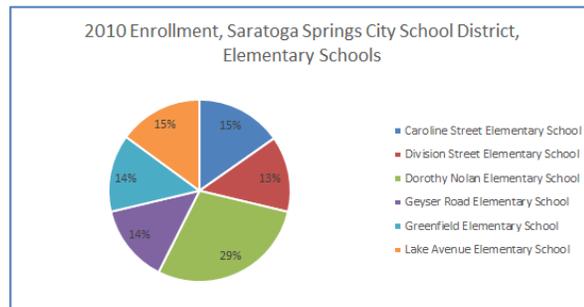


04 – Charts

1. Chart Types and Dimensions

Types

Pie – view what part data is when compared to the whole



Bar or Column – view data over a series (usually time)

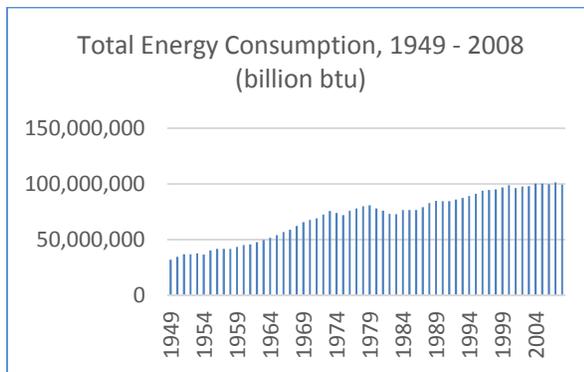


Chart Dimensions

You can alter a chart's dimensions using the same techniques that we used with images in the Formatting topic (Topic 2). You can move and resize them, drag the corner points (to resize and maintain the aspect ratio), drag the mid points (to resize and distort the aspect ratio)

Example Data and Corresponding Charts

Data set examples – what is the appropriate chart type?

[Superbowl score difference over years](#)

[Student score distribution](#)

2. Creating a Chart

2.1 Create a Pie Chart – use the [saratoga_schools.xlsx](#) Excel file

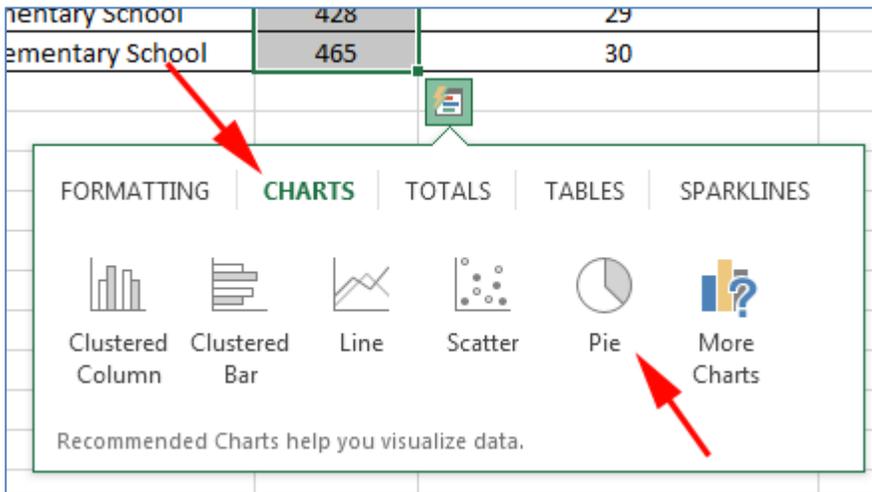
(1) Select the data that will be the subject of the chart

	A	B	C
1	SCHOOL	STUDENTS	FULL TIME CERTIFIED TEACHERS
2	Caroline Street Elementary School	475	31
3	Division Street Elementary School	419	27
4	Dorothy Nolan Elementary School	893	60
5	Geyser Road Elementary School	432	30
6	Greenfield Elementary School	428	29
7	Lake Avenue Elementary School	465	30
8			
9			

(2a) On the Insert Tab/Charts group – choose one of the pie charts

The screenshot shows the Microsoft Excel interface with the 'INSERT' tab selected. The 'Charts' group is active, and a dropdown menu is open, displaying options for '2-D Pie', '3-D Pie', 'Doughnut', and 'More Pie Charts...'. The background shows the same data table as in the previous image, with the 'STUDENTS' column highlighted in green.

(2b) Or choose Pie from the Charts tab of the Quick Analysis tool.



2.2 Create a Column Chart - use the [energy_consumption.xlsx](#) Excel file

Make a Total column to use for the data for the chart

Year	Residential	Commercial	Industrial	Transportation	Total
1949	5,604,608	3,670,240	14,716,733	7,990,087	31,981,668
1950	5,995,210	3,895,068	16,232,875	8,492,594	34,615,747
1951	6,387,325	3,875,122	17,669,234	9,042,162	37,973,843
1952	6,567,703	3,875,369	17,301,575	9,603,096	37,747,743

(1) Select the data that will be the subject of the chart and click on the Quick Analysis button.
(Or, on the Insert Tab/Charts group – choose one of the column charts.)

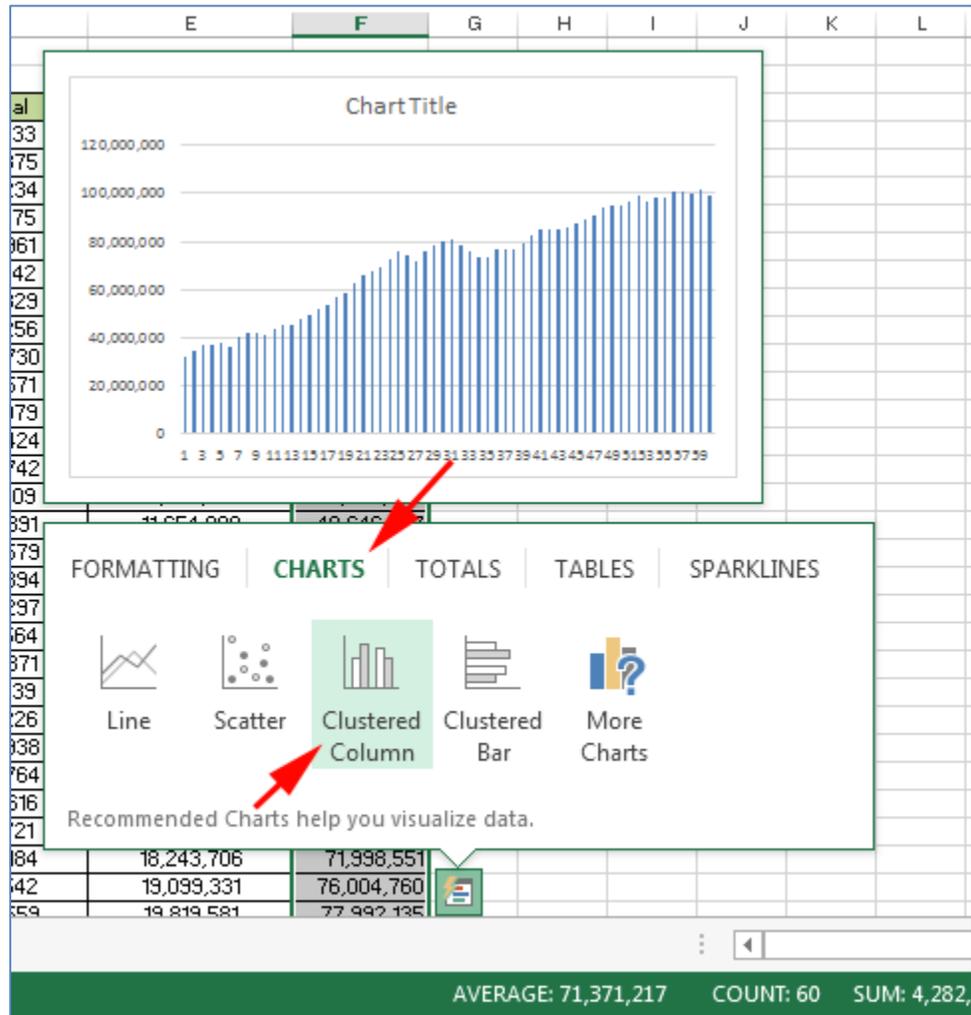
The screenshot shows an Excel spreadsheet with a column of data in column F. The data values are: 31,981,668; 34,615,747; 36,973,843; 36,747,743; 37,664,506; 36,639,291; 40,207,941; 41,754,427; 41,787,314; 41,645,017; 43,465,783; 45,086,864; 45,739,122; 47,827,747; 49,646,037; 51,817,318; 54,017,100; 57,016,747; 58,908,441; 62,419,153; 65,621,137; 67,844,040; 69,289,272; 72,704,343; 75,701,029; 73,983,778; 71,998,551; 76,004,760; 77,992,135. A tooltip for the Quick Analysis tool is displayed over the data, with a red arrow pointing to the Quick Analysis button (a small icon with a bar chart) located at the bottom left of the selected data range. The status bar at the bottom shows: AVERAGE: 71,371,217 COUNT: 60 SUM: 4,282,273.

