

DATA VISUALIZATION & PRESENTATION

With Microsoft Office®



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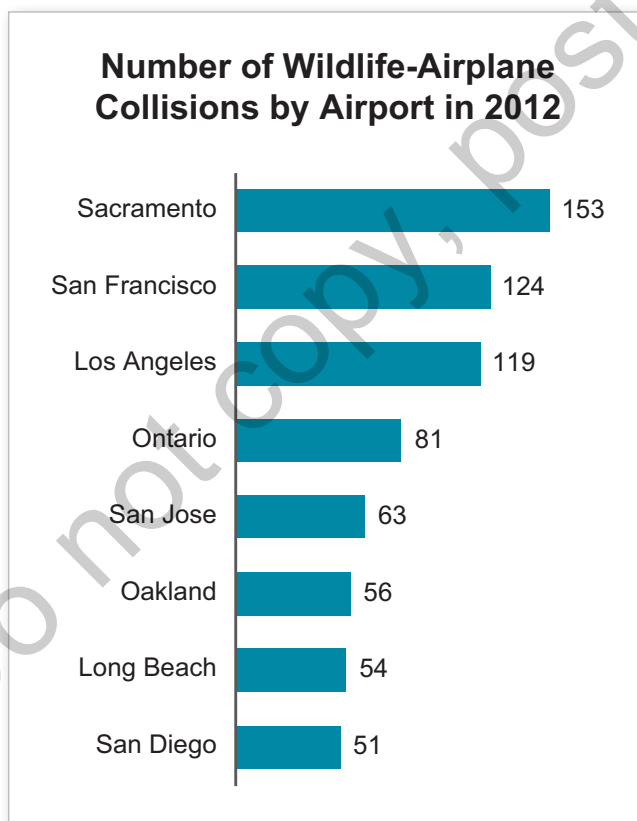


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Bar and column charts are ubiquitous. They are commonly used in academic, professional, and popular publications, rendering them familiar to a wide variety of readers. The bars in a bar chart are drawn horizontally, parallel to the chart's x-axis (see Figure 2.1); the columns in a column chart are drawn vertically, parallel to the y-axis (see Figure 2.2). Data in these charts are represented

Figure 2.1 Single-series bar chart



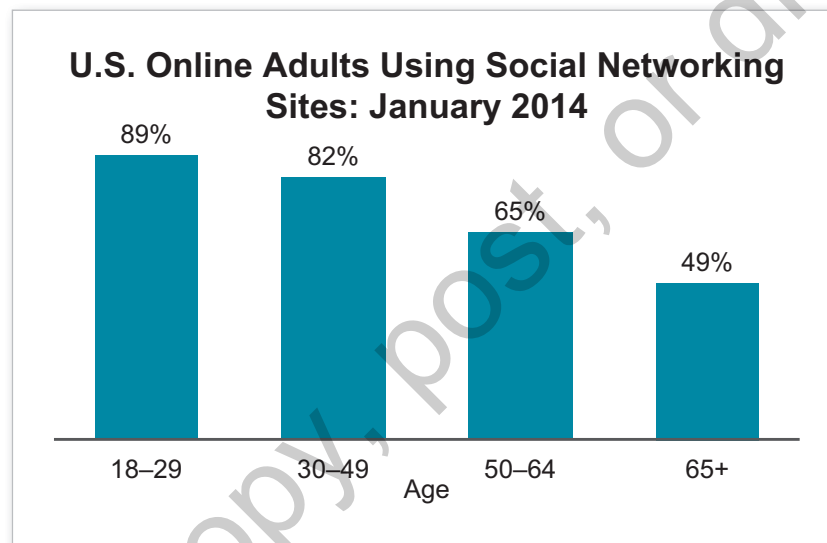
Learning Objectives

- Create column charts, stacked column charts, and 100% stacked column charts
- Identify the individual components comprising bar and column charts
- Demonstrate best practices for creating bar and column charts

by the length of the bars and height of the columns. The chart in Figure 2.1 contains one data series, Number of Wildlife–Airplane Collisions, for eight cities. Similarly, the column chart in Figure 2.2 contains one data series, U.S. Online Adults Using Social Networking Sites, for four age groups.

In most situations, bar and column charts may be used interchangeably. Additionally, Excel provides the same set of subtypes for bar and column charts. Unless we note otherwise, the same data considerations and design principles can be applied to bar or column charts.

