p_1(1-p_1)}{n_1} + \frac{p_2(1-p_2)}{n_2}}$
$p_1 - p_2 = 0$	n_1p_1, $n_1(1-p_1)$, n_2p_2 and $n_2(1-p_2)$ all ≥ 10	Z	$\sqrt{\frac{p_1n_1+p_2n_2}{n_1+n_1}}$
$\mu = \mu_0$	$n \geq 30$	Z	$\frac{\sigma}{\sqrt{n}}$
$\mu = \mu_0$	$n < 30$	t_{n-1}	$\frac{\sigma}{\sqrt{n}}$
$\mu_1 - \mu_2 = \text{diff}_0$	$\min(n_1, n_2) \geq 30$	Z	$\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}$
$\mu_1 - \mu_2 = \text{diff}_0$	$\min(n_1, n_2) < 30$	$t_{\min(n_1,n_2)-1}$	$\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}$