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 wi 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 → Bartlet's test
- when data is almost normal → Leven's test
- when data is sort of normal → Brown-Forsythe test
- when data is non-normal → Q-Q plot