

# Microsoft Excel 2013

## Pivot Tables

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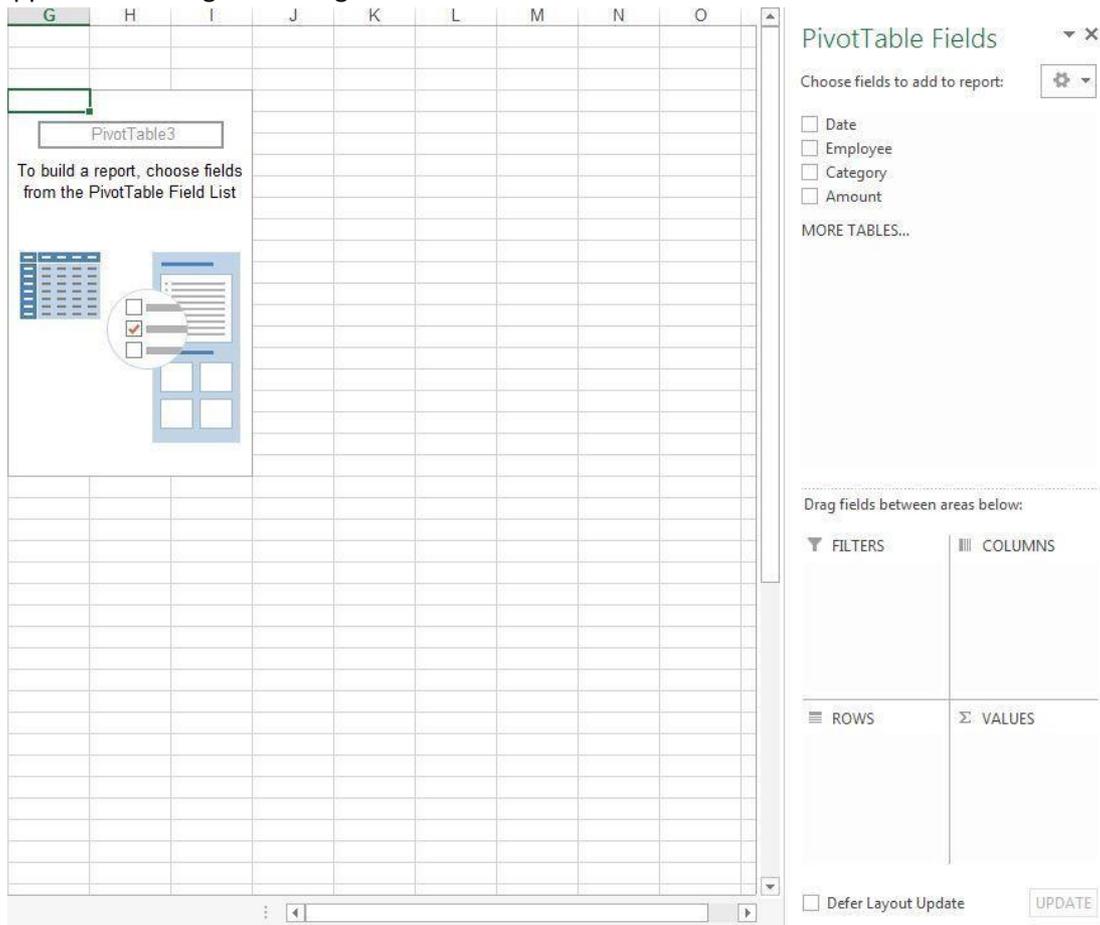
## Introduction

A Pivot Table is the name Excel gives to what is more commonly known as a cross-tabulation table. Such tables can be one, two or three-dimensional and offer a range of summary statistics. They can be modified interactively and can be based on data from more than one worksheet.

## Creating a Pivot Table

1. Load up Excel as usual and press <Ctrl o> to [Open] the file [advanced.xlsx](#)
2. Click on the **Accounts** tab – you should find that the set of data is already selected (if not then click in cell A1 to be in the data)
3. On the **INSERT** tab click on the [PivotTable] button
4. Accept the default area (or type in **A1 : D61**)
5. Place the Pivot Table on the **Existing Worksheet** in cell **G4** - press <Enter> or click on [OK]

**SEE:** you have two special PivotTable tabs (**ANALYZE** and **DESIGN**) appear on the *Ribbon*. In addition, a special **task pane** appears on the right showing the **PivotTable Fields**.



There are 4 boxes at the bottom of the pane on the right. **Rows**, **Columns** and **Values** are your starting point. The **Filters** is for the main item that you want to filter in relation to your whole pivot table.

## A One-Dimensional Table

One-dimensional pivot tables are very useful for obtaining subtotals. Here, for example, you might want to know the total expenditure by each employee:

1. Drag and drop the **[Employee]** field list button down into the area marked **Rows**
2. Drag and drop the **[Amount]** field list button into the area under  $\Sigma$  **Values**

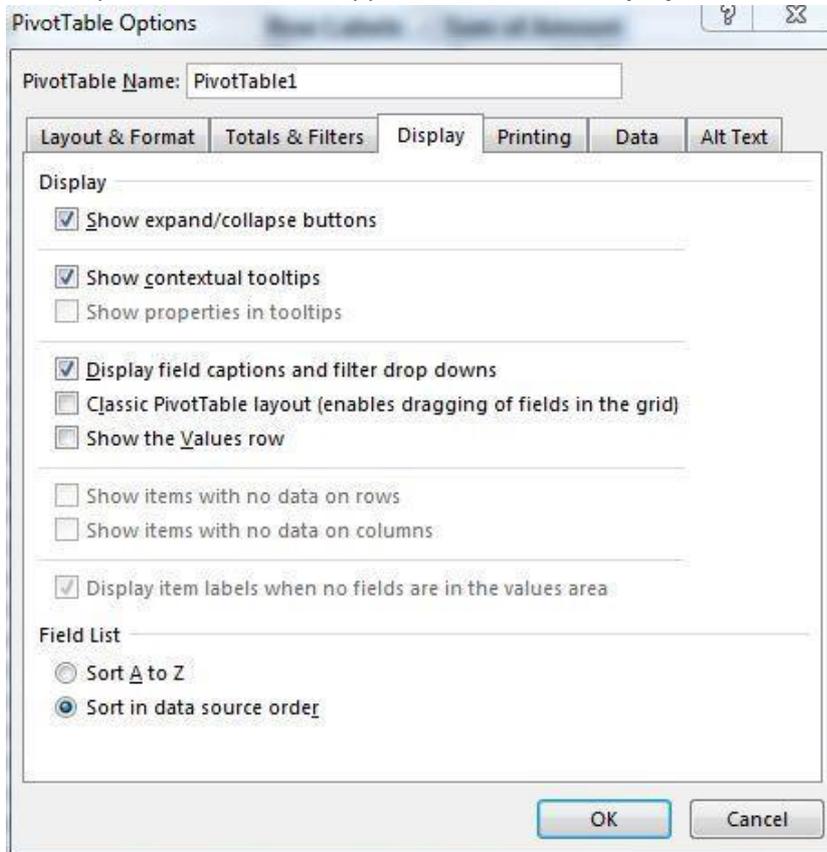
The Pivot Table is now automatically filled in with the data. The end result should look like this:

Row Labels	Sum of Amount
Chris	140.44
Emma	18.63
Liz	24.38
Mike	176.27
Paul	47.68
Sarah	303.35
Steve	141.06
<b>Grand Total</b>	<b>851.81</b>

**Note** that in Excel 2013, you have a **[Recommended PivotTables]** button on the **INSERT** tab, and this could have been used to produce the same pivot table as above (*Sum of Amount by Employee*) in a new worksheet.

To get the Pivot Table to **show** *Employee* rather than *Row Labels*, carry out the following *sequence* of instructions:

3. Click on the **[Options]** button (on the far left of the *PIVOTTABLE TOOLS*, **ANALYZE** tab) or **right click** in the table and choose **PivotTable Options...**:
4. In the *PivotTable Options* window that appears, click on the **Display** tab.



5. Click in the box next to **Classic PivotTable layout** to turn this option **on** and click **[OK]**

*Employee* has now appeared at the top, but the layout of the Pivot Table looks different. To return it to the original layout, but with *Employee* still at the top (instead of *Row Labels*):

6. Repeat steps 3-5, with the last step turning **off** the **Classic PivotTable layout** option. Now your Pivot Table should show as follows:

Employee	Sum of Amount
Chris	140.44
Emma	18.63
Liz	24.38
Mike	176.27
Paul	47.68
Sarah	303.35
Steve	141.06
<b>Grand Total</b>	<b>851.81</b>

To **sort** the names into a different alphabetical order and show the figures as money:

7. Click on *G5* then click the drop down arrow next to *Row Labels*, select the **Sort Z to A** - the names are sorted in reverse alphabetical order
8. Next, select the current totals in the pivot, highlight from cell **H5 to H12**.

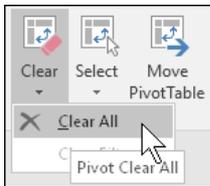
9. Right click the **selection** and select **[Number Format...]** menu, click **Accounting** in the *Category* group. In the Symbol drop down scroll down and select *English (United Kingdom)*, then click **OK** button.



## A Two-Dimensional Table

By using a second dimension (i.e. a column field as well as a row field), you can get a more detailed breakdown of the figures. Here, for example, you might want to know the expenditure by each employee for each category. This second field needs to be added to the pivot table layout. Until you are more familiar with how pivot tables work, it's best to re-display the skeleton first:

1. Click on the **PIVOTTABLE TOOLS ANALYZE** tab and then **[Clear]** button in the *Actions* group followed by **Clear All** to start all over again



2. Drag and drop the **[Employee]** field button down into the area marked *Rows*
3. Drag and drop the **[Category]** field button down into the area marked *Columns*
4. Drag and drop the **[Amount]** field button into the area under  $\Sigma$  *Values*

The Pivot Table now shows the breakdown of each employee's expenditure for the three categories, i.e. Food, Stationery and Travel, as follows:

Sum of Amount	Category			
Employee	Food	Stationery	Travel	Grand Total
Chris		40.44	100	140.44
Emma	4.01	14.62		18.63
Liz	2.38	22		24.38
Mike	42.34		133.93	176.27
Paul	12.51	4.78	30.39	47.68
Sarah	42.55	3.32	257.48	303.35
Steve	45.29	2.17	93.6	141.06
<b>Grand Total</b>	<b>149.08</b>	<b>87.33</b>	<b>615.4</b>	<b>851.81</b>

To return to a one-dimensional table:

5. In the *PivotTable Fields* pane on the right (if this has closed, either click on the Pivot Table data in the sheet or click on the **[Field List]** button in the *Show* group on the **PIVOTTABLE TOOLS ANALYZE** tab), click the down arrow on the **Category** field in the *Columns* area and select **Remove Field** from the menu or **drag** into the spreadsheet to the left.

To obtain a two-dimensional table once more:

6. Drag and drop the **[Category]** field into the area marked *Columns*.

7. Select from **H6 to K13**, right click the selection and select [**Number Format...**] menu, click **Accounting** in the *Category* group. In the Symbol drop down scroll down and select *English (United Kingdom)*, then click **OK** button.

## A Three-Dimensional Table

You can add a third dimension to a pivot table by having a drop-down list from which you select the third variable. The remaining data series on this worksheet refers to dates, but as they stand they are of little use in summarizing the data (nearly every date is a different value). To get a breakdown for each month, you first have to create a new field isolating this from the date:

1. In cell **E1** type the heading **Month** and press <Enter>
2. In cell **E2** type the formula `=text(a2,"mmm")` and press <Ctrl Enter> - if you didn't already know it, holding down <Ctrl> as you press <Enter> keeps the active cell where it is.
3. Double click on the **small green square** in the bottom right-hand corner of the **E2** cell to fill down the column with the months.
4. Click on a cell in the pivot table to reactivate the *PivotTable Fields* pane and the **PIVOTTABLE TOOLS, ANALYZE** and **DESIGN** tabs re-appear.
5. On the **PIVOTTABLE TOOLS ANALYZE** tab, click on the icon **above** the [**Change Data Source**] button in the *Data* group.
6. Redefine the data source *table/range* to include column E (i.e. change `$D$61` to `$E$61`) – click on [**OK**]
7. Drag and drop the new [**Month**] field button into the area under **Filters** in the *PivotTable Fields* pane.

