Excel Core
Session 4
Charts

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Pie Charts

These charts represent the parts of a whole. Each 'section' or 'slice of the pie is a data percentage. From biggest to smallest, segments are arranged in a clockwise formation. This way, the pie chart features easy-to-compare subjects presented in a neat, easy-to-understand way.

Create your own Pie Chart

1.) Open the tab timesheet.
2.) Select the names in column B
3.) Using your CTRL key, select the gross pay in column E
4.) To insert the graph, select insert pie, 2D

Again, not too hard. But, I don't like the color scheme. You can change that using the Gallery's selection on the top of the page.

Also, let's put the series name over the top of the pie pieces to make it easier to read along with their percentages.

OK, again I would call this the minimum acceptable chart. Perhaps we should draw our eyes to Smith since he is getting paid so much more than the rest of us. To do this:

Chart Title

Smith 24%
Fredrickson 19%
Jones 18%
Monroe 20%
Peterson 19%
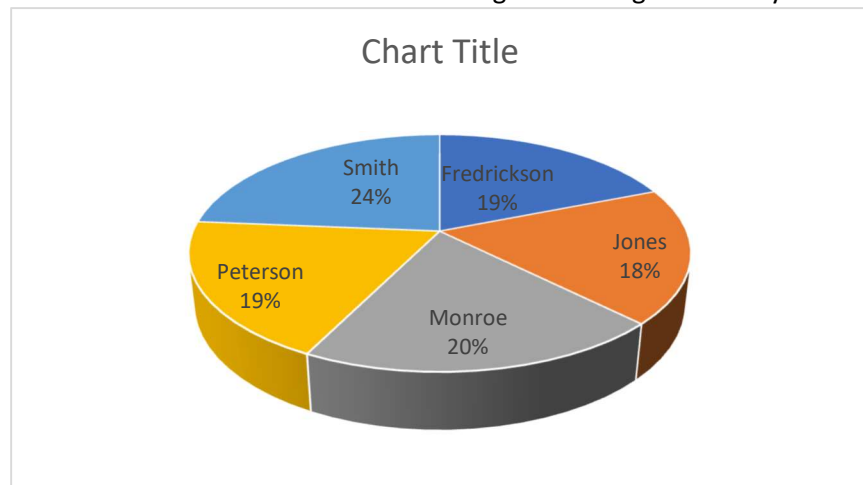
1.) Click once on Smith's pie piece. They are now all selected
2.) Click again on Smith's pie piece. Now only Smith is selected.
3.) Drag Smith's pie piece out
4.) Re-color the pie piece to hot pink.

Bar Graphs

The bars' heights are scaled according to their values and the bars can be compared to each other. Bar graphs can be drawn in a 3-dimensional way and compiled for data comparison about the same thing or location. So that more important categories are emphasized, bars in a bar graphs are arranged in order of frequency.

Create your own Bar Graph

In this first exercise, we would like to see the magnitude of sales by date.

1.) Open the tab called More Data
2.) Select from A2:D6
3.) Go to Insert->Insert Column Chart->2D Clustered Column

Boom! We have a chart. That was easy… But, my instructors always said a chart without a title is a graph. Add a chart title by selecting the Chart Layout with a Title on Top. Name the chart "Employee Sales by Month"
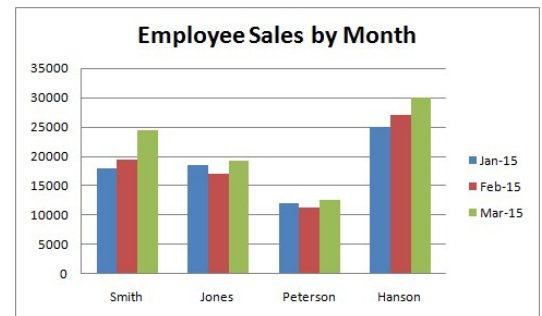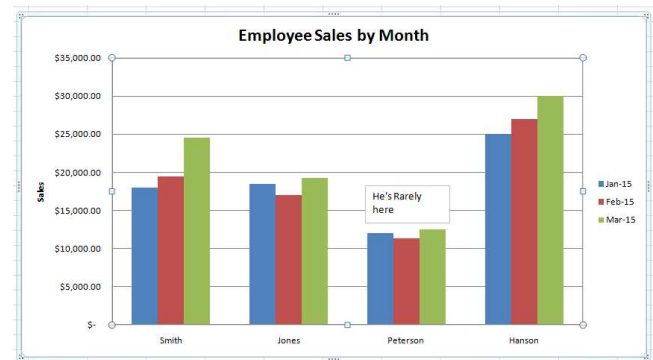
Now, it may be obvious what the y-axis is (money), but perhaps we should label it and use currency.

