Statistical Methods

Categorical Data – Counts, Percents, Proportions

Basic Categorical Inference

One Proportion Test (3.1)

There is only one set of responses with only two possible outcomes for each response. We are comparing our sample proportion to a specific value.

Two Proportion Test (3.2)

There two groups with responses having two possible outcomes. We're comparing the proportion of the two groups to each other.

Advanced Categorical Inference

Chi-Square Goodness of Fit Test (3.3)

This is an extension of the one proportion test where the data is divided into groups in only one way. Instead only having two possible outcomes, use this when there are more than two outcomes. You may either have specific proportions for each outcome or you can say all the outcomes occur equally.

Chi-Square Test for Association – Cross Tabulation (3.4)

This is an extension of the two proportion test. There are two variables used for classifying the data and you have a contingency table or a cross tabulation. Use this when you have more than 2 possible outcomes for either classification variable..

Numeric Data – Measurements, Means, Averages

Basic Numeric Inference

One Sample T Test (4.1)

There is only one set of numbers, not grouped in any way, and we are comparing the mean of those numbers to a specific value.

Paired Samples T Test – Dependent Samples (4.2)

There is only one group, but with two measurements for each item (the two values belong to the same item). We are comparing the measurements to each other to see if they are equal.

Two Sample T Test – Independent Samples (4.3)

There is one measurements, but we are splitting the data into two groups. We are comparing the means of the groups to each other.

Advanced Numeric Inference

One-Way ANOVA (4.4)

This is an extension of the two sample T test. There is still one measurement, but now we are comparing the means of three or more groups with each other.

Two-Way ANOVA (not in text)

Items are classified by two grouping variables and arranged into table form with rows and columns like a cross tabulation except this time for numbers. We are comparing the means of each grouping variable as well as whether there is any interaction between the variables.

Correlation & Regression (Ch 5-6)

Both of these use paired data. While the paired samples t test checks to see if the two values are equal, these check to see if they are related. **Correlation** measures the strength of a linear relationship while **Regression** describes the linear relationship by finding the equation of the line.

Regression can fall under either Basic or Advanced inference, depending on the number of variables.

Colors indicate the Minitab Stat menu location: Basic Statistics, ANOVA, Tables, or Regression.
Parentheses indicate the section from *Introductory Statistics with Randomization and Simulation*.