To look at the accounts for any one month:

8. Click on the *down arrow* in cell **H2**, select the month required (e.g. *Jan*) then click on [**OK**].

Your Pivot Table should look as follows (if you chose *Jan* as your month):

Month	Jan				
Sum of Amount	Category				
Employee	Food	Stationery	Travel	Grand Total	
Chris			£ 100.00	£	100.00
Emma		£ 5.96		£	5.96
Liz		£ 5.99		£	5.99
Mike	£ 6.40			£	6.40
Paul	£ 5.12			£	5.12
Sarah	£ 3.79	£ 3.32		£	7.11
Steve	£ 22.00	£ 0.57	£ 46.65	£	69.22
<b>Grand Total</b>	£ 37.31	£ 15.84	£ 146.65	£	199.80

9. Repeat step 8, choosing (**All**) to reshew all the data.

## Hiding and Showing Category Values with Filters

If you don't want certain values displayed (e.g. you might only want figures for food and travel) then you can omit data from the Pivot Table using the list arrows attached to the summary fields.

1. Click on the *down arrow* attached to the **Category** column heading in cell **H4**.

- Click on the **Stationery** check box to **remove** the check, then click on **[OK]**.

Only **Food and Travel** are now shown, and a *filter indicator* shows in H4.

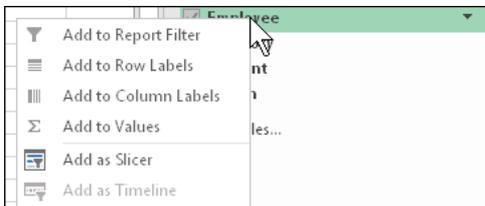
To show Stationery again:

- Click on the *filter indicator* attached to the **Category** column heading in cell H4.
- Click on the **Stationery** check box to restore the check mark then click on **[OK]**.
- Use the same process, this time using the down arrow for **Employee** row heading in cell G5 to show or hide particular people. Make sure all the data is being shown when you have finished.

## Adding New Data and Altering Table Layout

To summarize other data values, you simply drop them into the  $\Sigma$  Values area of the *PivotTable Fields* pane. Here, for example, you might want to know **how many** expenses claims have been submitted by each employee:

- Drag and drop the **Employee** field (from the top of the pane) into the area under  $\Sigma$  Values (You can also right click on the **Employee** field and choose from the menu option.)



You now have both the *Sum of amount* and the *Count of Employee* for the claims submitted by each employee. Note that the count is also shown as a currency style - how to remove this is dealt with in the next section. The results would also look clearer if the two sets of figures were separated out:

- Drag the  $\Sigma$  Values field button from the *Columns* area to below the **Employee** field button in the *Rows* area.

Your Pivot Table should now look like this:

Employee	Values	Food	Stationery	Travel	Grand Total
Chris	Sum of Amount	£ 40.44	£ 100.00	£ 140.44	
	Count of Employee	£ 5.00	£ 1.00	£ 6.00	
Emma	Sum of Amount	£ 4.01	£ 14.62	£ 18.63	
	Count of Employee	£ 2.00	£ 4.00	£ 6.00	
Liz	Sum of Amount	£ 2.38	£ 22.00	£ 24.38	
	Count of Employee	£ 2.00	£ 4.00	£ 6.00	
Mike	Sum of Amount	£ 42.34		£ 133.93	£ 176.27
	Count of Employee	£ 8.00		£ 8.00	£ 16.00
Paul	Sum of Amount	£ 12.51	£ 4.78	£ 30.39	£ 47.68
	Count of Employee	£ 3.00	£ 2.00	£ 2.00	£ 7.00
Sarah	Sum of Amount	£ 42.55	£ 3.32	£ 257.48	£ 303.35
	Count of Employee	£ 5.00	£ 2.00	£ 6.00	£ 13.00
Steve	Sum of Amount	£ 45.29	£ 2.17	£ 93.60	£ 141.06
	Count of Employee	£ 2.00	£ 2.00	£ 2.00	£ 6.00
<b>Total Sum of Amount</b>		<b>£ 149.08</b>	<b>£ 87.33</b>	<b>£ 615.40</b>	<b>£ 851.81</b>
<b>Total Count of Employee</b>		<b>£ 22.00</b>	<b>£ 19.00</b>	<b>£ 19.00</b>	<b>£ 60.00</b>

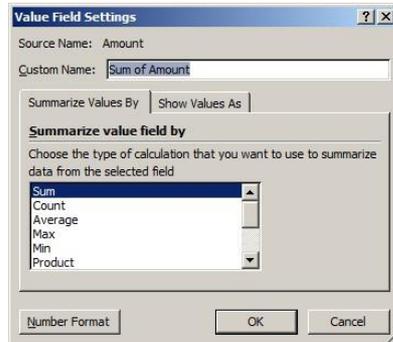
3. Drag the  $\Sigma$  **Values** field button above the **Employee** field button in the *Rows* area under *PivotTable Fields*

The data is now summarized first by the *Values* fields and then by *Employee*.

## Changing the Sum to Average and Data Format

To change the summary statistics:

1. Click on the **Sum of Amount** down arrow button in the  $\Sigma$  **Values** area under *PivotTable Fields* and choose **Value Field Settings...** from the menu - a dialog box appears:



2. Under *Summarize value field by* choose **Average** (note what else is available)
3. Press **<Enter>** or click on **[OK]**.

Note that you can add the same data series into the Data area more than once if you need to - for example to show both the Sum and Average values.

Another method of changing the field settings is to *right click* on the data in the Pivot Table:

4. *Right click* on **Average of Amount** label in the *Pivot Table* and choose **Value Field Settings...**
5. Change *Summarize value field by* back to **Sum** then press **<Enter>** or click on **[OK]**.

You can also change the data format in the *Value Field Settings* dialog box:

6. Click on the **Count of Employee** down arrow button in the  $\Sigma$  **Values** area under *PivotTable Fields* and choose **Value Field Settings...**
7. Click on the **[Number Format]** button in the bottom left – the *Format Cells* window appears
8. Change the *Category*: to **Number** and set *Decimal places*: to **1**.
9. Click the **[OK]** button twice.
10. Repeat – change *Decimal places*: to **0**.

