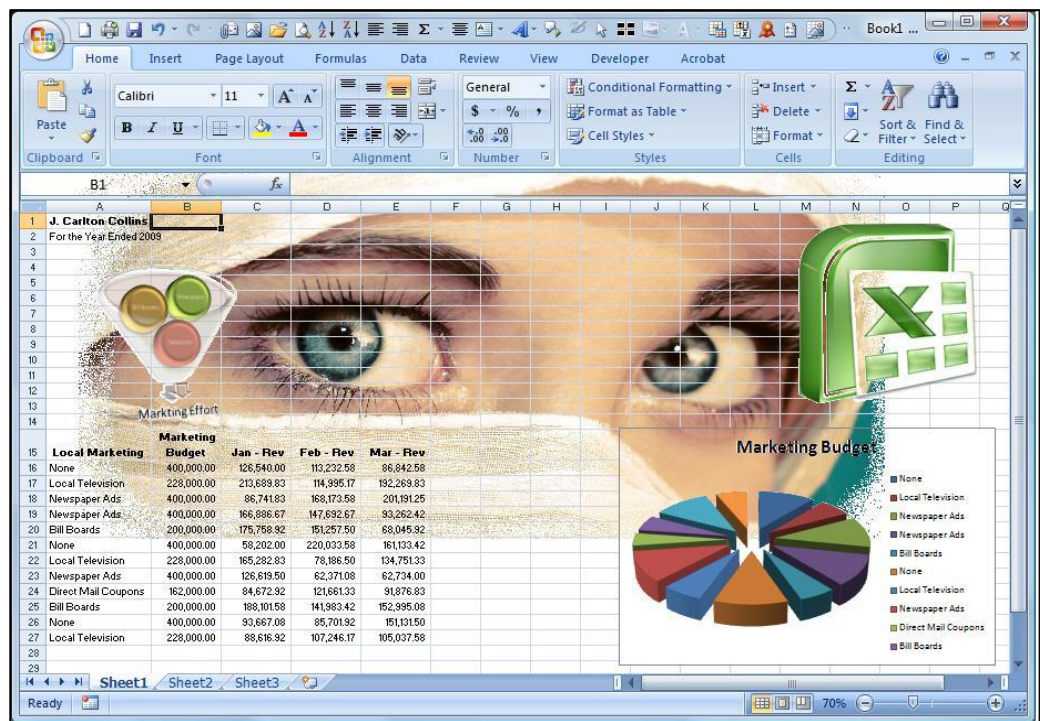


# ASA Research

# Excel PivotTables

*Excel's Greatest Tool*



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5. Prizes will continue to be awarded each month until this prize giveaway is terminated. Monthly prizes generally consist of less expensive technology items such as headsets, optical mice, GPS devices, camcorders, cordless keyboards, digital cameras, USB thumb drives, SD flash cards, computer monitors, wireless routers, etc. and will also include an annual grand prize of a new Windows 7 computer system.
6. ASA Research reserves the right to change these rules at any time, without notice. ASA Research reserves the right to terminate this prize giveaway at any time, without notice.

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# Excel PivotTables


## Copyright Notice & Course Information

(Recommended for 8 hours of A&A)

Based on popular demand, we are pleased to bring to you this comprehensive full-day course on Excel PivotTables. The PivotTable is widely considered to be one of the most powerful tools in Excel, and perhaps the most useful Excel tool for the CPA. In this course, we will cover every aspect of PivotTables using a wide variety of common CPA data including general ledger data; budget data; financial reporting data; inventory & warehouse data; sales order data; employee timesheet data; expense data; real estate data; sales reps & commissions data; marketing data; and more. General topics to be covered include data sources; creating PivotTables; manipulating PivotTables; formatting PivotTables; PivotCharts; reporting PivotTables and PivotCharts; printing PivotTables and PivotCharts; linking PivotTables to accounting systems; understanding OLAP data cubes.

Specific topics to be covered include controlling the PivotTable; slicer; adding calculated fields and sets; grouping columns; displaying data as percentages; archiving PivotTable data; publishing PivotTables; PivotTable organization; drilling PivotTables; Filtering PivotTables; duplicating PivotTables; querying a variety of data sources; working with PowerPivot; relocating PivotTables; Sorting PivotTables; Pivoting multiple data ranges; sharing PivotTables; generating static images; controlling PivotTable refresh rates; sorting PivotTables in unique order; converting PivotTables into hard data; auto-expanding data ranges; and disabling the GetPivotData function.

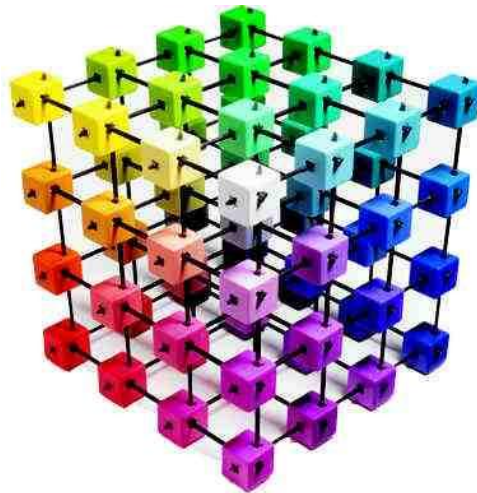
Ultimately, the objective of the course is to help you master PivotTables once and for all.

<b>Learning Objectives</b>	To increase the productivity of accountants and CPAs using Excel PivotTables
<b>Course Level</b>	Intermediate
<b>Pre-Requisites</b>	Familiarity with Microsoft Excel is Helpful
<b>Advanced Preparation</b>	None
<b>Presentation Method</b>	Live lecture using full color projection systems and live Internet access with follow up course materials
<b>Recommended CPE Credit</b>	8 hours
<b>Handouts</b>	Templates, checklists, web examples, manual
<b>Instructors</b>	J. Carlton Collins, CPA
	<p><i>ASA Research is registered with the National Association of State Boards of Accountancy (NASBA) as a sponsor of continuing professional education on the National Registry of CPE Sponsors. State boards of accountancy have final authority on the acceptance of individual courses for CPE credit. Complaints regarding registered sponsors may be addressed to the national Registry of CPE Sponsors, 150 Fourth Avenue, Nashville, TN, 37219-2417. Telephone: 615-880-4200.</i></p>

## Audience Assessment

The following questions are designed to help assess the level of the Excel users in this course.

- |  |                              |                             |
|--|------------------------------|-----------------------------|
| 1. Have you ever created a PivotTable?                                   | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 2. Have you created a PivotTable from multiple data ranges?              | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 3. Have you created a PivotTable from an external Excel workbook?        | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 4. Have you created a Pivot Table from multiple external sources?        | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 5. Have you created a PivotTable from an Accounting system query?        | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 6. Have you ever used the GetPivotData function?                         | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 7. Have you ever added a calculated column to a PivotTable?              | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 8. Have you ever copied and pasted a PivotTable?                         | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 9. Have you ever drilled a PivotTable?                                   | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 10. Have you ever created a PivotChart?                                  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 11. Have you ever grouped data in a PivotTable?                          | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 12. Have you ever used slicers?  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 13. Have you ever pivoted a PivotTable?                                  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 14. Have you ever displayed a PivotTable in Compact form?                | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 15. Have you ever worked with a PivotTable in Outline form?              | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 16. Have you ever pivoted data from an Excel Table?                      | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 17. Have you ever applied Report Filters (different than field filters)? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 18. Do you need to query more than 1 million rows of data?               | <input type="checkbox"/> Yes | <input type="checkbox"/> No |



# Introductory Review of PivotTables

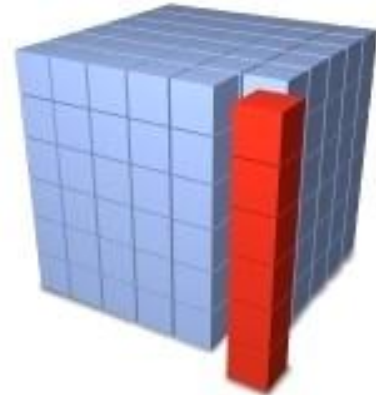
*(And How to Create Them)*

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## Chapter 1

## History of the PivotTable

**1989** - While working on a concept for a new software program which would eventually become **Lotus Improv**, a software engineer named **Pito Salas** envision patterns in spreadsheets which could possibly help to build advanced data models faster. Lotus Improv allowed users to define and store sets of categories, then change views by dragging category names with the mouse. This core functionality would provide the model for PivotTables.



**1991** - Lotus Development released Improv in 1991 on the **NeXT** platform. A few months after the release of Improv, **Brio Technology** published a standalone **Mac** implementation called **DataPivot** (with technology eventually patented in 1999).

**1992** - **Borland** purchased the DataPivot technology in 1992 and implemented it in their spreadsheet application **Quattro Pro**.

**1993** - In 1993, at the time when the Windows version of Improv appeared, **Microsoft Excel 5** was already on the market with a new functionality called a "PivotTable". This functionality was further improved in later Excel versions, as follows:

**1997** - **Excel 97** included a new and improved PivotTable Wizard, the ability to create calculated fields, and new pivot cache objects that allow developers to code against pivot tables.

**2000** - **Excel 2000** introduced "Pivot Charts" to graphically represent pivot table data.

## Where PivotTables Functionality is Found Today



PivotTables are an integral part of many applications, as follows:

- a. Microsoft **Excel** editions 2010, 2007, 2003, 2002, 2000 and 1997.  
(<http://office.microsoft.com/en-us/excel/>)
- b. OpenOffice.org's **Calc** provides similar functionality called **DataPilot**.  
(<http://www.openoffice.org/product/calc.html>)



- c. OpenOffice.org's **LibreOffice** provides similar functionality which has been renamed from DataPilot to 'Pivot Table'. (<http://www.libreoffice.org/>)
- d. **NumberGo** – A business Intelligence tool (<http://www.numbergo.com/>)
- e. **Quantrix** - A business Intelligence and modeling tool (<http://www.quantrix.com/>)
- f. **Google Docs** initially allowed the creation of basic pivot tables via the pivot table gadget from Panorama called **Panorama Analytics**, but as of 2011 this gadget provided limited functionality and was extremely slow with large amounts of data. (<https://accounts.google.com/ServiceLogin?service=writely&passive=1209600&continue=https://docs.google.com/&followup=https://docs.google.com/&ltmpl=homepage>)
- g. **Google spreadsheets editor** - In May 2011, Google announced the roll-out of a natively hosted pivot table feature in the **Google spreadsheets editor**. (<http://googleappsupdates.blogspot.com/2010/04/preview-of-new-google-spreadsheets.html>)
- h. **ZK**, an Ajax framework, also allows the embedding of pivot tables in Web applications. (<http://www.zkoss.org/>)
- i. **Others** - Pivot functionality is included in many other business intelligence packages.

## Introductory Review of PivotTables (*And How to Create Them*)

1. **Definition of a PivotTable** - A PivotTable summarizes large volumes of “flat table” data into summary PivotTable reports, and provides tools for rotating, filtering, drilling and modifying that PivotTable report<sup>(1)</sup>.
2. **Benefits of PivotTables** – A PivotTable summarizes and organizes data very fast<sup>(2)</sup> which saves you time. A PivotTable also enables you to view your data from different perspectives<sup>(3)</sup>, which can be insightful.
3. **Preparing to Pivot** - Before you can create a PivotTable, your raw data must be organized in columns, with a unique column heading atop each column.<sup>(4)</sup>
4. **No Blank Rows or Columns is Helpful** - While it is not absolutely required, it is best if your raw data does not contain any blank rows or columns<sup>(5)</sup>, because blank rows or columns might prevent Excel from auto-selecting all of the data correctly.

- 5. How to Create A PivotTable** - In Excel 2010 and 2007, to create a PivotTable, place your cursor in your raw data range, and from the **Insert** tab's **Tables** group, select **PivotTable**, **PivotTable**. In Excel 2003, from the **Data** menu select **PivotTable**, **Finish**.

(Note that if you select more than one cell in your raw data range, Excel will attempt to pivot only those selected cells<sup>(6)</sup>.)

- 6. Source Data that can be Pivoted** – Excel can pivot data from a variety of sources, including:
- Data from a single Excel worksheet<sup>(7)</sup>.
  - Data from multiple Excel worksheets<sup>(8)</sup>.
  - Data from another Excel workbook<sup>(9)</sup>.
  - Data from multiple Excel workbooks<sup>(10)</sup>.
  - Data from external sources, such as the Access, SQL Server, IBM DB/2 and Oracle databases.
  - Data from accounting systems<sup>(11)</sup> such as QuickBooks, MAS 90, and Dynamics GP.

A PivotChart report can help you visualize PivotTable report summary data so that you can easily see comparisons, patterns, and trends.

- 7. Benefits of a PivotTable at a Glance** - A summary of the more important benefits of a PivotTable are as follows:
- Quickly summarize<sup>(12)</sup> data by categories and subcategories.
  - Use a user-friendly method<sup>(13)</sup> to summarize/querying data.
  - Query large amounts of data.
  - Subtotal<sup>(14)</sup> and aggregate<sup>(15)</sup> numeric data.
  - Create custom calculations and formulas.
  - Expand and collapse levels of data to focus your results.
  - Drill down<sup>(16)</sup> to details from the summary data.
  - Move rows to columns or columns to rows (or "pivoting") to view data differently.
  - Filter<sup>(17)</sup>, sort<sup>(18)</sup>, group<sup>(19)</sup>, and conditionally format<sup>(20)</sup> to focus on the information you want.
  - Present concise, attractive, and annotated online or printed reports.

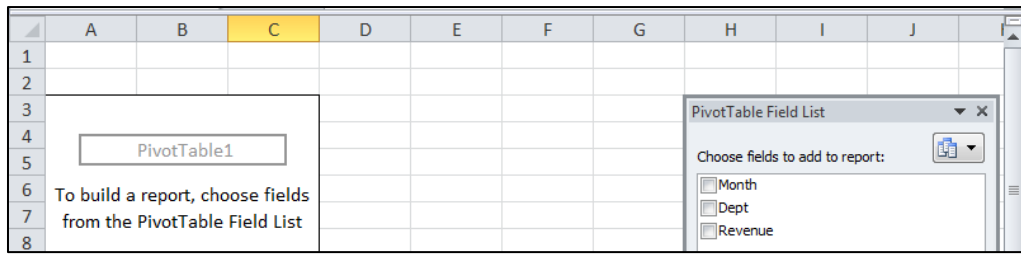


8. **Quick PivotTable Review**<sup>(21)</sup> – For those who have never before created a simple PivotTable, presented below is a step-by-step example, with screen images to make sure that everybody is on the same page before we dive in deeper.
- a. **Source Data** - Start with source data, and make sure your source data contains at least one number of each row and there are at least two descriptions per number<sup>(22)</sup>. For example, row 2 below contains the number “42,814” and that number is described as “January” and “Audit”.

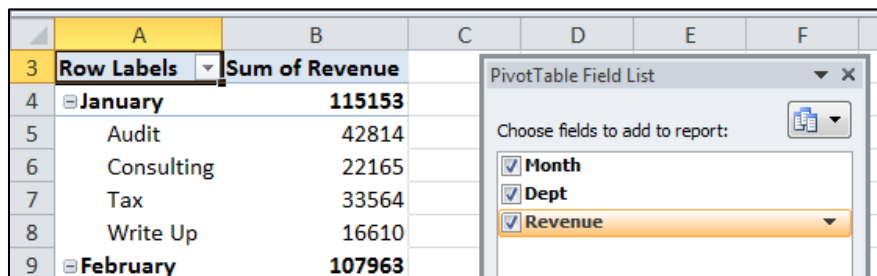
	A	B	C
1	<b>Month</b>	<b>Dept</b>	<b>Revenue</b>
2	January	Audit	42,814
3	February	Audit	33,669
4	March	Audit	35,304
5	April	Audit	37,992

Remember; make sure each column has a unique column heading<sup>(23)</sup>. If your columns headings are not located in row 1, make sure the row above your column headings is completely blank<sup>(24)</sup>. Make sure there are no blank columns or rows<sup>(25)</sup> in your data range. (It is OK to have empty cells in your data range<sup>(26)</sup>, as long as the complete column of row is not empty.

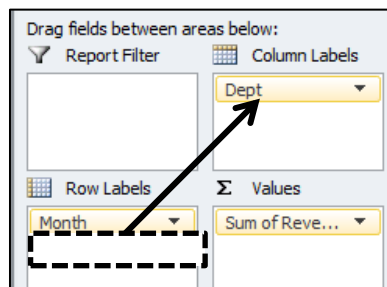
- b. **Create PivotTable** – Position your cursor in one (and only one<sup>(27)</sup>) cell of your data range (or select the entire data range, which takes longer), and from Excel 2010 and 2007's **Insert** tab, select **PivotTable**, and click **OK**. Your screen should now appear as follows:



- c. **Field List Check Boxes** - Next, place check marks<sup>(28)</sup> in the **PivotTable Field List's** checkboxes labeled **Month**, **Dept**, and **Revenue**. The screen should now appear as follows:



- d. **Pivot the PivotTable** - Next, drag the Field List icon<sup>(29)</sup> labeled **Dept** from the **Row Labels** drag box to the **Column Labels** Drag box, as suggested below by the arrow.



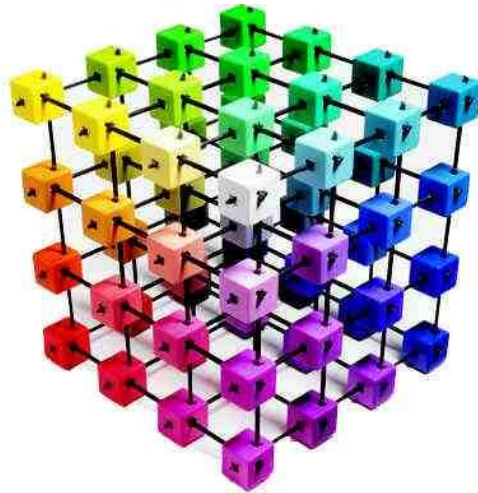
- e. **Minor Formatting** - Adjust the column widths, center the labels, and apply comma formatting to tidy the report. Your PivotTable should now appear as follows:

	A	B	C	D	E	F
3	<b>Sum of Revenue</b>	<b>Column La</b>				
4	<b>Row Labels</b>	<b>Audit</b>	<b>Consulting</b>	<b>Tax</b>	<b>Write Up</b>	<b>Grand Total</b>
5	January	42,814	22,165	33,564	16,610	115,153
6	February	33,669	17,618	37,410	19,266	107,963
7	March	35,304	19,545	29,863	11,017	95,729
8	April	37,992	24,776	43,812	7,078	113,658
9	May	17,284	17,604	18,282	13,615	66,785
10	June	19,012	29,876	21,425	10,012	80,325
11	July	19,585	27,383	20,410	12,518	79,896
12	August	14,697	24,221	18,297	4,491	61,706
13	September	11,190	13,943	20,793	20,192	66,118
14	October	15,487	21,770	16,458	17,073	70,788
15	November	17,514	26,054	6,539	12,061	62,168
16	December	17,882	21,253	9,944	15,075	64,154
17	<b>Grand Total</b>	<b>282,430</b>	<b>266,208</b>	<b>276,797</b>	<b>159,008</b>	<b>984,443</b>

f. **Notice That:**

- i. **Location of Pivot Table** - The PivotTable was created on a new worksheet<sup>(30)</sup> – the raw data is still intact on the original worksheet.
- ii. **Field Names** - The raw data's column labels have become the PivotTable's field names<sup>(31)</sup>.
- iii. **Default Functions** - By default, Excel summarizes numeric values using the SUM function, and summarizes text values using the COUNT function<sup>(31)</sup>.

(Often CPAs ask why Excel sometimes uses the COUNT function by default instead of the SUM function when creating a PivotTable. If this happens to you, it is because at least one text item (such as a space, for example), is mixed in with your values<sup>(32)</sup>. To correct this problem when you have hundreds of spaces, use **Search and Replace** to replace spaces with zeros.)



# PivotTable Data Sources

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## Chapter 2

9. **Source Data** - When you create a PivotTable or a PivotChart, you can use any of at least eight different types of source data<sup>(33)</sup>. These options are discussed below.

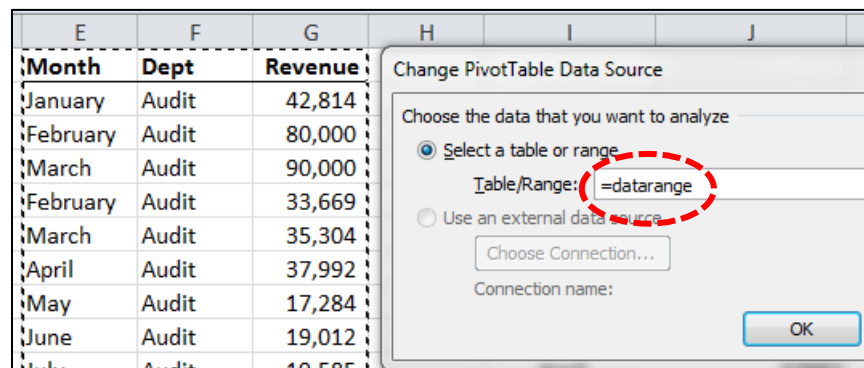
1) **From Worksheet Data** - You can use data from a Microsoft Excel worksheet as the basis for a report. The data should be in list format, with column labels in the first row. Each cell in subsequent rows should contain data appropriate to its column heading. There should not be any blank rows or columns within the data of interest. Excel uses your column labels for the field names in the report.

a. **First Remove Any Subtotals**<sup>(34)</sup> - Excel automatically creates subtotals and grand totals in a PivotTable report. If the source data contains automatic subtotals and grand totals that you created by using the **Subtotals** command in the **Outline** group on the **Data** tab, use that same command to remove the subtotals and grand totals before you create the report.



2) **Excel Tables** – To make your PivotTable easier to update when you add more rows or columns, convert your data range to an Excel Table<sup>(35)</sup>. That way, when you refresh your PivotTable report, new and updated data from the Excel Table will automatically be included in the refresh operation. By definition, Excel tables are already presented in list format, and therefore are good candidates for PivotTable source data.

3) **Using a Named Range** – Another measure which might make sense is to name the source Table range<sup>(36)</sup>, and use the name when you create the report. This will ensure that you PivotTable's properties point to a specific named range, which will be more recognizable than a simple cell reference. Again, if the named range expands to include more data, you can refresh the report to include the new data. To refer to a named range, make sure to insert an equals sign in front of the name.



4) **External Data Sources** - You can retrieve data from a source that is external to Excel such as an accounting system<sup>(37)</sup>, a database, an Online Analytical Processing (OLAP) cube, or a text file. For example, you might maintain a database of sales records you

- want to summarize and analyze or you might query your accounting software system.
- 5) **Office Data Connection files** - If you use an Office Data Connection (ODC) file (.odc) to retrieve external data for your report, you can input the data directly into a PivotTable report. Microsoft recommends that you retrieve external data for your reports by using ODC files (Because this usually provides faster results. To understand the issue better, try retrieving PivotTable data directly from QuickBooks; then you will see how slow of an operation that can be<sup>(38)</sup>).
  - 6) **OLAP Source Data** - When you retrieve source data from an OLAP database or a cube file, the data is returned to Excel only as a PivotTable report or a PivotTable report that has been converted to worksheet functions.
  - 7) **Non-OLAP source data** This is the underlying data for a PivotTable report or a PivotChart report that comes from a source other than an OLAP database. For example, data from relational databases or text files.
  - 8) **(This applies to Excel 2003 Only<sup>(39)</sup>) Using Another PivotTable Report As The Data Source** – You can use a PivotTable as the source data for creating another PivotTable.
    - a. **The PivotTable Cache** - Each time that you create a new PivotTable or PivotChart, Excel stores a copy of the raw data in memory, and saves this storage area as part of the workbook file. Thus, each new PivotTable or PivotChart you create requires additional memory and disk space. However, when you use an existing PivotTable as the source for a new PivotTable in the same workbook, both reports share the same copy of the data<sup>(40)</sup>. Because you reuse the same storage area, the size of the workbook file is reduced and less data is kept in memory.
    - b. **Location Requirements** - To use a PivotTable as the source for another PivotTable, both reports must be in the same workbook.
    - c. **Source Data in Different Workbooks** - If the source PivotTable report is in a different workbook, copy the source report to the workbook location where you want the new report to appear. PivotTable reports and PivotChart reports in different workbooks are separate, each with its own copy of the data in memory and in the workbook files.
      - i. **Changes Affect Both Reports** - When you refresh the data in the new report, Excel also updates the data in the source report, and vice versa. When you group or ungroup items in one report, both reports



are affected. When you create calculated fields or calculated items in one report, both reports are affected.

- II. **PivotCharts** – You cannot create a PivotChart from another PivotChart, but you can create a PivotChart from a PivotTable that already has a PivotChart based on the data.

**10. Changing the Source Data**<sup>(41)</sup> - Some CPAs working with large volumes of data find that instead of creating 30 new PivotTables tied to a new data source, it is sometimes easier to create their data reports using a smaller set of data, and then simply change the source data range once they have completed the PivotTable report. For example, you may want to conveniently switch from a test database to a production database.

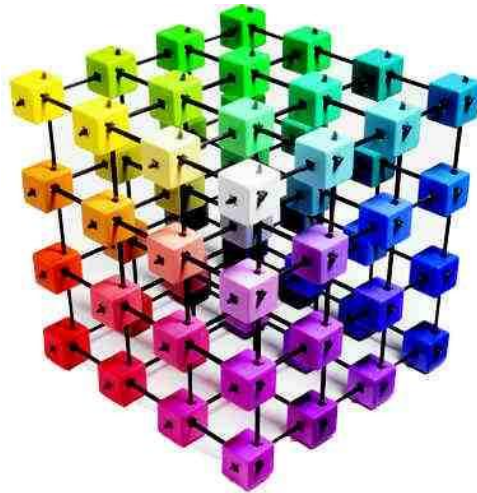
To include additional data or different data, you can redefine the PivotTable's source data range for the PivotTable report, or redefine the named Table Range the PivotTable points to.

However, if your initial data is substantially different (with many new or additional fields) from your new data range, it may be easier to create a new report, rather than changing source data references.

**11. Displaying new data brought in by refresh** - Refreshing a report can also change the data that is available for display. For reports based on worksheet lists, Excel retrieves new fields<sup>(42)</sup> within the source range or named range that you specified. For reports based on external data, Excel retrieves new data that meets the criteria for the underlying query or data that becomes available in an OLAP cube. You can view any new fields in the Field List and add the fields to the report.

**12. Changing OLAP cubes that you create** - Reports based on OLAP data always have access to all of the data in the cube. If you created an offline cube file that contains a subset of the data in a server cube, you can use the **Offline OLAP** command to modify your cube file so that it contains different data from the server.

**13. Improving PivotTable Performance** - If the PivotTable report is connected to an external data source that contains a lot of data, you can filter one or more fields before you add fields to the report, which can help reduce the time it takes to update the report<sup>(43)</sup>.



# Creating Pivot-Ready Data

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## Chapter 3

Before you create, build or construct a PivotTable, you should first inspect your data to determine if it is in Pivot-Ready condition. In general, this means that the data must be:

- a. **Contiguous Data**<sup>(44)</sup> – The data should contain no blank rows or blank columns. For example, the screen below shows blank rows (with solid lines). These rows should first be removed before proceeding with the creation of a PivotTable.

Batch	Date	Account	Account Description	Debit	Credit	Description	Source	Reference	Cum Debit	Cum Credit
<b>02/02/2003 3:09:26 AM</b>										
03020210001	01/05/2003	2-1200	Accounts Payable		25.00	Vendor Bill WATER/ DEC-02	WATERCO		0.00	25.00
03020210001	01/05/2003	6-2940	Water	25.00		Water Bill For Dec -1 DEC-02	WATERCO		25.00	25.00
<b>02/02/2003 3:10:47 AM</b>										
03020210002	01/04/2003	2-1200	Accounts Payable		130.00	Vendor Bill TELCO - T-Dec-02	TELCO		0.00	130.00
03020210002	01/04/2003	6-2910	Telephone	130.00		Telephone Bill Dec C T-Dec-02	TELCO		130.00	130.00
<b>02/02/2003 3:10:12 AM</b>										
03020210003	01/05/2003	2-1200	Accounts Payable		1,470.50	Vendor Invoice ACC VI-900002	ACCESS		0.00	1,470.50
03020210003	01/05/2003	1-1300	Inventory	67.50		64MB 800MHz NON VI-900002	ACCESS		67.50	1,470.50
03020210003	01/05/2003	1-1300	Inventory	319.00		INTEL PENTIUM 4 1.5 VI-900002	ACCESS		386.50	1,470.50
03020210003	01/05/2003	1-1300	Inventory	4.00		Keyboard PS/2 BTC VI-900002	ACCESS		390.50	1,470.50
03020210003	01/05/2003	1-1300	Inventory	1,089.00		HP XE3 P3 1.06G 1E VI-900002	ACCESS		1,470.50	1,470.50
<b>02/02/2003 3:19:28 AM</b>										
03020210004	02/02/2003	2-1200	Accounts Payable		450.00	Vendor Bill CARREP VBILLS-1002	CARREP		0.00	450.00
03020210004	02/02/2003	6-2410	Vehicles, Mach. & Equipment	450.00		Vehicles, Mach. & E VBILLS-1002	CARREP		450.00	450.00
<b>02/02/2003 3:20:48 AM</b>										
03020210005	01/03/2003	2-1200	Accounts Payable		160.00	Vendor Bill ELECTRI E-Dec-02	ELECTRIC		0.00	160.00
03020210005	01/03/2003	6-2930	Electricity	160.00		Electricity Bill Dec -1 E-Dec-02	ELECTRIC		160.00	160.00

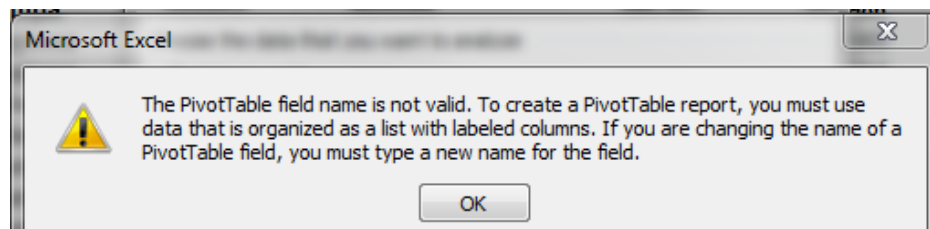
- b. **Single Row Data**<sup>(45)</sup> – Some accounting systems produce data that spans two or more rows per transaction. If this is the case, your will need to clean that data so that all related information for a single transaction or data is contained on a single row. For example, the following data contains multiple rows of data related to a single sales order. In this case, the user must move and paste the data to fall on a single row. This is an example of data that requires a great deal of clean up.

Item	T Part Number	Description	Site	CD	Total Ord	Total Inv	Total Rsrd	Total Bk Ord	Total In Stk	Ship Date	Sell Price	Need To Buy	On Ord For Stk	Unit Cost	P	
<b>ComponentControl.com</b>																
Emp#: DBA		Cust PO#: P340595		Customer: ABJ Aviation Corporation				Company Code: AAC4		Class Code: ISO-Y						
Order #: 100022		Order Date: 10/1/2002		Due Date: 10/15/2002												
3 E	005-01064-0075	SWITCH/ROCKER TYPE	NE	1	0	1	0			10/15/2002		0	104	0.00		
1 S	005-02012-0023	POSITIONER	NE	1	0	1	0			10/15/2002		0	8	2,500.00	62	
2 S	005-02044-0003	BLACK BEZEL	AR	1	0	1	0			10/15/2002		0	0	1,357.61	33	
Ordered SubTotal:			4,905.01	Open SubTotal:			4,905.01	Billable SubTotal:			4,905.01	Profit SubTotal:				1,04
Emp#: PIETR		Cust PO#: S3892		Customer: ACRIJ Hardware Company				Company Code: AHC1		Class Code: ISO-Y						
Order #: 100074		Order Date: 10/2/2002		Due Date: 10/20/2002												
1 E	005-01082-0058	EMERGENCY EVACUATION SLIDE	SV	1	0	1	0			10/2/2002		0	0	0.00	2,5	
2 S	010-06500	MASTER CYLINDER	OH	1	0	1	0					0	0	760.00	19	
Ordered SubTotal:			3,450.00	Open SubTotal:			3,450.00	Billable SubTotal:			3,450.00	Profit SubTotal:				2,89
Emp#: JOANN		Cust PO#: 980		Customer: American Component L.L.C.				Company Code: ACLL1		Class Code: ISO-Y						
Order #: 100379		Order Date: 10/2/2002		Due Date: 10/2/2002												
1 S	005-01082-0058	EMERGENCY EVACUATION SLIDE	SV	1	0	1	0			10/2/2002		0	0	950.00	1,03	
Ordered SubTotal:			1,989.66	Open SubTotal:			1,989.66	Billable SubTotal:			1,989.66	Profit SubTotal:				1,03
Emp#: DBA		Cust PO#:		Customer: ABC Aerospace Incorporated				Company Code: AAJ2		Class Code: ISO-Y						

- c. **Column Headers** - The data should contain a unique header atop each column<sup>(46)</sup>. For example, the following screen contains two columns labeled Date, while columns D and E contain no heading. These are both cases of data that should be cleaned before creating a PivotTable.

	A	B	C	D	E	F	G	H
1	Year	Date	Date			State	Attendance	Type
2	2010	10	5-Oct	Tech Savvy CPA	Acworth, GA	GA	13	Course
3	2009	6	3-Jun	Excel Advanced	Alpharetta, GA	GA	19	Course
4	2011	11	9-Nov	QuickBooks for CPAs	Alpharetta, GA	GA	33	Course
5	2010	12	14-Dec	Communicating with Computers	Buckhead, GA	GA	29	Course
6	2010	6	10-Jun	Excel Functions, Macros and Data	Buckhead, GA	GA	29	Course
7	2010	9	24-Sep	Microsoft Office 2010 and Windows	Buckhead, GA	GA	0	Course
8	2010	6	8-Jun	Excel Hands On	Cobb Galleria, GA	GA	8	Course
9	2010	5	20-May	Accounting Software Expo	Atlanta, GA	GA	100	Conferen
10	2010	4	30-Apr	Property Management Conferenc	Atlanta, GA	GA	100	Conferen
11	2010	8	18-Aug	SEAS Conference	Atlanta, GA	GA	100	Conferen
12	2009	8	13-Aug	Excel Functions	Birmingham, AL	AL	63	Course
13	2009	9	8-Sep	Information Security	Birmingham, AL	AL	24	Course
14	2009	7	15-Jul	QuickBooks for CPAs	Birmingham, AL	AL	45	Course
15	2009	7	16-Jul	Tech Savvy CPA	Birmingham, AL	AL	42	Course
16	2010	4	23-Apr	Communicating with Computers	Bloomington, MN	MN	20	Course
17	2009	4	29-Apr	Excel for Intermediate	Bloomington, MN	MN	46	Course

If you attempt to create a PivotTable using data that does not contain a column heading atop all columns, you will receive the following error message<sup>(47)</sup>.



If you have data with the same column heading used more than once, Excel will alter the column headings when you create a PivotTable, so all headings will be unique<sup>(48)</sup>.

- d. **Row Descriptions** - The raw data should repeat row descriptions for each row<sup>(49)</sup>. For example, the screen below shows that the state and city descriptions are not repeated for each row in columns A & B.

	A	B	C	D	E	F	G	H
3	<b>Carlton's Rental Properties</b>							
4	<b>2012 Analysis</b>							
5								
6	<b>State</b>	<b>City</b>	<b>Type</b>	<b>Manager</b>	<b>Revenue</b>	<b>Expenses</b>	<b>Profit</b>	<b>Vacancy Rate</b>
7	Florida	Daytona	Duplex	Steve	75,254	58,638	16,556	25.5%
8			Duplex	Steve	77,184	87,218	(10,034)	56.4%
9			Duplex	Steve	77,184	68,694	8,490	25.5%
10			Duplex	Steve	76,219	60,213	16,006	54.4%
11			Townhome	Steve	52,140	41,191	10,949	35.6%
12			Townhome	Steve	52,800	59,664	(6,864)	25.5%
13			Townhome	Steve	52,140	41,191	10,949	27.6%
14			Triplex	Ginger	110,772	94,156	16,616	39.8%
15			Triplex	Ginger	121,198	112,714	8,484	45.0%
16			Triplex	Ginger	121,198	112,714	8,484	23.3%
17		Tampa	Apartment	Ginger	128,563	119,564	8,999	39.8%
18			Apartment	Ginger	217,504	184,878	32,626	53.3%
19			Duplex	Steve	79,114	64,873	14,240	25.5%
20			Townhome	Steve	39,600	38,016	1,584	54.4%
21			Townhome	Steve	51,480	40,154	11,326	25.5%
22			Townhome	Steve	54,120	44,378	9,742	31.5%
23			Townhome	Steve	54,120	44,378	9,742	56.4%
24			Triplex	Ginger	91,224	127,714	(36,490)	24.7%
25			Triplex	Ginger	91,224	66,594	24,630	65.0%
26			Triplex	Ginger	110,772	125,172	(14,400)	23.3%
27			Triplex	Ginger	71,676	70,959	717	13.4%
28			Triplex	Ginger	110,772	125,172	(14,400)	31.8%
29	Georgia	Atlanta	Apartment	Ginger	432,900	367,965	64,935	24.7%
30			Apartment	Kathy	1,205,988	1,073,329	132,659	43.2%
31			Apartment	Ginger	96,768	70,641	26,127	53.3%
32			Apartment	Kathy	328,563	305,564	22,999	39.8%
33			Duplex	Steve	57,888	55,572	2,316	31.5%
34			Duplex	Steve	79,114	64,873	14,240	27.6%

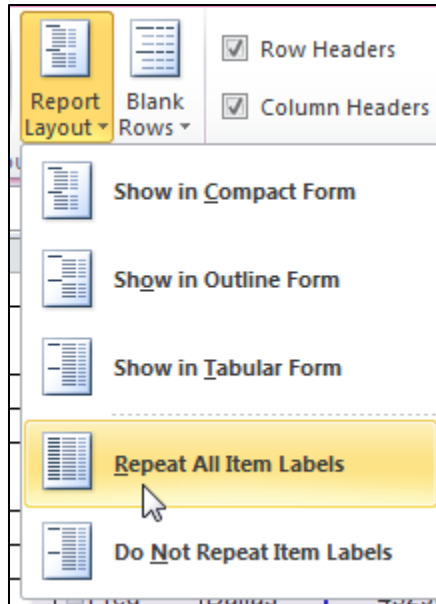
In this example, there are two ways you can solve this problem, as follows:

- Manually**<sup>(50)</sup> – Manually copy the state and city names to the blank cells below. However, this option is only good for small amounts of data.
- Paste to Blanks**<sup>(51)</sup> – A better approach is as follows:
  - In cell A8, insert the formula =A7. (This repeats the data in the above cell)
  - Copy cell A8 (**Ctrl + C**)
  - Highlight the range A7:B68 (in this example)
  - Press **F5**, to launch the **GoTo** dialog box. Select **Special, Blanks, OK**.
  - Paste (**Ctrl + V**)

*You have now repeated all row labels properly throughout the data range.*

- Finish by highlight columns A & B, then copy and paste value to convert the formulas to values.

