Flow Chart for selecting commonly-used statistical tests

Parametric assumptions:
1. Independent unbiased samples
2. Variables normally distributed
3. Equal variances

Type of data?

Continuous

Discrete, categorical

Chi-square tests
One and two-sample

Type of question?

Relationships

Differences

Do you have a true independent variable?

Differences between what?

Means

Yes

No

Tests for equal variances

Regression analyses

Correlation analysis

F_{max} test
Bartlett test

Parametric

Non-parametric

Pearson's *r*
Holm's correction if >2 variables

Spearman's *rho*
Holm's correction if >2 variables

How many levels?
(treatment groups)

Two groups

More than two groups

Parametric assumptions OK?

Parametric assumptions OK?

No

No

Transformation normalises?

Transformation normalises?

Yes

No

Yes

Yes

No

Student's unpaired t-test, Paired t-test

Mann-Whitney U or Wlicoxon test

Parametric

Non-parametric

If significant, do *post-hoc* test, *e.g.* Tukey's or Bonferroni's

ANOVA

Kruskal-Wallis test

If significant, Dunn's pairwise test

☐ Decisions   ☐ Statistical methods

Source: Anonymous (multiple unacknowledged internet sources)