E. Excel Mini-Exercises from our Text Book

Purpose: Continue to expand your Excel skills, introduce a small Scenario, and a small Pivot Table.

Mini-Exercise Components:

Appendix:

E.1 – Downloading your Starting Spreadsheet Template

To start this tutorial, you will download a starting Excel template which will be populated with heading titles, row titles and starting data. There are three mini exercises that comprise this project to help you learn and practice typical Excel tasks.

- All Excel projects are graded with the help of a computer system (Entropy), which means that you must follow directions closely and place all formulas, headings etc. in the exact cells specified or the grading system will not find your work. In particular, do not insert extra rows or columns as well as do not change the Sheet name unless instructed to change the title of the sheet.

- **Do you own work, and do not share any files with other students**.

    a. Download a starting template from Entropy as shown in Figure E-1. Go to https://csbapp.uncw.edu/entropy (or Google UNCW Entropy)
    b. Find the Upload files/download link in Entropy
    c. **Download the Template for the Mini Exercises**:
    d.

File Upload/Download

The following projects are available for upload/download

Assignment Name	Due	Due Time	Late Acceptance Until	File Type	Upload	Download
Project 8 - Multi-Mini Exercises	11/03/2022	11:59 PM	11/07/2022	XLSX	Upload Now	Download Starting Template

Figure E-1: Entropy screen for Excel upload/download files

    e. Save the downloaded file to the Download, then copy to either your **Documents** Folder or **OneDrive**. Do not open the spreadsheet in a browser.

    f. Rename the file **yourLastNameMultiple.xlsx** as in appleMultiple.xlsx

    g. **Do not share this file with anyone else; it has been created just for you.**

Once you download the starting template, you will notice three sheets (tabs) to complete. Complete all three tasks as described on the following pages and upload the completed worksheet to Entropy. These three tasks are:

    a. Sales Projections – using Excel for projections of Revenues
    b. Park Revenue – introduction to Scenarios
    c. Sales Data – gain knowledge of Pivot Tables

E.2 – Sales Projections

1. Calculate the percentage change from year to year (2021 to 2022 and 2022 to 2023). Percentage change is computed using the following formula: (current year sales – prior year sales) / (prior year sales). To help you get started, you should get the values as shown in Figure E-2 (before we format the cells to make them easier for a user to read).

	Customer ID	Company Name	2021	2022	% Change	2023 Projected	% Change	Total Sales
2	Customer ID	Company Name	2021	2022	% Change	2023	% Change	Total Sales
3						Projected		
4								
5	QUICK	QUICK-Foods	117483	125253	0.06613369	125986	0.0058522	368722
6	SAVEB	Save-Big Markets	115673	114597	-0.00930542	122698	0.0706912	352968
7	JONES	Jones & Sons Grocers	113237	122659	0.08320908	135693	0.1062621	371589

Figure E-2: Percentage gain/loss for our customers, before formatting.

2. Calculate the total sales for each customer for 2021, 2022, and 2023.

	Customer ID	Company Name	2021	2022	% Change	2023 Projected	% Change	Total Sales
2	Customer ID	Company Name	2021	2022	% Change	2023	% Change	Total Sales
3						Projected		
4								
5	QUICK	QUICK-Foods	117483	125253	0.06613369	125986	0.0058522	368722
6	SAVEB	Save-Big Markets	115673	114597	-0.00930542	122698	0.0706912	352968
7	JONES	Jones & Sons Grocers	113237	122659	0.08320908	135693	0.1062621	371589
8	UPALL	Up All Night Market	57317	62854	0.09659564	65269	0.0384224	185440
9	MUDDY	Muddy River Market	52246	47523	-0.09039752	52639	0.1076531	152408
10	SMITH	Smith Family Grocery	34101	33102	-0.0292996	31205	-0.0573077	98408
11	THEHI	The Hill Market	32556	35698	0.09652578	33461	-0.0626646	101715
12	SHOPS	Shops on the Park	32204	39658	0.23146575	41365	0.043043	113227
13	SNACK	Snack Quick Market	31746	28745	-0.09452446	29169	0.0147504	89660
14	QUEEN	Queen City Coffee	30226	22356	-0.26037431	29471	0.3182591	82053
15	SOULA	Soulard Pastries	29073	33345	0.14692271	36953	0.1082021	99371
16	FLAGS	Flagstaff Coffee and Tea	28723	26574	-0.07480875	22569	-0.1507112	77866
17	GOODB	Good Beverage Mart	26968	26995	0.00099562	21364	-0.2085942	75327
18	TASTY	Tasty Snack and Beverage	26260	32654	0.24349056	39654	0.2143688	98568

Figure E-3: Summary including Total Sales (before formatting).