**Note:** Do not confuse this topic with the Repeat Items Labels tool<sup>(52)</sup>, as pictured below.



- e. **Transposing Headers and Rows**<sup>(53)</sup> – In some cases, data may need to be transposed because the PivotTable tool creates Field names from the Column headings, not the row headings. To do this, copy the data, then select **Paste Special, Transpose, OK** to flip the data around.
- f. **Clean Data**<sup>(54)</sup> – The data must be clean of empty text cells containing spaces, special characters, extra spaces within data, trailing spaces, trailing zeros, leading zeros, etc.

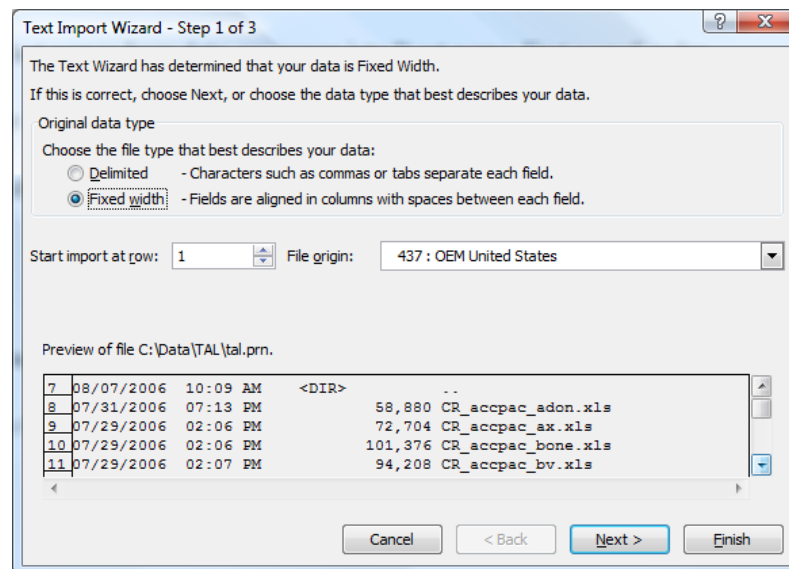
CPAs often receive or retrieve data from many sources in a wide variety of formats such as Text or CSV formats. You don't always have control over the format and type of data that you import from an external data source, such as a database, text file, or a Web page. Before you can analyze the data, you often need to clean it up. Fortunately, Office Excel has many features to help you get data in the precise format that you want. Sometimes, the task is straightforward and there is a specific feature that does the job for you.

For example, you can easily use Spell Checker<sup>(55)</sup> to clean up misspelled words in columns that contain comments or descriptions. Or, if you want to remove duplicate rows, you can quickly do this by using the **Remove Duplicates**<sup>(56)</sup> dialog box. At other times, you may need to manipulate one or more columns by using a formula to convert the imported text numbers into values<sup>(57)</sup>.

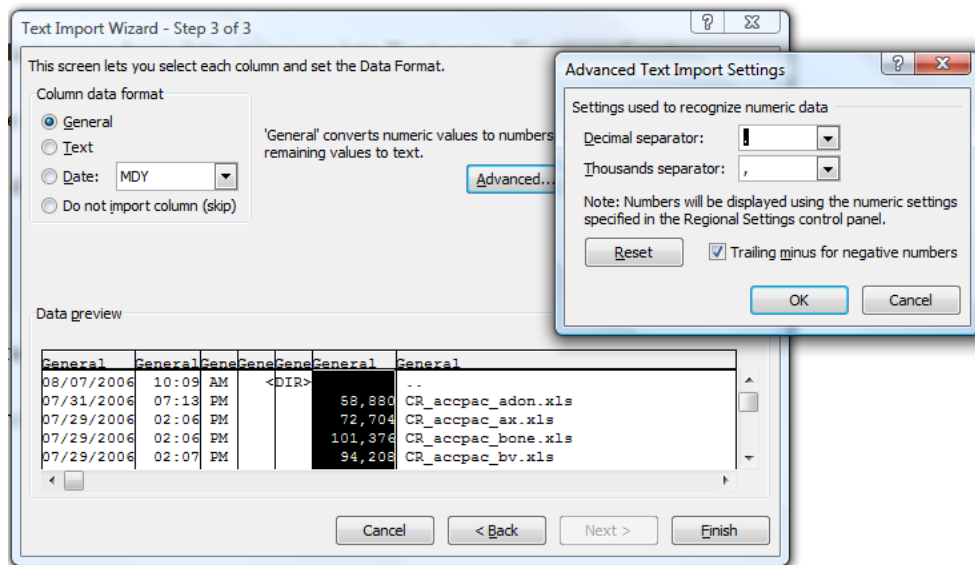
For example, if you want to remove trailing spaces, you can create a new column to clean the data by using a formula, filling down the new column, converting that new column's formulas to values, and then removing the original column. Excel provides many functions to help you clean your data as follows<sup>(58)</sup>:

- |     |                   |     |              |
|-----|-------------------|-----|--------------|
| 1.  | Import            | 14. | =LEFT        |
| 2.  | Text to Columns   | 15. | =MID         |
| 3.  | Remove Duplicates | 16. | =RIGHT       |
| 4.  | Find & Replace    | 17. | =VALUE       |
| 5.  | Spell Check       | 18. | =CONCATENATE |
| 6.  | =UPPER            | 19. | =TEXT        |
| 7.  | =LOWER            | 20. | =TRIM        |
| 8.  | =PROPER           | 21. | =CLEAN       |
| 9.  | =FIND             | 22. | =FIXED       |
| 10. | =SEARCH           | 23. | =DOLLAR      |
| 11. | =LEN              | 24. | =CODE        |
| 12. | =SUBSTITUTE       | 25. | Macros       |
| 13. | =REPLACE          |     |              |

1. **Importing Data into Excel** – Of course Excel opens up Excel files, but what happens when you attempt to open data that is not contained in an Excel format? The answer is that Excel automatically imports that data on the fly and displays an Import Wizard to help you complete the process. The Text Import Wizard examines the text file that you are importing and helps you import the data<sup>(59)</sup> the way that you want. To start the Text Import Wizard, on the Data tab, in the Get External Data group, click From Text. Then, in the Import Text File dialog box, double-click the text file that you want to import. The following dialog box will be displayed:

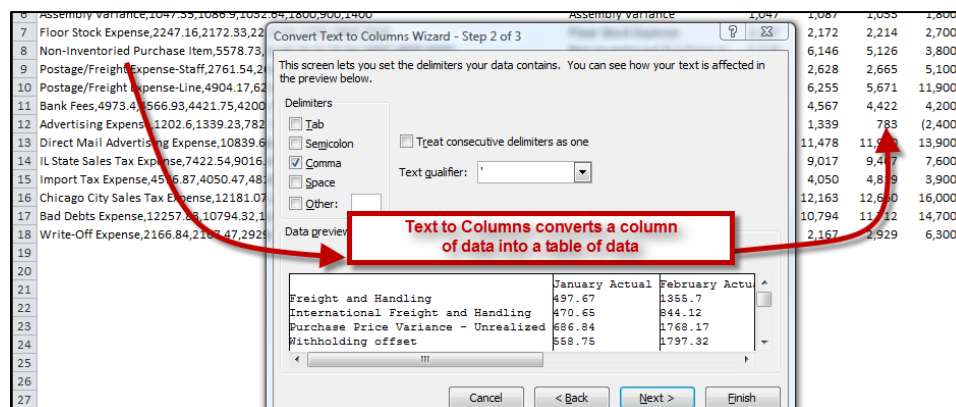


If items in the text file are separated by tabs, colons, semicolons, spaces, or other characters, select Delimited. If all of the items in each column are the same length, select Fixed width. In step 3, click the Advanced button to specify that one or more numeric values may contain a trailing minus sign. Also click the desired data format for each column to be imported.



2. **Text to Columns** – The Text to Columns command located on the Data Ribbon works exactly the same way as described above – the user simply launches it to convert data within an existing worksheet.
3. **No Built-in Logic Checking** - Excel's Text to Columns tool does not automatically recognize delimiters (commas, spaces, or quotes), although it may sometimes appear so. Like an elephant, Excel's Text to Columns simply has a good memory. Each time you use Text to Columns, it remembers your parsing criteria and sets it as the default setting for future parse jobs<sup>(60)</sup>, until Excel is closed.

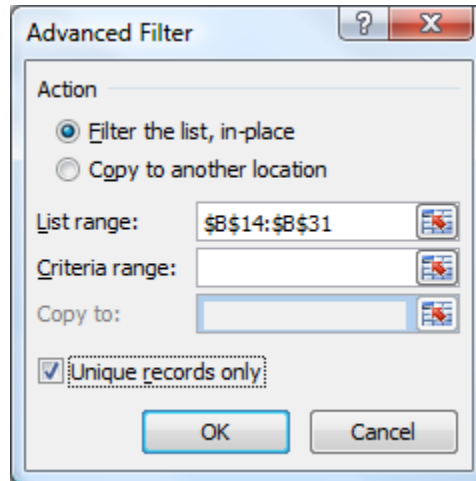
Some CPAs use the **Text to Columns** tool, changing the delimiter criteria as necessary, then they open a second file containing the same type of delimited data. In this second case, it may appear to them that Excel automatically recognized the embedded delimiter, but it was only following the lead from the first parsing job.



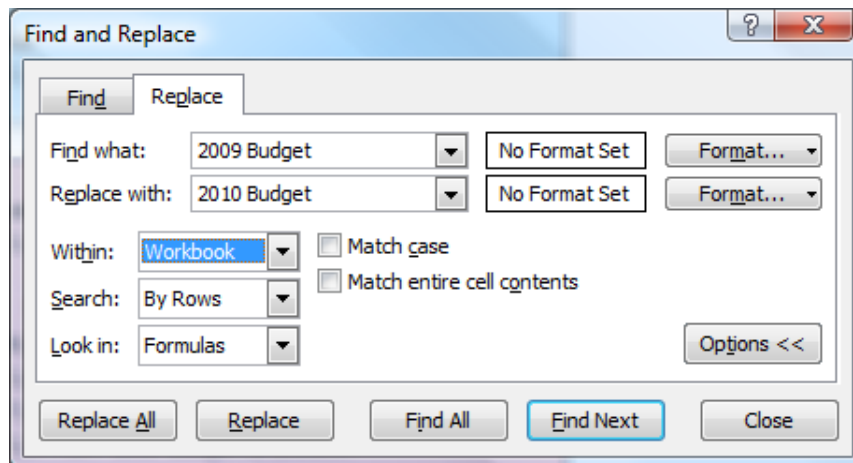


Notes: There is no option for changing the default **Text to Columns** delimiter in Excel, but you can achieve the same effect by setting the desired delimiters in a workbook and saving it as a template or as the default workbook<sup>(61)</sup>. You could also create macros designed to parse data according to the delimiting criteria you frequently encounter.

4. **Removing Duplicate Rows**<sup>(62)</sup> - Duplicate rows are a common problem when you import data. You can identify and remove duplicate rows by using the **Data, Advanced Filter, Unique Records Only** tool as show in the screen below.



5. **Find and Replace Text**<sup>(63)</sup> – This tool can be used to identify and remove leading string, such as a label followed by a colon and space, or a suffix, such as a parenthetic phrase at the end of the string that is obsolete or unnecessary. You can do this by finding instances of that text and then replacing it with no text or other text.

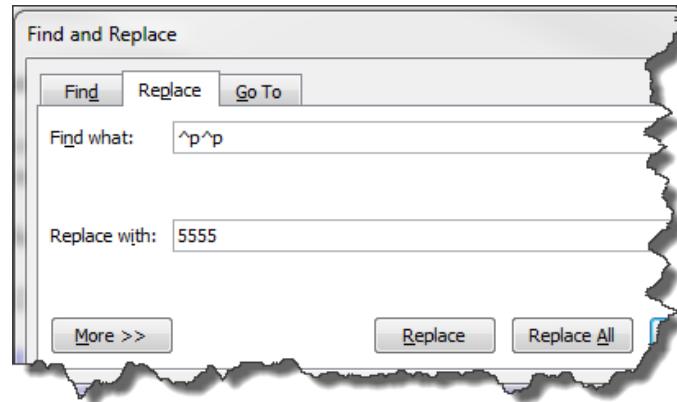


**Noteworthy Find and Replace Points:**

1. You can search and replace for an entire worksheet, or the entire workbook<sup>(64)</sup>.
  2. You can find and replace formats with new formats<sup>(65)</sup>.
  3. There is a cell chooser option<sup>(66)</sup> that makes it easier to find and replace formats.
  4. If you highlight a range of cells, then **Search and Replace** only searches and replaces within that range of cells<sup>(67)</sup>.
  5. You can replace all at once or one at a time.
  6. You could also find and replace references in a formula.
  7. Searching for a “[” is the only way to locate external links<sup>(68)</sup>.
6. **Find and Replace in Word, rather than Excel** – In some cases, it may make more sense to first paste your data into Word, and then use the Find and Replace tool in that environment, rather than Excel. This is particularly useful when you are working with row data that you want organized into paragraphs.

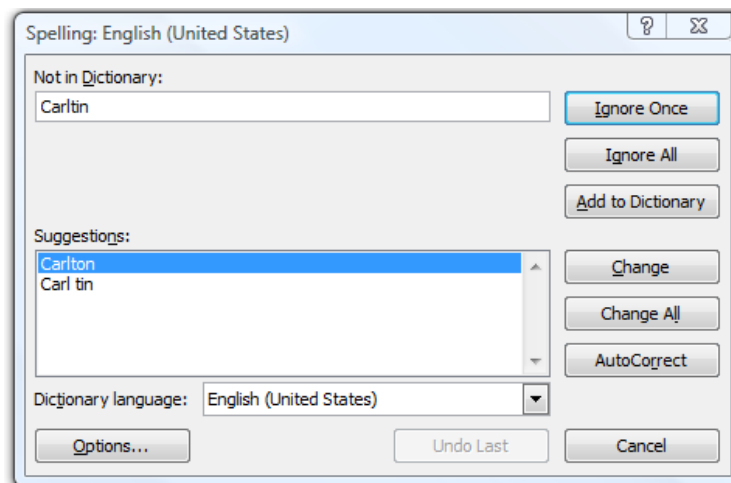
For example, the easiest way to remove unwanted line breaks is to simply press **Alt + Ctrl + K**<sup>(69)</sup>. This keystroke combination runs Word's **AutoFormat** command which analyzes the document and instantly applies an appropriate format, which includes the removal of unnecessary line breaks. (In your case, you should consider adding the **AutoFormat** tool to your **Quick Access Toolbar** for easy access.)

However, depending on the document, **AutoFormat** may delete (or alter) formatting that you wanted to keep. In this case, you are on the right track using the search and replace method as you described, you just need to add two small steps to your procedure to obtain the desired results. If you look closely, you will see that your document contains single paragraph breaks where you don't want them, and double paragraph breaks where you do. The trick is to get rid of the breaks you don't want but keep the breaks you do<sup>(70)</sup>. Start by replacing the double paragraph breaks (which you do want to keep) with an uncommon string of text that does not appear in the document, such as "5555", as follows. From the Office 2010 or 2007 **Home** tab, select **Editing, Replace** to launch the **Find and Replace** dialog box. From the Office 2003 menu select **Edit, Replace** to launch the **Find and Replace** dialog box. Then, in the **Find what** box, type **^p^p**, and in the **Replace with** box type **5555**, as shown.



Click the **Replace All** button. Next, use find and replace again to remove all single paragraph breaks (which you don't want) as follows: From the **Home** tab, select **Editing, Replace** and type **^p** in the **Find what** box and enter a space in the **Replace with** box, then click the **Replace All** button (this action will remove all paragraph breaks from your document and adds spaces instead). Finally, restore the double paragraph breaks as follows: From the **Home** tab, select **Editing, Replace** and type **5555** in the **Find what** box and **^p^p** in the **Replace with** box, then click the **Replace All** button. Your resulting document will be devoid of the unwanted paragraph breaks and you will be able to copy, paste and edit the text unencumbered by unwanted line breaks.

7. **Spell Check** - You can use a spell checker to not only find misspelled words, but to find values that are not used consistently, such as product or company names, by adding those values to a custom dictionary. The spell check function also checks your grammar as well.



8. **Changing The Case Of Text**<sup>(71)</sup> – You can use one or more of the three Case functions to convert text to lowercase letters, such as e-mail addresses, uppercase letters, such as product codes, or proper case, such as names or book titles.

Using a specific case in excel is not necessary because Excel ignores case<sup>(72)</sup> for all function calculations (such as VLOOKUPS); however, you may want to convert case for consistency and for better visual appeal and readability.

Excel does utilize case when performing a Search when the Match Case checkbox is selected, or when performing a Sort when the Case Sensitive checkbox is selected<sup>(73)</sup>.

a. =**UPPER**<sup>(74)</sup> - Converts text to uppercase letters.

A15		fx =UPPER(A13)			
	A	B	C	D	E
13	Keith Bell	118 Belvedere Lane	Peachtree City, GA 30269	770-632-9875	
14					
15	KEITH BELL	118 BELVEDERE LANE	PEACHTREE CITY, GA 30269	770-632-9875	

b. =**LOWER**<sup>(75)</sup> - Converts all uppercase letters in a text string to lowercase letters.

A15		fx =LOWER(A13)			
	A	B	C	D	E
13	KEITH BELL	118 BELVEDERE LANE	PEACHTREE CITY, GA 30269	770-632-9875	
14					
15	keith bell	118 belvedere lane	peachtree city, ga 30269	770-632-9875	

c. =**PROPER**<sup>(76)</sup> - Capitalizes the first letter in a text string and any other letters in text that follow any character other than a letter. Converts all other letters to lowercase letters.

A15		fx =PROPER(A13)			
	A	B	C	D	E
13	KEITH BELL	118 BELVEDERE LANE	PEACHTREE CITY, GA 30269	770-632-9875	
14					
15	Keith Bell	118 Belvedere Lane	Peachtree City, Ga 30269	770-632-9875	

9. **Merging And Splitting Columns**<sup>(77)</sup> - A common task after importing data from an external data source is to either merge two or more columns into one, or split one column into two or more columns. For example, you may want to split a column that contains a full name into a first and last name. Or, you may want to split a column that contains an address field into separate street, city, region, and postal code columns. The reverse may also be true. Presented below are functions that to help you accomplish these tasks:

10. =**FIND**<sup>(78)</sup> – Use Returns the starting position of a character, string of characters or word with a cell. Find is case sensitive.

I3		fx =FIND(" ",A3)								
	A	B	C	D	E	F	G	H	I	
3	Alan Akers,316 Wild Heron Road,St. Simons Island, GA 31522,(912) 638-5009,alan@akers.com									60

11. **=SEARCH**<sup>(79)</sup> – Returns the starting position of a character, string of characters or word with a cell. Search is not case sensitive.

	A	B	C	D	E	F	G	H	I
3	Alan Akers,316 Wild Heron Road,St. Simons Island, GA 31522,(912) 638-5009,alan@akers.com								
									60

12. **=LEN**<sup>(80)</sup> – Displays the length or number of characters in a cell.

	A	B
3	Alan Akers,(912) 638-5009,alan@Yahoo.com, alan@Gmail.com,AlanAkers@SSI.com	74

13. **=SUBSTITUTE**<sup>(81)</sup> – Replaces a character or characters with a character or characters that you specify.

	A
6	Teresa Baldwin, (912) 265-2616, Teresa@AOL.com
7	
8	Teresa Baldwin, (912) 265-2616, Teresa@America Online.com

14. **=REPLACE**<sup>(82)</sup> - Replaces a character or characters with a character or characters that you specify.

	A
6	Teresa Baldwin, (912) 265-2616, Teresa@AOL.com
7	
8	Teresa Baldwin, (912) 265-2616, Teresa@America Online.com

15. **=LEFT**<sup>(83)</sup> – Extracts the specified number of characters from a cell, starting from the left.

	G	H
4	Memphis, TN (Briarcrest Christina HS)	Memphis

16. **=MID**<sup>(84)</sup> – Extracts the specified number of characters from a cell, starting from somewhere in the middle of the cell.

	G	H
4	Memphis, TN (Briarcrest Christina HS)	TN

17. **=RIGHT**<sup>(85)</sup> – Extracts the specified number of characters from a cell, starting from the right.

F4		fx		=RIGHT(G4,3)
	F	G	H	
4	268	6-5/268	Memphis, TN (Briarcrest Christina HS)	

18. **=VALUE**<sup>(86)</sup> – Converts text to values so the data can be added, subtracted, multiplied, divided or referenced in a function.

F4		fx		=VALUE(RIGHT(G4,3))	
	D	E	F	G	H
4	Fr.	HS	268	6-5/268	Memphis, TN (Briarcrest Christina HS)

19. **=CONCATENATE**<sup>(87)</sup> - Joins two or more text strings into one text string.

D5		fx		
	A	B	C	D
3	Collins	Carlton	Carlton Collins	

Variations of these functions that are used when working with foreign languages:

- =**FINDB** – Use this when working with foreign characters like these (京", "東京都)
- =**SEARCHB** – Use this when working with foreign characters like these (京", "東京都)
- =**REPLACEB** – Use this when working with foreign characters like these (京", "東京都)
- =**LEFTB** – Use this when working with foreign characters like these (京", "東京都)
- =**RIGHTB** – Use this when working with foreign characters like these (京", "東京都)
- =**LENB** – Use this when working with foreign characters like these (京", "東京都)
- =**MIDB** – Use this when working with foreign characters like these (京", "東京都)

**Cleaning Text – (Removing Spaces And Nonprinting Characters From Text)** - Sometimes text values contain leading, trailing, or multiple embedded space characters ( character set values 32 and 160), or nonprinting characters (Unicode character set values 0 to 31, 127, 129, 141, 143, 144, and 157). These characters can sometimes cause unexpected results when you sort, filter, or search<sup>(88)</sup>. For example, in the external data source, users may make typographical errors by inadvertently adding extra space characters, or imported text data from external sources may contain nonprinting characters that are embedded in the text. Because these characters are not easily noticed, the unexpected results may be difficult to understand. Following is a list of functions you can use to remove these unwanted characters:

20. **=TEXT**<sup>(89)</sup> - Converts a value to text in a specific number format.

A10      fx      =A5&" sold "&TEXT(B5, "\$0.00")&" worth of units."			
	A	B	
5	Carlton Collins	\$ 2,800.00	Mo
6	Mickey Mouse	40%	
7			
8	<b>Examples</b>		
9	Carlton Collins2800		Simple com
10	Carlton Collins sold \$2800.00		Combines c

21. **=TRIM**<sup>(90)</sup> - Removes the 7-bit ASCII space character (value 32) from text.

C4      fx      =TRIM(B4)			
	B	C	
4	American Institute of Certified Public Accountants	American Institute of Certified Public Accountants	

22. **=CLEAN**<sup>(91)</sup> - Removes the first 32 nonprinting characters in the 7-bit ASCII code (values 0 through 31) from text.

D4      fx      =CLEAN(B4)			
	A	B	D
4		•Accounts Receivable•	Accounts Receivable

23. **=FIXED**<sup>(92)</sup> - Rounds a number to the specified number of decimals, formats the number in decimal format by using a period and commas, and returns the result.

B15      fx      =FIXED(B13,2)				
	A	B	C	D
13	Insurance	11,826.9537	15,375.0398	19,218.7997
14				
15		11,826.95	15,375.04	19,218.80

24. **=DOLLAR**<sup>(93)</sup> - Converts a number to text format and applies a currency symbol.

B15      fx      =DOLLAR(B13,2)				
	A	B	C	D
13	Insurance	11,826.9537	15,375.0398	19,218.7997
14				
15		\$11,826.95	\$15,375.04	\$19,218.80

25. **=CODE**<sup>(94)</sup> - Returns a numeric code for the first character in a text string.

**Fixing Dates and Times** - There are many different date formats, and these varied formats may be confused with numbered part codes or other strings that contain slash marks or

hyphens, dates and times often need to be converted and reformatted. Presented below is a list of functions that help you accomplish this task.

26. **=DATE**<sup>(95)</sup> - Returns the sequential serial number that represents a particular date. If the cell format was General before the function was entered, the result is formatted as a date.

A7		fx =DATE(A4,B4,C4)				
	A	B	C	D	E	F
3	<b>Year</b>	<b>Month</b>	<b>Day</b>	<b>Data</b>		
4	2008	1	1	20081125		
5						
6	<b>Examples:</b>					
7	1/1/2008			Serial date for the date derived by using cells A2, B2, and C2 as t		

27. **=DATEVALUE** - Converts a date represented by text to a serial number.

C4		fx =DATEVALUE(A4)			
	A	B	C	D	E
4	1/1/2008		39448		

28. **=TIME** - Returns the decimal number for a particular time. If the cell format was General before the function was entered, the result is formatted as a date.

29. **=TIMEVALUE** - Returns the decimal number of the time represented by a text string. The decimal number is a value ranging from 0 (zero) to 0.99999999, representing the times from 0:00:00 (12:00:00 AM) to 23:59:59 (11:59:59 P.M.).

**Transforming And Rearranging Columns And Rows** - Most of the analysis and formatting features in Office Excel assume that the data exists in a single, flat two-dimensional table. Sometimes you may want to make the rows become columns, and the columns become rows. At other times, data is not even structured in a tabular format, and you need a way to transform the data from a nontabular to a tabular format. The following function can help you achieve this goal:

30. **=TRANSPOSE**<sup>(96)</sup> - Returns a vertical range of cells as a horizontal range, or vice versa.



SUM    X ✓ f\_x    =TRANSPOSE(A2:FC18)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	
1	<b>=Transpose (You must select a range, Press F2, and then press CTRL+SHFT+ENTER)</b>																					
2	Name	My Area is:	Public Practice	Industry	Government	Education	Other 1:	I am a CPA	My Position is:	Owner or Partner	Manager	Supervisor	Senior or staff	Administrative	Other 2	My Experience is:	0-5 years	6-10 years	11-20 years	21 - 30 Years	More than 30 years	
3	Heydon		1							1											1	
4	Forsberg			1				1					1					1				
5	Morris		1					1	1												1	
6	Olson			1				1	1												1	
7	Morlock		1					1	1													1
8	Sheehan		1					1	1												1	
9	Adank						1	1						1								1
10	Hage		1					1														1
11	Bartholomay			1						1												1
12	Myers			1					1													1
13	Dickson		1								1										1	
14	Hillstrom		1									1				1						
15	Marshman		1				1				1							1				
16	Stroud		1				1	1													1	
17	Chilcote		1				1					1						1				
18	DeMars		1									1					1					
19																						
20	<b>=TRANSPOSE(A2:FC18)</b>																					

**31. Data Fill In Trick<sup>(97)</sup>** – A clever trick for filling in missing data can be accomplished using the GOTO, Special, Blanks command. Here is how it works. This trick works well when you have a large volume of data but descriptions are not provided for every row, as shown in the example below:

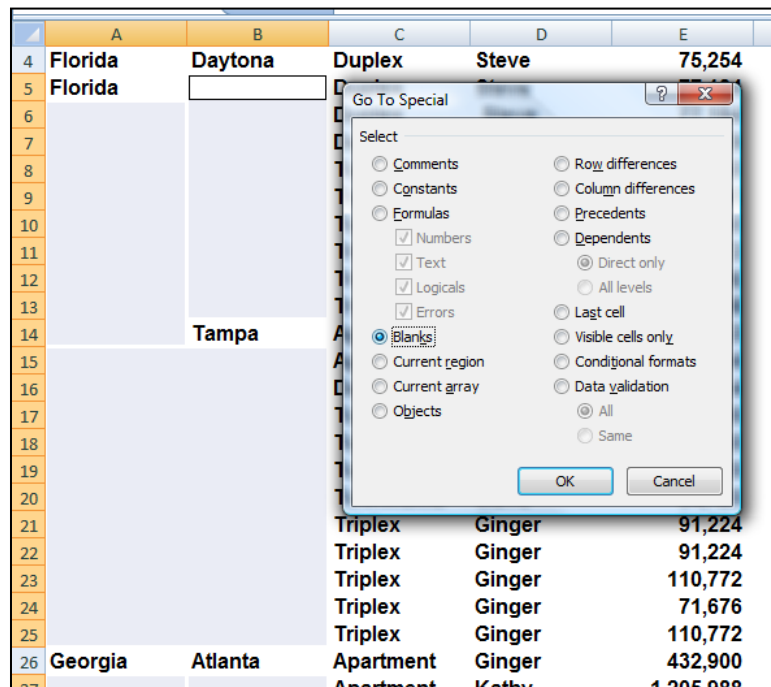


	A	B	C	D	E	F	G	H
26	Georgia	Atlanta	Apartment	Ginger	432,900	367,965	64,935	24.7%
27			Apartment	Kathy	1,205,988	1,073,329	132,659	43.2%
28			Apartment	Ginger	96,768	70,641	26,127	53.3%
29			Apartment	Kathy	328,563	305,564	22,999	39.8%
30			Duplex	Steve	57,888	55,572	2,316	31.5%
31			Duplex	Steve	79,114	64,873	14,240	27.6%
32			Duplex	Steve	57,888	55,572	2,316	18.7%
33			Duplex	Steve	79,114	64,873	14,240	54.4%
34			Townhome	Steve	39,600	38,016	1,584	56.4%
35			Townhome	Steve	51,480	58,172	(6,692)	26.5%
36			Triplex	Ginger	181,988	205,646	(23,658)	43.2%
37			Triplex	Steve	71,676	70,959	717	53.3%
38			Triplex	Ginger	121,198	112,714	8,484	15.4%
39		Macon	Apartment	Ginger	128,563	119,564	8,999	15.4%
40			Apartment	Steve	296,700	216,591	80,109	23.3%
41			Apartment	Ginger	128,563	119,564	8,999	13.4%
42			Duplex	Steve	76,219	60,213	16,006	26.5%
43			Duplex	Steve	75,254	58,698	16,556	35.6%
44			Townhome	Steve	52,800	46,992	5,808	18.7%
45		Savannah	Apartment	Ginger	76,032	75,272	760	65.0%
46	Texas	Dallas	Apartment	Fred	432,900	367,965	64,935	24.7%
47			Apartment	Martha	1,205,988	1,073,329	132,659	43.2%
48			Apartment	Kathy	328,563	305,564	22,999	39.8%
49			Duplex	Steve	57,888	55,572	2,316	31.5%

Start by entering a simple formula referencing the data label in the above cell, just like this:

	A	B	C	D	E	F
3	State	City	Type	Manager	Revenue	Expenses
4	Florida	Daytona	Duplex	Steve	75,254	58,698
5	=A4		Duplex	Steve	77,184	87,218

- Next copy that formula...
- Highlight the entire range containing data labels in columns A and B. columns...
- Press the F5 key to launch the GoTo dialog box...
- Select the Options Box...
- Click on the "Blanks" radio button...
- Press Enter...
- Paste.



**This action will cause all data labels to repeat in the empty cells beneath. Next:**

- Copy columns A & B...
- Paste Special as values to convert the formulas to text based data labels...
- You are now ready to sort, filter, subtotal and pivot your data.

**Fetching Data** - Occasionally, database administrators use Office Excel to find and correct matching errors when two or more tables are joined. This might involve reconciling two tables from different worksheets, for example, to see all records in both tables or to compare tables and find rows that don't match.

**32. =VLOOKUP<sup>(98)</sup>** - Searches for a value in the first column of a table array and returns a value in the same row from another column in the table array. For example, consider the example below which uses a =VLOOKUP function to calculate the appropriate amount of tax due based on the IRS rate schedule.

Schedule Y-1 – Married Filing Jointly or Qualifying					
If Taxable Income	But Not Over--	The Tax Is:	Base Tax	Tax Rate	
\$0	\$14,600	over \$0	-	10%	
\$14,600	\$59,400	15% of the amount	1,460.00	15%	
\$59,400	\$119,950	the amount over	8,180.00	25%	
\$119,950	\$182,800	28% of the amount	23,317.50	28%	
\$182,800	\$326,450	33% of the amount	40,915.50	33%	
\$326,450	no limit	35% of the amount	88,320.00	35%	

13	Taxable Income (from profit & loss statement on Sheet 2)	224,209
15	Taxable Income Threshold Amount (from Column 1 Above)	182,800.00
17	Tax Rate (from Column 5 Above)	33%
19	Base Tax Amount (from Column 4 Above)	40,915.50
21	Total Amount of Taxes Due	54,580.47

Income Statement - Schedule C		2009
<b>Revenue</b>		
Sales		\$ 2,300,322
Cost of Goods Sold		1,546,577
Gross Margin		\$ 753,745
<b>Expenses:</b>		
Rent	\$	86,230
Salaries		326,300
Supplies		12,988
Insurance		36,788
Travel		67,230
Total Expenses	\$	529,536
Net Income Before Taxes	\$	224,209
Taxes	\$	54,580
Net Income After Taxes	\$	169,629

As the Income statement shown in the shaded area is updated, the resulting taxable income amount is referenced in Cell F13. Next, 3 VLOOKUP functions pull the appropriate rate, base and threshold information from the rate schedule to be used in calculating income tax. Once calculated, the resulting tax is referenced back to the income statement for the purposes of computing Net income After taxes.

Key points to Consider when Using VLOOKUP:

- If you are looking up based on text, the first column containing lookup values must be sorted alphabetically in descending order – else it will not work properly.
- Another approach is to add the FALSE attribute at the end of the VLOOKUP function, to force Excel to lookup values based on exact matches.
- If you are looking up based on text, you must have an exact match between the lookup value and the table array value.
- If you are looking up based on values, the first column containing lookup values must be sorted numerically in descending order – else it will not work properly.
- If you are looking up based on values, then Excel will choose the closest value without going over. For example, if the lookup value is 198,000 and the table array contains values of 100,000 and 200,000, the n excel will choose 100,000 because

200,000 goes over or exceeds 198,000. (It might be helpful to think back to the old Bob barker game show the Price is Right.)



- 33. =HLOOKUP<sup>(99)</sup>** - Searches for a value in the top row of a table or an array of values, and then returns a value in the same column from a row you specify in the table or array.
- 34. =INDEX<sup>(100)</sup>** - Returns a value or the reference to a value from within a table or range. There are two forms of the INDEX function: the array form and the reference form.
- 35. =MATCH<sup>(101)</sup>** - Returns the relative position of an item in an array that matches a specified value in a specified order. Use MATCH instead of one of the LOOKUP functions when you need the position of an item in a range instead of the item itself.
- 36. =OFFSET<sup>(102)</sup>** - Returns a reference to a range that is a specified number of rows and columns from a cell or range of cells. The reference that is returned can be a single cell or a range of cells. You can specify the number of rows and the number of columns to be returned.
- 37. Data Cleaning with Macros** - To periodically clean the same data source, consider recording a macro or writing code to automate the entire process. There are also a number of external add-ins written by third-party vendors, listed in the Third-party providers section, that you can consider using if you don't have the time or resources to automate the process on your own.
- 38. RAND( )<sup>(103)</sup>, RANDBETWEEN( )<sup>(104)</sup>, ROUND( )<sup>(105)</sup>** – In Excel 2003, RANDBETWEEN is not in the standard EXCEL 2003 installation<sup>(106)</sup> but if the analysis tool pack is installed and the add-in activated it is an extremely useful function.

	A	B	C	D	E	F	G	H
1	<b>Selecting Invoice Numbers</b>							
2								
3	First Invoice Number		1000					
4	Last Invoice Number		9999					
5								
6	<b>Simple Random Number Example:</b>							
7								
8		1		2		3		
9		=RAND()		=B8*1000		=ROUND(D8,0)		
10		0.637495984		637.496		637		
11								
12	<b>Complex Random Number Example:</b>							
13								
14		1		2		3		
15		=RANDBETWEEN(C2,C3)		=B8*1000		=ROUND(D8,0)		
16		9174		9174000		9174000		
17								

### 39. Informational Functions

**CELL(info\_type,reference)**<sup>(107)</sup> - Info\_type is a text value that specifies what type of cell information you want. The following list shows the possible values of info\_type and the corresponding results.

