# STATISTICAL COMPUTING

Cheat-Sheet for Our Statistical Procedures

**Purpose**: This handout provides a list of many types of research questions and their appropriate tests. The R function is also provided (none of these function names contains a numeral). It is your duty to know the assumption(s) to each test.

## MEANS PROCEDURES

| | | |
|---|---|---|
| One Population | One-sample t-test | `t.test` |
| | Wilcoxon test | `wilcox.test` |
| Two Populations | Two-sample t-test | `t.test` |
| | Mann-Whitney test | `wilcox.test` |
| More than Two Populations | Analysis of Variance | `aov` |
| | Kruskal-Wallis test | `kruskal.test` |

## PROPORTIONS PROCEDURES

| | | |
|---|---|---|
| One Population | Binomial test | `binom.test` |
| Two Populations | Proportions test | `prop.test` |

## RELATIONSHIPS

| | | |
|---|---|---|
| Categorical vs. Categorical | Chi-square independence test | `chisq.test` |
| Numeric vs. Numeric | Correlation test | `cor.test` |
| Numeric vs. Numeric | OLS Regression | `lm` |

## GOODNESS OF FIT

| | | |
|---|---|---|
| Categorical | Chi-square test | `chisq.test` |
| Normality | Shapiro-Wilk test | `shapiro.test` |
| Fully Specified Distribution | Kolmogorov-Smirnov test | `ks.test` |

## VARIANCE

| | | |
|---|---|---|
| One population | Chi-square test | `onevar.test` |
| Two populations | F test | `var.test` |
| More than two populations | Fligner-Killeen test | `fligner.test` |

## GRAPHICS

| | | |
|---|---|---|
| Categorical | Bar chart | `barplot` |
| Proportions | Binomial plot | `binom.plot` |
| Numeric | Box-and-whiskers plot | `boxplot` |
| | Histogram | `hist` |
| | | `normoverlay` |
| Categorical vs. Numeric | Side-by-side box plot | `boxplot` |
| Numeric vs. Numeric | Scatter plot | `plot` |
| Categorical vs. Categorical | Mosaic plot | `mosaicplot` |
| | Association plot | `assocplot` |