

Statistics in R Workshop #2

March 15, 2022

Workshop 2: Hypothesis testing with categorical data

Goal: Learn and implement hypothesis testing at the group level. This includes examining data for normality, skewness, and kurtosis, forming hypotheses based in theory and the current literature, carrying out statistical testing, and interpreting results.

Goodness-of-fit tests with single categorical variable

- Chi-square
- Binomial test
- Nonparametric: Sign Test

T-tests

- Check for normality in the data
 - qqplots
 - Transformations for abnormal data
- One-sample
- Two-sample
- Nonparametric: Mann-Whitney U test
- Confidence intervals

Analysis of Variance (ANOVA)

- ANOVA assumptions (normality, equal variance with Levene's test)
- One-way
 - Nonparametric: Kruskal-Wallis
- Multi-factor
 - Main effects and interactions
- Tukey HSD post-hoc test
 - Type-I errors
 - Type-II errors

Categorical data visualization