

# Using Excel Effectively

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Upon completion of this workshop, users will have knowledge of these Excel techniques:

- Understand the way Excel works with database information (page 1)
- Understand the difference between data gathering and data analysis
- Copy Sheets (page 2)
- Freeze Panes, Renaming Sheets and Auto Calculate (page 3)
- Sort Data with Toolbar buttons and Menu Bar (page 4)
- Using AutoFilter (page 5)
- Creating Custom Filters (page 6)
- Creating Subtotals (page 7)
- Chart Sheets (page 9), Chart Templates (page 11), Apply Templates (page 12)
- Splitting a Column into Multiple Columns (page 13)
- Pivot Tables (page 14)
- Windows Tips N Tricks (page 17)

## Understanding How Excel Sorts, Filters, and Subtotals

To best utilize these tools, it is important for users to understand how Excel treats information stored in sheet tabs. Excel treats data stored in rows and columns as a database, up to the point that it finds a *completely blank row or column*. I call this the “automated data selection” feature. This Excel feature saves the user from having to *manually* select the range of cells that contain information needing analysis. The user then applies Excel’s powerful database features, (probably borrowed from Access!) to the area **Excel** thinks is the database. Because of this, it is vital to have your cursor clicked on any single cell within the data area before using automated data select.

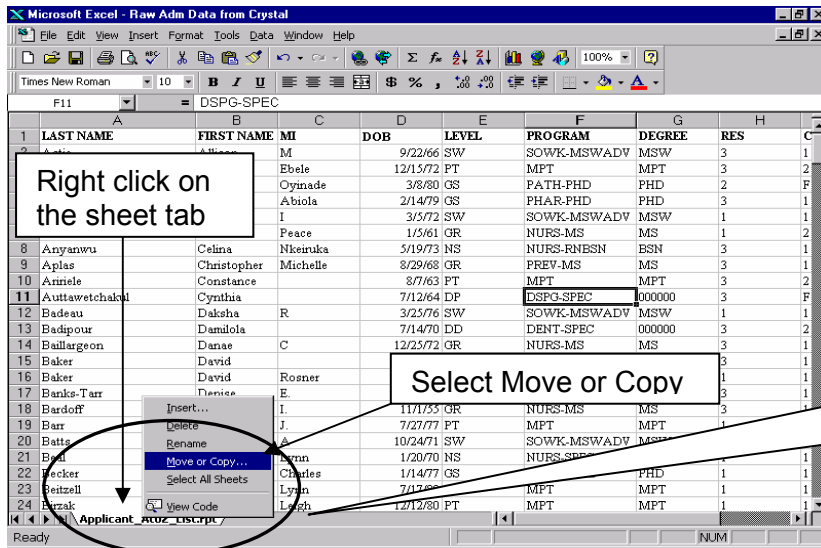
When users apply the Sort feature, for instance, Excel looks for and selects what *it* thinks are the boundaries of the database - get it? The base of the data. The perimeters, the boundaries. Look closely, you will see your data highlighted in black during the sort process. It goes by very quickly. If your data is one *contiguous* set of uninterrupted rows and columns, Excel will use that as your “base” of information and will relocate each row of data appropriate to the sort order you choose. That’s a fancy way of saying that everything about Jane Smith (name, date of birth, admission code, etc.) will make the jump to the appropriate line if you sort on last name, for instance, *if* there are no blank columns between those fields (column headers). Individual blank cells are OK, just not completely blank rows or columns. If you use blank columns or rows for presentation purposes – get rid of them for data analysis! Making things look pretty is a different workshop!

That is why it is *absolutely imperative* that users first “clean up” the data that is transferred from any canned report. For instance, if your data looks like it extends from column A through M, but column D is actually empty, Excel’s automated data selecting feature will only select the data from columns A through C. If one were to then use the Sort tool, only columns A-C would be sorted, leaving the information from columns E-M unchanged! The information in those columns would not be representative of the information in columns A-C. Basically what you would have is two sets of completely unrelated data. Be very careful of this!

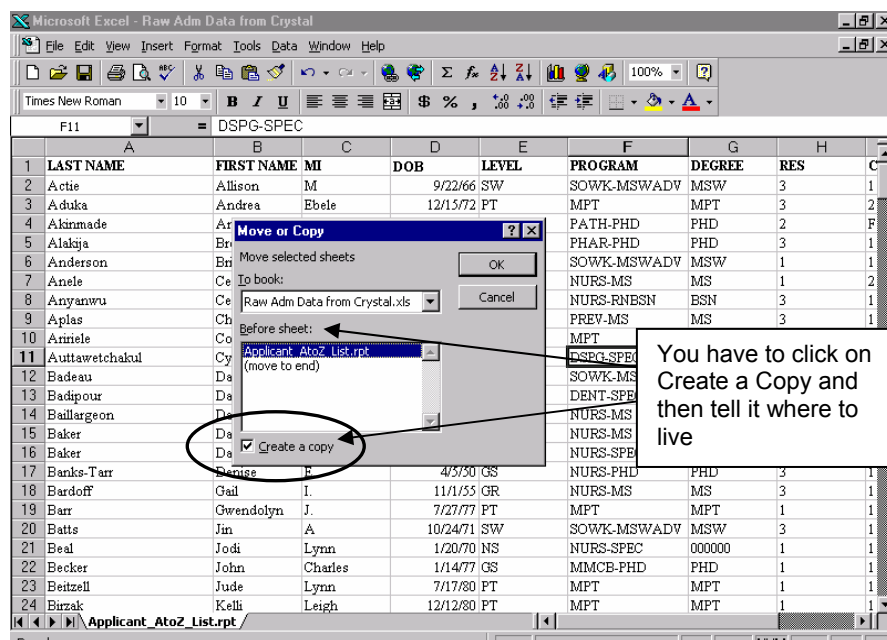
This “automated data selection” feature is the basis for Sorts, Filters, Subtotals and Pivot Tables. If you “get” this, you are well on your way to Excel bliss!

## Copying Sheets

After checking for and deleting any completely blank columns and/or rows, copy the sheet that contains the data. That way you will always have the original to fall back on or copy again. There are a couple of ways to do this. One is to right click the sheet tab, as shown below (to open the Quick Menu), and select **Move or Copy**. Select **Create a Copy** checkbox from the dialogue box. Then click to tell Excel where in your workbook to put it. You can also use this technique to copy a sheet to a new document or to a workbook (document) you have open!



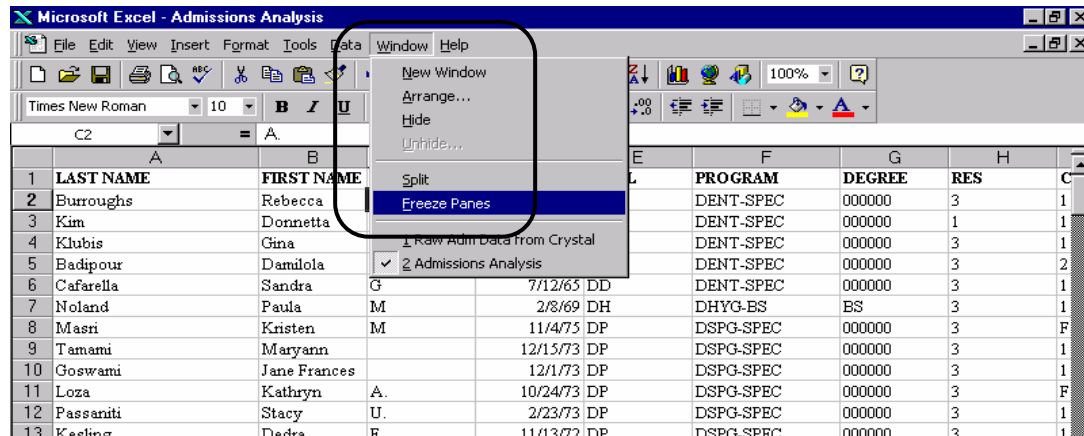
I always make a copy of the first sheet tab. That way, if I mess it up, I've always got my back-up!



