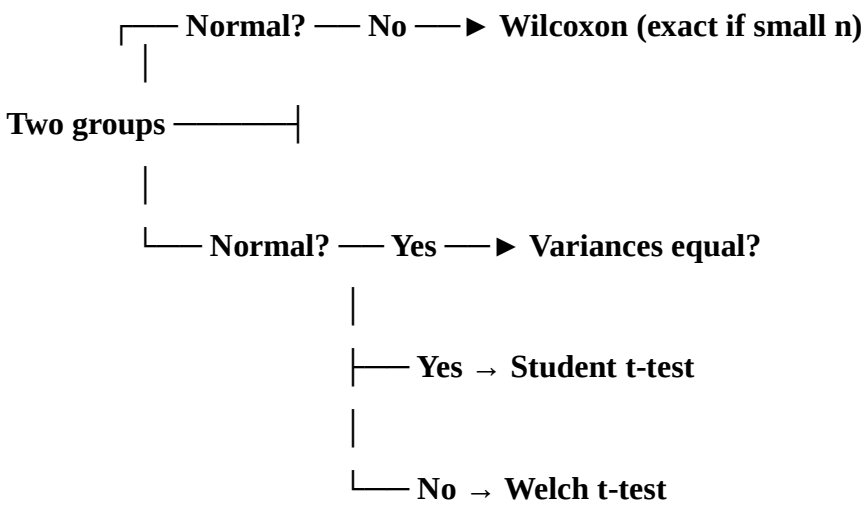
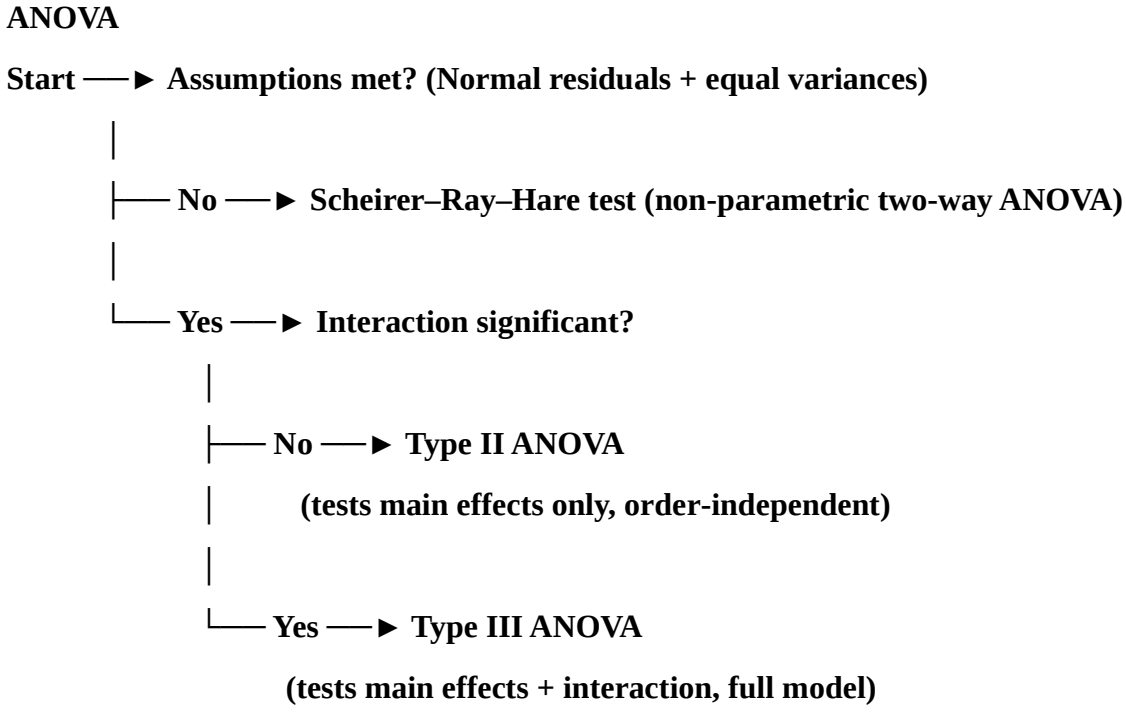


1. General rule

- **H_0 (null hypothesis):** “No effect,” “no difference,” or “no association.”
- **H_1 (alternative hypothesis):** “There is an effect,” “there is a difference,” or “there is an association.”