Info_type	Returns
"address"	Reference of the first cell in reference, as text.
"col"	Column number of the cell in reference.
"color"	1 if the cell is formatted in color for negative values; otherwise returns 0 (zero).
"contents"	Value of the upper-left cell in reference; not a formula.
"filename"	Filename (including full path) of the file that contains reference, as text. Returns empty text ("") if the worksheet that contains reference has not yet been saved.
"format"	Text value corresponding to the number format of the cell. The text values for the various formats are shown in the following table. Returns "-" at the end of the text value if the cell is formatted in color for negative values. Returns "(" at the end of the text value if the cell is formatted with parentheses for positive or all values.
"parentheses"	1 if the cell is formatted with parentheses for positive or all values; otherwise returns 0.
"prefix"	Text value corresponding to the "label prefix" of the cell. Returns single quotation mark (') if the cell contains left-aligned text, double quotation mark (") if the cell contains right-aligned text, caret (^) if the

	cell contains centered text, backslash (\) if the cell contains fill-aligned text, and empty text ("") if the cell contains anything else.
"protect"	0 if the cell is not locked, and 1 if the cell is locked.
"row"	Row number of the cell in reference.
"type"	Text value corresponding to the type of data in the cell. Returns "b" for blank if the cell is empty, "l" for label if the cell contains a text constant, and "v" for value if the cell contains anything else.
"width"	Column width of the cell rounded off to an integer. Each unit of column width is equal to the width of one character in the default font size.

Reference the cell that you want information about. If omitted, information specified in info\_type is returned for the last cell that was changed. The following list describes the text values CELL returns when info\_type is "format", and reference is a cell formatted with a built-in number format.

If the Microsoft Excel format is	CELL returns
General	"G"
0	"F0"
#,##0	",0"
0.00	"F2"
#,##0.00	",2"
\$#,##0_);(\$#,##0)	"C0"
\$#,##0_);[Red](\$#,##0)	"C0-"
\$#,##0.00_);(\$#,##0.00)	"C2"
\$#,##0.00_);[Red](\$#,##0.00)	"C2-"
0%	"P0"
0.00%	"P2"
0.00E+00	"S2"
# ?/? or # ??/??	"G"
m/d/yy or m/d/yy h:mm or mm/dd/yy	"D4"
d-mmm-yy or dd-mmm-yy	"D1"

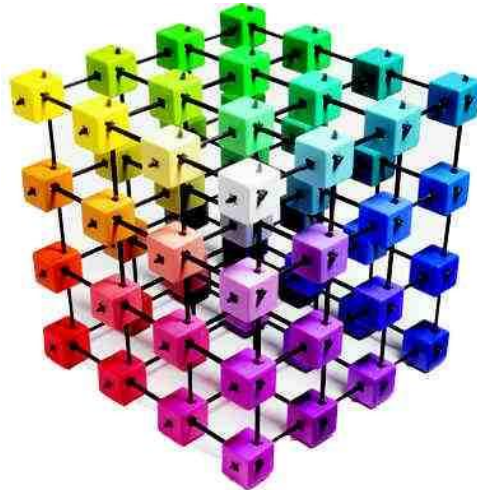
d-mmm or dd-mmm	"D2"
mmm-yy	"D3"
mm/dd	"D5"
h:mm AM/PM	"D7"
h:mm:ss AM/PM	"D6"
h:mm	"D9"
h:mm:ss	"D8"

If the info\_type argument in the CELL formula is "format", and if the cell is formatted later with a custom format, then you must recalculate the worksheet to update the CELL formula.

<u>Examples of Cell Information</u>	
44	2 =CELL("col",B5)
	G =CELL("format",B5)
	8 =CELL("width",B6)
	\$B\$5 =CELL("address",B5)

**Third-Party Solutions** – In case Excel's built-in functions are not sufficient to meet your needs, following is a partial list of third-party providers that have products that are used to clean data in a variety of ways.

<b>Provider</b>	<b>Product</b>
Add-in Express Ltd.	Advanced Find & Replace, Merge Cells Wizard
Add-Ins.com	Duplicate Finder
AddinTools	AddinTools Assist
CDX	<a href="#">Zip Stream</a>
Click 2 Convert	Converts PDF to Excel formats
DigDB	Add-ins for Excel®
JKP Application Development	Flexfind for Excel
J-Walk & Associates, Inc.	Power Utility Pak Version 7
Office Assistance LLC	Similar Data Finder for Excel®
PATools	PATools Advanced Find Replace
PDF2XL	Converts PDF files to Excel Formats
Spinnaker Software Solutions	Spinnaker DB tools for Excel
Vonnix	Excel Power Expander 4.6
WinPure	ListCleaner Lite
ListCleaner Pro	
Clean and Match 2007	



# Case Study

## Preparing QuickBooks Data for Pivoting

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### Chapter 4



When it comes to pivoting QuickBooks data in Excel, you must first do a little bit of clean up work before Pivoting process can begin<sup>(108)</sup>. In the following example, I have exported a QuickBooks General Ledger Report from 1995 to 2011, and I walk you through the process of preparing the expense portion of this data for pivoting, as follows.

1. **Remove Empty Columns** – QuickBooks provides an option for exporting a general ledger report to Excel without empty columns, but this is not the default action. If you have not adjusted this default setting, then your exported general ledger report will contain empty columns, and you should remove them by selecting an empty column, right clicking on that column, and selecting Delete Column. Thereafter, you can select each subsequent empty column and press the F4 key to repeat the deletion.
2. **Reformat Text Columns** – QuickBooks does a nasty thing when it exports data to Excel in that it formats all text columns with text formatting, making it impossible to insert text based formulas, (which we want to do in the next step). To correct this problem, select the text columns and from the **Home** tab, select **General** from the **Number Format** drop down options box in the **Number** group.
3. **Delete the Non Expense Related Rows** – In this example, the expense related rows begin on row 9490, therefore I will delete everything above that row, except the top row column headings. Select these rows by clicking on row 9408, then hold the **Shift Key** down and press **HOME**, then move down one row, right-click on the selected range and select **DELETE**. The data should now appear as follows:

	A	B	C	D	E	F	G	H
1			<b>Type</b>	<b>Date</b>	<b>NumAdj</b>		<b>Name</b>	<b>Memo</b>
2		<b>Advertising – Business</b>						
3			Check	03/07/1996	6164		Foster & Associates	Portrait for Brochure
4			Check	03/27/1996	6175		Foster & Associates	Portrait for Brochure
5			Check	04/11/1997	6338		Foster & Associates	Portrait for Brochure
6			Check	04/29/1997	6347		M-Broidery, Inc.	K2 Shirts for Vendors
7		Total Advertising – Business						
8		<b>Airgrd</b>						
9			Check	06/08/2004	4521		Bank One	Quiktrip Gasoline
10		Total Airgrd						
11		<b>Asset Purchases – Business</b>						
12			Check	01/15/1995	5969		American Express	-MULTIPLE-
13			Check	01/15/1995	5969		American Express	Home Depot Credit

4. **Insert Column Descriptions** – In this example, there is no column description in Columns A & B, therefore we need to insert descriptions – any description will do.
5. **Repeat Account Description** – In column B, the **Account Description** must be repeated on all subsequent blank rows below. For example, the phrase Advertising – Business shown on 2 in the screen image above needs to be repeated on rows 3, 4, 5, and 6. To do this:
  - a. In cell B3, enter the formula **=B2**.

- b. Copy cell B3 by pressing **Ctrl + C**.
- c. Highlight the range from **B2** to the end of column B's data range, **B8816** in this example.
- d. Press the **F5** key to launch the **GoTo** dialog box.
- e. Click the Special button, check the radio button labeled **Blanks**, then click **OK**.
- f. Paste the data by pressing **Ctrl + V**.
- g. Next, select Column B and copy the entire column by pressing **Ctrl + C**.
- h. selecting **Home** tab, **Paste Special, Paste Values**. (Note that without this extra step, you will end up with formulas, and not values throughout column B, which will not be suitable for Pivoting.)

	B	C	D	E	F	G	H
1	<b>Account Description</b>	<b>Type</b>	<b>Date</b>	<b>NumAdj</b>		<b>Name</b>	<b>Memo</b>
2	<b>Advertising - Business</b>						
3	Advertising - Business	Check	03/07/1996	6164		Foster & Associates	Portrait for Brochure
4	Advertising - Business	Check	03/27/1996	6175		Foster & Associates	Portrait for Brochure
5	Advertising - Business	Check	04/11/1997	6338		Foster & Associates	Portrait for Brochure
6	Advertising - Business	Check	04/29/1997	6347		M-Broidery, Inc.	Shirts for Vendors
7	Total Advertising - Business						
8	<b>Airgrd</b>						
9	Advertising - Business	Check	06/08/2004	4521		Bank One	Quiktrip Gasoline
10	Total Airgrd						
11	<b>Asset Purchases - Business</b>						
12	Advertising - Business	Check	01/15/1995	5969		American Express	-MULTIPLE-
13	Advertising - Business	Check	01/15/1995	5969		American Express	Home Depot Credit

- 6. **Save Your Work** – At this point, save your work (and save it often), perhaps to a new file name (such as Export 2), in case power goes out or a major mistake is made.
- 7. **Number Each Row** – Insert a new column in front of Column A, and number them sequentially. To insert numbers quickly, enter the number 1 in cell **A1** and the number 2 in cell **A2**. Now highlight cells A1:A2, and doubleclick the Fill handle. This action will automatically number your rows down to row 8,816.

8810	8810	Water -- Personal	Check	12/14/2011	6357	Gwinnett
8811	8811	Water -- Personal	Check	01/09/2012	6374	Gwinnett
8812	8812	Water -- Personal	Check	02/03/2012	6391	Gwinnett
8813	8813	Total Water -- Personal				
8814	8814	<b>No acct</b>				
8815	8815	Total no acct				
8816	8816	<b>TOT/ Total no acct</b>				

- 8. **Eliminate Non Transaction Rows** – The data's transaction rows each contain a date, therefore sort the data by the date column, then delete all rows that do not have dates, then resort the data by column A in descending order.

	A	B	C	D	E	F	G	H
1	1	Row	Account Description	Type	Date	Num	Name	Memo
2	3		Advertising - Business	Check	03/07/1996	6164	Foster & Associates	Portrait for Brochure
3	4		Advertising - Business	Check	03/27/1996	6175	Foster & Associates	Portrait for Brochure
4	5		Advertising - Business	Check	04/11/1997	6338	Foster & Associates	Portrait for Brochure
5	6		Advertising - Business	Check	04/29/1997	6347	M-Broidery, Inc.	Shirts for Vendors
6	9		Airgrd	Check	06/08/2004	4521	Bank One	Quiktrip Gasoline
7	12		Asset Purchases - Business	Check	01/15/1995	5969	American Express	-MULTIPLE-
8	13		Asset Purchases - Business	Check	01/15/1995	5969	American Express	Home Depot Credit
9	14		Asset Purchases - Business	Check	02/03/1995	5980	American Express	-MULTIPLE-
10	15		Asset Purchases - Business	Check	03/21/1995	6032	American Express	-MULTIPLE-
11	16		Asset Purchases - Business	Check	03/21/1995	6032	American Express	Home Depot

9. **Delete Columns A & B** – Delete columns A & B As they are no longer needed.

10. **Format the Data** – To make the data visually easier to read, format the data to your desired appearance. For example, I changed all fonts to Calibri and all font colors to black: I removed unnecessary borders and lines: I bolded the column heading labels only: I adjusted column widths; and I centered certain text columns. My data now appears as follows:

	A	B	C	D	E	F
1	Account Description	Type	Date	Num	Name	Memo
2	Advertising - Business	Check	03/07/1996	6164	Foster & Associates	Portrait for Brochure
3	Advertising - Business	Check	03/27/1996	6175	Foster & Associates	Portrait for Brochure
4	Advertising - Business	Check	04/11/1997	6338	Foster & Associates	Portrait for Brochure
5	Advertising - Business	Check	04/29/1997	6347	M-Broidery, Inc.	Shirts for Vendors
6	Airgrd	Check	06/08/2004	4521	Bank One	Quiktrip Gasoline
7	Asset Purchases - Business	Check	01/15/1995	5969	American Express	-MULTIPLE-
8	Asset Purchases - Business	Check	01/15/1995	5969	American Express	Home Depot Credit
9	Asset Purchases - Business	Check	02/03/1995	5980	American Express	-MULTIPLE-
10	Asset Purchases - Business	Check	03/21/1995	6032	American Express	-MULTIPLE-
11	Asset Purchases - Business	Check	03/21/1995	6032	American Express	Home Depot
12	Asset Purchases - Business	Check	03/21/1995	6033	ATT Universal Card	Target
13	Asset Purchases - Business	Check	04/25/1995	6040	American Express	Luggage for Computer
14	Asset Purchases - Business	Check	05/10/1995	6046	AT & T Universal Card	Walmart
15	Asset Purchases - Business	Check	06/25/1995	6060	American Express	Service Merchandise

11. **Tidy the Debits and Credits Columns** – The presentation of the debits and credits columns are not conducive to easy pivoting, therefore I inserted the formula to combine debits and credits in the same column as shown below.

	G	H	I	J	K
1	Split	Debit	Credit	Balance	
2	Wachovia Checking	174.90		174.90	
3	Wachovia Checking	84.50		259.40	84.50
4	Wachovia Checking	80.42		339.82	80.42
5	Wachovia Checking	370.50		710.32	370.50
6	First Union Checking	32.94		32.94	32.94
7	Wachovia Checking	795.33		795.33	795.33
8	Wachovia Checking		55.47	739.86	(55.47)
9	Wachovia Checking	489.02		1,228.88	489.02
10	Wachovia Checking	310.53		1,539.41	310.53

Next I converted the formulas contained in Column K to values using the same steps mentioned above (in steps 5g & 5h), labeled Column K, then deleted Columns H, I and J as they are no longer needed. My data now appears as follows:

	E	F	G	H
1	Name	Memo	Split	Amount
2	Foster & Associates	Portrait for Brochure	Wachovia Checking	174.90
3	Foster & Associates	Portrait for Brochure	Wachovia Checking	84.50
4	Foster & Associates	Portrait for Brochure	Wachovia Checking	80.42
5	M-Broidery, Inc.	Shirts for Vendors	Wachovia Checking	370.50
6	Bank One	Quiktrip Gasoline	First Union Checking	32.94
7	American Express	-MULTIPLE-	Wachovia Checking	795.33
8	American Express	Home Depot Credit	Wachovia Checking	(55.47)
9	American Express	-MULTIPLE-	Wachovia Checking	489.02
10	American Express	-MULTIPLE-	Wachovia Checking	310.53

12. **Data Review and More Cleaning** – Now that the data has been cleaned from a layout point of view, it still must be reviewed for consistency in content as well. For example, in this data set we can see many problems as follows:

- a. **Consistency** – A quick review reveals that consistent account descriptions and memos have not been used throughout the data. For example, the phrase AT&T Universal Card has not been entered consistently. If you plan to summarize data using this phrase, then consistent phrasing is needed throughout.

ATT Universal Card American Express AT & T Universal Card
---

- b. **No Amounts** - Some transactions have no amounts, which may be due to Voided transactions or other explanations. Each of these transactions should be reviewed to determine if that line item should be removed completely.
- c. **Credit Amounts** – Some transactions have credit balances, which aren't expenses at all. Each of these transactions should be reviewed to ensure the data is a valid expense, and if not, consideration should be given to removing the transaction completely.

13. **Ready for Pivoting** – At this point, the data is ready for pivoting. As an example, the PivotTable report shown below was created in only a few seconds, including time to adjust the grouping of the dates listed across the report in Years.



## The QuickBooks Check Detail Report<sup>(109)</sup>

In the example presented above, the data contains some credit card transactions that are not spelled out in detail; instead the memo reads “**Multiple**”, as pictured below. This is because the bookkeeper did not input the credit card details correctly using QuickBooks “**Enter Credit Card Charges**” data entry screen. You can see the issue pictured below.

2596 Capital One	Drug Emporium	First Union Checking	20.08
2606 Capital One	-MULTIPLE-	First Union Checking	210.88
2627 Capital One	Big B Drugs	First Union Checking	10.35
2571 Capital One	Rollerblade JAC	First Union Checking	10.39
2596 Capital One	American Adventures	First Union Checking	27.30
2606 Capital One	-MULTIPLE-	First Union Checking	31.58
2627 Capital One	-MULTIPLE-	First Union Checking	48.30
2645 Capital One	-MULTIPLE-	First Union Checking	130.64
2533 Capital One	-MULTIPLE-	First Union Checking	34.98
2596 Capital One	Sonnys BBQ	First Union Checking	11.51
2606 Capital One	-MULTIPLE-	First Union Checking	45.58

For this reason and others, many people find the QuickBooks Check Detail Report to be a better report for exporting to Excel in order to analyze expenses. In essence, the QuickBooks Check Detail Report provides a listing of every check written, along with line item descriptions and account posting details.

The steps for preparing the QuickBooks Check Detail Report for pivoting are similar to those mentioned above. Quickly, those steps again are as follows:

- a. Change formatting from Text to General.
- b. Insert a column and number each row sequentially.
- c. Delete empty columns.
- d. Repeat missing row descriptions, as needed.
- e. Sort the data and delete unnecessary rows.
- f. Format the data to be more readable.

With the QuickBooks Check Detail Report, if you follow the steps described above, you will still end up with double rows for each check, as shown below.

G	H	I	J	K
Memo	Account	Paid Amount	Split	Original Amount
ical Insurance	Wachovia Checking		Insurance, Medical - Busin	(625.27)
ical Insurance	Insurance, Medical - Bus	-625.27	Wachovia Checking	625.27
\$ 494 4145 30	Wachovia Checking		Georgia Power - Personal	(96.22)
\$ 494 4145 30	Georgia Power - Persona	-96.22	Wachovia Checking	96.22
	Wachovia Checking		Miscellaneous Expense - B	(1.25)
	Miscellaneous Expense -	-1.25	Wachovia Checking	1.25
Cash Withdraws	Wachovia Checking		Cash on Hand	(400.00)
Cash Withdraws	Cash on Hand	-400.00	Wachovia Checking	400.00

This occurs because the QuickBooks Check Detail Report displays both sides of the transaction entry for each check. The solution here is pay attention to the column labeled **Paid Amount**. If you sort by the **Paid Amount** column and delete all of those rows that contain an amount in that column, then you will lose the detailed split information for each transaction. But if you sort by the **Paid Amount** column and delete all of those rows that contain no amount in that column, then you will lose the date and name of the transaction.

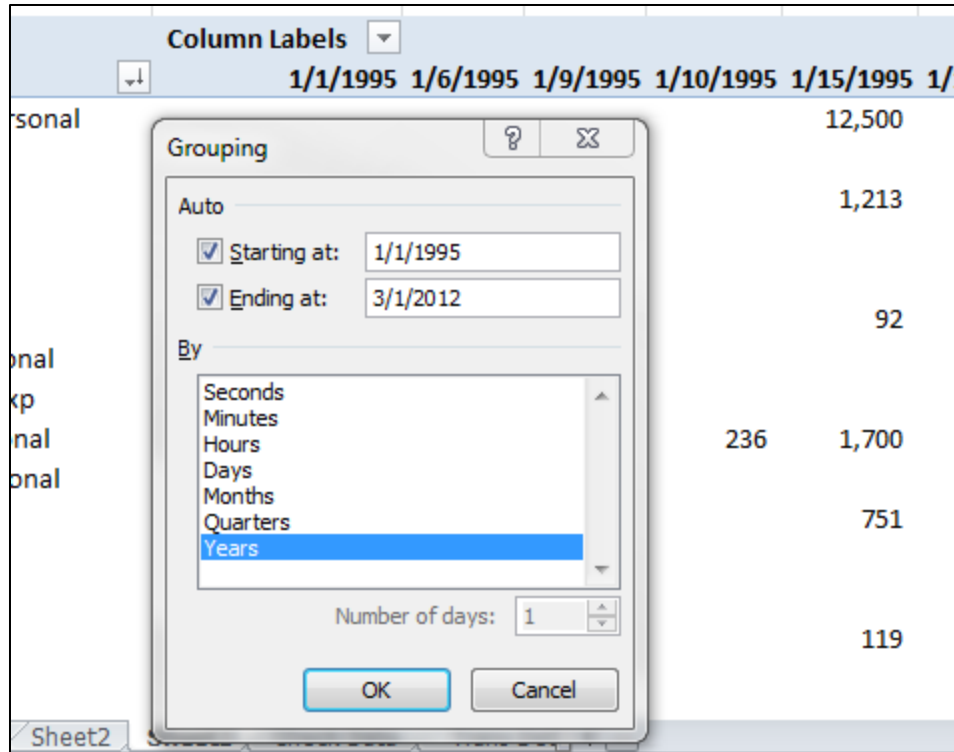
The solution is to repeat the name and date information in subsequent rows, and then delete the rows that contain no amount in that **Paid Amount** column (using the **Paste to Blanks** procedure described above).

Now your data is ready to pivot. What started out as a 39,598 row report is now a 15,014 row report; in this case a report that details all of the checks written in the past 16 years for this particular client.

For example, creating a simply PivotTable with **Names** along the rows, and **Dates** across the columns, yields the following result with more than 2,300 columns – a column for each date checks were written.

3	Sum of Original Amount	Column Labels						
4	Row Labels	1/1/1995	1/6/1995	1/9/1995	1/10/1995	1/15/1995	1/17/1995	1/23/1995
5	Federal Tax Payments - Personal							12,500
6	Transfers							
7	Travel Expense - Business							1,213
8	Investments							
9	Home Mortgage - Personal			1,249				
10	Miscellaneous - Personal							92

In this case, you can summarize the columns by right-clicking a date and selecting Years, as pictured below.



This action tidies up the columns, summarizing them by **Year** instead of by **Day**.

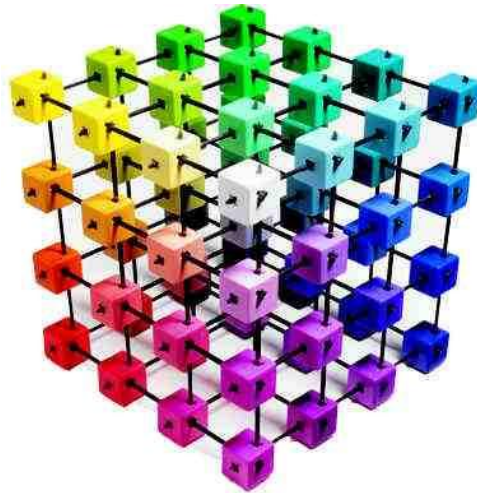
3	Sum of Original Amount	Labels							
4	Row Labels	1995	1996	1997	1998	1999	2000	2001	2002
5	Federal Tax Payments - Personal	35,300	41,324	31,500	15,300	30,993	61,500	25,323	17,100
6	Transfers	33,800	14,000	10,500	35,000	22,000	34,000	49,500	41,000
7	Travel Expense - Business	40,364	33,531	37,542	36,739	44,832	37,998	42,602	2,607
8	Investments	34,400	31,733	30,000	40,000			23,400	25,000
9	Home Mortgage - Personal	25,437	14,983	16,183	16,183	14,835	17,532	16,183	14,835
10	Miscellaneous - Personal	2,080	3,220	3,387	5,482	8,991	14,757	4,111	56,987
11	Home Improvement- Personal		1,192	8,068	16,284	4,821	3,983	3,696	8,022
12	School Tuition & Related Exp				60			256	8,841

Thereafter; double clicking any number on this report drills down to a detailed listing supporting that number, which makes it easy to analyze where expenses are growing, and analyze those trends.

## Consolidations

The procedure described above could be helpful in consolidating the revenue and expenses for multiple companies, particularly if the same Account Names were used in each company. Simply export the general ledger or check detail reports for each company, copy and paste them onto the same worksheet in Excel, and follow the steps described herein to produce a detailed PivotTable Income Statement that can be easily drilled, sorted or charted.





# Creating, Building & Customizing Your PivotTables

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## Chapter 5

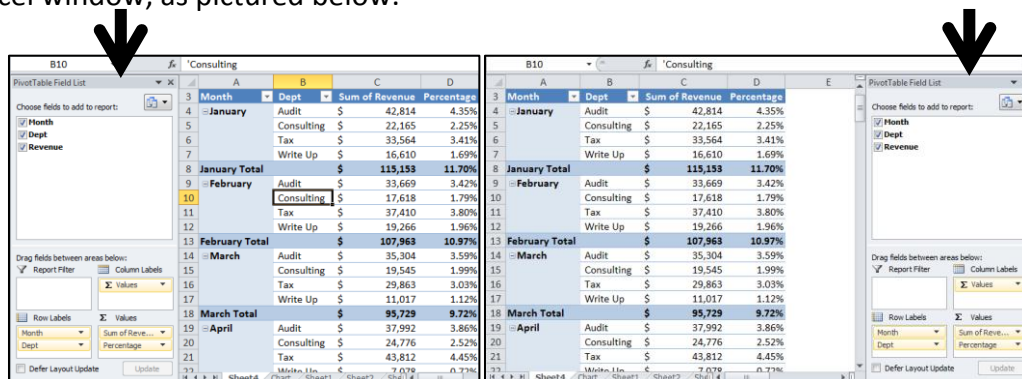
**14. Customizing a PivotTable** - Once you have created a PivotTable, you can customize, manipulate, and fine-tune it many ways, as follows:

- 1) Rearranging the fields<sup>(110)</sup> in the PivotTable field List produces different layouts. Move a column field to the row area or a row field to the column area.
- 2) Clicking the minus and plus icons expand and collapse<sup>(111)</sup> the data (in outline mode).
- 3) Sort<sup>(112)</sup> the PivotTable by any column or row.
- 4) Filter<sup>(113)</sup> the PivotTable by any field, or by multiple fields.
- 5) Group fields<sup>(114)</sup> together and subtotal fields.
- 6) Group items<sup>(115)</sup> together and subtotal items.
- 7) Change summary functions to average, or count<sup>(116)</sup> instead of sum.
- 8) Add custom calculations<sup>(117)</sup> and formulas.
- 9) Change the PivotTable report form to compact<sup>(118)</sup>, outline<sup>(119)</sup>, or tabular.
- 10) Add or remove fields.
- 11) Change the order of fields or items (by dragging and dropping<sup>(120)</sup>).
- 12) Turn column and row field headers on or off<sup>(121)</sup>. **(Right Click, Options, Display)**
- 13) Display or hide blank rows<sup>(122)</sup>. **(Right Click, Options, Display)**
- 14) Display subtotals above<sup>(123)</sup> or below their rows. **(PivotTable Tools, Design, Subtotals)**
- 15) Adjust column widths on refresh<sup>(124)</sup>.
- 16) Move a column field to the row area or a row field to the column area<sup>(125)</sup>.
- 17) Merge or unmerge cells for outer row and column items.
- 18) Change how errors and empty cells are displayed<sup>(126)</sup>. **(Right Click, Layout & Format)**
- 19) Change how items and labels without data are shown.<sup>(127)</sup> **(Right Click, Options, Display)**

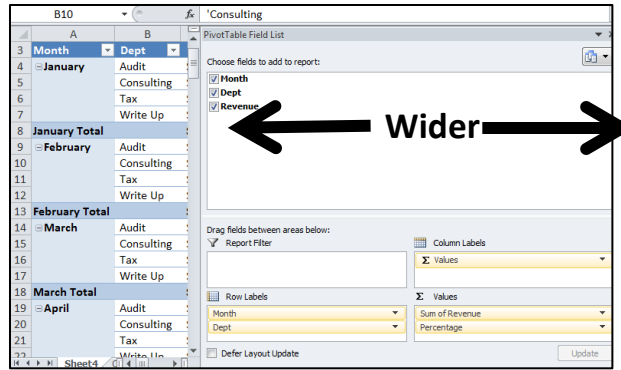
- 20) Manually and conditionally format cells and ranges.<sup>(128)</sup> (**Home tab, Styles**)
- 21) Change the overall PivotTable format style.<sup>(129)</sup>
- 22) Change values to display as percentages instead of values.<sup>(130)</sup>
- 23) Change the number format for fields.<sup>(131)</sup> (**Right Click, Value Field Setting, Number Format**)
- 24) Include Online Analytical Processing (OLAP) Server formatting.

**15. The Field List** – There are a variety of ways to control/display the **Field List**, as follows:

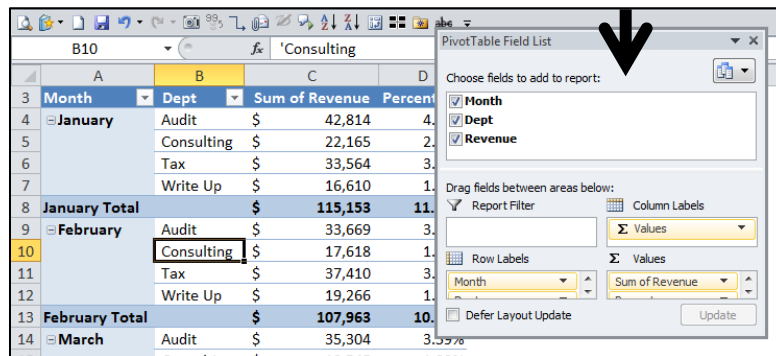
- a. **Displaying the Field List** - If you don't see the PivotTable Field List, click anywhere in the PivotTable to display the Field List<sup>(132)</sup>. If the Field List does not display, then it is closed. If closed, you can open the Field List several ways as follows:
  - i. Right-click the PivotTable, and then click **Show Field List**<sup>(133)</sup>.
  - ii. Click **Field List** on the **PivotTable Tools Ribbon**<sup>(134)</sup>, **Options** tab, **Show** group for a PivotTable; **PivotChart Tools, Analyze** tab, **Show/Hide** group for a PivotChart.
- b. **Docking the Field List**<sup>(135)</sup> - You can dock the PivotTable Field List to either side of the Excel window, as pictured below.



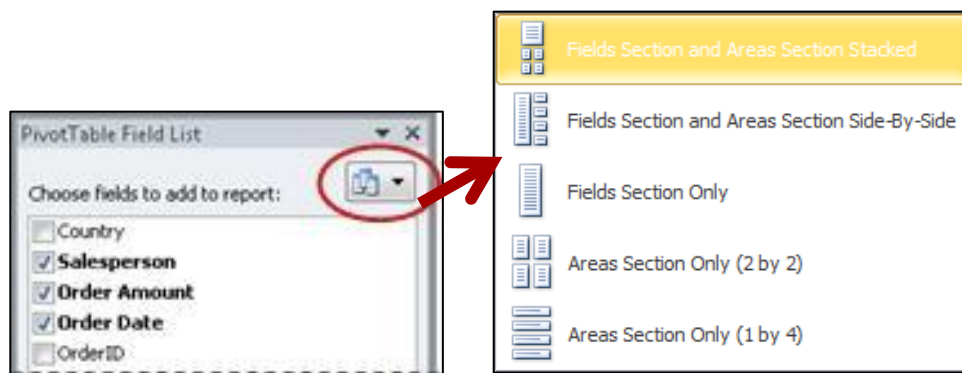
- c. **Resize the Docked field List**<sup>(136)</sup> - You can horizontally resize the docked Field List.



- d. **Floating the Field List**<sup>(137)</sup> - You can also undock and float the PivotTable Field List, in which case, you can resize it both vertically and horizontally.



- e. **Field List Stacking**<sup>(138)</sup> – An Options button in the top right corner of the Field List enables you to display the Field List in four different arrangements, as pictured below.



- f. **Resizing Field List Sections**<sup>(139)</sup> - In the **Fields Section and Areas Section Stacked** and **Fields Section and Areas Section Side-By-Side** views, you can adjust the width and height of each section by resting the pointer on the section divider until the pointer changes to a vertical double arrow  $\updownarrow$  or horizontal double arrow  $\leftrightarrow$ , by dragging

the double arrow up or down or left or right to where you want it, and then either clicking the double arrow or pressing **Enter**.

- g. **Missing Field Names** - If you don't see the fields that you want to use in the PivotTable Field List, refresh the PivotTable or PivotChart by right-clicking the PivotTable or PivotChart and selecting Refresh.

## 16. Controlling the Layout of a PivotTable<sup>(140)</sup>

You can substantially change the layout of a PivotTable using one of three forms, as follows: **Compact** form, **Tabular** Form, or **Outline** form. These three forms are pictured below, using the same data.

	A	B
3	Row Labels	Sum of Revenue
4	January	115,153
5	Audit	42,814
6	Consulting	22,165
7	Tax	33,564
8	Write Up	16,610
9	February	107,963
10	Audit	33,669
11	Consulting	17,618
12	Tax	37,410
13	Write Up	19,266
14	March	95,729

**Compact Form**

	A	B	C
3	Month	Dept	Sum of Revenue
4	January	Audit	42,814
5		Consulting	22,165
6		Tax	33,564
7		Write Up	16,610
8	January Total		115,153
9	February	Audit	33,669
10		Consulting	17,618
11		Tax	37,410
12		Write Up	19,266
13	February Total		107,963
14	March	Audit	35,304

**Tabular Form**

	A	B	C
3	Month	Dept	Sum of Revenue
4	January		115,153
5		Audit	42,814
6		Consulting	22,165
7		Tax	33,564
8		Write Up	16,610
9	February		107,963
10		Audit	33,669
11		Consulting	17,618
12		Tax	37,410
13		Write Up	19,266
14	March		95,729

**Outline Form**



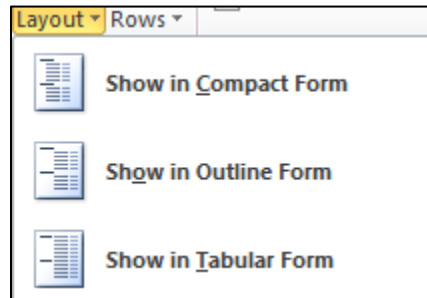
Tip On Fire → a. **Compact** form was added beginning in Excel 2007<sup>(141)</sup>, and this form collapses all description columns into a single hierarchical outline view. The benefits are:

- i. A report in compact form is in most cases, easier to read<sup>(142)</sup>.
- ii. The resulting row labels also take up less space<sup>(143)</sup> in compact form, which leaves more room to display numeric data.
- iii. Expand and Collapse buttons are displayed so that you can display or hide details in compact form.

b. **Tabular** form displays one column per field and provides space for field headers. The benefits are:

- i. The Tabular form provides a view more similar to the view of your raw data<sup>(144)</sup>, which in some cases, could make it easier to refer back and forth.
- ii. The Tabular form makes filter buttons available<sup>(145)</sup> to you for each column, whereas in the compact view you must first select a member before applying the filter.

- c. **Outline** form is similar to tabular form but it can display subtotals at the top of every group<sup>(146)</sup>. Also, all items in the next column are displayed one row below the current item.
- d. To change the layout of a PivotTable to compact, outline, or tabular form, click anywhere in the PivotTable, and on the **PivotTable Tools** Ribbon, select **Design**, **Report Layout**, as shown.



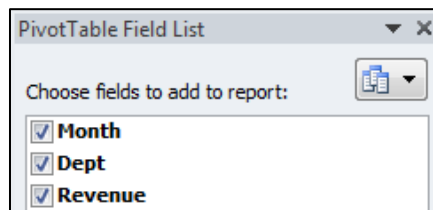
- e. You can add expand and collapse icons to any member in a PivotTable by clicking on that member's description. For example, pictured below expand and collapse icons have been added after double clicking the phrase "**Consulting**".

5	⊕ <b>Audit</b>	<b>42,814</b>
6	⊖ <b>Consulting</b>	<b>22,165</b>
7	4,863	4,863
8	17,302	17,302
9	⊕ <b>Tax</b>	<b>33,564</b>
10	⊕ <b>Write Up</b>	<b>16,610</b>

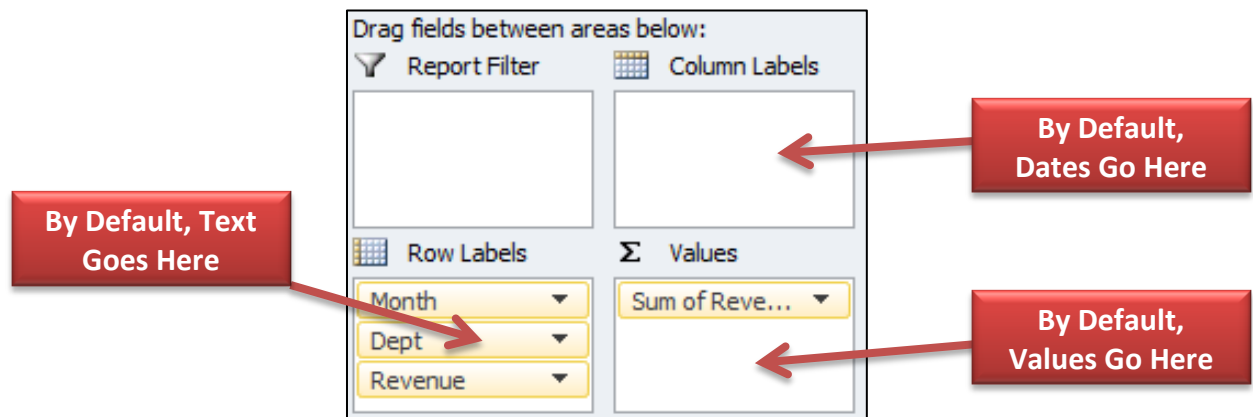
**17. Re-arranging Fields on a PivotTable** - To get the final layout results that you want, you can add, rearrange, and remove fields by using the PivotTable **Field List**, as follows:

- a. **Select the PivotTable** - If you don't see the PivotTable **Field List**, click on the PivotTable to select it.
- b. **Display the Field List** - If you still don't see the PivotTable **Field List**, on the **Options** tab, in the **Show/Hide** group, click **Field List**.
- c. **Refresh** - If you don't see the fields that you want to use in the PivotTable Field List, you may need to refresh the PivotTable report to display any new fields, calculated fields, measures, calculated measures, or dimensions that you have added since the last operation. On the **Options** tab, in the **Data** group, click **Refresh**.