3. In Row 20, calculate the total for each year (not the % change). In the two % Change Columns calculate the % change based on the Total for each year.

4. In Row 21, calculate the mean (average) for the columns which detail the sales (4 columns)

5. In Row 22, calculate the standard deviation for the sales columns. Hint start with the = (equals) sign and then hit the fx [× ✓ (fx)] function tool, then look for STDEV in the menu provided.

6. Your results should look like E-4.

		2021	2022	% Change	2023	% Change	Total Sales
20	Total Sales By Year	727813	752013	0.03324965	787496	0.047184	2267322
21	Mean (Average per Customer)	51987	53715		56250		161952
22	Standard Deviation	35574	37787		40669		113676

Figure E-4: Summary Statistics

7. Format the spreadsheet as follows
   a. The sales columns should be formatted with zero decimals, but include a , (comma) separator. (Hint: Right click on selected cells and then select Format).
   b. Format the % columns as a %, with 1 decimal place.
   c. Your completed sheet should look like Figure E-5.

2	Customer ID	Company Name	2021	2022	% Change	2023 Projected	% Change	Total Sales
3						Projected		
4								
5	QUICK	QUICK-Foods	117,483	125,253	6.6%	125,986	0.6%	368,722
6	SAVEB	Save-Big Markets	115,673	114,597	-0.9%	122,698	7.1%	352,968
7	JONES	Jones & Sons Grocers	113,237	122,659	8.3%	135,693	10.6%	371,589
8	UPALL	Up All Night Market	57,317	62,854	9.7%	65,269	3.8%	185,440
9	MUDDY	Muddy River Market	52,246	47,523	-9.0%	52,639	10.8%	152,408
10	SMITH	Smith Family Grocery	34,101	33,102	-2.9%	31,205	-5.7%	98,408
11	THEHI	The Hill Market	32,556	35,698	9.7%	33,461	-6.3%	101,715
12	SHOPS	Shops on the Park	32,204	39,658	23.1%	41,365	4.3%	113,227
13	SNACK	Snack Quick Market	31,746	28,745	-9.5%	29,169	1.5%	89,660
14	QUEEN	Queen City Coffee	30,226	22,356	-26.0%	29,471	31.8%	82,053
15	SOULA	Soulard Pastries	29,073	33,345	14.7%	36,953	10.8%	99,371
16	FLAGS	Flagstaff Coffee and Tea	28,723	26,574	-7.5%	22,569	-15.1%	77,866
17	GOODB	Good Beverage Mart	26,968	26,995	0.1%	21,364	-20.9%	75,327
18	TASTY	Tasty Snack and Beverage	26,260	32,654	24.3%	39,654	21.4%	98,568
19								
20	Total Sales By Year		727,813	752,013	3.3%	787,496	4.7%	2,267,322
21	Mean (Average per Customer)		51,987	53,715		56,250		161,952
22	Standard Deviation		35,574	37,787		40,669		113,676
23								

Figure E-5: Completed Sales Analysis Tab

E.3. – Park Revenues – Introduction to Scenarios (2nd Tab)

Note: More detail on this case may be found in the textbook appendices, starting on Page A-90, some numbers/headings have been changed for readability.

As you know, one useful function of spreadsheet software is the ability to change input values and see the impact on outcome variables. For example, you can change sales projections and see the impact on net income. Excel's Scenario Manager makes performing these sorts of sensitivity analyses much easier. Figure E-6 shows a simple spreadsheet that computes total revenues for a recreation park. The sources of revenues are admissions fees, merchandise, and food sales.

1	Fun Parks Revenue Analysis					
2					Assumptions (based on prior year revenues	
3	Revenue	Amount			Attendance	1000
4	Admission	5,400,000.00			Days/season	120
5	Merchandise	3,000,000.00			Admission fee	45
6	Food	1,200,000.00			Merchandise per customer	25
7	Total revenue	9,600,000.00			Food per customer	10
8						

Figure E-6: Park Revenue Spreadsheet

Assumptions for total visitors, admission price, and average merchandise and food purchases per customer are also shown, as is the number of days the park is open. The formulas in this spreadsheet are

simple. For example, total admissions revenue is the product of attendance, days per season, and admission fee. Merchandise and food sales are computed similarly, substituting the appropriate value for admission fee

Park management is thinking about raising the admission fee, but they want to see the impact on overall revenue. They estimate that raising the admission fee to $50 will lower attendance by 50 guests per day. Raising the admission fee to $53 will lower attendance by 75 visitors per day.