Figure 2.2 Single-series column chart



Data Appropriate for Bar and Column Charts

Bar and column charts work well for comparing values across categories of a variable, for example, types of pizzas sold by a restaurant in a given year. These charts are particularly well suited for displaying categorical data but also may be used effectively for describing continuous data. For example, column charts are routinely used to describe age data. The data might be grouped into categories,

for example, 18–29, 30–49, and so on; alternatively, the chart may show all ages in a distribution, for example, 18, 19, 20, and so on (see Figures 2.3 and 2.4).

Figure 2.3 Column chart showing grouped ages

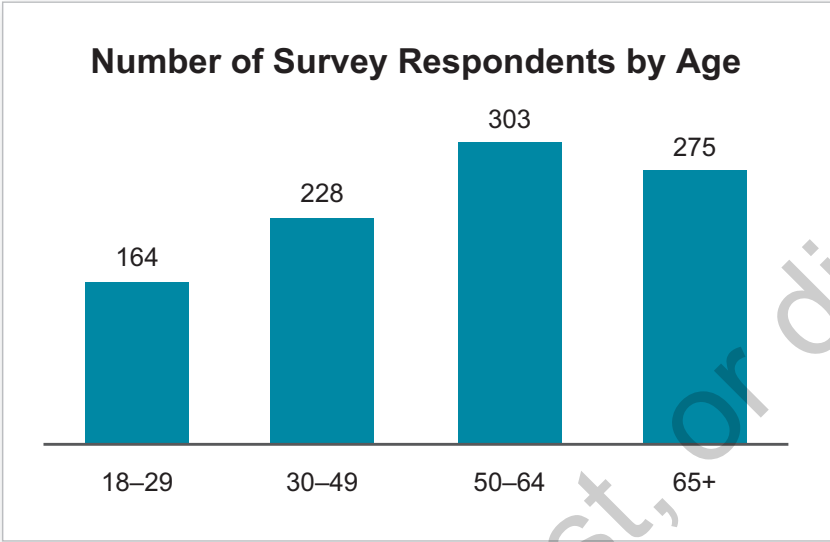
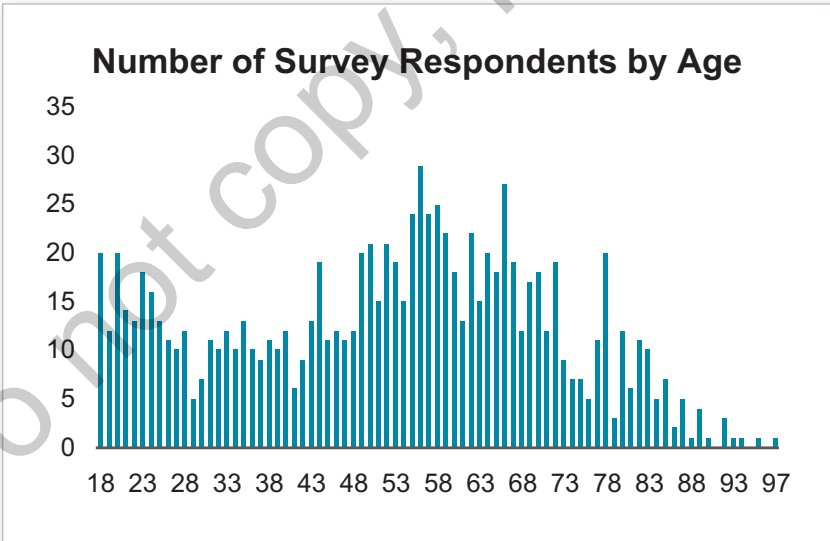


Figure 2.4 Column chart showing individual ages



A type of column chart where each column represents a range of data rather than a single category is called a histogram (see Figure 2.5).

Column charts may be used to show change over time in a variable, such as sales volume over four quarters of a year. In Figure 2.6 it is easy to see that anvil sales peaked in Q4. With more than a few data points, however, a line chart is

