Contents

1 Sample Size, Mean, Standard Deviation, and Standard Error of the Mean ........................................................ 1
  1.1 Mean ........................................................................... 1
  1.2 Standard Deviation ...................................................... 2
  1.3 Standard Error of the Mean ....................................... 3
  1.4 Sample Size, Mean, Standard Deviation, and Standard Error of the Mean ........................................ 4
    1.4.1 Using the Fill/Series/Columns Commands .............. 4
    1.4.2 Changing the Width of a Column .......................... 5
    1.4.3 Centering Information in a Range of Cells .......... 6
    1.4.4 Naming a Range of Cells .................................. 8
    1.4.5 Finding the Sample Size Using the =COUNT Function ........................................ 9
    1.4.6 Finding the Mean Score Using the =AVERAGE Function ........................................ 9
    1.4.7 Finding the Standard Deviation Using the =STDEV Function ........................................ 10
    1.4.8 Finding the Standard Error of the Mean ............ 10
  1.5 Saving a Spreadsheet ............................................. 12
  1.6 Printing a Spreadsheet ............................................ 13
  1.7 Formatting Numbers in Currency Format (Two Decimal Places) ........................................ 15
  1.8 Formatting Numbers in Number Format (Three Decimal Places) ........................................ 16
  1.9 End-of-Chapter Practice Problems .......................... 17
Reference .................................................................. 19
2 Random Number Generator .......................................................... 21
  2.1 Creating Frame Numbers for Generating Random Numbers .................. 21
  2.2 Creating Random Numbers in an Excel Worksheet ................................. 24
  2.3 Sorting Frame Numbers into a Random Sequence .................................... 26
  2.4 Printing an Excel File So That All of the Information Fits onto One Page ........................................... 29
  2.5 End-of-Chapter Practice Problems ................................................... 31
Reference ..................................................................................... 33

3 Confidence Interval About the Mean Using the TINV Function and Hypothesis Testing ................................................ 35
  3.1 Confidence Interval About the Mean ................................................... 35
    3.1.1 How to Estimate the Population Mean ............................................. 35
    3.1.2 Estimating the Lower Limit and the Upper Limit of the 95% Confidence Interval About the Mean ................. 36
    3.1.3 Estimating the Confidence Interval for the Chevy Impala in Miles per Gallon ........................................ 37
    3.1.4 Where Did the Number “1.96” Come From? ................................. 38
    3.1.5 Finding the Value for t in the Confidence Interval Formula .................... 38
    3.1.6 Using Excel’s TINV Function to Find the Confidence Interval About the Mean ........................................ 39
    3.1.7 Using Excel to Find the 95% Confidence Interval for a Car’s Miles per Gallon Claim ................................. 40
  3.2 Hypothesis Testing ........................................................................ 44
    3.2.1 Hypotheses Always Refer to the Population of People or Events That You Are Studying ......................... 47
    3.2.2 The Null Hypothesis and the Research (Alternative) Hypothesis ...................... 47
    3.2.3 The Seven Steps for Hypothesis Testing Using the Confidence Interval About the Mean ....................... 50
  3.3 Alternative Ways to Summarize the Result of a Hypothesis Test ................... 56
    3.3.1 Different Ways to Accept the Null Hypothesis .................................. 57
    3.3.2 Different Ways to Reject the Null Hypothesis .................................. 57
  3.4 End-of-Chapter Practice Problems .................................................... 58
Reference ..................................................................................... 63

4 One-Group t-Test for the Mean ...................................................... 65
  4.1 The Seven Steps for Hypothesis Testing Using the One-Group t-Test ............... 65
    4.1.1 Step 1: State the Null Hypothesis and the Research Hypothesis .................. 66
    4.1.2 Step 2: Select the Appropriate Statistical Test ................................... 66
# Contents