We want to create three scenarios: one using the current value for Admission ($45), one with a $50 admission fee, and one with a $53 admission fee.

8. Start the Scenario Manager. To do so, click the Data menu ribbon. Click the What-If Analysis icon in the Data Tools section of the Data menu ribbon. In the drop down that is displayed, select Scenario Manager (Figure E-7). If you do not see the **What if**, you might be working in the 'cloud' version of Excel and not the version on your desktop.
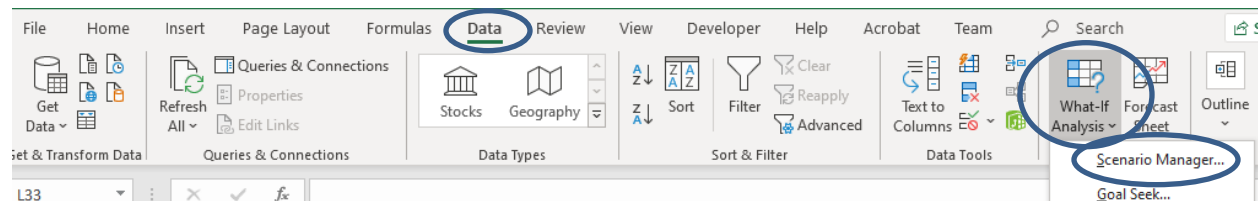
Figure E-7: Scenario Manager is found under the What-If Analysis icon in the Data Tools section of the Data menu ribbon

9. The starting setup screen for the Scenario Manager is shown in Figure E-8. There are no scenarios set up when you first start the Scenario Manager.
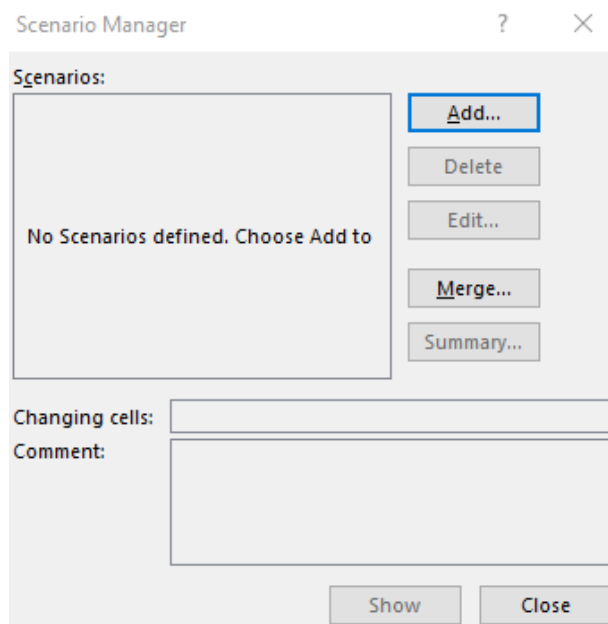

Figure E-8: Starting setup for Scenario Manager (Mac Users should click the + (Plus sign to add a Scenario)

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10. Your first step in the scenario manager will be to add a scenario. Each scenario represents a different "set of inputs" from our spreadsheet (and management's desires). For this tutorial, we will be creating one scenario for each of the three admission fee cases we desire to investigate..

Click the Add button to create your first scenario. Figure E-9 shows the setup screen that will start the creation of a scenario.

Figure E-9 Setup screen of one scenario

11. Each scenario must be given a name. It's best to use a descriptive name because this will be displayed on the output report. In addition, it will be easier to tell the scenarios apart when making updates if you use a descriptive name.

Name this first scenario **No Change** and place this in the Scenario name box provided in the scenario setup.

12. Changing cells refers to one or several input cells that will be modified for each scenario. For this tutorial, we have two input cells that we will change, **both F3 and F5 (daily attendance and admission fee)**, as shown in Figure E-10

Figure E-10 Building the Current Case (no change to fees)

You may manually type the cell references into the Changing cells box provided. Alternatively, you can use your mouse to click the cells (holding down the crtl key) on the worksheet in the background. Feel free to move the Add Scenario window so you can see the cells below it. Confirm your scenario setup by clicking OK. In the next screen you will enter values for each of the changing cells. For your first scenario (No Change), the values may already be inserted into the Scenario Value Panel as shown in E-11. If they do not appear, type 1000 and 45 respectively into F3 and F5, then click OK.

