Tests	**Null Hypothesis**	**Test Statistic**	**Type**
One-sample test of proportions	$H_0: p = p_0$	$z = \dfrac{\hat{p} - p_0}{\sqrt{\dfrac{p_0(1-p_0)}{n}}}$	Parametric
Two-sample test of proportions	$H_0: p_x = p_y$	$z = \dfrac{\hat{p}_x - \hat{p}_y}{\sqrt{\hat{p}(1-\hat{p})\left(\dfrac{1}{n_x} + \dfrac{1}{n_y}\right)}}$ $\hat{p} = \dfrac{n_x\hat{p}_x + n_y\hat{p}_y}{n_x + n_y}$	Parametric
Two-sample z-test	$H_0: \mu_x = \mu_y$	$z = \dfrac{\bar{X} - \bar{Y}}{\sqrt{\dfrac{\sigma_x^2}{n_x} + \dfrac{\sigma_y^2}{n_y}}}$	Parametric
Independent-Two- sample t-test	$H_0: \mu_1 = \mu_2$	$t = \dfrac{\bar{x}_1 - \bar{x}_2 - 0}{se}$ $s = \sqrt{\dfrac{(n_1 - 1) * s_1^2 + (n_2 - 1) * s_2^2}{n_1 + n_2 - 2}}$ $se = s * \sqrt{\dfrac{1}{n_1} + \dfrac{1}{n_2}}$ $df = n_1 + n_2 - 2$ $se = \sqrt{\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}}$ $df = \min(n_1 - 1, n_2 - 1)$	Parametric
Paired-Two-Sample-t-test	$H_0: \mu_1 = \mu_2$	$\bar{d} = \bar{x}_{diff} = \bar{x}_1 - \bar{x}_2.$ $s_d = \sqrt{(\sum (di - \bar{d})^2 / (n-1))}$ $SE(d) = se = s_d / \sqrt{n}$ $T = \dfrac{\bar{d}}{SE(d)}.$ $df = n - 1$	Parametric
McNemar Test for paired proportions	$H_0: n_{01} = n_{10}$	$z = \dfrac{n_{01} - n_{10}}{\sqrt{n_{01} + n_{10}}}$	Parametric
Chi-square test for independence	Independent	$\sum \dfrac{(observed_i - expected_i)^2}{expected_i}$ $df = (nrows - 1) * (ncolumns - 1).$	Parametric
Strength of Association		$\sqrt{\dfrac{\chi^2}{n * m}}$	Parametric

Regression Overall Test	All the coefficients are zero	F-statistic $\dfrac{\dfrac{SS_{total} - SS_{residual}}{k-1}}{\dfrac{SS_{residual}}{n-k}}$ $df1 = k - 1$ $df2 = n - k$	Parametric
One-way ANOVA	All the group means are equal	$F = \dfrac{Between - groups - variability}{within - groups - variability}$ $df1 = g - 1$ $df2 = N - g$ $\dfrac{n_1 * (\bar{y}_1 - \bar{y})^2 + n_2 * (\bar{y}_2 - \bar{y})^2 + \ldots + n_g * (\bar{y}_g - \bar{y})^2}{g-1}$ $\dfrac{\sum(y_{i1} - \bar{y}_1)^2 + \sum(y_{i2} - \bar{y}_2)^2 + \ldots + \sum(y_{ig} - \bar{y}_g)^2}{n-g}$	Parametric
Kruskal Wallis	All the group ranks are equal	g groups g-1 degrees of freedom $\frac{12}{N(N+1)} \sum_{i=1}^{g} n_i (\bar{R} - \bar{R}_i)^2 = H \sim \chi^2(g-1)$	Non Parametric

Two-Way ANOVA Table

It is assumed that main effect A has a levels (and A = a-1 df), main effect B has b levels (and B = b-1 df), n is the sample size of each treatment, and N = abn is the total sample size. Notice the overall degrees of freedom is once again one less than the total sample size.

Source	SS	df	MS	F
Main Effect A	*given*	A, a-1	SS / df	MS(A) / MS(W)
Main Effect B	*given*	B, b-1	SS / df	MS(B) / MS(W)
Interaction Effect	*given*	A*B, (a-1)(b-1)	SS / df	MS(A*B) / MS(W)
Within (Error)	*given*	N - ab, ab(n-1)	SS / df	
Total	sum of others	N - 1, abn - 1		