PIVOT TABLES

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INTRODUCTION

- Pivot Tables are one of the most powerful tools available to you in Excel.
- They allow you to quickly and easily analyze large amounts of data by creating summary tables.
- You simply drag and drop the fields you want, tweak a few settings, and you're done.
- I think they are essential for anyone dealing with data they need to analyze and I've used them on every single professional job I've had as well as in college.
- If there's one advanced skill you learn in Excel it should be pivot tables.

WHAT WE’RE GOING TO COVER

- Data Layouts
- Pivot Tables
  - Creating
  - Formatting
    - PivotTable Styles
    - Style Options
    - Layout
  - Adding a Calculated Value
  - Group
  - Filter
  - Changing the Data Source
  - Refreshing
  - Clearing

INTRODUCTION

- This course is part of the Easy Excel Essentials series of courses and is based on the books of the same name.
- Each course is meant to cover one specific topic.
- The assumption is that you already familiar with Excel but want to broaden your understanding in that one area.
- The videos in this course are extracted from the course *Intermediate Excel* by M.L. Humphrey which provides a broader coverage of intermediate Excel topics. (Links and discount codes at mlhumphrey.com)

INTRODUCTION

- I’m using Excel 2013 for this course
  - It should look familiar to users of Excel 2007 or later.
- What qualifies me to teach this course:
  - I have an Econ degree from Stanford and an MBA from Wharton.
  - More importantly, I’ve been using Excel for over twenty years in a personal and professional capacity and I use Pivot Tables almost every single day.

DATA LAYOUTS

DATA LAYOUTS

- If you're going to analyze your data by using filtering, sorting, or pivot tables, you need your data in a format that makes it easy to do. (This actually holds true for any data analysis program.)
- Worksheets that include subtotals or summary information within the data do not work. Those are reports.
- You want a clean worksheet that just lists your data.
- Sometimes having "good data" means repeating information on multiple rows. That's okay. It's actually expected.
- The amount and extent of data analysis you can perform will depend 100% on how well-structured your data is.

BAD VS. GOOD DATA LAYOUTS

	A	B	C	D
1	**Albert Jones**			
2		8/1/2015	1 widget, 1 other	$25.00
3		8/30/2015	10 widgets	$250.00
4		9/1/2015	3 whatchamacallits	$45.00
5				
6	**Richard Martinez**			
7		3/7/2016	10 who knows what	$35.00
8		4/7/2016	20 whatsits	$30.00
9				
10				
11				

Bad Data Layout

Customer	Date of Transaction	Quantity	Item	Unit Price	Total
Albert Jones	8/1/2015	1	Widget	$ 20.00	$ 20.00
Albert Jones	8/1/2015	1	Other	$ 5.00	$ 5.00
Albert Jones	8/30/2015	10	Widget	$ 25.00	$ 250.00
Albert Jones	9/1/2015	3	Whatchamacallit	$ 15.00	$ 45.00
Richard Martinez	3/7/2016	10	Who knows what	$ 3.50	$ 35.00
Richard Martinez	4/7/2016	20	Whasit	$ 1.50	$ 30.00

Good Data Layout

QUALITIES OF A GOOD DATA LAYOUT

- A good data layout:
  - Has a header row that labels each column of data
  - Uses standardized values for entries like customer name, item name/number, city, state, etc.
  - Doesn’t include summary rows within the data
  - Has all information for each entry in one row
  - Doesn’t include blank lines or spaces or other dividers in the midst of the data
  - Only includes one data point or type of data per entry
  - Includes a separate entry for anything you might want to analyze (E.g., state and city in separate cells because you might want to run a report on sales by state)

PIVOT TABLES

PIVOT TABLES

- Pivot tables are fantastic for when you have a large amount of data that you want to summarize quickly and easily.
  - E.g., say you run a small business and had 1,000 sales last year that you've put into an Excel spreadsheet and now want to know who your best customer was. Or which customers ordered your newest product.
  - You could sort the data or filter it, but a pivot table will give you those same answers and in a nice table format.

CREATING A PIVOT TABLE

- Highlight the data that you want to include in your pivot table.
  - If it’s the entire worksheet and your header row is in Row 1 you can just Select All by using Ctrl + A or clicking in the top left corner of the worksheet.
  - If it’s just part of the worksheet, be sure that you include the header row in your selection.
- Go to the Insert tab and choose Pivot Table.
- Choose to add your Pivot Table to a new worksheet.
  - You could keep it in the same worksheet, but it’s better to have one location where you store your raw information and another location where you manipulate that information. Especially since the size of pivot tables can change depending on your choices.

CREATING A PIVOT TABLE (Cont.)

- Excel will create a blank pivot table on a new worksheet for you with the available fields showing on the right and the pivot table on the left.
- Click and drag the fields you want to use to where you want to use them.
  - You can do this in the table itself or into the section below the fields with boxes for Filters, Columns, Rows, and Values.
    - Filters: Will allow you to use that criteria to filter the entire table.
    - Columns: Which field values you want across the top of the table.
    - Rows: Which field values you want down the sides of the table.
    - Values: Which fields you want to summarize based on the row and column values.