Figure E-11 – Entering the base case values

13. We need to add two additional cases to show the impact of the change in admission fee. Name the 2nd scenario: $5 Increase, with the values for F3 to be 950 (reduction of 50 guests) and F5 to be 50.

14. Likewise create a third scenario, name it $8 increase, with the values of 925 for F3 and F5 to be 53.

15. When complete you should have 3 scenarios built for analysis, and to help us determine the impact of potential price increases. If you made any errors you can hit the EDIT button and adjust your values.

Figure E-12 – Scenario Manager with 3 cases

16. We want to summarize our scenarios, which will show all three on a single worksheet, so we click on **Summary**.

17. When you click on Summary, a dialog box lets you choose the output cells you want to show in your summaries. In our example, we click in the Result Cell area and choose cells **B4,B7**, which contain the Admission and Total Revenue values; the dialog box with our selections is shown in Figure E-13. Click on OK to create the scenario summaries.
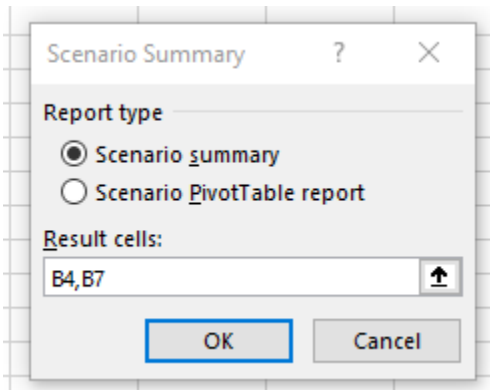
Scenario Summary ? ✕

Report type
◉ Scenario summary
○ Scenario PivotTable report

Result cells:
B4,B7

OK   Cancel

Figure E-13 – Scenario Summary showing the result cells

18. Once you hit OK, Excel will generate a new sheet (tab) with the 3 different cases and their impact on total revenues as shown in Figure E-14.

Scenario Summary

		Current Values:	No Change	$5 Increase	$8 Increase
Changing Cells:					
	F3	1000	1000	950	925
	F5	45	45	50	53
Result Cells:					
	B4	5,400,000.00	5,400,000.00	5,700,000.00	5,883,000.00
	B7	9,600,000.00	9,600,000.00	9,690,000.00	9,768,000.00

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.

Figure E-14 – Scenario Summary with 3 cases and impact on revenues before formatting

19. You may notice that the Current Values are the same as the No Change scenario. This occurred because one of our scenarios happened to have the same values as those that are currently in the worksheet. This won't always be the case. To eliminate the duplicate values, highlight Column D and click Delete to delete the entire column.

20. We can improve the summary by changing the formats of the numbers for the changing cells. We should also have more meaningful labels than F3. F5 etc.. We will use the ParkRevenue sheet to help with more readable titles.

    a. Click on B6, enter an = sign, and then click the ParkRevenue tab, and select E3 (where the title Attendance appears). Then hit Enter. You should now see Attendance appearing in cell B6 on the Scenario Summary sheet. Click on C6 and hit delete to clear out the prior entry.

    b. Do the same for B7, B9 and B10.

    c. Format the cells to be zero decimals, but with a ,

    d. Format the Admission fee, Admission, and Total Revenue rows to be currency with zero decimals.

    e. When complete your Scenario Summary tab **(check that it's name is Scenario Summary)** should look like Figure E-15.

	A	B	C	D	E	F
1						
2		**Scenario Summary**				
3				No Change	$5 Increase	$8 Increase
5		Changing Cells:				
6		Attendance		1,000	950	925
7		Admission fee		$45	$50	$53
8		Result Cells:				
9		Admission		$5,400,000	$5,700,000	$5,883,000
10		Total Revenue		$9,600,000	$9,690,000	$9,768,000
11		Notes: Current Values column represents values of changing cells at				
12		time Scenario Summary Report was created. Changing cells for each				
13		scenario are highlighted in gray.				
14						

Figure E-15 – Scenario Summary with 3 cases and impact on revenues after formatting

E.4. – Sales Data – Introduction to Pivot Tables (SalesData Tab)

Note: More detail on this case may be found in the textbook appendices, starting on Page A-81, some numbers/headings have been changed for readability.