1.) Select the data that makes up the graph
2.) Go to the Home tab
3.) Select the $ for money

To add a title on the axis:

1.) Select the Chart
2.) Select Layout under the Chart
3.) Select on Axis Titles
4.) Select Vertical
5.) Put in "Sales"

Now, this graph is minimal – meaning the minimal we can get away with. Let's make it better. Let's annotate why Peterson's numbers are so low, "He's rarely here"

1.) Select the text box under insert
2.) Draw out a box to put text
3.) Put in the text, "He's Rarely Here"

Line Graphs

Line Graphs are great for showing trends in data. Is the item you are looking at going up or down? Is it staying consistent?

Let's show the stock prices of Apple and Microsoft from Jan 1, 2000 to Jan 1, 2015 (weekly) against the Dow Jones Industrial Average

Open the tab Stocks.

Wow! That's a lot of data. Let's hide everything except the closing data for all items.

	A	E	N	C
1		Apple	Microsoft	
2	Date	Close	Close	
3	12/29/2014	110.38	46.45	
4	12/22/2014	113.99	47.88	
5	12/15/2014	111.78	47.66	
6	12/8/2014	109.73	46.95	
7	12/1/2014	115	48.42	
8	11/24/2014	118.93	47.81	
9	11/17/2014	116.47	47.98	
10	11/10/2014	114.18	49.58	
11	11/3/2014	109.01	48.68	
12	10/27/2014	108	46.95	
13	10/20/2014	105.22	46.13	
14	10/13/2014	97.67	43.63	
15	10/6/2014	100.73	44.03	
16	9/29/2014	99.62	46.09	
17	9/22/2014	100.75	46.41	

1.) Select the column that we want to hide (e.g. column B)
2.) Right click on the selection giving you a context sensitive menu
3.) Select hide

Voilia! Repeat until it looks like this:

Now, to graph, select the date and the Apple close. We will add Microsoft close later in the exercise. Use the CTRL+Shift+Down Arrow to grab everything quickly!

While selected, Insert->Graph->Line 2-D

Wow! That was easy! Let's add Microsoft.

Edit Series

Series name:
Microsoft   = Microsoft

Series values:
=Stock!$N$3:$N$784   = 1

OK   Cancel

1.) Select the chart
2.) Go to Chart Tools->Design-> And in the data section, choose Select Data.
3.) Click the Add button on the Legend Entries
4.) Type Microsoft into the Series name and select the series values
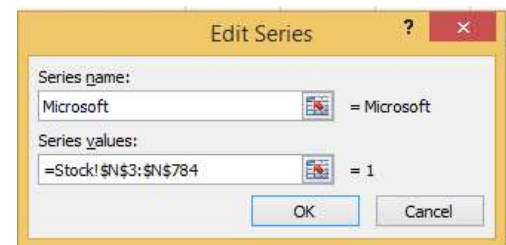
Scatterplot