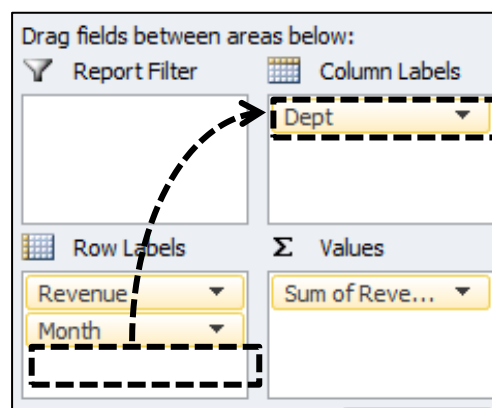
- d. **Add Fields** – To add fields, check the checkbox next to the field name in the field section of the **Field List**.



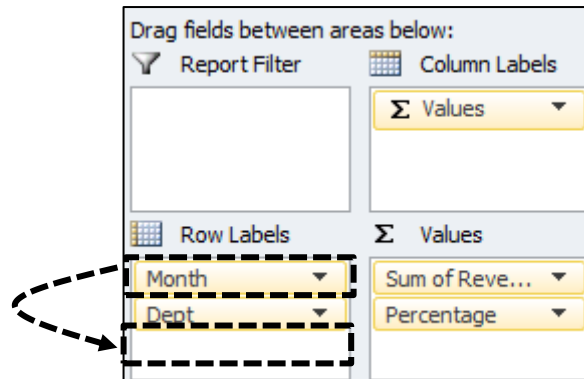
- e. **Default Field Arrangement**<sup>(147)</sup> - By default, text fields are added to the **Row Labels** area, numeric fields are added to the **Values area**, date and time fields are added to the **Column Labels** area.



- f. **Rearrange Fields**<sup>(148)</sup> – To rearrange fields, click and drag the **Field Name** button to a different **Drag** box, as pictured below.



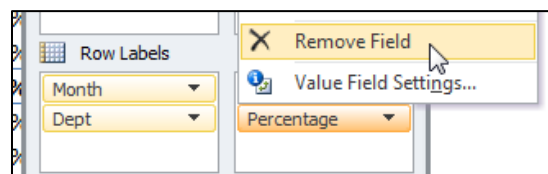
- g. **Re-Ordering Fields**<sup>(149)</sup> – You can also rearrange Field Names to control the display order of the data in the PivotTable. For example, to adjust the display order of Fields, click and drag the **Field Name** button above or below other **Field Name Buttons** in the same **Drag** box, as pictured below.



- h. **Copy Fields in a PivotTable**<sup>(150)</sup> - You may want to add the same field more than once to the Values area so that you can display different calculations by using the **Show Values As** to display **Percentage of Column Total**, for example. To do this, click and drag the desired **Field Name** (from the Field list Area) to the **Values** box (in the Drag Box area). Thereafter, right-click the heading label for the new column and select **Value Field Settings, Show Values As, Percentage of Column Total**. The results should appear as pictured below.

	A	B	C	D
3	Month	Dept	Sum of Revenue	Percentage
4	January	Audit	42,814	4.35%
5		Consulting	22,165	2.25%
6		Tax	33,564	3.41%
7		Write Up	16,610	1.69%
8	January Total		115,153	11.70%
9	February	Audit	33,669	3.42%
10		Consulting	17,618	1.79%

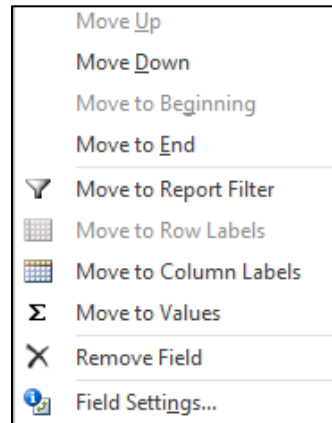
- i. **Note** – Clearing a checkbox in the **Field List** removes all instances of the field from the **PivotTable**<sup>(151)</sup>. To remove just one instance of a field name that has been duplicated, click the **Field Name Button's Drop Down Arrow** in a **Layout** area, and then click **Remove Field**, as pictured below. As an alternative, you could also click and hold a field name in the layout section, and then drag it outside the PivotTable **Field List**.



- j. **Edit Column Labels**<sup>(152)</sup> – You can edit column and row labels by double-clicking the label and typing in your desired label. In the example pictured above, I have edited the last column from “**Sum of Revenue2**” to “**Percentages**”.



- k. **Rearrange Using Drop Down Arrows**<sup>(153)</sup> – Instead of clicking and dragging Field name buttons, you could also click the Field Name Button's drop down arrow to reveal a pop up menu as shown below.



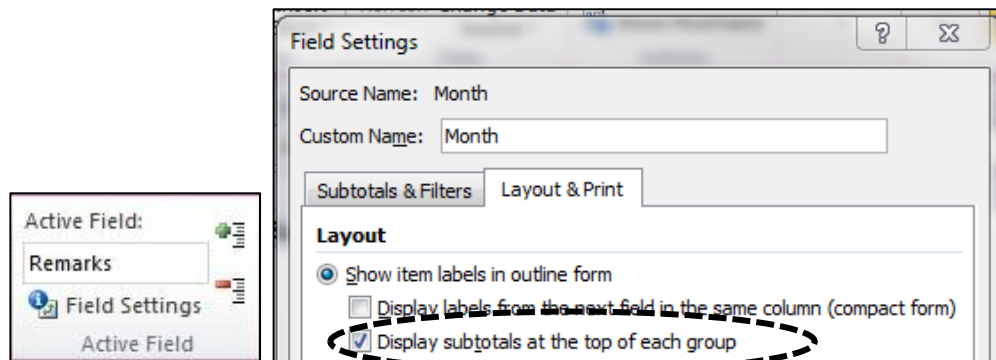
The action for each of these commands is explained below.

- i. **Move Up** - Move the field up one position in the area.
  - ii. **Move Down** - Move the field down position in the area.
  - iii. **Move to Beginning** - Move the field to the beginning of the area.
  - iv. **Move to End** - Move the field to the end of the area.
  - v. **Move to Report Filter** - Move the field to the Report Filter area.
  - vi. **Move to Row Labels** - Move the field to the Row Labels area.
  - vii. **Move to Column Labels** - Move the field to the Column Labels area.
  - viii. **Move to Values** - Move the field to the Values area.
  - ix. **Field Settings** - Display the Field Settings or Value Field Settings dialog boxes.
- l. **PivotTable Tools Options Show Group**<sup>(154)</sup> – The Show group on the PivotTable Tools, Options Tab enables you to show or hide the **Field List**, **Expand and Collapse** buttons, and **Field Headers**. These buttons are pictured below.



- m. **Displaying Subtotals Above Rows**<sup>(155)</sup> - To display subtotals above or below their rows:

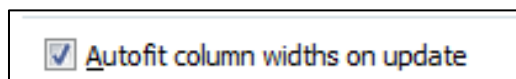
- i. In the PivotTable, select the row field for which you want to display subtotals. (In **Outline** or **Tabular** form, you can also double-click the row field.)
- ii. On the **PivotTable Tools, Options** tab, in the **Active Field** group, click **Field Settings**.
- iii. On the **Subtotals & Filters** tab, under the **Subtotals**, click **Automatic** or **Custom**. (Note - If None is selected, subtotals are turned off.)
- iv. On the **Layout & Print** tab, under **Layout**, click **Show Item Labels in Outline Form**, and then do one of the following:
  1. To display subtotals above the subtotaled rows, select the Display subtotals at the top of each group check box. This option is selected by default.
  2. To display subtotals below the subtotaled rows, clear the Display subtotals at the top of each group check box.



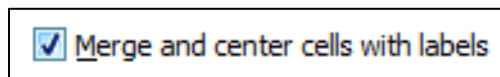
- n. **Turning Column Headers Off**<sup>(156)</sup> – To turn column headers on or off, select **PivotTable Tools, Options** tab, **Show** group, **Field Headers**.
- o. **Rearranging Individual Items within a Row or Column**<sup>(157)</sup> - To change the order of row or column items, in the PivotTable, right-click the row or column label or the item in a label, select **Move**, and then use one of the commands on the Move menu to move the item to another location. Select the row or column label item that you want to move, and then point to the bottom border of the cell. When the pointer becomes a four-headed pointer, drag the item to a new position. The following illustration shows how to move a row item by dragging.

	A	B	C
3	Month	Dept	Sum of Reve
4	January	Audit	42,
5		Consulting	22,
6		Tax	33,
7		Write Up	16,
8	January Total		115,

- p. **Adjust Column Widths on Refresh**<sup>(158)</sup> – To adjust column widths on refresh, right-click on the PivotTable and select **PivotTable Options**. Next, on the **Layout & Format** tab, under **Format**, check or uncheck the checkbox labeled **Autofit column widths on update**.



- q. **Merge or Unmerge Cells for Outer Row and Column Items** – To merge cells for row and column items in order to center the items horizontally and vertically, or to unmerge cells, right-click on the PivotTable and select **PivotTable Options**. Next, on the **Layout & Format** tab, under **Layout**, check or uncheck the checkbox labeled **Merge and center cells with labels**.



Before and after screen shots of this type of merge is presented below.

	A	B	C
3	Month	Dept	Sum of Revenue
4	January	Audit	42,814
5		Consulting	22,165
6		Tax	33,564
7		Write Up	16,610
8	January Total		115,153
9	February	Audit	33,669
10		Consulting	17,618
11		Tax	37,410
12		Write Up	19,266

*Before Merging*

	A	B	C
3	Month	Dept	Sum of Revenue
4		Audit	42,814
5	January	Consulting	22,165
6		Tax	33,564
7		Write Up	16,610
8	January Total		115,153
9		Audit	33,669
10	February	Consulting	17,618
11		Tax	37,410
12		Write Up	19,266

*After Merging*

- r. **Change the Display of Blank Cells, Blank Lines, and Errors**<sup>(159)</sup> – if your PivotTable data contains blank cells, blank lines, or errors, and you want to change the way they are displayed, right-click on the PivotTable and select **PivotTable Options**. Next, on the **Layout & Format** tab, under **Format**, check or uncheck the checkboxes labeled

**For error values show** and **For empty cells show**, and enter the desired results in the adjacent text box.

<input type="checkbox"/> For error values show:	<input type="text"/>
<input checked="" type="checkbox"/> For empty cells show:	<input type="text"/>

**Tip** - To display blank cells, delete any characters in the box. To display zeros, clear the check box.

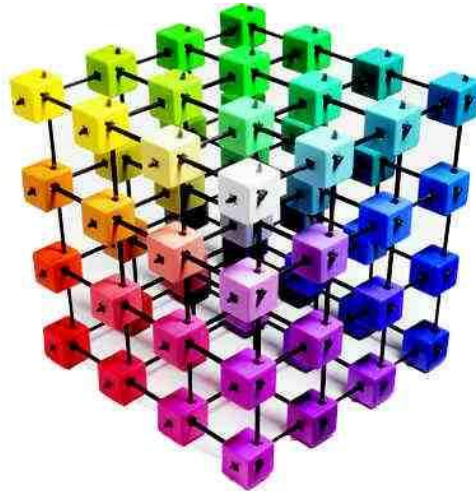
- s. **Display or hide blank lines after rows or items**<sup>(160)</sup> – if your PivotTable data contains blank lines, and you want to change the way they are displayed, select the blank row, then right-click on the PivotTable and select **Field Settings**. Next, on the **Layout & Print** tab, under **Layout**, check or uncheck the checkbox labeled **Insert blank line after each label**.

<input type="checkbox"/> Insert blank line after each item label
--

**Note** - You can apply character and cell formatting to the blank lines, but you cannot enter data in them.<sup>(161)</sup>

- t. **Control Cells with No Data** – (This setting is only available for an OLAP based PivotTables, and only to Excel 2003 and earlier.) To control how items and labels with no data are displayed, right-click on the PivotTable and select **PivotTable Options**. Next, on the **Display** tab, under **Display**, select or clear the **Show items with no data on rows**, **Show items with no data on columns** or **hide row items that have no values**.

<input type="checkbox"/> Show items with no data on rows
<input type="checkbox"/> Show items with no data on columns
<input checked="" type="checkbox"/> Display item labels when no fields are in the values area

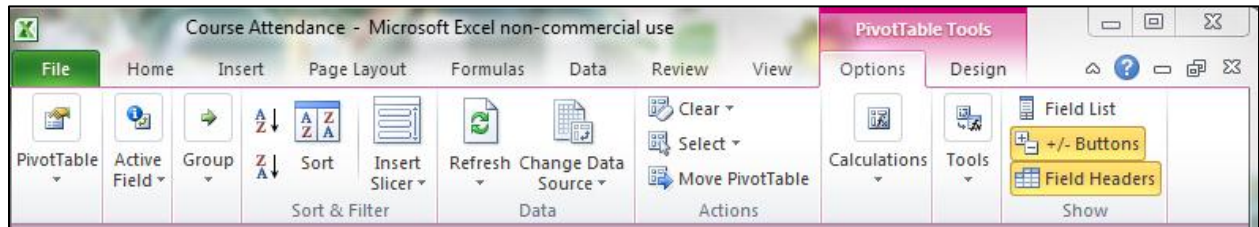
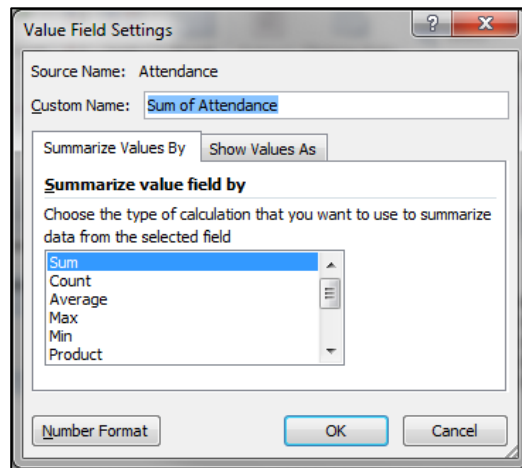
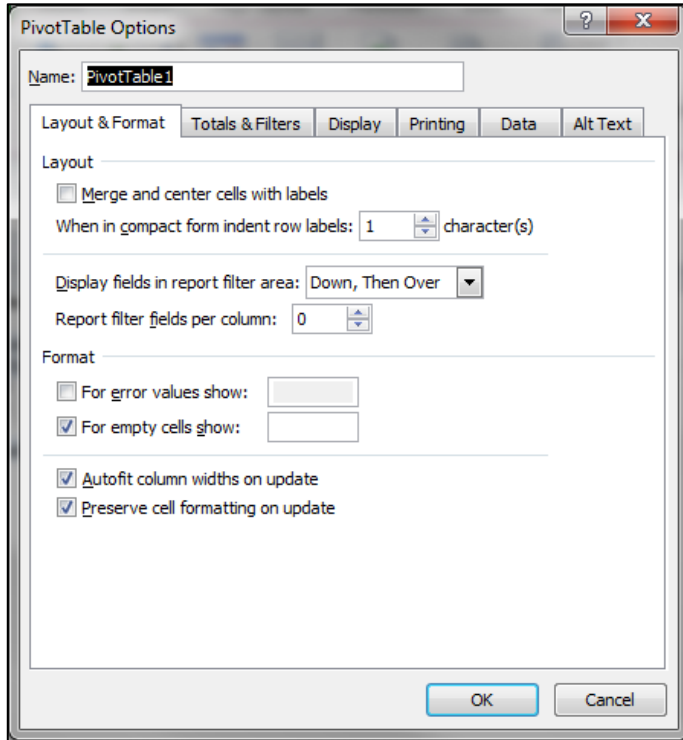


# PivotTable Options

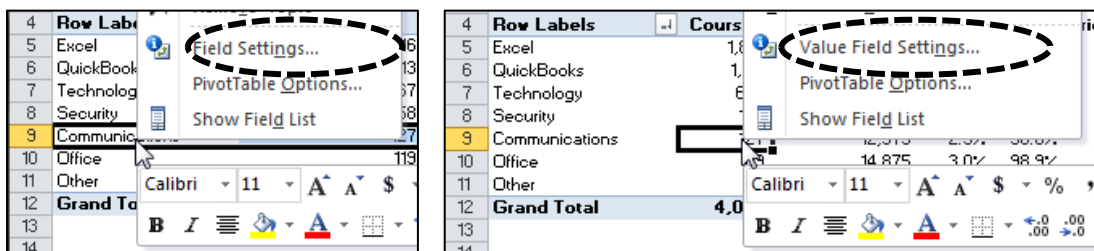
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## Chapter 6

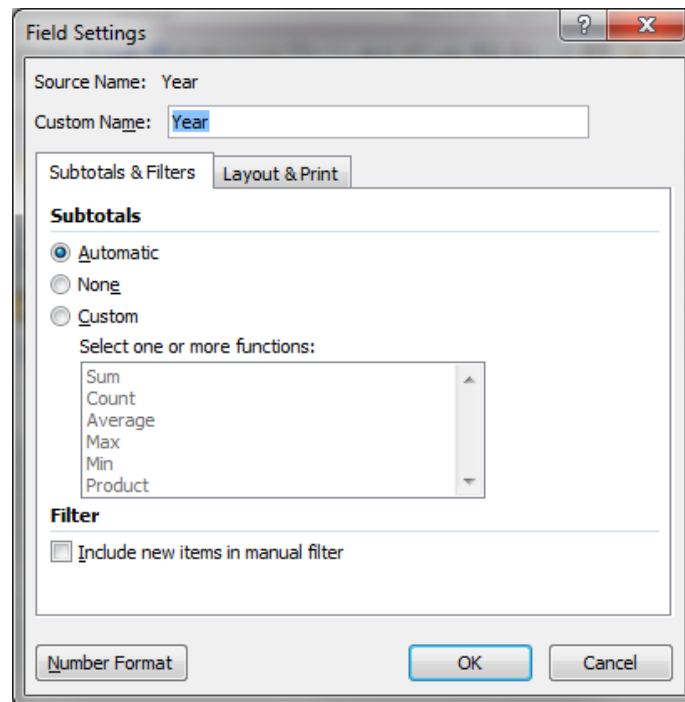
**18. Accessing the PivotTable Options<sup>(162)</sup>** – The PivotTable Options are accessible by right-clicking a PivotTable and selecting **PivotTable Options**, **Value Field Settings** or other menu options; or from the **PivotTable Tools** tab by selecting the **Options** tab. Examples of these PivotTable Option dialog boxes and menu tabs are pictured below.



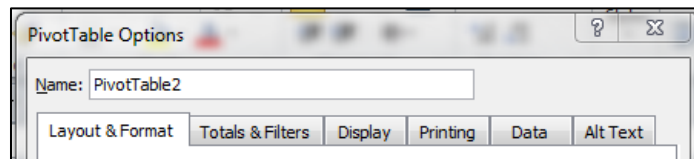
**19. Hidden Options<sup>(163)</sup>** – However, another Options dialog box can be displayed by right-clicking on a row description (or column heading), and selecting Field Settings as shown below.



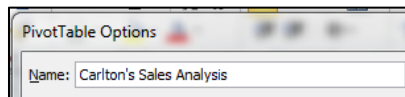
Presented below is the hidden Field Settings dialog box that appears.



**20. PivotTable Options** – There are a wide number of options available for fine-tuning a PivotTable. To access these options, right click the PivotTable and select PivotTable Options. This action will launch a dialog box with the following six tabs.



- a. **Rename the PivotTable**<sup>(164)</sup> - To rename your PivotTable, enter a new name in the name box and click **OK**.



### Layout & Format tab

- b. **Merge and Center Cells with Labels** – You cannot use the **Merge Cells** check box under the **Alignment** tab in a PivotTable; you must instead click the **Merge and Center Cells with Labels** checkbox in the **PivotTable Options** dialog box.

- c. **Indent The Compact Form Row Labels**<sup>(165)</sup> - To indent rows in the row labels area when the PivotTable report is in compact format, select an indentation level of 0 to 127. Below see the difference between 1 indent and 5 indents.

3	Restaurant Name, Location and Number	Sum of Revenue
4	Albany, New York , Store 2	\$ 671,176.79
5	New York	\$ 671,176.79
6	Albany	\$ 671,176.79
7	Albany, New York, Store 1	\$ 656,206.93
8	New York	\$ 656,206.93
9	Albany	\$ 656,206.93

3	Restaurant Name, Location and Number	Sum of Revenue
4	Albany, New York , Store 2	\$ 671,176.79
5	New York	\$ 671,176.79
6	Albany	\$ 671,176.79
7	Albany, New York, Store 1	\$ 656,206.93
8	New York	\$ 656,206.93
9	Albany	\$ 656,206.93

- d. **Display Fields In Report Filter Area**<sup>(166)</sup> - Select **Down, Then Over** to first display fields in the report filter area in a column. Select **Over, Then Down** to first display fields in the report filter area in a row. (Note as the column (or row) becomes full, new filters spill over into new column (or row))

	A	B	C	D	E	F	G	H
2	City	(All)						
3	Territory	(All)						
4	Sales Rep	(All)						
5								
6	Restaurant Location	Sum of Revenue	Sum of Revenue2					

	A	B	C	D	E	F	G	H
2								
3								
4	State	(All)		City (All)		Territory (All)		
5								
6	Restaurant Location	Sum of Revenue	Sum of Revenue2					

- e. **Report filter fields per column**<sup>(167)</sup> - Type or select the number of fields to display before taking up another column or row based on the setting of Display fields in report filter area.



	A	B
2	City	(All)
3	Territory	(All)
4	Sales Rep	(All)
5		
6	Restaurant Location	Sum of Revenue
7	Albany, New York , Store 2	\$ 671,176.79
8	Albany, New York, Store 1	\$ 656,206.93

	A	B
2		
3		
4	State	(All)
5		
6	Restaurant Location	Sum of Revenue
7	Albany, New York , Store 2	\$ 671,176.79
8	Albany, New York, Store 1	\$ 656,206.93

- f. **For Error Values Show**<sup>(168)</sup> – If your raw data contains errors, then your PivotTable will repeat those errors. In this case, you can place a check in the checkbox labeled **For error vales show** and indicate the text you would prefer to show.

	A	B	C
37	Hartford, Connecticut , Store 2	\$ 636,925.43	636925.43
38	Hartford, Connecticut, Store 1	#DIV/0!	#DIV/0!
39	Hornell, New York, Store 1	\$ 664,322.87	664322.87
40	Ithaca, New York, Store 1	\$ 650,529.24	650529.24

	A	B	C
37	Hartford, Connecticut , Store 2	\$ 636,925.43	636925.43
38	Hartford, Connecticut, Store 1	N/A	N/A
39	Hornell, New York, Store 1	\$ 664,322.87	664322.87
40	Ithaca, New York, Store 1	\$ 650,529.24	650529.24
41	Jamestown, New York, Store 1	\$ 644,321.91	644321.91

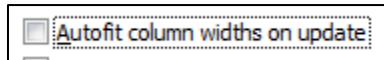
- g. **For Empty Cells Show**<sup>(170)</sup> - If your raw data contains blank cells, then your PivotTable may repeat those blank cells. In this case, you can place a check in the checkbox labeled **For Empty Cells Show** and indicate the text you would prefer to show instead.

For empty cells show: No data

- h. **Autofit Column Widths On Update**<sup>(171)</sup> – By default, Excel automatically adjusts PivotTable columns to fit to the size of the widest text or number value when you refresh the data. To prevent this from happening, clear the check in the checkbox labeled **Autofit Column Widths On Update**.



Tip On Fire →



Tip On Fire →

- i. **Preserve Cell Formatting On Update**<sup>(172)</sup> – In some cases, you might want to make formatting changes to a PivotTable for better readability, but when you refresh the data, you want the PivotTable to revert back to its default format. In this case, clear the checkbox labeled **Preserve Cell Formatting On Update**. However, if you want to keep your format changes, even upon refresh, then check the checkbox labeled **Preserve Cell Formatting On Update**.

(Note: Many people who use this feature find that the format still reverts back upon refresh, but what they really see is their column widths adjusting<sup>(173)</sup>. Therefore, if this is a problem for you, make sure to uncheck the checkbox labeled **Autofit Column Widths On Update** as discussed above.)

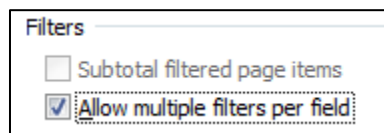
## Totals & Filters

- j. **Show Grand Totals For Rows**<sup>(174)</sup> – This option allows you to **Display** or **Hide** the **Grand Total** column (next to the last column).
- k. **Show Grand Totals For Columns**<sup>(175)</sup> – This option allows you to display or hide the **Grand Total** row (at the bottom of the PivotTable).

100	Watervliet, New York, Store 1	\$	646,516.28
101	White Plains, New York, Store 1	\$	649,849.65
102	Yonkers, New York, Store 1	\$	665,062.44
103	<b>Grand Total</b>	\$	<b>65,789,202.09</b>

100	Watervliet, New York, Store 1	\$	646,516.28
101	White Plains, New York, Store 1	\$	649,849.65
102	Yonkers, New York, Store 1	\$	665,062.44
103			

- l. **Subtotal Filtered Page Items** – Use this option to include or exclude report-filtered items in subtotals. Note - this setting is only available for an OLAP data source.



- m. **Allow Multiple Filters Per Field**<sup>(176)</sup> – Use this option to include all values, including those hidden by filtering, when Microsoft Office Excel calculates subtotals and the grand total. Note - this setting is only available for a non-OLAP data source.



Tip On Fire →

- n. **Use Custom Lists When Sorting**<sup>(177)</sup> - Use this option to enable or disable the use of **Custom Lists** when sorting a PivotTable. The reason you might want to clear this check box is to improve performance when you sort large amounts of data.

## Display

- o. **Show Expand/Collapse Buttons** – Check this option to display the plus or minus buttons that you use to expand or collapse row or column labels. (You might want to hide the plus or minus buttons when you print a PivotTable or to make a PivotTable more readable on the screen.)
- p. **Show Contextual Tooltips** – Use this option to display tooltips that show (or hide) value, row, or column information for a field or data value.
- q. **Show Properties In Tooltips** - Use this option to display (or hide) tooltips that display property information for an item. Note - this setting is only available for an OLAP data source.
- r. **Display Field Captions and Filter Drop Downs** - Use this option to display (or hide) PivotTable captions at the top of the PivotTable report and filter drop-down arrows on column and row labels.

Display field captions and filter drop downs



Tip On Fire →

- s. **Classic PivotTable Layout**<sup>(178)</sup> – If you like the old excel 2003 drag and drop style of creating and working with a PivotTable, you can revert back to this old style by checking the Classic PivotTable layout checkbox.

Classic PivotTable layout (enables dragging of fields in the grid)

Note - This option does not enable compatibility with previous versions of PivotTable reports.

- t. **Show Items With No Data On Rows** - To display or hide row items that have no values, check the checkbox labeled **Show items with no data on rows**. **Note - This setting is only available for an OLAP data source.**
- u. **Show Items With No Data On Columns** - To display or hide column items that have no values, check the checkbox labeled **Show items with no data on columns**. **Note - This setting is only available for an OLAP data source.**
- v. **Display Item Labels When No Fields Are In The Values Area** - To display or hide item labels when there are no fields in the value area, check the checkbox labeled **Display**

item labels when no fields are in the values area. **Note - This check box only applies to PivotTable reports created prior to Office Excel 2007.**

- w. **Show Calculated Members From Olap Server** - To display or hide calculated members in a dimension, check the checkbox labeled **Show Calculated Members From Olap Server**. **Note - This setting is only available for an OLAP data source.**

The following two options are mutually exclusive:



Tip On Fire →

- x. **Sort A to Z**<sup>(179)</sup> - To sort the fields in the PivotTable field list in ascending alphabetical sort order, , check the checkbox labeled **Sort A to Z**. **Note - This setting is not available for an OLAP data source.**



Tip On Fire →

- y. **Sort In Data Source Order**<sup>(180)</sup> - To sort the fields in the PivotTable field list in the order that is specified by the external data source, , check the checkbox labeled **Sort in data source order**. **Note - This setting is not available for an OLAP data source.**

## Printing

- z. **Print Expand/Collapse Buttons When Displayed On PivotTable**<sup>(181)</sup> - To display (or hide) expand and collapse buttons when you print a PivotTable, check the checkbox labeled **Print Expand/Collapse Buttons When Displayed On PivotTable**. This check box is not available if the Show drill buttons check box is cleared in the Display tab of this dialog box.
- aa. **Repeat Row Labels On Each Printed Page**<sup>(182)</sup> - To repeat the current item labels of the row label area on each page of a printed PivotTable, check the checkbox labeled **Repeat Row Labels On Each Printed Page**.
- bb. **Set Print Titles**<sup>(183)</sup> - To enable (or disable) the repeating of row and column field headers and column item labels on each printed page of a PivotTable, check the checkbox labeled **Set print titles**.

**Note**<sup>(184)</sup> – Using this feature requires a little more work on your part as follows. To actually print the labels, you must still enter values in the Rows to repeat at the top or Columns to repeat at left boxes under the Print titles section in the Sheet tab of the Page Setup dialog box (On the Page Layout tab, in the Page Setup group, click Print Titles).

## Data



Tip On Fire →

- a. **Save Source Data With File**<sup>(185)</sup> - Select or clear to save or not save the data from the external data source with the workbook. **Note - This setting is not available for an OLAP data source.**
- b. **Enable Expand To Detail**<sup>(186)</sup> - Select or clear to enable drilling down to detail data from the data source, and then displaying the data on a new worksheet. **Note - This setting is not available for an OLAP data source.**
- c. **Refresh Data When Opening The File** - Select or clear to refresh or not refresh the data when you open the Excel workbook that contains this PivotTable report. **Note - This setting is not available for an OLAP data source.**
- d. **Number Of Items To Return Per Field** - To specify the number of items for each field to temporarily cache with the workbook, select one of the following:
  - i. **Automatic** - The default number of unique items for each field.
  - ii. **None** - No unique items for each field.
  - iii. **Max** - The maximum number of unique items for each field. You can specify up to 1,048,576 items.

**Note - This setting is not available for an OLAP data source.**

**Note**<sup>(187)</sup>: If you need to query more than 1,048, 576 rows of data, then use the filter option to query only a portion of your data, such as first quarter data, then repeat queries for additional queries on additional worksheets.

## Value Field Settings

The Value Field Settings dialog box enables you to control the formulas that appear in your PivotTable<sup>(188)</sup> (as opposed to writing your own formulas as calculated fields).

For example, you can use **Show Values As** to quickly present values in different ways. **Show Values As** is not a new feature but in Excel 2010, it's much easier to find and use. It also provides several new calculation options, such as **% of Parent Total** or **% Running Total In**.

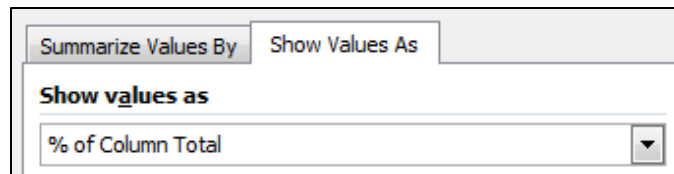


Tip On Fire →

**Side-by-Side Calculations**<sup>(189)</sup> - While you can use the **Show Values As** feature to display different calculations in a value field, you can also use this feature to add the same value fields to a PivotTable more than once to display the actual value and other calculations, such as a running total calculation, side-by-side.

To add two or more of the same value fields to the PivotTable to display different calculations (in addition to the actual value of a specific field):

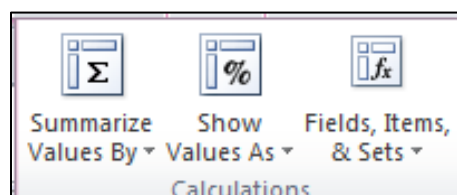
- i. In the **Field List**, drag the value field that you want to add to the **Values** area that already contains that value field, and then place it below that field. (NOTE - The value field is added to the PivotTable and a version number is appended to its field name - you can edit the field name as needed.)
- j. Repeat step 1 until you have displayed all the value fields you want to calculate by using **Show Values As**.
- k. In the PivotTable, right click on the value field that you want to calculate by using **Show Values As** and select **Value Field Settings**, and on the **Show Values As** tab, select **Percent of Column Total** (or whichever option you want) from the **Show Values As** dropdown box.



In this example, the PivotTable below displays two columns of the same data - one numerically and the other as a percent to total.

4	Course		
5	Row Labels	Total	% to Total
6	2009	1,501	37.38%
7	2010	1,209	30.10%
8	2011	1,306	32.52%
9	<b>Grand Total</b>	<b>4,016</b>	<b>100.00%</b>

Note – This same option can also be accessed from the **PivotTable Tools** Ribbon by selecting the **Options** tab, **Calculations**, **Show Value As**, an example of which is pictured below.



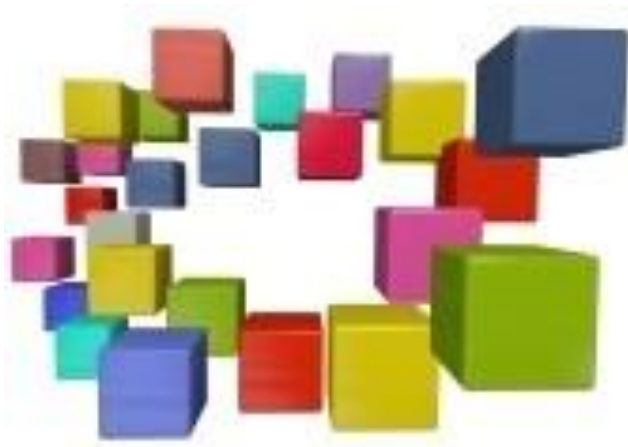
A summary of the available value field calculation options is presented below.

Calculation Option	Result
No Calculation	Displays the value that is entered in the field.
% of Grand Total	Displays values as a percentage of the grand total of all the values or data points in the report.
% of Column Total	Displays all the values in each column or series as a percentage of the total for the column or series.
% of Row Total	Displays the value in each row or category as a percentage of the total for the row or category.
% Of	Displays values as a percentage of the value of the <b>Base item</b> in the <b>Base field</b> .
% of Parent Row Total	Calculates values as follows: (value for the item) / (value for the parent item on rows)
% of Parent Column Total	Calculates values as follows: (value for the item) / (value for the parent item on columns)
% of Parent Total	Calculates values as follows: (value for the item) / (value for the parent item of the selected <b>Base field</b> )
Difference From	Displays values as the difference from the value of the <b>Base item</b> in the <b>Base field</b> .
% Difference From	Displays values as the percentage difference from the value of the <b>Base item</b> in the <b>Base field</b> .
Running Total in	Displays the value for successive items in the <b>Base field</b> as a running total.
% Running Total in	Calculates the value as a percentage for successive items in the <b>Base field</b> that are displayed as a running total.
Rank Smallest to Largest	Displays the rank of selected values in a specific field, listing the smallest item in the field as 1, and each larger value with a higher rank value.
Rank Largest to Smallest	Displays the rank of selected values in a specific field, listing the largest item in the field as 1, and each smaller value with a higher rank value.
Index	Calculates values as follows: $((\text{value in cell}) \times (\text{Grand Total of Grand Totals})) / ((\text{Grand Row Total}) \times (\text{Grand Column Total}))$

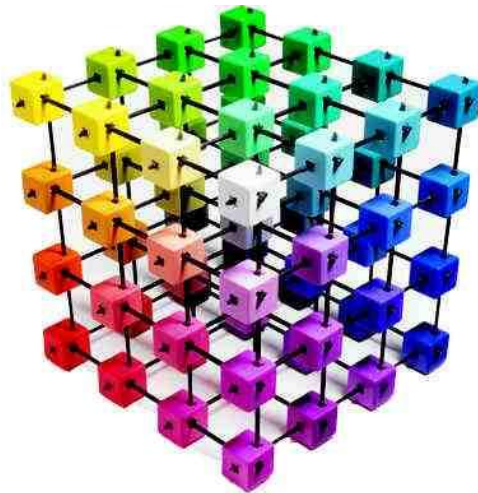
## Field Settings

A different set of options becomes available when you right-click on a PivotTable's row or column descriptions and select **Field Settings**. These options are as follows:

- a. **Subtotals**<sup>(189)</sup> – You can control whether that particular Field name displays subtotals, no subtotals, or an alternative Custom calculation (such as Count, Average, Max, Min, Product, Count Numbers, StdDev, StdDevp, Var or Varp).
  - i. **Replicated Changes** - When you apply any of these changes, the changes you make are automatically applied to all other cells with the same label.
  - ii. **Tabular Note** - Repeated labels are shown in tabular form only. They are not shown when compact form or outline form are applied.
- b. **Filters**<sup>(190)</sup> – There is an option to include new items in a manual filter.
- c. **Layout & Print Show Labels in Outline or Tabular Form** –
- d. **Layout & Print Show labels in Next Column in Compact Form** –
- e. **Layout & Print Display Subtotals at the Top or Bottom of a List** –
- f. **Layout & Print Repeat Column Labels** –
- g. **Layout & Print Insert Blank Line after each Label** –
- h. **Layout & Print Show Items with No Data** –
- i. **Layout & Print Insert Page Break After each Item** -







# PivotTables Slicers

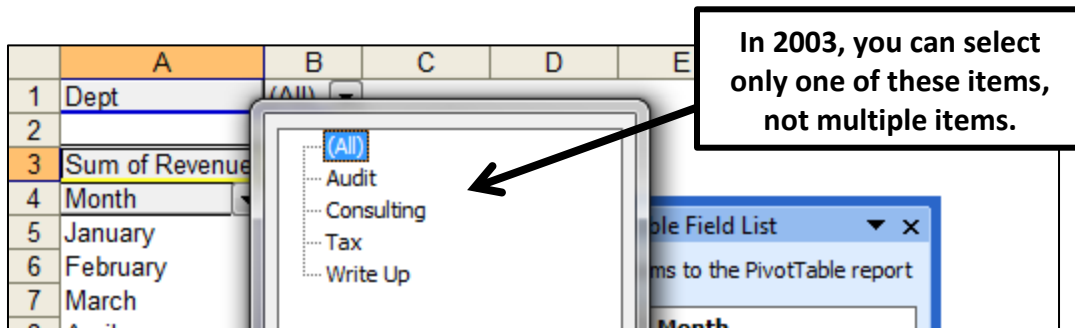
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## Chapter 7

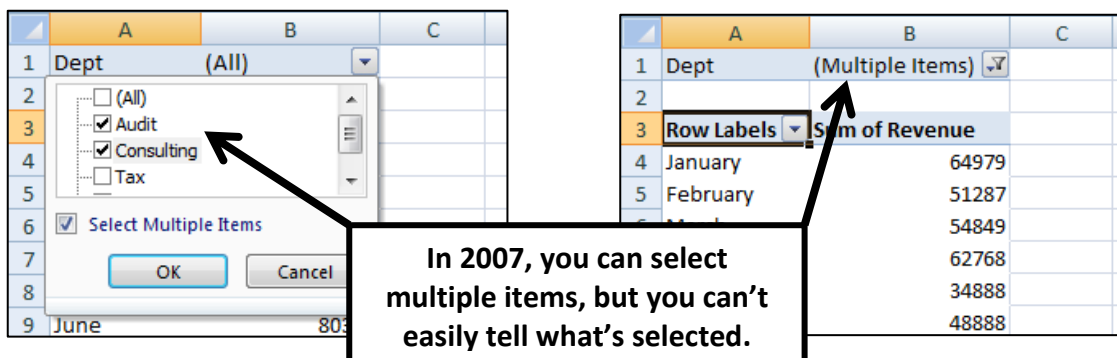


Tip On Fire → **Introduction to Slicers**<sup>(191)</sup>

In Microsoft Excel 2003, you can use three dimensional filters to filter data in a PivotTable, but you can only filter by one item per Field Name<sup>(192)</sup>, which is a critical limitation.