Month	Total
	31,981,668
	34,615,747
	36,973,843
	36,747,743
	37,664,506
	36,639,291
	40,207,941
	41,754,427
	41,787,314
	41,645,017
	43,465,783
	45,086,864
	45,739,122
	47,827,747
	49,646,037
	51,817,318
	54,017,100
	57,016,747
	58,908,441
	62,419,153
	65,621,137
	67,844,040
	69,289,272
	72,704,343
	75,701,029
	73,983,778
	71,998,551
	76,004,760
	77,992,135

Quick Analysis (Ctrl+Q)
Use the Quick Analysis tool to quickly and easily analyze your data with some of Excel's most useful tools, such as charts, color-coding, and formulas.

AVERAGE: 71,371,217 COUNT: 60 SUM: 4,282,273

(2) Choose Clustered Column from the Charts tab of the Quick Analysis tool

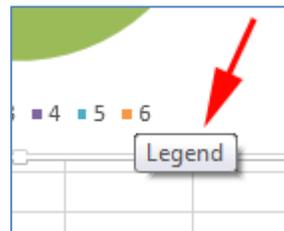


3. Chart Parts

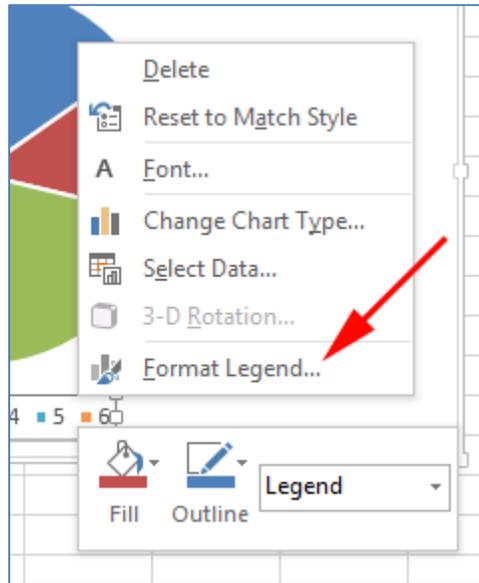
3.1 Identifying and Modifying Chart Parts

Rest mouse over a chart part to see that chart part's name

Right click a chart part to modify it

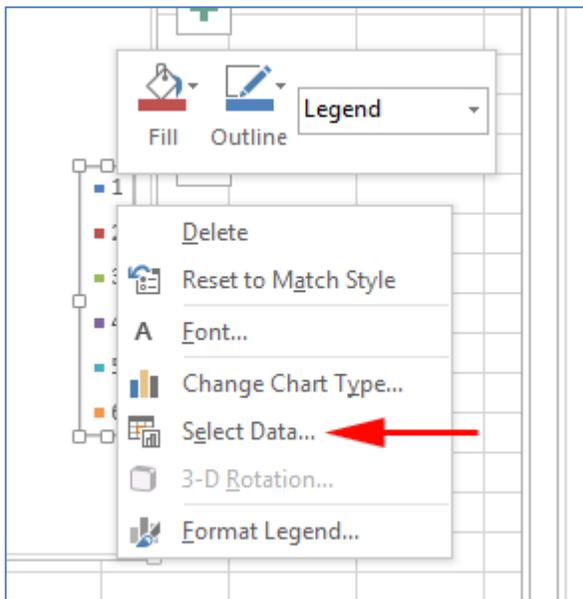


Choose Format (*chart part*) to show formatting options

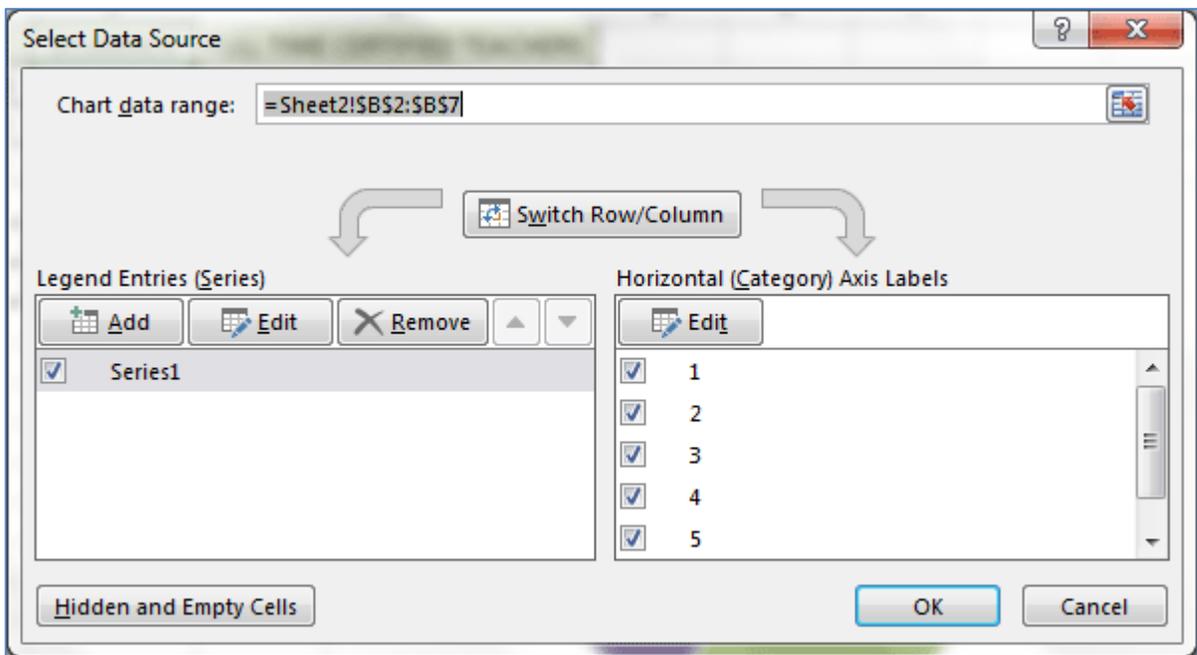


3.2 Modifying the Legend on a Pie Chart

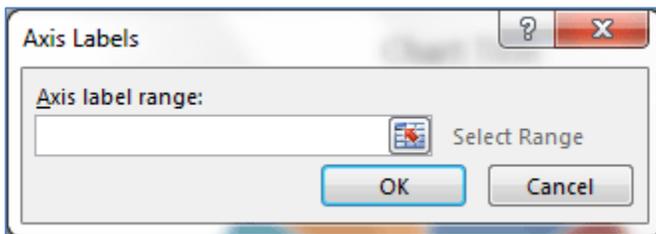
(1) Right click on the Legend, choose Select Data...



