Pearson New International Edition

Exploring Microsoft Office Excel 2010 Comprehensive

Grauer Poatsy Mulbery Hogan

First Edition

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Create a Pie Chart

A **pie chart** shows each data point in proportion to the whole data series as a slice in a circular pie.

A ***pie chart*** shows each data point as a proportion to the whole data series. The pie chart displays as a circle or "pie," where the entire pie represents the total value of the data series. Each slice represents a single data point. The larger the slice, the larger percentage that data point contributes to the whole. Use a pie chart when you want to convey percentage or market share. Unlike column, bar, and line charts, pie charts represent a single data series only.

The pie chart in Figure 11 divides the pie representing total Fall 2012 enrollment into seven slices, one for each college. The size of each slice is proportional to the percentage of total enrollment for that year. The chart depicts a single data series (Fall 2012 enrollment), which appears in the range E5:E11 on the worksheet in Figure 1. Excel creates a legend to indicate which color represents which pie slice. When you create a pie chart, limit it to about seven slices. Pie charts with too many slices appear too busy to interpret.

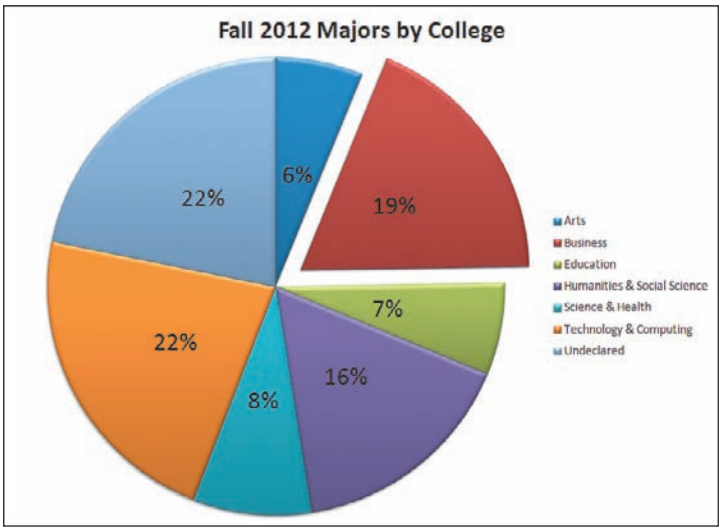


FIGURE 11 Pie Chart ➤

Similar to the way it creates a 100% stacked column chart, Excel creates a pie chart by computing the total 2012 enrollment (21,530 in our example), calculating the enrollment percentage by college and drawing each slice of the pie in proportion to its computed percentage. The Business College had 4,000 majors, which accounts for 19% of the total number of majors. You can focus a person's attention on a particular slice by separating one or more slices from the rest of the chart in an ***exploded pie chart***, as shown in Figure 11. Additional pie subtypes include pie of pie, bar of pie, and 3-D pie charts.

An **exploded pie chart** separates one or more pie slices from the rest of the pie chart.

Create Other Chart Types

Excel enables you to create seven other basic chart types: area, X Y (scatter), stock, surface, doughnut, bubble, and radar. Each chart type has many chart subtypes available.

An **area chart** emphasizes magnitude of changes over time by filling in the space between lines with a color.

An ***area chart*** is similar to a line chart in that it shows trends over time. Like the line chart, the area chart uses continuous lines to connect data points. The difference between a line chart and an area chart is that the area chart displays colors between the lines. People sometimes view area charts as making the data series more distinguishable because of the filled-in colors. Figure 12 shows a stacked area chart representing yearly enrollments by college. The shaded areas provide a more dramatic effect than a line chart.