Another way is to hold the **Control** key down while dragging a sheet tab. You will see a plus sign (+) and what looks like a piece of paper. Let go of the mouse **before** you let go of the **Control** key! What you lose with this technique is the ability to choose from the list of options the Quick Menu (right click) provides. This same technique can be used for copying individual cells, groups of cells, or drawing objects (circles, text boxes, etc.). It is the same technique used in PowerPoint to copy drawing objects (circles, squares, etc.).

## Freeze Panes

Sometimes, not all the data you want to look at can be viewed at the same time. Freezing Panes is a technique that allows users to "freeze" certain columns and rows to allow one to scroll to other areas of the sheet without losing site of the columns or rows desired.



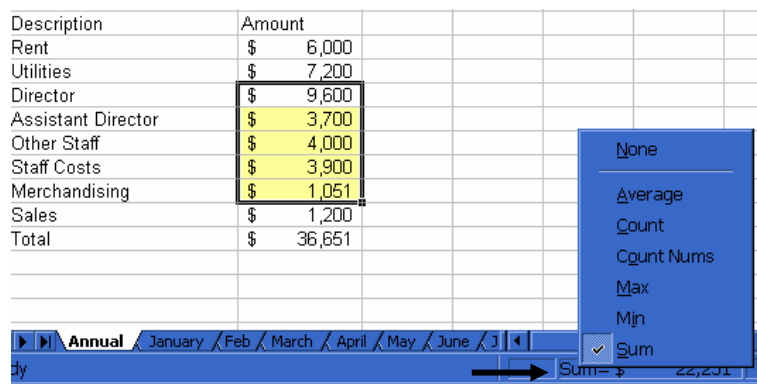
To Freeze Panes, click in the cell **below and to the right** of the columns and rows you wish to keep in view (in the example above cell C2). Then click on **Window, Freeze Panes** and Excel will keep the rows above and columns to the left in view. To Unfreeze Panes, click on **Window** in the Menu Bar and select **Unfreeze Panes** from the list.

## Renaming Sheets

I recommend that users rename the copy by double clicking the sheet tab and typing a new name. Press the **Enter** key to have the new name appear. Use this copy to perform any of the techniques described in this workshop. Then, if you want to use another of the tools, copy the original again, rename it, and use the tool. That way, each tool used has a dedicated working copy of the information. This will be especially helpful when you wish to chart subtotals. You can also right click the sheet tab (opens the Quick Menu) and select Rename. Type the new name and hit **Enter**.

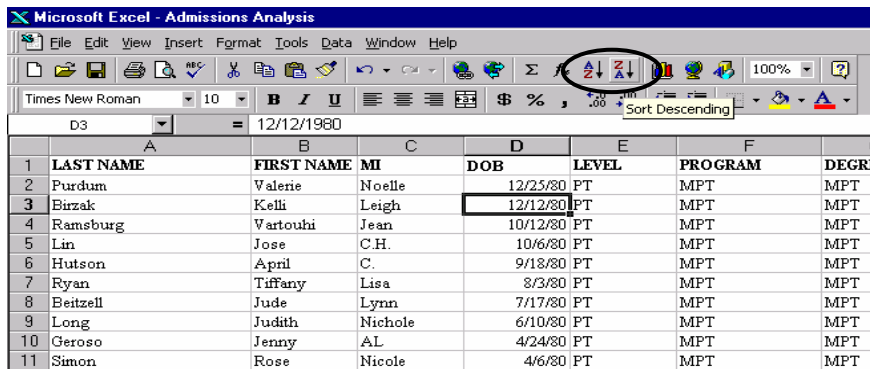
## Auto Calculate

The Auto Calculate tool is really neat. Try highlighting a few cells that contain numbers. Now, observe the lower right side of the status bar. Right click on the number displayed and choose Average, Count, SUM, Min, Max, etc. Whichever operator you choose will stay in the Auto Calculate area. Highlight other cells to see the calculation change in the Auto Calculate area.



## Sort Data with Toolbar Buttons

Sorting data is very simple. Click on a single cell in the column you want the information sorted by, and click one of the two Sort toolbar buttons as shown below (ascending or descending). In the example, a descending sort was applied to date of birth (DOB).



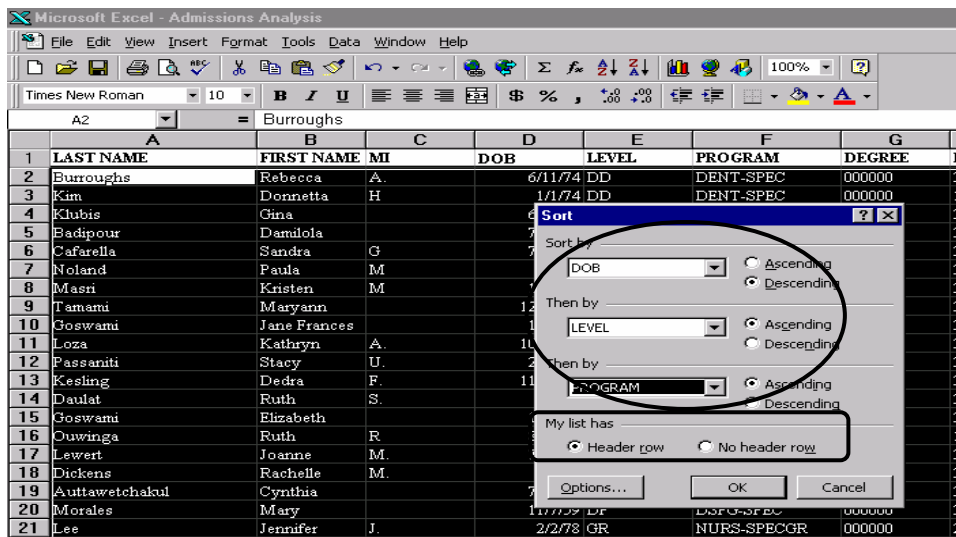
The screenshot shows the Microsoft Excel interface with the 'Sort Descending' button highlighted in the toolbar. The data table below is sorted by the 'DOB' column in descending order.

	A	B	C	D	E	F	G
1	LAST NAME	FIRST NAME	MI	DOB	LEVEL	PROGRAM	DEGREE
2	Purdum	Valerie	Noelle	12/25/80	PT	MPT	MPT
3	Buzak	Kelli	Leigh	12/12/80	PT	MPT	MPT
4	Ramsburg	Vartouhi	Jean	10/12/80	PT	MPT	MPT
5	Lin	Jose	C.H.	10/6/80	PT	MPT	MPT
6	Hutson	April	C.	9/18/80	PT	MPT	MPT
7	Ryan	Tiffany	Lisa	8/3/80	PT	MPT	MPT
8	Beitzell	Jude	Lynn	7/17/80	PT	MPT	MPT
9	Long	Judith	Nichole	6/10/80	PT	MPT	MPT
10	Geroso	Jenny	AL	4/24/80	PT	MPT	MPT
11	Simon	Rose	Nicole	4/6/80	PT	MPT	MPT

## Sort Data the Menu Bar

The Sort Menu Bar allows you to apply more than one sort at the same time, up to three (3) levels. It also assumes that the first row of your data is a "header row", namely, the names of the fields or columns of your data.

To use the Sort Menu Bar, simply click in a single cell in your data area, then click on **Data, Sort** from the Menu Bar. When the Sort dialog box appears, choose the column name for each column (header) desired and whether it should be sorted in ascending or descending order. Note that Excel defaults to your data having a header row and you have the option to change it.