In Microsoft Excel 2007, you can also use three dimensional filters to filter data in a PivotTable, and this feature is improved because you can filter multiple items per Field Name. Unfortunately, the product's design does not enable you to easily see<sup>(193)</sup> which items are being used as filters.



In Microsoft Excel 2010, you still have the same filter capability as excel 2007, but you also have the new option to use slicers<sup>(194)</sup> to filter that same data. Slicers provide buttons that you can click to filter PivotTable data. In addition to quick filtering, slicers also display the selected filters<sup>(195)</sup> which make it easy to understand what exactly is shown in a filtered PivotTable.

	A	B	C	D	E
3	Row Labels	Sum of Revenue			
4	January	64,979			
5	February	51,287			
6	March				
7	April				
8	May				
9	June	48,888			
10	July	46,968			
11	August	38,918			
12	September	25,133			

Dept
Audit
Consulting
Tax
Write Up

Sum of Revenue  
Value: 51,287  
Row: February

In 2010, these slicer buttons make it easy to select filters and tell what's selected.

In the example above, I first selected **Audit** from the **Dept** slicer which forced the PivotTable to display only the **Audit** related revenue. I then held down the **Ctrl** key and also selected **Consulting** from the **Dept** slicer, and by selecting both **Audit** and **Consulting**, the PivotTable displays both the **Audit** and **Consulting** related revenue.

Presented below are points and tips related to using slicers.

- e. **Easy** - Slicers are easier to use than the previous **Report Field Filter** approach employed by Excel 2003 & 2007, because there is no need to open and scroll drop-down lists.
- f. **Visual**<sup>(196)</sup> – Slicers are more visual than the previous **Report Field Filter** approach employed by Excel 2003 & 2007, making it easier to understand the specific data included in the corresponding PivotTable. This is because there is no need to open and scroll drop-down lists to see what's been filtered.
- g. **Creating A Slicer**<sup>(197)</sup> - To create a slicer, click a PivotTable to select it, then on the **Insert** tab, select **Slicer** and in the **Insert Slicers** dialog box, check the checkboxes for each Field Name you want included in your slicer, click **OK**.
- h. **Slicing Data**<sup>(198)</sup> - In each slicer, click the items on which you want to filter.
- i. **Slicing by Multiple Items**<sup>(199)</sup> - To select more than one item, hold down **CTRL**, and then click the items on which you want to filter.
- j. **Slicer Header** - The slicer header indicates the **Field Name** of the items in the slicer, for example **Dept** indicates the **Field Name** being sliced.
- k. **Filter Button Selected**<sup>(200)</sup> – In a slicer, any filter button that is selected indicates that the item's data is included in the PivotTable.
- l. **Filter Button Not Selected**<sup>(201)</sup> – Likewise, in a slicer, any filter button that is not selected indicates that the item's data is not included in the PivotTable.

- m. **Clear Filter** – The **Clear Filter** button removes all filters and selects all items in the slicer.
- n. **Slicer Scroll Bar** – When the slicer is not large enough to display all of the Field Name items, a scroll bar pops up enabling you to scroll the Field name items
- o. **Resizing the Slicer** - To resize a slicer, then hover the mouse pointer over the corners or the middle of each edge until the pointer changes to a resizing arrow, the click and drag to grow or shrink the size of the slicer.
- p. **Moving the Slicer** – To move the slicer to a new location, click and drag the slicer in the border areas.
- q. **Copying A Slicer** – To create a duplicate copy a slicer, click the slicer to select it, then press **Ctrl+C** to copy the existing slicer, and **Ctrl+V** to paste the new slicer. Your new slicer will also be associated with the same PivotTable.
- r. **OLAP Slicer** - You can create a stand-alone slicer that can be referenced by Online Analytical Processing (OLAP) Cube functions or that you can associate with any PivotTable at a later time.
- s. **Multiple Slicers**<sup>(202)</sup> - Because each slicer that you create is designed to filter on a specific PivotTable **Field Name**, it is likely that you will create more than one slicer to filter a PivotTable report. When you create multiple slicers, they appear on the worksheet alongside the PivotTable, in a layered display as pictured below.

Restaurant Name, Location and Number	Sum of	Store Number
Niagara Falls, New York, Store 1	\$	1015
Niagara Falls, New York, Store 2	\$	1023
Niagara Falls, New York, Store 3	\$	1040
Niagara Falls, New York, Store 4	\$	1043
Niagara Falls, New York, Store 5	\$	1048
Norwich, New York, Store 1	\$	1050
Providence, Rhode Island, Store 2	\$	1058
Providence, Rhode Island, Store 1	\$	1069
Providence, Rhode Island, Store 2	\$	
Providence, Rhode Island, Store 3	\$	
<b>Grand Total</b>	<b>\$ 6,566</b>	

The slicers shown are: Store Number, Restaurant Location, State, City, Territory, and Sales Rep. The Sales Rep slicer is currently set to 'Caroline'.

You can resize and move these slicers to make them easier to see and access, as shown below.

	A	B	C	D	E	F	G	H	I	J
2										
3		<b>Restaurant Name, Location and Number</b>	<b>Sum of Revenue</b>							
4		Niagara Falls, New York, Store 1	\$ 678,142.21							
5		Niagara Falls, New York, Store 2	\$ 646,990.71							
6		Niagara Falls, New York, Store 3	\$ 622,726.89							
7		Niagara Falls, New York, Store 4	\$ 695,861.53							
8		Niagara Falls, New York, Store 5	\$ 661,976.53							
9		Norwich, New York, Store 1	\$ 660,072.77							
10		Providence, Rhode Island, Store 2	\$ 658,714.96							
11		Providence, Rhode Island, Store 1	\$ 630,612.47							
12		Providence, Rhode Island, Store 2	\$ 644,951.77							
13		Providence, Rhode Island, Store 3	\$ 668,598.84							
14		<b>Grand Total</b>	<b>\$ 6,568,648.68</b>							
15										
16										
17										
18										
19										
20										

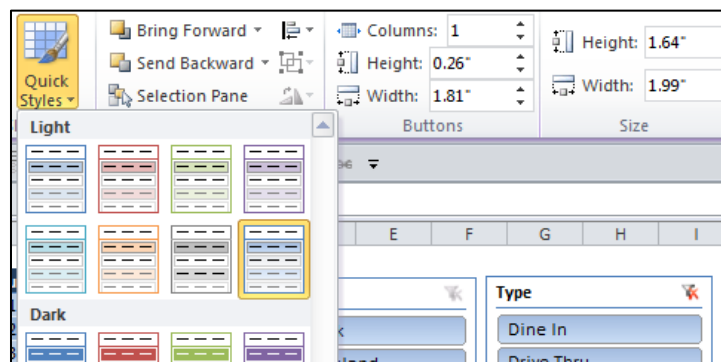
  

State	Type	Sales P
New York	Dine In	Carol
Rhode Island	Drive Thru	Conn
Connecticut	Hotel	Madi
Maine	Mall	Maril
Massachusetts		Sand
New Hampshire		
New Jersey		
Pennsylvania		
Vermont		

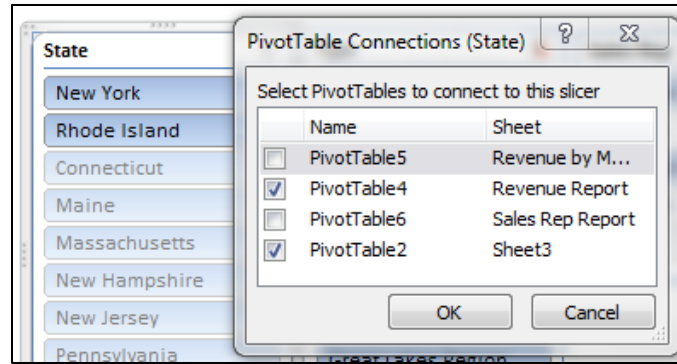
  

Territory
Atlantic Region
Great Lakes Region
Quaker Region
Upper Side

- t. **Formatting Slicers**<sup>(203)</sup> - To create professional looking reports or simply to match the format of a slicer to the format of the associated PivotTable, you can apply slicer styles for a consistent look. By applying one of the various predefined styles that are available for slicers, you can closely match the color theme that is applied to a PivotTable. For a custom look, you can create your own slicer styles, just as you create custom PivotTable styles. To apply a slicer style, click on a slicer to select it, then from the **Slicer Tools** menu select **Quick Styles**, and select a style.

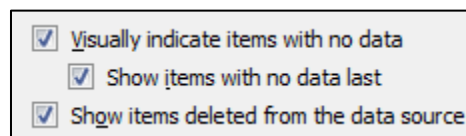


- u. **Sharing Slicers Between PivotTables**<sup>(204)</sup> - When you have several different PivotTables, it is likely that you will want to apply the same filter to some or all of those PivotTables. In this case, there is no need to duplicate the filter for each PivotTable because you can share a slicer that you created in one PivotTable with other PivotTables, as follows. Click on a slicer to select it, then from the **Slicer Tools** tab, select **PivotTable Connections** and place a checkmark next to the PivotTables you want connected to the slicer, as shown below.

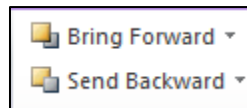


When you share a slicer, you create a connection to another PivotTable; thereafter, any changes that you make to a shared slicer are immediately reflected in all PivotTables that are connected to that slicer.

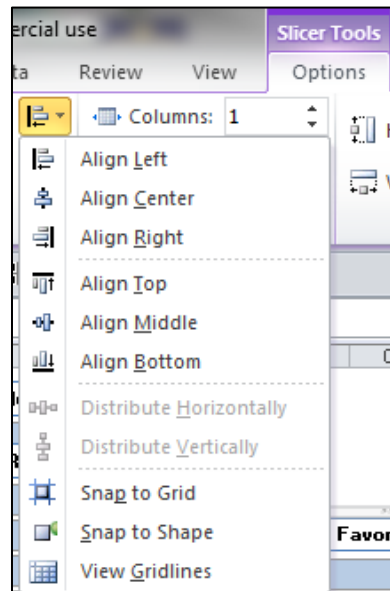
- v. **Shared versus Local Slicers** - Slicers that are connected to and used in more than one PivotTable are called shared slicers. Slicers that are used in one PivotTable only are called local slicers. A PivotTable can have both local and shared slicers at the same time.<sup>(256)</sup>
- w. **Naming Your Slicer**<sup>(206)</sup> – To name your slicer, right-click the slicer and select **Slicer Settings**, then enter a name in the **Name** box, then click **OK**. You might do this to apply a more descriptive name making it easier to create connections between your slicer and other PivotTables.
- x. **Display a Slicer Caption**<sup>(207)</sup> – To display a different slicer caption, right-click the slicer and select **Slicer Settings**, then enter a name in the **Caption** box, then click **OK**.
- y. **Sorting the Slicer's items**<sup>(208)</sup> - To control the sort order of the items in a slicer, right-click the slicer and select **Slicer Settings**, then check **Ascending**, **Descending** or **Use Custom Lists when sorting**.
- z. **Control the Display of Slicer Items**<sup>(209)</sup> - To way the slicer displays items that have been selected or de-selected, right-click the slicer and select **Slicer Settings**, then check the following boxes as desired:



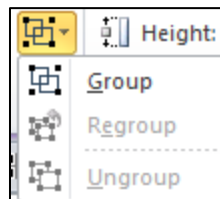
- aa. **Layering Order of Slicers**<sup>(210)</sup> – Slicers are objects, and accordingly you can layer one slicer atop another. To control which Slicer is on top, click on a Slicer to select it, then from the **Slicer Tools** tab, click the **Bring Forward** or **Send Backward** buttons to achieve your desired layering.



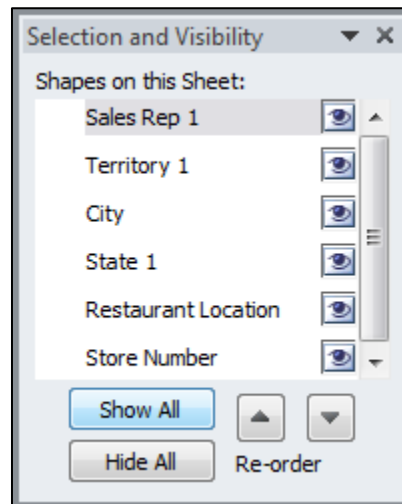
- bb. **Slicer Alignment**<sup>(211)</sup> – If you have multiple Slicers, and you want to arrange them neatly on your worksheet, first select them by going to the **Home** tab and in the **Editing** group click **Find & Select, Select Objects**. Next, use the mouse pointer to click and lasso the Slicers so they are all selected. Then, from the **Slicer Tools** tab, click the **Alignment** button (pictured below) and use the various Alignment tools control slicer arrangement.



- cc. **Grouping Slicers**<sup>(212)</sup> - If you have multiple Slicers arranged the way you want them, you might want to group them together so you don't accidentally disturb the arrangement and so they are easier to move as a group. To do this, select your Slicers by going to the **Home** tab and in the **Editing** group click **Find & Select, Select Objects**. Next, use the mouse pointer to click and lasso the Slicers so they are all selected. Then, from the **Slicer Tools** tab, click the **Group** button (pictured below) and use the various Grouping tools control slicer arrangement.

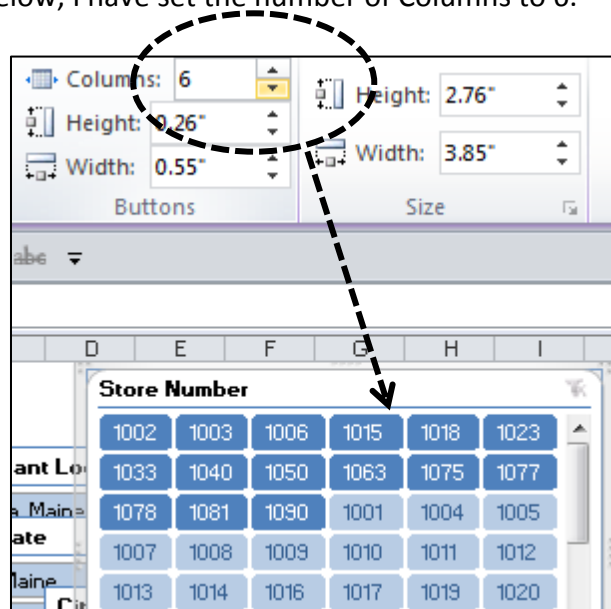


- dd. **Selection and Visibility Pane**<sup>(213)</sup> – To view a control panel that enables you to quickly turn your Slicers on and off, hide all Slicers, or re-order the Slicer arrangement, from the **Slicer Tools** tab, click the **Selection Pane** button.



Tip On Fire →

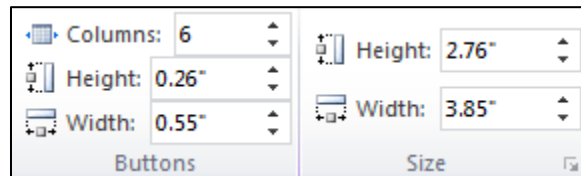
- ee. **Slicer Columns**<sup>(214)</sup> – To control the number of columns visible in a Slicer, from the **Slicer Tools** tab, spin the **Columns** spinner to the desired number of columns. In the example shown below, I have set the number of Columns to 6.



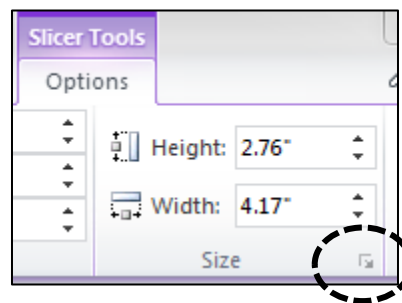
- ff. **Slicer Height and Width** – As mentioned, you can resize the Slicer using the resizing arrows to stretch the Slicer by its borders, but a more exacting approach can be achieved from the **Slicer Tools** tab's **Size** group, by spinning the **Height** and **Weight** spinners to the desired size.



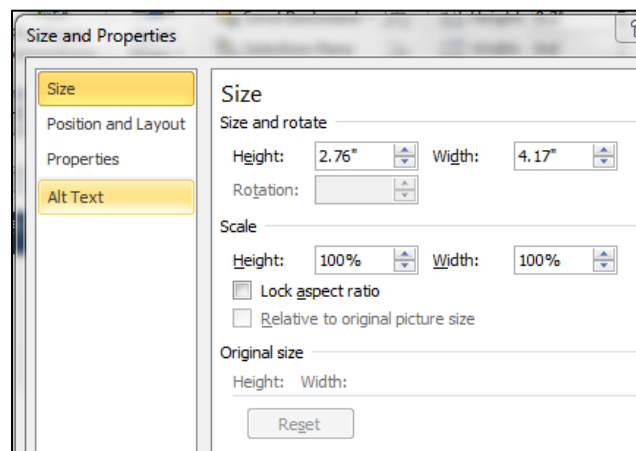
- gg. **Slicer Height and Width** – To resize a Slicer's **Buttons**, from the **Slicer Tools** tab's **Button** group, spin the **Height** and **Weight** spinners to the desired size.



- hh. **Size and Properties Dialog Box**<sup>(215)</sup> – To display the Slicer **Size and Properties** dialog box, from the **Slicer Tools** tab, click the **Properties Box** icon located in the bottom right corner of the **Size** group.

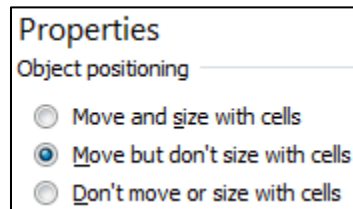


This action will display the following dialog box.

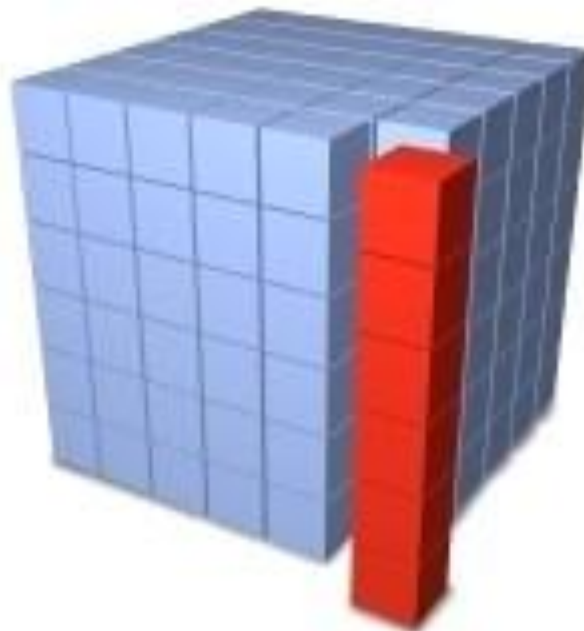


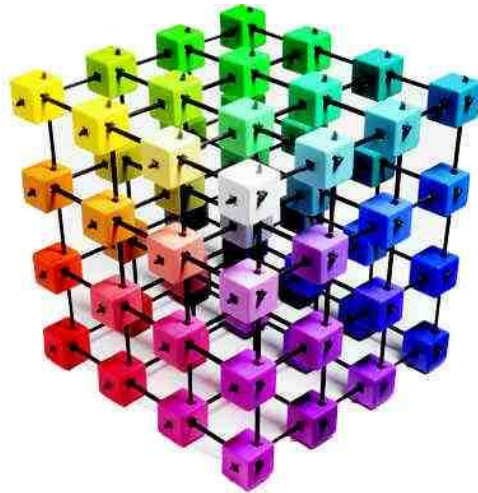
- ii. **Scale Your Slicer** – On the **Size and Properties** dialog box's **Size** tab you will find settings for scaling the size of your Slicer based on percentages instead of inches. You can also **Lock the Aspect Ratio** so that the Slicer retains its original shape when you increase or decrease the height or width.
- jj. **Slicer Positioning** – On the **Size and Properties** dialog box's **Position and Layout** tab you will find settings for positioning your Slicer on the worksheet horizontally and vertically. On this tab you can also disable resizing and moving of the Slicer.

- kk. **Slicer Movement**<sup>(217)</sup> - On the **Size and Properties** dialog box's **properties** tab you will find settings that enable you to control how the Slicer behaves when you insert or delete rows or columns, or when you adjust the height or width of rows and columns, as follows:



- ll. **Slicer Printing**<sup>(218)</sup> – By default, Slicers will print whenever they are included in your Print Range Area. However, if you don't want the Slicer's to print, uncheck the checkbox labeled **Print Object** on the **Size and Properties** dialog box's **properties** tab.
- mm. **Slicer Locking**<sup>(219)</sup> – By default, Slicers are locked whenever you protect the worksheet. However, if you want the user to be able to modify the Slicer even when the worksheet is protected, uncheck the checkbox labeled **Locked** on the **Size and Properties** dialog box's **properties** tab.





# Formatting PivotTables

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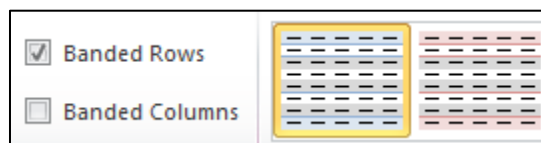
## Chapter 8

- cc. **PivotTable Styles**<sup>(220)</sup> – To apply formatting using the PivotTable styles gallery, from the **PivotTable Tools' Design** tab, click the **PivotTable Styles** drop down arrow to display the gallery shown below, and then select a Style.

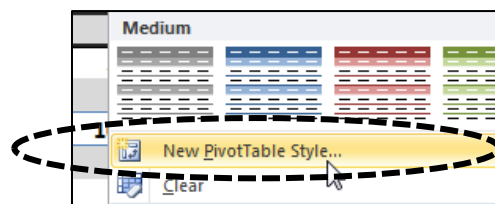


Tip On Fire →

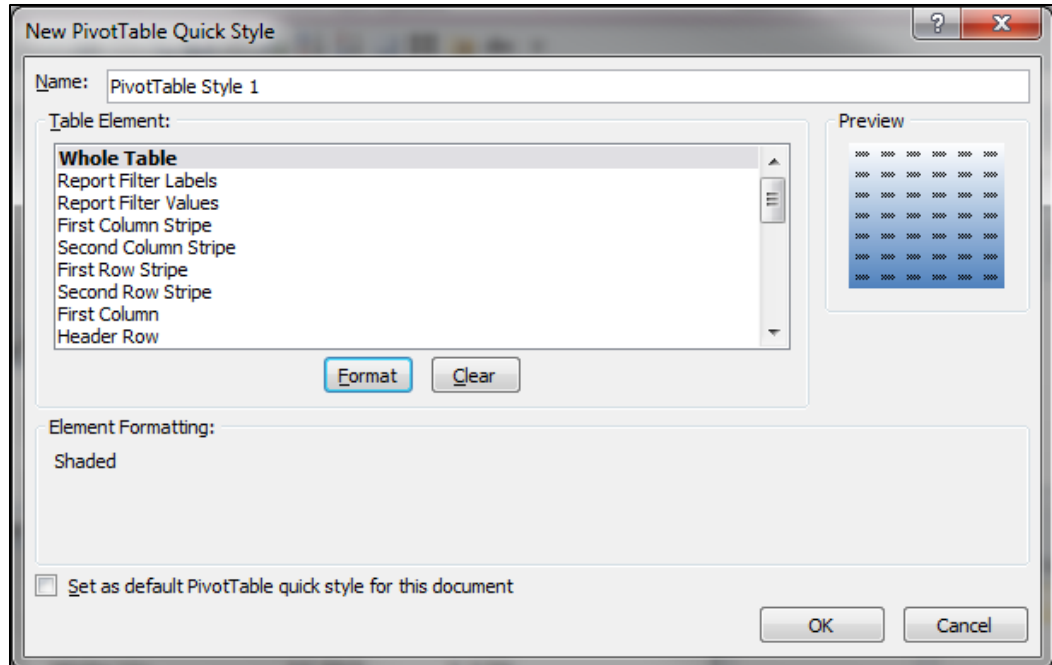
- dd. **Banding Rows or Columns**<sup>(221)</sup> – Banding can make a PivotTable easier to read, especially across wide rows. To control the banding behavior of a report, check or uncheck the checkboxes labeled **Banded Rows** or **Banded Columns** on the **PivotTable Tools' Design** tab.



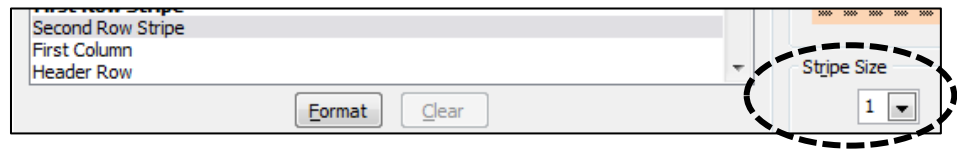
- ee. **Custom Styles**<sup>(222)</sup> - To create your own custom PivotTable style, click **New PivotTable Style** at the bottom of the gallery to display the **New PivotTable Style** dialog box.



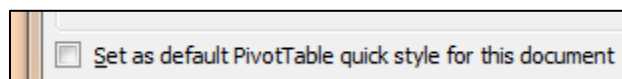
This action will launch the **New PivotTable Quick Style** dialog box pictured below.



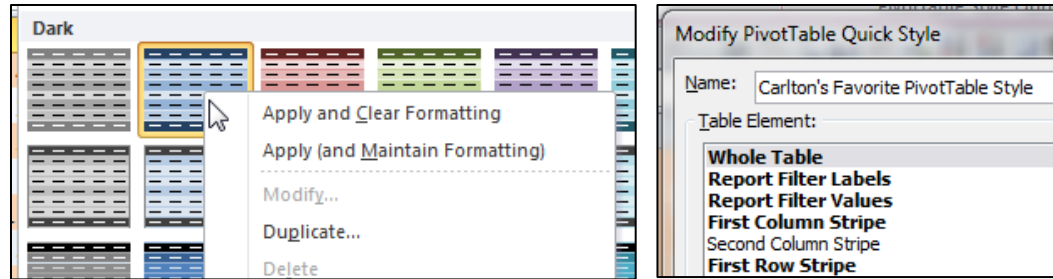
- i. Click the various **Table Elements** one at a time and click the **Format** button to apply the **Font**, **Border** and **Fill** formatting you want to apply to each Table Element.
- ii. When you select a table Element Stripe, a special control pops up enabling you to control the size of that particular stripe.



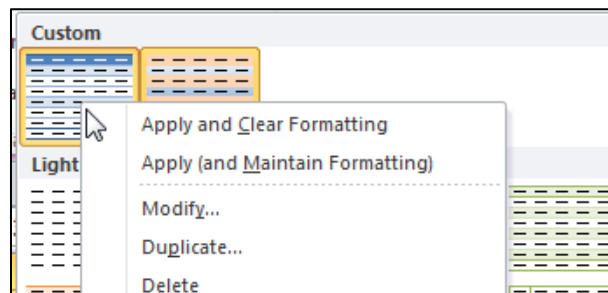
- iii. **Default Style** - To make your new PivotTable style the default style, check the checkbox labeled **Set as default PivotTable quick style for this document**.



- ff. **Duplicating and Modifying a Style**<sup>(223)</sup> – If you want to modify an existing PivotTable Style, you must first duplicate that style, saving it to a new name. To do this, right-click a style in the **Gallery** and select **Duplicate**, then enter a name and click **OK**.



Thereafter, you can right-click on the newly saved style under the **Custom** section of the **Gallery**, and select **Modify**.



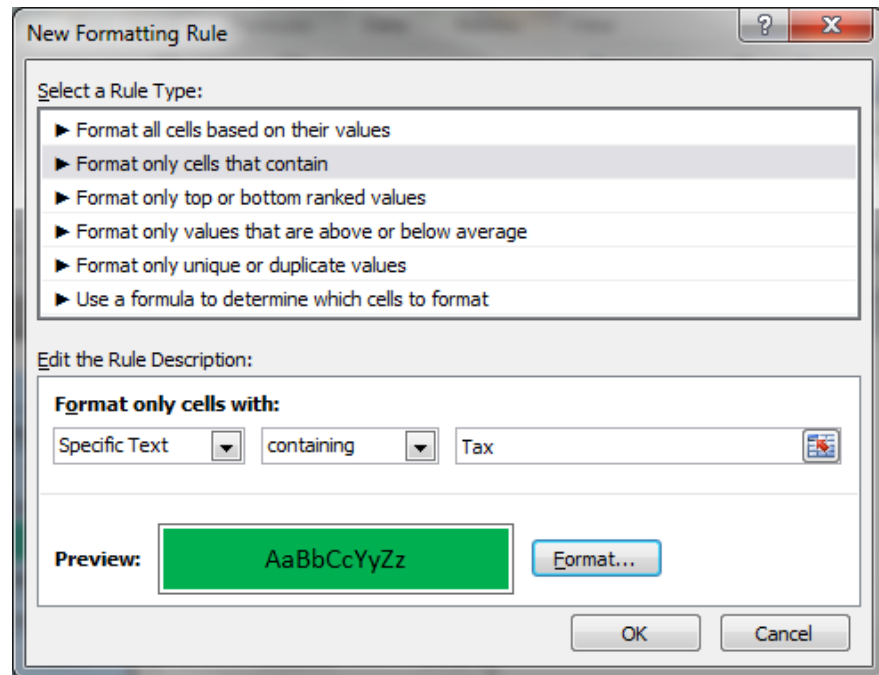
Tip On Fire → gg. **Conditionally Format a PivotTable**<sup>(224)</sup> - Conditional formatting can help you visually analyze data, detect critical issues, and identify patterns and trends. There are important differences to understand when you use conditional formatting on a PivotTable compared to Conditional formatting in a worksheet, as follows:

- i. **Persistent Formatting** - If you happen to hide conditionally formatted cells in a PivotTable by filtering, hiding levels, collapsing and expanding levels, or moving a field, the conditional formats will continue to display later, so long as the underlying data is not removed.
- ii. **Hierarchical Formatting** - The scope of the conditional format for fields in the Values area can be based on the data hierarchy (row descriptions) and is determined by all the visible children (the next lower level in a hierarchy) of a parent (the next higher level in a hierarchy) on rows for one or more columns, or columns for one or more rows.

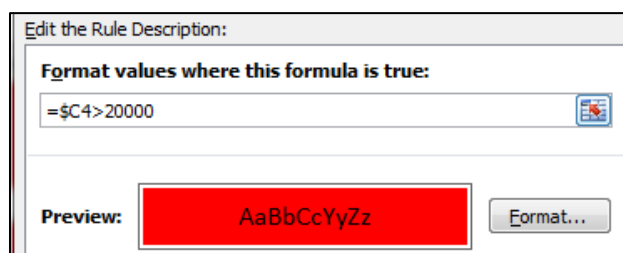
However, in the data hierarchy, children do not inherit conditional formatting from the parent, and the parent does not inherit conditional formatting from the children.

- iii. There are three methods for scoping the conditional format of fields in the Values area: by selection, by corresponding field, and by value field<sup>(225)</sup>.

- iv. **Example of Conditional Formatting by Selection** – I started by selecting the Department Labels (column B), then from the **Home** tab, I selected **Styles, Conditional Formatting, New Rule, Format only cells that contain**. In the **Edit** section, I selected **Specific Text** from the **Format only cells with** drop down box; then inserted the phrase **Tax** in the **Cell Chooser** box and applied a format of a green background, as shown.



- v. **Example of Conditional Formatting by Corresponding Field** – In this example, I started by highlighting the Percentage column (column D). Next, from the **Home** tab, I selected **Styles, Conditional Formatting, New Rule, Use a formula to determine which cells to format**. In the **Edit** section, I started to build a formula by clicking on cell **\$C\$4**, then I removed the second dollar sign so the formula would not absolutely refer to cell C4. Next I added the phrase **>20000**, set the fill format to red (as shown below), then I clicked **OK**.



Thereafter, all percentages in column D adjacent to values in column C greater than 20,000 display using red fill, as shown.

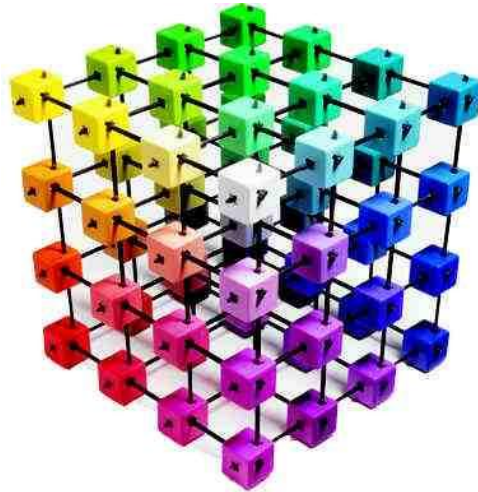
23	April Total		\$ 113,658	11.55%
24	May	Audit	\$ 17,284	1.76%
25		Consulting	\$ 17,604	1.79%
26		Tax	\$ 18,282	1.86%
27		Write Up	\$ 13,615	1.38%
28	May Total		\$ 66,785	6.78%
29		Audit	\$ 19,012	1.93%
30		Consulting	\$ 29,876	3.03%

- hh. **Controlling Number Formats**<sup>(226)</sup> – To change the number format for a field, in the PivotTable, right-click the field of interest and select **Values Field Settings**, then click the **Number Format** button at the bottom of the dialog box. Thereafter, all of the cells that contain the word “Tax” are formatting with a green background fill, as shown.

3	Month	Dept	Sum of Revenue	Percentage
4	January	Audit	\$ 42,814	4.35%
5		Consulting	\$ 22,165	2.25%
6		Tax	\$ 33,564	3.41%
7		Write Up	\$ 16,610	1.69%
8	January Total		\$ 115,153	11.70%
9	February	Audit	\$ 33,669	3.42%
10		Consulting	\$ 17,618	1.79%
11		Tax	\$ 37,410	3.80%
12		Write Up	\$ 19,266	1.96%
13	February Total		\$ 107,963	10.97%

- ii. **Preserve (or Discard) Formatting on Refresh**<sup>(227)</sup> - To save the PivotTable layout and format so that it is used each time that you perform an operation on the PivotTable, right-click any cell on the PivotTable and select PivotTable Options. Next, on the Layout and Format tab, check the checkbox labeled Preserve cell formatting on update.





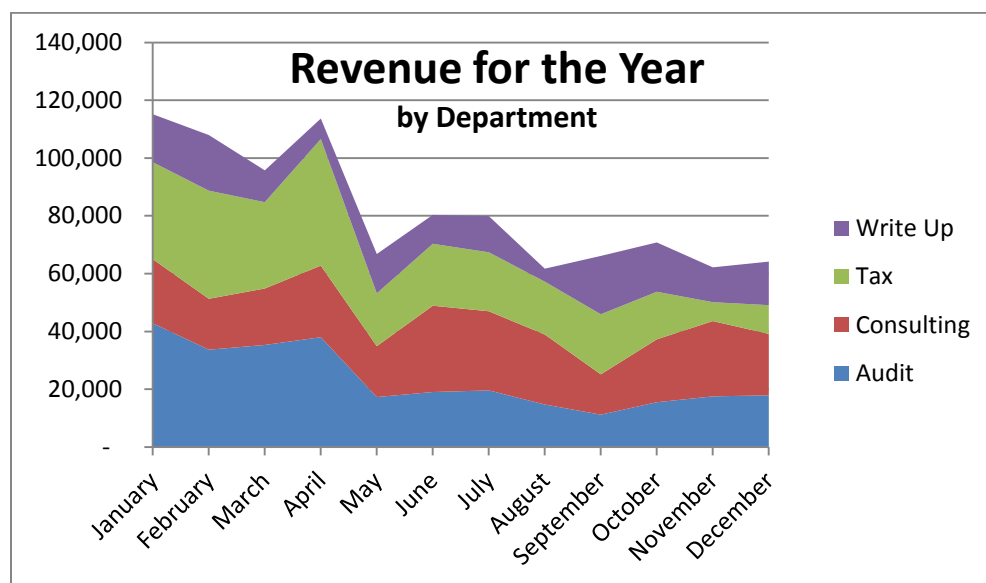
# PivotCharts

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## Chapter 9

**21. PivotCharts** – When you create a PivotChart, the process actually creates a PivotTable and a PivotChart tied to that PivotTable<sup>(230)</sup>. Like a PivotTable report, a PivotChart report is interactive. When you create a PivotChart report, PivotChart report filters are displayed in the chart area so that you can sort and filter the underlying data of the PivotChart report. Changes that you make to the field layout and data in the associated PivotTable report are immediately reflected in the PivotChart report.