Month	(All)					
		Category				
Values	Employee	Food	Stationery	Travel		Grand Total
Sum of Amour	Chris		£ 40.44	£ 100.00		£ 140.44
	Emma	£ 4.01	£ 14.62			£ 18.63
	Liz	£ 2.38	£ 22.00			£ 24.38
	Mike	£ 42.34		£ 133.93		£ 176.27
	Paul	£ 12.51	£ 4.78	£ 30.39		£ 47.68
	Sarah	£ 42.55	£ 3.32	£ 257.48		£ 303.35
	Steve	£ 45.29	£ 2.17	£ 93.60		£ 141.06
Count of Empl	Chris		5	1		6
	Emma	2	4			6
	Liz	2	4			6
	Mike	8		8		16
	Paul	3	2	2		7
	Sarah	5	2	6		13
	Steve	2	2	2		6
<b>Total Sum of Amount</b>		£ 149.08	£ 87.33	£ 615.40		£ 851.81
<b>Total Count of Employee</b>		22	19	19		60

## Removing a Values item

To remove a summary statistic from the Pivot Table, in this case, the *Count of Employee*:

1. Note the area labelled  $\Sigma$  **Values** in the bottom right corner (Rows) of the *PivotTable Fields* pane.
2. Click on **Count of Employee** and drag to spreadsheet. You can also click the down arrow and choose **Remove Field**. **Both** *Count of Employee* and *Values* fields are removed.

## Multiple Row/Column - Filter Fields

You can have **more than one** Row, Column or Filter field in a pivot table. A good example of the latter would be if you had years as well as months – you could then select a month in a particular year using the list arrows provided. If you want to display the breakdown by month for the current table, you have to move the **Month** box from the *Filters* area into either the *Rows* or *Columns* area of the *PivotTable Fields* pane:

1. Drag the **Month** field from the *Filters* area to the *Columns* area, and put it under the **Category** field so that you are viewing by *Category* and then *Month*.

Your Pivot Table data and fields will look something like:

Sum of Amount	Category	Month					Food Total	Stationery
Employee	Jan	Feb	Mar	Apr		Jan		
Chris		£ 4.01				£ 4.01	£ 5.96	
Emma			£ 2.38			£ 2.38	£ 5.99	
Liz								
Mike	£ 6.40	£ 10.69	£ 15.19	£ 10.06	£ 42.34			
Paul	£ 5.12			£ 7.39	£ 12.51			
Sarah	£ 3.79		£ 8.65	£ 30.11	£ 42.55	£ 3.32		
Steve	£ 22.00			£ 23.29	£ 45.29	£ 0.57		
<b>Grand Total</b>	<b>£ 37.31</b>	<b>£ 14.70</b>	<b>£ 26.22</b>	<b>£ 70.85</b>	<b>£ 149.08</b>	<b>£ 15.84</b>		

**PivotTable Fields**

Choose fields to add to report: ⚙️

Date

Employee

Category

Amount

Month

MORE TABLES...

---

Drag fields between areas below:

**FILTERS**

**COLUMNS**

Category

Month

---

**ROWS**

Employee

**VALUES**

Sum of Amou...

A better arrangement is obtained by moving the **Month** box into the *Rows* area of the *PivotTable Fields* pane:

2. Drag the **Month** field from the *Columns* area to the *Rows* area, and put it under the **Employee** field button.

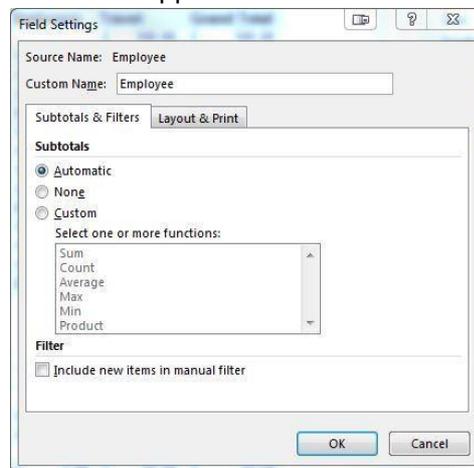
**To hide each employee's total:**

Sum of Amount	Employee	Month	Category	Food	Stationery	Travel	Grand Total
	Chris	Jan				£ 100.00	£ 100.00
		Feb			£ 2.01		£ 2.01
		Mar			£ 1.27		£ 1.27
		Apr			£ 37.16		£ 37.16
	<b>Chris Total</b>				£ 40.44	£ 100.00	£ 140.44
	Emma	Jan			£ 5.96		£ 5.96
		Feb	£ 4.01		£ 2.33		£ 6.34
		Mar			£ 2.11		£ 2.11
		Apr			£ 4.22		£ 4.22
	<b>Emma Total</b>		£ 4.01		£ 14.62		£ 18.63

3. Click on the **Employee** field down arrow and choose **Field Settings...**



The following *Field Settings* dialog box should appear:



4. Change the setting under *Subtotals* to **None** and click the **OK** button. (no subtotals)

Sum of Amount	Employee	Month	Category	Food	Stationery	Travel	Grand Total
	Chris	Jan				£ 100.00	£ 100.00
		Feb			£ 2.01		£ 2.01
		Mar			£ 1.27		£ 1.27
		Apr			£ 37.16		£ 37.16
	Emma	Jan			£ 5.96		£ 5.96

**To view by Month then Employee:**

5. In the *Rows* area, drag the **Month** field button above the **Employee** field button

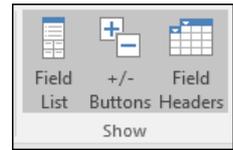
**To display the monthly totals:**

6. Click on the **Month** field button and choose **Field Settings...**
7. Change the setting under *Subtotals* to **Automatic** and click the **OK** button.

**To hide the details for a particular month:**

8. Click on the [-] button to the left of the month name in the data area of the Pivot Table, *You can also right click the [-] or [+] and select from the menu.*
9. To redisplay the details, click on the same button (which now appears as [+])

**Note:** These expand/contact buttons can be turned off by clicking on the **[+/- Buttons]** icon in the *Show* group on the right of the **PIVOTTABLE TOOLS ANALYZE** tab.



Hopefully the above exercise has demonstrated the flexibility of pivot table layout and you now understand the various component parts of the table.

10. On the *Analyze* ribbon, in the *Show* group, click the **Buttons** button.

With the Buttons turned off, your Pivot Table data and fields will now look something like:

(Notice Jan, Feb and Mar have no buttons.)