The screenshot shows the Microsoft Excel interface with the 'Sort' dialog box open. The dialog box is set to sort by 'DOB' in descending order, then by 'LEVEL' in ascending order, and then by 'PROGRAM' in ascending order. The 'My list has' section is set to 'Header row'. The data table below is the same as in the previous screenshot.

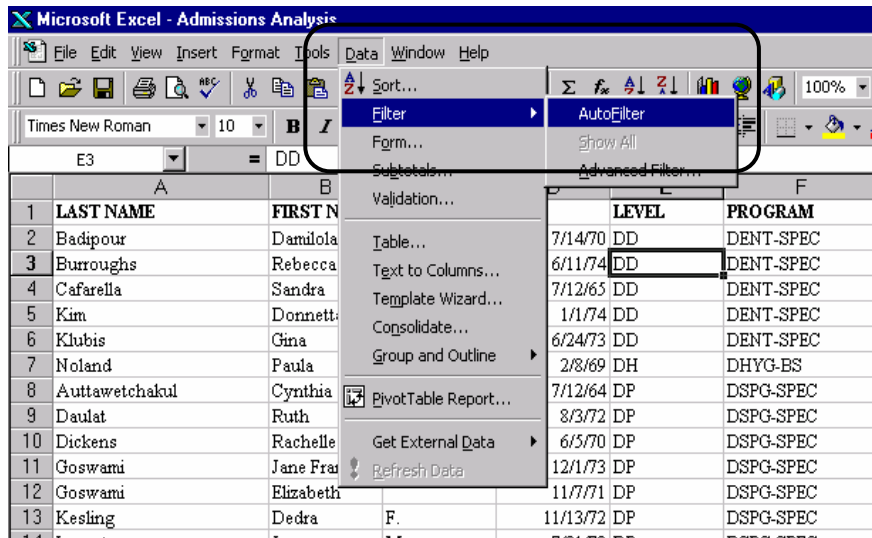
	A	B	C	D	E	F	G
1	LAST NAME	FIRST NAME	MI	DOB	LEVEL	PROGRAM	DEGREE
2	Burroughs	Rebecca	A.	6/11/74	DD	DENT-SPEC	000000
3	Kim	Donnetta	H	1/1/74	DD	DENT-SPEC	000000
4	Klubis	Gina					
5	Badipour	Damulola					
6	Cafarella	Sandra	G				
7	Noland	Paula	M				
8	Masri	Kristen	M				
9	Tamami	Maryann		12/25/80	PT	MPT	MPT
10	Goswami	Jane Frances					
11	Loza	Kathryn	A.				
12	Passaniti	Stacy	U.				
13	Kesling	Dedra	F.				
14	Daulat	Ruth	S.				
15	Goswami	Elizabeth					
16	Ouwinga	Ruth	R				
17	Lewert	Joanne	M.				
18	Dickens	Rachelle	M.				
19	Autawetchakul	Cynthia					
20	Morales	Mary					
21	Lee	Jennifer	J.	2/2/78	GR	NURS-SPECGR	000000

This screenshot above is a good example of how Excel selects the data area for you. Notice that the first row is not selected - that's because it is considered a header row and will not be sorted with the rest of the rows.

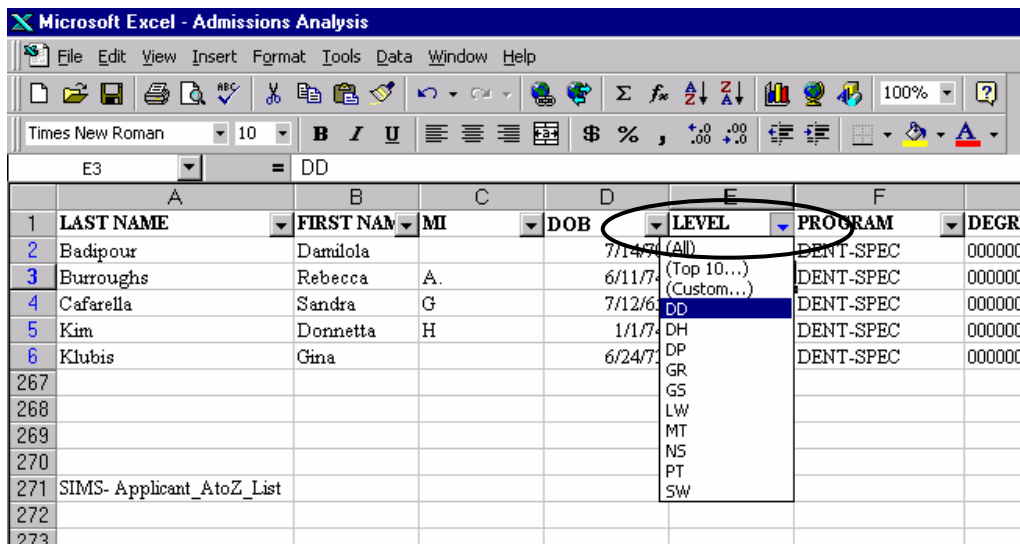
If you want to sort more than three, here's a tip: write out the columns you wish to sort – left to right (on a sheet of paper). Then sort the fields, 3 at a time, right to left!

## Using AutoFilter

AutoFilter is by far the coolest, easiest to learn and use tool in Excel's arsenal! It works just like the Sort tool. Excel "searches" your database for the perimeters or boundaries of your data and assumes that the first row refers to the names of your data elements, fields, or columns. Simply click on a single cell in your data area, and click on **Data, Filter, AutoFilter**.



Excel will place down-pointing arrows in each of your column headers, allowing you to click the arrow and get a "pick list" of the data found in that column. When you click on one of the values in the list, Excel displays only rows that have that value in that column, "hiding" all other rows from view. The down arrow for a column's pick list will turn blue where the filter has been applied – that way you know which column you've filtered on. You can filter on multiple columns. The **Status Bar** (at the bottom left of the screen, below the sheet tabs) **will indicate the number of records selected** (e.g., 12 of 265 records found). This is great if all you need is an answer! And the best part about this is **what you see is what you print!** To get the original data back, click the down arrow and select **All** from the pick list, or choose **Data, Filter, Show All** from the **Menu Bar**. Try it! You're gonna like the way you look...



## Creating Custom Filters

Custom Filters allow you to do some nifty things! You can get data for two departments, or tell it to display only rows that meet a certain date or numeric range (or criteria). To create a Custom Filter, **apply AutoFilter first**, then simply click the down arrow for the column you want a custom filter for and choose **Custom** from the list. The Custom AutoFilter dialogue box will appear providing you choices for the type of operator you want (equal to, less than, etc.) and the value you wish to filter on (DD, LW, etc.)