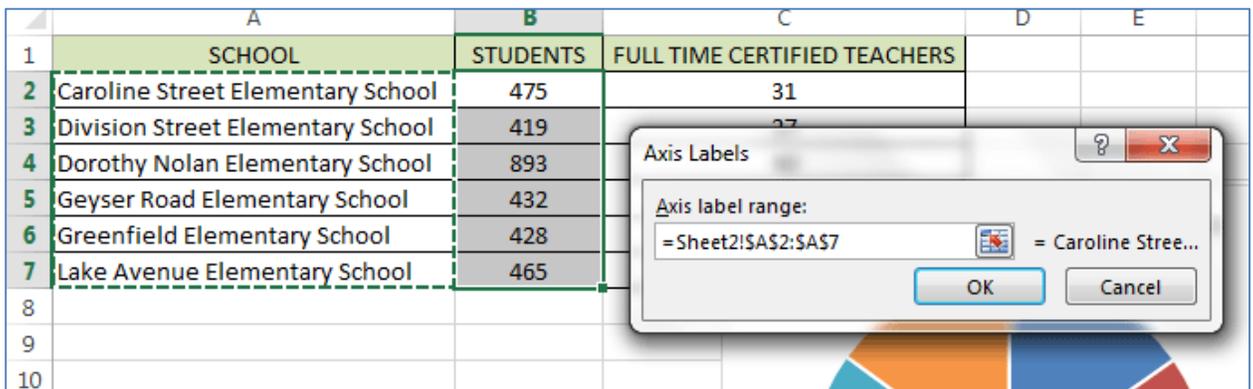
(2) This shows the Select Data Source dialog box. Click the Edit button over the Horizontal (Category) Axis Labels list box.



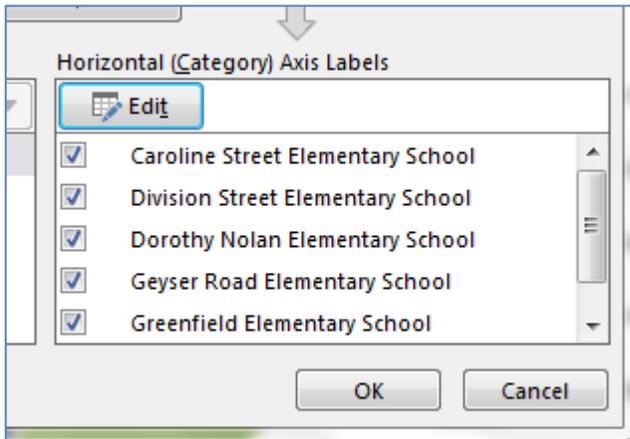
(3) This shows the Axis Labels dialog box.



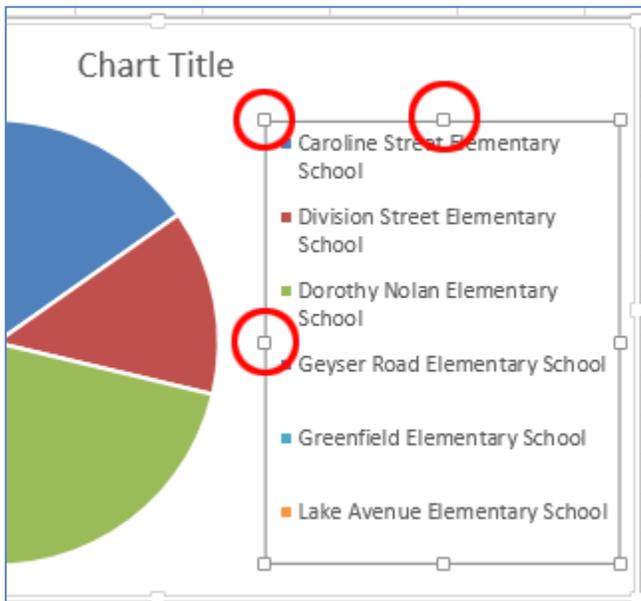
(4) Use this to select the range of cells that have the desired contents for the legend and click the OK button.



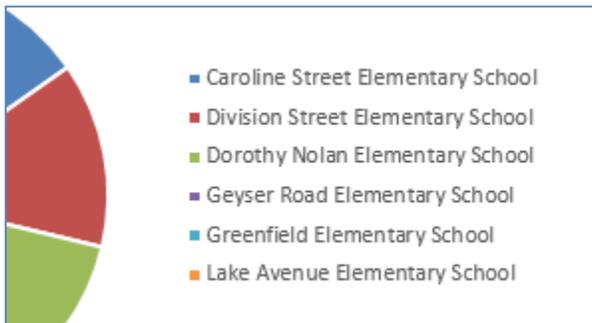
(5) The new legend contents show in the Horizontal (Category) Axis Labels list box.



(6) You can resize chart parts the same way you resize images – by using the corner and/or mid-point drag handles