Sum of Amount		Category				
Month	Employee	Food	Stationery	Travel	Grand Total	
Jan	Chris				£ 100.00	£ 100.00
	Emma		£ 5.96			£ 5.96
	Liz		£ 5.99			£ 5.99
	Mike	£ 6.40				£ 6.40
	Paul	£ 5.12				£ 5.12
	Sarah	£ 3.79	£ 3.32			£ 7.11
	Steve	£ 22.00	£ 0.57	£ 46.65		£ 69.22
<b>Jan Total</b>		<b>£ 37.31</b>	<b>£ 15.84</b>	<b>£ 146.65</b>		<b>£ 199.80</b>
Feb	Chris		£ 2.01			£ 2.01
	Emma	£ 4.01	£ 2.33			£ 6.34
	Mike	£ 10.69		£ 56.90		£ 67.59
	Paul		£ 2.13	£ 15.50		£ 17.63
	Sarah			£ 2.40		£ 2.40
	Steve		£ 1.60			£ 1.60
<b>Feb Total</b>		<b>£ 14.70</b>	<b>£ 8.07</b>	<b>£ 74.80</b>		<b>£ 97.57</b>
Mar	Chris		£ 1.27			£ 1.27

11. On the *Analyze* ribbon, in the *Show* group, click the **Buttons** button to return buttons.

## TimeLine, Grouping and Details

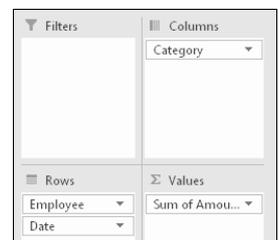
Earlier in these lessons (in the three-dimensional table section), you calculated a *Month* field, to view the monthly expenditure statistics. In fact, there was no need to calculate a new field as you can **group** data in Pivot Tables.

The grouping available depends on the type of data held in the field. Numbers can be grouped in equally sized ranges (e.g. values 0-10, 10-20, 20-30 etc.) while dates/times can be summarized by years, quarters, months, days, hours etc. Grouping **cannot** be carried out on text values.

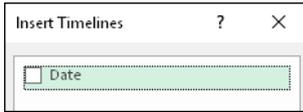
To view monthly expenditure **without** calculating a new field:

1. Click on the **Month** field button in the *Rows* area and choose **Remove Field**
2. Drag the **Date** field from the top of the *PivotTable Fields* pane to below the **Employee** field button in the *Rows* area at the bottom - expenditure is shown for each date.

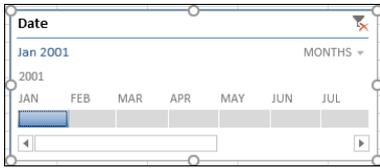
Sum of Amount		Category				
Employee	Date	Food	Stationery	Travel	Grand Total	
Chris						
	10-Jan			£ 100.00		£ 100.00
	2-Feb		£ 2.01			£ 2.01
	27-Mar		£ 1.27			£ 1.27
	12-Apr		£ 0.99			£ 0.99
	17-Apr		£ 19.87			£ 19.87
	21-Apr		£ 16.30			£ 16.30
Emma						
	20-Jan		£ 5.96			£ 5.96
	1-Feb		£ 2.33			£ 2.33
	4-Feb	£ 1.99				£ 1.99
	7-Feb	£ 2.02				£ 2.02
	27-Mar		£ 2.11			£ 2.11
	30-Apr		£ 4.22			£ 4.22



- Click on **10-Jan (H6)**, on the *Analyze* tab, in the *Filter* group, click the **Insert Timeline** button.



- Click the *Date* check box and click **[OK]**.
- In the *Time Line Date* dialog box appears, scroll to the left and click on **Jan**.

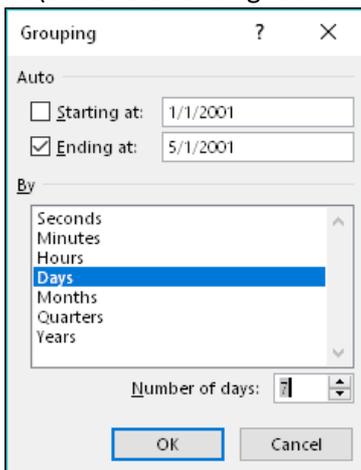


Notice that the only dates showing in the pivot table are Jan.

- Click the **red X** in the top right corner of the dialog box to remove the filter.
- Right click in the top of the *Time Line Date* dialog box and click **Cut** to remove the dialog box.

Next let's take a look at **Group** command.

- Right click on any date value in column *H* and choose **Group** (or click on any date and then click on the **[Group Selection]** button in the *Group* area of the *PIVOTTABLE TOOLS, ANALYZE* tab) - a dialog box appears (the one on the right shows the *Grouping* window for numeric data):



- Change the *Starting date:* to **01/01/2001**
- Under the heading *By*, select **Days** then change **Number of days:** to **7** (for weekly figures).  
(Make sure **Months** is not selected.)
- Click the **[OK]** button.

Sum of Amount	Category				
Employee	Date	Food	Stationery	Travel	Grand Total
Chris	4/18/2001 - 4/24/2001		£ 16.30		£ 16.30
	4/11/2001 - 4/17/2001		£ 20.86		£ 20.86
	3/21/2001 - 3/27/2001		£ 1.27		£ 1.27
	1/31/2001 - 2/6/2001		£ 2.01		£ 2.01
	1/10/2001 - 1/16/2001			£ 100.00	£ 100.00

Notice your dates are grouped by weeks.

- Right click *Dates* and choose **Group**.

- Under the heading *By*, select **Months** then click the **[OK]** button.



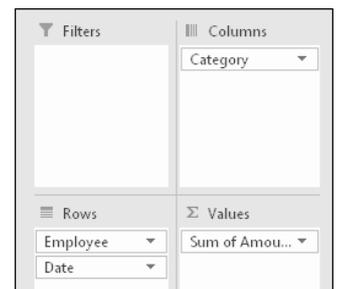
(Make sure **Days** is not selected.)

