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.................................... 3
       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 .......................... 15
       (Two decimal places) ..................................... 15
   1.8 Formatting Numbers in Number Format ..................................... 17
       (Three decimal places) ..................................... 17
   1.9 End-of-Chapter Practice Problems .............................. 20
   Reference .............................................. 20

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
4.1.5 STEP 5: Find the Critical Value of t in the t-Table in Appendix E .......................... 68
4.1.6 STEP 6: State the Result of Your Statistical Test .............................................. 69
4.1.7 STEP 7: State the Conclusion of Your Statistical Test in Plain English! ................. 69

4.2 One-Group t-Test for the Mean ................................................................. 70
4.3 Can You Use Either the 95% Confidence Interval About the Mean OR the One-Group t-Test When Testing Hypotheses? .................................................. 74
4.4 End-of-Chapter Practice Problems .............................................................. 74

References ............................................................................................................. 79

5 Two-Group t-Test of the Difference of the Means for Independent Groups .................. 81

5.1 The 9 STEPS for Hypothesis-Testing Using the Two-Group t-Test ......................... 82

5.1.1 STEP 1: Name One Group, Group 1, and the Other Group, Group 2 ................. 82

5.1.2 STEP 2: Create a Table That Summarizes the Sample Size, Mean Score, and Standard Deviation of Each Group .................................................. 82

5.1.3 STEP 3: State the Null Hypothesis and the Research Hypothesis for the Two-Group t-Test .......................................................... 84

5.1.4 STEP 4: Select the Appropriate Statistical Test ................................................. 84

5.1.5 STEP 5: Decide on a Decision Rule for the Two-Group t-Test ......................... 84

5.1.6 STEP 6: Calculate the Formula for the Two-Group t-Test ................................. 84

5.1.7 STEP 7: Find the Critical Value of t in the t-Table in Appendix E .................... 85

5.1.8 STEP 8: State the Result of Your Statistical Test ............................................ 86

5.1.9 STEP 9: State the Conclusion of Your Statistical Test in Plain English! .......... 86

5.2 Formula #1: Both Groups Have More Than 30 People in Them ............................. 90

5.2.1 An Example of Formula #1 for the Two-Group t-Test ................................. 91

5.3 Formula #2: One or Both Groups Have Less Than 30 People in Them ................. 97

5.4 End-of-Chapter Practice Problems .................................................................... 103

References ............................................................................................................. 106
6 Correlation and Simple Linear Regression .......................... 107
   6.1 What Is a “Correlation?” ...................................... 107
      6.1.1 Understanding the Formula for Computing
             a Correlation ........................................ 112
      6.1.2 Understanding the Nine Steps for Computing
             a Correlation, r ...................................... 112
   6.2 Using Excel to Compute a Correlation Between
       Two Variables ............................................. 114
   6.3 Creating a Chart and Drawing the Regression Line
       onto the Chart ............................................. 118
      6.3.1 Using Excel to Create a Chart and the
             Regression Line Through the Data Points ............. 120
   6.4 Printing a Spreadsheet So That the Table and Chart
       Fit onto One Page ........................................... 127
   6.5 Finding the Regression Equation .............................. 129
      6.5.1 Installing the Data Analysis ToolPak into Excel ........ 130
      6.5.2 Using Excel to Find the SUMMARY OUTPUT
             of Regression .......................................... 133
      6.5.3 Finding the Equation for the Regression Line ........... 138
      6.5.4 Using the Regression Line to Predict the
             y-Value for a Given x-Value ....................... 138
   6.6 Adding the Regression Equation to the Chart ................. 139
   6.7 How to Recognize Negative Correlations in the
       SUMMARY OUTPUT Table .................................... 143
   6.8 Printing Only Part of a Spreadsheet Instead of the
       Entire Spreadsheet ........................................... 143
      6.8.1 Printing Only the Table and the Chart on
             a Separate Page ......................................... 144
      6.8.2 Printing Only the Chart on a Separate Page ............ 144
      6.8.3 Printing Only the SUMMARY OUTPUT of
             the Regression Analysis on a Separate Page .......... 145
   6.9 End-of-Chapter Practice Problems ............................. 145
       References .................................................. 149

7 Multiple Correlation and Multiple Regression ....................... 151
   7.1 Multiple Regression Equation ................................ 151
   7.2 Finding the Multiple Correlation and the Multiple
       Regression Equation ........................................ 153
   7.3 Using the Regression Equation to Predict Annual Sales .... 157
   7.4 Using Excel to Create a Correlation Matrix in
       Multiple Regression ........................................ 158
   7.5 End-of-Chapter Practice Problems ................................ 161
       References .................................................. 166
### 8 One-Way Analysis of Variance (ANOVA)

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1 Using Excel to Perform a One-Way Analysis</td>
<td>167</td>
</tr>
<tr>
<td>8.2 How to Interpret the ANOVA Table Correctly</td>
<td>169</td>
</tr>
<tr>
<td>8.3 Using the Decision Rule for the ANOVA F-Test</td>
<td>171</td>
</tr>
<tr>
<td>8.4 Testing the Difference Between Two Groups</td>
<td>172</td>
</tr>
<tr>
<td>8.4.1 Comparing Dierberg’s vs. Shop ‘n Save in Their Prices Using the ANOVA t-Test</td>
<td>173</td>
</tr>
<tr>
<td>8.5 End-of-Chapter Practice Problems</td>
<td>177</td>
</tr>
</tbody>
</table>

### Appendices

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix A: Answers to End-of-Chapter Practice Problems</td>
<td>185</td>
</tr>
<tr>
<td>Appendix B: Practice Test</td>
<td>216</td>
</tr>
<tr>
<td>Appendix C: Answers to Practice Test</td>
<td>228</td>
</tr>
<tr>
<td>Appendix D: Statistical Formulas</td>
<td>238</td>
</tr>
<tr>
<td>Appendix E: t-Table</td>
<td>240</td>
</tr>
</tbody>
</table>

### Index

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>241</td>
</tr>
</tbody>
</table>
Excel 2016 for Marketing Statistics
A Guide to Solving Practical Problems
Quirk, Th.; Rhiney, E.
2016, XVII, 242 p. 167 illus. in color., Softcover
ISBN: 978-3-319-43375-2