

Table of tests	Dependent (outcome) variable	Independent (explanatory) variable	Parametric test	Non-parametric alternative
Comparing means				
The means of 2 paired (matched) samples e.g. weight before and after a diet for same subjects	Continuous/ scale	Time / condition	Paired t-test	Wilcoxon signed rank test
The means of two INDEPENDENT groups	Continuous/ scale	Categorical / binary	Independent t-test	Mann-Whitney U test (Wilcoxon rank sum)
The means of 3+ independent groups	Continuous/ scale	Categorical/ nominal	One-way ANOVA	Kruskal-Wallis test
The means of 3+ measurements on the same subject	Continuous/ scale	Time variable	Repeated measures ANOVA	Friedman test
Investigating relationships				
Relationship between 2 continuous variables	Continuous/ scale	Continuous/ scale	Pearson's Correlation Coefficient	Spearman's Correlation Coefficient (also use for ordinal data)
Predicting the value of one variable from the value of a predictor variable	Continuous/ scale	Any	Simple Linear Regression	
Assessing the relationship between two categorical variables	Categorical/ nominal	Categorical/ nominal		Chi-squared test

Note: The table only shows the most common tests for simple analysis of data.

1 st Independent variable type	2 nd Independent variable type	Test
Scale	Scale / binary	Multiple regression
Nominal: independent groups	Nominal: independent groups	2 way ANOVA
Nominal: repeated measures	Nominal: repeated measures	2 way repeated measures ANOVA
Nominal: repeated measures	Nominal: repeated measures	Mixed ANOVA
Nominal	Scale	ANCOVA

Regression or ANOVA? Use regression if you have only scale or binary independent variables. Categorical variables can be recoded to a series of dummy binary variables but if there are a lot of categories, ANOVA is preferable

Table 1: Statistical methods for two variables measured on the same sample of subjects

	<i>Continuous, Normal</i>	<i>Continuous, non-Normal</i>	<i>Ordinal</i>	<i>Nominal</i>	<i>Binary</i>
<i>Continuous, Normal</i>	Regression Correlation (Pearson's <i>r</i>)	Regression Rank correlation	Rank correlation (Spearman's <i>r</i> or Kendall's <i>t</i>)	One-way Analysis of Variance	Two independent samples <i>t</i> -test
<i>Continuous, non-Normal</i>		Regression Rank correlation	Rank correlation	Kruskall Wallis Test	Mann-Whitney <i>U</i> test
<i>Ordinal</i>			Rank correlation	Kruskall Wallis Test	Mann-Whitney <i>U</i> test Chi-squared test for trend
<i>Nominal</i>				Chi-squared test	Chi-squared test
<i>Binary</i>					Chi-squared test Fisher's exact test