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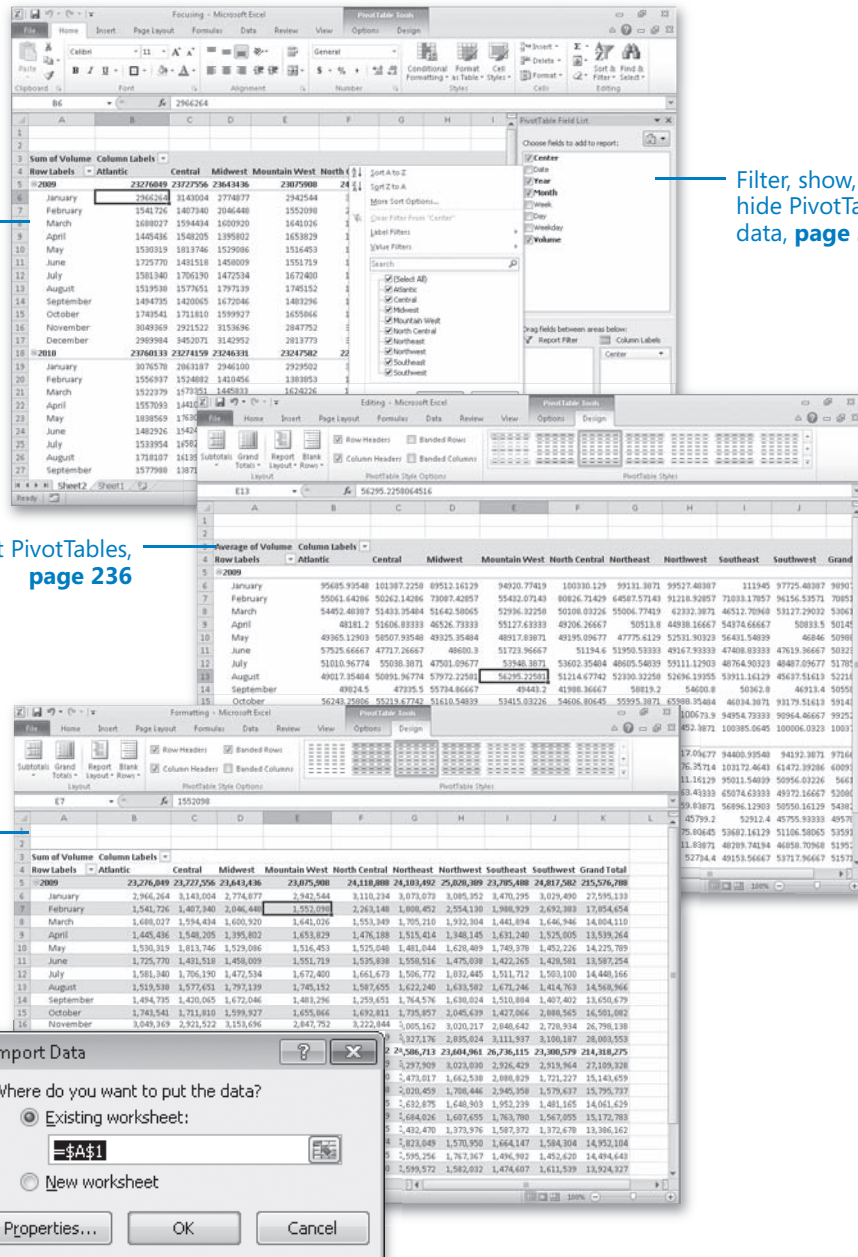
Chapter at a Glance

Analyze data dynamically by using PivotTables, **page 212**

Filter, show, and hide PivotTable data, **page 222**

Edit PivotTables, **page 236**

Format PivotTables, **page 242**

Create PivotTables from external data, **page 250**

9 Creating Dynamic Worksheets by Using PivotTables

In this chapter, you will learn how to

✔ Analyze data dynamically by using PivotTables.

✔ Filter, show, and hide PivotTable data.

✔ Edit PivotTables.

✔ Format PivotTables.

✔ Create PivotTables from external data.

When you create Microsoft Excel 2010 worksheets, you must consider how you want the data to appear when you show it to your colleagues. You can change the formatting of your data to emphasize the contents of specific cells, sort and filter your worksheets based on the contents of specific columns, or hide rows containing data that isn't relevant to the point you're trying to make.

One limitation of the standard Excel worksheet is that you can't easily change how the data is organized on the page. For example, in a worksheet in which each column represents an hour in the day, each row represents a day in a month, and the body of the worksheet contains the total sales for every hourly period of the month, you can't change the worksheet quickly so that it displays only sales on Tuesdays during the afternoon.

There is an Excel tool with which you can create worksheets that can be sorted, filtered, and rearranged dynamically to emphasize different aspects of your data. That tool is the PivotTable.

In this chapter, you'll learn how to create and edit PivotTables from an existing worksheet, focus your PivotTable data using filters and Slicers, format PivotTables, and create a PivotTable with data imported from a text file.

> **Practice Files** Before you can complete the exercises in this chapter, you need to copy the book's practice files to your computer. The practice files you'll use to complete the exercises in this chapter are in the Chapter09 practice file folder. A complete list of practice files is provided in "Using the Practice Files" at the beginning of this book.

Analyzing Data Dynamically by Using PivotTables

With Excel worksheets you can gather and present important data, but the standard worksheet can't be changed from its original configuration easily. As an example, consider a worksheet that records monthly package volumes for each of nine distribution centers in the United States.

Troubleshooting The appearance of buttons and groups on the ribbon changes depending on the width of the program window. For information about changing the appearance of the ribbon to match our screen images, see "Modifying the Display of the Ribbon" at the beginning of this book.

The data in the worksheet is organized so that each row represents a distribution center and each column represents a month of the year. When presented in this arrangement, the monthly totals for all centers and the yearly total for each distribution center are given equal billing: neither set of totals stands out.
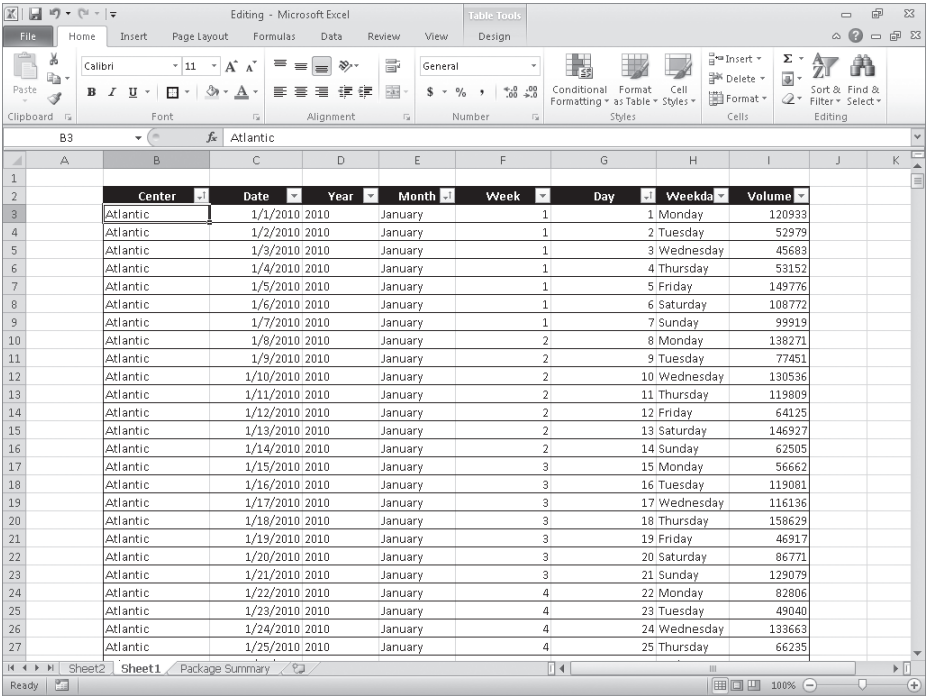
Such a neutral presentation of your data is versatile, but it has limitations. First, although you can use sorting and filtering to restrict the rows or columns shown, it's difficult to change the worksheet's organization. For example, in this worksheet, you can't easily reorganize the contents of your worksheet so that the months are assigned to the rows and the distribution centers are assigned to the columns.

The Excel tool to reorganize and redisplay your data dynamically is the PivotTable. You can create a PivotTable, or dynamic worksheet, that enables you to reorganize and filter your data on the fly. For instance, you can create a PivotTable with the same layout as the worksheet described previously, which emphasizes totals by month, and then change the PivotTable layout to have the rows represent the months of the year and the columns represent the distribution centers. The new layout emphasizes the totals by regional distribution center.

Row Labels	Atlantic	Central	Midwest	Mountain West	North Central	Northeast	Northwest	Southeast	Southwest	Grand Total
January	6,042,842	6,006,191	5,720,977	5,872,046	6,236,863	6,370,982	6,108,382	6,396,724	5,949,454	54,704,461
February	3,098,663	2,932,222	3,456,904	2,935,951	3,785,068	3,281,469	4,216,668	4,877,758	4,413,610	32,998,313
March	3,210,406	3,167,785	3,046,753	3,265,252	2,929,397	3,725,669	3,640,750	4,387,252	3,226,583	30,599,847
April	3,002,529	2,989,245	3,125,231	3,071,049	2,677,853	3,148,289	2,997,048	3,583,479	3,006,170	27,600,893
May	3,368,888	3,576,763	3,280,768	3,159,233	3,079,267	3,165,070	3,236,144	3,513,158	3,019,281	29,398,572
June	3,208,696	2,973,980	3,035,619	3,063,572	3,040,653	2,990,986	2,849,014	3,009,637	2,801,259	26,973,416
July	3,115,294	3,364,482	2,945,492	3,456,576	3,521,947	3,329,821	3,403,395	3,175,859	3,087,404	29,400,270
August	3,237,645	3,191,591	3,441,757	3,371,850	3,166,710	3,217,496	3,400,949	3,168,228	2,867,383	29,063,609
September	3,072,723	2,807,222	3,166,599	2,942,925	2,996,901	3,364,148	3,220,056	2,985,491	3,018,941	27,575,006
October	3,261,585	3,362,250	3,333,751	3,182,437	3,125,591	3,346,381	3,789,687	3,196,785	4,462,698	31,061,165
November	6,137,174	6,083,306	6,236,356	6,121,929	6,026,826	6,287,815	6,002,883	6,245,619	5,725,902	54,867,810
December	6,279,737	6,546,678	6,099,560	5,880,670	6,093,514	6,462,079	5,768,374	5,981,613	6,539,476	55,651,701
Grand Total	47,036,182	47,001,715	46,889,767	46,323,490	46,680,590	48,690,205	48,633,350	50,521,603	48,118,161	429,895,063

To create a PivotTable, you must have your data collected in a list. Excel tables mesh perfectly with PivotTable dynamic views; not only do Excel tables have a well-defined column and row structure, but the ability to refer to an Excel table by its name also greatly simplifies PivotTable creation and management.

In the Excel table used to create the distribution PivotTable, each row of the table contains a value representing the distribution center, date, month, week, weekday, day, and volume for every day of the years 2009 and 2010.

Excel needs that data when it creates the PivotTable so that it can maintain relationships among the data. If you want to filter your PivotTable so that it shows all package volumes on Thursdays in January, for example, Excel must be able to identify January 11 as a Thursday.