	A	B	C	D	E	F	G	H
1	LAST NAME	FIRST NAME	MI	DOB	LEVEL	PROGRAM	DEGREE	RES
2	Badipour	Damilola		7/14/70	DD	DENT-SPEC	000000	3
3	Burroughs	Rebecca	A.	6/11/74	DD	DENT-SPEC	000000	3
4	Cafarella	Sandra	G	7/12/65	DD	DENT-SPEC	000000	3
5	Kim							1
6	Klubis							3

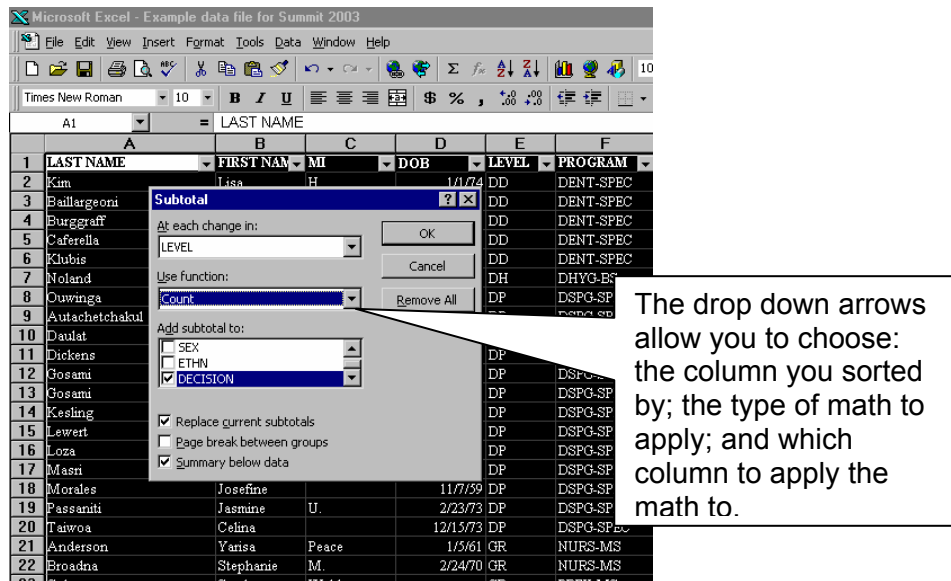
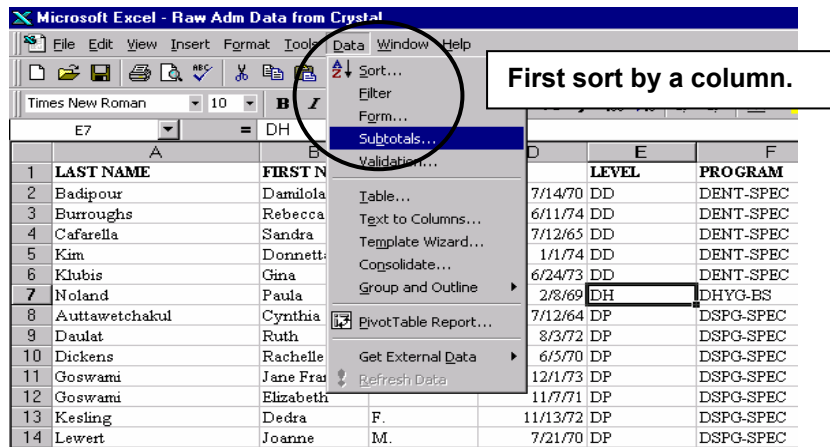
As you can see below you can create an and/or statement by choosing "and" or "or". This will enable you to filter on two different values within the same column.

	A	B	C	D	E	F	G	H
1	LAST NAME	FIRST NAME	MI	DOB	LEVEL	PROGRAM	DEGREE	RES
2	Badipour	Damilola		7/14/70	DD	DENT-SPEC	000000	3
3	Burroughs	Rebecca	A.	6/11/74	DD	DENT-SPEC	000000	3
4	Cafarella	Sandra	G	7/12/65	DD	DENT-SPEC	000000	3
5	Kim	Donnetta	H	1/1/74	DD	DENT-SPEC	000000	1
6	Klubis	Gina		6/24/73	DD	DENT-SPEC	000000	3
7	Noland	Paula	M	2/8/69	DH	DHYG-BS	BS	3

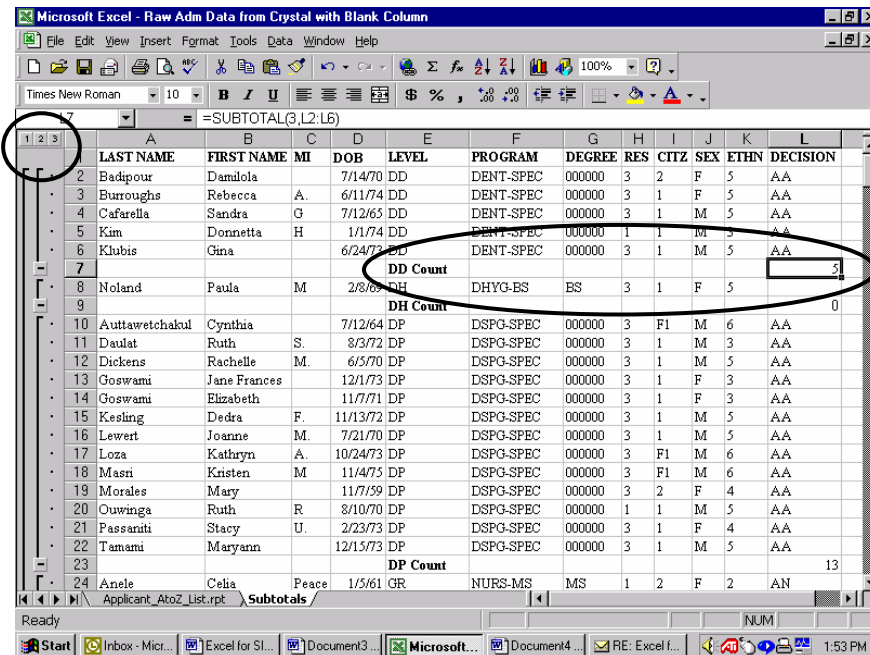
## Creating Subtotals

Subtotals is a feature that allows users to get subtotals for columns, based on a sort order. For instance, you may want to know the number of application decisions your school has for a certain term for a given Level (school). Once you sort the data by Level, Excel can "count" the number of decisions for each Level. Data outlining tools are automatically displayed which allow you to view all the data, a summary of the subtotals, or the grand total (page 8). Subtotals can also be used to create charts. **Please be aware that subtotals do not count blank cells.**

To create subtotals, **first sort** your data and then click on **Data, Subtotals**. A dialogue box will appear that will allow you to choose the field you sorted on; the mathematical formula you desire (count, add, etc.); and the column to apply the math to. Make your selections and click OK. Your datasheet will have an extra row automatically inserted at each sort change with a subtotal under the column you applied the math to. In addition, data outlining tools will automatically appear on the top left of the screen allowing you to view: all the data; the subtotal summary; or the grand total. You can also perform another subtotal on, let's say, decisions, to get a subtotal of a subtotal. Please see page 8 for an illustration of a list with subtotals.

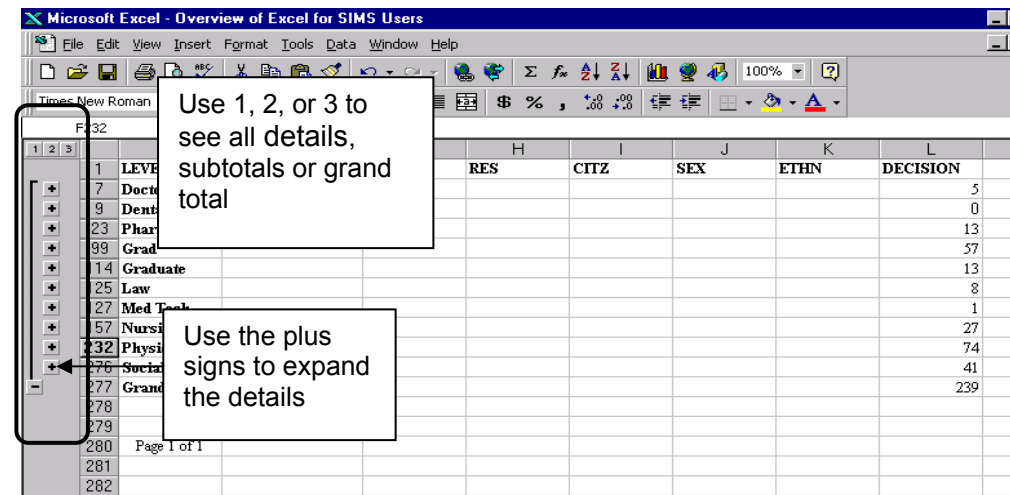


This is what it looks like after subtotals has been applied:



## Outlining Tools

When subtotals are applied, a data outlining toolbar appears on the left side of the screen allowing you to view all the data, the subtotals, and the grand total (the 1, 2, and 3 at the top of the outlining toolbar). In addition, plus signs (+) are located next to each subtotaled category to allow you to view the details of each category by clicking the plus sign next to it. When expanded, the plus sign for that category is replaced by a minus sign (-), allowing you to collapse the details. You can also select the subtotals to use in a chart!