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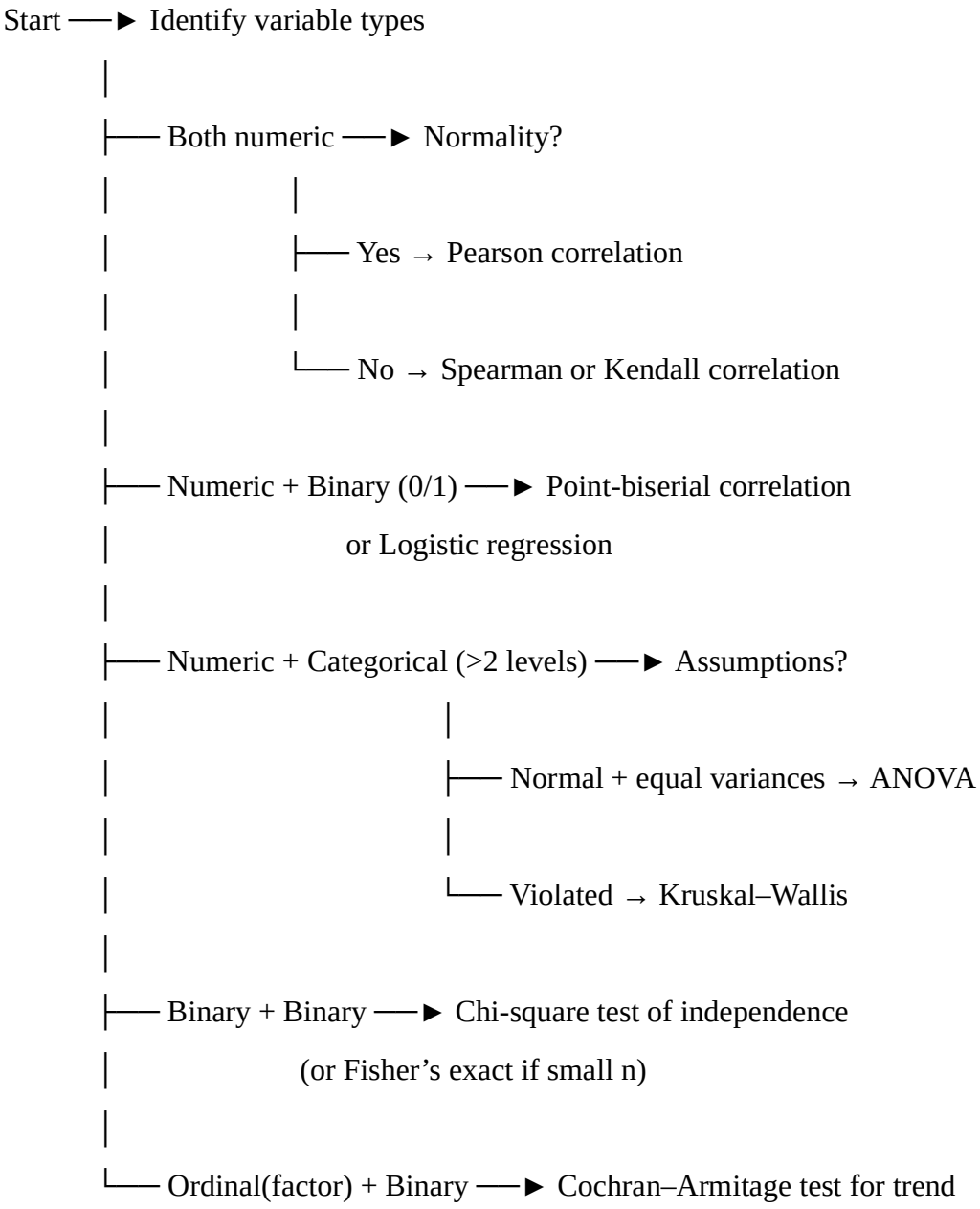

Graph Selection Cheat Sheet

Data Type	Best Graphs	Purpose
Continuous (e.g., wages)	Histogram	Shows distribution, skewness, spread
Continuous (with outliers)	Boxplot	Highlights median, quartiles, and outliers
Continuous (smooth view)	Density plot	Smoothed distribution curve
Ordinal categorical (e.g., education levels 1–4)	Bar chart	Shows frequency of each category

Data Type	Best Graphs	Purpose
Nominal categorical (e.g., gender, occupation)	Bar chart / Pie chart	Shows proportions of categories
Two categorical variables	Stacked bar chart / Mosaic plot	Compares distributions across groups
Continuous vs. categorical	Side-by-side boxplots	Compare distributions across categories
Continuous vs. continuous	Scatter plot	Shows relationship/correlation between two numeric variables
Time series (ordered data)	Line graph	Shows trend over time

Situation	Best Measure
Categorical data	Mode
Symmetric, clean numeric data	Mean
Skewed data	Median
Large sample with extreme errors	Trimmed mean
Small sample with real extremes	Winsorized mean
Growth rates	Geometric mean
Rates	Harmonic mean