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Workshop 9/17, 9/24, 10/15, 10/22, 10/29, 2010 presented by Linda Henkel and Laura McSweeney of Fairfield University. Materials available on website: [www.faculty.fairfield.edu/lmcsweeney/SFE.htm](http://www.faculty.fairfield.edu/lmcsweeney/SFE.htm) .

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OVERVIEW OF WORKSHOP

Day 1: Parts 1 & 2. Summarizing and graphing data; descriptive statistics
Day 2: Part 3. T tests
Day 3: Parts 4a & 4b. One-way ANOVA; two-way ANOVA
Day 4: Part 5. Chi square
Day 5: Part 6a & 6b. Correlation & Regression; Part 7: Putting it all together (how to choose appropriate statistic)

Part 1. Statistics as a Tool in Scientific Research: Summarizing and Graphically Representing Data

- A. Statistics as a Tool in Scientific Research
 - Types of research questions (descriptive, correlational, experimental)
 - Types of data (categorical and numerical)
 - Types of statistical procedures (descriptive, inferential)
- B. Basic Numerical Summaries in Tables
 - Frequency and relative frequency tables
 - Contingency tables
- C. Choosing the Appropriate Type of Graph
 - Bar graphs
 - Histograms
 - Scatterplots
 - Time series plots
- D. Shapes of Distributions and Outliers
- E. Pitfalls to Avoid and Guidelines to Follow in Making Graphs
- F. Hands-On Exercise: Making Graphs Using Excel and SPSS

Part 2. Descriptive Statistics: Measures of Central Tendency and Variability

- A. Central Tendency (mean, median, mode)
- B. Variability (range, SD, interquartile range, SE)
- C. Hands-On Exercise: Obtaining Descriptive and Summary Statistics Using Excel and SPSS

Part 3. Comparing 2 Conditions With a T Test

- A. Types of T Tests: One-sample t test, Independent samples t test, Paired samples t test
- B. When to use, how to run, how to interpret and report
- C. Hands-On Exercise: Running T Tests Using Excel and SPSS

Part 4a. Comparing 2 or More Conditions With a One-Way ANOVA

- A. Types of One-Way ANOVA: Independent samples F test and repeated measures F test for main effect
- B. When to use, how to run, how to interpret and report
- C. Hands-On Exercise: Running One-Way ANOVA Using SPSS

Part 4b. Comparing 2 or More Independent Variables Using a Two-Way ANOVA

- A. Types of Two-Way ANOVA: Independent samples, repeated measures, and mixed factorial; understanding main effects and interactions
- B. When to use, how to run, how to interpret and report
- C. Hands-On Exercise: Running Two-Way ANOVA Using SPSS

Part 5. Comparing the Proportion of Scores in Different Categories With a Chi Square Test

- A. Types of Chi Square Tests:
 - One-way table (goodness of fit test)
 - Two-way table (test for independence)
- B. When to use, how to run, how to interpret and report
- C. Hands-On Exercise: Running Chi Square Tests Using Excel and SPSS

Part 6a. Assessing the Relationship Between 2 Variables With Correlation

- A. Correlation and Regression
- B. When to use, how to run, how to interpret and report
- C. Hands-On Exercise: Running Correlations and Regression Using Excel and SPSS

Part 6b. Assessing the Relationship Between Multiple Variables

- A. Correlation and Regression
- B. When to use, how to run, how to interpret and report
- C. Hands-On Exercise: Running Correlations and Regression Using Excel and SPSS

Part 7: Putting It All Together

- A. Choosing the appropriate statistical test for your research question
- B. Optional hands-on exercise: Develop a teaching module for one of your courses to integrate statistical reasoning (work on individually or in small group; present to larger group)