After you create an Excel table, you can click any cell in the table, display the Insert tab and then, in the Tables group, click PivotTable to open the Create PivotTable dialog box.
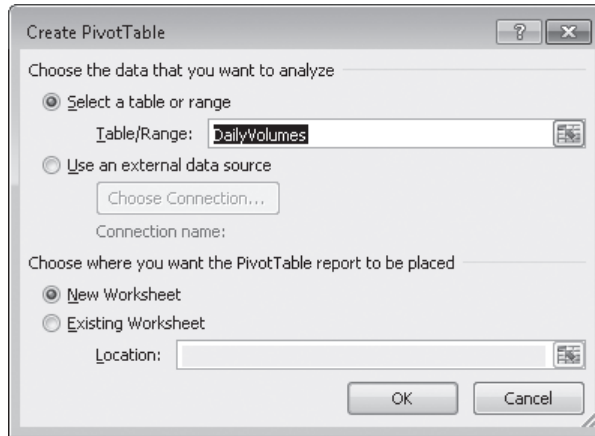
In this dialog box, you verify the data source for your PivotTable and whether you want to create a PivotTable on a new worksheet or an existing worksheet. After you click OK, Excel displays a new or existing worksheet and displays the PivotTable Field List task pane.

Tip You should always place your PivotTable on its own worksheet to avoid cluttering the display.

If the PivotTable Field List task pane isn't visible, you can display it by clicking any cell in the PivotTable to display the PivotTable Tools contextual tabs. On the Options contextual tab, in the Show/Hide group, click Field List.
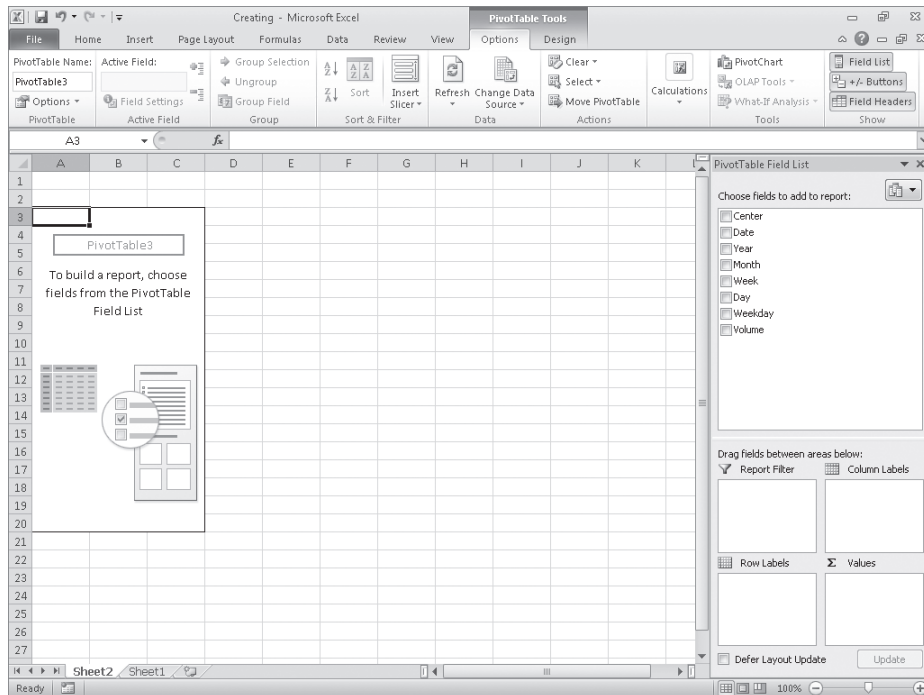
To assign a field, or column of data, to an area of the PivotTable, drag the field header from the Choose Fields To Add To Report area at the top of the PivotTable Field List task pane to the Drag Fields Between Areas Below area at the bottom of the task pane. For example, if you drag the Volume field header to the Values area, the PivotTable displays the total of all entries in the Volume column.
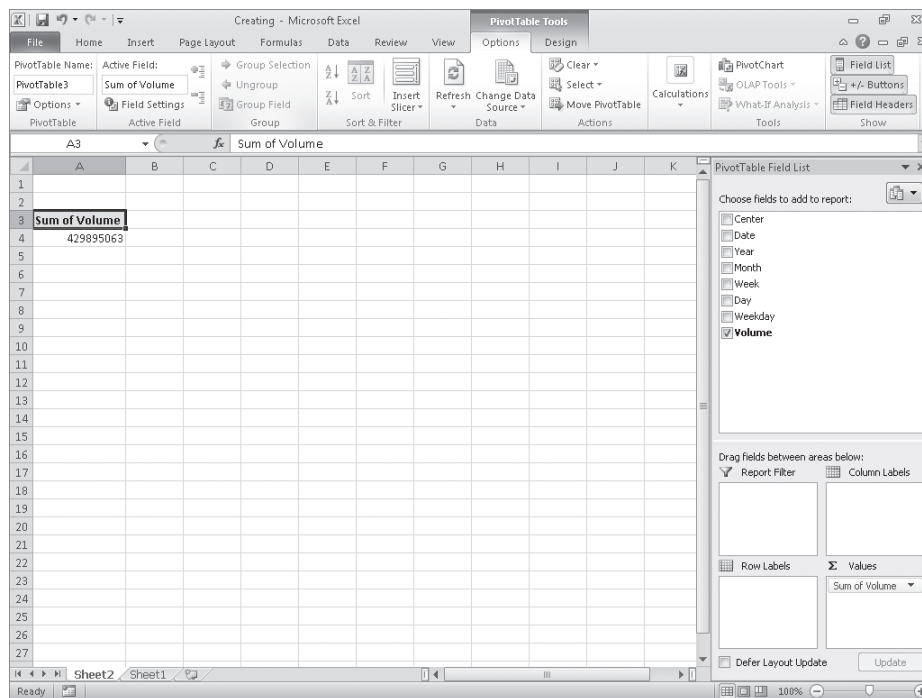
It's important to note that the order in which you enter the fields in the Row Labels and Column Labels areas affects how Excel organizes the data in your PivotTable. As an example, consider a PivotTable that groups the PivotTable rows by distribution center and then by month.

The same PivotTable data could also be organized by month and then by distribution center.
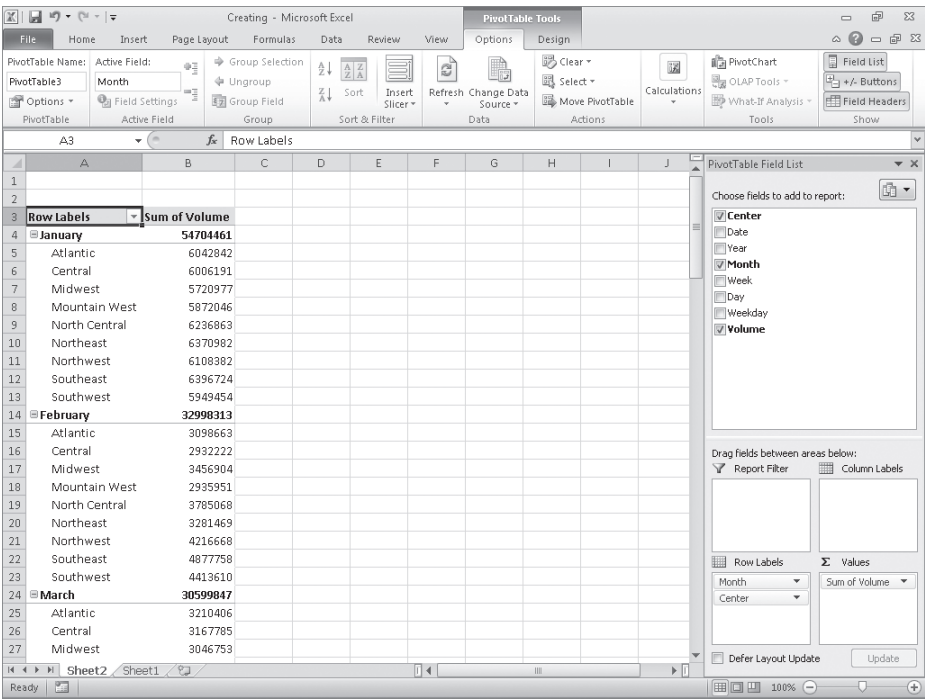
In the preceding examples, all the field headers are in the Row Labels area. If you drag the Center header from the Row Labels area to the Column Labels area, the PivotTable reorganizes (pivots) its data to form a different configuration.

To pivot a PivotTable, you drag a field header to a new position in the PivotTable Field List task pane. As you drag a field within the task pane, Excel displays a blue line in the interior of the target area so you know where the field will appear when you release the left mouse button. If your data set is large or if you based your PivotTable on a data collection on another computer, it might take some time for Excel to reorganize the PivotTable after a pivot. You can have Excel delay redrawing the PivotTable by selecting the Defer Layout Update check box in the lower-left corner of the PivotTable Field List task pane. When you're ready for Excel to display the reorganized PivotTable, click Update.

If you expect your PivotTable source data to change, such as when you link to an external database that records shipments or labor hours, you should ensure that your PivotTable summarizes all the available data. To do that, you can refresh the PivotTable connection to its data source. If Excel detects new data in the source table, it updates the PivotTable contents accordingly. To refresh your PivotTable, click any cell in the PivotTable and then, on the Options contextual tab, in the Data group, click Refresh.

In this exercise, you'll create a PivotTable by using data from a table, add fields to the PivotTable, and then pivot the PivotTable.

SET UP **You need the Creating_start workbook located in your Chapter09 practice file folder to complete this exercise. Start Excel, open the Creating_start workbook, and save it as *Creating*. Then follow the steps.**

1. Click any cell in the Excel table.

2. On the **Insert** tab, in the **Tables** group, click the **PivotTable** button (not the arrow).

   The Create PivotTable dialog box opens.

3. Verify that the **DailyVolumes** table name appears in the **Table/Range** field and that the **New Worksheet** option is selected.

4. Click **OK**.

   Excel creates a PivotTable on a new worksheet.

5. In the **PivotTable Field List** task pane, drag the **Center** field header to the **Row Labels** area.

   Excel adds the Center field values to the PivotTable row area.
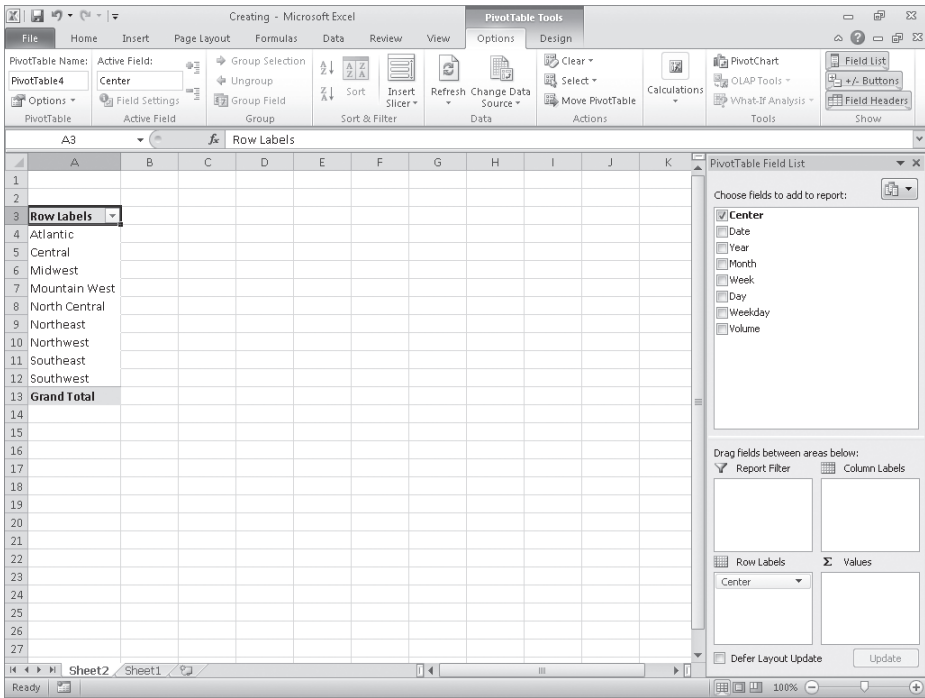
6. In the **PivotTable Field List** task pane, drag the **Year** field header to the **Column Labels** area.