Scatterplots display paired data using the vertical or the y axis and a horizontal axis or the x axis. The tools for statistics called correlation and regression are then used for showing trends on this type of graph.
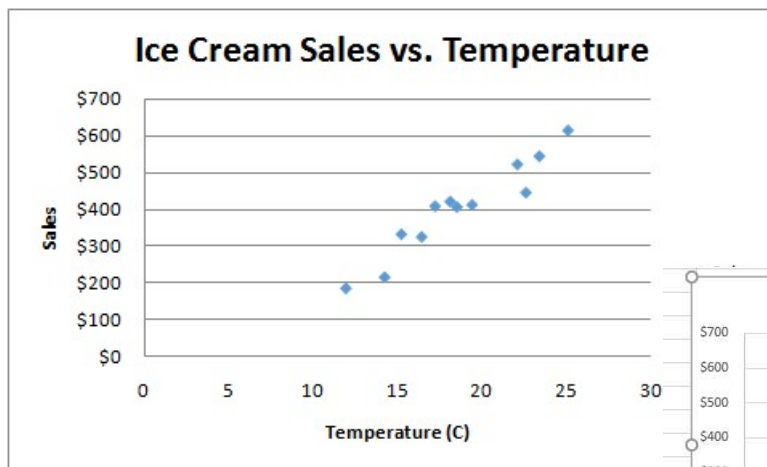
Create your own Scatterplot

Open the file **scatterplot**

1. Select the data from C4:D15
2. Go to Insert->Scatter-> 2D plot
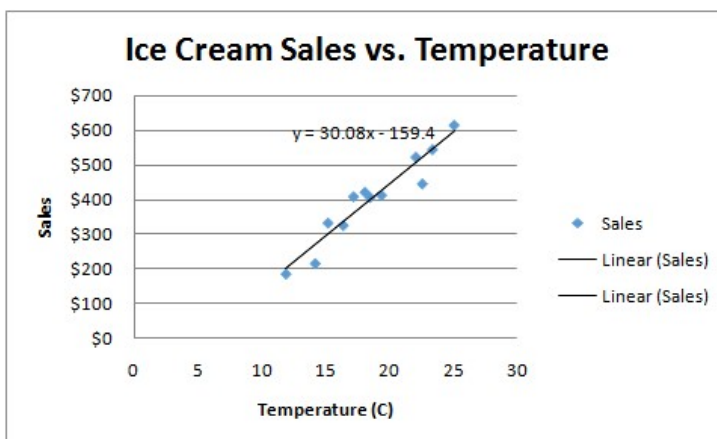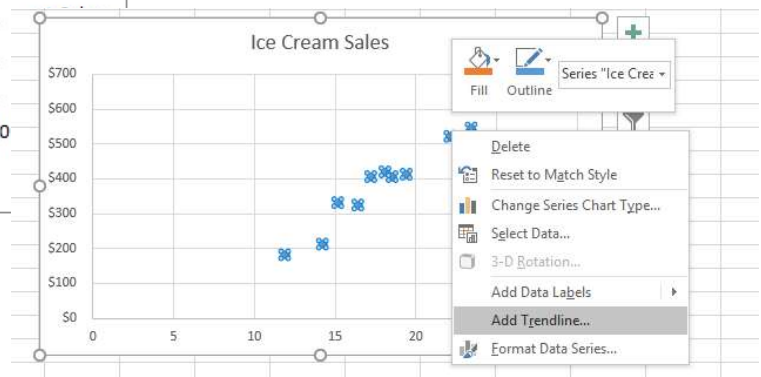3. Add Titles and Labels
4. Profit!
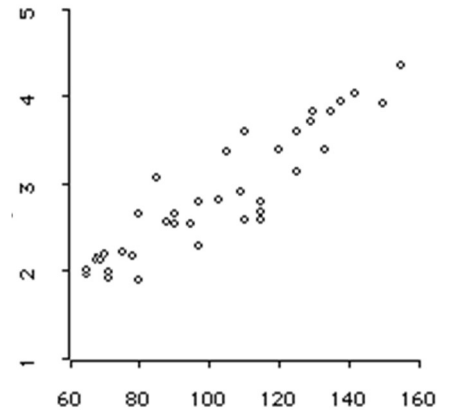
Make sure the x-axis values are on the right of the table. This is default in Excel.