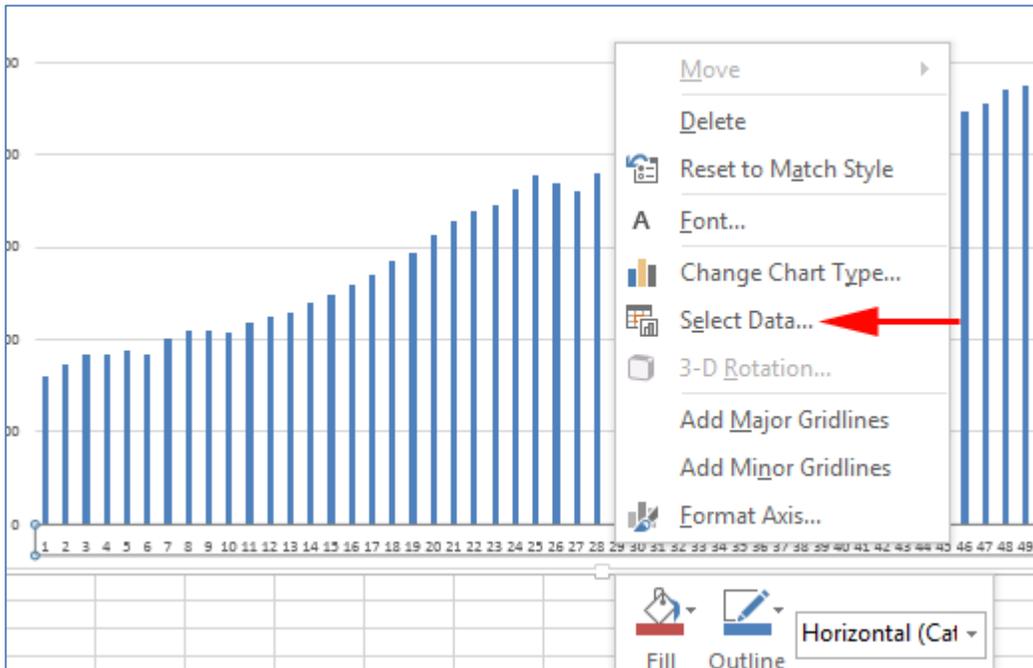


Example of a resized legend

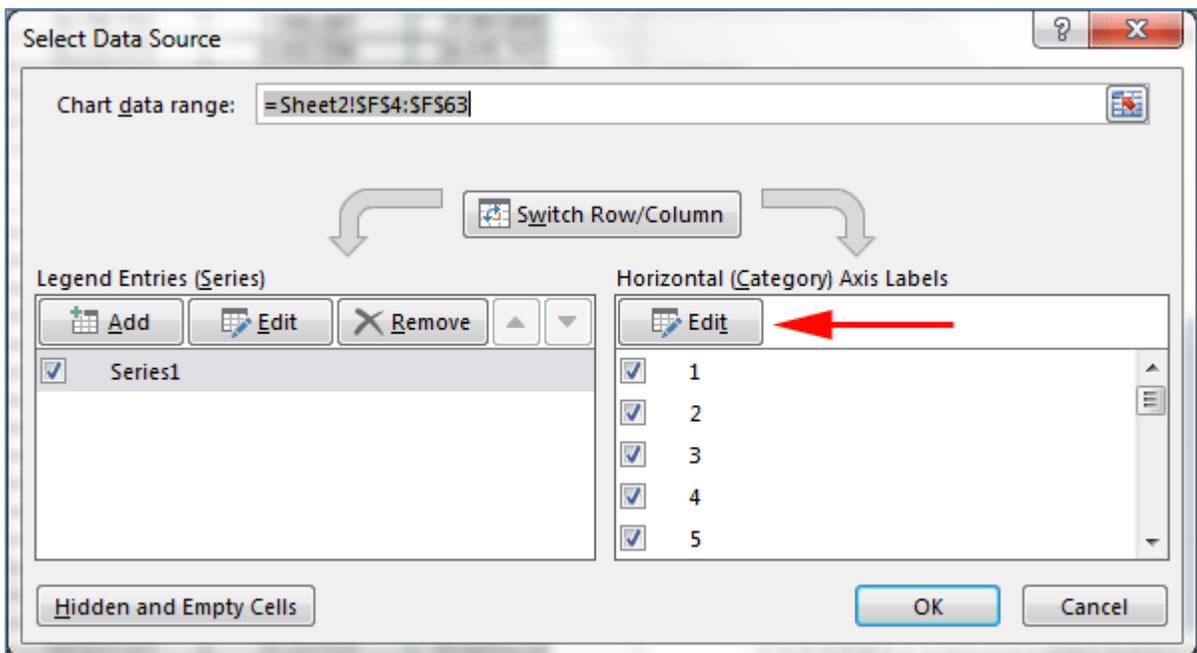


3.3 Modifying the Horizontal Axis Labels on a Bar Chart

(1) Right click on the Legend, choose Select Data...



(2) This shows the Select Data Source dialog box. Click the Edit button over the Horizontal (Category) Axis Labels list box.



(3) This shows the Axis Labels dialog box.

(4) Use this to select the range of cells that have the desired contents for the legend and click the OK button.

	A	B	C	D	E
1	Table 2.1a Energy Consumption by Sector, 1949-2008 (Billion Btu)				
2					
3	Year	Residential	Commercial	Industrial	Transportation
4	1949				
5	1950				
6	1951				
7	1952				
8	1953				
9	1954				
10	1955				
11	1956				
12	1957	7,722,095	3,963,472	20,204,730	9,897,000
13	1958	8,211,515	4,122,038	19,306,571	10,004,000
14	1959	8,424,818	4,375,629	20,315,979	10,349,000
15	1960	9,053,445	4,613,194	20,823,424	10,596,000

(5) The new legend contents show in the Horizontal (Category) Axis Labels list box.

Select Data Source

Chart data range: =Sheet2!\$A\$4:\$A\$63,Sheet2!\$F\$4:\$F\$63

Switch Row/Column

Legend Entries (Series)

- Series1

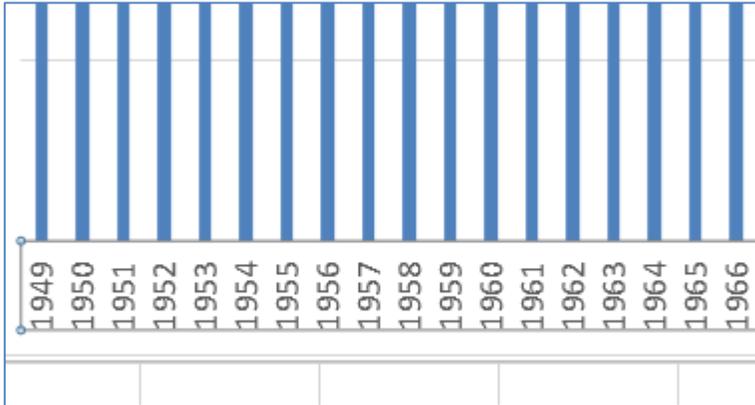
Horizontal (Category) Axis Labels

- 1949
- 1950
- 1951
- 1952
- 1953

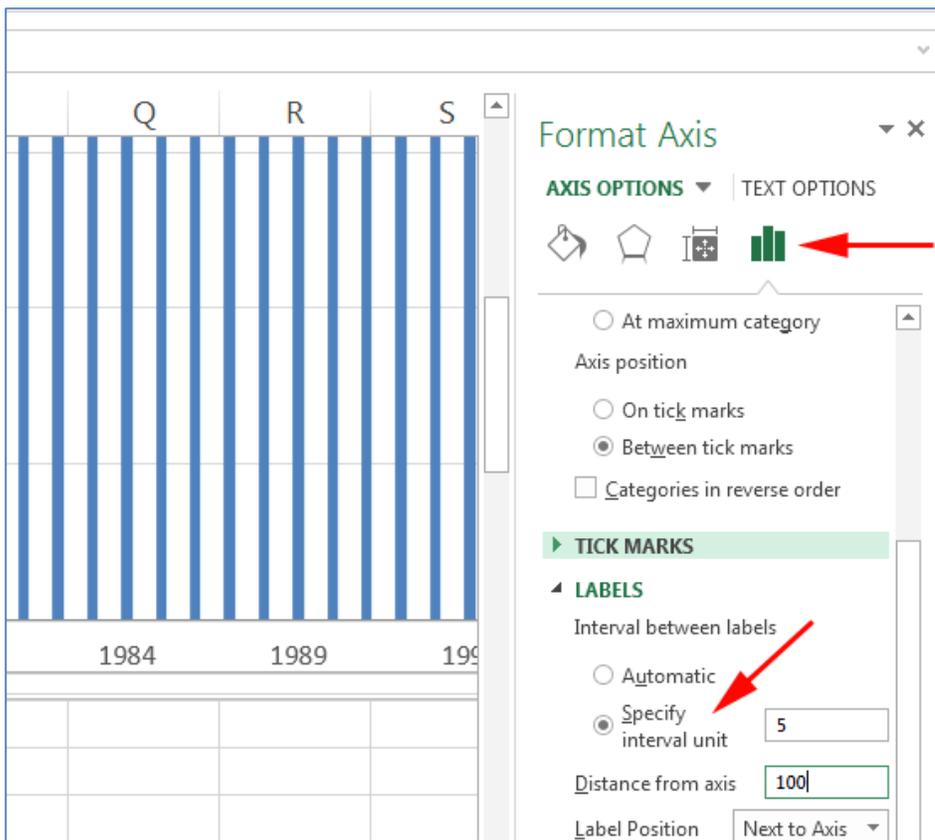
Hidden and Empty Cells

OK Cancel

(6) Now the year labels display in the horizontal axis of the bar chart



(7) You can make additional modifications to the axis labels – right click on the axis labels and choose Format Axis...



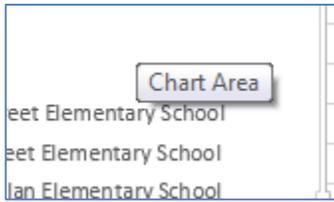
The screenshot shows the 'Format Axis' task pane with the following settings:

- AXIS OPTIONS** (selected tab)
- TEXT OPTIONS**
- AXIS POSITION**
 - At maximum category
 - On tick marks
 - Between tick marks
 - Categories in reverse order
- TICK MARKS** (expanded)
- LABELS** (expanded)
 - Interval between labels
 - Automatic
 - Specify interval unit (value: 5)
 - Distance from axis: 100
 - Label Position: Next to Axis

For example – you can set the interval between labels - Click on the axis options button (top red arrow in the above image) and specify the interval unit in the Labels group of the format axis tools.

