

SOLUTIONS

MAKING TECHNOLOGY WORK FOR YOU

PivotTable Magic

Exploring complex Excel data is easier with a PivotTable. Our tips show you how. **BY BEN Z. GOTTESMAN**

Microsoft Excel's PivotTables give you an amazingly flexible way to analyze your data. PivotTables can take any list in Excel, or the results of a database query, and let you slice and dice the data in almost any imaginable way.

Consider, for instance, our sample data set, which provides detailed sales information for a chain of superstores. By dragging a few fields onto the row, column, and page dimensions of a PivotTable, we can see sales by product category by region. Add and group the Order Date field and move the Region field, and now we can see annual detail. Remove the Region field and insert the Market Segment field, and we now see sales by category across the whole chain, broken down by type of customer. Flip the order of Market Segment and Product Category, and now we see our data by product grouping within customer type. Each change is reflected instantaneously. The possibilities are multitudinous.

It's easy enough to create a PivotTable: Start with a list in Excel, choose *Data | PivotTable and PivotChart*, and walk through the process with the wizard, specifying what fields should be summarized and where they should be

Product Category	Total
APPLIANCES	119
BINDERS AND BINDER ACCESSORIES	487
BOOKCASES	60
CHAIRS & CHAIRMATS	169
COMPUTER PERIPHERALS	502
COPIERS AND FAX	28
ENVELOPES	93
LABELS	529

COUNT FREQUENCY

The screenshots show the following PivotTable configurations:

- Top Left:** Rows: Product Category; Columns: Region (CENTRAL, EAST, WEST); Grand Total.
- Top Right:** Rows: Product Category; Columns: Order Date (2001, 2002, 2003, 2004); Grand Total.
- Middle Left:** Rows: Product Category; Columns: Market Segment (CONSUMER, HOME OFFICE, SMALL BUSINESS); Grand Total.
- Middle Right:** Rows: Market Segment; Columns: Product Category; Grand Total.

contain a certain value in a field, such as how many orders were shipped within each product category. Just drag the field label to the Row drop area, and then drag it again to the Data drop area. If the field contains text values, Excel will count the number of instances of each value. If it contains numeric values but you want a count instead of a sum, follow the next tip.

More than the Sum of All Values: By default, Excel will sum numerical

placed. The trick is getting a good feel for what you can actually do with a PivotTable. The 14 tips that follow will help you glean much more in-depth information from your data.

Our sample data Excel spreadsheet was provided to us by Tableau Software, whose namesake software lets you create tables of charts for an even deeper look at large data sets. You can download the spreadsheet to try out our tips at go.pcmag.com/pivottables.

FOURTEEN WAYS OF LOOKING AT A SPREADSHEET

Count Frequency: Sometimes you want to know how many records in your list

PIVOTTABLE VARIATIONS

fields placed in the data zone. But you can perform several other operations on them instead. Right-click within the field and choose *Field Settings*. You can now choose to summarize based on 11 different operations, from averages and counts to standard deviations and variances.

Sort Your Data in Your Order: By default, Excel sorts your dimensions (rows, columns, and pages) alphabetically (or chronologically, in the case of date/time values). If you want to sort in your own order, such as East, Central, and West, just grab one side of a label and drag it to

98 DESKTOP:

Upsample your images.

100 DIY HARDWARE:

Webcam home surveillance.

102 SECURITY WATCH:

Is it spyware?

104 BUSINESS:

This mobile workforce takes the cake.

107 USER TO USER:

Tips and tricks.

		Total
3	Sum of Sales Total	
4	Product Category	Total
5	APPLIANCES	130878.72
6	BINDERS & BINDER ACCESSORIES	107.59
7	BOOKCASES	94.94
8	CHAIRS & SEATERS	00.83
9	COMPUTERS	35.62
10	COPIERS & SCANNERS	81.98
11	ENVELOPES	90.89
12	LABELS	06.21
13	OFFICE FILING	87.64
14	OFFICE MACHINES	61.76
15	PAPER	86.34
16	PENS & ART SUPPLIES	83048.97
17	RUBBER BANDS	14599.9

MORE THAN THE SUM OF ALL VALUES

where you want it. Excel will remember this order.

Sort Your Data Based on Another Field: To zero in on particular results, you may want to sort your labels based on the values in another field. For example, you can find the best-selling items by sorting product categories based on the sum of the Sales Total field. To do this, double-click the row label for Product Category, which makes the *PivotTable* field dialog appear. Then you click *Advanced*, choose *Descending* under *AutoSort options*, and, from the *Using field* drop-down list, select *Sum of Sales Total*. Clicking *OK* twice gets you back to the table.