## Create and Work with Chart Sheets

Like the other advanced features of Excel (sort, filter, etc.), we rely on "selecting" in order to perform charting. Unlike the other features though, charting requires the **user** to select the data to be charted. Excel needs to know what information you wish to graphically represent. The bottom line is, if you do not select a group of cells, or have a blank cell selected when you execute the chart command, Excel will give you exactly asked for - nothing! Usually in the form of one big column or a chart with nothing in it!

For the purpose of this presentation, we will use the results from subtotaling to create a chart, apply formatting, and then save that **format** so we can apply it to other charts - saving us valuable time formatting in the future and creating consistency in the presentation of our charts.

Charts typically represent summary data. Instead of charting every student's admission decision, we tend to chart admissions decisions by program, school, etc. So somewhere along the line, we need to summarize data in order for a chart to be visually useful.

To chart the results of a subtotaled datasheet, simply select the first set of cells you want to chart. Then, hold the Control key down with one hand **and** select, with the mouse, the cells that represent the corresponding data. It is vital that you select the same number of rows from each column, **and** you do not select the grand total! Otherwise you will get yuck!

The screenshot shows an Excel spreadsheet with the following data:

LEVEL	PROGRAM	DECISION
7	Doctor of Dental	5
9	Dental Hygiene	0
23	Pharmacy	13
99	Grad	57
114	Graduate	13
125	Law	8
127	Med Tech	1
157	Nursing	27
232	Physical Therapy	74
276	Social Work	41
277	Grand Count	239

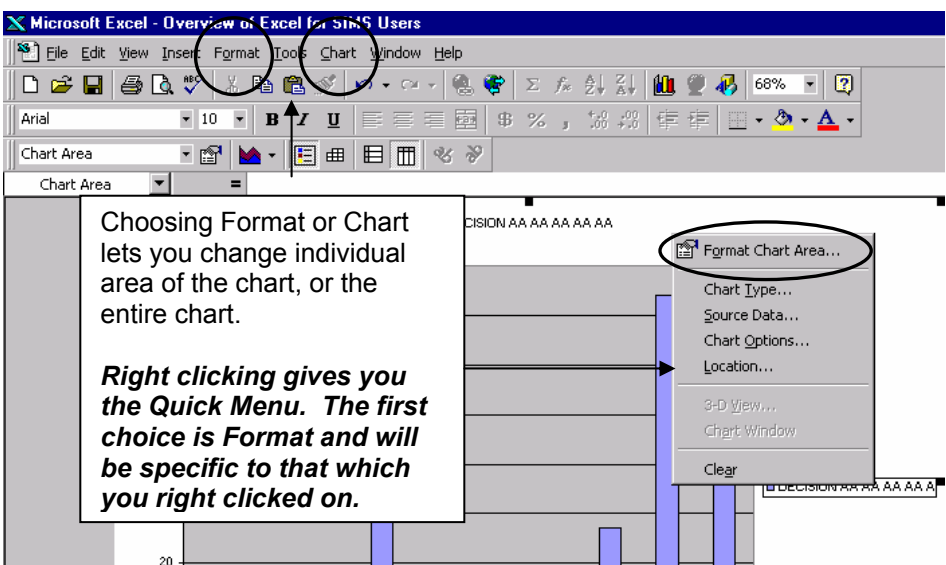
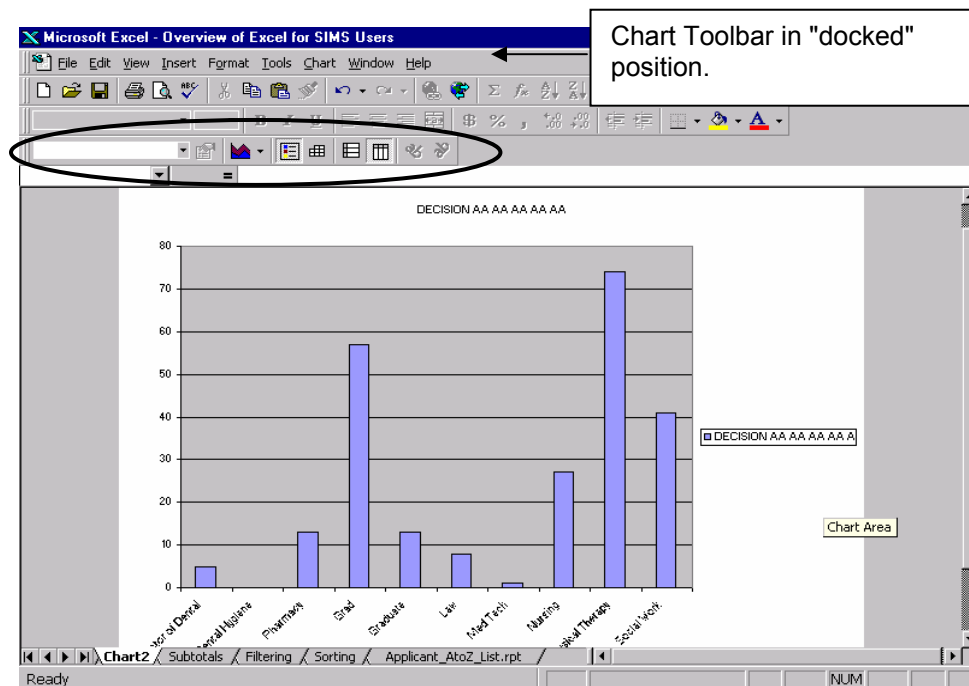
Two callout boxes are present:

- Box 1: "First, use you mouse to select your data - be sure to include the column header (title)." (Note: 'you' is misspelled as 'you' in the original image)
- Box 2: "Press and hold the Control key and select, with the mouse, the cells that represent the numbers you are charting. Include the header. Notice the header cell is white, not black - that's OK. Now press F11."

Now press the **F11 Function Key** and Excel will create a new, separate sheet tab called a "chart sheet." The chart sheet is nothing more than the graphical representation of the selected data, on a separate sheet tab, and is tied directly to the data in the sheet you selected the data from. **Changes made to the data will automatically update the chart!** You can also use the Chart Wizard toolbar button to create chart sheets or charts within the data sheet.

