GUIDE TO USING PIVOT TABLES and PIVOT CHARTS in EXCEL 2016
(BUSINESS AND ECON APPLICATIONS)

Please refer to the “Business and Econ Data Sheet” Excel file. You will see a “SBA Disaster Loan” sheet, as well as a “Sales” Data sheet for a small fictitious office supply company. Use this data to practice creating Pivot Tables and Pivot Charts.

Session Goal: To orient users on how to use: 1) Pivot Tables to analyze worksheet data, and 2) Pivot Chart to create visualization of complex data sets.

About Pivot Table: Pivot tables are used to summarize, sort, reorganize, group, count, total or average data stored in a database. Users can transform columns into rows and rows into columns (hence the term “pivot table”). Users can query large amounts of data in user-friendly ways, subtotal and aggregate numerical data, and summarize data by categories and subcategories. (Users can also filter, sort, group and conditionally format useful and interesting subsets of data.) So, with Pivot Table, you are able to “slice and dice data” to present it in a meaningful way.

About Pivot Chart: Pivot charts complement PivotTables by adding visualizations to the summary data created in a PivotTable. Bar graphs, histograms, line charts allow you to easily see comparisons, patterns, and trends. Pivot Charts can be used to produce “dashboard” summaries for reports.

(Note: there are many ways to use Pivot Table and Pivot Chart in Excel to analyze data. Users are encouraged to practice in “playing with” Excel to find alternate, perhaps more efficient ways to get to the desired output.

SETTING UP YOUR DATA IN EXCEL

1. Provide named headers for your columns (and indicate units of measure).
2. Insure no duplicate rows.
3. Insure no blank cells.
TERMINOLOGY TO KNOW

Data

Simple PivotTable
Summarizes Data

More Sophisticated PivotTable

Value field

Field
Field
Field
Field

Creating a Pivot Table

1. Select/highlight the cells from your data sheet (including the field names) you want to create a PivotTable from. To highlight all of the cells in a data set quickly you can click on upper left cell hold down CTRL and SHIFT, and press → and then ↓.)

2. Select Insert > PivotTable.
3. Under Choose the data that you want to analyze, select Select a table or range.

4. In Table/Range, verify the cell range.

5. Under Choose where you want the PivotTable report to be placed, select New worksheet to place the PivotTable in a new worksheet or Existing worksheet and then select the location you want the PivotTable to appear.

6. Select OK.

7. To build out your PivotTable, select name of the field you want from the PivotTables Fields pane by checking the box. Some fields are added to their default areas. Generally, non-numeric fields are added to Rows, numeric fields are added to Values. You can direct how you set up your table by dragging the name of the field to Rows, Columns, or Σ Values.

   a. To move a field from one area to another, drag the field to the target area.
b. If you drag a quantitative variable into Σ Values area you will default to SUM; if you drag a qualitative variable into Σ Values area you will default to COUNT (i.e., frequency data). Note that you can change how this data is handled by going to the field area for “Σ VALUES” and click on the drop down menu to open up window to select the last entry -- “Value Field Settings” to then select the value you want (e.g., count, average, min, max, etc.).

c. To set up multiple subcategories in your table rows by dragging the name of the fields into Rows, and then you can order the subcategories in one of two ways: 1) you can click on the drop down menu to the right of the field you have placed in the Row area and move it up or down, or 2) you can click and drag that field up or down relative to other fields you have in the Row area.

Below is shown the general set up.

Now let’s try some Examples using the “Business and Econ Data Set” (start with the “SBA Disaster Loan sheet”)

A. To view total approved loan amount, move it to the Σ values area.
B. To view the total approved loan amount by month of claim, move claim date to the Rows area. Here, and for more sophisticated analyses where you might want to display data in bar graph or histogram, think of your y-axis (dependent-variable) data going into Values area and x-axis (independent variable) data going to Rows area. (Notice that when you click on “claim data” the default is to show in Row area with “months” and “claim date” automatically appearing. The table you created is now interactive, in that if you click on the + to the left of any month to see data for every day of the month for which there is data. If you only want information for the months, you can now right click on that claim date and delete that from the Row area, which now leaves your claims data summarized by month.

<table>
<thead>
<tr>
<th>Month</th>
<th>Sum of Total Approved Loan Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>68536200</td>
</tr>
<tr>
<td>Feb</td>
<td>30921900</td>
</tr>
<tr>
<td>Mar</td>
<td>31376500</td>
</tr>
<tr>
<td>Apr</td>
<td>89502600</td>
</tr>
<tr>
<td>May</td>
<td>28711100</td>
</tr>
<tr>
<td>Jun</td>
<td>507439400</td>
</tr>
<tr>
<td>Jul</td>
<td>562695300</td>
</tr>
<tr>
<td>Aug</td>
<td>436661500</td>
</tr>
<tr>
<td>Sep</td>
<td>347180600</td>
</tr>
<tr>
<td>Oct</td>
<td>444993600</td>
</tr>
<tr>
<td>Nov</td>
<td>44686500</td>
</tr>
<tr>
<td>Dec</td>
<td>12573500</td>
</tr>
</tbody>
</table>

Grand Total: 2863802700
C. If you now want to show this data by state (i.e., adding an additional field to your interactive table), you can add the Damaged Property State Code to Column.