Filter Your Data by a Specific Value: Excel creates a separate row, column, or page for each unique label in a list. Sometimes you want to look at the values for only one or just a few specific labels. For instance, to look at a specific product category in our table, you would

		Total
3	Sum of Sales Total	
4	Product Category	Total
5	APPLIANCES	130878.72
6	BINDERS AND BINDER ACCESSORIES	158207.59
7	BOOKCASES	145104.94
8	CHAIRS & SEATERS	
9	COMPUTERS	
10	COPIERS & SCANNERS	
11	ENVELOPES	
12	LABELS	
13	OFFICE FILING	
14	OFFICE MACHINES	
15	PAPER	
16	PENS & ART SUPPLIES	
17	RUBBER BANDS	
18	SCISSORS	
19	STORAGE	
20	TABLES	459016.36
21	TELEPHONES AND COMMUNICATION	4407286.43
22	Grand Total	8484686.95

SORT YOUR DATA BASED ON ANOTHER FIELD

drag the Product Category field up to the Page area, and then click the drop-down menu next to "(All)" and choose the product category you want to view. (Sometimes it's easier just to type a value rather than selecting it from a list. Don't worry about typos. Excel won't let you enter a value that doesn't exist in the field.)

Filter Your Data by Multiple Specific Values: To see cumulative results for a few product categories, you'd first have to set the value back to "(All)," then double-click the Product Category label in the Page area. In the *PivotTable* field dialog that pops up,

		Total
1	Product Category	(All)
2	Region	(All)
3	Sum of Sales Total	
4	Product Category	Total
5	APPLIANCES	130878.72
6	BINDERS & BINDER ACCESSORIES	107.59
7	BOOKCASES	94.94
8	CHAIRS & SEATERS	00.83
9	COMPUTERS	35.62
10	COPIERS & SCANNERS	81.98
11	ENVELOPES	90.89
12	LABELS	06.21
13	OFFICE FILING	87.64
14	OFFICE MACHINES	61.76
15	PAPER	86.34
16	PENS & ART SUPPLIES	83048.97
17	RUBBER BANDS	14599.9
18	SCISSORS	
19	STORAGE	
20	TABLES	459016.36
21	TELEPHONES AND COMMUNICATION	4407286.43
22	Grand Total	8484686.95

FILTER YOUR DATA BASED ON VALUES

click on each category in the Hide Items area that you *don't* want to see. When you click *OK* to go back to the table, the value "(All)" has changed to "(Multiple Items)" to show that we're looking at a filtered list.

If you want to see a breakout by product category, but only for specific categories, place the Product Category label in the Row area. When a label is in the Row or Column area, the drop-down box lets you select each label you want to look at and removes all the others. As with most things in *PivotTables*, Excel remembers your settings for filters, even if you drag the field label to different dimensions. If you

		Total
1	Product Category	(All)
2	Region	(All)
3	Sum of Sales Total	
4	Product Category	Total
5	CENTRAL	1697270.04
6	EAST	4469797.49
7	WEST	2317619.42
8	Grand Total	8484686.95

FILTER YOUR DATA BY MULTIPLE SPECIFIC VALUES

want to view all data again, don't forget to unhide the records.

Filter Your Data Based on Values: If you just want to look at the top performers in a category—for instance, the ten best-selling products—double-click on the field label (Product Category in our case) or right-click and choose *Field Settings...*, then select the *Advanced* button. Turn on *Top 10 AutoShow* and choose the data field you want to filter on. (Although the feature is called *Top 10 AutoShow*, you can choose to show anywhere from 1 to 500 top items.)

Grouping Dates: Often your list will have a date field with the specific dates on which transactions occurred. In your analysis, however, you'd probably prefer to summarize information by month, quarter, or year. To do this, drag the date field to a row, column, or page dimension. Right-click within the field or on its label and choose *Group and Show Detail* and then *Group*. Excel will sense that it's dealing with date/time data and offer to group it by seconds, minutes, hours, days, months, quarters, and years. You can even select multiple groupings, so you can look at the data by quarter and by year, for instance.

Grouping Other Data: What if a number of values should be logically grouped, but you don't have a field in your database for those groups? For example, we have region data, but you may want to look at the Mid-Atlantic subregion, grouping Virginia, Maryland, and Delaware together. Start by manually sorting the rows so that related entries are together. Next, highlight those entries, right-click,

5	Sum of Gross Profit			
6	Product Category	Total		
7	APPLIANCES	23126.48	23126.48	=GETPIVOTDATA("Gross Profit",\$A\$5,"Product Category","APPLIANCES")
8	BINDERS AND BINDER ACCESSORIES	30688.81	23126.48	=B7
9	BOOKCASES	-9551.39		
10	CHAIRS & CHAIRMATS	80578.35		
11	COMPUTER PERIPHERALS	130438.54		

and select *Group and Show Detail* and then *Group*. A new field appears with a label with the number 1 appended to the name (such as States1), and your grouped items are listed as Group1. Repeat these steps for any additional groups you want to create. Then, drag the more detailed data (States) off the PivotTable, and you'll be looking at the data by subregion. Click on the States1 field label and type a

Table toolbar and select *Table Options*. Deselect *AutoFormat Tables*.

