What statistical test should I use?

Predictor variable(s)	Outcome variable(s)	Number of predictor and outcome variables	Assumptions to check	When should I choose a non-parametric test instead of a parametric test? • When the sample size is small • When the assumptions are not met or cannot be checked	
				Parametric Test	Non-parametric Test
Categorical	Quantitative	• 1 Predictor (1 group) • 1 Outcome	• Outcome approximately normally distributed • No major outliers	1 sample t-test	Wilcoxon rank test
		• 1 Predictor (2 dependent groups) • 1 Outcome	• Outcome differences approximately normally distributed • No major outliers	Paired t-test	Wilcoxon rank test
		• 1 Predictor (2 independent groups) • 1 Outcome	• Outcome approximately normally distributed • Outcome has similar variances across groups	Unpaired t-test	Mann-Whitney U test
		• 1 Predictor (3+ dependent groups) • 1 Outcome	• Outcome differences approximately normally distributed • Outcome differences have similar variances	Repeated Measures ANOVA	Friedman Test
		• 1 Predictor (3+ independent groups) • 1 Outcome	• Outcome approximately normally distributed • Outcome has similar variances across groups	ANOVA	Kruskall-Wallis test
	Categorical	• 1 Predictor (3+ independent groups) • 1 Outcome (3+ independent groups)	For the non-parametric test (there is no parametric test): • Data must be frequencies in a contingency tables • Expected value of cells should be 5 or greater		Chi-Square test of Independence
Quantitative	Quantitative	• 1 Predictor • 1 Outcome	• Linear relationship between predictor and outcome • Predictor and outcome approximately normally distributed	Pearson Correlation	Spearman Correlation
		• **1+ Predictors** • 1 Outcome	• Linear relationship between predictor(s) and outcome • Residuals approximately normally distributed • Variance of residuals approximately uniformly distributed • Low correlation among predictors (low multicollinearity)	Linear Regression	Non-parametric Regression Methods
	Categorical	• **1+ Predictors** • 1 Outcome (2 groups)	• Linear relationship between predictor(s) and log odds	Logistic Regression	Classification Methods