   Excel adds the Year field values to the PivotTable column area.

7. In the **PivotTable Field List** task pane, drag the **Volume** field header to the **Values** area.

   Excel fills in the body of the PivotTable with the Volume field values.

8. In the **PivotTable Field List** task pane, in the **Column Labels** area, drag the **Year** field header to the **Row Labels** area, and drop it beneath the **Center** field header.

   Excel changes the PivotTable to reflect the new organization.

✖ CLEAN UP Save the Creating workbook, and then close it.

Filtering, Showing, and Hiding PivotTable Data

PivotTables often summarize huge data sets in a relatively small worksheet. The more details you can capture and write to a table, the more flexibility you have in analyzing the data. As an example, consider all the details captured in a table in which each row contains a value representing the distribution center, date, month, week, weekday, day, and volume for every day of the year.


Each column, in turn, contains numerous values: there are nine distribution centers, data from two years, 12 months in a year, seven weekdays, and as many as five weeks and 31 days in a month. Just as you can filter the data that appears in an Excel table or other data collection, you can filter the data displayed in a PivotTable by selecting which values you want the PivotTable to include.

See Also For more information on filtering an Excel table, see "Limiting Data That Appears on Your Screen" in Chapter 5, "Focusing on Specific Data by Using Filters."

To filter a PivotTable based on a field's contents, click the field's header in the Choose Fields To Add To Report area of the PivotTable Field List task pane. When you do, Excel displays a menu of sorting and filtering options.
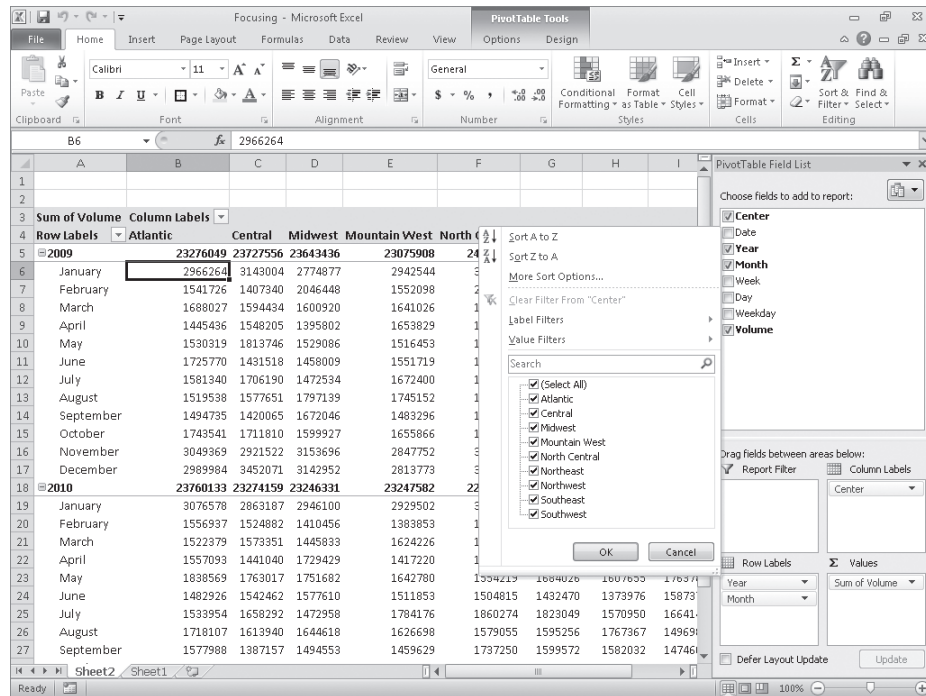
The PivotTable displays several sorting options, commands for different categories of filters, and a list of items that appear in the field you want to filter. Every list item has a check box next to it. Items with a check mark in the box are currently displayed in the PivotTable, and items without a check mark are hidden.

The first entry at the top of the item list is the Select All check box. The Select All check box can have one of three states: displaying a check mark, displaying a black square, or empty. If the Select All check box contains a check mark, then the PivotTable displays every item in the list. If the Select All check box is empty, then no filter items are selected. Finally, if the Select All check box contains a black square, it means that some, but not all, of the items in the list are displayed. Selecting only the Northwest check box, for example, leads to a PivotTable configuration in which only the data for the Northwest center is displayed.
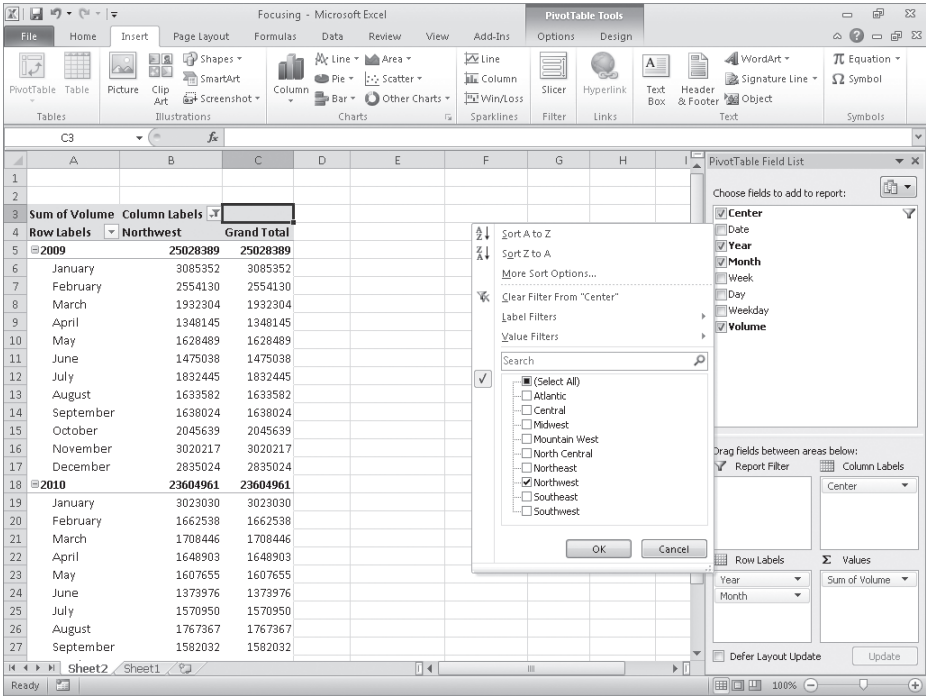
If you'd rather display as much PivotTable data as possible, you can hide the PivotTable Field List task pane and filter the PivotTable by using the filter arrows on the Row Labels and Column Labels headers within the body of the PivotTable. Clicking either of those headers enables you to select a field by which you can filter; you can then define the filter by using the same controls you see when you click a field header in the PivotTable Field List task pane.

Excel indicates that a PivotTable has filters applied by placing a filter indicator next to the Column Labels or Row Labels header, as appropriate, and the filtered field name in the PivotTable Field List task pane.

So far, all the fields by which we've filtered the PivotTable have changed the organization of the data in the PivotTable. Adding some fields to a PivotTable, however, might create unwanted complexity. For example, you might want to filter a PivotTable by weekday, but adding the Weekday field to the body of the PivotTable expands the table unnecessarily.
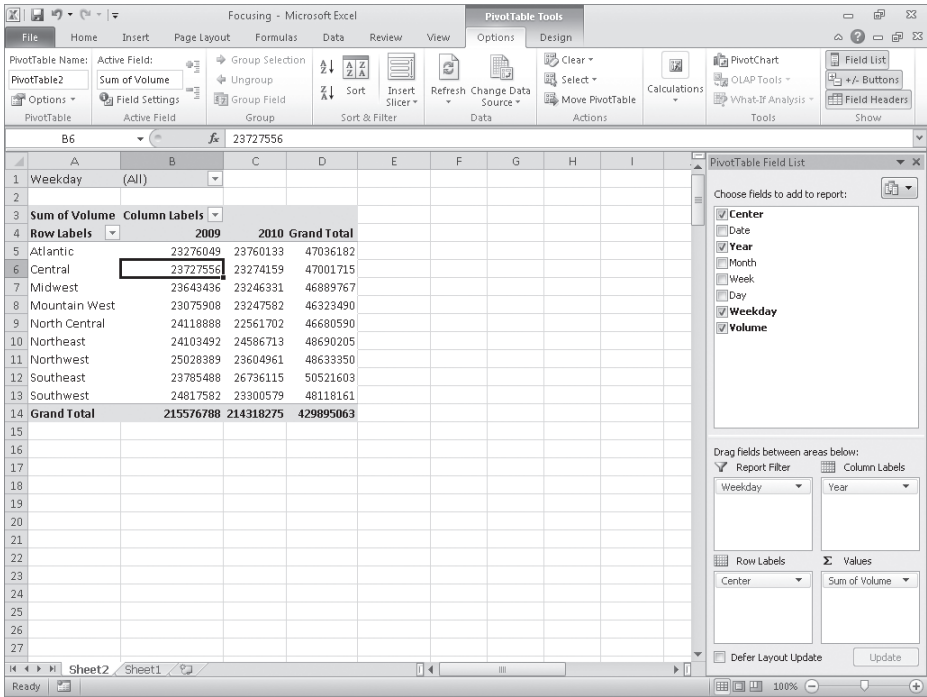

Instead of adding the Weekday field to the Row Labels or Column Labels area, you can drag the field to the Report Filter area near the bottom of the PivotTable Field List task pane. Doing so leaves the body of the PivotTable unchanged, but adds a new area above the PivotTable in its worksheet.

Tip In Excel 2003 and earlier versions, this area was called the Page Field area.

When you click the filter arrow of a field in the Report Filter area, Excel displays a list of the values in the field. When you click the filter arrow, you can choose to filter by one value at a time. If you'd like to filter your PivotTable by more than one value, you can do so by selecting the Select Multiple Items check box.

If your PivotTable has more than one field in the Row Labels area, you can filter values in a PivotTable by hiding and collapsing levels of detail within the report. To do that, you click the Hide Detail control (which looks like a box with a minus sign in it) or the Show Detail control (which looks like a box with a plus sign in it) next to a header.