CREATING A PIVOT TABLE (Cont.)

- Often, the field that you drag into the Values section will default to counting the number of times that value occurs. I usually want a sum instead.
- To change this, click on the arrow next to the field name and choose Value Field Settings.
  - This will bring up the Value Field Settings dialogue box.
  - From here you can choose to take the sum, count, average, max, min, product, count of numbers, or standard deviation of the values that meet both the row and column criteria.
  - You can also click on the Number Format option at the bottom to format the entries a particular way. (For example, as currency.)

CREATING A PIVOT TABLE (Cont.)

- In the Value Field Settings dialogue box you can also choose to show your results as a percentage of the grand total, of the column total, of the row total, etc. by using the Show Values As tab.
- You can put a field into the Values section more than once if you want to show both the summed value and the percentage, for example.
- Rows, columns, and values can all have multiple fields, but it does make the table that much more difficult to view and understand.
  - If you use multiple fields, you can choose the order they appear. For example, a table that uses book title and then geography will have a different focus than a table that uses geography and then book title.

CREATING A PIVOT TABLE (Cont.)

- You can also add a calculated value to a pivot table. To do so, click on Fields, Items & Sets in the Analyze tab and then choose Calculated Field.
- This will bring up the Insert Calculated Field dialogue box.
- You can name the field in the Name field and will then need to enter a formula in the Formula field.
- When you’re done, click OK. The field should now be listed in your Pivot Table Fields and shown in your table. If it isn’t in the table, drag it to the Values section and then treat it like any other Value field.

FORMATTING A PIVOT TABLE

- In addition to formatting a field in the Values section using the Value Field Settings dialogue box, you can also just highlight the cells in the table itself and then use the formatting options on the Home tab.
- You can use the Design tab under Pivot Table Tools to change the table's appearance.
  - You can change the color, add a blank row after every entry in the table, choose when and how to display subtotals, choose when and how to display grand totals, and change the format of your row and column headers.
  - You can also choose from one of the PivotTable Styles to use a pre-defined table style.

PIVOT TABLE ANALYSIS – GROUP

- Group is available under the Analyze tab.
- It allows you to create an artificial grouping of entries by clicking on each item while holding down the Ctrl key and then choosing Group Selection. (To remove a grouping, click on the group and then choose Ungroup.)
- To rename a group, click on its name and then change the group name in the formula bar.
- Click on Collapse Field in the Active Field section to collapse all grouped fields to the summary level. Click on Expand Field to expand.

PIVOT TABLE ANALYSIS – SLICER

- I’d never really used this one before, but it seems to basically work like a filter option.
- Choose to insert a slicer, click the field you want to slice by, and then click on the values that you want to keep to narrow the pivot table down to just those selected values.
- To undo a slicer, click on the funnel in the top right corner of the slicer box.

PIVOT TABLE ANALYSIS – TIMELINE

- Insert Timeline is one I'd never really used before either.
- It works with date fields in your data to allow you to narrow the pivot table results down by month, quarter, year, or day.
- This is very handy for data where you have a date, but want to look at the data by month or year without having to using formulas and add fields that show that to your data.

REFRESHING A PIVOT TABLE

- If your source data changes (for example, I've found in my advertising tracker that I had a book title listed in two different ways so it was showing as two different entries and I had to correct that), you can click on Refresh in the Analyze tab or you can right-click on the table and choose Refresh that way.
- Be careful with refreshing a pivot table if you have any entries around the pivot table that aren't part of the table itself. Pivot tables are not fixed, so they can expand in terms of the number of columns or rows and will overwrite other cells.

CHANGING THE DATA SOURCE

- If you selected only a limited set of cells (and not the whole worksheet) and now need to incorporate more data into your pivot table, you can click on Change Data Source in the Analyze tab and selecting Change Data Source from the dropdown menu.
- The easiest way to update the cell range is to use your cursor to select all of the cells you want to include.
  - If you have thousands of rows of data, you can select the top section of the data and then click into the box and change the final number to correspond to the last row of your data.
  - When I just try updating the cell references by typing in the data field, it sometimes tries adding extra information that messes things up.

PIVOT TABLES – OTHER

- If you want to start over with your pivot table from scratch, you can click on Clear in the Analyze tab and then choose Clear All.
- To remove a field from a table, click on the arrow next to the table name in the grid at the bottom right of the screen and choose Remove Field or right-click on an example value in the table and choose to remove from there.
- If you try undo while working in a pivot table and it doesn’t work, click into the worksheet and try it again.
- I often will generate a pivot table and then copy and Paste-Special Values before I work on it further.

CONCLUSION

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- So that was pivot tables, probably one of the most powerful tools in Excel.
- Hopefully now you understand the basics of how to use them but if you do get stuck, reach out to me at mlhumphreywriter@gmail.com and I'm happy to help.
- And if you want to cover more Excel topics, then drop by my website for links to other classes and/or books on Excel at www.mlhumphrey.com.