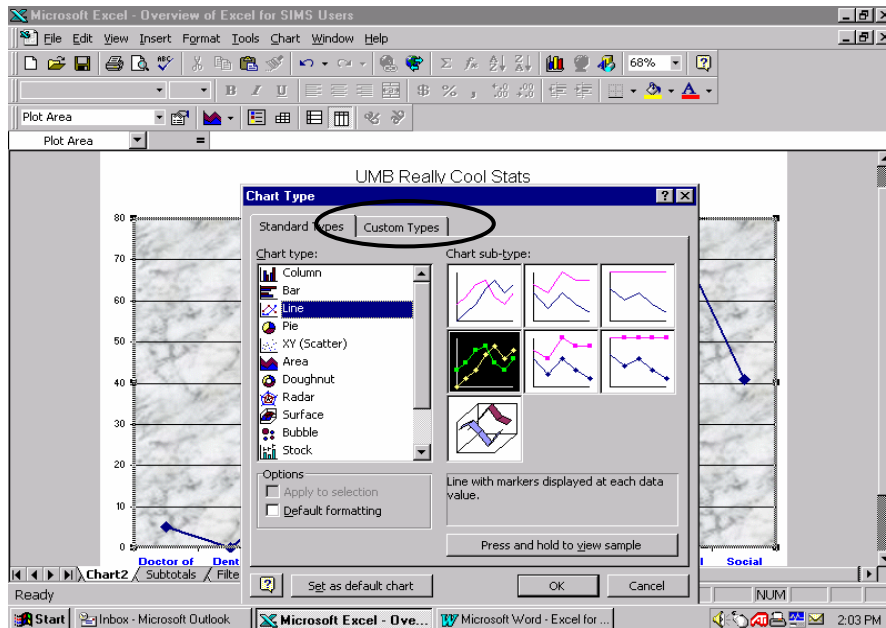
As a default, Excel creates a standard two-dimensional **Chart Type** (from its list of available chart styles). You can modify the chart type, add or modify titles, formatting and style of the chart. Use the Chart Toolbar to access the most common tools for formatting a chart. Please note that this toolbar initially may appear in the chart area and can be relocated by dragging it to the toolbar area. Once "docked" in the toolbar area, the chart toolbar will always come up in the same location. Use the line at the end of a toolbar to relocate it when docked.

You can change the chart to three-dimensional, pie or any of the standard styles of charts. You can do this via the Chart Toolbar or by clicking on Chart in the **Menu Bar** and selecting Chart Type or Chart Options. Make sure you have clicked on a part of the chart before using the Menu Bar. The **easiest** way to format a chart is to right click on **any** part of the chart and select Format from the Quick Menu. This menu will verify what part is to be formatted (i.e., **Format Chart Area** as shown below).

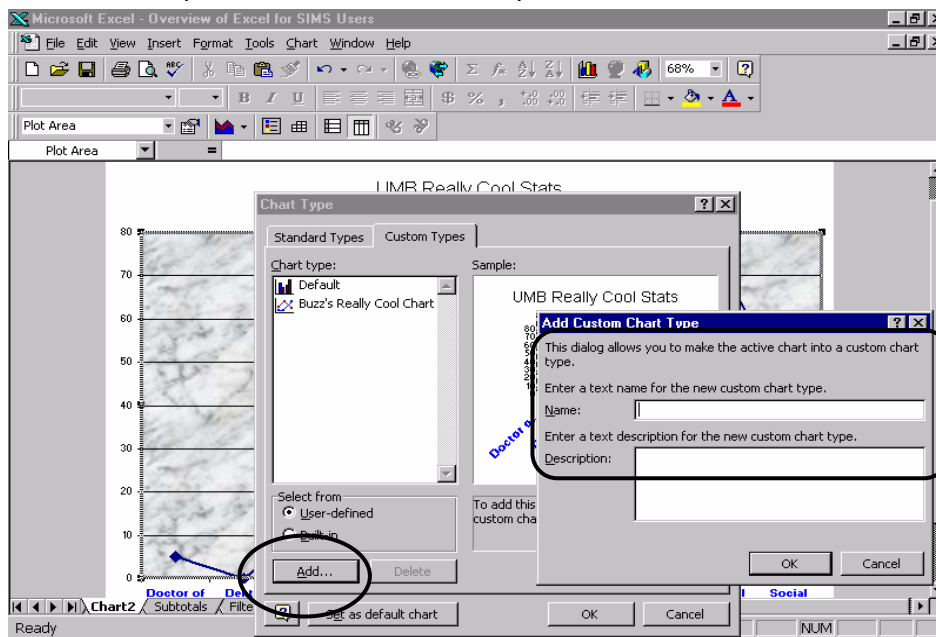


## Creating a Chart Template

Once you've created and modified your chart, you may want to save the way it looks to apply to other charts for this document, or **any other** Excel (or Microsoft) document (Word, Access, PowerPoint). This is called a chart template and Excel has room for as many "user defined" chart templates as you want to create. To add a template design of your own, simply format your chart the way you like it and then select **Chart Type** from the **Chart Menu Bar**. This will open the Chart Type dialogue box as shown below.



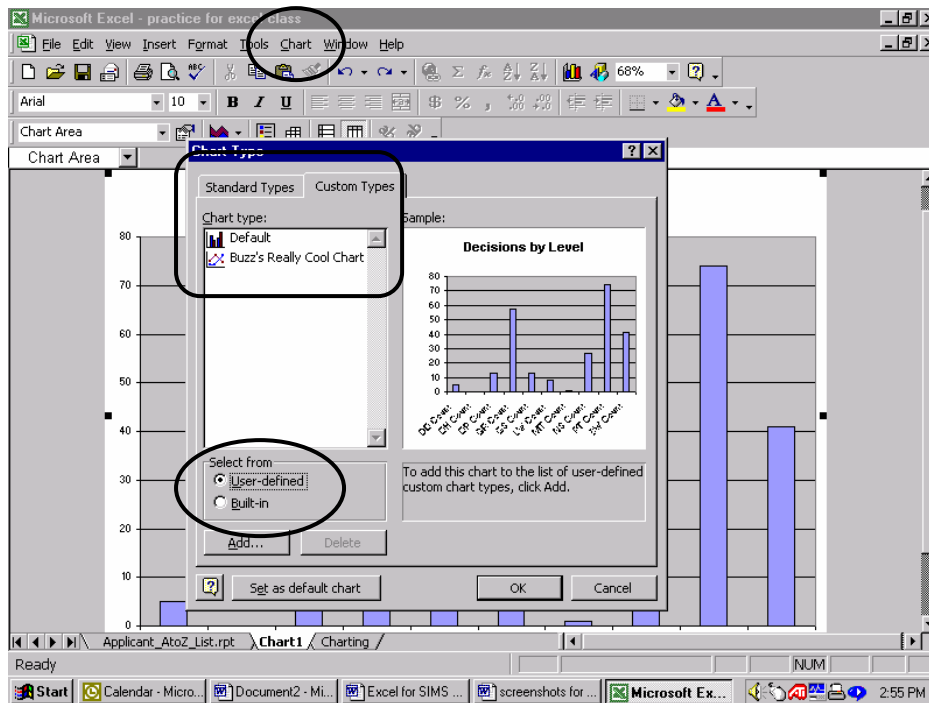
Next, click on Custom Types as shown above. Then select **Add** and Excel will allow you to name the template and include a description for future reference as shown below. Click **OK**.



## Applying a Chart Template

Once you've added your chart template, it is available to be applied like any other type of chart Excel has - only you will be choosing the type from the Custom Type tab, User Defined area.

Once you've created a standard chart, simply click on **Chart** from the **Menu Bar** and select **Chart Type**. Click on the **Custom** tab and choose **User-defined** at the bottom left of the dialogue box. Excel will list your charts. Click on the chart type you desire and click **OK**.