A PivotChart displays data series, categories, data markers, and axes just as standard charts do. You can also change the chart type and other options such as the titles, the legend placement, the data labels, and the chart location as follows:



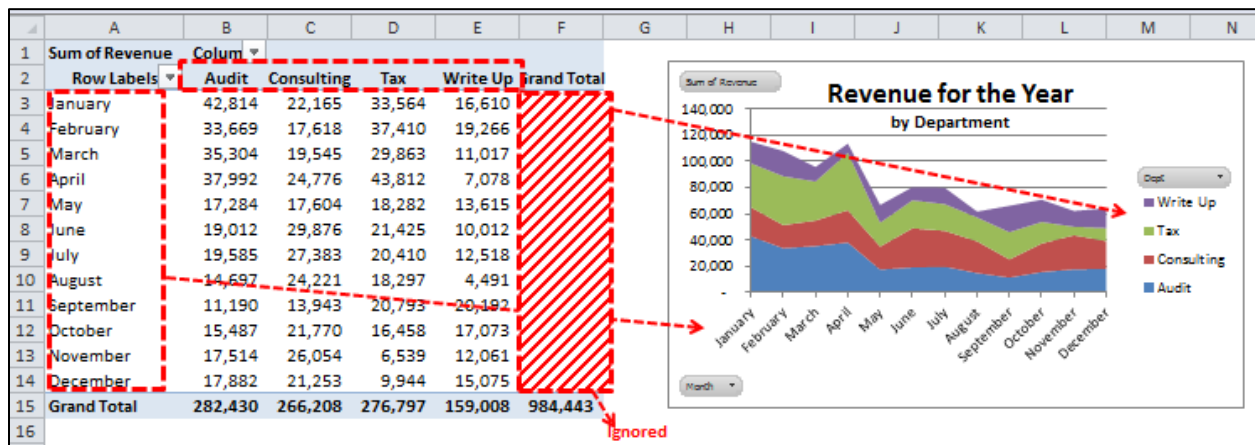
### PivotChart Points:

**22. Two Ways to Create a PivotChart<sup>(231)</sup>** - You can automatically create a PivotChart report when you first create a PivotTable report, or you can create a PivotChart report from an existing PivotTable report.

**23. Creating the PivotChart from Raw Data** - When you create the PivotChart report first, you determine the chart layout by dragging fields from the **PivotTable Field List** to specific areas on the chart sheet.

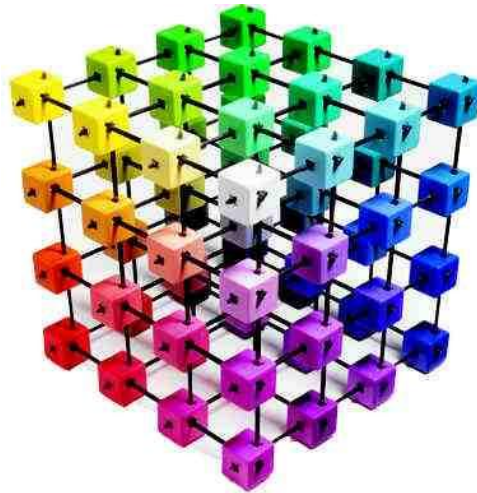
**24. Creating the PivotChart from a PivotTable** - When you create a PivotChart report from a PivotTable report, the layout of the PivotChart report, that is, the position of its fields is determined initially by the layout of the PivotTable report.

**25. Subtotals are Ignored<sup>(232)</sup>** - The Totals and Subtotals of an associated PivotTable report are ignored in a PivotChart report.



**26. Differences between a PivotChart and a Standard Chart** - Most operations are the same in PivotChart reports. However, there are some differences<sup>(233)</sup>, as follows:

- Row/Column Orientation** - Unlike a standard chart, you cannot switch<sup>(234)</sup> the row/column orientation of a PivotChart report by using the **Select Data Source** dialog box. However, you can pivot the Row and Column labels of the associated PivotTable report to achieve the same effect.
- Chart types** - You can change a PivotChart report to any chart type except an xy (scatter), stock, or bubble chart<sup>(235)</sup>.
- Source Data** - Standard charts are linked directly to worksheet cells. PivotChart reports are based on the data source of the associated PivotTable report<sup>(236)</sup>. Unlike a standard chart, you cannot change the chart data range in the **Select Data Source** dialog box of a PivotChart report.
- Formatting** - Most formatting, including chart elements that you add, layout, and style, is preserved when you refresh a PivotChart report. However, trendlines, data labels, error bars, and other changes to data sets are not preserved<sup>(237)</sup>. Standard charts do not lose this formatting once it is applied.
- Font Size<sup>(238)</sup>** - Although you cannot directly resize the data labels in a PivotChart report, you can increase the font size of the text to effectively resize the labels, which is effectively the same thing.



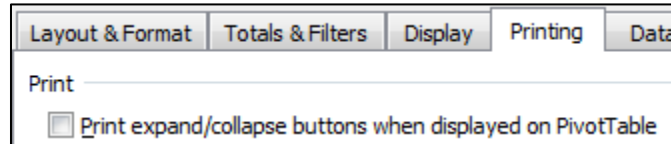
# Printing PivotTables & PivotCharts

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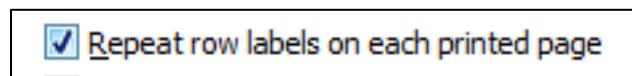
## Chapter 10

The process of printing a PivotTable or PivotChart is not much different than printing a standard Excel worksheet page, with the following exceptions.<sup>(239)</sup>

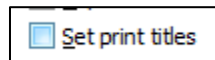
- i. **Expand/Collapse Buttons**<sup>(240)</sup> - The PivotTable Options dialog box's Printing tab provides options for Printing the expand/collapse buttons when they are displayed on a PivotTable.



- ii. **Repeating Row Labels**<sup>(241)</sup> - The PivotTable Options dialog box's Printing tab provides options for repeating row labels on each printed page, which is slightly different than the Print Manager's tools for repeating row labels (although the both accomplish the same goal).



- iii. **Setting Print Titles**<sup>(242)</sup> - The PivotTable Options dialog box's Printing tab provides options for setting Print Titles to appear on each page, which is slightly different than the Print Manager's tools for setting Print Titles (although the both accomplish the same goal).



#### A few important printing notes:

- a. Arranging each PivotTable on a separate worksheet will make them easier to print<sup>(243)</sup>. That way you won't have to take extra time to specify the print range area.
- b. Orienting the worksheet to landscape or portrait to match the shape of the PivotTable Report can be helpful.
- c. Setting margins to narrow could help you display PivotTables using a slightly larger font which may be more readable.
- d. You might try forcing page breaks in larger PivotTable Reports to make them more readable.

- e. **Preview before You Print** - Some PivotTable designs may look good on one screen, but may not print well on your printer<sup>(244)</sup>, particularly on a black and white page. Be sure to use a design that works well before you print.

The screenshot shows the Microsoft Excel interface with the 'Print' ribbon selected. The ribbon includes options for 'Print', 'Printer', 'Settings', and 'Pages'. The 'Print' section shows 'Copies: 1' and a 'Print' button. The 'Printer' section shows 'Carlton's HP 4300' as the selected printer. The 'Settings' section includes 'Print Active Sheets' (set to 'Only print the active sheets'), 'Print on Both Sides' (set to 'Flip pages on long edge'), 'Collated' (set to '1,2,3'), 'Portrait Orientation', and 'Letter' paper size (8.5" x 11"). The 'Pages' section shows 'Pages: 1 to 5'. The PivotTable report is titled 'Analysis of Course Attendance by City - Past 2 Years' and displays a table with columns for 'Average Attendance', 'Column Labels', 'Course', 'Set Revenue', '% to Total', and 'Accum %'. The table lists various cities and their corresponding attendance and revenue data.

Average Attendance	Column Labels	Course	Set Revenue	% to Total	Accum %
57			7125	5.2%	5.2%
54			6775	4.9%	10.0%
51			6275	4.6%	14.6%
45			4425	3.2%	22.4%
41			5125	3.7%	26.1%
41			5100	3.7%	29.8%
39			4825	3.5%	33.2%
36			4525	3.3%	36.5%
36			4460	3.2%	39.8%
35			4375	3.2%	43.0%
32			4000	2.9%	45.9%
31			2875	2.1%	48.7%
30			3750	2.7%	51.4%
28			3500	2.5%	53.9%
27			3350	2.4%	56.3%
26			3250	2.3%	58.7%
26			3224	2.3%	61.0%
25			3068	2.2%	63.2%
24			2401	1.7%	65.0%
24			3000	2.2%	66.1%
24			3000	2.2%	68.2%
24			3000	2.2%	70.5%
22			2812	2.0%	72.5%
21			2625	1.9%	74.4%
21			2625	1.9%	76.2%
21			2678	1.9%	77.8%
20			2550	1.8%	79.6%
20			2500	1.8%	81.4%
18			2188	1.6%	83.0%
17			2179	1.6%	84.6%
17			2125	1.5%	86.1%
17			2125	1.5%	87.7%
15			1857	1.4%	89.1%
15			1875	1.4%	90.4%
15			1822	1.3%	91.7%
14			1668	1.2%	93.0%
13			1625	1.2%	94.1%
11			1375	1.0%	95.1%
11			1312	0.9%	96.1%
8			1000	0.7%	96.8%
8			875	0.6%	97.4%
28		Grand Total	2560	2.0%	100.0%

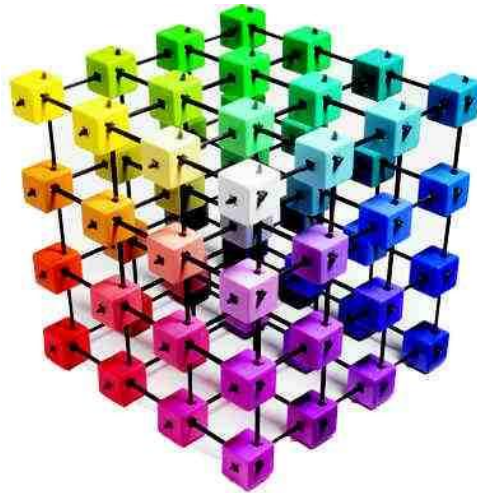
- f. **Saving Ink** - Some PivotTable designs use more ink than others, which could cost you more money in the long run. That said, choose your PivotTable designs wisely.
- g. **Selecting Colors**<sup>(245)</sup> - Some companies use certain printer colors more than others, often because of their company colors are used more often than other colors. Therefore if you find that you have a surplus of a certain toner cartridge (magenta for example), you might consider using that color more in your PivotTable design selection rather than those toner cartridge colors that are used more often.
- h. **Background Images** - You can't add a background image to a PivotTable Report, but you can insert a background image in your worksheet and adjust row heights and font sizes to achieve a similar affect, if it is important to you. Sometimes I like to create a Chart of the data, then positioning it transparent style behind my PivotTable data.
- i. **Organizing PivotTables on a Single Page**<sup>(246)</sup> - To print PivotTable reports on a single page, you can use the PivotTable Tools Move command to move them to the same



Tip On Fire →

worksheet. As an alternative, you could use the Excel Camera tool to take a snapshot of the various PivotTables and organize them on a single worksheet for printing.

- j. **Banded Rows**<sup>(247)</sup> - Banding rows may make it easier for readers to read the printed PivotTable, particularly if the PivotTable spans multiple printed pages.
- k. **Compact Form**<sup>(248)</sup> - Using the Compact format for printing will allow you to fit more data on the printed page and can make the data a little easier to read.
- l. **Design Tip**<sup>(249)</sup> - You can apply design styles to your slicers so they match your PivotTable Design Styles.



# Reporting & Archiving PivotTables & PivotCharts

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## Chapter 11



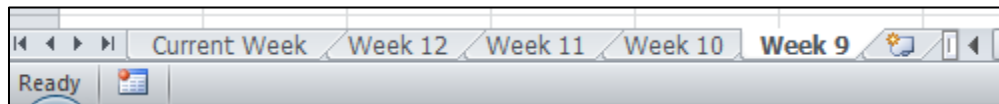
## Archiving PivotTables Data

Because raw data usually changes over time, many users who update their raw data regularly want to take snapshots of their existing PivotTable data at specified intervals. While there are no specific tools for achieving this goal, there many ways to achieve this same result as follows:

- i. **Save Copies Of The File**<sup>(250)</sup> - Save a copy of the file regularly using an identifying file name. For example, if you produce a weekly PivotTable named **2012 Sales and Commissions.xlsx**, then each week before updating the file, you could save the file as:
  1. 2012 Sales and Commissions Week 1.xlsx
  2. 2012 Sales and Commissions Week 2.xlsx
  3. 2012 Sales and Commissions Week 3.xlsx
  4. 2012 Sales and Commissions Week 4.xlsx
  5. And so on...

**Benefit** - The benefit to this approach is that you can go back and change the raw data, drill the data, perform what-if calculations, etc.

- ii. **Duplicate The Worksheet**<sup>(251)</sup> – Another approach might be to duplicate the worksheet containing the PivotTable, break the PivotTable's links to the raw data (so the data is no longer updated), then rename the worksheet. This approach would result in a single workbook containing many worksheets, and might appear as follows.



Here are steps to follow:

- To create a duplicate worksheet, click and drag the PivotTable's worksheet tab to the right while holding down the **Ctrl** key.
- Double click the new worksheet tab and enter a new tab name.
- PivotTables don't have links to the raw data, they have a data source, and removing that data source destroys the PivotTable. Therefore to break the link you need to:
  - Copy and Paste the PivotTable Using Paste value (which loses the formatting)
  - Paste the PivotTable into Word, and then back to Excel. This action will produce a Paste value copy of the PivotTable and retain the formatting.

- Use Excel's camera tool to Copy and Paste the PivotTable in Excel as a picture. (The camera tool is a hidden tool which must be added to the Quick Access Tool bar or Ribbon before it can be used.)

**Benefit** - The benefit to this approach is that you will have all of the archived PivotTables in one workbook, not spread across multiple workbooks.

iii. **Create an Archive Worksheet**<sup>(252)</sup> - Copy and paste the PivotTable data to a single worksheet, breaking the link as you paste as follows:

- Copy and Paste the PivotTable Using Paste value (which loses the formatting)
- Paste the PivotTable into Word, and then back to Excel. This action will produce a Paste value copy of the PivotTable and retain the formatting.
- Use Excel's camera tool to Copy and Paste the PivotTable in Excel as a picture. (The camera tool is a hidden tool which must be added to the Quick Access Tool bar or Ribbon before it can be used.)

	A	B	C	D	E	F	G	H	I
1	<b>January</b>								
2	Average of Attendance		Column Labels			↓Y		% to	Accum
3	Row Labels		Course			Est Revenue		Total	%
4	QuickBooks				33	4,092		114.9%	114.9%
5	Excel				32	3,982		111.9%	226.8%
6	Communications				25	3,175		89.2%	316.0%
7	Technology				25	3,088		86.7%	402.7%
8	Office				17	1,683		47.3%	450.0%
9	Other				16	2,000		56.2%	506.1%
10	Security				16	1,975		55.5%	561.6%
11	Grand Total				28	3,560		100.0%	661.6%
12	<b>February</b>								
13	Average of Attendance		Column Labels			↓Y		% to	Accum
14	Row Labels		Course			Est Revenue		Total	%
15	QuickBooks				33	4,092		114.9%	114.9%
16	Excel				32	3,982		111.9%	226.8%
17	Communications				25	3,175		89.2%	316.0%
18	Technology				25	3,088		86.7%	402.7%
19	Office				17	1,683		47.3%	450.0%
20	Other				16	2,000		56.2%	506.1%
21	Security				16	1,975		55.5%	561.6%
22	Grand Total				28	3,560		100.0%	661.6%
23	<b>March</b>								
24	Average of Attendance		Column Labels			↓Y		% to	Accum
25	Row Labels		Course			Est Revenue		Total	%
26	QuickBooks				33	4,092		114.9%	114.9%
27	Excel				32	3,982		111.9%	226.8%

**Benefit** - The benefit to this approach is that you will have all PivotTable archives on a single worksheet, for easier reference.



Tip On Fire → iv.

**Create an Archive Word Document**<sup>(253)</sup> - Copy and paste each PivotTable data to a single word document, breaking the link as you paste as follows:

- Copy and Paste the PivotTable to Word.
- Copy and Paste the PivotTable to Word as a picture. You can use the camera tool or simply copy the PivotTable and Paste as Picture.

**Benefit** - The benefit to this approach is that you can organize comments and notes along with each PivotTable to produce a chronological archive of all data and executive comments regarding that data.

## Sharing PivotTables with Others

Of course, often the whole point of preparing PivotTable reports is in order to share the information with others. That said, what is the best way to present PivotTables or PivotTable information to others? Listed below are a variety of approaches, including a summary of the benefits each offers.

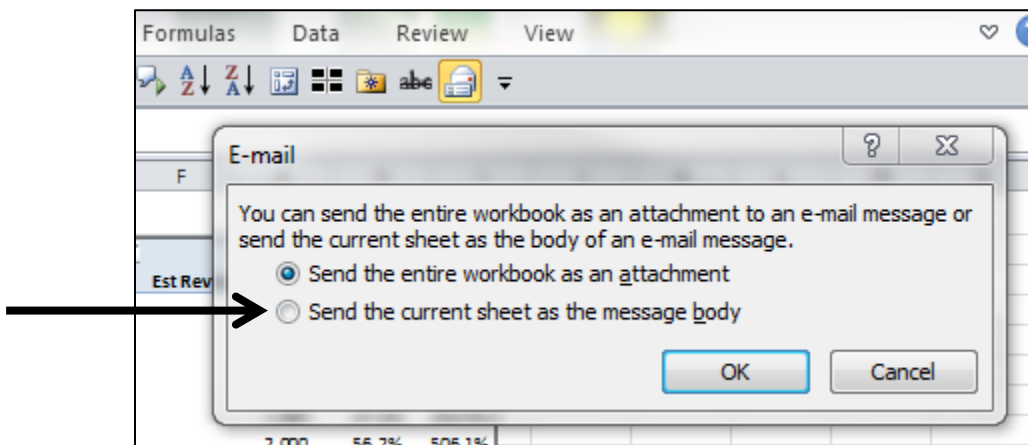
1. **E-Mail the Entire PivotTable Workbook**<sup>(254)</sup> – In my opinion, perhaps the best way to share a PivotTable is to email the entire workbook to your recipients. If you are concerned that recipients may unintentionally (or intentionally) alter the raw data sources, then apply worksheet protection passwords before sending. This approach has several benefits as follows:
  - m. It serves notice to the recipient that the new PivotTable report is available.
  - n. It enables the recipients to save the workbook to a location and file name of their choosing. (If you simply save your workbook to a shared file server, the recipient may accidentally and unknowingly open the wrong file).
  - o. Providing the full workbook enables the recipients to drill the data, manipulate the data, slice the data, format the data, and so on to their particular preference.

A drawback to this approach is that emails are naked and vulnerable to hackers, unless you have encrypt your email or workbook.

2. **E-Mail a Link to The PivotTable Workbook on your File Server**<sup>(255)</sup> – Because your workbook might be too big (over 10 MBs) it may not be deliverable via email. In this

case, emailing a link to the file may be a good alternative. This approach provides all the benefits as described in approach 1 above, but has the disadvantage in that your recipient may not be sitting at their desk, they may be traveling without easy access to the file server. This approach is more secure than using unprotected email to send your PivotTable Workbook.

3. **Share the PivotTable Workbook via the Cloud**<sup>(256)</sup> – By uploading your PivotTable Workbook to the cloud (using DropBox, Microsoft Sky Drive, Google Docs, etc.), your recipient can access the file from that cloud based location. Thereafter, you can send the recipients a link via email, or using the cloud's share tools which essentially provides the recipients with a link so they can securely access the PivotTable Workbook. While this approach takes two steps (instead of one step as described in approach one above), it may actually be the best solution for many.
4. **Email the PivotTable Worksheet Only**<sup>(257)</sup> – Excel provides a tool which enables you to email only the worksheet containing the PivotTable to your recipients. This tool integrates with outlook so you can select recipients from your contacts or contact groups. To use this tool, you must first add it to your Ribbon or Quick Access Toolbar for Excel's Commands Not in the Ribbon.



This approach will convert the PivotTable into Values, so the recipient will not be able to drill, slice, manipulate or format the data using the Excel PivotTable tools, but in many cases, you only intend to share the results of your PivotTable without the underlying Excel PivotTable functionality.



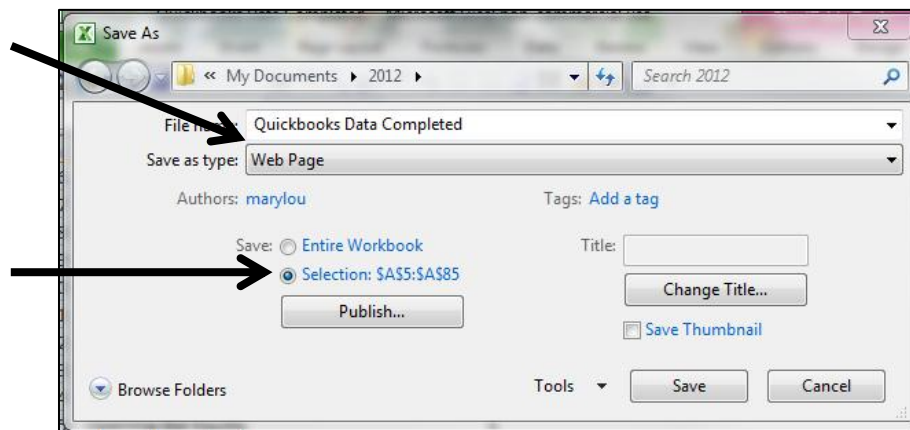
- Tip On Fire → 5. **Email Snapshots**<sup>(258)</sup> – Another approach is to email snapshot images of your PivotTables. The primary reason for using this approach is that the resulting images behave – there is no risk that formatting problems will occur, which can be the case when you send a table of data.

6. **Publish PivotTable Reports to the Internet (or an Intranet)**<sup>(259)</sup> – I like Excel's ability to publish a workbook, worksheet or range selection to the Internet as a web page; especially using the tool's built-in auto-republishing feature which updates the internet web page each time you save your workbook.

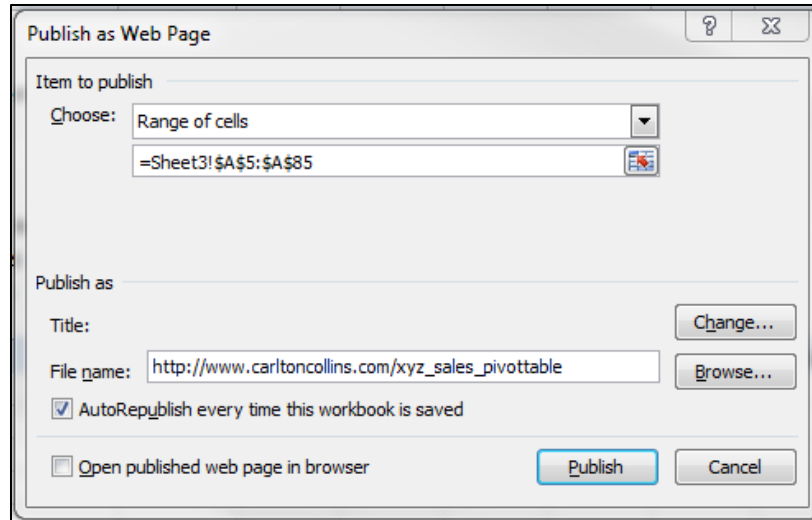
The drawbacks to using this approach are that the tool is sometimes a little buggy, and you probably don't mean to share your data with the world.

To publish a PivotTable to the Internet:

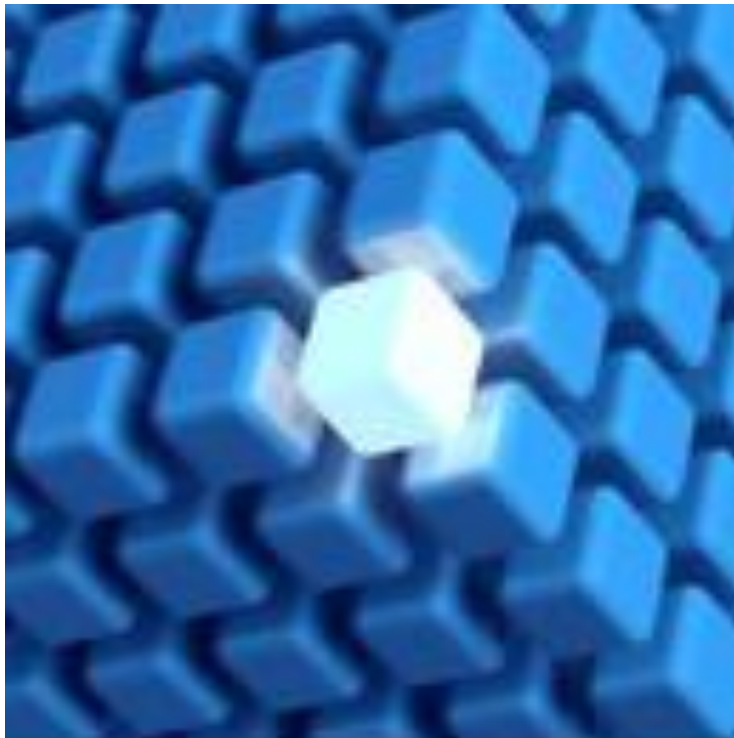
1. Highlight the PivotTable.
2. Select **File, Saves As**, and select **Web Page**.
3. Check the checkbox labeled **Selection**.

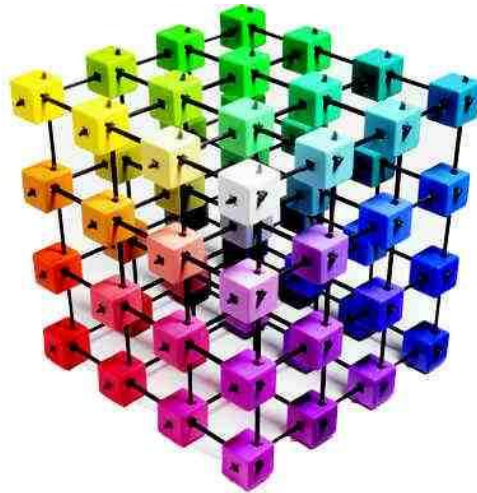


4. Next click the **Publish** button.
5. In the File name box, enter the full web address to your web site and include an appropriate file name. For example, below I have entered: [http://www.carltoncollins.com/xyz\\_sales\\_pivottable1.mht.htm](http://www.carltoncollins.com/xyz_sales_pivottable1.mht.htm). Place a check in the checkbox labeled **AutoRepublish every time this workbook is saved**.



This action will not only publish your PivotTable to the Internet, it will update it automatically each time you save your Excel workbook to your hard drive.





# Linking PivotTables to Accounting Systems

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## Chapter 12

## Database Queries

Microsoft Excel can query data from an external data source (such as your accounting system) and return that data in the form of a PivotTable<sup>(260)</sup>. Using Microsoft Query, you can connect to external data sources, select data from those external sources, import that data into your worksheet, and refresh the data as needed to keep your worksheet data synchronized with the data in the external sources. To create a simple query, use the Query Wizard, or to create a more complex query use the advanced features of Microsoft Query.

### Preparing to use Microsoft Query:

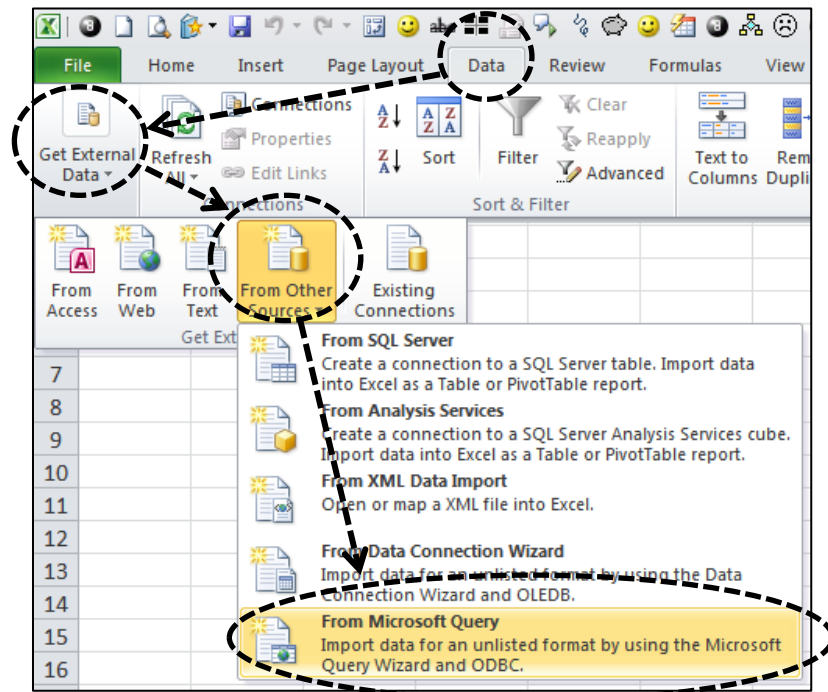
1. **Install Microsoft Query** - If Microsoft Query is not installed on your computer, you will need to install it. This Microsoft web page contains links to numerous articles for setting up Microsoft Query under a variety of conditions and circumstances. <http://office.microsoft.com/en-us/excel-help/CH001003685.aspx>.
2. **Have access to an external data source** - If the data is not on your local computer, you may need to see the administrator of the external database for a password, user permission, or other information about how to connect to the database.
3. **Install the Drivers that match your data** - Microsoft Office provides drivers that you can use to retrieve data from the following data sources:
  - Microsoft SQL Server Analysis Services (OLAP provider)
  - Microsoft Office Access
  - dBASE
  - Microsoft FoxPro
  - Microsoft Office Excel
  - Oracle
  - Paradox
  - Text file databases
4. **ODBC Drivers** - You can use also ODBC drivers (or data source drivers) from other manufacturers to retrieve information from data sources that are not listed above, including other types of OLAP databases. For information about installing an ODBC driver or data source driver, contact your database vendor or better yet, search the web for the term ODBC driver and the name of your database (or accounting system). For example, searching for "QuickBooks ODBC driver" returns the web site [www.QODBC.com](http://www.QODBC.com), where you can download and install a QuickBooks ODBC driver.

Detailed instructions for connecting to a wide variety of data sources is available on this Microsoft web article - <http://office.microsoft.com/en-us/excel-help/use-microsoft-query-to-retrieve-external-data-HA010099664.aspx>.

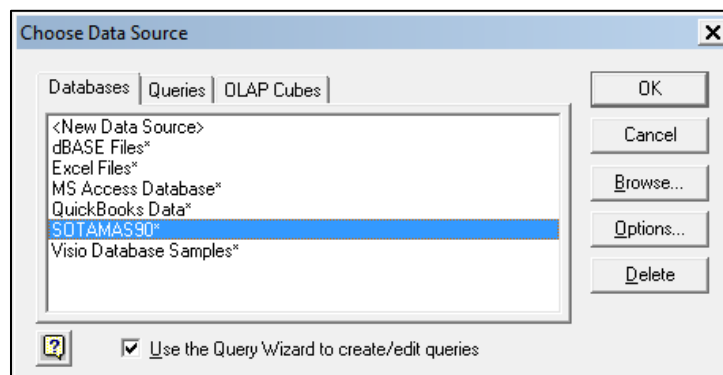


## Example Case Study

As an example, let us assume that our accounting system is Sage MAS 200 ERP, and that we would like to analyze our Customer data in Excel. To use the Database Query Wizard to build a query that will extract the data we need and place it in an Excel spreadsheet, from the **Data** tab, select **Get External Data, From Other Sources, From Microsoft Query**.

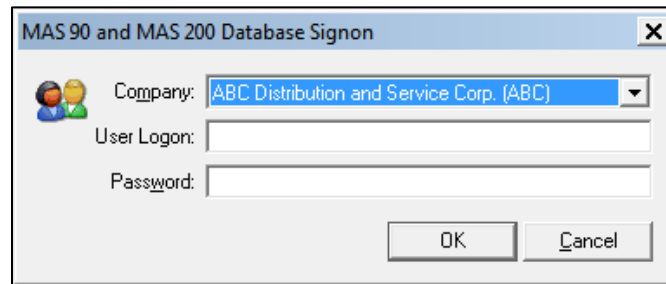


This action will launch the Choose Data Source dialog box pictured below. If Microsoft query is installed and your system has the right database query and ODBC drivers installed, your data source will be displayed in the query list.



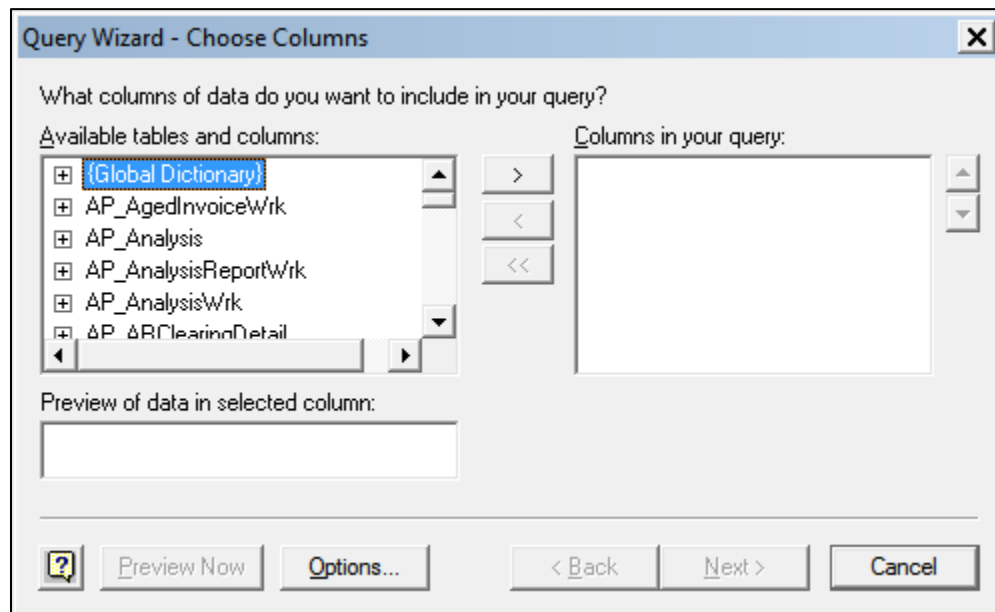
Accordingly, in our example we select MAS 90 and click **OK**. In the next dialog box that appears, we will have the option to select a company to query, and provide our user name and password

to access that company's data. (Remember, a company may be keeping the books for more than one entity on the same accounting system). In this example, I have selected the company called ABD Distribution. Notice also that Excel queries obey the security settings for each database, therefore if the database is password protected, you will need the appropriate logon name and password to continue.



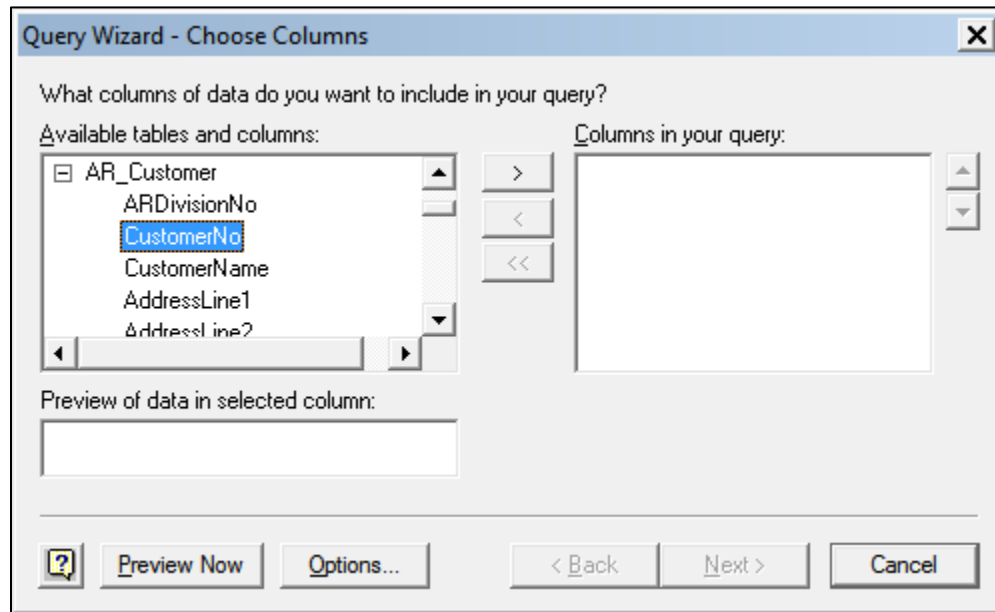
The next dialog box displays the table names for the accounting system. It is normal for an accounting system to have several hundred, if not more than one thousand tables. Further, by rule these table names will not contain spaces and they frequently contain abbreviations. This results in a series of cryptic table names that some CPAs find intimidating. Don't be intimidated, this is normal for a query.

At this juncture, the trick is to figure out which table(s) have the information you are seek. While this is typically the most difficult part of the query process, it doesn't hurt to look in each table. Clicking the Plus sign (+) located in front of each table name will expand the table to display the various field names.