The PivotTable is among the most useful tools available in modern spreadsheet software. PivotTables allow you to quickly summarize large quantities of data. In addition, you can quickly and easily examine the data by various dimensions. For example, the district manager of a retail store chain may want to examine sales revenue by store or product category. This is easy to do with PivotTables. You can go even further and examine sales revenue for each product category and store combination. PivotTables seem complex and mysterious to many spreadsheet users. In reality, they are quite easy to create, as long as you understand a few basics, which we will cover.

PivotTables work best if you have well-structured data that are organized in continuous rows and columns. An example is shown on the SalesData Tab in the spreadsheet you downloaded. Notice that there are no blank rows or columns in the data. Having your data structured this way makes creating PivotTables easier.

21. To create the PivotTable, select any cell within the table of data you want to summarize. Excel can usually tell the data you want to use as the basis for the PivotTable, but if the correct data are not selected, you can change the selection later.

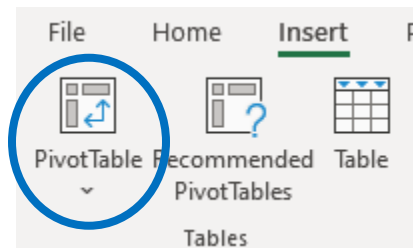22. Select Insert and then "PivotTable from the top Menu bar

Figure E-16 – Selecting the Pivot Table option from the Insert menu

23. This brings up the dialog box shown in Figure E-17. Be sure to check the Table/Range selection. If the wrong range is selected, correct it now to match the Figure E-17.
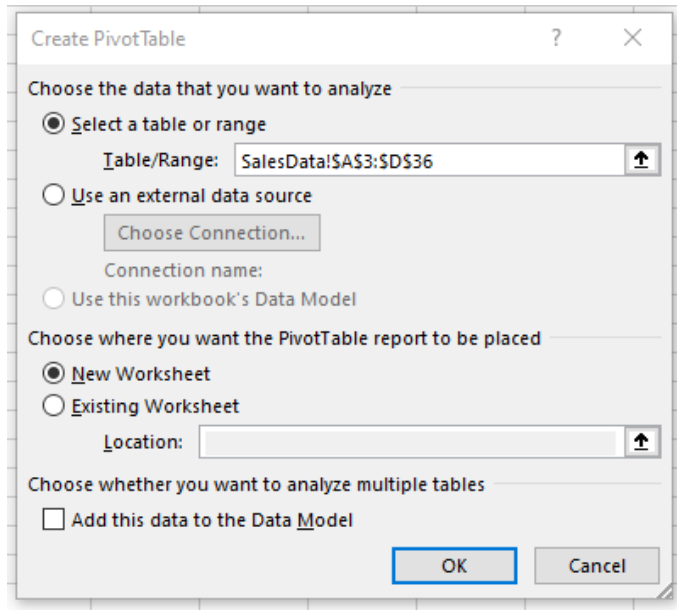

Figure E-17 – Create Pivot Table Initial Options

24. Generally, you should place the PivotTable in a new worksheet. Clicking on OK creates a new worksheet that contains a PivotTable Form and Field List. Its name should be Sheet3

25. Figure E-18 shows a PivotTable Form and Field List. The Field List shows the column headings from the data range of your data source. In this case, we have four fields: Sales Rep, Quarter, Category, and Amount. The form provides areas into which you can drag elements of the PivotTable (see the right columns of your new sheet). These correspond to the four areas shown at the bottom of the Field List.
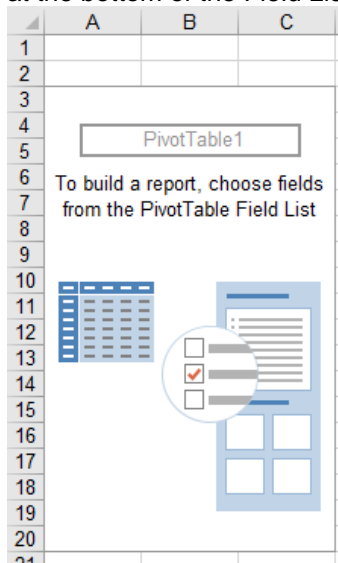