3.4 Some Other Chart Parts

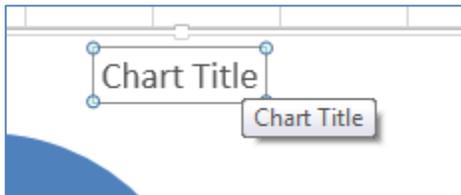
Chart Area - You can modify the background fill color



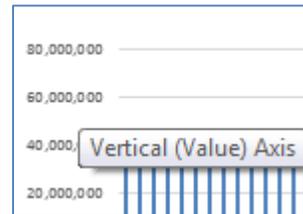
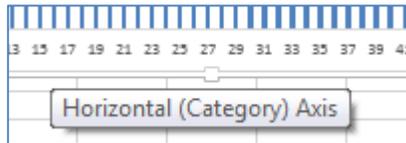
Plot Area - You can modify the background fill color



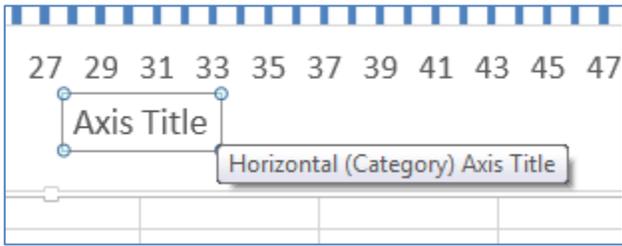
Chart Title



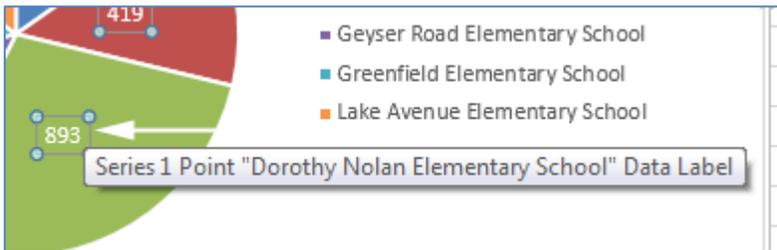
Axes – Horizontal and Vertical



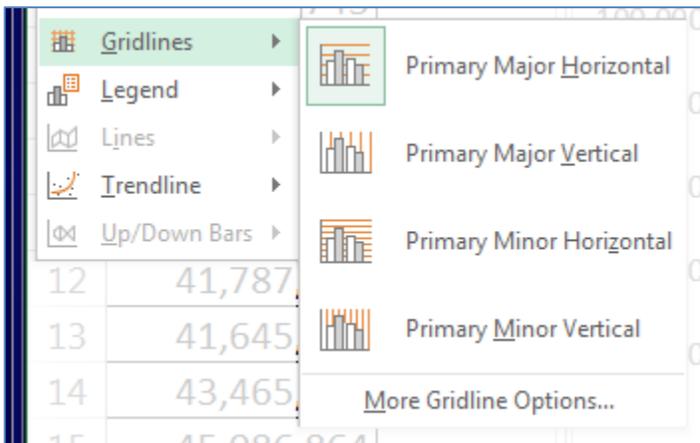
Axis Title



Data Labels



Gridlines

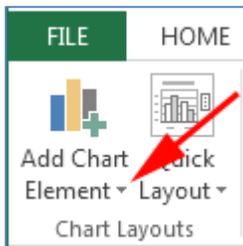


3.5 Adding Other Chart Parts

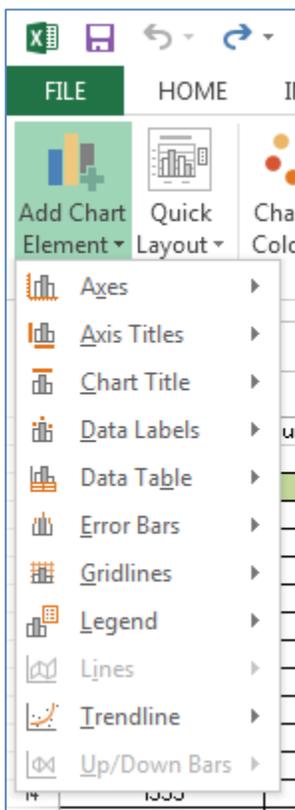
If they are not displayed on the chart, you can add additional chart parts. Click on the chart to select it, then click on the Design tab of the Chart Tools part of the ribbon.



Then Add Chart Element



Choose the chart part to add



4. Stacked Column Chart - Combination of Pie and Column charts

A stacked column chart is a combination of a bar chart and a pie chart. It shows the overall change over a series, and also shows the portion of each part over that series. For example, in the data below, the total energy consumption is the sum of the residential, commercial, industrial, and transportation consumption components. A stacked column shows the total energy consumption over the years, and also the portion of each energy consumption sector over the years.

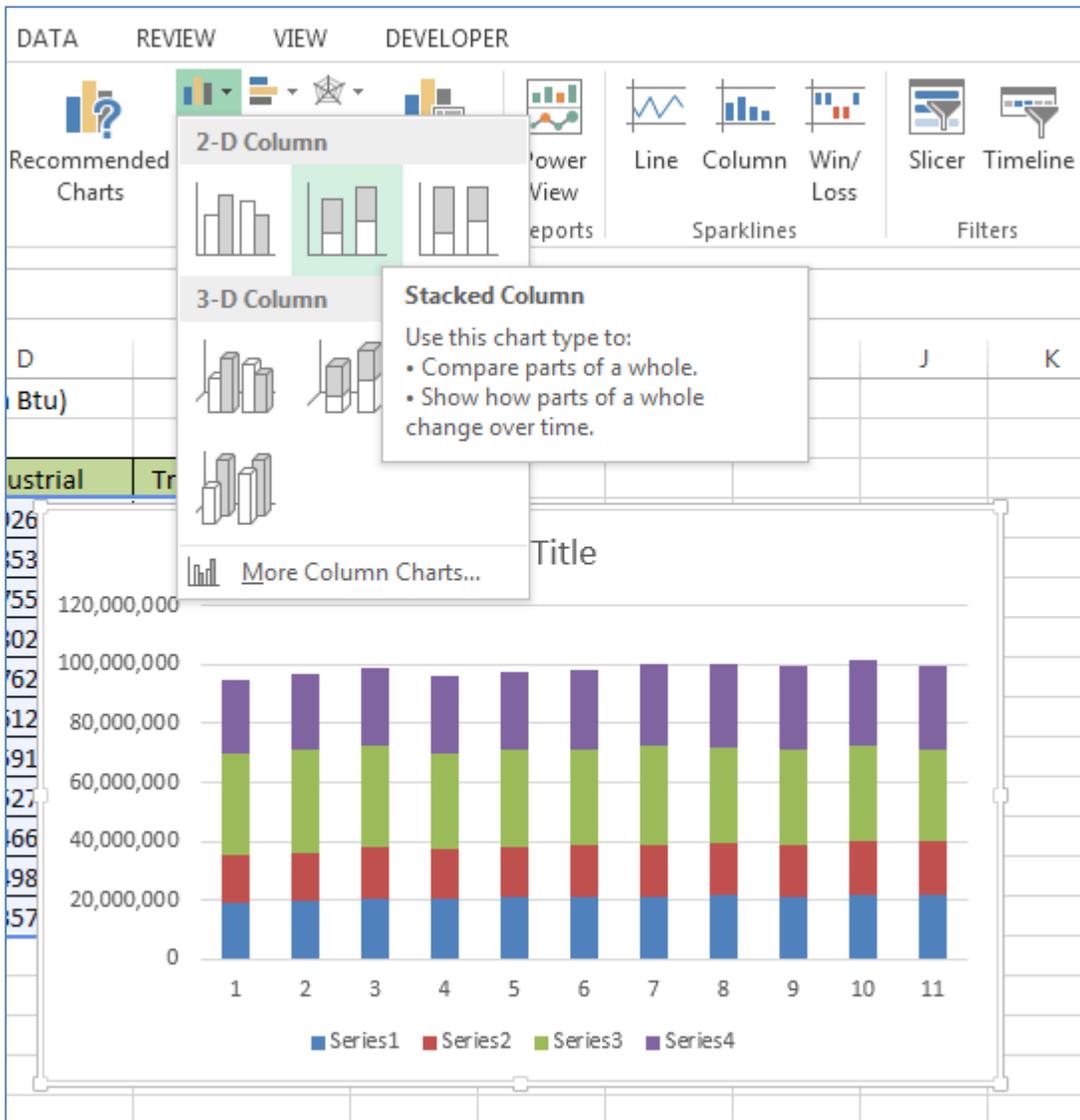
	A	B	C	D	E
1	Table 2.1a Energy Consumption by Sector, 1949-2008 (Billion Btu)				
2					
3	Year	Residential	Commercial	Industrial	Transportation
4	1998	18,986,464	16,013,536	34,926,384	25,255,455
5	1999	19,582,928	16,421,544	34,853,627	25,948,049
6	2000	20,445,761	17,218,069	34,755,525	26,548,003
7	2001	20,064,807	17,179,872	32,802,793	26,274,814
8	2002	20,837,794	17,404,375	32,762,390	26,844,037
9	2003	21,138,904	17,387,615	32,612,018	26,993,593
10	2004	21,124,816	17,707,110	33,591,933	27,894,875
11	2005	21,659,926	17,905,328	32,527,701	28,351,927
12	2006	20,734,770	17,760,105	32,466,383	28,828,760
13	2007	21,599,692	18,313,720	32,498,949	29,117,985
14	2008	21,606,384	18,411,218	31,357,561	28,026,827