Figure 2.5 Histogram of incidents by speed

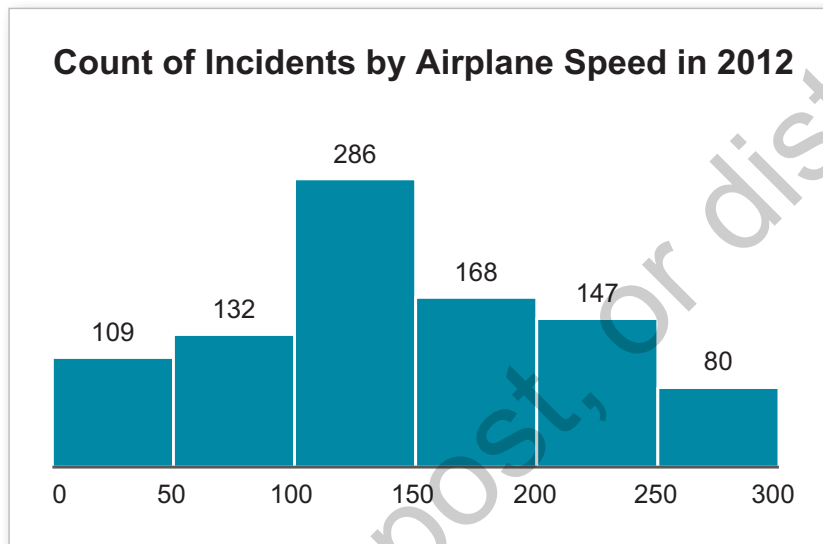


Figure 2.6 Column chart with time series data

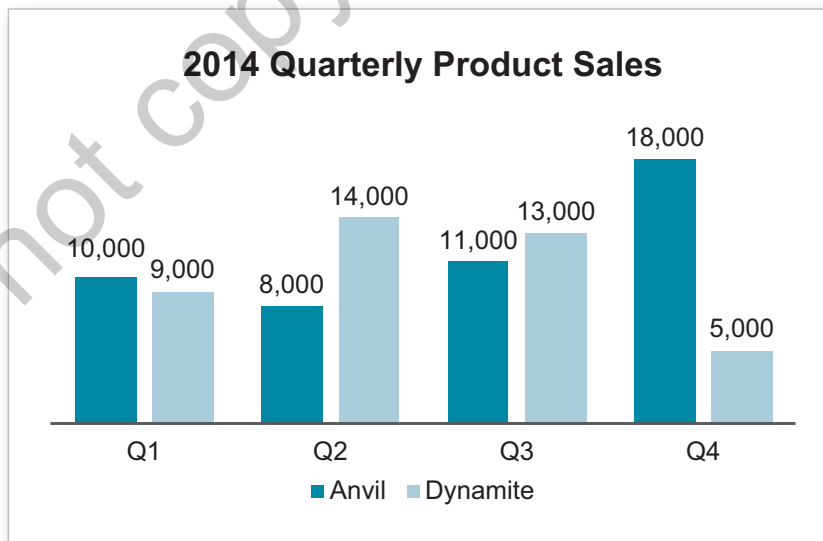
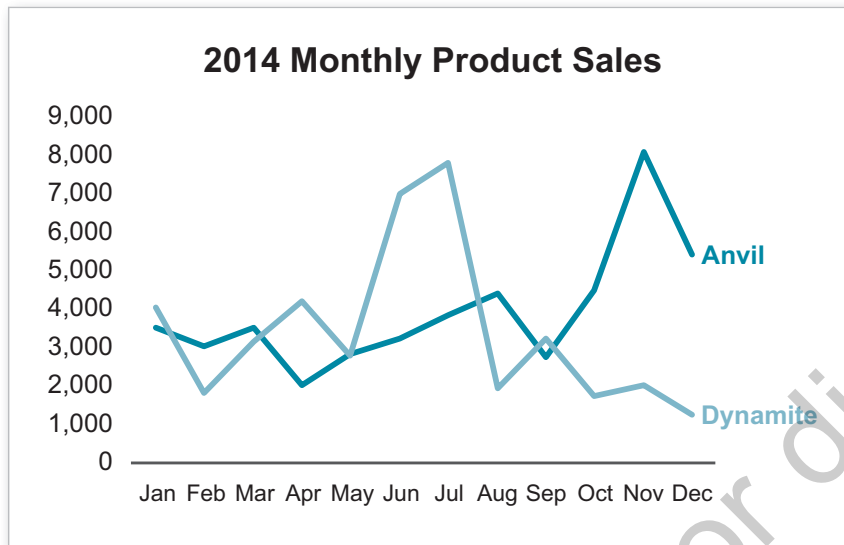


Figure 2.7 Line chart with time series data



When you select a data range, the **Quick Analysis** tool will appear in the lower right corner of the range. This is a new feature in Excel 2013. The shortcut menu includes many options. If you select the **CHARTS** option and mouse over the chart types, Excel will provide a preview showing how your data will look in the chart. Click the chart type of your choice to select it. (See Figure 2.9.)

preferable for showing time series data as it will allow readers to more easily discern patterns over time (see Figure 2.7).