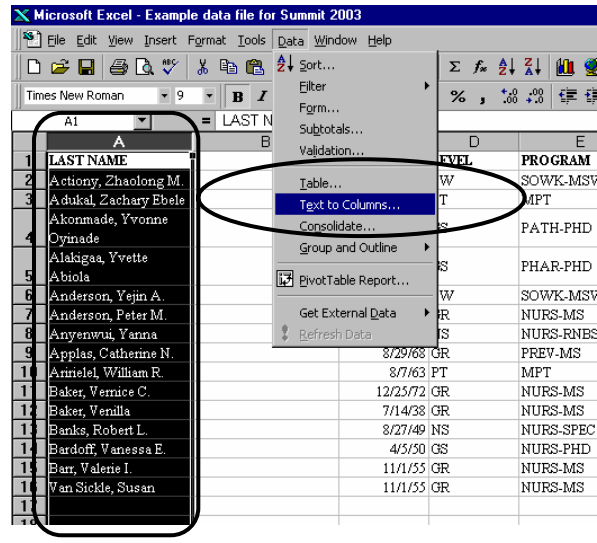
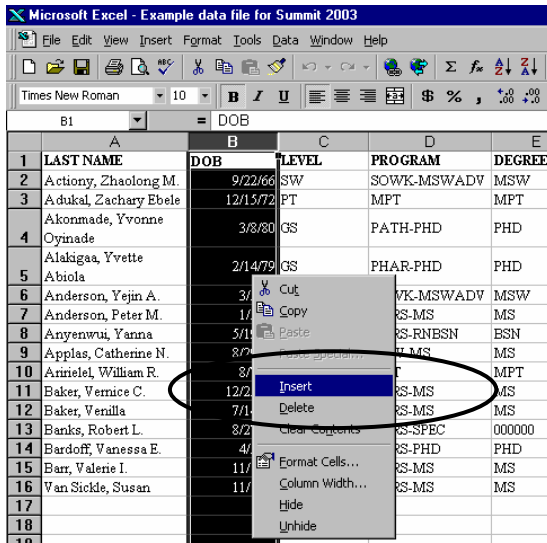


## Splitting a Column into Multiple Columns

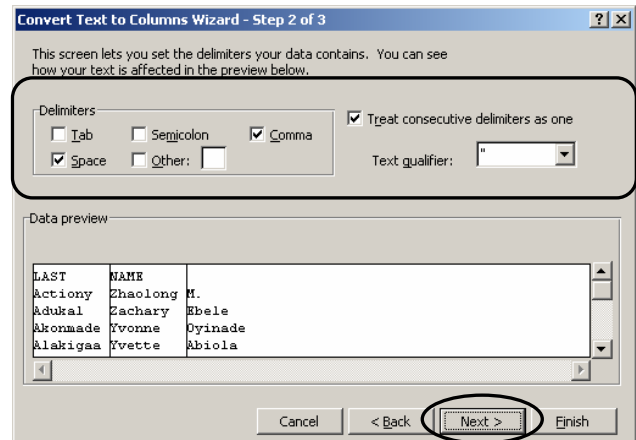
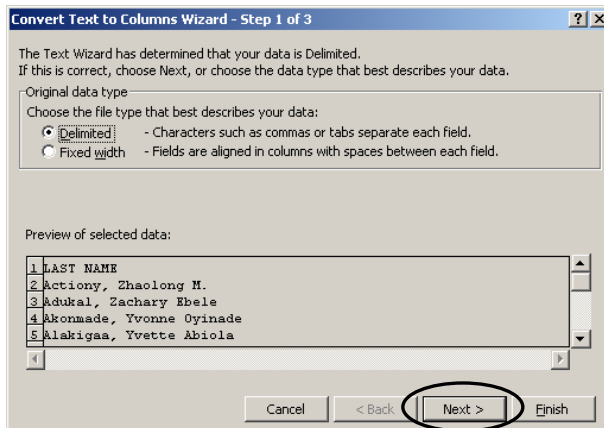
There may be times when you want to split the contents of one column into more than one. For instance, if a column contains students' last, first and middle names, you may want to split that into two cells so you can perform a sort on last name. In the past, this was a difficult and time-consuming procedure. Now it's as easy as selecting the column and answering a couple of questions posed by a Wizard. When finished, your data will be separated into multiple cells.

To use this tool:

1. Insert the number of columns needed to display the separated information. Use **Insert, Columns** from the Menu Bar or select the column headings (A, B, C, etc.) with your mouse and right click in the selected area (Quick Menu) and choose **Insert**.
2. Click on the column that contains the information to be separated and select on **Data, Columns to Text** from the Menu Bar to invoke the Wizard



3. Choose **Delimited** in the first Wizard dialogue box, then click on **Next**
4. Choose the delimiter (usually comma, tab, space, or any combination) and click **Next**



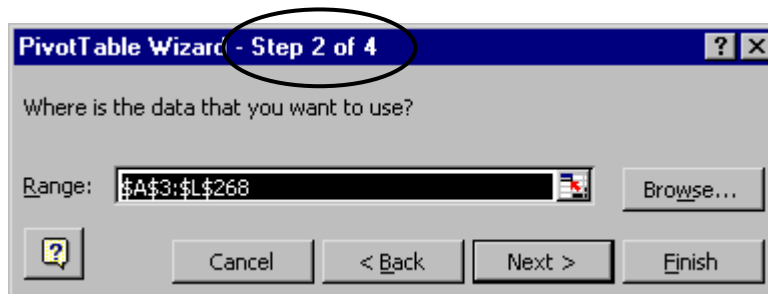
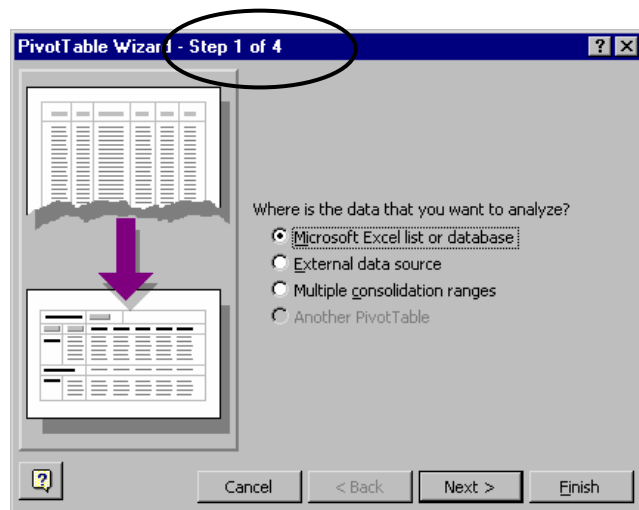
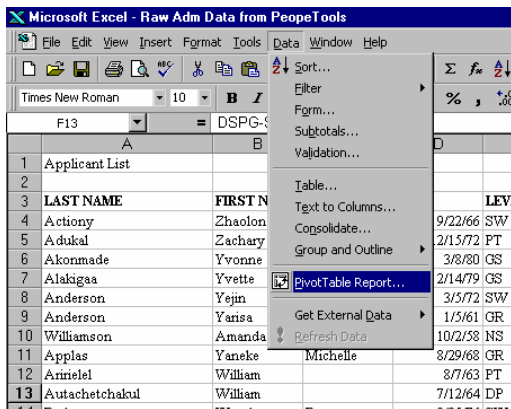
5. Choose the data type format if necessary (it usually isn't, especially for names)
6. Click on **Finish**. Your data will appear in the number of columns desired.