For example, you might have your data divided by year; clicking the Show Detail control next to the 2009 year header would display that year's details. Conversely, clicking the 2010 year header's Hide Detail control would hide the individual months' values and display only the year's total.
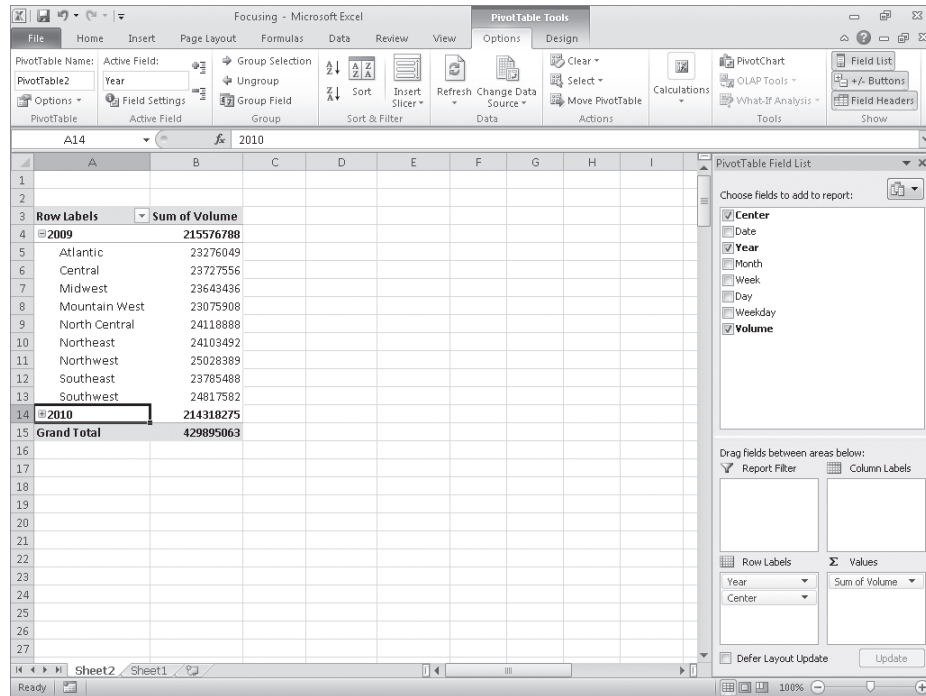
Excel 2010 provides two new ways for you to filter PivotTables: search filters and Slicers. With a search filter, you can type in a series of characters for Excel to filter that field's values. To create a search filter, click a field's filter arrow and type the character string for which you want to search in the filter menu's Search box.
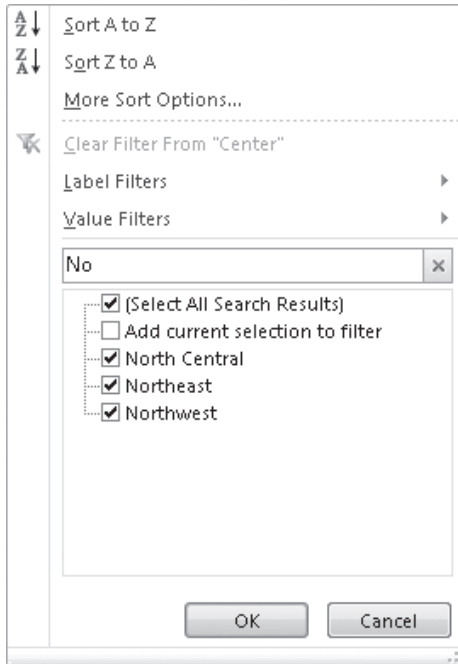
For example, if the PivotTable's Center field contains the values Atlantic, Central, Midwest, Mountain West, North Central, Northeast, Northwest, Southeast, and Southwest, typing the character string "No" limits the values to *North Central*, *Northeast*, and *Northwest*.

Tip Search filters look for the character string you specify anywhere within a field's value, not just at the start of the value. In the previous example, the search filter string "cen" would return both *Central* and *North Central*.

In versions of Excel prior to Excel 2010, the only visual indication that you had applied a filter to a field was the indicator added to a field's filter arrow. The indicator told users that there was an active filter applied to that field but provided no information on which values were displayed and which were hidden. In Excel 2010, Slicers provide a visual indication of which items are currently displayed or hidden in a PivotTable.

To create a Slicer, click any cell in a PivotTable and then, on the Options contextual tab of the ribbon, in the Sort & Filter group, click Insert Slicer to display the Insert Slicers dialog box.
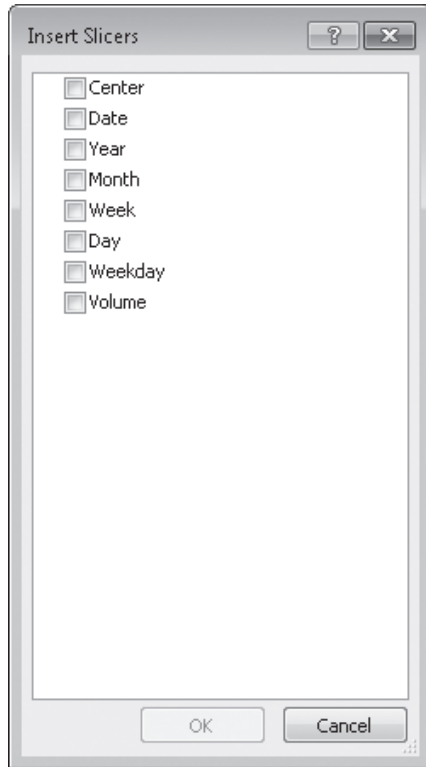
Select the check box next to the fields for which you want to create a Slicer, and click OK. When you do, Excel 2010 displays a Slicer for each field you identified.
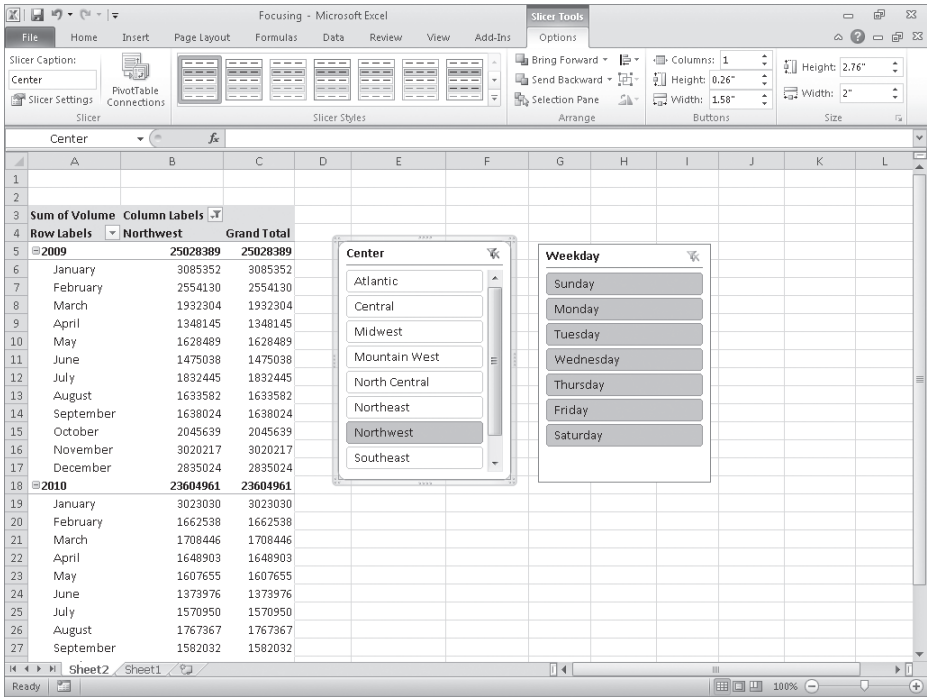
Tip If you have already applied a filter to the field for which you display a Slicer, the Slicer reflects the filter's result.

A Slicer displays the values within the PivotTable field you identified. Any value displayed in color (or gray if you select a gray-and-white color scheme) appears within the PivotTable. Values displayed in light gray or white do not appear in the PivotTable.

Clicking an item in a Slicer changes that item's state—if a value is currently displayed in a PivotTable, clicking it hides it. If it's hidden, clicking its value in the Slicer displays it in the PivotTable. As with other objects in an Excel 2010 workbook, you can use the Shift and Ctrl keys to help define your selections. For example, suppose you create a Slicer for the Month field while every month is displayed.

If you want to hide every month except January, February, and March, you click the January item to hide every month except January. Then hold down the Shift key and click March to have Excel 2010 display just the data for the months of January, February, and March. You can then add another month, such as July, to the filter by holding down the Ctrl key and clicking July in the Slicer.
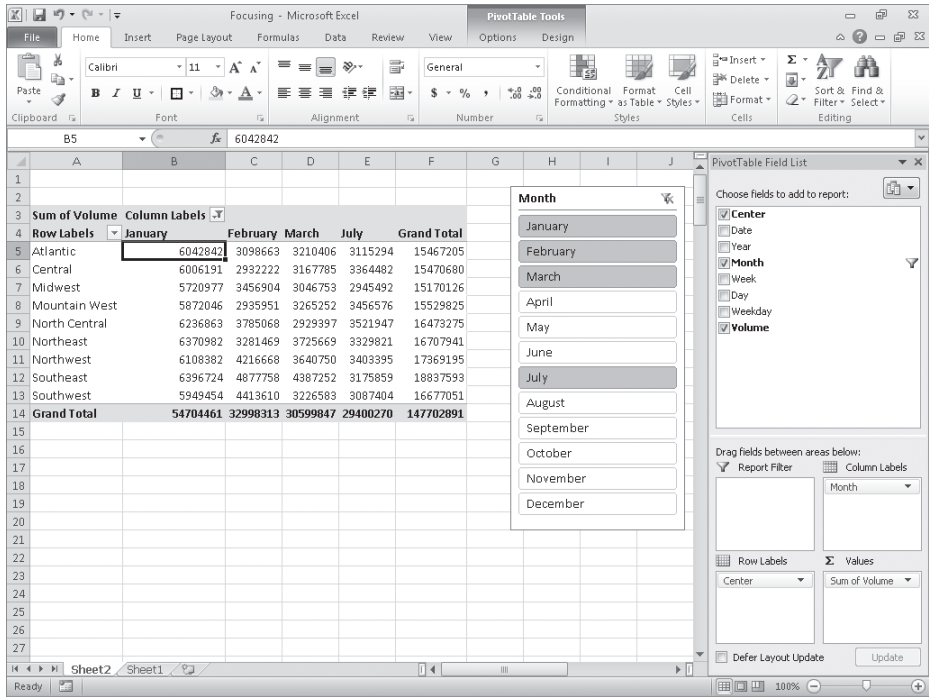
To use a Slicer to remove a filter, click the Clear Filter button in the upper-right corner of the Slicer. If you want to resize a Slicer, you can do so by dragging the resize handle in the lower-right corner of the Slicer. To hide the Slicer, right-click it and then click the menu command that starts with the word "Remove." For example, the Month field's menu command would be Remove Month.

Tip You can change a Slicer's formatting by clicking the Slicer and then, on the Slicer Tools Options contextual tab on the ribbon, clicking a style in the Slicer Styles gallery.

In this exercise, you'll focus the data displayed in a PivotTable by creating a filter, by filtering a PivotTable based on the contents of a field in the Report Filters area, by showing and hiding levels of detail within the body of the PivotTable, by using the Search box, and by using Slicers.