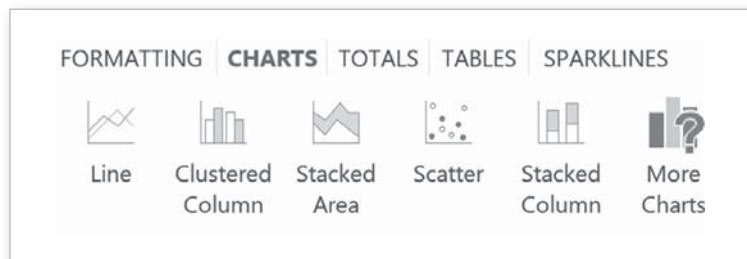
Creating a Column Chart

1. **Organize your data.** To create a column chart, organize data as shown in Figure 2.8. Category labels are in column A, and data values are in columns B and C. Row 1 contains descriptions of the data in each column. For simplicity, we started this data range in cell A1; you may place your data in any contiguous worksheet cells.

Figure 2.8 Data source for column chart

	A	B	C
1	Region	Jane Smith	Bill Jones
2	Northeast	6,000	4,000
3	South	4,500	3,500
4	Midwest	5,000	6,000
5	West	6,500	5,500

Figure 2.9 Quick Analysis toolbar



2. **Select the range of cells to be included in the chart** (cells A1:C5). If you don't select a range of cells, Excel may still insert a chart by guessing at the data to be charted. Depending on your data structure, that is, how you lay out your rows and columns, Excel may guess correctly. However, we recommend that you always select your cell range to ensure that the data array charted is what you intended.
3. **Choose the chart type.** From the **INSERT** tab, in the **Charts** group, click the column chart icon and select the first chart in the 2-D section, which is the **Clustered Column** (see Figures 2.10 and 2.11).

Figure 2.10 Chart group on the INSERT tab

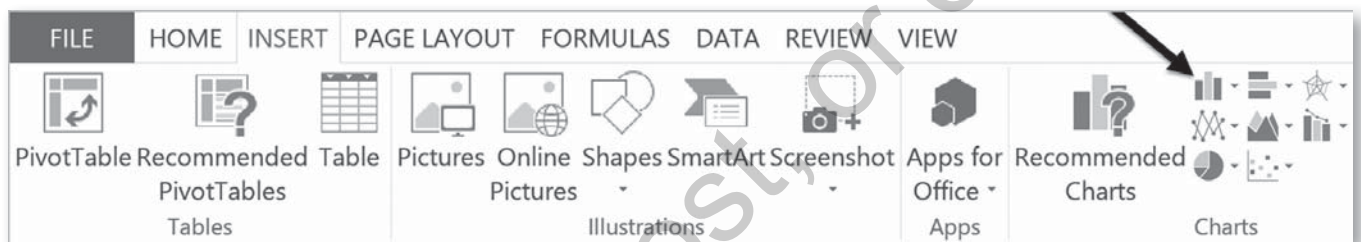


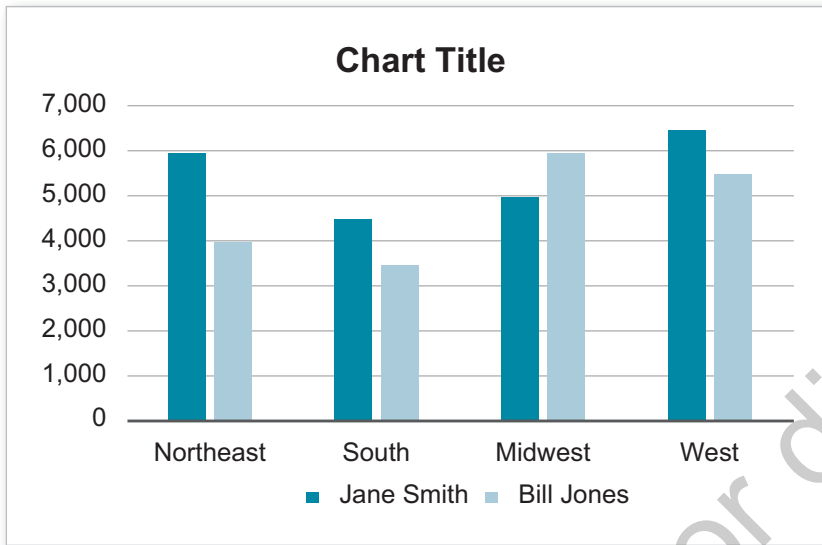
Figure 2.11 Column chart gallery



After you select the chart type, the chart will appear on the page (see Figure 2.12).