To create a stacked column chart –

- (1) select that data for the subject of the chart

	A	B	C	D	E
1	Table 2.1a Energy Consumption by Sector, 1949-2008 (Billion Btu)				
2					
3	Year	Residential	Commercial	Industrial	Transportation
4	1998	18,986,464	16,013,536	34,926,384	25,255,455
5	1999	19,582,928	16,421,544	34,853,627	25,948,049
6	2000	20,445,761	17,218,069	34,755,525	26,548,003
7	2001	20,064,807	17,179,872	32,802,793	26,274,814
8	2002	20,837,794	17,404,375	32,762,390	26,844,037
9	2003	21,138,904	17,387,615	32,612,018	26,993,593
10	2004	21,124,816	17,707,110	33,591,933	27,894,875
11	2005	21,659,926	17,905,328	32,527,701	28,351,927
12	2006	20,734,770	17,760,105	32,466,383	28,828,760
13	2007	21,599,692	18,313,720	32,498,949	29,117,985
14	2008	21,606,384	18,411,218	31,357,561	28,026,827

(2) Insert the Stacked Column chart using the Quick Analysis button or from the Insert tab of the ribbon (as shown in the image below)



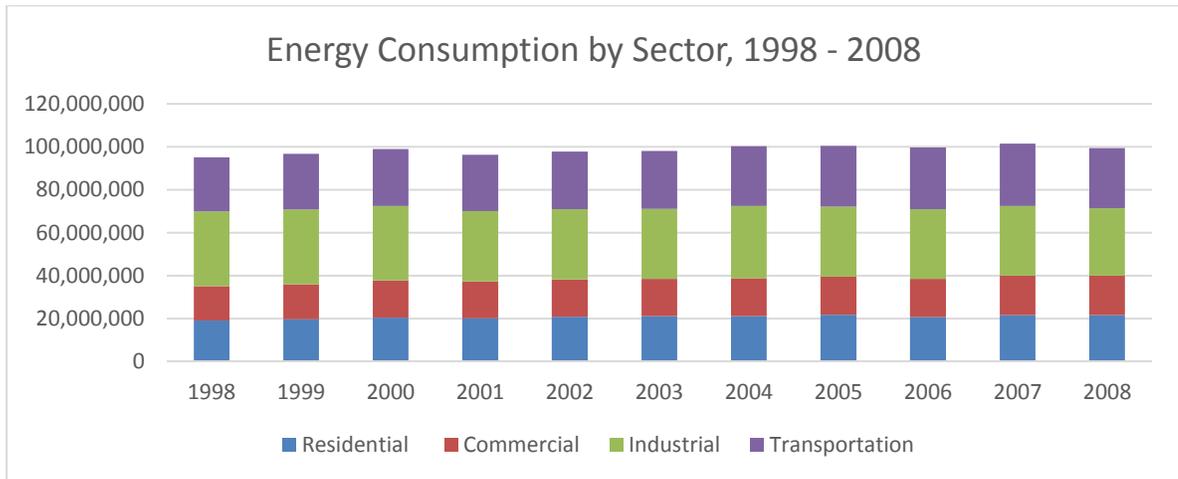
Add labels to the legend following the instructions in the [\(3.3 Modifying the Horizontal Axis Labels on a Bar Chart\)](#) section above.

The screenshot shows an Excel spreadsheet with the following data table:

	Residential	Commercial	Industrial	Transportation
	18,986,464	16,013,536	34,926,384	25,255,455
	19,582,928	16,421,544	34,853,627	25,948,049
	20,445,761	17,218,069	34,755,525	26,548,003
	20,064,807	17,179,872	32,802,793	26,274,814
	20,837,794	17,404,375	32,762,390	26,844,037
	21,138,904	17,387,615	32,612,018	26,993,593
	21,124,816	17,707,110	33,591,933	27,894,875
	21,659,926	17,905,328	32,527,701	28,351,927
	20,734,770	17,760,105	32,466,382	28,828,760

The 'Select Data Source' dialog box is open, showing the legend entries: Residential, Commercial, Industrial, and Series4. A red arrow points to 'Series4'.

Finished Stacked Column chart.