You now get the same grouping you had earlier using the calculated *Month* field. Once grouping has been set on a field button in the *Columns* or *Rows* area, you can use the grouped data in the *Filters* area:

- Drag the **Date** field button from the *Rows* area to the *Filters* area in the *PivotTable Fields* pane
- Click on the *down arrow* in *H2* and note that you have all the months of the year listed
- Select the month *Jan* then click on the **[OK]** button to see that month's figures.
- Repeat step 8 but this time select **(All)**
- End by moving the **Date** field button out of the *Filters* area and back to the *Rows* area under the **Employee** field button.

You could now Ungroup the data (as in steps 3 and 4), but you might just want to see the breakdown of expenses for a single month:

- Right click on **Apr** in *H9* and choose **Expand/Collapse** followed by **Expand** - the *Show Detail* dialog box appears



- From the available fields choose **Amount** then click the **[OK]** button.

Your Pivot Table data and fields should now look something like:

Sum of Amount	Date	Amount	Category	Stationery	Travel	Grand Total
Chris						
	Jan				£ 100.00	£ 100.00
	Feb			£ 2.01		£ 2.01
	Mar			£ 1.27		£ 1.27
	Apr			£ 37.16		£ 37.16
		0.99		£ 0.99		£ 0.99
		16.3		£ 16.30		£ 16.30
		19.87		£ 19.87		£ 19.87
Emma						
	Jan			£ 5.96		£ 5.96
	Feb		£ 4.01	£ 2.33		£ 6.34
	Mar			£ 2.11		£ 2.11
	Apr			£ 4.22		£ 4.22
		4.22		£ 4.22		£ 4.22
Liz						
	Jan			£ 5.99		£ 5.99
	Mar		£ 2.38	£ 9.52		£ 11.90
	Apr			£ 6.49		£ 6.49
		6.49		£ 6.49		£ 6.49
Mike						
	Jan		£ 6.40			£ 6.40
	Feb		£ 10.69		£ 56.90	£ 67.59
	Mar		£ 15.19		£ 39.78	£ 54.97
	Apr		£ 10.06		£ 37.25	£ 47.31
		3.52		£ 3.52		£ 3.52
		6.54		£ 6.54		£ 6.54
		37.25		£ 37.25		£ 37.25
Paul						
	Jan		£ 5.12			£ 5.12
	Feb		£ 2.43		£ 45.50	£ 47.93

PivotTable Fields

Choose fields to add to report:

Search

Date  
 Employee  
 Category  
 Amount  
 Month

More Tables...

Drag fields between areas below:

Filters

Columns  
Category

Rows  
Employee  
Date  
Amount

Values  
Sum of Amou...

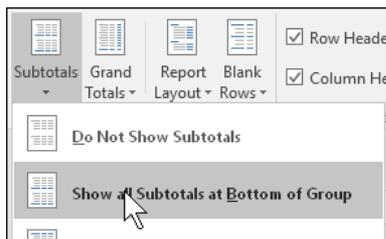
- To hide the detail, you can repeat step 11, but choose **Expand/Collapse** followed by **Collapse**, or click on the [-] button to the left of *Apr*
- End by removing the *Amount Detail (+ & -)* column for the *Amount* by clicking on the **Amount** field button in the *PivotTable Fields* pane and *drag* it into the spreadsheet.

**Tip:** Pivot Tables have another very useful feature. If you double click on any of the calculated cells in a table (often a total), a copy of that data is pasted onto a new sheet. For example, to see all of the Food expenses, **double click on cell I33**; to see Steve's claims for January, **double click on cell L29**.

## Row/Column Field Options and Built-in Styles

Slightly different settings apply to fields being used as row/column headings from those being used in the data area. You have already had a brief look at the latter; now look at a row field setting:

- To see the subtotals better in this next part; click *Design* tab, in the *Layout* group, click *Report Layout* and select **Show all Subtotals at Bottom of Group** menu item.



- Click on the **Employee** field down arrow button under the *Rows* area in the *PivotTable Fields* pane and choose **Field Settings...**
- Under *Subtotals*, you can decide whether you want the same statistic as in the data area (i.e. *Sum*) or whether you want to set a different one – click on **Custom** then choose **Average & Sum**.
- Click on **[Layout & Print]** and investigate the options - turn on **Show item labels in outline form** (make sure **Display subtotals at the top of each group** is turned off)

## Tabular

Sum of Amount		Category					
Employee	Date	Amount	Food	Stationery	Travel	Grand Total	
Chris	Jan				£ 100.00	£ 100.00	
	Feb			£ 2.01		£ 2.01	
	Mar			£ 1.27		£ 1.27	
	Apr			£ 37.16		£ 37.16	
<b>Chris Sum</b>				£ 40.44	£ 100.00	£ 140.44	
<b>Chris Average</b>				£ 8.09	£ 100.00	£ 23.41	

## Outline:

Sum of Amount		Category					
Employee	Date	Amount	Food	Stationery	Travel	Grand Total	
Chris	Jan				£ 100.00	£ 100.00	
	Feb			£ 2.01		£ 2.01	
	Mar			£ 1.27		£ 1.27	
	Apr			£ 37.16		£ 37.16	
<b>Chris Sum</b>				£ 40.44	£ 100.00	£ 140.44	
<b>Chris Average</b>				£ 8.09	£ 100.00	£ 23.41	

Notice Outline has a blank row added for the name row.

- Press <Enter> or click on [OK] and the table is updated to reflect the changes made - note the monthly averages and sums now show with the totals.

Your Pivot Table data and fields should now look something like:

Sum of Amount		Category					
Employee	Date	Amount	Food	Stationery	Travel	Grand Total	
Chris	Jan				£ 100.00	£ 100.00	
	Feb			£ 2.01		£ 2.01	
	Mar			£ 1.27		£ 1.27	
	Apr			£ 37.16		£ 37.16	
<b>Chris Sum</b>				£ 40.44	£ 100.00	£ 140.44	
<b>Chris Average</b>				£ 8.09	£ 100.00	£ 23.41	
Emma	Jan			£ 5.96		£ 5.96	
	Feb			£ 2.33		£ 6.34	
	Mar	£ 4.01		£ 2.11		£ 2.11	
	Apr			£ 4.22		£ 4.22	
<b>Emma Sum</b>		£ 4.01	£ 14.62		£ 18.63		
<b>Emma Average</b>		£ 2.01	£ 3.66		£ 3.11		
Liz	Jan			£ 5.99		£ 5.99	
	Mar			£ 9.52		£ 11.90	
	Apr			£ 6.49		£ 6.49	
	<b>Liz Sum</b>		£ 2.38	£ 22.00		£ 24.38	
<b>Liz Average</b>		£ 1.19	£ 5.50		£ 4.06		
Mike	Jan			£ 6.40		£ 6.40	
	Feb			£ 10.69	£ 58.90	£ 67.59	
	Mar			£ 15.19	£ 39.78	£ 54.97	
	Apr			£ 10.06	£ 37.25	£ 47.31	
<b>Mike Sum</b>		£ 42.34	£ 133.93	£ 176.27			
<b>Mike Average</b>		£ 5.29	£ 16.74	£ 11.02			
Paul	Jan			£ 5.12		£ 5.12	
	Feb			£ 2.13	£ 15.50	£ 17.63	
	Mar			£ 2.65	£ 14.89	£ 17.54	
	Apr			£ 7.39		£ 7.39	
<b>Paul Sum</b>		£ 12.51	£ 4.78	£ 30.39	£ 47.68		
<b>Paul Average</b>		£ 4.17	£ 2.39	£ 15.20	£ 6.81		
Sarah	Jan			£ 3.79		£ 7.11	
	Feb				£ 2.40	£ 2.40	
	Mar			£ 8.65	£ 63.00	£ 71.65	
	Apr			£ 30.11	£ 192.08	£ 222.19	
<b>Sarah Sum</b>		£ 42.55	£ 3.32	£ 257.48	£ 303.35		
<b>Sarah Average</b>		£ 8.51	£ 1.66	£ 42.91	£ 23.33		
Steve	Jan			£ 22.00	£ 0.57	£ 46.65	£ 69.22
	Feb			£ 1.60		£ 1.60	
	Mar				£ 46.95	£ 46.95	
	Apr			£ 23.29		£ 23.29	
<b>Steve Sum</b>		£ 45.29	£ 2.17	£ 93.60	£ 141.06		
<b>Steve Average</b>		£ 22.65	£ 1.09	£ 46.80	£ 23.51		
<b>Grand Total</b>		£ 149.08	£ 87.33	£ 615.40	£ 851.81		

**PivotTable Fields**

Choose fields to add to report:

Search

Date  
 Employee  
 Category  
 Amount  
 Month

More Tables...

---

Drag fields between areas below:

**Filters** | **Columns**

Category

---

**Rows** | **Values**

Employee | Sum of Amou...

Date

Amount

Pivot Tables are used a lot in the commercial world and built into Excel are various pre-defined layouts which make use of the field setting and table layout options. To see these:

- Click on the **PIVOTTABLE TOOLS DESIGN** tab on the *Ribbon*
- Move the mouse over the various **PivotTable Styles** provided – the pivot table shows a preview of the new style.

- To see more styles, click on the **[More]** button below the scroll bar attached to the styles

It's unlikely you will be making use of these styles but it's worth knowing of their existence. You can even design your own style via the **New PivotTable Style...** option below the pre-defined styles. The buttons in the *PivotTable Style Options* group on the *Ribbon* can also be used to customize the settings. Here:

- If you have applied a style, **[Undo]** it (or press <Ctrl z>) to remove any formatting
- End this section** by moving the **Date** field button from the *Rows* area back into the *Filters* area in the *PivotTable Fields* pane

## Updating a Pivot Table

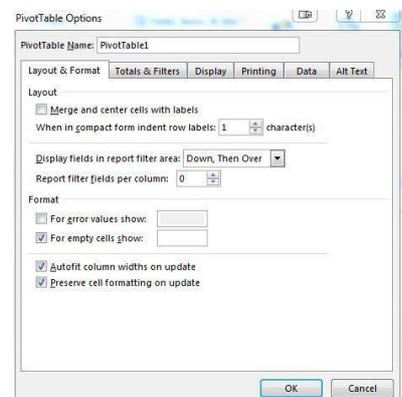
Although pivot tables appear to interact closely with the raw data, they are in fact based on a copy of the data values, held in temporary memory. If you change a data value, the pivot table will not reflect this – not even if you make fundamental changes to the layout or summary statistics. You have to explicitly refresh the data for the new values to be included in the summaries:

- Change Chris' travel in cell *D4* from £100 to **£3.75** – note that the *Chris K* column isn't updated.
- Click anywhere in the pivot table then on the *PIVOTTABLE TOOLS ANALYZE* tab, in the *Data* group click the **[Refresh]** button. (or *right click* on the data and choose **Refresh**)

## Pivot Table Options

You can in fact ask Excel to update a pivot table **every time** you open the file or after a fixed period of time (if the data is from an external source). This is only one of several options which can be set:

- Click on the **[Options]** button (on the far left of the *PIVOTTABLE TOOLS ANALYZE* tab) or *right click* in the table and choose **PivotTable Options...**:



The *PivotTable Options* window will appear, as shown on the right.

- On *Layout & Format*, note the option **For empty cells show** – type in a value of **0** (empty cells are currently shown as blank)
- On the *Totals & Filters* tab, turn off **Show Grand totals for rows**
- On the *Display* tab, change *Field List* to **Sort A to Z**
- On the final *Data* tab, turn on the option to **Refresh data when opening the file**
- Press <Enter> for **[OK]** to confirm the changes to the options.
- Right click **Chris** in the pivot table, select **Field Settings**.
- In the *Subtotals* section, click the *Automatic* option, then click the **OK** button.  
*This will remove Average and return the table to the default of only showing Sum.*
- In the *Rows* field area drag **Date** field into the *Filters* field box.

