Common Statistical Tests

Statistical Test			Variables		Significance		Magnitude	
Group	**Specific Test**	**Test Statistic**	**IV** *or* **Predictor**	**DV** *or* **Response**	**H_0** *or* Null Hypothesis	**If you reject H_0*, then there is a statistically significant …**	**Effect Size**	**Large** (*guide*)
Chi-Square	Goodness-of-Fit (One Sample)	X^2	1 categorical		p = #	***difference*** between the *population* proportion and #	Cramer's V	V > .5
	Test of Homogeneity		2 categorical		$p_1 = p_2$	***difference*** between proportions by category in the *population*		
	Test of Independence		2 categorical		$f_e = f_o$ *or* $f_e - f_o = 0$	***relationship*** between category memberships in the *population*	ϕ (phi)	ϕ > .5
t-Test	One-sample	t	n/a	1 numeric	μ = #	***difference*** between the *population* mean and #	Cohen's d	d > .8
	Paired Samples / Dependent		n/a †	2 numeric	$\mu_{diff} = 0$	***difference*** between the paired values in the *population*		
	Independent / 2-Sample		1 binary	1 numeric	$\mu_1 = \mu_2$ *or* $\mu_1 - \mu_2 = 0$	***difference*** between the means of the two *populations*		
ANOVA	Repeated Measures / Within Subjects	F	n/a †	2+ numeric	$\mu_1 = \mu_2 = \mu_3$ *etc.*	***difference*** among one or more of the measures in the *population*	η_p^2 (partial eta^2)	$\eta_p^2 > .25$
	Between Subjects		1+ categorical	1 numeric	$\mu_1 = \mu_2 = \mu_3$ *etc.*	***difference*** among one or more of the *population* means		
Correlation	Pearson's / Linear	r	2 numeric		r = 0	linear ***relationship*** between the two variables *in the population*	r	|r| > .6
Regression	Linear, Simple	F / t	1 numeric ‡	1 numeric	$\beta_1 = 0$	linear predictive ***relationship*** between the IV and the DV…	R^2, β	n/a
	Linear, Multiple		1+ numeric ‡	1 numeric	$\beta_1 = 0$ $\beta_2 = 0$ *etc.*	linear predictive ***relationship*** between the IV(s) and the DV…	adj R^2, β	n/a
	Logistic, Multiple	-2LL / z	1+ numeric ‡	1 binary	$\beta_1 = 0$ $\beta_2 = 0$ *etc.*	predictive ***relationship*** between the IV(s) and the likelihood of DV…	Pseudo R^2, Odds-ratio	n/a

* Reject H_0 when the test statistic > critical value *OR* p-value < alpha. Only then should you evaluate the direction and magnitude of the effect.

† This is for the more common "wide form". The two variables must represent the same measurement under different conditions (e.g., before & after). In "long form", there is 1 numeric DV, a categorical IV with the conditions, and an ID variable connecting the paired values.

‡ For IVs in Regression, numeric also includes binary variables such as dummy coded categorical variables.