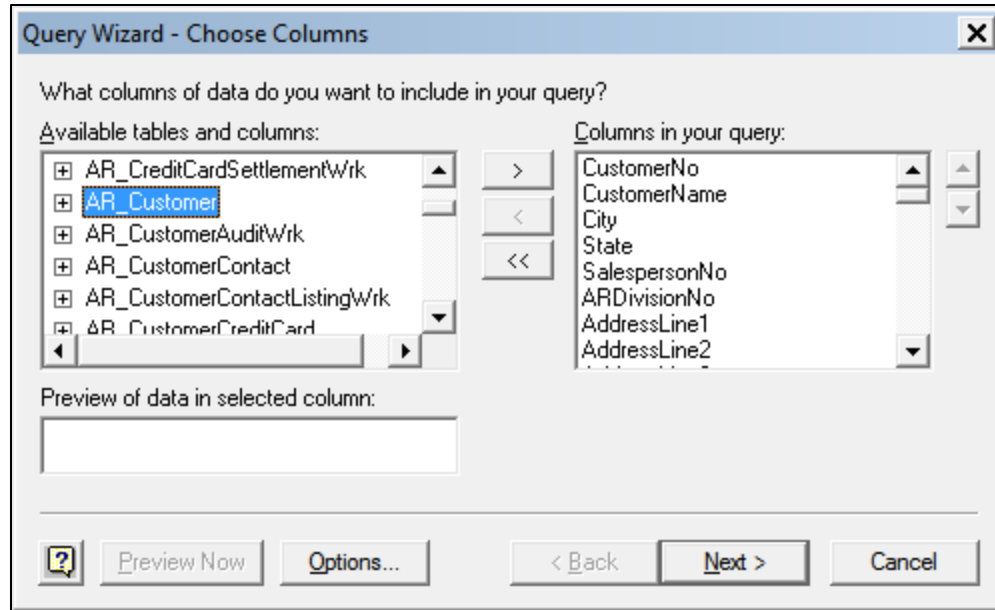


MAS 200 has 57 tables associated with accounts payable, and even more tables associated with accounts receivable, inventory, etc. You can tell that the tables listed in the picture above are

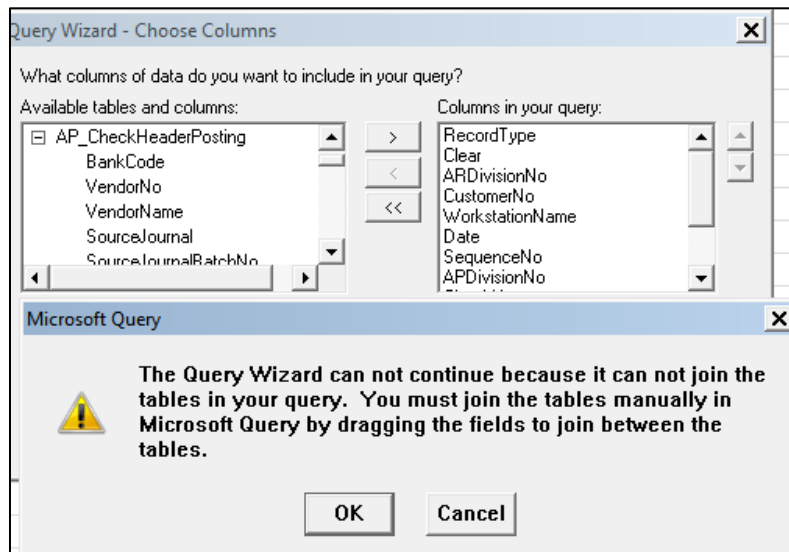
related to accounts payable because they all begin with the phrase “AP”. This is typical, and once you’ve learned how the programmers designed the table names, you can usually navigate them much easier. Below we see that I have scrolled down to the table named **AR\_Customer**, and I have clicked the plus sign to expand the table. This particular table contains approximately 72 fields of data, and as examples, we can see that it contains customer number (**CustomerNo**) and customer name (**CustomerName**) data.



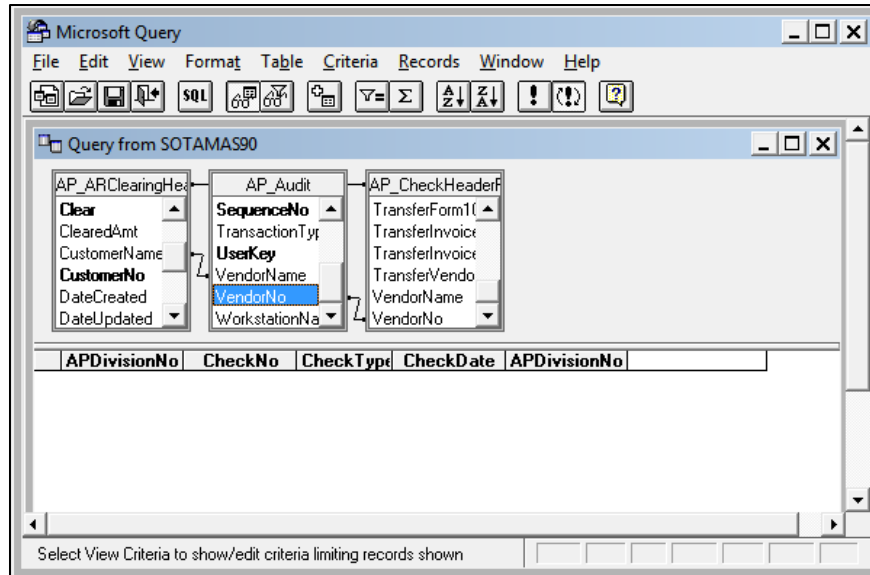
To select data to appear in the resulting PivotTable, select the field name and click the **Greater Than (>)** button to move the field to the Query Column. Or, as an alternative, you can select the table name (**AR\_Customer** in this example) and click the **Greater Than (>)** button to move all of the field names in the table to the Query Column, as is pictured below.



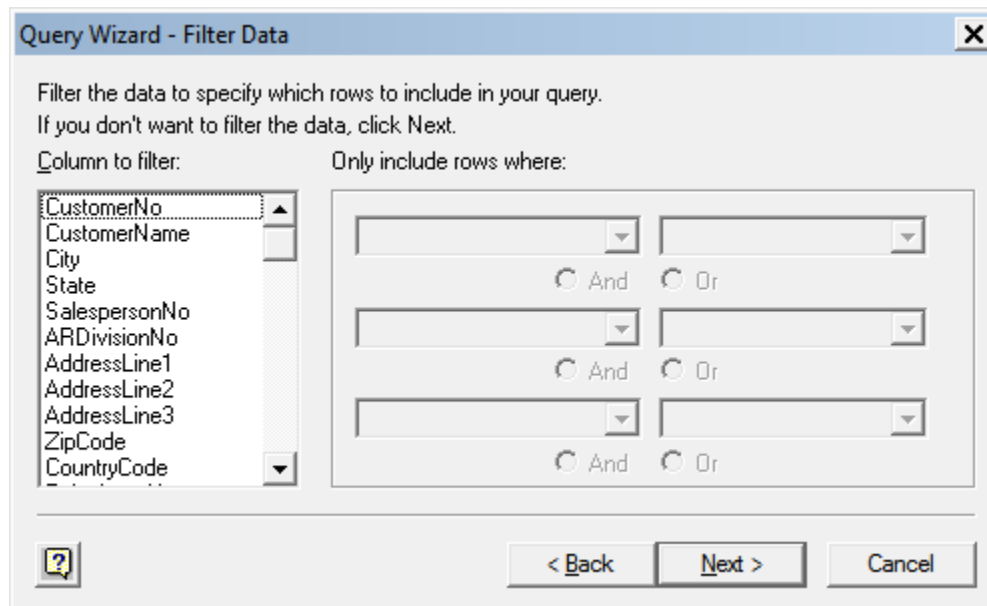
You may or may not be able to select field names from separate tables, depending upon the particular database driver that is installed on your computer system. If this is problematic, an error message will be displayed similar to the one shown below.



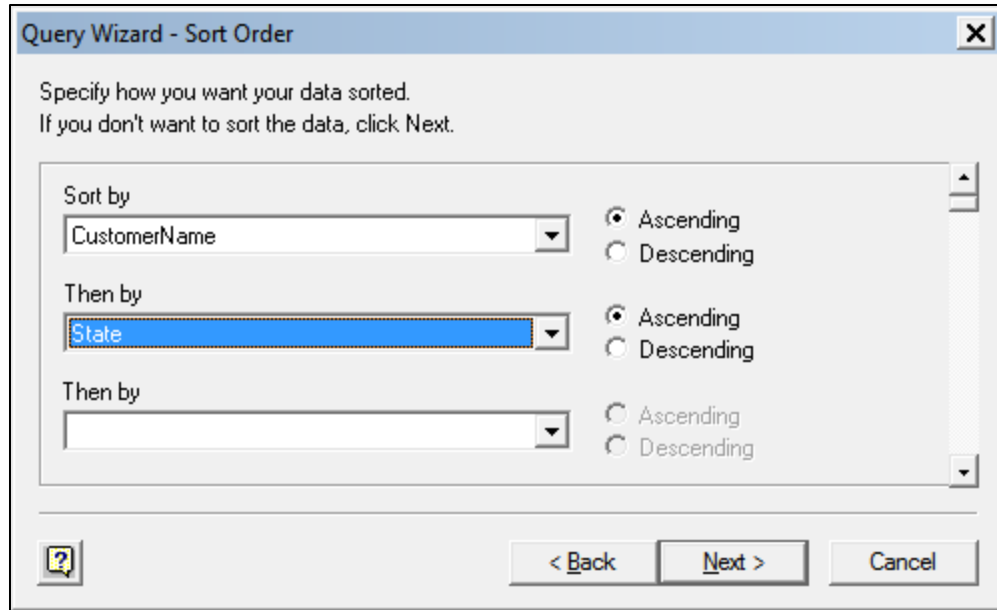
In many cases, you will be able to select field names from different tables, however you will need to join them together manually using the advanced Microsoft Query tools pictured below. In this example I dragged the field names **VendorNo** in the second box to the field name **VendorNo** in the third box. You can see a squiggly little line which documents the join.



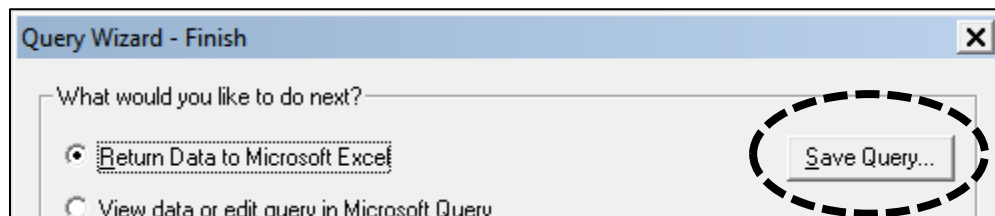
Once you have selected all of the necessary fields you would like to query, click **Next>**. The following dialog box will enable you to filter the data. For example, if I wanted to only query those customers in the state of Michigan, I could select the field name **State** in the left most column and use operators and criteria in the center and right columns (such as **Equals (=)** and **Michigan**) to limit my query.



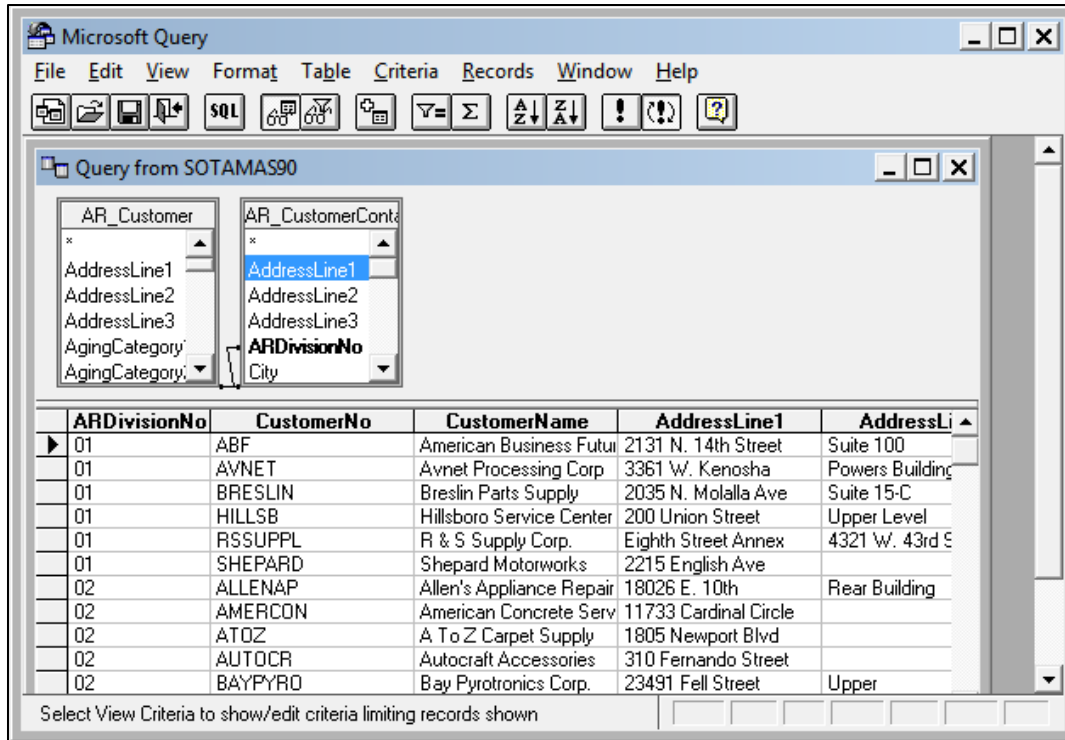
In the next dialog box, we have the option to sort the data. For example, I could select a field name in the left most column and indicate to sort the queried data according to that field name's contents in ascending or descending order.



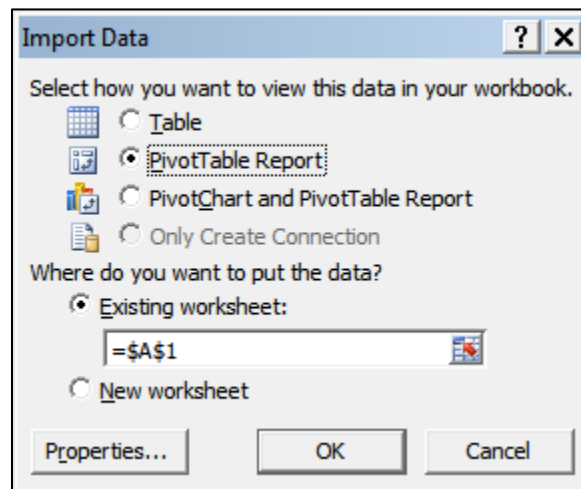
The **Finish** portion of the **Query Wizard** (pictured below) enables us to save our query so we can re-run it quicker in the future.



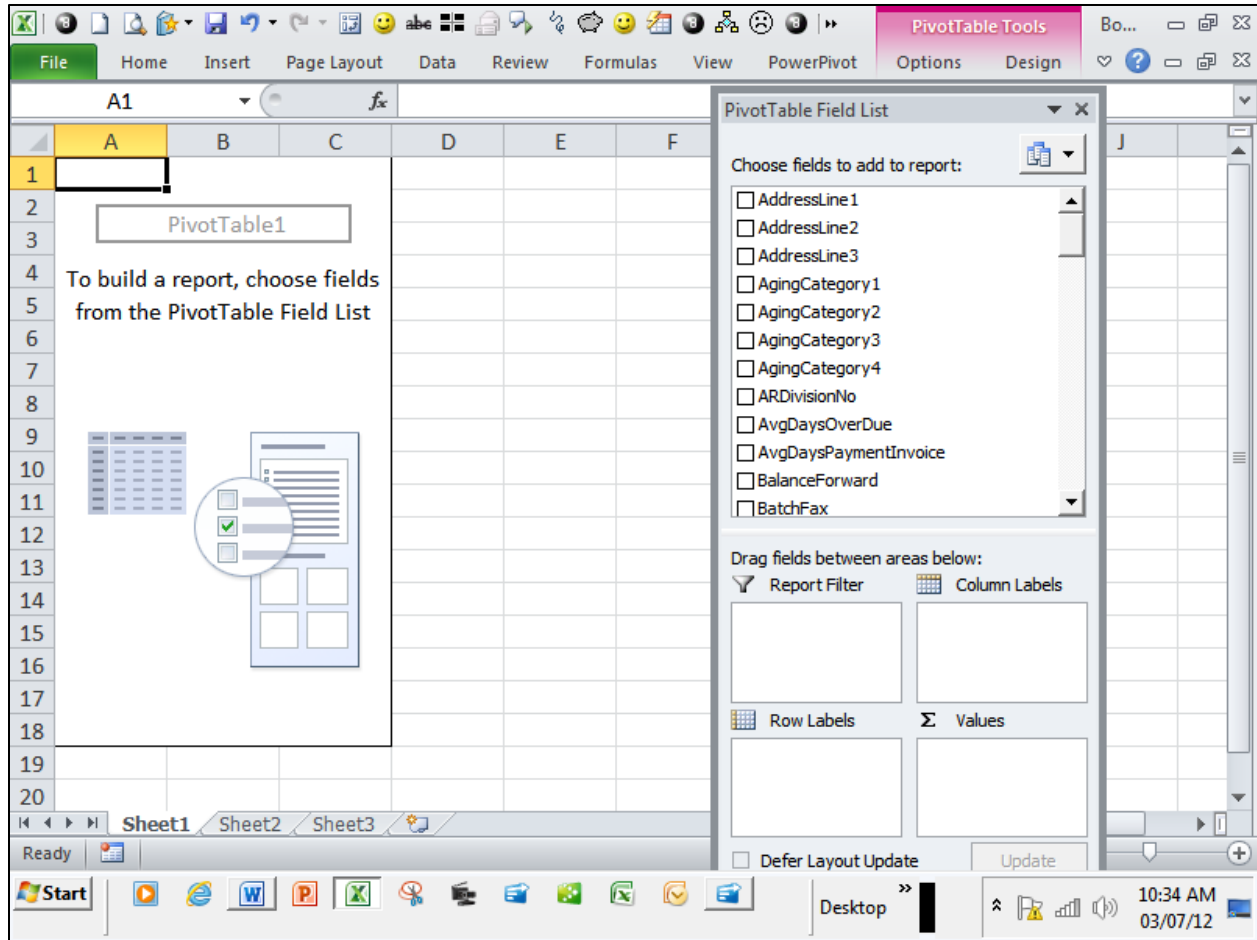
Another option in this dialog box enables us to send our simple query to Microsoft Query where we can add more tables, more fields or apply more advanced query options, as pictured in the screen shot below.



However, in most cases selecting the option to return data to Excel is the primary goal of the query. Therefore selecting this option yields to following final dialog box. In this dialog box, you can choose to return the data to excel as a table of information that is ready for pivoting, or as a PivotTable connected directly to the source data. I would typically recommend that you use the **PivotTable Report** option, then click **OK**.

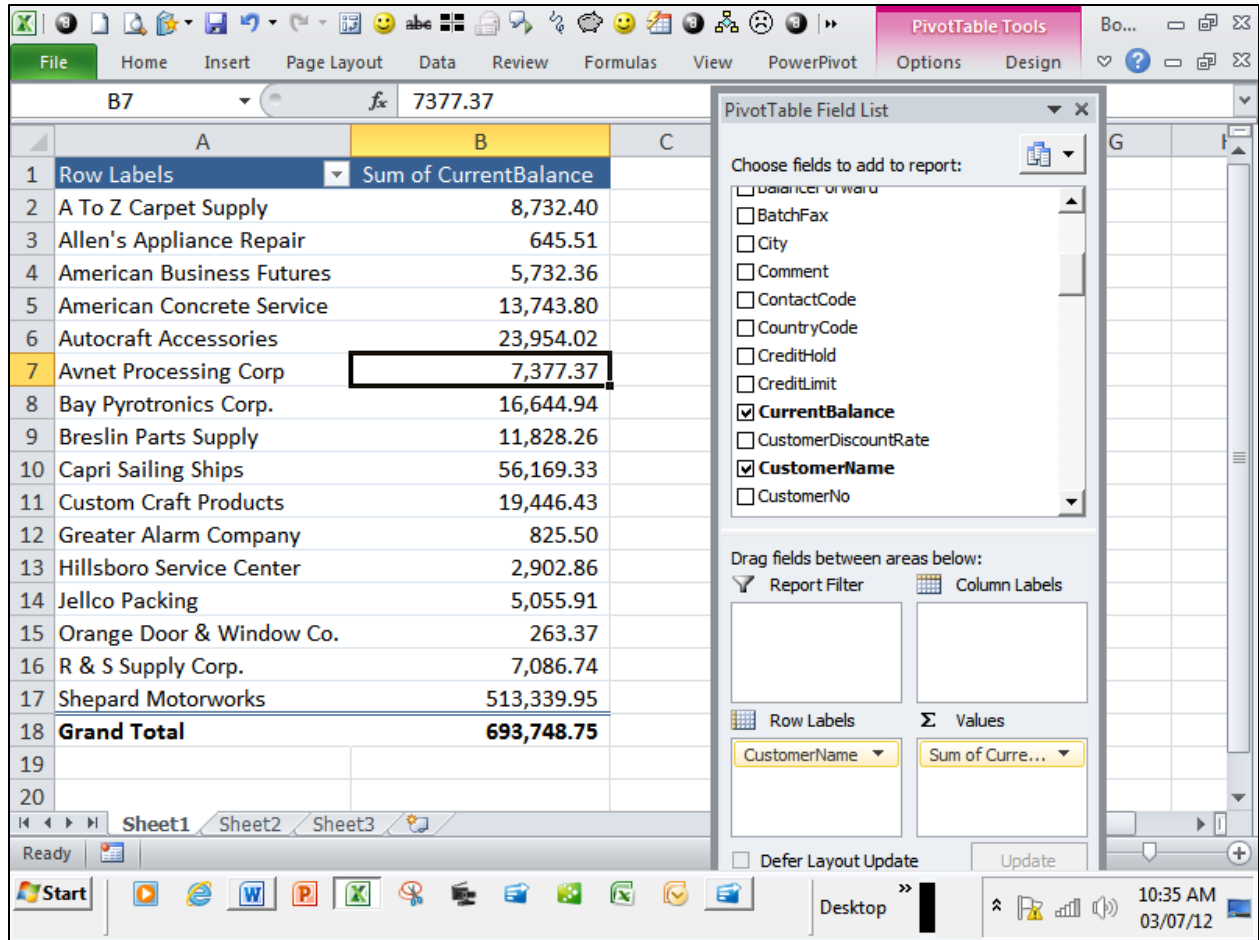


The resulting PivotTable is picture below.

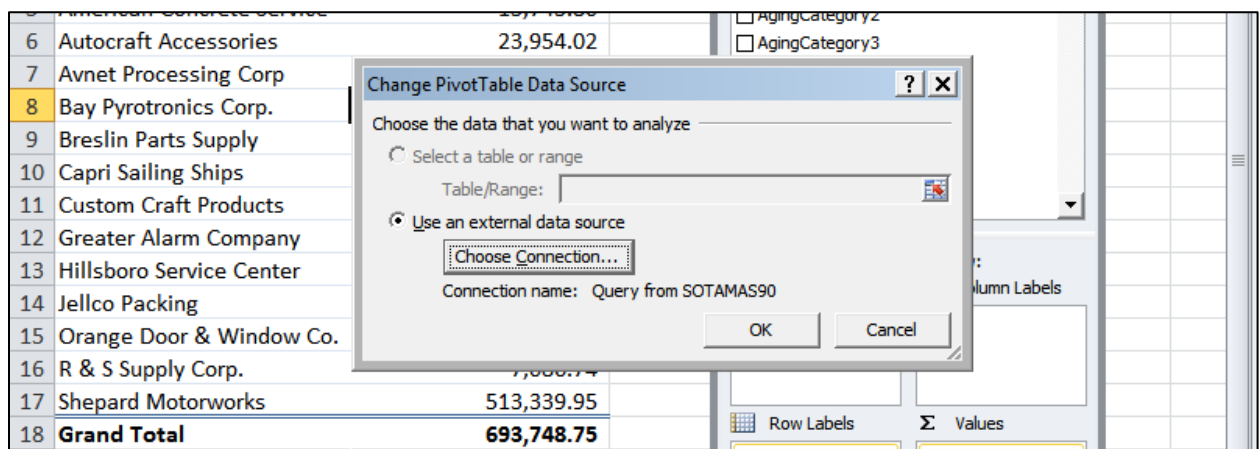


As you can see, the PivotTable pictured above is ready for pivoting. Clicking only a few **Field Names** and apply a PivotTable **Design** quickly yields the desired PivotTable Report, ready for further data analysis, manipulation, formatting, and sharing. The resulting report is ready for slicing and dicing, filtering, drilling, sorting, charting, refreshing, duplicating and sharing.



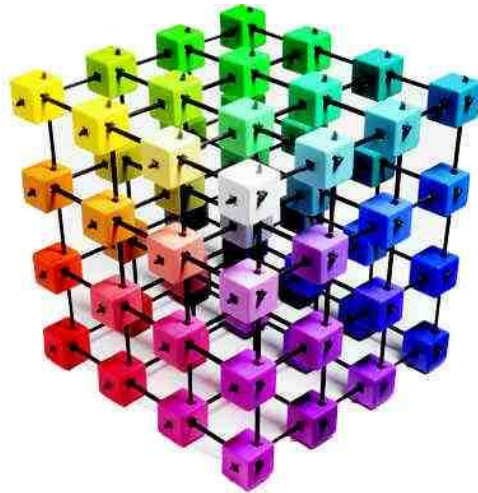


Right clicking on the PivotTable and selecting **Data Sources** reveals that this PivotTable is connected directly to your accounting system, not another table in Excel.



Adding a few Slicers to the PivotTable Report and some extra calculated columns, as shown below, completes the basic creation process for linking an Excel based PivotTable directly to your accounting system.

	A	B	C	D	E	F	G	H
1	Row Labels	Balance	Percent					
2	A To Z Carpet Supply	8,732	1.26%	City		Salesper...		
3	Allen's Appliance Repair	646	0.09%	Anaheim		0100		
4	American Business Futures	5,732	0.83%	Fountain Valley		0200		
5	American Concrete Service	13,744	1.98%	Hillsboro		0300		
6	Autocraft Accessories	23,954	3.45%	Irvine		0400		
7	Avnet Processing Corp	7,377	1.06%	Milwaukee				
8	Bay Pyrotronics Corp.	16,645	2.40%	Molalla				
9	Breslin Parts Supply	11,828	1.70%	Newport Beach				
10	Capri Sailing Ships	56,169	8.10%	Orange				
11	Custom Craft Products	19,446	2.80%					
12	Greater Alarm Company	826	0.12%					
13	Hillsboro Service Center	2,903	0.42%					
14	Jellco Packing	5,056	0.73%					
15	Orange Door & Window Co.	263	0.04%					
16	R & S Supply Corp.	7,087	1.02%					
17	Shepard Motorworks	513,340	74.00%					
18	<b>Grand Total</b>	<b>693,749</b>	<b>100.00%</b>					



# PivotTables

## Miscellaneous Topics

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### Chapter 13


**Tip On Fire → Adding Calculated Columns to PivotTables<sup>(261)</sup>**

Many CPAs struggle with the need to add calculations to their Pivot Table reports. The problem arises when you use your mouse to write a formula that references a cell in a PivotTable. In this case, Excel automatically inserts the GETPIVOTDATA function into your formula along with the PivotTable criteria used to produce that referenced cell shown in the lengthy formula below in cell D2.

=GETPIVOTDATA("January Budget",\$A\$1,"Accounts","Accounting Fees ") - GETPIVOTDATA("January Actual",\$A\$1,"Accounts","Accounting Fees ")									
	B	C	D	E	F	G	H	I	J
	January Actual	January Budget							
	11,119	13,200	=GETPIVOTDATA("January Budget",\$A\$1,"Accounts","Accounting Fees ") - GETPIVOTDATA("January Actual",\$A\$1,"Accounts","Accounting Fees ")						
	1,203	(2,400)							

As a result, copying that formula to other cells does not result in the desired relative references to adjacent cells.

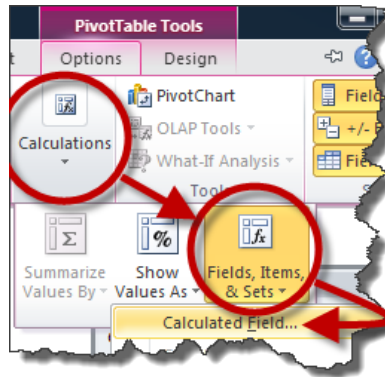
Presented below are two possible solutions to this situation.

1. If you write your formulas by typing cell references into the formula using your keyboard instead of your mouse, Excel does not insert the GETPIVOTDATA function. The screen shot below shows the same formula as pictured above, as created using the keyboard instead of the mouse pointer.

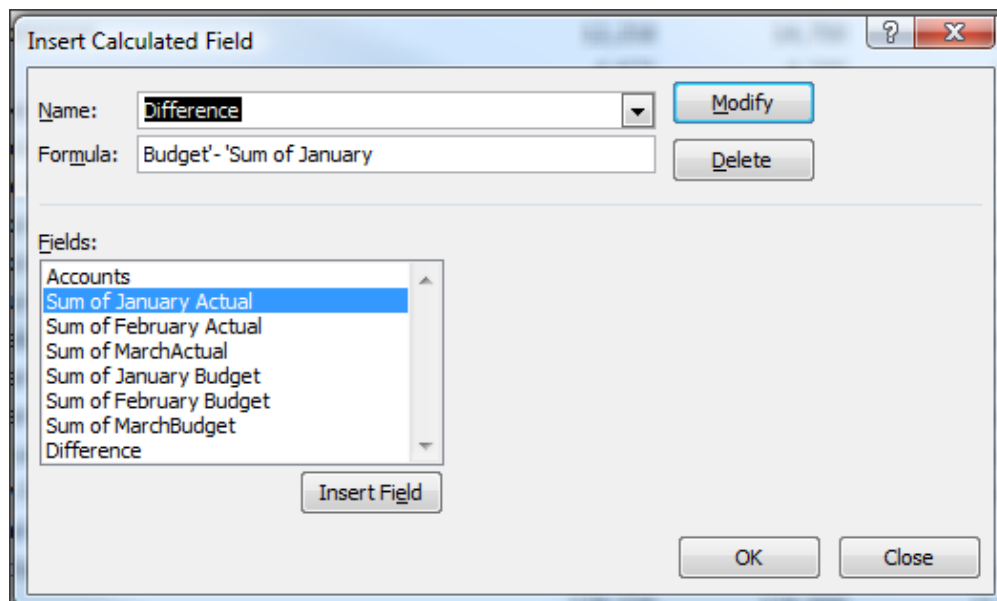
=C2-B2			
	B	C	D
	January Actual	January Budget	
	11,119	13,200	2,081
	1,203	(2,400)	

This simply formula can then be copied down to the cells below to produce the desired column differences. (Note: The key problem with this method is that if you refresh your PivotTable and the data repositions to different cells, your formulas will no longer produce the desired results.)

2. A better method is to insert a new calculation column into your PivotTables using the PivotTable using Excel's **Fields, Item's and Sets** tool. To use this tool in Excel 2010 and 2007, first select a cell within the PivotTable you want to modify. Next, from the **PivotTable Tools** menu, select **Options, Calculations, Fields, items & Sets** as shown.



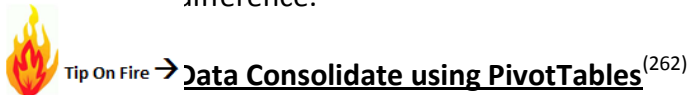
In the resulting **Insert Calculated Field** dialog box, type a name that will appear as the column label in the **Name** box, then create the desired formula you want in the **Formula** box. To create the formula, start by inserting an equals sign, then select the columns you want to appear in your formula from the **Fields** box and click the **Insert Field** button to add them to your formula. (Note: the Formula box displays only one line of your formula at a time; use the left and right arrow keys to view or edit your formula.)



When you have completed your formula click **OK**, and the results will appear as follows:

2081.33			
	B	C	D
	January	January	
	Actual	Budget	Difference
	11,119	13,200	2,081
	1,203	(2,400)	(3,603)

If desired, you could repeat this process to insert another column to calculate the percentage difference.



Consolidating Budgets – CPAs often have a need to consolidate data such as:

- Months
- Departments
- Locations
- Warehouses
- Sale Representatives

In this section we will explore four consolidation methods - two methods for consolidating data that is similar, and two more methods for consolidating data that is dissimilar. These four methods are as follows:

1. Using simple formulas to consolidate similar data.
2. Using spearing formulas to consolidate similar data.
3. Using the “Data Consolidate Command” to consolidate dissimilar similar data.
4. Using the “PivotTable Wizard” to consolidate dissimilar similar data.

**1. Using Simple Formulas To Consolidate Similar Data** - The workbook below contains identical budgets for Departments A, B, C and D. The goal is to consolidate these four budgets into one consolidated budget.

	A	B	C	D	E	F	G
1	<b>Department A - George</b>						
2							
3							
4			<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Total</b>
5	1000	Rent	4,000	4,000	4,000	4,000	16,000
6	2000	Salaries	6,700	7,800	7,800	7,800	30,100
7	3000	Insurance	1,450	1,450	1,450	1,450	5,800
8	4000	Marketing	700	700	700	700	2,800
9	5000	Supplies	500	500	500	500	2,000
10	6000	Entertainment	1,200	-	2,000	-	3,200
11	7000	Contract Labor	3,500	3,500	-	-	7,000
12	8000	Travel	7,500	7,500	7,500	7,500	30,000
13	9000	Miscellaneous	1,750	1,750	1,750	1,750	7,000
14		<b>Totals</b>	<b>27,300</b>	<b>27,200</b>	<b>25,700</b>	<b>23,700</b>	<b>103,900</b>
15							
16							
17							

- **CTRL + Drag Tab** – Select worksheet labeled “Dept D”. Use the CTRL + Drag Tab keystroke combination to create a duplicate worksheet of Dept D.

- **Clean** – Clean the new worksheet by deleting the data in the grid area.
- **Relabel** – Change the worksheet labels in Cells A1 and on the worksheet tab to read “consolidated”.
- **Formula** – In cell C5, enter a formula adding the C5 cells in the four budget sheets. The formula should look like this:

**=Dept A!C5+Dept B!C5+Dept C!C5+Dept D!C5**

- **Copy** – Copy the formula down and across the grid area, and you are done.

**2. Using Spearing Formulas To Consolidate Similar Data** - The workbook below contains identical budgets for Departments A, B, C and D. The goal is to consolidate these four budgets into one consolidated budget.

	A	B	C	D	E	F	G
1	<b>Department A - George</b>						
2							
3							
4			<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Total</b>
5	1000	Rent	4,000	4,000	4,000	4,000	16,000
6	2000	Salaries	6,700	7,800	7,800	7,800	30,100
7	3000	Insurance	1,450	1,450	1,450	1,450	5,800
8	4000	Marketing	700	700	700	700	2,800
9	5000	Supplies	500	500	500	500	2,000
10	6000	Entertainment	1,200	-	2,000	-	3,200
11	7000	Contract Labor	3,500	3,500	-	-	7,000
12	8000	Travel	7,500	7,500	7,500	7,500	30,000
13	9000	Miscellaneous	1,750	1,750	1,750	1,750	7,000
14		<b>Totals</b>	<b>27,300</b>	<b>27,200</b>	<b>25,700</b>	<b>23,700</b>	<b>103,900</b>
15							
16							
17							

- **CTRL + Drag Tab** – Select worksheet labeled “Dept D”. Use the CTRL + Drag Tab keystroke combination to create a duplicate worksheet of Dept D.
- **Clean** – Clean the new worksheet by deleting the data in the grid area.
- **Relabel** – Change the worksheet labels in Cells A1 and on the worksheet tab to read “consolidated”.
- **Formula** – In cell C5, enter a spearing formula that adds cell C5 cells in the four budget sheets. The formula should look like this:

**=SUM('Dept A:Dept D!C5)**

I use the mouse to accomplish this step. Start by typing “=SUM(“, then click on cell C5 in Dept A, hold the shift key down, and click cell C5 in Dept D.

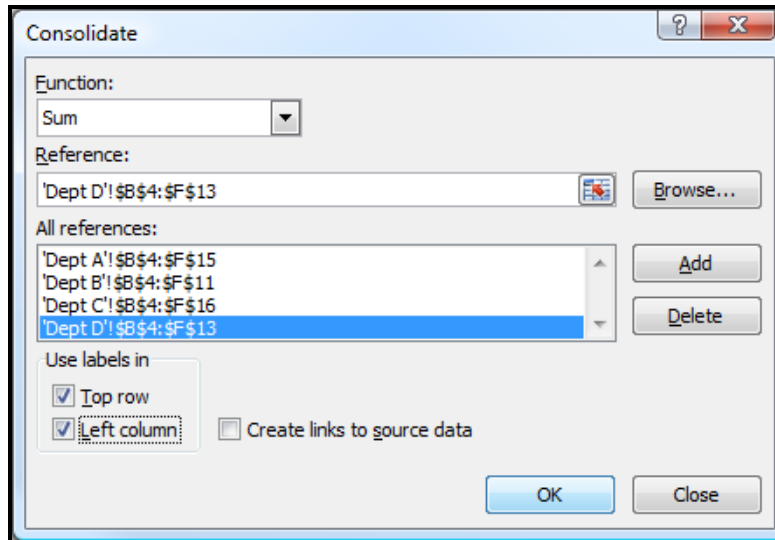
- **Copy** – Copy the formula down and across the grid area, and you are done.

**3. Using the “Data Consolidate Command” To Consolidate Dissimilar Similar Data** - The workbook below contains dis-similar budgets for Departments A, B, C and D. In other words, each worksheet contains some different row descriptions and more or less rows than the other worksheets. The goal is to consolidate these four budgets.