You should find that on the right in the *PivotTable Fields* pane the fields are now listed alphabetically as shown below:

Sum of Amount	Category	Stationery	Travel	Grand Total
Chris		£ 40.44	£ 3.75	£ 44.19
Emma	£ 4.01	£ 14.62		£ 18.63
Liz	£ 2.38	£ 22.00		£ 24.38
Mike	£ 42.34		£ 133.93	£ 176.27
Paul	£ 12.51	£ 4.78	£ 30.39	£ 47.68
Sarah	£ 42.55	£ 3.32	£ 257.48	£ 303.35
Steve	£ 45.29	£ 2.17	£ 93.60	£ 141.06
<b>Grand Total</b>	<b>£ 149.08</b>	<b>£ 87.33</b>	<b>£ 519.15</b>	<b>£ 755.56</b>

### PivotTable Fields

Choose fields to add to report: ⚙️

Search 🔍

- Date
- Employee
- Category
- Amount
- Month

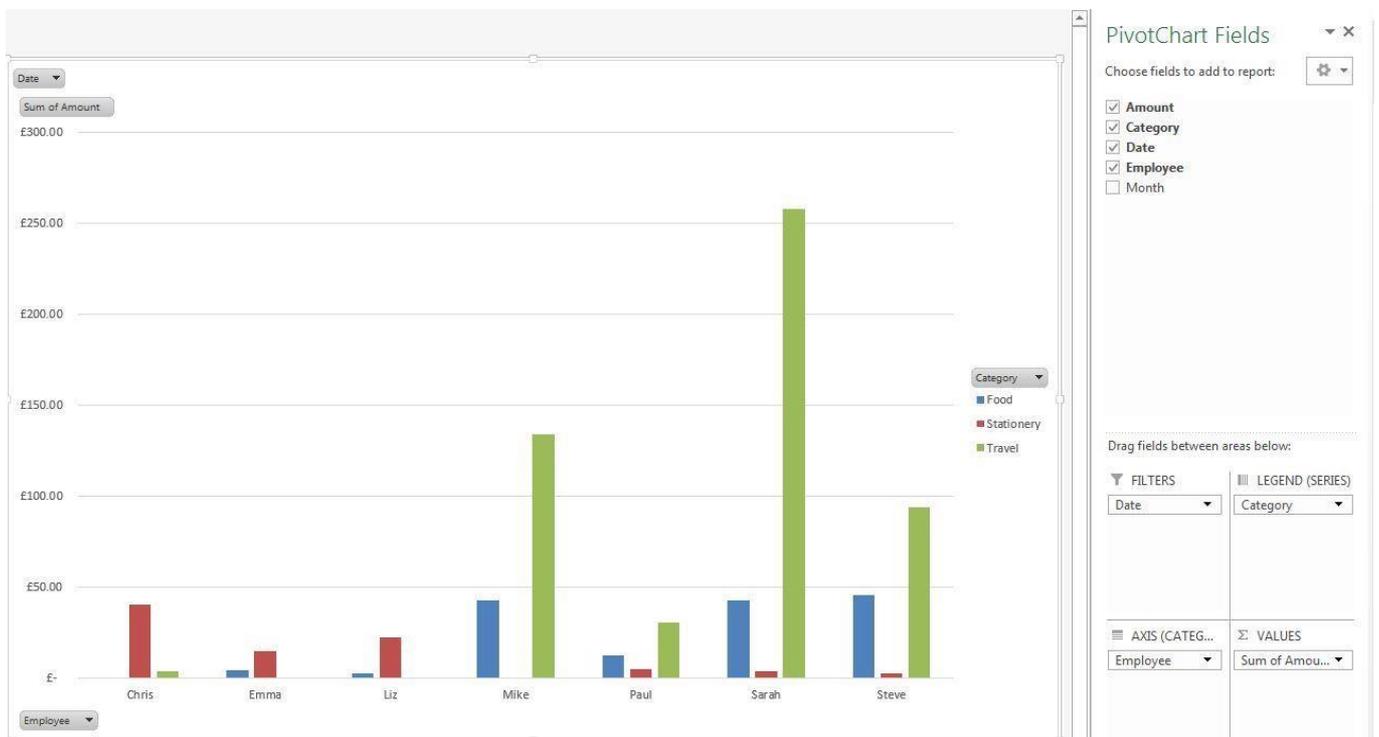
## Pivot Charts

When you first inserted the PivotTable at the very start of this training, you could have chosen to have a pivot chart. As an introduction to pivot tables that would have been very confusing. However, you can at any time plot a chart if you want one:

1. On the **PIVOTTABLE TOOLS ANALYZE** tab in the *Tools* group, Click on the **[PivotChart]** button– press **<Enter>** for **[OK]** to accept the default (*Column*) chart

A column chart appears on the same sheet and three new **PIVOTCHART TOOLS** tabs (**ANALYZE**, **DESIGN** and **FORMAT**) are added to the *Ribbon*. To move the chart onto a separate sheet:

2. Click on the **PIVOTCHART TOOLS DESIGN** tab followed by the last **[Move Chart]** button, and then select the **New Sheet** radio button and click on **[OK]** Your Pivot Chart and fields should look something like:



3. In the top left-hand corner of the Pivot Chart, click on the *list/filter arrow* to the right of **Date** and choose a particular month, e.g. **Jan**, and click **[OK]**

**Tip:** If you return to look at the data in the Pivot Table on the **Accounts** sheet, you will see that it is showing the same information as on the Pivot Chart, but in numbers. Remember to click back on the **Chart1** sheet to return to the Pivot Chart.

4. Repeat step 3, but turn on **Select Multiple Items** and choose a second month, e.g. **Mar**
5. Repeat step 3, but choose **(All)** to reshown all the data
6. Click on the *list/filter arrows* attached to **Employee** (bottom left by the axes) and **Category** (middle right of chart above the legend) to set the **Employee(s)** and **Category(ies)** respectively
7. Repeat step 6, but choose **(Select All)** to reshown all the data
8. Using the *PivotChart Fields* pane on the right of the chart, drag the **Month** field button below the **Employee** field button in the *AXIS (CATEGORIES)* area – you now have a chart showing each employee's monthly spending
9. Drag the **Month** field button above the **Employee** field button in the *AXIS (CATEGORIES)* area to show a summary by month then employee
10. Drag the **Month** field button into the  *Values* area to get the **Count of Month** (i.e. how many claims per month) figures (note that these may still be in a currency rather than number format)
11. Click on **Count of Month** and choose **Remove Field** to get rid of the extra columns

The last two *PivotChart Tools* tabs are in fact the regular tabs you get with any chart. You can use these to customize your chart (change chart type or color etc.). The **ANALYZE** tab is unique to Pivot Charts and Tables. To see it in action:

12. Click on the **PIVOTCHART TOOLS ANALYZE** tab
13. Select one of the series (e.g. *Travel*) by clicking on any of its columns – little circles, known as *handles*, appear on the columns
14. Click on the **[Expand Field]** button  in the *Active Field* group, choose one of the options, e.g. **Category**, and click on **[OK]**
15. End by closing the file - there's no need to save the changes, unless you want to