Figure E-18 – Create Pivot Form and Field Initial Screen

26. Let's start by creating a very simple PivotTable that shows the total sales amount for the period covered by the original data. To create this report, simply click the checkmark next to "Amount" in the PivotTable Fields section. This simple operation allows you to quickly calculate the sum of the amount values in the underlying data. Look on the right side of your spreadsheet and you will see the available PivotTable Fields as shown in Figure E-19. Figure E-20 demonstrates the totaling of the Amount Column (i.e. the Pivot Table), which appears on the left side of your sheet.
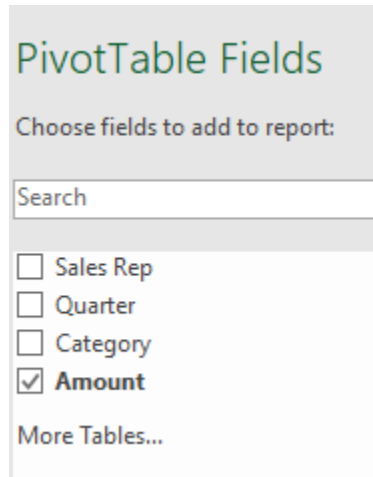

Figure E-19 – Selecting fields to summarize or display

Figure E-20 – First Simple Pivot Table!

27. Now let's make a more complex PivotTable. Suppose that you are the sales manager in charge of these sales representatives. You might want to see the sales broken down by sales rep. To create this PivotTable, simply Slide the "Sales Rep" (field) from the Field List and drop it on the "Rows" area (slightly below it) (Figure E-21), which creates the PivotTable results shown in Figure E.22.
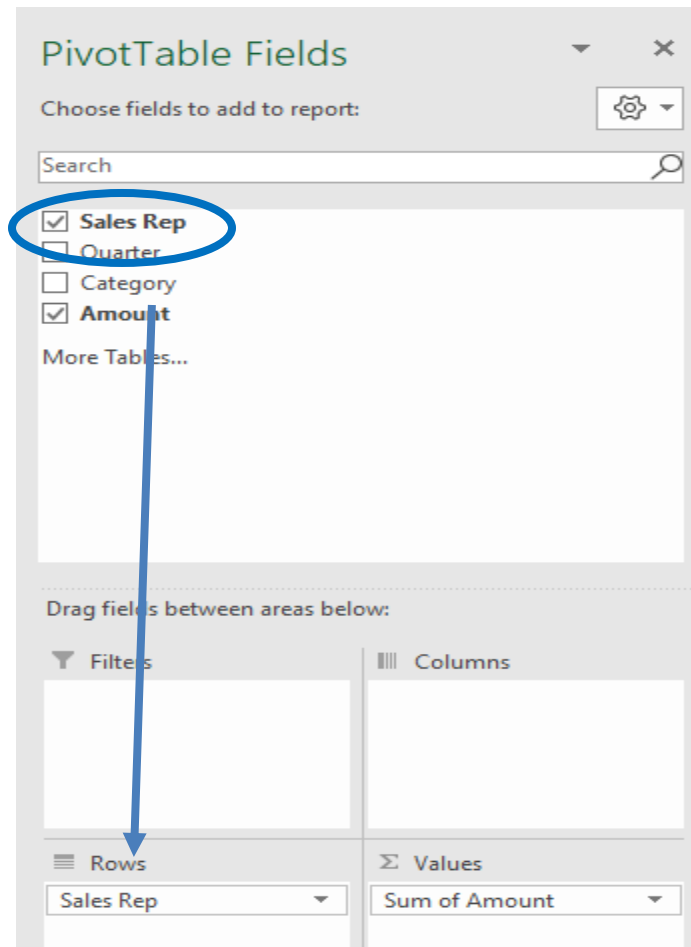
Figure E-21 – Demonstration of clicking on SalesRep and dropping on Rows in the Pivot Table Options.

	A	B
1		
2		
3	Row Labels	Sum of Amount
4	Fred Smith	1388231.732
5	Janet Medows	1288711.451
6	Kim Martinez	651461.0321
7	**Grand Total**	**3328404.215**
8		
9		

