

One-way ANOVA

- it is parametric test when we have one independent variable(categorical) and one dependent(continuous);
 - 3 or more independent groups;
 - the probability distribution of responses in each group is normal;
 - homogeneity of variances;
 - there should be no significant outliers within each group;
 - equal or not sample sizes;
- F = variances between the means / variances within the distributions

Welch's ANOVA

- we have one independent variable(categorical) and one dependent(continuous);
- the main idea of Welch's F-test is using a weight w_i to reduce the effect of heterogeneity;
- 3 or more independent groups;
- the probability distribution of responses in each group is normal;
- heterogeneous;
- equal or not sample sizes;

Kruskal-Wallis test

- we have one independent variable(categorical) and one dependent(continuous);
- 3 or more independent groups;
- it performs the test on ranked data;
- the probability distribution of responses in each group is non-normal;
- homogeneity of variances;
- equal or not sample sizes;
- commonly used when we don't have a large sample size;

How to test homogeneity of variances

- when data is normal → Bartlett's test
- when data is almost normal → Leven's test
- when data is sort of normal → Brown-Forsythe test
- when data is non-normal → Fligner-Killeen test