

Basic Pivot Tables

Before we look at Pivot Tables in this chapter, we'll work on creating cross tabulation using function formulas. Cross tabulation summarizes data for analysis. For this chapter, we'll be using data from a survey performed on 1,500 people who bought fishing supplies from stores in three locations. (See **Figure 25.1**)

	A	B	C	D	E
1	Customer #	Age	Gender	Store	Type of Fishing Preferred
2	1	58	Male	Boise, Idaho	Bait
3	2	15	Male	Lehi, Utah	Spinners
4	3	56	Male	Boise, Idaho	Bait
5	4	65	Male	Lehi, Utah	Spinners
6	5	50	Female	Lehi, Utah	Bait
7	6	49	Male	Boise, Idaho	Spinners
8	7	41	Female	Boise, Idaho	Spinners
9	8	52	Male	Boise, Idaho	Bait
10	9	51	Male	Lehi, Utah	Bait

Figure 25.1

Practice Spreadsheet

Use this [workbook](#) for the chapter.

Cross Tabulation

If we want to know the number of customers by location that prefers a specific fishing method, a cross-tabulation will present the data for analysis. We'll set up the cross-tabulation by using the UNIQUE function in combination with TRANSPOSE to list the type of fishing method across the columns.

1. Select an empty cell and type **=TRANSPOSE** followed by a left parenthesis (().
2. Type **UNIQUE** followed by another left parenthesis (().
3. Select the set of data for the **Type of Fishing Preferred** column.
4. Type a right parenthesis ()) to close the UNIQUE function.
5. Type another right parenthesis ()) to close the TRANSPOSE function.
6. Press **Enter** to complete the formula (**=TRANPOSE(UNIQUE(E2:E1501))**) correlating with **Figure 25.1**.

Then, we repeat the steps for the UNIQUE function to label the rows.

1. Select the cell down and to the left of the previously completed cell.
2. Type **=UNIQUE** followed by a left parenthesis (().
3. Select the set of data for the **Store** column.
4. Type a right parenthesis ()) to close the function.
5. Press **Enter** to complete the formula (**=UNIQUE(D2:D1501)**) correlating with **Figure 25.1**).

Lastly, we need to populate the cross-tabulation cells with data from the survey information correlating to the column and row headers. The COUNTIFS function will add the data based on criteria that we will specify in the formula.

1. Select the first cell in the cross-tabulation.
2. Type **=COUNTIFS** followed by a left parenthesis (().
3. Select the set of data for the **Type of Fishing Preferred** column and anchor the references with the **F4** key, then type a comma (,).
4. Select the cross tabulation's column header and anchor the reference's row only, then type a comma (,).
5. Select the set of data for the **Store** column and anchor the references, then type a comma (,).
6. Select the cross tabulation's row header and anchor the reference's column only.
7. Type a right parenthesis ()) to close the function.
8. Press **Enter** to complete the formula (shown as **=COUNTIFS(\$E\$2:\$E\$1501,H\$3,\$D\$2:\$D\$1501,\$G4)** in **Figure 25.2**).
9. Copy the formula to the cross tabulation's remaining cells.

	Bait	Spinners	Flies	Total
Boise, Idaho	=COUNTIFS(\$E\$2:\$E\$1501,H\$3,\$D\$2:\$D\$1501,\$G4)			
Lehi, Utah				
Ammon, Idaho				
	575	589	336	1500

Figure 25.2

This function's formula can be used for cross-tabulation of other criteria from the survey data, such as gender and age. Additionally, we can add the totals for each row and column by using the SUM function to total the row or column's cells.

Insert a Pivot Table

There are two methods to adding a Pivot table. The first method is to select the data set and name it before inserting the table. The second method skips the range naming and Excel will attempt to guess the desired data range to be used when opening a Create PivotTable menu.

1. Select the data set.
2. Type a new name for the range in the top-left box in the formula bar. For this example, the range will be renamed "data." (See **Figure 25.3**)