Figure E-22 – Pivot Table showing Sales by Sales Rep

28. Suppose that you now want to see if the sales rep's performances vary by quarter. Add this dimension by dragging "Quarter" to the "Columns" area. This creates the PivotTable provided in Figure E-23. You may wonder why we put "Quarter" in the column labels section rather than row labels. This is a judgment call. Normally you want to avoid putting too many different values in the column labels section. This lets us reduce the amount of horizontal scrolling necessary to view the data. Since there are only four distinct values in the Quarter field, we placed it in the column labels. If you do not like a particular arrangement, you can quickly change it to suit your preferences. See Figure E-24 which demonstrates sales by quarter by sales rep.
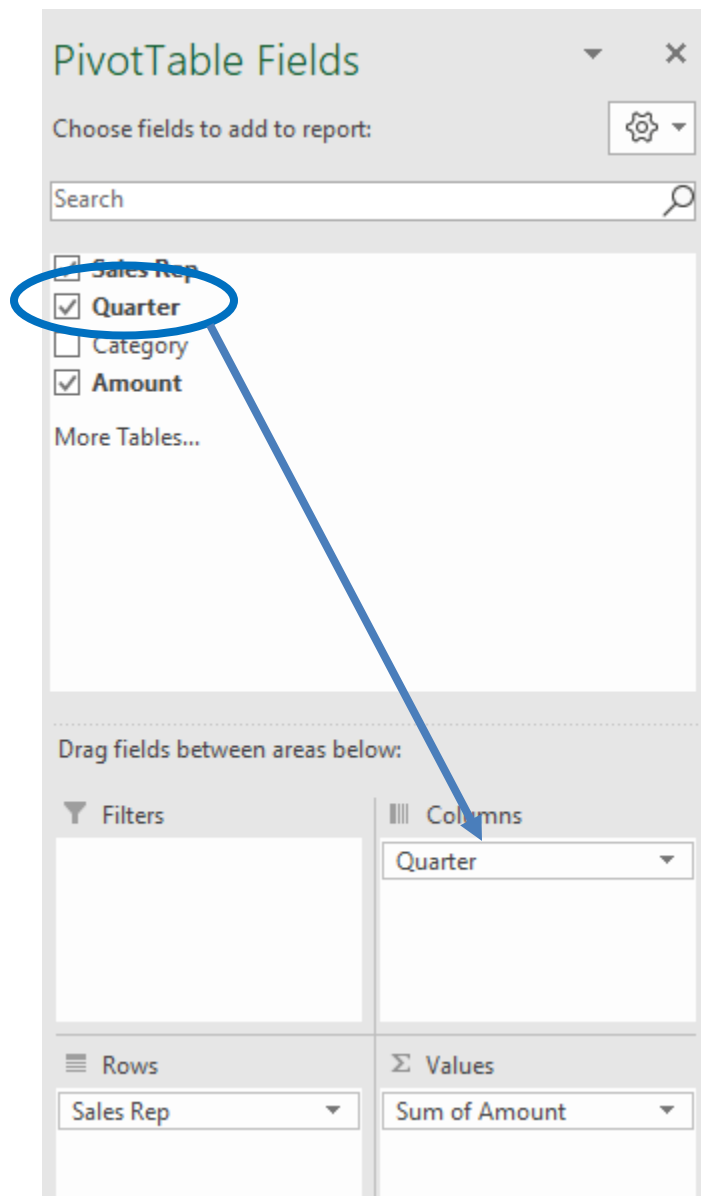

Figure E-23 – Demonstration of placing the "quarter" field in the columns option.

29. The PivotTable in Figure E-24 illustrates a key feature of PivotTables, which is the ability to "slice and dice" data by multiple dimensions. In this case, we have two dimensions: Sales Rep and Quarter. The number of dimensions is limited only by the characteristics of your data (how many fields you have) and your computer's memory. It is unlikely that you will ever exceed these limits.

	A	B	C	D	E	F
1						
2						
3	Sum of Amount	Column Labels ▾				
4	Row Labels ▾	1	2	3	4	Grand Total
5	Fred Smith	282005.1664	626181.3716	135733.814	344311.38	1388231.732
6	Janet Medows	374151.697	151219.358	387046.1957	376294.2	1288711.451
7	Kim Martinez	122798.0095	233065.1964	51224.43623	244373.39	651461.0321
8	Grand Total	778954.8729	1010465.926	574004.4459	964978.97	3328404.215
9						

Figure E-24 – Sales by Quarter and by Sales Rep.

30. Let's add one more dimension to our PivotTable by **dragging "Category" to the "Rows" area so that it is below Sales Rep**. The order in which the labels appear in the Field List is important since this determines the order in which the values appear in the PivotTable.

31. Figure E-25 shows the PivotTable with the Category dimension added. Notice that there are some empty cells in this PivotTable. This indicates that the original data set did not contain any values with that particular combination of dimension values. For example, Fred Smith did not sell any peripherals in Quarter 2. Also notice that the sales rep names appear to the left of the category names. This is because Sales Rep is above Category in the Field List row labels section. If Category was on top, the category names would appear to the left of the sales rep names.