<table>
<thead>
<tr>
<th>Row Labels</th>
<th>AL</th>
<th>AR</th>
<th>CA</th>
<th>CO</th>
<th>FL</th>
<th>GA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>5038300</td>
<td>1487000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>3891600</td>
<td>587500</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar</td>
<td>2611900</td>
<td>857000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apr</td>
<td>0</td>
<td>55100</td>
<td>802900</td>
<td></td>
<td>650600</td>
<td>983300</td>
</tr>
<tr>
<td>May</td>
<td>672800</td>
<td>4885800</td>
<td>43844400</td>
<td>542500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jun</td>
<td>406300</td>
<td>2436100</td>
<td>610700</td>
<td>654700</td>
<td>112739600</td>
<td>23462500</td>
</tr>
<tr>
<td>Jul</td>
<td>9600</td>
<td>1702900</td>
<td>97400</td>
<td>163114800</td>
<td>2278800</td>
<td></td>
</tr>
<tr>
<td>Aug</td>
<td>124900</td>
<td>3221900</td>
<td>709500</td>
<td>134592900</td>
<td>4237400</td>
<td></td>
</tr>
<tr>
<td>Sep</td>
<td>80300</td>
<td>3555700</td>
<td>33600</td>
<td>135785200</td>
<td>6548500</td>
<td></td>
</tr>
<tr>
<td>Oct</td>
<td>78800</td>
<td>818300</td>
<td>217900</td>
<td>25313600</td>
<td>4910900</td>
<td></td>
</tr>
<tr>
<td>Nov</td>
<td>0</td>
<td>0</td>
<td>115700</td>
<td>46600</td>
<td>1403800</td>
<td>1293600</td>
</tr>
<tr>
<td>Dec</td>
<td>283200</td>
<td></td>
<td>4213500</td>
<td></td>
<td>769000</td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>1487200</td>
<td>5881800</td>
<td>13201500</td>
<td>1050200</td>
<td>633200200</td>
<td>47958000</td>
</tr>
</tbody>
</table>

D. Now assume you only want to look at the total approved loan amount by month for just the states of Florida and California. You can move the Damaged Property State Code to Filter. You now will see a drop down menu that you can use to filter this data to only include the state(s) you are interested in.

Total Approved Loan Amount for states of FL and CA
More Examples, this time using the “Sales” sheet

E. Notice that the sales data is for 2019 and 2020. Assume you are interested in sales data for each representative only for 2020. Set up as shown below.

F. Practice setting up subcategories of rows. View which office products (and how many, and total revenues from each) sold in each of the regions of the country. Simply check the 4 relevant boxes and see default for set up as shown below. (Notice that default was “sum of units” rather than “count” in Values area for Units. There were 7 desks sold in the Central region, but there were only 2 order dates. So, always check that your output is displaying what you want.)
How to clean up your generated Pivot Tables.

Notice the unaltered Pivot Table below.

For example, if you have financial data and you want to indicate in units of $$$:
- right click on any of the cells in the column you want to show in $
- go to “value field settings”
- click on the “number” button
- select “currency” and select the # of decimal places
- click OK

For example if you have empty cells in your table and you want them to indicate “0”, can click on any cell in the body of the table, then:
- right click to then select “pivot table options”
- select to fill empty cells with value of 0

You can highlight your table and select the DESIGN tab in the ribbon tab at the top of the page.

You can SORT data in a column, for example to show highest to lowest values by right clicking on the cell at the top of the column and selecting SORT.

KS did not have any disaster loans.
CREATING A PIVOT CHART:

1. Select any cell in your PivotTable.
2. From the Insert tab, click the PivotChart command.
3. The Insert Chart dialog box will appear. Select the desired chart type and layout, then click OK. ...
4. The PivotChart will appear.
5. Clean up and customize your chart.

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Good Videos (length) to Take You to the Next Level:

Using slicers to filter data (:36) [https://support.office.com/en-us/article/use-slicers-to-filter-data-249f966b-a9d5-4b0f-b31a-12651785d29d](https://support.office.com/en-us/article/use-slicers-to-filter-data-249f966b-a9d5-4b0f-b31a-12651785d29d)

How to build interactive Excel Dashboards (52:25) [https://www.youtube.com/watch?v=K74_FNnIIF8](https://www.youtube.com/watch?v=K74_FNnIIF8) (show min 48:45 as an example)