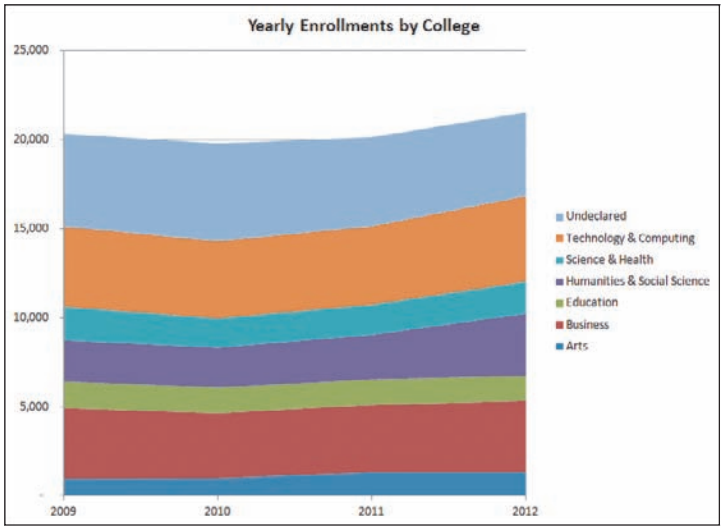


FIGURE 12 Stacked Area Chart ➤

TIP Hidden Data

When creating an area chart, be careful which subtype you select. For some subtypes such as a 3-D area chart, the chart might hide smaller data values behind data series with larger values. If this happens, you can change subtypes or apply a transparency fill to see any hidden data values.

An **X Y (scatter) chart** shows a relationship between two variables.

An ***X Y (scatter) chart*** shows a relationship between two variables using their X and Y coordinates. Excel plots one variable on the horizontal X-axis and the other variable on the vertical Y-axis. Scatter charts are often used to represent data in educational, scientific, and medical experiments. A scatter chart is essentially the plotted values without any connecting line. A scatter chart helps you determine if a relationship exists between two different sets of numerical data. For example, you can plot the number of minutes students view a computer-based training (CBT) module and their test scores to see if a relationship exists between the two variables (see Figure 13).

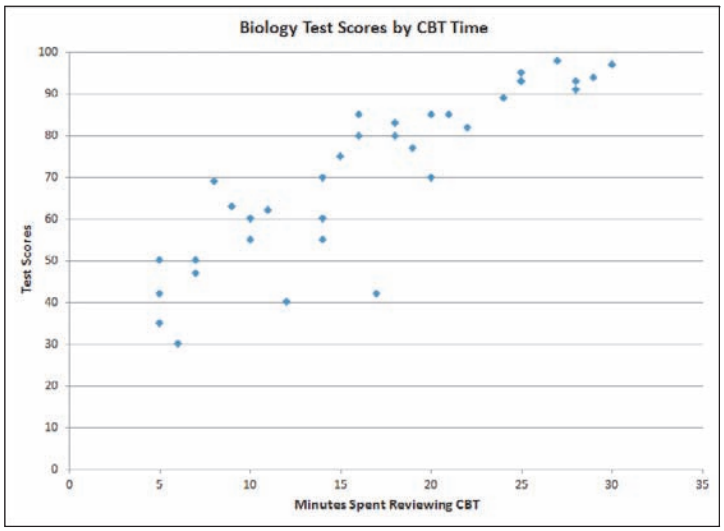


FIGURE 13 Scatter (X Y) Chart ➤

A **stock chart** shows the high, low, and close prices for individual stocks over time.

Stock charts show fluctuations in stock changes. You can select one of four stock subtypes: High-Low-Close, Open-High-Low-Close, Volume-High-Low-Close, and Volume-Open-High-Low-Close. The High-Low-Close stock chart marks a stock's trading range on a given day with a vertical line from the lowest to the highest stock prices. Horizontal bars or rectangles mark the opening and closing prices. Although stock charts may have some other uses, such as showing a range of temperatures over time, they usually show stock prices. To create an Open-High-Low-Close stock chart, you must arrange data with Opening Price, High Price, Low Price, and Closing Price as column labels in that sequence. If you want to create other variations of stock charts, you must arrange data in a structured sequence required by Excel. Figure 14 shows three days of stock prices for a particular stock.