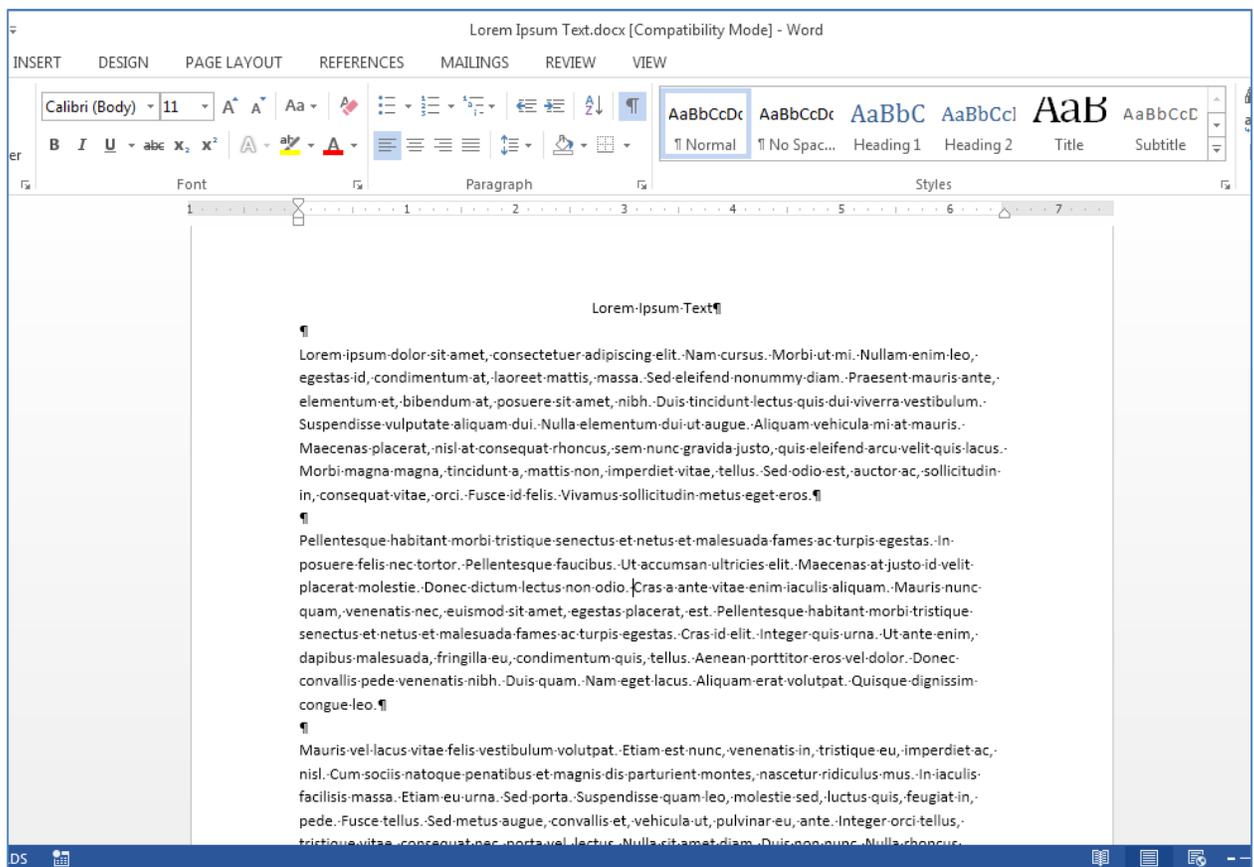


5. Using charts in other (including Office) applications

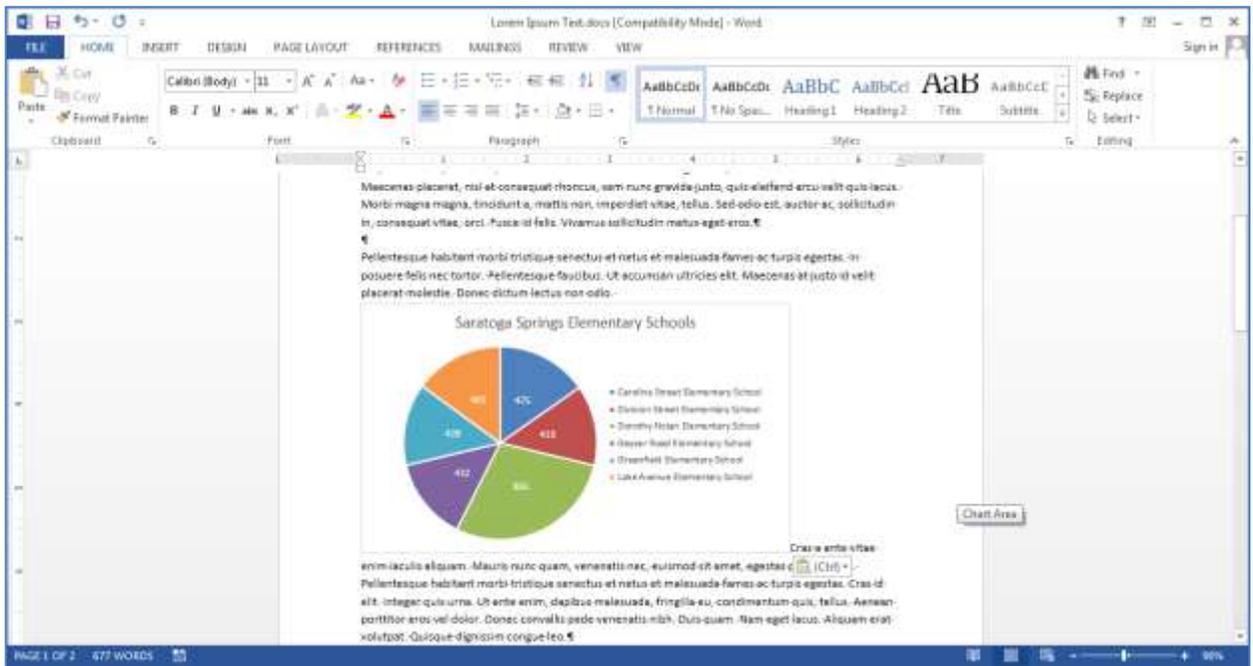
You can easily include an Excel chart to other applications – like Word or PowerPoint.

Follow these steps:

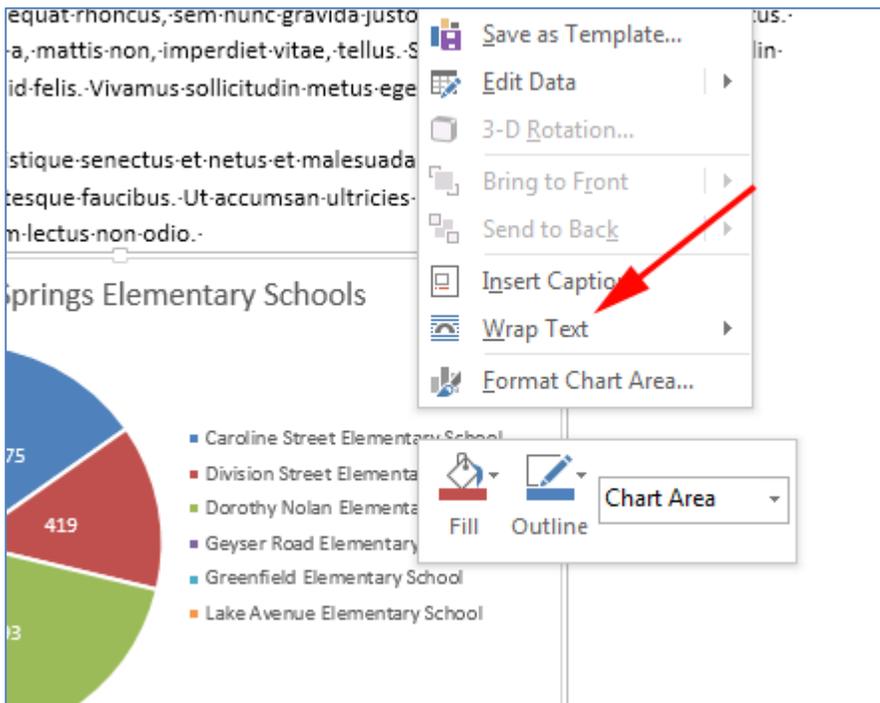
1. Select the chart in Excel and copy it to the clipboard (right click and choose copy from the pop-up menu or click on copy on the xxx tab /xxx in the xxx group on the ribbon). Make sure you have the entire chart selected (the corner and mid-point drag handles are showing) and not a just chart part.
2. Open the file that will be the destination for the copied Excel chart. This example uses a Word document.
3. Position the Insertion Point in the location that you want to paste the chart.



4. Paste the chart into the document (right click and choose Paste from the pop-up menu or Paste from the ribbon).



5. (Charts in Word) Set the Text Wrapping. Right click on the chart on choose Wrap Text from the pop-up menu. Select the desired text wrapping style.



6. More Layout Options - Right click on the chart image, hover the mouse arrow over Wrap Text and select More Layout Options – you can use this dialog box to set the chart image’s distance from text (see the following images).