	A	B	C	D	E	F
1						
2						
3	Sum of Amount	Column Labels ▾				
4	Row Labels ▾	1	2	3	4	Grand Total
5	⊟ Fred Smith	282005.1664	626181.3716	135733.814	344311.38	1388231.732
6	Hardware	121141.8015	444516.995	50926.40377	120407.35	736992.5503
7	Peripherals	12979.81556			125401.92	138381.7356
8	Software	147883.5493	181664.3766	84807.4102	98502.11	512857.4461
9	⊟ Janet Medows	374151.697	151219.358	387046.1957	376294.2	1288711.451
10	Hardware	130760.079		225752.9265	97714.38	454227.3854
11	Peripherals	162009.485	151219.358	89242.15399	140856.09	543327.0869
12	Software	81382.13305		72051.11525	137723.73	291156.9783
13	⊟ Kim Martinez	122798.0095	233065.1964	51224.43623	244373.39	651461.0321
14	Hardware	122798.0095	98553.00282	15223.5485	86990.33	323564.8908
15	Peripherals				104881.34	104881.34
16	Software		134512.1936	36000.88772	52501.72	223014.8013
17	Grand Total	778954.8729	1010465.926	574004.4459	964978.97	3328404.215
18						

Figure E-25 – Sales by Quarter, Sales Rep and Category (Product)

32. Format the amounts to be zero decimals with , (comma) separators. Your final results are shown in Figure E-26.

	A	B	C	D	E	F
1						
2						
3	Sum of Amount	Column Labels ▼				
4	Row Labels ▼	1	2	3	4	Grand Total
5	⊟Fred Smith	282,005	626,181	135,734	344,311	1,388,232
6	Hardware	121,142	444,517	50,926	120,407	736,993
7	Peripherals	12,980			125,402	138,382
8	Software	147,884	181,664	84,807	98,502	512,857
9	⊟Janet Medows	374,152	151,219	387,046	376,294	1,288,711
10	Hardware	130,760		225,753	97,714	454,227
11	Peripherals	162,009	151,219	89,242	140,856	543,327
12	Software	81,382		72,051	137,724	291,157
13	⊟Kim Martinez	122,798	233,065	51,224	244,373	651,461
14	Hardware	122,798	98,553	15,224	86,990	323,565
15	Peripherals				104,881	104,881
16	Software		134,512	36,001	52,502	223,015
17	Grand Total	778,955	1,010,466	574,004	964,979	3,328,404
18						

Figure E-26 – Final Sheet with formatting.

33. Rename this Sheet to be Pivot

◄ ►	CoffeeProjections	Scenario Summary	ParkRevenue	Pivot	SalesData	+

Figure E-27 – Rename the Sheet to be Pivot

Appendix 1.1 Uploading a file to Entropy that is stored on your machine.

1. *Make sure your Excel file is closed. Excel should not be open when you upload it to Entropy.*

2. Open a web browser (not in Horizon).

3. Go to Entropy (https://csbapp.uncw.edu/Entropy/). Enter your Entropy UserID and Password and select the appropriate class.

4. Click the **Upload Assignment** option.

Your Progress

Check Progress

Upload Assignment / Download Starting Template

Figure Appendix-1: Entropy, starting the process to upload an assignment

5. Find the correct assignment you wish to upload. Most likely the file will be in one of the following folders: **Documents, Downloads or OneDrive**. This will vary based on your instructor.

6. Click **Upload Now** beside the appropriate assignment.

File Upload/Download

The following projects are available for upload/download

Assignment Name	Due	Due Time	Late Acceptance Until	File Type	Upload	Download
Project 7 - Excel Refresher	12/25/2020	11:59 PM	12/25/2020	XLSX	Upload Now	Download Starting Template

Figure Appendix-2: Entropy, upload an assignment

7. Entropy will respond with a listing of all files uploaded and their date/time. *Should you upload a file to the same assignment more than once, it will list both uploads but only keep and grade the most recent upload.*

Assignment Name	Due Date	Upload Date	File Size	Unique Upload ID
Project 3 - Access Queries	09/10/2020 11:00 PM	09/11/2020 03:24 PM	950272	196972
Project 3 - Access Queries	09/10/2020 11:00 PM	09/11/2020 03:09 PM	819200	196973

Figure Appendix-3: Summary of files uploaded