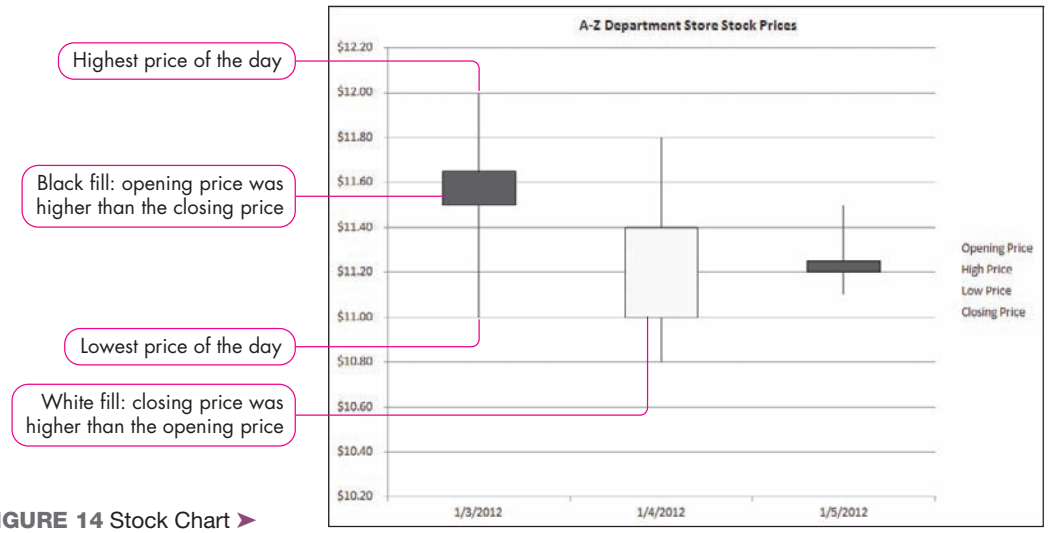


FIGURE 14 Stock Chart ➤

The stock chart legend may not explain the chart clearly. However, you can still identify prices. The rectangle represents the difference in the opening and closing prices. If the rectangle has a white fill, the closing price is higher than the opening price. If the rectangle has a black fill, the opening price is higher than the closing price. In Figure 14, the opening price was $11.65, and the closing price was $11.50 on January 3. A line below the rectangle indicates that the lowest trading price is lower than the opening and closing prices. In Figure 14, the lowest price was $11.00 on January 3. A line above the rectangle indicates the highest trading price is higher than the opening and closing prices. In Figure 14, the highest price was $12.00 on January 3. If no line exists below the rectangle, the lowest price equals either the opening or closing price, and if no line exists above the rectangle, the highest price equals either the opening or closing price.

A **surface chart** displays trends using two dimensions on a continuous curve.

The ***surface chart*** is similar to a line chart; however, it represents numeric data and numeric categories. This chart type takes on some of the same characteristics as a topographic map of hills and valleys (see Figure 15). Excel fills in all data points with colors. Surface charts are not as common as other chart types because they require more data points and often confuse people.

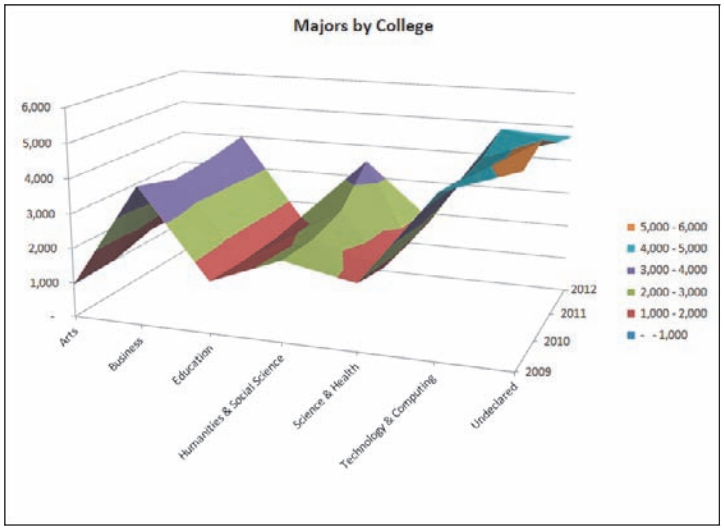


FIGURE 15 Surface Chart ➤

A **doughnut chart** displays values as percentages of the whole but may contain more than one data series.

The ***doughnut chart*** is similar to a pie chart in that it shows the relationship of parts to a whole, but the doughnut chart can display more than one series of data, and it has a hole in the middle. Like a clustered or stacked column chart, a doughnut chart plots multiple data series. Each ring represents a data series, with the outer ring receiving the most emphasis. Although the doughnut chart is able to display multiple data series, people often have difficulty interpreting it. Figure 16 illustrates the 2011 and 2012 data series, with the 2012 data series on the outer ring. The chart shows each college as a segment of each ring of the doughnut. The larger the segment, the larger the value.