SET UP You need the Focusing_start workbook located in your Chapter09 practice file folder to complete this exercise. Open the Focusing_start workbook, and save it as *Focusing*. Then follow the steps.

1. On the **Sheet2** worksheet, click any cell in the PivotTable.

2. In the **PivotTable Field List** task pane's **Choose fields to add to report** area, click the **Center** field header, click the **Center** field filter arrow, and then clear the **(Select All)** check box.

Excel clears all the check boxes in the filter menu.

3. Select the **Northwest** check box, and then click **OK**.

   Excel filters the PivotTable.
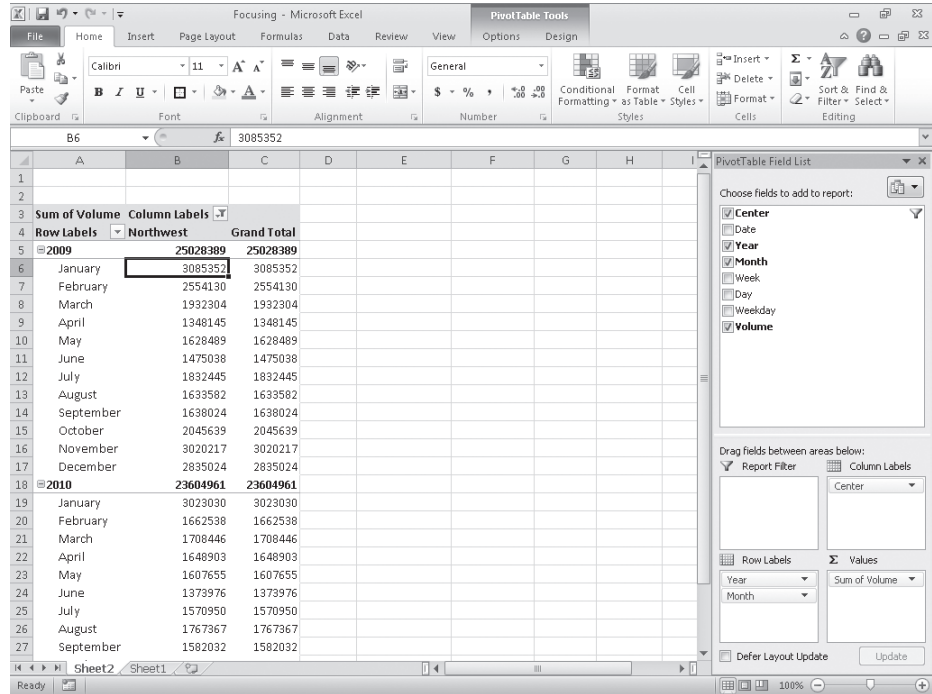
4. On the Quick Access Toolbar, click the **Undo** button.

   Excel removes the filter.

5. In the **PivotTable Field List** task pane, drag the **Weekday** field header from the **Choose fields to add to report** area to the **Report Filter** area in the **Drag fields between areas below** area.

6. In the **PivotTable Field List** task pane, click the **Close** button.

   The PivotTable Field List task pane closes.

7. In the body of the worksheet, click the **Weekday** filter arrow, and then, if necessary, select the **Select Multiple Items** check box.

   Excel adds check boxes beside the items in the Weekday field filter list.

8. Clear the **All** check box.
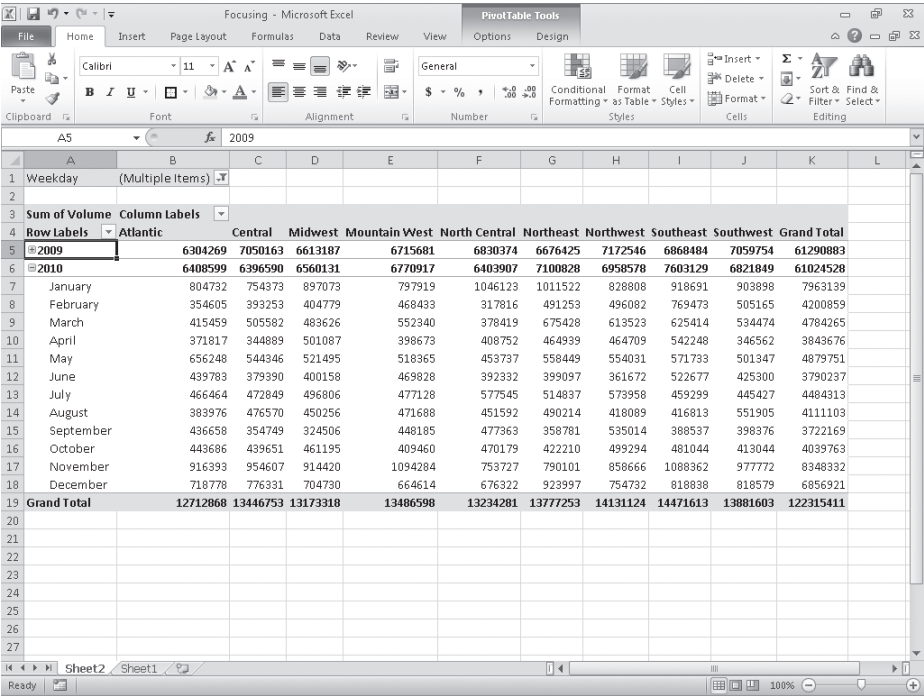
   Excel clears each check box in the list.

9. Select the **Tuesday** and **Thursday** check boxes, and then click **OK**.

Excel filters the PivotTable, summarizing only those values from Tuesdays and Thursdays.

10. In cell A5, click the **Hide Detail** button.

Excel collapses rows that contain data from the year 2009, leaving only the subtotal row that summarizes that year's data.

11. In cell **A5**, click the **Show Detail** button.

Excel redisplays the collapsed rows.

12. On the ribbon, click the **Options** contextual tab, and then, in the **Show** group, click **Field List**.

The PivotTable Field List task pane opens.

13. In the **PivotTable Field List** task pane, click the **Month** field header arrow.

The filter menu opens.

14. In the **Search** box, type **Ju**.

    Excel displays the months June and July in the filter list.

A↓	Sort A to Z
Z↓	Sort Z to A
	More Sort Options...
⟪	Clear Filter From "Month"
	Label Filters ▶
	Value Filters ▶

    Ju ☒

    - ☑ (Select All Search Results)
    - ☐ Add current selection to filter
    - ☑ June
    - ☑ July

    OK   Cancel
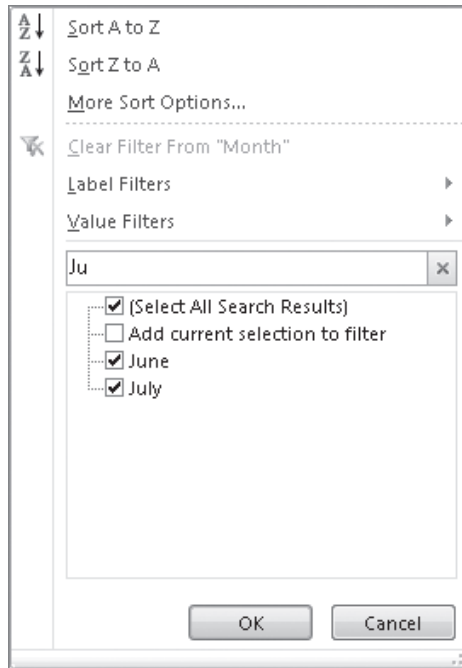
15. Click **OK**.

    Excel applies the filter.

16. On the **Options** contextual tab of the ribbon, in the **Actions** group, click the **Clear** button, and then click **Clear Filters**.

    Excel clears all filters from the PivotTable.

17. On the **Options** contextual tab of the ribbon, in the **Sort & Filter** group, click **Insert Slicer**.

    The Insert Slicers dialog box opens.

18. In the **Insert Slicers** dialog box, select the **Center** check box, and then click **OK**.

    A Slicer for the Center field appears.

19. Click the **Atlantic** item.

    Excel filters the PivotTable so only results for the Atlantic center appear.

20. In the Slicer, click **Midwest**, and then, while holding down the Ctrl key, click **Mountain West** and then **Northwest**.

Excel filters the PivotTable so it displays results for the Midwest, Mountain West, and Northwest centers.
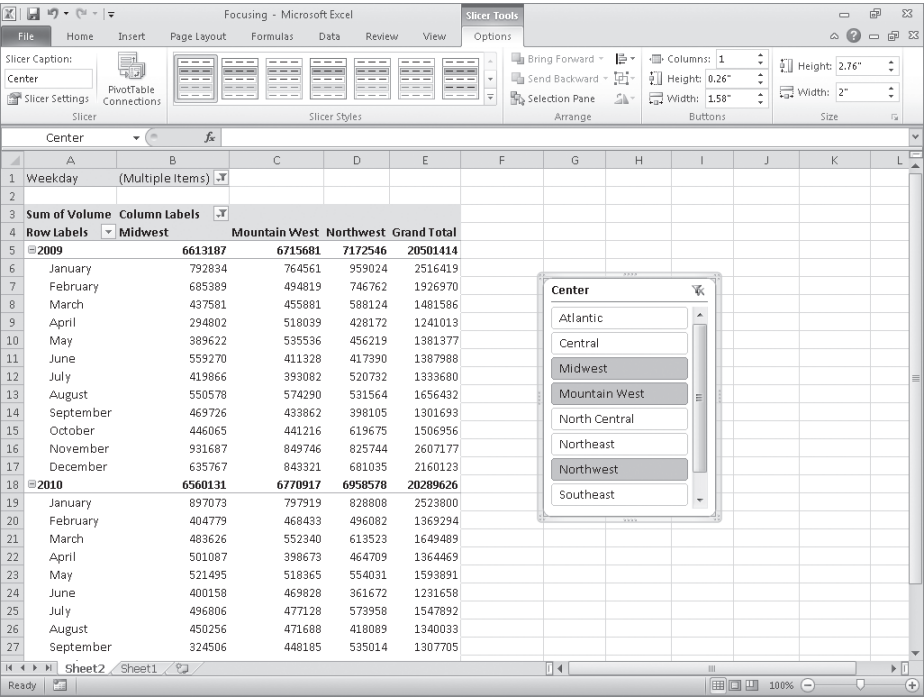
21. In the upper-right corner of the Slicer, click the **Clear Filter** button.

Excel removes the filter from the Center field.

22. Right-click the Slicer, and then click **Remove "Center"**.

Excel closes the Slicer.

✖ **CLEAN UP** Save the Focusing workbook, and then close it.

Editing PivotTables

After you create a PivotTable, you can rename it, edit it to control how it summarizes your data, and use the PivotTable cell data in a formula. As an example, consider a PivotTable named *PivotTable2* that summarizes package volumes for every Consolidated Messengers regional distribution hub.

Excel displays the PivotTable name on the Options contextual tab, in the PivotTable Options group. The name *PivotTable2* doesn't help you or your colleagues understand the data the PivotTable contains, particularly if you use the PivotTable data in a formula on another worksheet. To give your PivotTable a more descriptive name, click any cell in the PivotTable and then, on the Options contextual tab, in the PivotTable Options group, type the new name in the PivotTable Name field.

