A guide to unifactorial statistical methods

This guide may be used to indicate appropriate statistical methods. It is advisable to read the details of all these tests after consulting this table

Design or aim of study	Type of data/assumptions	Statistical method
COMPARE TWO INDEPENDENT SAMPLES		
Compare two means	Continuous, Normal distribution, same variance	t test for two independent means
Compare two proportions	Categorical, two categories, all expected values greater than 5	Chi-squared test
Compare two proportions	Categorical, two categories, some expected values less than 5	Fisher's exact test
Compare distributions	Ordinal	Wilcoxon two-sample signed rank test equivalent to Mann Whitney U test
Compare time to an event (e.g. survival) in two groups	Continuous	Logrank test
COMPARE SEVERAL INDEPENDENT SAMPLES		
Compare several means	Continuous, Normal distribution, same variance	One-way analysis of variance
Compare time to an event (e.g. survival) in several groups	Continuous	Logrank test

COMPARE DIFFERENCES IN A PAIRED SAMPLE		
Test mean difference	Continuous, Normal distribution for differences	t test for two paired (matched) means
Compare two paired proportions	Categorical, two categories (binary)	McNemar's test
Distribution of differences	Ordinal, symmetrical distribution	Wilcoxon matched pairs test
Distribution of differences	Ordinal	Sign test
RELATIONSHIPS BETWEEN TWO VARIABLES		
Test strength of linear relationship between two variables	Continuous, at least one has Normal distribution	Pearson's correlation
Test strength of relationship between two variables	Ordinal	Spearman's rank correlation, Kendall's tau (if many ties)
Examine nature of linear relationship between two variables	Continuous, residuals from Normal distribution, constant variance	Simple linear regression
Test association between two categorical variables	Categorical, more than two categories for either or both variables, at least 80% of expected frequencies greater than 5	Chi-squared test
Test for trend in proportions	Categorical, one variable has two categories and the other has several categories which are ordered, sample greater than 30	Chi-squared test for trend