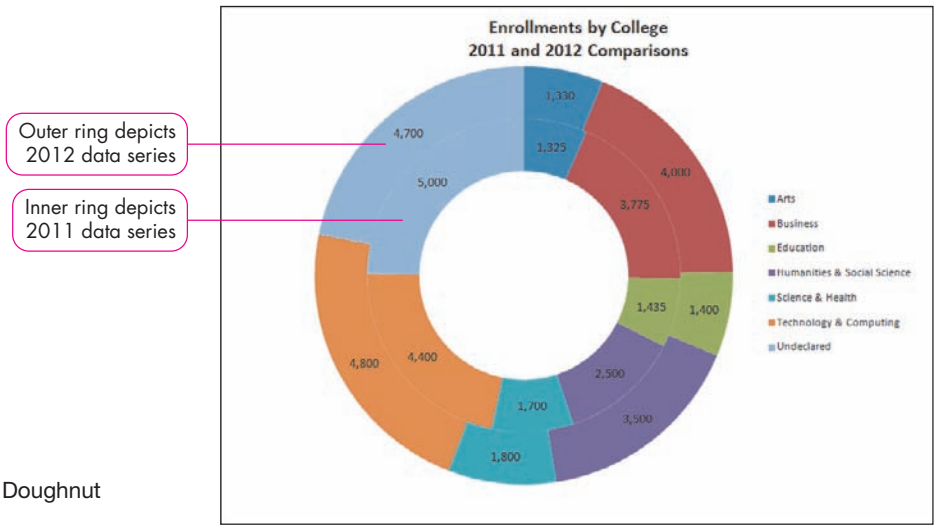
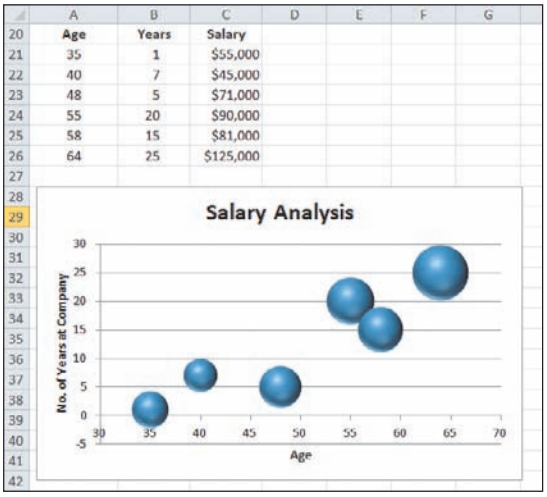


FIGURE 16 Doughnut Chart ➤

A **bubble chart** shows relationships among three values by using bubbles.

The ***bubble chart*** is similar to a scatter chart, but it uses round bubbles instead of data points to represent a third dimension. Similar to the scatter chart, the bubble chart does not contain a category axis. The horizontal and vertical axes are both value axes. The third value determines the size of the bubble where the larger the value, the larger the bubble. People often use bubble charts to depict financial data. In Figure 17, age, years at the company, and salaries are compared. When creating a bubble chart, do not select the column headings, as they might distort the data.



Age	Years	Salary
35	1	$55,000
40	7	$45,000
48	5	$71,000
55	20	$90,000
58	15	$81,000
64	25	$125,000

FIGURE 17 Bubble Chart ➤

A **radar chart** compares aggregate values of three or more variables represented on axes starting from the same point.

The final chart type is the ***radar chart***, which uses each category as a spoke radiating from the center point to the outer edges of the chart. Each spoke represents each data series, and lines connect the data points between spokes, similar to a spider web. You can create a radar chart to compare aggregate values for several data series. Figure 18 shows a radar chart comparing monthly house sales by house type (rambler, split level, 2 story). The house type categories appear in different colors, while the months appear on the outer edges of the chart.