An awesome feature in excel is to get the trendline!

1. Select the chart
2. Select Chart Tools->Layout->Trendline
3. You, as the expert, will have to say what type of trendline the data is representing.
4. I also recommend getting the equation on the chart

Bubble Graphs

A bubble chart is a variation of a scatter chart in which the data points are replaced with bubbles, and an additional dimension of the data is represented in the size of the bubbles. Just like a scatter chart, a bubble chart does not use a category axis — both horizontal and vertical axes are value axes. In addition to the x values and y values that are plotted in a scatter chart, a bubble chart plots x values, y values, and z (size) values.
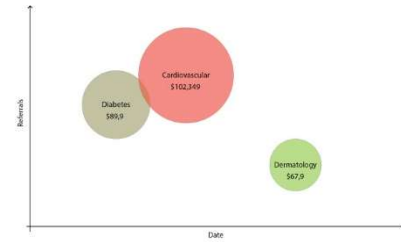
Create your own Bubble Graph

Bubble charts are often used to present financial data. Different bubble sizes are useful to visually emphasize specific values.

To create a bubble chart, arrange your data in rows or columns on a worksheet so that x values are listed in the first row or column and corresponding y values and bubble size (z) values are listed in adjacent rows or columns.

Open the file bubblechart:

Number of products	Sales	Market Share %
14	$ 12,200	15%
20	$ 60,000	33%
18	$ 24,400	10%
22	$ 32,000	42%

In this bubble chart, the number of products is displayed along the horizontal axis, the sales amounts are displayed along the vertical axis, and the market share percentages are represented by the size of the bubbles.

Consider using a bubble chart when your data includes the following:

- **Three values per data point** : Three values are required for each bubble. These values can be in rows or columns on the worksheet, but they must be in the following order: x value, y value, and then z value.

- **Multiple data series** : Plotting multiple data series in a bubble chart (multiple bubble series) is similar to plotting multiple data series in a scatter chart (multiple scatter series). Scatter charts use sets of x values and y values, but bubble charts use sets of x values, y values, and z values.
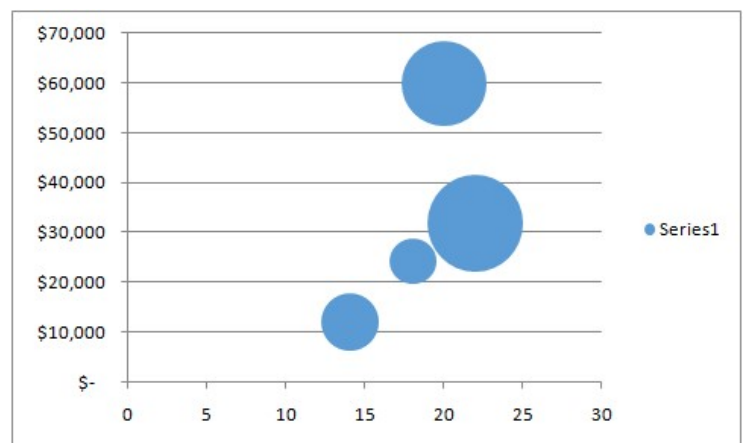
When you create a bubble chart, you can choose one of the following bubble chart subtypes.

- **Bubble or bubble with 3-D effect** : Both bubble chart types compare sets of three values instead of two. The third value determines the size of the bubble marker. You can choose to display bubbles in 2-D format or with a 3-D effect.