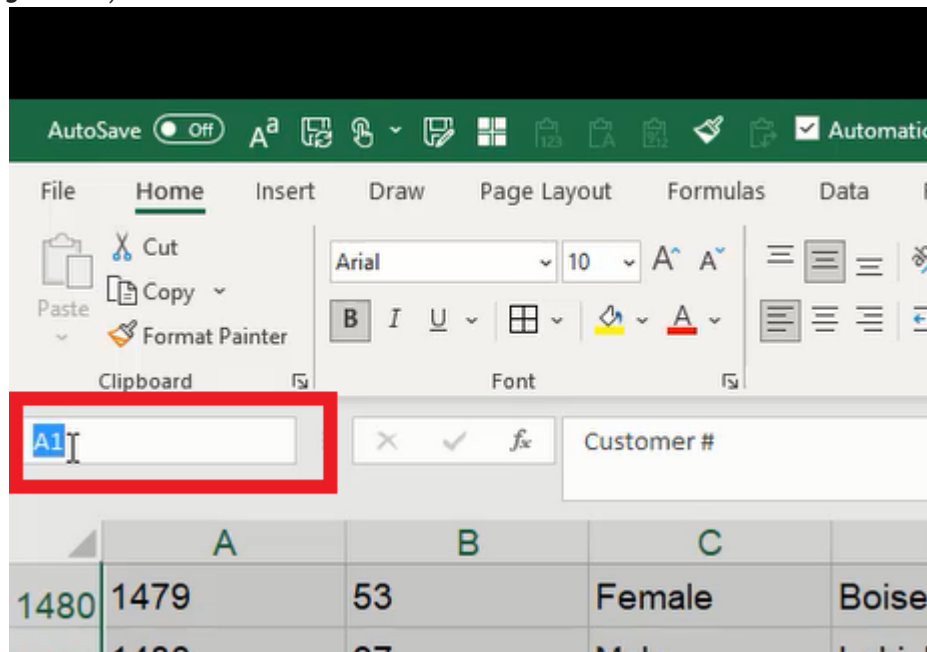


Figure 25.3

3. Go to the **Insert** tab.
4. Select **PivotTable** to open a Create PivotTable menu.
5. Select the range manually in the **Table/Range** field or type the equals sign (=) and the range name. (See **Figure 25.4**)

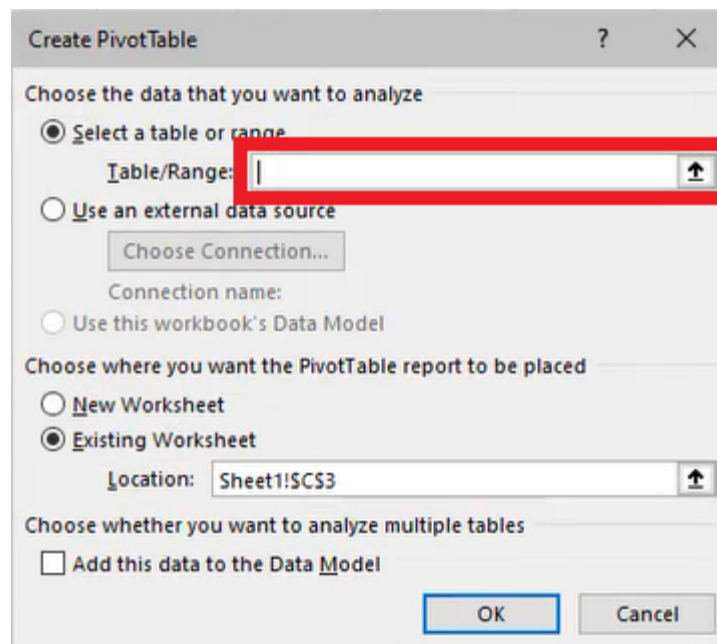


Figure 25.4

6. Select to place the Pivot table in a **New Worksheet** or **Existing Worksheet**.
7. Press **OK**.

Upon creating a Pivot table, a side menu will open with a list of the data range's columns and fields for building the table. The data items can be placed into the Filters, Columns, Rows, and Values fields by dragging the desired item from the list.

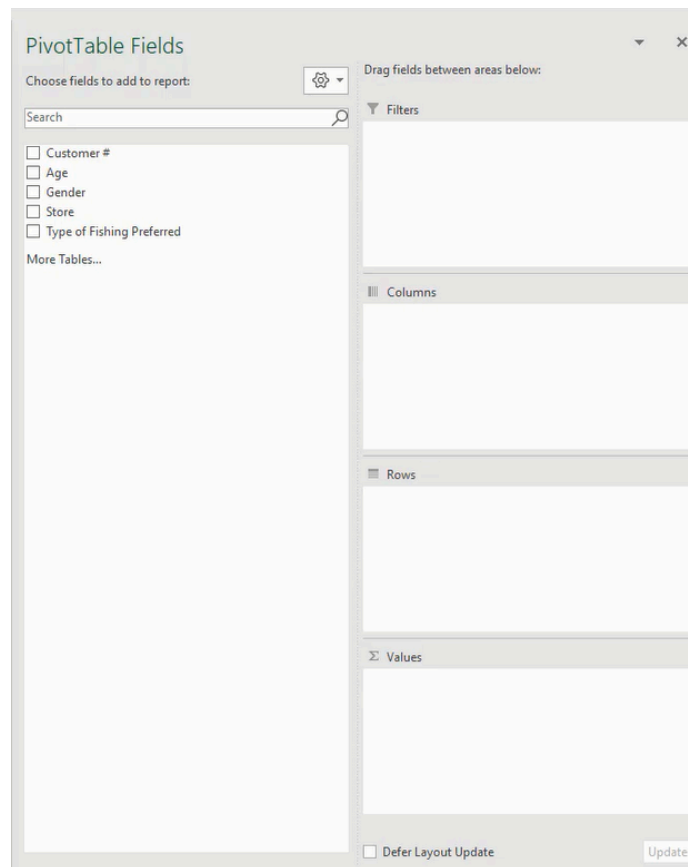


Figure 25.5

Data Analyses and Filters

A Pivot table can function similarly to the previous cross-tabulation and display calculations with a few short steps.