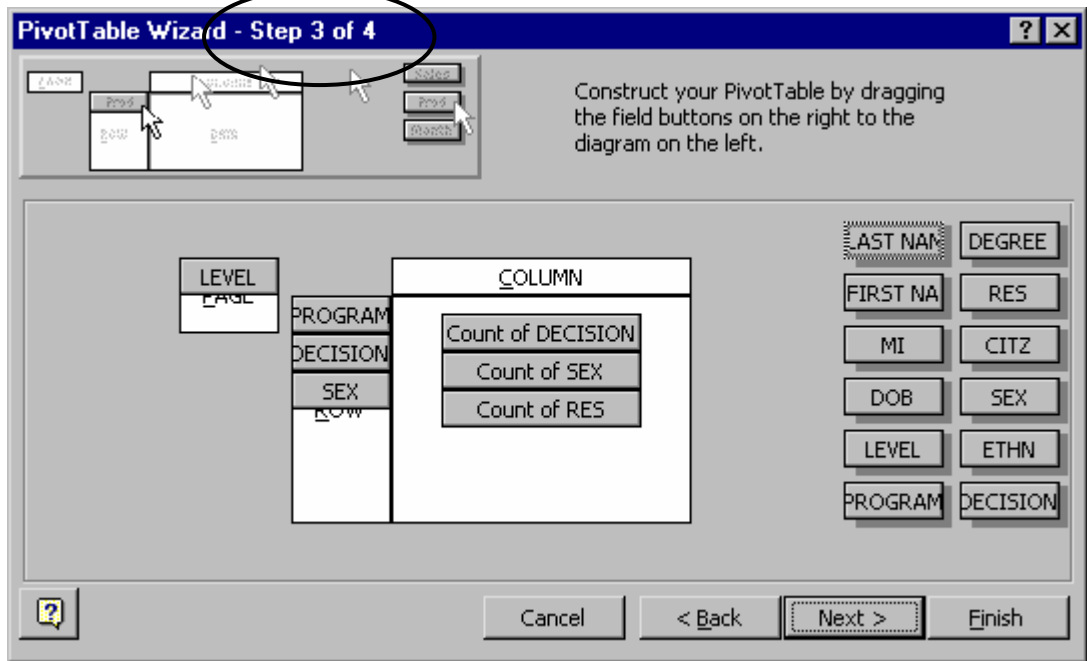
## Pivot Tables

Pivot Tables in Excel are used to provide users with a “cross-tab” result – effectively summarizing data while allowing users to expand or collapse detail easily. Like charts, there is an “umbilical cord” between the data and the table, so any changes made to the data will affect the table – only NOT simultaneously! Users must refresh the data in the Pivot Table anytime there are changes. However, if you are using your data as a snapshot you will not be changing the data in Excel, but in the database the data was extracted from.

To create a Pivot Table:

1. Make a **copy** of the datasheet. **Name** it “Pivot Data”, so you’ll know this was the sheet used for the Pivot Table.
2. Click on **Data, Pivot Table Report** from the **Menu Bar** (this will open a 4 step Wizard).
3. **Indicate** that the data comes from Excel and click **Next** (Step 1).
4. **Verify** the range of data used for the table and click **Next** (Step 2)
5. **Construct** your Pivot Table by dragging and dropping the fields you want to the appropriate area of the wizard diagram and click **Next** (Step 3)
6. **Choose** whether to locate the Pivot Table in a **new worksheet** or as a **new workbook** (document) and click **Finish** (Step 4).

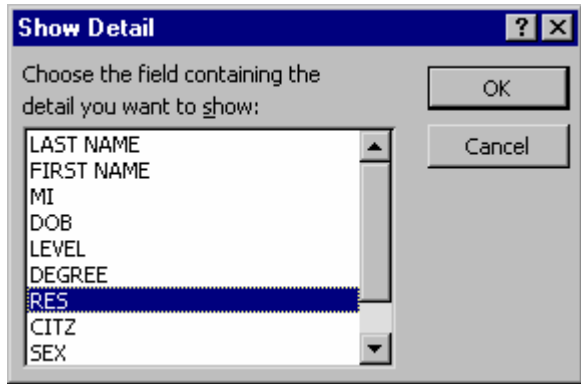
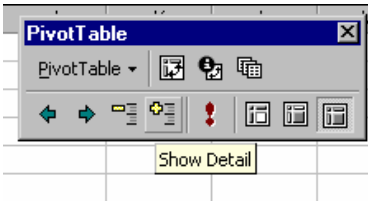




Microsoft Excel - Raw Adm Data from People Tools

LEVEL	(All)	Total
PROGRAM	Data	Total
DENT-SPEC	Count of DECISION	5
	Count of SEX	5
	Count of RES	5
DHYG-BS	Count of DECISION	
	Count of SEX	1
	Count of RES	1
DHYG-MS	Count of DECISION	1
	Count of SEX	1
	Count of RES	1
DOBH-MS	Count of DECISION	5
	Count of SEX	5
	Count of RES	5
DOCB-PHD	Count of DECISION	1
	Count of SEX	1
	Count of RES	1
DSPG-SPEC	Count of DECISION	13
	Count of SEX	13
	Count of RES	13
LAW-DAY	Count of DECISION	2
	Count of SEX	3
	Count of RES	3
LAW-EVENING	Count of DECISION	4
	Count of SEX	5
	Count of RES	5
LAW-SPEC	Count of DECISION	2
	Count of SEX	2
	Count of RES	2
MBIC-MS	Count of DECISION	1
	Count of SEX	1
	Count of RES	1
MBIC-PHD	Count of DECISION	2

To Expand or Collapse a field, simply click on one of the headers (Program) and select the Show Detail Toolbar button from the Pivot Table Toolbar. Then select the field you want more detail for.



A screenshot of Microsoft Excel showing a PivotTable. The PivotTable is located in the range A3:G15. The PivotTable has 'LEVEL' as the row field and 'PROGRAM' as the column field. The data is summarized by 'Data' and 'Total'. The PivotTable toolbar is visible in the top right corner of the worksheet area.

LEVEL	PROGRAM	DECISION	SEX	Data	Total
DENT-SPEC	AA	F	Count of DECISION	2	
			Count of RES	2	
			Count of SEX	2	
DENT-SPEC	AA	M	Count of DECISION	3	
			Count of RES	3	
			Count of SEX	3	
AA Count of DECISION				5	
AA Count of RES				5	
AA Count of SEX				5	
DENT-SPEC Count of DECISION					5
DENT-SPEC Count of RES					5
DENT-SPEC Count of SEX					5
DHYG-BS	(blank)	F	Count of DECISION	1	
			Count of RES	1	
			Count of SEX	1	
(blank) Count of DECISION					
(blank) Count of RES				1	
(blank) Count of SEX				1	
DHYG-BS Count of DECISION					1
DHYG-BS Count of RES					1
DHYG-BS Count of SEX					1
DHYG-MS	DF	F	Count of DECISION	1	
			Count of RES	1	
			Count of SEX	1	
DF Count of DECISION				1	
DF Count of RES				1	
DF Count of SEX				1	
DHYG-MS Count of DECISION					1
DHYG-MS Count of RES					1
DHYG-MS Count of SEX					1
DENT-SPEC	AA	F	Count of DECISION	1	



## Windows Tips and Tricks

### Tips:

- As a general rule: type it first, spell check, save it and *then* make it look pretty!
- Windows *loves* selections:
  - When you select something in Windows, you tell the computer to ignore everything *except* that which is selected. You select something and do something **to** whatever is selected. This works in Word, Excel, PowerPoint, Outlook.
  - So, just select the information and then apply the trick/technique (copy, format, etc.)
- In Word, use the formatting toolbar, the ruler and the show/hide toolbar button as a substitute for Reveal Codes

### Tricks (Word, Excel, etc.)

Control + C	Copy a selection
Control + X	Cut a selection
Control + V	Paste a selection
Control + D	Duplicate a drawing object
Control + P	To open the print dialogue box
Control + A	Select All
Control + F	To open the Find dialogue box – this works on the Internet, and eUMB as well
Control + S	Save a document (Quick Save)
Control + Arrow Keys	Move a drawing object
Control + Delete	To delete the word in front of the cursor
Control + Backspace	To delete the word in back of the cursor
Control + F4	To close a document
Control + F6	Toggle between open documents
Control + Home	Go to the top of the document
Control + End	Go to the bottom of the document
F7	Starts Spellchecker
Shift + F7	Open the Thesaurus
F4	Repeat last action
Double click gray area of ruler in Word	Opens Page Setup Dialog box
Alt+Tab	Toggle between open applications
Tab or Shift + Tab	Move to the right or left between cells