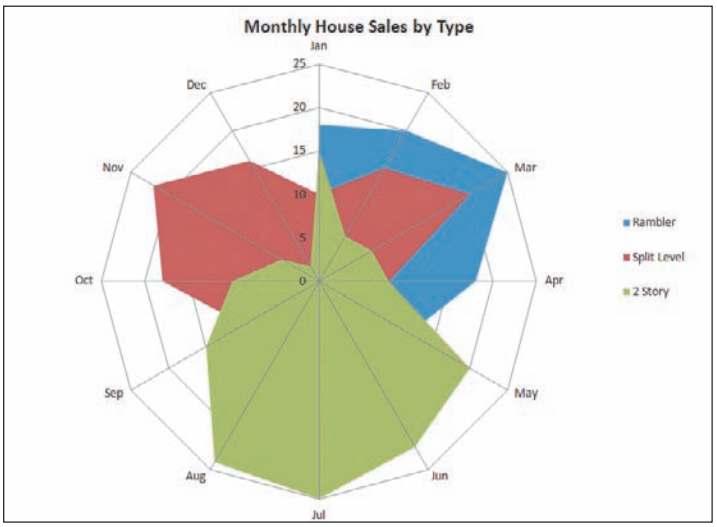


FIGURE 18 Radar Chart ➤

Creating a Chart

Creating a chart involves selecting the data source and choosing the chart type. After you insert a chart, you will position and size it.

Select the Data Source

Identify the chart data range by selecting the data series, any descriptive labels you need to construct the category labels, and the series labels you need to create the legend. Edit the row and column labels if they are not clear and concise. Table 1 describes what you should select for various charts. If the labels and data series are not stored in adjacent cells, press and hold Ctrl while selecting the nonadjacent ranges. Using Figure 1 as a guide, you would select the range A4:E11 to create a clustered column chart with multiple data series. To create the pie

chart in Figure 11, select the range A5:A11, and then press and hold Ctrl while you select the range E5:E11. If your worksheet has titles and subtitles, you should not select them. Doing so would add unnecessary text to the legend.

TABLE 1 Data Selection for Charts

Chart Type	What to Select	Figure 1 Example
Column, Bar, Line, Area, Doughnut	Row labels (such as colleges), column labels (such as years), and one or more data series	A4:E11
Pie	Row labels (such as colleges) and only one data series (such as 2012), but not column headings	A5:A11,E5:E11
Bubble	Three different data series (such as age, years, and salary)	A21:C26 (in Figure 17)
X Y (Scatter)	Two related numeric datasets (such as minutes studying and test scores)	*

*Figure 1 does not contain data conducive to an X Y (scatter) chart.

TIP Total Rows and Columns

Make sure that each data series uses the same scale. For example, don't include aggregates, such as totals or averages, along with individual data points. Doing so would distort the plotted data. Compare the clustered column chart in Figure 3 to Figure 19. In Figure 19, the chart's design is incorrect because it mixes individual data points with the totals and yearly averages.

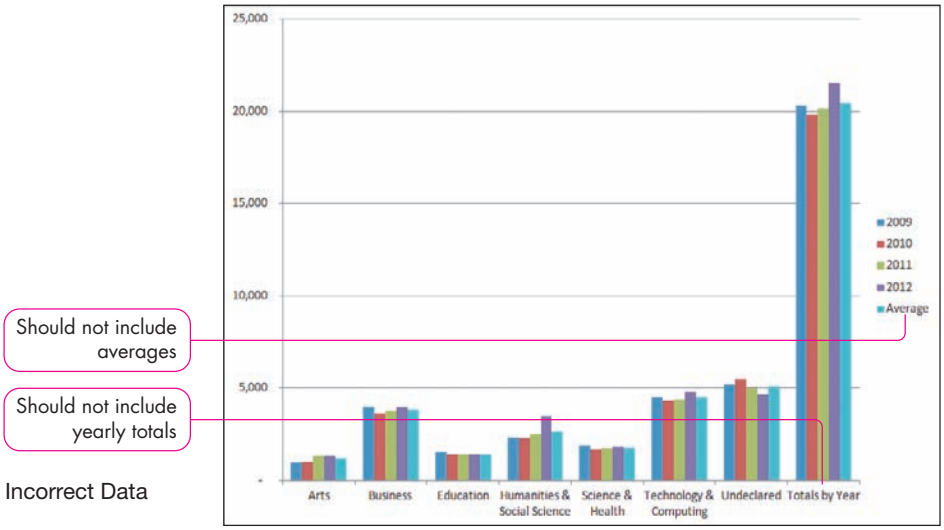


FIGURE 19 Incorrect Data Source ➤

Select the Chart Type

After you select the range of cells that you want to be the source for the chart, you need to select the chart type. To insert a chart for the selected range, click the Insert tab, and then do one of the following:

- Click the chart type (such as Column) in the Charts group, and then click a chart subtype (such as Clustered Column) from the chart gallery.