When you create a PivotTable with at least one field in the Row Labels area and one field in the Column Labels area of the PivotTable Field List task pane, Excel adds a grand total row and column to summarize your data. You can control how and where these summary rows and columns appear by clicking any PivotTable cell and then, on the Design contextual tab, in the Layout group, clicking either the Subtotals or Grand Totals button and selecting the desired layout.

After you create a PivotTable, Excel determines the best way to summarize the data in the column you assign to the Values area. For numeric data, for example, Excel uses the *SUM* function. If you want to change a PivotTable summary function, right-click any data cell in the PivotTable values area, point to Summarize Values By, and then click the desired operation. If you want to use a function other than those listed, click More Options to display the Value Field Settings dialog box. On the Summarize Values By page of the dialog box, you can choose the summary operation you want to use.
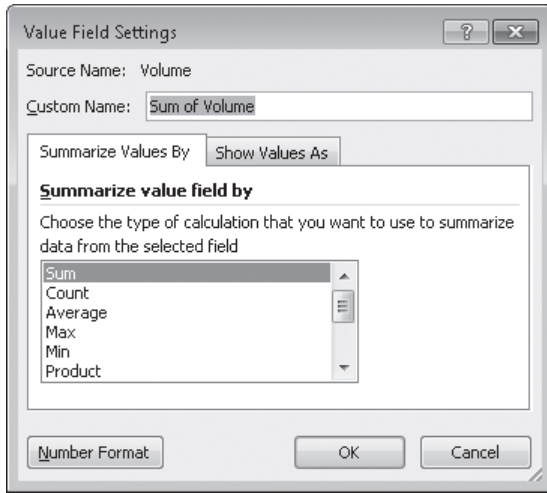
You can also change how the PivotTable displays the data in the Values area. On the Show Values As page of the Value Field Settings dialog box, you can select whether to display each cell's percentage contribution to its column's total, its row's total, or its contribution to the total of all values displayed in the PivotTable.
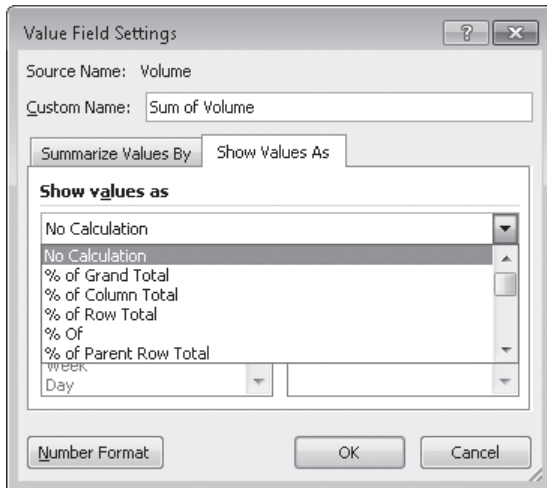
If you want, you can create a formula that incorporates a value from a PivotTable cell. To do so, you click the cell where you want to create the formula, type an equal sign, and then click the cell in the PivotTable that contains the data you want to appear in the other cell. A *GETPIVOTDATA* formula appears in the formula box of the worksheet that contains the PivotTable. When you press Enter, Excel creates the *GETPIVOTDATA* formula and displays the contents of the PivotTable cell in the target cell.

In this exercise, you'll rename a PivotTable, specify whether subtotal and grand total rows will appear, change the PivotTable summary function, display each cell's contribution to its row's total, and create a formula that incorporates a value in a PivotTable cell.

SET UP You need the Editing_start workbook located in your Chapter09 practice file folder to complete this exercise. Open the Editing_start workbook, and save it as *Editing*. Then follow the steps.

1. On the **Sheet2** worksheet, click any cell in the PivotTable.

2. On the **Options** contextual tab, in the **PivotTable** group, in the **PivotTable Name** field, type **VolumeSummary** and press **Enter**.

   Excel renames the PivotTable.

3. On the **Design** contextual tab, in the **Layout** group, click **Subtotals**, and then click **Do Not Show Subtotals**.

   Excel removes the subtotal rows from the PivotTable.

4. On the **Design** contextual tab, in the **Layout** group, click **Grand Totals**, and then click **On for columns only**.

   Excel removes the cells that calculate each row's grand total.

5. On the Quick Access Toolbar, click the **Undo** button.

   Excel reverses the last change.

6. Right-click any data cell in the PivotTable, point to **Summarize Values By**, and then click **Average**.

   Excel changes the Value field summary operation.

Average of Volume	Column Labels									Grand
Row Labels	Atlantic	Central	Midwest	Mountain West	North Central	Northeast	Northwest	Southeast	Southwest	
2009										
January	95685.93548	101387.2258	89512.16129	94920.77419	100330.129	99131.3871	99527.48387	111945	97725.48387	98907
February	55061.64286	50262.14286	73087.42857	55432.07143	80826.71429	64587.57143	91218.92857	71033.17857	96156.53571	70851
March	54452.48387	51433.35484	51642.58065	52936.32258	50108.03226	55006.77419	62332.3871	46512.70968	53127.29032	53061
April	48181.2	51606.83333	46526.73333	55127.63333	49206.26667	50513.8	44938.16667	54374.66667	50833.5	50145
May	49365.12903	58507.93548	49325.35484	48917.83871	49195.09677	47775.6129	52531.90323	56431.54839	46846	50988
June	57525.66667	47717.26667	48600.3	51723.96667	51194.6	51950.53333	49167.93333	47408.83333	47619.36667	50323
July	51010.96774	55038.3871	47501.09677	53948.3871	53602.35484	48605.54839	59111.12903	48764.90323	48487.09677	51789
August	49017.35484	50891.96774	57972.22581	56295.22581	51214.67742	52330.32258	52696.19355	53911.16129	45637.51613	52218
September	49824.5	47335.5	55734.86667	49443.2	41988.36667	58819.2	54600.8	50362.8	46913.4	50558
October	56243.25806	55219.67742	51610.54839	53415.03226	54606.80645	55995.3871	65988.35484	46034.3871	93179.51613	59143
November	101645.6333	97384.06667	105123.2	94925.06667	107428.1333	100172.0667	100673.9	94954.73333	90964.46667	99252
December	96451.09677	111357.129	101385.5484	90766.87097	104208.0323	107328.2581	91452.3871	100385.0645	100006.0323	10037
2010										
January	99244.45161	92360.87097	95035.48387	94500.06452	100859	106384.1613	97517.09677	94400.93548	94192.3871	97166
February	55604.89286	54460.07143	50373.42857	49423.32143	54354.28571	52607.75	59376.35714	103172.4643	61472.39286	60093
March	49109	50753.25806	46639.77419	52394.3871	44388.64516	65176.09677	55111.16129	95011.54839	50956.03226	5661
April	51903.1	48034.66667	57647.63333	47240.66667	40055.5	54429.16667	54963.43333	65074.63333	43972.16667	52080
May	59308.67742	56871.51613	56505.87097	52992.90323	50136.09677	54323.41935	51859.83871	56896.12903	50550.16129	54382
June	49430.86667	51415.4	52587	50395.1	50160.5	47749	45799.2	52912.4	45755.93333	49578
July	49482.3871	53493.29032	47514.77419	57554.06452	60008.83871	58808.03226	50675.80645	53682.16129	51106.58065	53591
August	55422.80645	52062.58065	53052.19355	52474.12903	50937.25806	51459.87097	57011.83871	48289.74194	46858.70968	51952
September	52599.6	46238.56667	49818.43333	48654.3	57908.33333	53319.06667	52734.4	49153.56667	53717.96667	51571

7. On the Quick Access Toolbar, click the **Undo** button.

   Excel reverses the last change.

8. Right-click any data cell in the PivotTable, and then click **Value Field Settings**.

   The Value Field Settings dialog box opens.

9. Click the **Show Values As** tab.

   The Show Values As page appears.

10. In the **Show Values As** list, click **% of Row Total**.

11. Click **OK**.

   Excel changes how it calculates the values in the PivotTable.

12. On the Quick Access Toolbar, click the **Undo** button.

Excel reverses the last change.

13. On the **Design** tab, in the **Layout** group, click **Subtotals**, and then click **Show All Subtotals at Bottom of Group**.

Excel displays subtotals in the workbook.

14. Click the **Package Summary** sheet tab.

The Package Summary worksheet appears.

15. In cell **C4**, type **=**, but do not press Enter.

16. Click the **PivotTable** sheet tab.

The PivotTable worksheet appears.

17. Click cell **K32**, and then press Enter.

Excel creates the formula *=GETPIVOTDATA("Volume",PivotTable!$A$3,"Year",2010)* in cell C4.
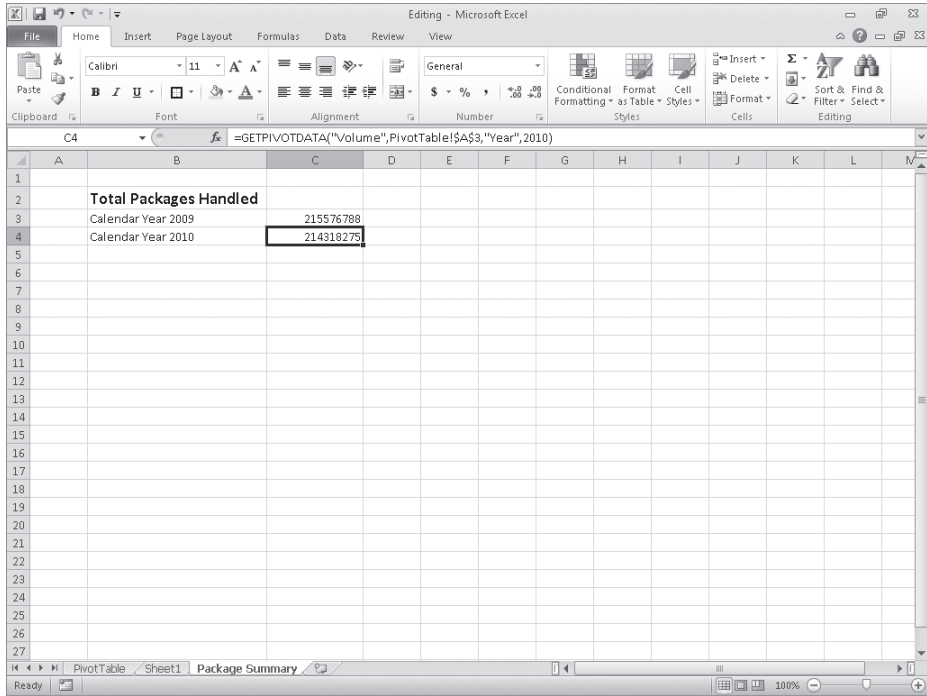
CLEAN UP Save the Focusing workbook, and then close it.

Formatting PivotTables

PivotTables are the ideal tools for summarizing and examining large data tables, even those containing more than 10,000 or even 100,000 rows. Even though PivotTables often end up as compact summaries, you should do everything you can to make your data more comprehensible. One way to improve your data's readability is to apply a number format to the PivotTable Values field. To apply a number format to a field, right-click any cell in the field, and then click Number Format to display the Format Cells dialog box. Select or define the format you want to apply, and then click OK to enact the change.

See Also For more information on selecting and defining cell formats by using the Format Cells dialog box, see "Formatting Cells" in Chapter 4, "Changing Workbook Appearance."