1. Select and drag **Store** from the list on the left to the **Rows** box in the PivotTable Fields menu.
2. Select and drag **Type of fishing Preferred** to the **Columns** box.
3. Select and drag **Store** to the **Values** box to complete the table. (See **Figure 25.6**)

Count of Store Column Lak				
Row Labels	Spinners	Bait	Flies	Grand Total
Lehi, Utah	321	364	245	930
Boise, Idaho	264	179	28	471
Ammon, Idaho	4	32	63	99
Grand Total	589	575	336	1500

Figure 25.6

The data can be removed or rearranged to display other analyses. In another example, the table could show the average age for male and female customers based on the preferred fishing method. (See **Figure 25.7**)

Note: Unlike the cross-tabulation using formulas, a Pivot table will not automatically update values if the base data is changed. However, the table can be manually updated by selecting the table, going to the **PivotTable Analyze** tab, pressing the **Refresh** button, and selecting **Refresh All**.

1. Select the Pivot table and go to the **PivotTable Analyze** tab.
2. Press the **Clear** button and select **Clear All**.
3. Select and drag **Gender** to the **Rows** box in the PivotTable Fields menu.
4. Select and drag **Type of Fishing Preferred** to the **Columns** box.
5. Select and drag **Age** to the **Values** box.
6. Press the down arrow for the **Age** value and select **Value Field Settings....**
7. Change the **Summarize Values By** to **Average**.
8. Press **OK**.
9. Adjust the formatting to **Number** and reduce decimal places to show one digit.

Average of Age Column Labels				
Row Labels	Bait	Spinners	Flies	Grand Total
Female	55.6	41.6	33.8	45.7
Male	54.2	42.0	32.8	44.5
Grand Total	54.5	42.0	32.9	44.8

Figure 25.7

Multiple items can be placed in a single box to categorically list values based on the desired criteria. For example, the table can display the average age of customers that prefer a particular type of fishing method, and also the average for females and males under that fishing method. Additionally, the table may show the standard deviation of age for each. (See **Figure 25.8**)

Row Labels	Average of Age	StdDev of Age
Bait	53.9	12.1
Female	53.1	13.8
Male	54.1	11.7
Spinners	42.5	16.1
Female	43.7	16.2
Male	42.2	16.1
Flies	32.4	11.7
Female	32.3	9.8
Male	32.4	12.1
Grand Total	46.2	15.8

Figure 25.8

1. Insert **Type of Fishing Preferred** into the **Rows** box.
2. Insert **Gender** into the **Rows** box.
 - a. *Note:* The order may also be rearranged to list gender, then the type of fishing.
3. Insert **Age** into the **Values** box and change the **Value Field Settings...** to show **Average**.
4. Insert **Age** into the **Values** box again and change the **Value Field Settings...** to show **StdDev** (standard deviation).

Filters can be assigned to select the details to be shown on the Pivot table. Simply drag the list item into the **Filters** box for the table to display the filter option and select the data to be filtered. (See **Figure 25.9**)

Store	Boise, Idaho	
Gender	Female	
Row Labels	Average of Ag	StdDev of Age
Bait	53.1	13.8
Spinners	43.7	16.2
Flies	32.3	9.8
Grand Total	46.9	16.0

Figure 25.9

Pivot tables can have an unlimited number of hierarchy levels. For example, if we want to see statistics by gender, and then fishing method and store location, then each category can be added to the **Rows** box and arranged in the desired order. The Pivot table includes a button next to each level for collapsing and expanding the data under the specific level. (See **Figure 25.10**)

Row Labels	Average of Ag
Female	45.7
+ Bait	55.6
- Spinners	41.7
Ammon, I	29.0
Boise, Ida	43.7
Lehi, Utah	40.3
- Flies	33.8
Ammon, I	33.4
Boise, Ida	32.3
Lehi, Utah	34.1
Male	44.5
+ Bait	54.2
- Spinners	42.0
Ammon, I	24.3
Boise, Ida	42.2
Lehi, Utah	42.1
- Flies	32.8
Ammon, I	32.9
Boise, Ida	32.4
Lehi, Utah	32.8

Figure 25.10

Supplemental Resource



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https://books.byui.edu/bus_115_business_app/basic_pivot_tables.