	A	B	C	D	E	F	G
1	<b>Department A - George</b>						
2							
3							
4			<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Total</b>
5	1000	Rent	4,000	4,000	4,000	4,000	16,000
6	2000	Salaries	6,700	7,800	7,800	7,800	30,100
7	2020	Fringe Benefits	1,005	1,170	1,170	1,170	4,515
8	3000	Insurance	1,450	1,450	1,450	1,450	5,800
9	4000	Marketing	700	700	700	700	2,800
10	4010	Advertising	1,350	2,350	3,000	55	6,755
11	5000	Supplies	500	500	500	500	2,000
12	6000	Entertainment	1,200	-	2,000	-	3,200
13	7000	Contract Labor	3,500	3,500	-	-	7,000
14	8000	Travel	7,500	7,500	7,500	7,500	30,000
15	9000	Miscellaneous	1,750	1,750	1,750	1,750	7,000
16		<b>Totals</b>	<b>29,655</b>	<b>30,720</b>	<b>29,870</b>	<b>24,925</b>	<b>115,170</b>
17							

- **New Worksheet** – Insert a new worksheet.
- **Label** – Label the new worksheet in Cells A1 and on the worksheet tab to read “Consolidated”.
- **Select Cell** – Select a blank cell such as B5.
- **Data, Consolidate** – Select Data, Consolidate to display the Consolidate dialog box as shown below. Make sure to click the Cell Choose button, then highlight the data only on Dept A, click “Enter”, and then click “Add”. Repeat this process for Dept B, C and D.





Click the check boxes to use Labels in the “Top Row” and “Left Column”.

- **Finish** – Click OK to produce the results
- **Add Totals** - Highlight your data and expand the selection to include a blank bottom row and blank right column. Click the AutoSum tool, add formatting and you are done.

	A	B	C	D	E	F	G
1	<b>Total Budget for All Departments</b>						
2							
3			Q1	Q2	Q3	Q4	
4		Rent	14,500	14,500	14,500	14,500	58,000
5		Salaries	24,600	24,800	24,800	24,800	99,000
6		Fringe Benefits	1,005	1,170	1,170	1,170	4,515
7		Insurance	2,680	2,150	2,150	2,150	9,130
8		Marketing	1,000	1,000	1,000	1,000	4,000
9		Advertising	1,350	2,350	3,000	55	6,755
10		Supplies	1,460	1,460	1,460	1,460	5,840
11		Equipment	3,240	1,230	679	4,500	9,649
12		Client Gifts	500	500	500	500	2,000
13		Cell Phones	1,250	1,250	1,250	1,250	5,000
14		Entertainment	3,205	1,660	4,830	1,800	11,495
15		Contract Labor	7,050	7,050	50	50	14,200
16		Travel	24,500	24,500	24,500	24,500	98,000
17		Air Fare	4,000	4,000	5,000	2,300	15,300
18		Hotels	2,300	1,450	3,000	2,030	8,780
19		Miscellaneous	5,350	5,350	5,350	5,350	21,400
20			97,990	94,420	93,239	87,415	373,064
21							
22							
23							

#### Comments:

- **Row Descriptions** - Note that the consolidation works only to the extent that the different worksheets contain the same row descriptions. Had you department heads used

the descriptions Rent, Rent EXP, and Rent Expense, then those rows would not actually consolidate but would be shown as three separate rows on the resulting consolidation report.

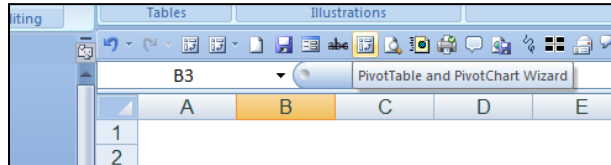
- **Account Numbers** – As an option, you might insert account numbers to the left of the row descriptions to consolidate dissimilar information which contains dis-similar row descriptions.
- **To Update** – To Update the results, place your cursor in the upper left hand corner of the Consolidation range, and rerun the Consolidate command. If the resulting report is a different size, you will need to add totals or clean up left behind data.
- **Consolidate Different Workbooks** – Excel can also consolidate data from different workbooks. The procedure is exactly the same except that you use the Browse button instead of the Cell Chooser button to point to your data ranges.

**4. Using The “PivotTable Wizard” To Consolidate Dissimilar Similar Data** - The workbook below contains dis-similar budgets for Departments A, B, C and D. In other words, each worksheet contains some different row descriptions and more or less rows than the other worksheets. The goal is to consolidate these four budgets.

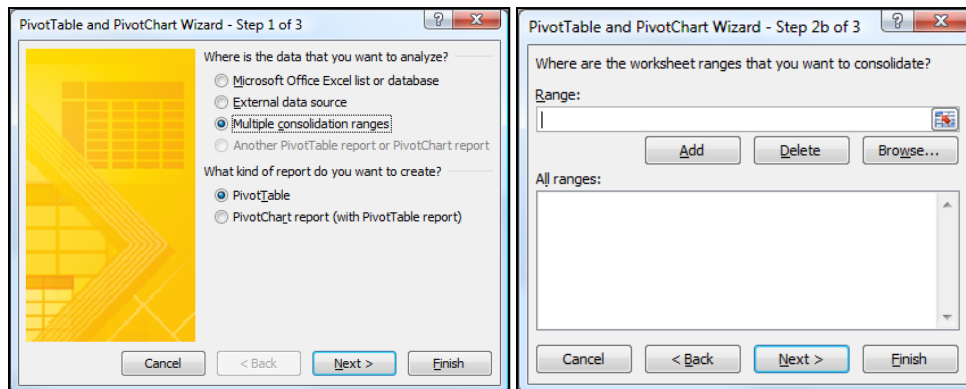
	A	B	C	D	E	F	G
1	<b>Department A - George</b>						
2							
3							
4			<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Total</b>
5	1000	Rent	4,000	4,000	4,000	4,000	16,000
6	2000	Salaries	6,700	7,800	7,800	7,800	30,100
7	2020	Fringe Benefits	1,005	1,170	1,170	1,170	4,515
8	3000	Insurance	1,450	1,450	1,450	1,450	5,800
9	4000	Marketing	700	700	700	700	2,800
10	4010	Advertising	1,350	2,350	3,000	55	6,755
11	5000	Supplies	500	500	500	500	2,000
12	6000	Entertainment	1,200	-	2,000	-	3,200
13	7000	Contract Labor	3,500	3,500	-	-	7,000
14	8000	Travel	7,500	7,500	7,500	7,500	30,000
15	9000	Miscellaneous	1,750	1,750	1,750	1,750	7,000
16		<b>Totals</b>	<b>29,655</b>	<b>30,720</b>	<b>29,870</b>	<b>24,925</b>	<b>115,170</b>
17							

- **New Worksheet** – Insert a new worksheet.
- **Label** – Label the new worksheet in Cells A1 and on the worksheet tab to read “Consolidated”.
- **Select Cell** – Select a blank cell such as B5.

- **PivotTable Wizard** – In Excel 2007 and excel 2010, you must first customize your Quick Access Toolbar and insert the icon titled PivotTable and PivotChart Wizard as shown below. This is a hidden tool in Excel 2007 and cannot be used unless you first add it to your Quick Access Tool bar. (The Insert PivotTable command in Excel 2007 does not allow you to select multiple consolidation ranges).



- **PivotTable** – Click the PivotTable and PivotChart Wizard icon to display the PivotTable and PivotChart Wizard dialog box as shown below. Choose multiple Consolidation ranges and click Next, and Next again. The dialog box on the right should now be displayed.



Click the Cell Chooser button, then highlight the data only on Dept A, click "Enter", and then click "Add". Repeat this process for Dept B, C and D.

- **Finish** – Click "FINISH" to produce the results.
- **Add Formatting** - Highlight your data and add formatting, then you are done.

	A	B	C	D	E	F	G
1		Page1	(All)				
2							
3		<b>Sum of Value</b>	<b>Column Labels</b>				
4		<b>Row Labels</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Grand Total</b>
5		Advertising	1,350	2,350	3,000	55	6,755
6		Air Fare	4,000	4,000	5,000	2,300	15,300
7		Cell Phones	1,250	1,250	1,250	1,250	5,000
8		Client Gifts	500	500	500	500	2,000
9		Contract Labor	7,050	7,050	50	50	14,200
10		Entertainment	3,205	1,660	4,830	1,800	11,495
11		Equipment	3,240	1,230	679	4,500	9,649
12		Fringe Benefits	1,005	1,170	1,170	1,170	4,515
13		Hotels	2,300	1,450	3,000	2,030	8,780
14		Insurance	2,680	2,150	2,150	2,150	9,130
15		Marketing	1,000	1,000	1,000	1,000	4,000
16		Miscellaneous	5,350	5,350	5,350	5,350	21,400
17		Rent	14,500	14,500	14,500	14,500	58,000
18		Salaries	24,600	24,800	24,800	24,800	99,000
19		Supplies	1,460	1,460	1,460	1,460	5,840
20		Travel	24,500	24,500	24,500	24,500	98,000
21		<b>Grand Total</b>	<b>97,990</b>	<b>94,420</b>	<b>93,239</b>	<b>87,415</b>	<b>373,064</b>

**Comments:**

The PivotTable approach is superior to the Data Consolidate approach for many reasons as follows:

- i. Totals are automatic inserted.
- ii. AutoFilter buttons are automatic inserted.
- iii. If the source data changes, simply click refresh to update.
- iv. The resulting PivotTable is drillable.
- v. The resulting PivotTable can be pivoted.
- vi. The PivotTable report offers many PivotTable tools such as PivotTable formatting which Data Consolidate does not offer.

**The Accounting Format**<sup>(263)</sup>

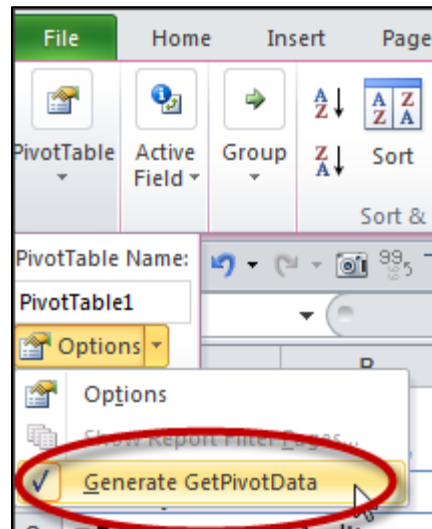
In Excel, use the “Accounting Format” with the “Single” and “Double” Accounting underlines to achieve the look and feel that CPAs prefer. The accounting format underlines are located in the Font dialog box.

**Tip On Fire → The GETPIVOTTABLE Function**<sup>(264)</sup>

Excel, by default, inserts the GETPIVOTTABLE function when you point to PivotTable cells while writing a formula. but you can disable the GETPIVOTTABLE functionality in Excel 2010 and 2007 as follows:

- a. Click a PivotTable to display the **PivotTable Tools** tab.
- b. From the **PivotTable Tools** tab, select **Options, PivotTable**

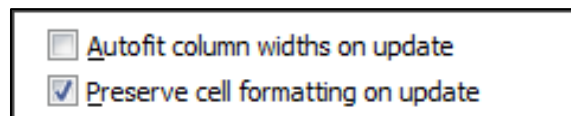
- c. Click the **Options** dropdown arrow and uncheck the **Generate GetPivotData** item, as pictured below.



### PivotTable Formatting<sup>(265)</sup>

Why do my Excel PivotTables sometimes lose their formatting upon refresh, even after I check the PivotTable Options checkbox labeled **Preserve cell formatting on update**?

Often, when CPAs think their PivotTable is reformatting upon refresh, what actually happens is the column widths are adjusting on each refresh. To prevent this from happening in Excel 2010 and 2007, disable Excel's Autofit functionality as follows. Right click on your PivotTable, then select **PivotTable Options** from the popup menu. From the **Layout & Format** tab, uncheck the checkbox labeled **Autofit column widths on update**, then click **OK**. In addition, make sure the checkbox labeled **Preserve cell formatting on update** is checked. Thereafter, your PivotTable's number formats, color formats and column widths will remain the same whenever you change the PivotTable settings or refresh the PivotTable's data.

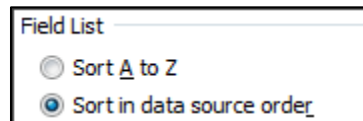


### Tip On Fire → Sorting PivotTables<sup>(266)</sup>

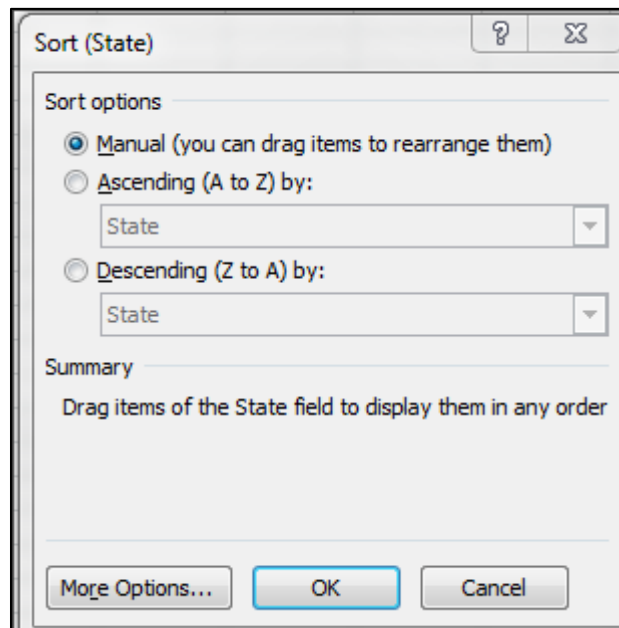
One CPA wrote to me complaining that "I can sort my PivotTable in ascending or descending order using the numeric data columns just fine; however, my PivotTables do not sort alphabetically. Why is this and how do I fix this problem?"

By default, Excel 2010 and 2007 PivotTables sort row label data according to the order of the source data, and you have two options for solving this issue. First, you can sort your source data

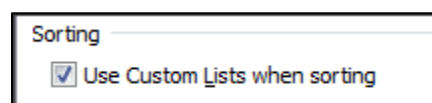
in the order you would like it to appear on the PivotTable. Secondly, you can set your PivotTable to ignore the source data order by right clicking on your PivotTable, select **PivotTable Options** from the popup menu, then from the **Display** tab, under the **Field List** section, select **Sort A to Z**.



Also, be aware that Excel's sort functionality is somewhat different for PivotTables than for regular worksheets. When you click on text-based column in a PivotTable and select **Sort** from the **Data** tab, the resulting dialog box (pictured below) provides additional sort options for sorting data manually (by dragging and rearranging data), or for sorting the data in ascending or descending order according to a PivotTable's specific field names. Consequently, you should also check these settings to ensure the desired results are achieved.

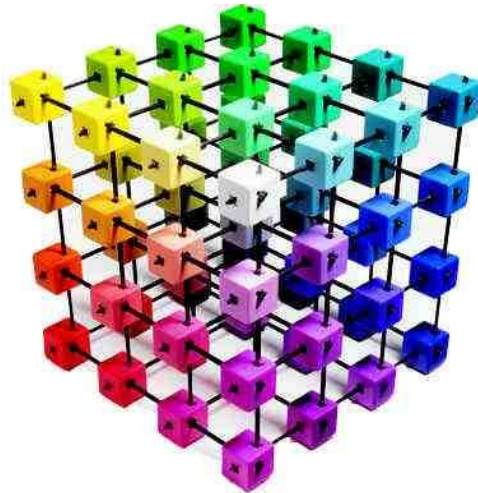


Further, be aware that as a default, Excel's PivotTable sort function sorts by custom lists, which explains why a PivotTable will sort months (January, February, March, etc.) in month order instead of alphabetical order. To disable custom list sorting in a PivotTable, right click your PivotTable, select **PivotTable Options** from the popup menu, then from the **Totals and Filters** tab, under the **Sorting** section, uncheck the checkbox labeled **Use Custom Lists when sorting**.



**Updating PivotTable Source Data**<sup>(267)</sup>

What's the best way to update a PivotTable's source data range when the data source grows larger? Before creating a PivotTable in Excel 2010 or 2007, first convert the source data to a Table by selecting the source data (or by selecting a single cell in your source data assuming your source data contains no blank rows or columns and has a blank row above the column headings). Then from the **Insert** tab, select **Table**, **OK**. Thereafter, refreshing PivotTables created from this source data will automatically include any new column or row data you add to your source data table. (The Table feature is not available in Excel 2003.)



# **PivotTables Compatibility Issues between Excel 2010, 2007 & 2003**

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## **Chapter 14**



My general recommendation is that there are enough significant issues between excel 2010 and 2007 compared to Excel 2003, that you really should no longer use Excel 2003 for any kind of heavy PivotTable analysis – which makes this chapter completely irrelevant. Nonetheless, for those that live in a world where others around them embrace old technology like grandpa complaining about the price of movie tickets, following is a list of the reported warning issues that cause a significant loss of functionality which you will see when you save an Excel 2010 or 2007 PivotTable to an Excel 2003 format.

Reported Warning/Issue	Solution
<p>A PivotTable in this workbook exceeds former limits and will be lost if it is saved to earlier file formats. Only PivotTables that are created in Compatibility Mode will work in earlier versions of Excel.</p>	<p><b>What This Means</b> - In Excel 2010, a PivotTable report supports 1,048,576 unique items per field, but in Excel 97-2003, only 32,500 items per field are supported.</p> <p><b>What to do</b> In the Compatibility Checker, click <b>Find</b> to locate the PivotTable report that exceeds the former limits. Save the workbook to Excel 97-2003 format, and then re-create this PivotTable report in Compatibility Mode.</p>
<p>A PivotTable in this workbook contains conditional formatting rules that are applied to cells in collapsed rows or columns. To avoid losing these rules in earlier versions of Excel, expand those rows or columns.</p>	<p><b>What This Means</b> - Conditional formatting rules that are applied to cells in collapsed rows or columns will be lost in Excel 97-2003.</p> <p><b>What to do</b> In the Compatibility Checker, click <b>Find</b> to locate the collapsed rows or columns that contain conditional formatting rules, and then expand those rows or columns before you save the workbook in an earlier Excel file format.</p>
<p>This workbook contains named sets which are not associated with a PivotTable. These named sets will not be saved.</p>	<p><b>What This Means</b> - Named sets that are not associated with a PivotTable will be removed in Excel 2007 and Excel 97-2003.</p> <p><b>What to do</b> To avoid this issue, make sure that you create a PivotTable by using a connection.</p>
<p>A PivotTable in this workbook has what-if analysis turned on. Any unpublished what-if changes will be lost in earlier versions of Excel.</p>	<p><b>What This Means</b> - What-if analysis changes that are not published to the server are not displayed in the earlier version of Excel.</p> <p><b>What to do</b> Make sure that you publish the what-if analysis changes before you open the workbook in an earlier version of Excel (<b>PivotTable Tools, Options</b> tab, <b>Tools</b> group, <b>What-If Analysis</b> button).</p>
<p>A PivotTable in this workbook contains a</p>	<p><b>What This Means</b> - In Excel 2010, you can</p>

<p>data axis upon which the same measure appears more than once. This PivotTable will not be saved.</p>	<p>duplicate a measure in a PivotTable that is connected to an Online Analytical Processing (OLAP) data source. The PivotTable cannot be displayed in Excel 2007 and Excel 97-2003.</p> <p><b>What to do</b> In the Compatibility Checker, click <b>Find</b> to locate the PivotTable report that contains a data axis upon which more than one of the same measure appears, and then remove any duplicate measures so that only one measure remains.</p>
<p>A PivotTable or data connection in this workbook contains server settings which do not exist in earlier versions of Excel. Some PivotTable or data connection server settings will not be saved.</p>	<p><b>What This Means</b> - Some PivotTable or data connection server settings that are not available in Excel 2007 and Excel 97-2003 will be lost.</p> <p><b>What to do</b> Verify that the server settings you use are compatible with earlier versions of Excel and then make the necessary changes (<b>PivotTable Tools, Options</b> tab, <b>Data</b> group, <b>Change Data Source</b> button, <b>Connection Properties</b> command).</p>
<p>A PivotTable in this workbook contains data represented using the 'Show Values As' feature. These custom outputs will not be saved, and will be replaced by the original values from the data source.</p>	<p><b>What This Means</b> - The Show Values As feature is not supported in Excel 2007 and Excel 97-2003 and custom value data you entered (such as <b>% of Grand Total, % of Column Total, or Running Total In</b>) cannot be displayed.</p> <p><b>What to do</b> In the Compatibility Checker, click <b>Find</b> to locate the PivotTables that contain custom value outputs, and then remove those outputs (<b>PivotTable Tools, Options</b> tab, <b>Calculations</b> group, <b>Show Values As</b> button).</p>
<p>Alternative text is applied to a PivotTable in this workbook. Alternative text on PivotTables will be removed in versions prior to Excel 2007.</p>	<p><b>What This Means</b> - Alternative text is not available in Excel 2007 and Excel 97-2003, and cannot be displayed in these earlier versions of Excel.</p> <p><b>What to do</b> In the Compatibility Checker, click <b>Find</b> to locate the PivotTable that contains alternative text. To display the alternative text in the earlier version of Excel, you can copy it into a blank cell on the worksheet, or you could insert a comment that contains the text.</p> <p>Right-click anywhere in the PivotTable, click <b>PivotTable Options</b>. On the <b>Alt Text</b> tab, in the <b>Description</b> box, select the alternative text, and</p>

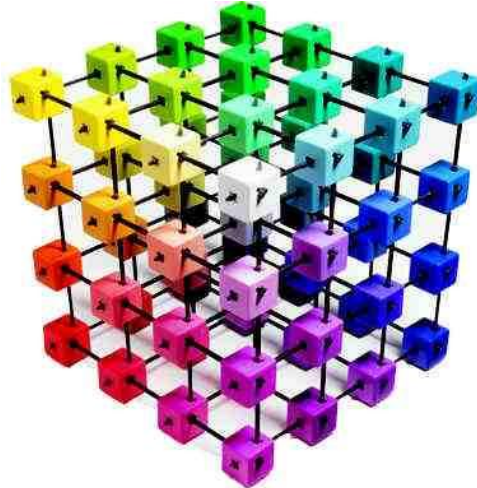
	then press CTRL+C to copy it.
Alternative text is applied to a PivotTable in this workbook. Alternative text cannot be displayed in Excel 2007.	<p><b>What This Means</b> - Alternative text is not available in Excel 2007, and cannot be displayed.</p> <p><b>What to do</b> In the Compatibility Checker, click <b>Find</b> to locate the PivotTable that contains alternative text. To display the alternative text in the earlier version of Excel, you can copy it into a blank cell on the worksheet, or you could insert a comment that contains the text.</p> <p>Right-click anywhere in the PivotTable, click <b>PivotTable Options</b>. On the <b>Alt Text</b> tab, in the <b>Description</b> box, select the alternative text, and then press CTRL+C to copy it.</p>
This workbook contains custom embedded data. This data will not be saved.	<p><b>What This Means</b> - Embedded custom data such as PowerPivot data is not supported in Excel 2007 and Excel 97-2003. The data will be lost.</p> <p><b>What to do</b> Remove the PowerPivot data from a workbook that you plan to work on in an earlier version of Excel.</p>

The Compatibility checker which analyzes 2010 and 2007 workbooks that you save to 2003 formats segregates its warnings between critical and minor. Continuing is a list of the minor reporting warnings and Issues you may see when you save an Excel 2010 or 2007 workbook to an Excel 2003 format.

Reported Warning/Issue	Solution
A PivotTable style is applied to a PivotTable in this workbook. PivotTable style formatting cannot be displayed in earlier versions of Excel.	<p><b>What This Means</b> - Theme-based PivotTable styles are not available in Excel 97-2003 and cannot be displayed.</p> <p><b>What to do</b> In the Compatibility Checker, click <b>Find</b> to locate the PivotTable report that has a PivotTable style applied, remove that PivotTable style, and then manually apply PivotTable formatting that is supported in the earlier versions of Excel.</p>
A PivotTable in this workbook will not work in versions prior to Excel 2007. Only PivotTables that are created in Compatibility Mode will work in earlier versions of Excel.	<p><b>What This Means</b> - A PivotTable report you create in the Excel 2010 cannot be refreshed in Excel 97-2003.</p> <p><b>What to do</b> In the Compatibility Checker, click <b>Find</b> to locate the PivotTable report that is created in the current file format. Save the workbook to Excel 97-2003 format, and then re-create this PivotTable report in Compatibility Mode so that you can open it</p>

	in Excel 97-2003 without loss of functionality.
A PivotTable in this workbook has fields in compact form. In earlier versions of Excel, this layout will be changed to tabular form.	<p><b>What This Means</b> - Compact form (alone or in combination with tabular and outline form) to keep related data from spreading horizontally off of the screen and to help minimize scrolling is not available in Excel 97-2003, and fields will be displayed in tabular form.</p> <p><b>What to do</b> In the Compatibility Checker, click <b>Find</b> to locate the PivotTable report that has fields in a compact form, and then change that format to outline form or tabular form as needed by clearing the <b>Merge and center cells with labels</b> check box (<b>PivotTable Tools, Options</b> tab, <b>PivotTable</b> group, <b>Options</b> command, <b>Layout &amp; Format</b> tab).</p>
A PivotTable in this workbook contains settings which do not exist in earlier versions of Excel. Some PivotTable settings will not be saved.	<p><b>What This Means</b> - Some PivotTable settings are not supported in Excel 2010 and Excel 97-2003. These settings will be lost.</p> <p><b>What to do</b> In the Compatibility Checker, click <b>Find</b> to locate the PivotTable that contains the settings that are not supported, and then make the necessary changes.</p>
A PivotChart in this workbook has specific field buttons enabled or disabled. All field buttons will be saved as enabled.	<p><b>What This Means</b> - Field buttons that are not shown on a PivotChart will be saved as enabled when open and save the workbook in an earlier version of Excel.</p> <p><b>What to do</b> When you reopen a workbook after you save it to a file format of an earlier version of Excel, you may have to enable and disable field buttons to display the ones that you want (<b>PivotChart Tools, Analyze</b> tab, <b>Show/Hide</b> group, <b>Field Buttons</b> button).</p>
A PivotTable in this workbook contains one or more named sets. Some properties of the named sets may not be saved.	<p><b>What This Means</b> - One or more named sets have non-default property settings that may not be saved when you save the workbook to the Excel 97-2003 file format.</p> <p><b>What to do</b> In the Compatibility Checker, click <b>Find</b> to locate the PivotTable report that contains the named set properties that have been changed, and then make the necessary adjustments in the <b>Field Settings</b> dialog box. Right-click any member of the named set, and then click <b>Field Settings</b>. On the <b>Layout &amp; Print</b> tab, make sure that the <b>Display items</b></p>

	<p><b>from different levels in separate fields</b> check box is not selected (the default setting), and that the <b>Automatically order and remove duplicates from the set</b> check box is selected (the default setting).</p>
<p>This workbook contains Slicers that can be used to filter PivotTables and CUBE functions within the workbook. Slicers will not work in earlier versions of Excel.</p>	<p><b>What This Means</b> - Slicers will not available in Excel 2007 but will remain available for use in Excel 2010.  <b>What to do</b> In the earlier version of Excel, you can use PivotTable filters to filter data.</p>
<p>This workbook contains Slicers that can be used to filter PivotTables and CUBE functions within the workbook. Slicers will not be saved. Formulas that reference Slicers will return a #NAME? error.</p>	<p><b>What This Means</b> - Slicers are not supported in in Excel 97-2003 and cannot be shown. When you refresh the connection or update a PivotTable, the filters that were applied by the slicers are no longer displayed, and the slicers will be lost.  Refreshing connections that have OLAP Functions which reference slicers will return #NAME? errors instead of the expected results.  <b>What to do</b> Use PivotTable filters instead of slicers to filter the data.</p>
<p>A slicer style exists in this workbook, and is not supported in earlier versions of Excel. This slicer style will not be saved.</p>	<p><b>What This Means</b> - A custom slicer style will be lost when the workbook is saved to the file format of an earlier version of Excel.  <b>What to do</b> Change the custom slicer style to a built-in slicer style before you save the workbook to an earlier Excel file format (<b>Slicer Tools, Options</b> tab, <b>Slicer Styles</b> gallery).</p>
<p>A PivotTable in this workbook contains one or more fields that contain repeated labels. If the PivotTable is refreshed, these labels will be lost.</p>	<p><b>What This Means</b> - Repeated labels are not supported in Excel 2007 and Excel 97-2003, and the labels will be lost when you refresh the PivotTable report in the earlier version of Excel.  <b>What to do</b> In the Compatibility Checker, click <b>Find</b> to locate the PivotTable that contains repeated labels, and then stop repeating labels (<b>PivotTable Tools, Design</b> tab, <b>Layout</b> group, <b>Report Layout</b> button, <b>Do Not Repeat Item Labels</b> command).</p>



# Understanding OLAP Data Cubes

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## Chapter 15

## PivotTable As an OLAP Client

Excel PivotTables includes the ability to directly query an OLAP server for retrieving data instead of getting the data from an Excel spreadsheet. On this configuration a PivotTable is a simple client of an OLAP server. Excel's PivotTable not only allows for connecting to Microsoft's solution (Analysis Service), but to any XMLA (OLAP standard) compliant server.

### 21. What is the Difference Between an OLAP Data Cube and a PivotTable?

Visually, an OLAP Data Cube is almost identical to a PivotTable. Functionally, the key differences are that OLAP Data Cubes store data differently (usually in database form), and a database server engine generates and powers the OLAP Data Cube. In contrast, the PivotTable's data is store two dimensionally in a flat worksheet or table, and Excel is used to generate and power the PivotTable. The trade-off is that an OLAP Data Cube typically operates faster with large volumes of data while a PivotTable's tools are a bit easier to work with.

Compounding this explanation is the fact that many users and tools create PivotTables from OLAP Data Cubes, but this actually makes good sense. The OLAP technology is excellent for retrieving large volumes of data while the PivotTable is excellent for summarizing the data retrieved. Specifically, OLAP speeds up the retrieval of data because the OLAP server, rather than Microsoft Office Excel, computes the summarized values; therefore, less data needs to be sent to Excel when you create or change a report. By contrast, Excel retrieves all of the individual records and then calculates the summarized values, which is a far slower approach.

For Excel 2010, Microsoft created an add-in that combines the speed and power of OLAPs database approach with the ease of use of the PivotTable approach. (This solution called **PowerPivot**, is discussed later in these materials.)

Following are a few key technical points and definitions concerning OLAP Data Cubes.

- 1) **Business intelligence** - Online Analytical Processing (OLAP) is a method for querying databases and is often described as a business-intelligence tool, because the reader has the ability to view the data quickly, and from all perspectives.
- 2) **OLAP Designed for Querying** - OLAP is a database technology that has been optimized for querying and reporting, instead of processing transactions.
- 3) **OLAP Data's Organization** - OLAP data is organized hierarchically and stored in cubes instead of tables. It uses multidimensional structures to provide rapid access to data for analysis. This organization makes it easy for a PivotTable report or PivotChart report to display high-level summaries, such as sales totals across an

- entire country or region, and also display the details for sites where sales are particularly strong or weak.
- 4) **Measures & Dimensions** - OLAP databases contain two basic types of data: measures, which are numeric data, the quantities and averages that you use to make informed business decisions, and dimensions, which are the categories that you use to organize these measures. OLAP databases help organize data by many levels of detail, using the same categories that you are familiar with to analyze the data.
  - 5) **Cube** - A data cube is a structure that stores the measures by the levels and hierarchies of each of the dimensions that you want to analyze. Cubes can combine several dimensions, such as time, geography, and product lines, with summarized data, such as sales or inventory figures. However, cubes are not "cubes" in the strictly mathematical sense because they do not necessarily have equal sides. However, they are an apt metaphor for a complex concept.
  - 6) **Measure** - A set of values in a cube that are based on a column in the cube's fact table and that are usually numeric values. Measures are the central values in the cube that are preprocessed, aggregated, and analyzed. Common examples include sales, profits, revenues, and costs.
  - 7) **Member** - An item in a hierarchy representing one or more occurrences of data. A member can be either unique or nonunique. For example, 2007 and 2008 represent unique members in the year level of a time dimension, whereas January represents nonunique members in the month level because there can be more than one January in the time dimension if it contains data for more than one year.
  - 8) **Calculated Member** - A member of a dimension whose value is calculated at run time by using an expression. Calculated member values may be derived from other members' values. For example, a calculated member, Profit, can be determined by subtracting the value of the member, Costs, from the value of the member, Sales.
  - 9) **Dimension** - A set of one or more organized hierarchies of levels in a cube that a user understands and uses as the base for data analysis. For example, a geography dimension might include levels for Country/Region, State/Province, and City. Or, a time dimension might include a hierarchy with levels for year, quarter, month, and day. In a PivotTable report or PivotChart report, each hierarchy becomes a set of fields that you can expand and collapse to reveal lower or higher levels.
  - 10) **Hierarchy** - A logical tree structure that organizes the members of a dimension such that each member has one parent member and zero or more child members. A child is a member in the next lower level in a hierarchy that is directly related to the current member. For example, in a Time hierarchy containing the levels Quarter,



Month, and Day, January is a child of Qtr1. A parent is a member in the next higher level in a hierarchy that is directly related to the current member. The parent value is usually a consolidation of the values of all of its children. For example, in a Time hierarchy that contains the levels Quarter, Month, and Day, Qtr1 is the parent of January.

- 11) **Level** - Within a hierarchy, data can be organized into lower and higher levels of detail, such as Year, Quarter, Month, and Day levels in a Time hierarchy.

### **OLAP features in Excel**

**Retrieving OLAP Data** - You can use Excel's PivotTable tool to connect to OLAP data sources just as you do to other external data sources. You can work with databases that are created with Microsoft SQL Server OLAP Services, Microsoft SQL Server Analysis Services, and Microsoft SQL Server Analysis Services, the Microsoft OLAP server products. Excel can also work with third-party OLAP products that are compatible with OLE-DB for OLAP.

You can display OLAP data only as a PivotTable or PivotChart or in a worksheet function converted from a PivotTable report, but not as an external data range. You can save OLAP PivotTable reports and PivotChart reports in report templates, and you can create Office Data Connection (ODC) files (.odc) to connect to OLAP databases for OLAP queries. When you open an ODC file, Excel displays a blank PivotTable report, which is ready for you to lay out.

**Creating cube files for offline use** - You can create an offline cube file (.cub) with a subset of the data from an OLAP server database. Use offline cube files to work with OLAP data when you are not connected to your network. A cube enables you to work with larger amounts of data in a PivotTable report or PivotChart report than you could otherwise, and speeds retrieval of the data. You can create cube files only if you use an OLAP provider, such as Microsoft SQL Analysis Services Server version 2005, which supports this feature.



## Bio for J. Carlton Collins, CPA

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J. Carlton Collins, CPA is a Certified Public Accountant with experience in technology, tax, auditing, accounting systems, financial reporting, and bond financing. He is an author, lecturer, and technology & accounting systems consultant. He has published books, articles, and web pages and is the author of the monthly technology Q&A column for the [Journal of Accountancy](#). As a public speaker, Mr. Collins has delivered more than 2,000 lectures in 44 states and 5 countries addressing more than 500,000 CPAs and business professionals. As a consultant, Mr. Collins has assisted 275+ large and small companies with the selection and implementation of accounting systems. Mr. Collins has a Bachelor's degree in Accounting from the University of Georgia, is a 25+ year member of the American Institute of CPAs and the Georgia Society of CPAs, and is also a licensed realtor.

### Summary of Selected Positions, Awards & Accomplishments:

1. Honored as one of the CPA Industries Top 25 Thought Leaders by [CPA Technology Advisor Magazine](#)
2. Author of the monthly Technology Q&A column for the [Journal of Accountancy](#).
3. Recipient of the AICPA's Lifetime Technical Contribution to the CPA Profession Award.
4. Chairman of the Southeast Accounting Show - the South's largest CPA event.
5. Recipient of the Tom Radcliff Outstanding Discussion Leader Award.
6. Named "Top Ten CPA Technologists" by [Accounting Technologies Magazine](#) (multiple years).
7. Named "Top 100 Most Influential CPAs" by [Accounting Technologies Magazine](#) (multiple years).
8. Has personally delivered over 2,000 technology lectures around the world.
9. Recipient of the Outstanding Discussion Leader Award from the Georgia Society of CPAs.
10. Lead author for PPC's Guide to Installing Microcomputer Accounting Systems.
11. Has installed accounting systems for more than 200 companies.
12. Chairperson of the AICPA Technology Conference.
13. Recipient of the ACCPAC Partner of the Year Award.
14. Determined by SAP to be one of the country's "Top Ten Most Influential ERP Systems Consultants".
15. Has delivered keynote and session lectures at dozens of accounting software conferences.
16. Sworn in as a Certified Public Accountant on September 18, 1985.
17. Member of the American Institute of CPAs since 1985.
18. Member of the Georgia Society of CPAs since 1982.

As an auditor, Mr. Collins has audited businesses in the areas of health care, construction, distribution, automobile dealerships, insurance, manufacturing, and general business. Mr. Collins' tax experience includes corporate, individual, partnership, fiduciary, and estate tax planning work. In the area of finance, Mr. Collins has prepared (or assisted in preparing) feasibility studies and financial forecasts for nearly 300 projects seeking more than \$3 billion in startup capital. Mr. Collins is familiar with bond issues, Medicare and Medicaid reimbursement, and conventional financing matters. In 1992, Mr. Collins contributed and demonstrated more than 500 pages of suggested design improvements to the Microsoft Excel development team of programmers - and many of those improvements are found in Excel today.

At the University of Georgia, Mr. Collins was elected President of the Phi Eta Sigma Honor Society, was initiated into the BIFTAD Honor Society, served three years in the Judicial Defender/Advocate program, and was a member of Alpha Tau Omega fraternity. At Glynn Academy High School, Mr. Collins was Senior Class President, Class Valedictorian (1 of 6), and received a principle nomination to Annapolis Naval Academy. Mr. Collins has been married for 27 years and has two children. He devotes his leisure time to family, travel, tennis, fishing, snow skiing, and riding motorcycles (both dirt and street). Mr. Collins is president of his homeowners association, participates in the Gwinnett Clean and Beautiful program, and volunteers for Cooperative Ministries food drive.