Change How Data Is Presented: Sometimes it's more important to know how much each value contributes to the whole than to know the precise value itself. For instance, if you look at the sum of sales by product category, you'll find that the figure for Telephones and Communications is over \$4 million. But

THE PROPER WAY TO POINT

perhaps what you really want to know is what percentage of the company's total sales that is. To get this value, right-click within the data and choose *Field Settings*. Next, click the *Options* button and select *Show Data As % of column*. Click OK to get out of the dialog, and you now see that the telephone-sales proportion is 52 percent of the total. *Show Data As* offers several other ways to summarize the numbers, including as running totals and as a percentage of some other field.

twice, showing data first normally, then as a percent of the total. **The Proper Way to Point:** If you create a formula with a reference to a cell in a PivotTable, and you add the reference by clicking on that cell, Excel defaults to referring to the cell using the *GETPIVOTDATA* function, which can be verbose, making

4	Sum of Sales Total	Region		
5	Order Date	CENTRAL	EAST	WEST
6	1/1/2001		5893.93	5893.93
7	1/2/2001			9451.38
8	1/3/2001		326.52	10488.84
9	1/4/2001			18148.1
10	1/5/2001			766.45
11	1/6/2001			12747.3
12	1/7/2001			12770.99
13	1/8/2001		884.02	1333.91
14	1/9/2001		333.91	10936.93
15	1/10/2001			21286.65
16	1/11/2001		31.17	2017.89
17	1/12/2001		248.22	19694.48
18	1/13/2001		338.94	5593.52
19	1/14/2001			10488.84
20	1/15/2001		5545.22	5545.22

GROUPING DATES

more suitable name, such as Subregion, and click on the Group1 label and type Mid-Atlantic.

Turn off AutoFormat: One annoying aspect of PivotTables is that, by default, Excel always resizes the columns so that they're all as wide as the widest column or page label. This often pushes your data way off the page, or makes each column so far from the adjacent ones that it's too difficult to analyze the numbers. To stop this behavior and get control of column widths, click the *PivotTable* button on the Pivot-

4	Sum of Sales Total	Region	
5	Years	CENTRAL	
6	2001	Qtr1	162207.14
7		Qtr2	102883.22
8		Qtr3	122818.01
9		Qtr4	169958.38
10	2002	Qtr1	105824.29
11		Qtr2	72257.29
12		Qtr3	68848.91
13		Qtr4	112984.65
14	2003	Qtr1	108255.05
15		Qtr2	72374.4
16		Qtr3	91028.53
17		Qtr4	87563.51

What Lies Beneath: If you want to see the records that contribute to a specific value, just double-click on that value. Excel will create a new worksheet with these records. The records are

4		Data	
5	Product Category	Sum of Sales Total2	Sum of Sales Total
6	APPLIANCES	130878.72	1.54%
7	BINDERS AND BINDER ACCESSORIES	158207.59	1.86%
8	BOOKCASES	145194.94	1.71%
9	CHAIRS & CHAIRMATS	610600.83	7.20%
10	COMPUTER PERIPHERALS	417635.62	4.92%
11	COPIERS AND FAX	329261.98	3.88%

DRAG THAT FIELD AGAIN AND AGAIN

not linked back to the table's source, so changes made within them won't be reflected in the table or anywhere else.

Drag That Field Again and Again: There's nothing restricting you from using a particular field more than once in a table. For instance, perhaps you want to see sales by category both as a dollar amount and as a percentage of total sales. To do this, just drag the same field into the data area

out of your Excel data. Experiment with the options in the right-click menus and all the dialog boxes. Try PivotCharts, a graphical way to look at your data that's only one click away. And read our Beyond Excel story (go.pcmag.com/beyondexcel) for reviews of Tableau and other software solutions that let you drill into your data even farther.

Ben Z. Gottesman is an executive editor of PC Magazine.

1	A	B	C	D
2	Drop Page Fields Here			
3				
4	Sum of Sale			
5	Region	State2	State	Total
6	EAST	Group1	VIRGINIA	776564.8
7			MARYLAND	736683.18
8			DELAWARE	681765.9
9		NEW YORK	NEW YORK	714874.53
10		CONNECTICUT	CONNECTICUT	787663.97
11		VERMONT	VERMONT	772245.11
12	EAST Total			4469797.49
13	CENTRAL	ILLINOIS	ILLINOIS	291031.32
14		IOWA	IOWA	203071.85
15		MICHIGAN	MICHIGAN	315831.97
16		MINNESOTA	MINNESOTA	390408.17
17		MISSOURI	MISSOURI	240853.52
18		WISCONSIN	WISCONSIN	256273.21
19	CENTRAL Total			1697270.04

GROUPING OTHER DATA