A simple decision chart for statistical tests in Biol321


Start

Are you taking measurements (length, pH, duration, …), or are you counting frequencies of different categories (gender, colour, species …)?

Measurements or ranks

Are you looking at *differences* between sets of measurements, or are you looking for *associations* between sets of measurements?

Differences

Do you have an expected outcome (e.g. 50 male:50 female), or are you testing for *non-random* association between sets of categories (e.g. habitat and colour)?

Expected outcome

*X² tests for goodness of fit*

Associations

X² tests for homogeneity or independence

Is one variable (e.g. time, age) fixed (i.e. unaffected by the other variable)?

No

Yes

Regression / Rank correlation

How many sets of measurements (groups) do you have?

One

Two

More than two

One-sample t-test/
One sample sign test

Are your measurements paired (i.e. two measurements from the same individual?)

Yes

No

Paired t-test/
Wilcoxon matched pairs test

Two-sample t-test/
Mann-Whitney U test

Are you investigating the effect of one factor or two factors?

One

Two

Are your measurements in matched sets (e.g. before/during/after)?

Yes

No

Repeated measures ANOVA/
Friedman test

Two-way ANOVA

One-way ANOVA/
Kruskal-Wallis test