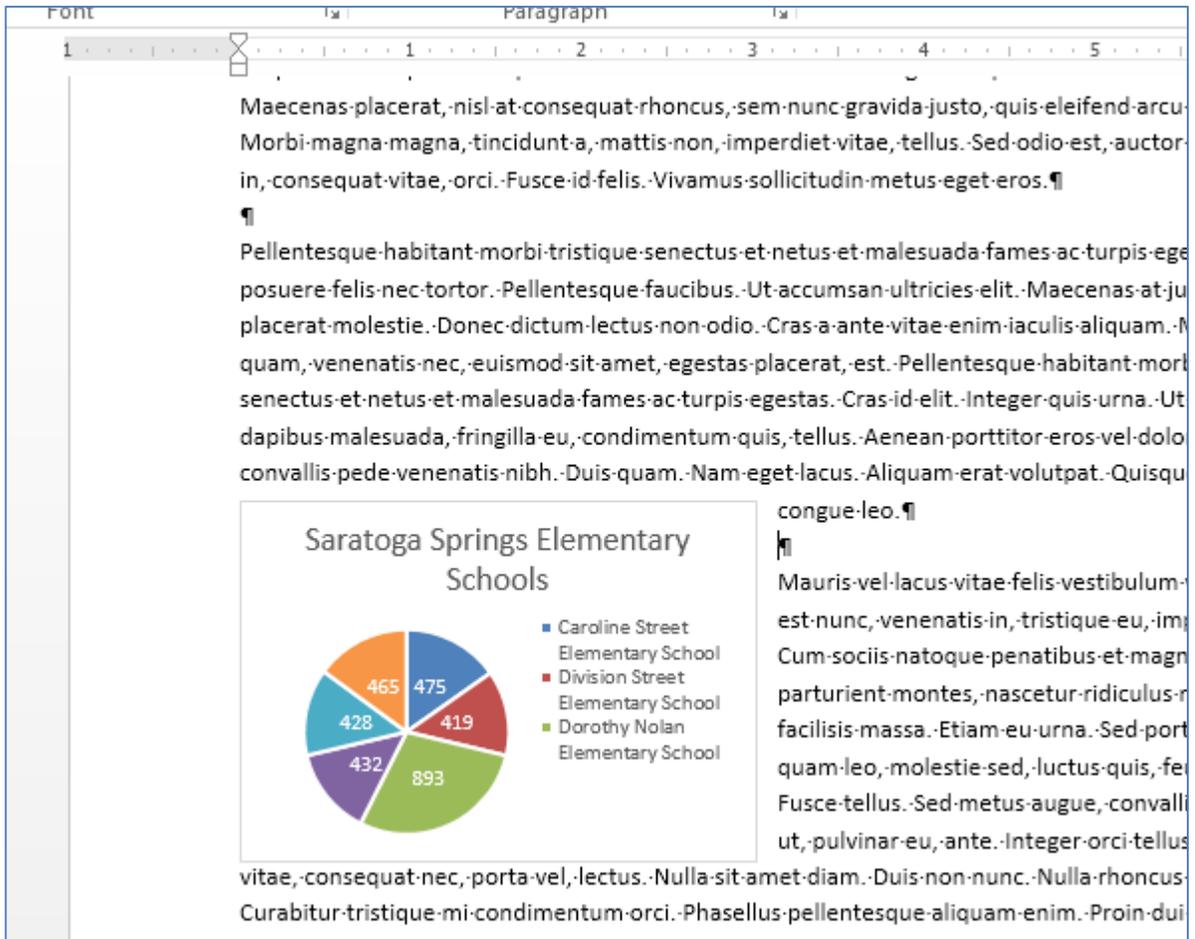
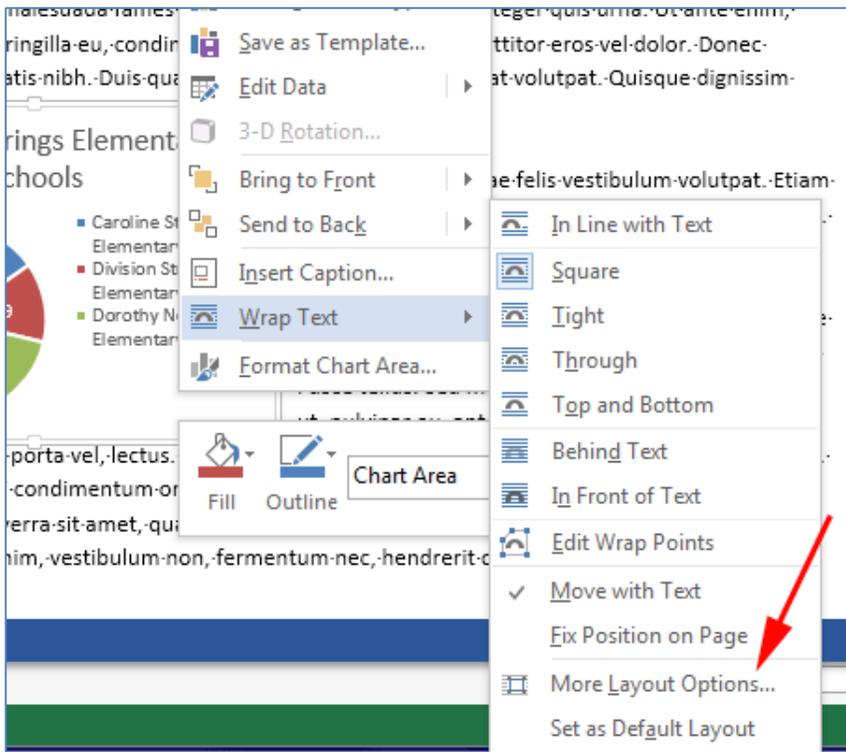
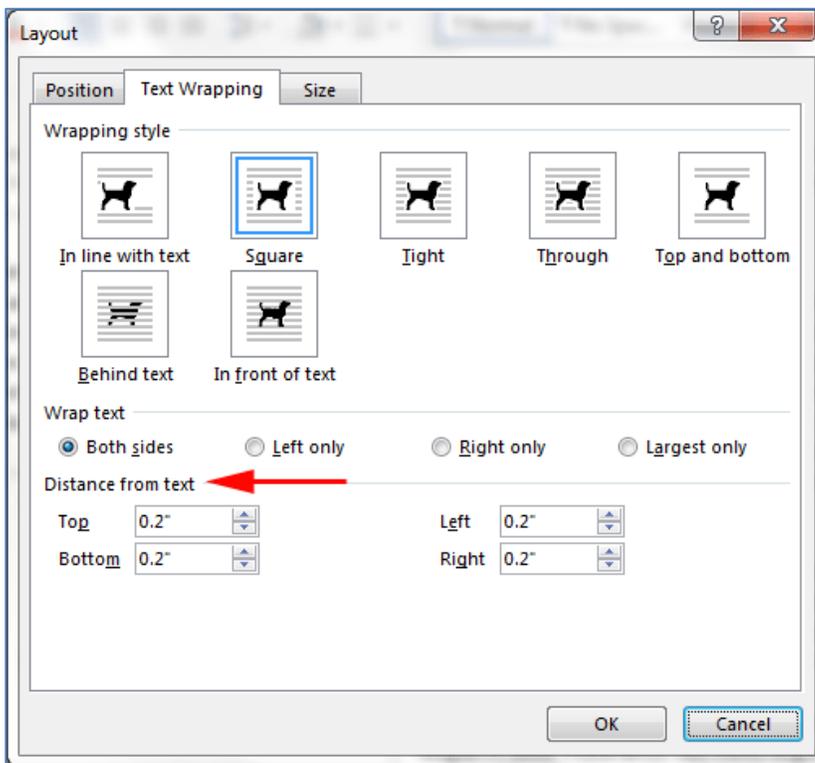


Chart Image before setting Distance from text

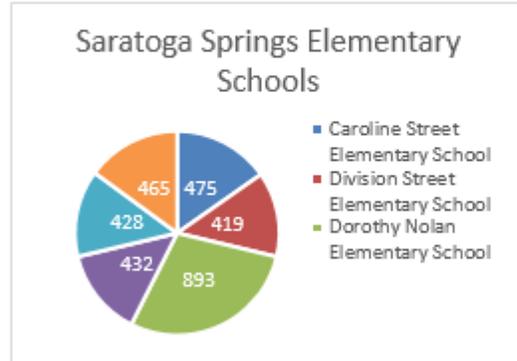


More Layout Options from the pop-up menu



Setting the Distance from text

placemat-molestie.-Donec-dictum-rectus-non-odio.-Cras-a-ante-vitae-enim-
quam,-venenatis-nec,-euismod-sit-amet,-egestas-placemat,-est.-Pellentesque
senectus-et-netus-et-malesuada-fames-ac-turpis-egestas.-Cras-id-elit.-Integ
dapibus-malesuada,-fringilla-eu,-condimentum-quis,-tellus.-Aenean-porttitor



convallis-pede-venenatis
lacus.-Aliquam-erat-venenatis
congue-leo.¶

¶
Mauris-vel-lacus-vitae
Etiam-est-nunc,-venenatis
ac,-nisl.-Cum-sociis-nam
parturient-montes,-nam
facilisis-massa.-Etiam
Suspendisse-quam-leo
feugiat-in,-pede.-Fusce
convallis-et,-vehicula-

orci-tellus,-tristique-vitae,-consequat-nec,-porta-vel,-lectus.-Nulla-sit-amet
rhoncus-dictum-metus.-Curabitur-tristique-mi-condimentum-orci.-Phasellus
Proin-dui-lectus,-cursus-eu,-mattis-laoreet,-viverra-sit-amet,-quam.-Curabitur

Chart image after setting the Distance from text