Analysts often use PivotTables to summarize and examine organizational data with an eye to making important decisions about the company. For example, chief operating officer Lori Penor might examine monthly package volumes handled by Consolidated Messenger and notice that there's a surge in package volume during the winter months in the United States.

Excel extends the capabilities of your PivotTables by enabling you to apply a conditional format to the PivotTable cells. What's more, you can select whether to apply the conditional format to every cell in the Values area, to every cell at the same level as the selected cell (that is, a regular data cell, a subtotal cell, or a grand total cell) or to every cell that contains or draws its values from the selected cell's field (such as the Volume field in the previous example).

To apply a conditional format to a PivotTable field, click a cell in the Values area. On the Home tab, in the Styles group, click Conditional Formatting, and then create the desired conditional format. After you do, Excel displays a Formatting Options action button, which offers three options for applying the conditional format:

- **Selected Cells** Applies the conditional format to the selected cells only

- **All Cells Showing Sum of field_name Values** Applies the conditional format to every cell in the data area, regardless of whether the cell is in the data area, a subtotal row or column, or a grand total row or column

- **All Cells Showing Sum of field_name Values for Fields** Applies the conditional format to every cell at the same level (for example, data cell, subtotal, or grand total) as the selected cells

See Also For more information on creating conditional formats, see "Changing the Appearance of Data Based on Its Value" in Chapter 4, "Changing Workbook Appearance."

In Excel, you can take full advantage of the Microsoft Office system enhanced formatting capabilities to apply existing formats to your PivotTables. Just as you can create Excel table formats, you can also create your own PivotTable formats to match your organization's desired color scheme.

To apply a PivotTable style, click any cell in the PivotTable and then, on the Design contextual tab, in the PivotTable Styles group, click the gallery item representing the style you want to apply. If you want to create your own PivotTable style, click the More button in the PivotTable Styles gallery (in the lower-right corner of the gallery), and then click New PivotTable Style to display the New PivotTable Quick Style dialog box.
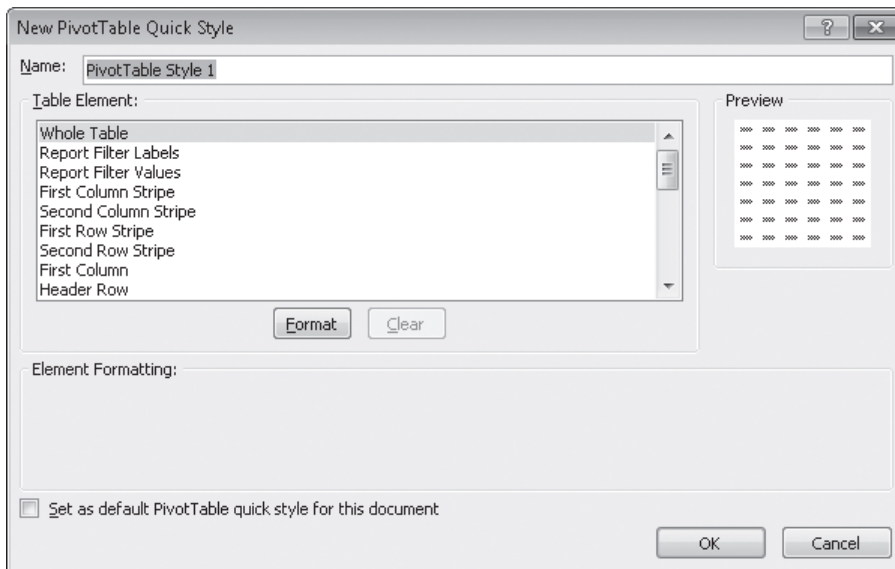
Type a name for the style in the Name field, click the first table element you want to customize, and then click Format. Use the controls in the Format Cells dialog box to change the element's appearance. After you click OK to close the Format Cells dialog box, the New PivotTable Quick Style dialog box Preview pane displays the style's appearance. If you want Excel to use the style by default, select the Set As Default PivotTable Quick Style For This Document check box. After you finish creating your formats, click OK to close the New PivotTable Quick Style dialog box and save your style.
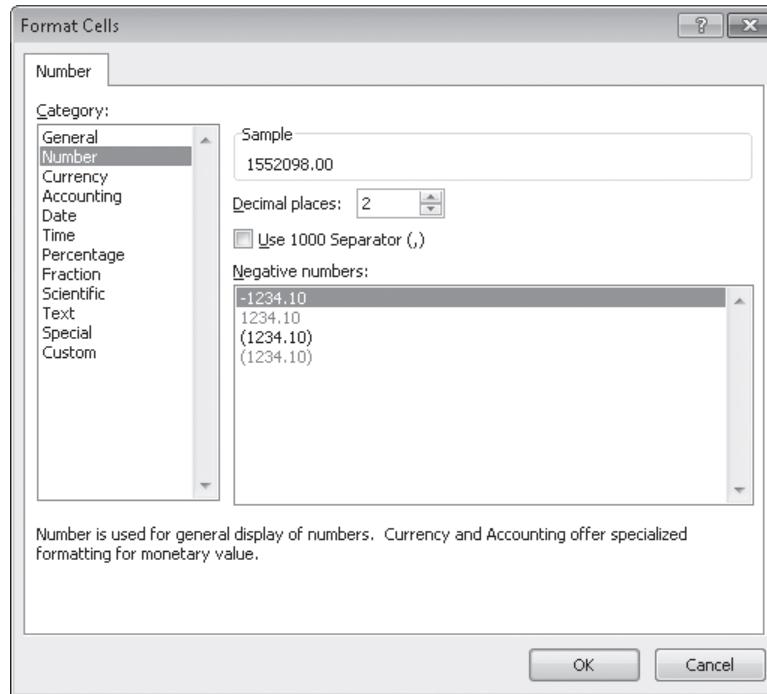
The Design contextual tab contains many other tools you can use to format your PivotTable, but one of the most useful is the Banded Columns check box, which you can find in the PivotTable Style Options group. If you select a PivotTable style that offers banded rows as an option, selecting the Banded Rows check box turns banding on. If you prefer not to have Excel band the rows in your PivotTable, clearing the check box turns banding off.

In this exercise, you'll apply a number format to a PivotTable values field, apply a PivotTable style, create your own PivotTable style, give your PivotTable banded rows, and apply a conditional format to a PivotTable.

SET UP **You need the Formatting_start workbook located in your Chapter09 practice file folder to complete this exercise. Open the Formatting_start workbook, and save it as *Formatting*. Then follow the steps.**

1. On the **Sheet2** worksheet, right-click any data cell, and then click **Number Format**.

   The Format Cells dialog box opens.

2. In the **Category** list, click **Number**.

   The Number page is displayed.

3. In the **Decimal places** field, type **0**.

4. Select the **Use 1000 Separator (,)** check box.

5. Click **OK**.

   Excel reformats your PivotTable data.

6. If necessary, on the **Design** contextual tab, in the **PivotTable Style Options** group, select the **Banded Rows** check box.

7. On the **Design** contextual tab, in the **PivotTable Styles** group, click the **More** button. Then, in the top row of the gallery, click the third style from the left. (When you point to it, Excel displays a ScreenTip that reads **Pivot Style Light 2**.)

Excel applies the PivotTable style.

8. In the lower-right corner of the **PivotTable Styles** gallery, click the **More** button.

The gallery expands.

9. Click **New PivotTable Style**.

The New PivotTable Quick Style dialog box opens.
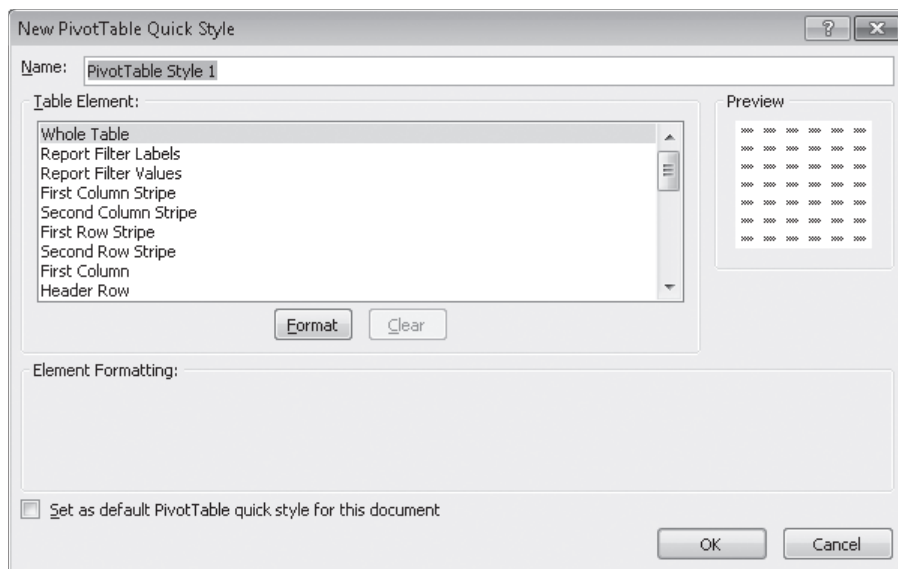
10. In the **Name** field, type **Custom Style 1**.

11. In the **Table Element** list, click **Header Row**, and then click **Format**.

    The Format Cells dialog box opens.

12. On the **Font** page, in the **Color** list, click the white square.

13. On the **Border** page, in the **Presets** area, click **Outline**.

14. On the **Fill** page, in the **Background Color** area, click the purple square at the lower-right corner of the color palette.

15. Click **OK**.

    The Format Cells dialog box closes, and the style change appears in the Preview pane of the New PivotTable Quick Style dialog box.

16. In the **Table Element** list, click **Second Row Stripe**, and then click **Format**.

    The Format Cells dialog box opens.

17. On the **Fill** page, in the middle part of the **Background Color** area, click the eighth square in the second row (it's a light, dusty purple).

18. Click **OK** twice.

The Format Cells dialog box closes, and your format appears in the PivotTable Styles gallery.
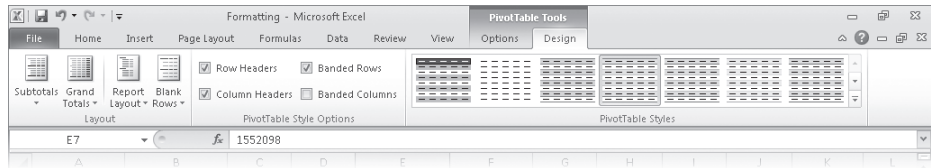
19. Click the new style.

Excel formats your PivotTable using your custom PivotTable style.

20. On the **Design** contextual tab, in the **PivotTable Style Options** group, clear the **Banded Rows** check box.

Excel removes the banding from your PivotTable and from the preview of the custom style.

21. Select the cell ranges **K6:K17** and **K19:K30**.

22. On the **Home** tab, in the **Styles** group, click **Conditional Formatting**, point to **Color Scales**, and in the top row, click the second three-color scale from the left.

    Excel applies the conditional format to the selected cells.

