Parametric test

Non-Parametric test

Calculate:
Totals from tallies

Frequencies or counts

Type of data collected

Measurements

Calculate:
Mean and **Standard deviation (SD)**

Type of IV

Continuous

Plot a **scatter graph** with regression line and error bars from SD

Also test:
statistical difference between groups

Strength of relationship between variables

Sample size *(n)* ≥ 20
& expected freq ≥ 5 per cell

Test for association between groups

Chi-squared test for independence

Compare observed vs expected values

Chi-squared goodness of fit test

ALL assumptions met:
✓ Linear
✓ Normal distribution
✓ No outliers

Pearson's Correlation Coefficient

Report:

Coefficient of Determination (r^2)
Fit linear line

≥1 assumption NOT met:
✗ linear
✗ normal distribution
✗ No outliers

Spearman's Rank Correlation Coefficient

Report:

r_s
Fit appropriate line (linear or non-linear)

≥3 groups

ALL assumptions met:
✓ normal distribution
✓ equal variance

Analysis of Variance (ANOVA)

$p \leq \alpha$ (0.05)

Tukey HSD *post-hoc* test

≥1 assumption NOT met:
✗ normal distribution
✗ equal variance

Kruskal-Wallis Test

$p \leq \alpha$ (0.05)

Dunn *post-hoc* test

Discrete

Plot a **bar graph** with error bars from SD

Statistical difference between groups

2 groups

assumption NOT met:
✗ normal distribution

Mann-Whitney U test

assumption met:
✓ normal distribution

assumption met:
✓ equal variance

Independent two-tailed *t*-test

assumption NOT met:
✗ equal variance

Welch's *t*-test

2 paired groups

Assumption met:
✓ normal distribution of differences

Paired *t*-test

Assumption NOT met:
✗ normal distribution of differences

Wilcoxon signed-rank test

Assumption tests:

Test for normality

Shapiro-Wilk test
p >0.05 → normal

Test for equal variance

Levene's test
p >0.05 → equal

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