

Thomas J. Quirk • Julie Palmer-Schuyler

Excel 2016 for Human Resource Management Statistics

A Guide to Solving Practical Problems

 Springer

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	6
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)	17
1.9	End-of-Chapter Practice Problems	18
	References	21

- 2 Random Number Generator 23**
 - 2.1 Creating Frame Numbers for Generating Random Numbers 23
 - 2.2 Creating Random Numbers in an Excel Worksheet 27
 - 2.3 Sorting Frame Numbers into a Random Sequence 28
 - 2.4 Printing an Excel File So That All of the Information
Fits onto One Page 32
 - 2.5 End-of-Chapter Practice Problems 35
- 3 Confidence Interval About the Mean Using the TINV
Function and Hypothesis Testing 37**
 - 3.1 Confidence Interval About the Mean 37
 - 3.1.1 How to Estimate the Population Mean 37
 - 3.1.2 Estimating the Lower Limit and the Upper
Limit of the 95 % Confidence Interval
About the Mean 38
 - 3.1.3 Estimating the Confidence Interval
for TIME TO FILL 39
 - 3.1.4 Where Did the Number “1.96” Come From? 40
 - 3.1.5 Finding the Value for t in the Confidence
Interval Formula 41
 - 3.1.6 Using Excel’s TINV Function to Find the Confidence
Interval About the Mean 42
 - 3.1.7 Using Excel to find the 95 % Confidence Interval
for TIME TO FILL 42
 - 3.2 Hypothesis Testing 50
 - 3.2.1 Hypotheses Always Refer to the Population That
You Are Studying 51
 - 3.2.2 The Null Hypothesis and the Research (Alternative)
Hypothesis 52
 - 3.2.3 The 7 Steps for Hypothesis-testing Using
the Confidence Interval About the Mean 55
 - 3.3 Alternative Ways to Summarize the Result
of a Hypothesis Test 62
 - 3.3.1 Different Ways to Accept the Null Hypothesis 63
 - 3.3.2 Different Ways to Reject the Null Hypothesis 63
 - 3.4 End-of-Chapter Practice Problems 63
 - References 69
- 4 One-Group t-Test for the Mean 71**
 - 4.1 The 7 STEPS for Hypothesis-Testing Using
the One-Group t-Test 71
 - 4.1.1 STEP 1: State the Null Hypothesis and the Research
Hypothesis 72
 - 4.1.2 STEP 2: Select the Appropriate Statistical Test 72

- 4.1.3 STEP 3: Decide on a Decision Rule for the One-Group t-Test 72
- 4.1.4 STEP 4: Calculate the Formula for the One-Group t-Test 73
- 4.1.5 STEP 5: Find the Critical Value of t in the t-Table in Appendix E 74
- 4.1.6 STEP 6: State the Result of Your Statistical Test 75
- 4.1.7 STEP 7: State the Conclusion of Your Statistical Test in Plain English! 76
- 4.2 One-Group t-Test for the Mean 76
- 4.3 Can You Use Either the 95 % Confidence Interval About the Mean OR the One-Group t-Test When Testing Hypotheses? 82
- 4.4 End-of-Chapter Practice Problems 82
- References 86
- 5 Two-Group t-Test of the Difference of the Means for Independent Groups 87**
 - 5.1 The 9 STEPS for Hypothesis-Testing Using the Two-Group t-Test 88
 - 5.1.1 STEP 1: Name One Group, Group 1, and the Other Group, Group 2 88
 - 5.1.2 STEP 2: Create a Table That Summarizes the Sample Size, Mean Score, and Standard Deviation of Each Group 88
 - 5.1.3 STEP 3: State the Null Hypothesis and the Research Hypothesis for the Two-Group t-Test 90
 - 5.1.4 STEP 4: Select the Appropriate Statistical Test 90
 - 5.1.5 STEP 5: Decide on a Decision Rule for the Two-Group t-Test 90
 - 5.1.6 STEP 6: Calculate the Formula for the Two-Group t-Test 91
 - 5.1.7 STEP 7: Find the Critical Value of t in the t-Table in Appendix E 91
 - 5.1.8 STEP 8: State the Result of Your Statistical Test 92
 - 5.1.9 STEP 9: State the Conclusion of Your Statistical Test in Plain English! 92
 - 5.2 Formula #1: Both Groups Have A Sample Size Greater Than 30 97
 - 5.2.1 An Example of Formula #1 for the Two-Group t-Test 98
 - 5.3 Formula #2: One or Both Groups Have a Sample Size Less Than 30 105
 - 5.4 End-of-Chapter Practice Problems 112
 - References 115

6 Correlation and Simple Linear Regression 117

6.1 What Is a “Correlation?” 117

6.1.1 Understanding the Formula for Computing
a Correlation 122

6.1.2 Understanding the Nine Steps for Computing
a Correlation, r 122

6.2 Using Excel to Compute a Correlation Between
Two Variables 124

6.3 Creating a Chart and Drawing the Regression Line
onto the Chart 129

6.3.1 Using Excel to Create a Chart and the Regression
Line Through the Data Points 131

6.4 Printing a Spreadsheet So That the Table and Chart
Fit onto One Page 140

6.5 Finding the Regression Equation 142

6.5.1 Installing the Data Analysis ToolPak into Excel 142

6.5.2 Using Excel to Find the SUMMARY
OUTPUT of Regression 145

6.5.3 Finding the Equation for the Regression Line 150

6.5.4 Using the Regression Line to Predict
the y -Value for a Given x -Value 150

6.6 Adding the Regression Equation to the Chart 151

6.7 How to Recognize Negative Correlations
in the SUMMARY OUTPUT Table 154

6.8 Printing Only Part of a Spreadsheet Instead of the Entire
Spreadsheet 154

6.8.1 Printing Only the Table and the Chart
on a Separate Page 155

6.8.2 Printing Only the Chart on a Separate Page 155

6.8.3 Printing Only the SUMMARY OUTPUT
of the Regression Analysis on a Separate Page 156

6.9 End-of-Chapter Practice Problems 156

References 163

7 Multiple Correlation and Multiple Regression 165

7.1 Multiple Regression Equation 165

7.2 Finding the Multiple Correlation and the Multiple Regression
Equation 168

7.3 Using the Regression Equation to Predict FIRST-YEAR GPA 173

7.4 Using Excel to Create a Correlation Matrix
in Multiple Regression 173

7.5 End-of-Chapter Practice Problems 177

References 182

- 8 One-Way Analysis of Variance (ANOVA)** 183
 - 8.1 Using Excel to Perform a One-Way Analysis of Variance (ANOVA) 185
 - 8.2 How to Interpret the ANOVA Table Correctly 188
 - 8.3 Using the Decision Rule for the ANOVA F-Test 189
 - 8.4 Testing for the Difference Between Two Groups Using the ANOVA t-Test 190
 - 8.4.1 Comparing Division B vs. Division C in Job Satisfaction Using the ANOVA t-Test 190
 - 8.5 End-of-Chapter Practice Problems 195
- References 200

- Appendices** 201
 - Appendix A: Answers to End-of-Chapter Practice Problems 201
 - Appendix B: Practice Test 233
 - Appendix C: Answers to Practice Test 244
 - Appendix D: Statistical Formulas 254
 - Appendix E: t-Table 256

- Index** 257