✖ **CLEAN UP** **Save the Formatting workbook, and then close it.**

Creating PivotTables from External Data

Although most of the time you will create PivotTables from data stored in Excel worksheets, you can also bring data from outside sources into Excel. For example, you might need to work with data created in another spreadsheet program with a file format that Excel can't read directly. Fortunately, you can export the data from the original program into a text file, which Excel then translates into a worksheet.
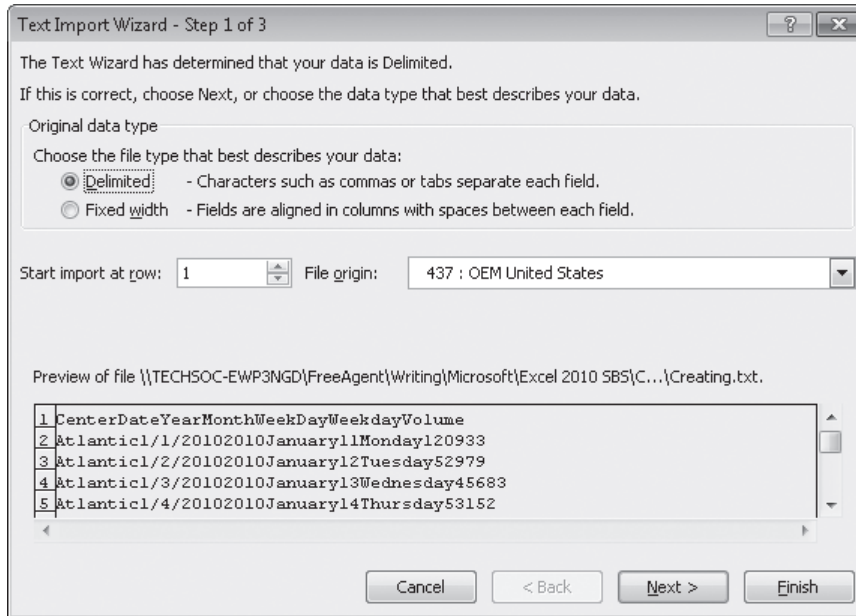
Tip The data import technique shown here isn't exclusive to PivotTables. You can use this procedure to bring data into your worksheets for any purpose.

Spreadsheet programs store data in cells, so the goal of representing spreadsheet data in a text file is to indicate where the contents of one cell end and those of the next cell begin. The character that marks the end of a cell is a *delimiter*, in that it marks the end (or "limit") of a cell. The most common cell delimiter is the comma, so the delimited sequence *15, 18, 24, 28* represents data in four cells. The problem with using commas to delimit financial data is that larger values—such as *52,802*—can be written by using commas as thousands markers. To avoid confusion when importing a text file, the most commonly used delimiter for financial data is the Tab character.

To import data from a text file, on the Data tab, in the Get External Data group, click From Text to display the Import Text File dialog box.
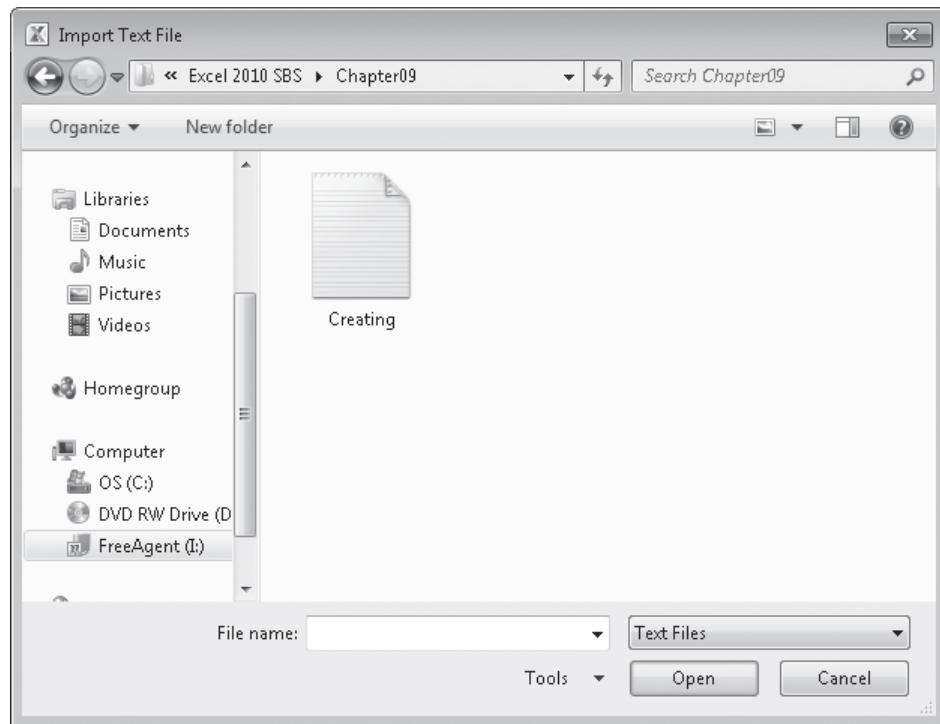
From within the Import Text File dialog box, browse to the directory that contains the text file you want to import. Double-clicking the file launches the Text Import wizard.

On the first page of the Text Import wizard, you can indicate whether the data file you are importing is Delimited or Fixed Width; Fixed Width means that each cell value will fall within a specific position in the file. Clicking Next to accept the default choice, Delimited (which Excel assigns after examining the data source you selected), advances you to the next wizard page.

On this page, you can choose the delimiter for the file (in this case, Excel detected tabs in the file and selected the Tab check box for you) and gives you a preview of what the text file will look like when imported. Clicking Next advances you to the final wizard page.

On this page, you can change the data type and formatting of the columns in your data. Because you'll assign number styles and PivotTable Quick Styles after you create the PivotTable, you can click Finish to import the data into your worksheet. After the data is in Excel, you can work with it normally.

In this exercise, you'll import data into Excel from a text file and then create a PivotTable based on that data.

SET UP **You need the Creating_start text file located in your Chapter09 practice file folder to complete this exercise.**
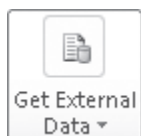
1. Create a new Excel workbook. On the **Data** tab, click the **Get External Data** button, and then click **From Text**.

   The Import Text File dialog box opens.

2. Navigate to the **Chapter09** practice file folder, and then double-click **Creating_start.txt**.

   The Text Import wizard starts.

3. Verify that the **Delimited** option is selected, and then click **Next**.

   The next Text Import Wizard page opens.

4. In the **Delimiters** area, verify that the **Tab** check box is selected and also verify that the data displayed in the **Data preview** area reflects the structure you expect.

5. Click **Finish**.

   Clicking Finish skips page 3 of the wizard, which has commands you can use to assign specific data types to each column. Excel assigns data types for you, so you don't need to do so. After you click Finish, the Import Data dialog box opens.
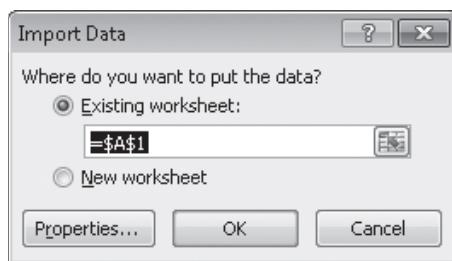
6. Verify that the **Existing worksheet** option is selected, and then click **OK**.

   Excel imports the data into your workbook.

7. On the **Home** tab, in the **Styles** group, click **Format as Table**, and then click the first table style.

   The Format As Table dialog box opens.

8. Verify that the **My table has headers** check box is selected and that the range **=$A$1:$H$6571** appears in the **Where is the data for your table?** box, and then click **OK**.

   A confirmation dialog box opens.

9. Click **Yes** to confirm you want to create the Excel table and break its link to the external data source.

   Excel creates an Excel table from your imported data.

10. On the **Insert** tab, in the **Tables** group, click **PivotTable**.

    The Create PivotTable dialog box opens.

11. Verify that the **Select a table or range** option is selected, that **Table1** appears in the **Table/Range** field, and that the **New Worksheet** option is selected.
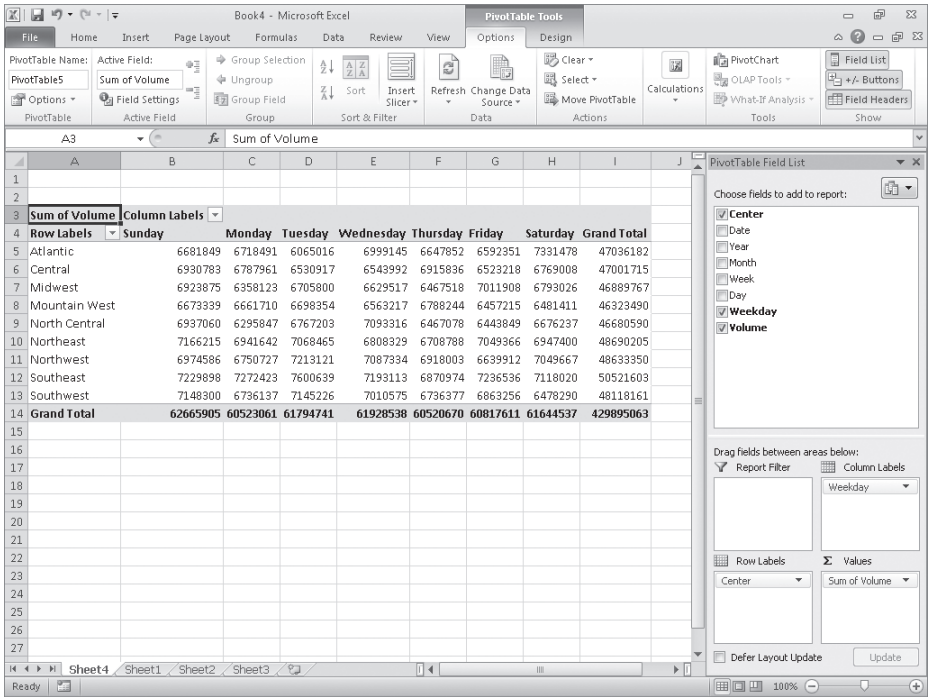
12. Click **OK**.

    Excel creates the PivotTable on a new worksheet.

13. In the **PivotTable Field List** task pane, drag the **Volume** field header to the **Values** area.

14. Drag the **Weekday** field header to the **Column Labels** area.

15. Drag the **Center** field header to the **Row Labels** data area.

16. On the Quick Access Toolbar, click the **Save** button.

    The Save As dialog box opens.

17. Browse to the **Chapter09** folder.

18. In the **File name** field, type **ImportedData**.

19. Click **Save**.

    Excel saves your file.

CLEAN UP Close the Imported Data workbook. If you're not continuing directly to the next chapter, exit Excel.

Key Points

● A PivotTable is a versatile tool you can use to rearrange your data dynamically, enabling you to emphasize different aspects of your data without creating new worksheets.

● PivotTable data must be formatted as a list. By using a data table as the PivotTable data source, you can streamline the creation process by referring to the table name instead of being required to select the entire range that contains the data you want to summarize.

● Excel comes with many attractive styles for PivotTables; you'll probably find one you like.

● With the PivotTable Field List task pane, you can create your PivotTable by using a straightforward, compact tool.

● Just as you can limit the data shown in a static worksheet, you can use filters to limit the data shown in a PivotTable.

● Excel 2010 includes two new types of filters, search filters and Slicers, that you can use to limit the data in your PivotTables.

● If you have data in a compatible format, such as a text file, you can import that data into Excel and create a PivotTable from it.