1.) Select only the numbers of products, sales, and market share
2.) Select Insert->Other Charts-> Bubble

Update accordingly!
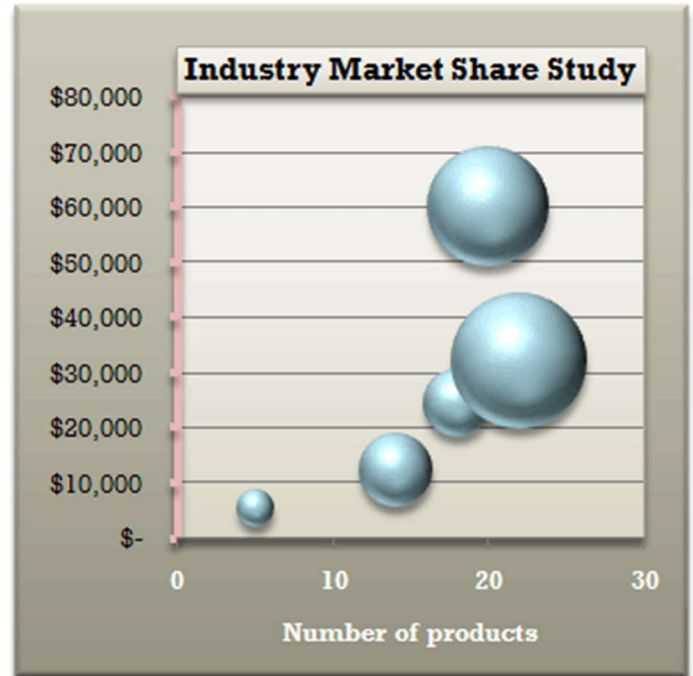
Sparklines

What if we don't want to go through the trouble of creating a graph, yet we want a graphical way of looking at the trends? That's a Sparkline!

Go back to the More Data sheet tab and select cell O3. We want to take a look at how Smith is doing in that cell.

- Go to Insert->Sparklines->Line
- Select B3:M3 as the Range
- Click OK
- Copy down to the other sales people.
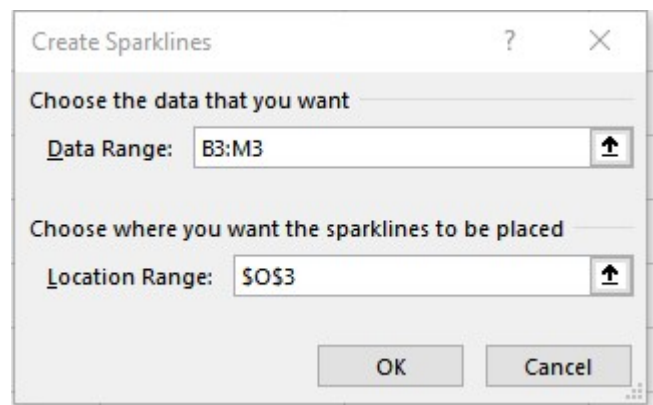
L	M	N	O
Nov-00	Dec-00		
35,333	36,833		
21,625	22,000		
14,183	14,433		
31,660	31,845		

Pareto Graph

Many people have heard of this as the "80-20 rule". That is, that doing 20% of the work can generate 80% of the advantage of doing the entire job. In the idea of quality improvement, we can say that a large majority of the problems (80%) are produced by a few key issues (20%).

Open the File Pareto

1.) Sort rows in decreasing order of importance of the causes (i.e., the most important cause first)
2.) Sum the numbers together

   Add a cumulative percentage column to the table
   Add a new column to the table and get the percentages of each of the complaints. This is done by taking the quantity of each complaint, dividing it by the total number of complaints, and multiplying by 100.

   For example, hospital cafeteria food (bad) has 159 complaints. So 159/557*100 = 28.5%

Patient Complaints for the Month	Quantity	Percent
Hospital cafeteria food bad	159	28.5%
Waiting room overcrowded	108	19.4%
Walk-up clinic not open Saturday morning	75	13.5%
No parking available in the parking ramp	56	10.1%
Coffee cold in waiting room	44	7.9%
Appointment scheduled for different day	34	6.1%
Pharmacy orders take too long to be filled	28	5.0%
Doctor unfriendly during appointment	17	3.1%
Medical file errors	16	2.9%
Unfriendly receptionist	9	1.6%
Wheel chair unavailable	8	1.4%
Old magazines in waiting room	3	0.5%
Name misspelled on medical chart	0	0.0%

3.) Plot with numbers on the left and cumulative percentages on the secondary y axis.