## 6 Correlation and Simple Linear Regression
- **6.1 What Is a “Correlation”?**
  - **6.1.1 Understanding the Formula for Computing a Correlation**
  - **6.1.2 Understanding the Nine Steps for Computing a Correlation, r**
- **6.2 Using Excel to Compute a Correlation Between Two Variables**
- **6.3 Creating a Chart and Drawing the Regression Line onto the Chart**
  - **6.3.1 Using Excel to Create a Chart and the Regression Line Through the Data Points**
- **6.4 Printing a Spreadsheet so that the Table and Chart Fit onto One Page**
- **6.5 Finding the Regression Equation**
  - **6.5.1 Installing the Data Analysis ToolPak into Excel**
  - **6.5.2 Using Excel to Find the SUMMARY OUTPUT of Regression**
  - **6.5.3 Finding the Equation for the Regression Line**
  - **6.5.4 Using the Regression Line to Predict the Y-Value for a Given X-Value**
- **6.6 Adding the Regression Equation to the Chart**
- **6.7 How to Recognize Negative Correlations in the SUMMARY OUTPUT Table**
- **6.8 Printing Only Part of a Spreadsheet Instead of the Entire Spreadsheet**
  - **6.8.1 Printing Only the Table and the Chart on a Separate Page**
  - **6.8.2 Printing Only the Chart on a Separate Page**
  - **6.8.3 Printing Only the SUMMARY OUTPUT of the Regression Analysis on a Separate Page**
- **6.9 End-of-Chapter Practice Problems**

## 7 Multiple Correlation and Multiple Regression
- **7.1 Multiple Regression Equation**
- **7.2 Finding the Multiple Correlation and the Multiple Regression Equation**
- **7.3 Using the Regression Equation to Predict FROSH GPA**
- **7.4 Using Excel to Create a Correlation Matrix in Multiple Regression**
- **7.5 End-of-Chapter Practice Problems**

References

---

- **Correlation and Simple Linear Regression**
  - **What Is a “Correlation”?**
    - **Understanding the Formula for Computing a Correlation**
    - **Understanding the Nine Steps for Computing a Correlation, r**
  - **Using Excel to Compute a Correlation Between Two Variables**
  - **Creating a Chart and Drawing the Regression Line onto the Chart**
    - **Using Excel to Create a Chart and the Regression Line Through the Data Points**
  - **Printing a Spreadsheet so that the Table and Chart Fit onto One Page**
  - **Finding the Regression Equation**
    - **Installing the Data Analysis ToolPak into Excel**
    - **Using Excel to Find the SUMMARY OUTPUT of Regression**
    - **Finding the Equation for the Regression Line**
    - **Using the Regression Line to Predict the Y-Value for a Given X-Value**
  - **Adding the Regression Equation to the Chart**
  - **How to Recognize Negative Correlations in the SUMMARY OUTPUT Table**
  - **Printing Only Part of a Spreadsheet Instead of the Entire Spreadsheet**
    - **Printing Only the Table and the Chart on a Separate Page**
    - **Printing Only the Chart on a Separate Page**
    - **Printing Only the SUMMARY OUTPUT of the Regression Analysis on a Separate Page**
  - **End-of-Chapter Practice Problems**

- **Multiple Correlation and Multiple Regression**
  - **Multiple Regression Equation**
  - **Finding the Multiple Correlation and the Multiple Regression Equation**
  - **Using the Regression Equation to Predict FROSH GPA**
  - **Using Excel to Create a Correlation Matrix in Multiple Regression**
  - **End-of-Chapter Practice Problems**

References
8 One-Way Analysis of Variance (ANOVA) ......................... 165
  8.1 Using Excel to Perform a One-Way Analysis
      of Variance (ANOVA) ........................................... 166
  8.2 How to Interpret the ANOVA Table Correctly ............... 169
  8.3 Using the Decision Rule for the ANOVA F-Test ............. 170
  8.4 Testing the Difference Between Two Groups Using
      the ANOVA t-Test .............................................. 171
  8.4.1 Comparing LECTURES vs. INDEPENDENT
      in Their Exam Scores Using the ANOVA t-Test .......... 171
  8.5 End-of-Chapter Practice Problems .......................... 175
References ............................................................... 181

Appendices ............................................................... 183
Appendix A: Answers to End-of-Chapter Practice Problems .... 183
Appendix B: Practice Test ........................................... 216
Appendix C: Answers to Practice Test ............................. 227
Appendix D: Statistical Formulas .................................. 238
Appendix E: t-Table ................................................... 240

Index ........................................................................... 241
Excel 2010 for Educational and Psychological Statistics
A Guide to Solving Practical Problems
Quirk, Th.
2012, XV, 243 p. 163 illus., 159 illus. in color., Softcover