4. **Add a chart title.** Notice that the words *Chart Title* appear at the top of the chart you created. Click anywhere on **Chart Title**, highlight the words, and replace with a title that describes the content of the chart. If you do not type over or delete the placeholder, your chart will print with the words *Chart Title* at the top.
5. **Adjust the chart formatting.** Remove the gridlines from the chart by clicking on the **CHART ELEMENTS** shortcut menu (the plus sign found at the upper right of the chart when the chart is selected) and deselecting **Gridlines**. Alternately,

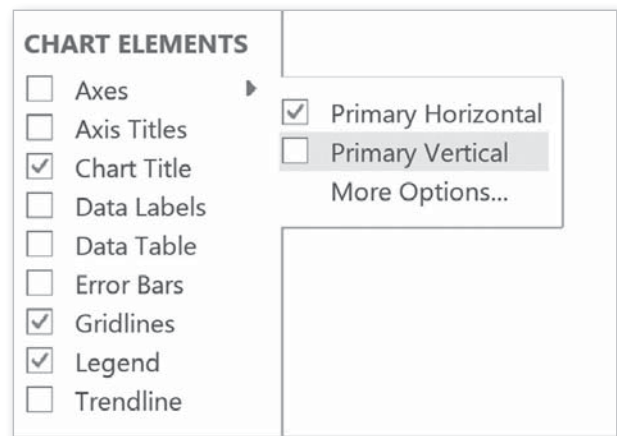
Figure 2.12 Default column chart



position your cursor on any gridline, click once to select the gridlines, and then press the **Delete** key on your keyboard. For this example, we will add data labels to the columns; therefore, the gridlines are unnecessary.

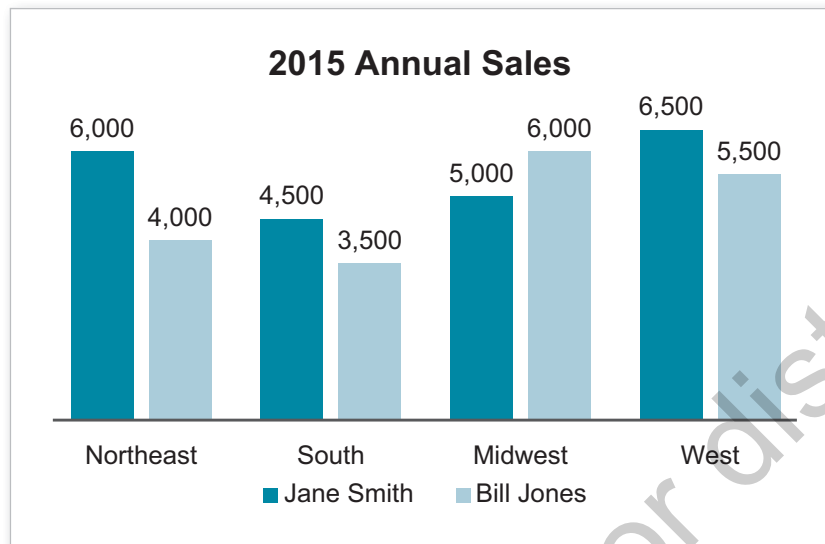
With the **CHART ELEMENTS** shortcut menu still open, select **Data Labels**. Because you added data labels, you no longer need the vertical axis on the chart. To remove it, hover over **Axes** in the **CHART ELEMENTS** shortcut menu, click on the arrow that appears to the right to activate the **Axes** submenu, and deselect **Primary Vertical** (see Figure 2.13).

Figure 2.13 CHART ELEMENTS shortcut menu



After completing these steps you will have a column chart that is ready to be inserted into a report or presentation (see Figure 2.14).

Figure 2.14 Formatted column chart



Stacked Column Charts

The column chart in Figure 2.14 is a clustered column. The data categories are the regions of the country, and there are two data series, one for Jane Smith and another for Bill Jones. Another way to display these data is with a stacked column chart. Stacked column charts contain fewer columns than clustered column charts and each column shows either multiple data categories or multiple data series. We will use the regional sales data to create a stacked column chart showing Jane's and Bill's relative contributions to the sales totals in each of the four regions.

Figure 2.15 Column chart gallery



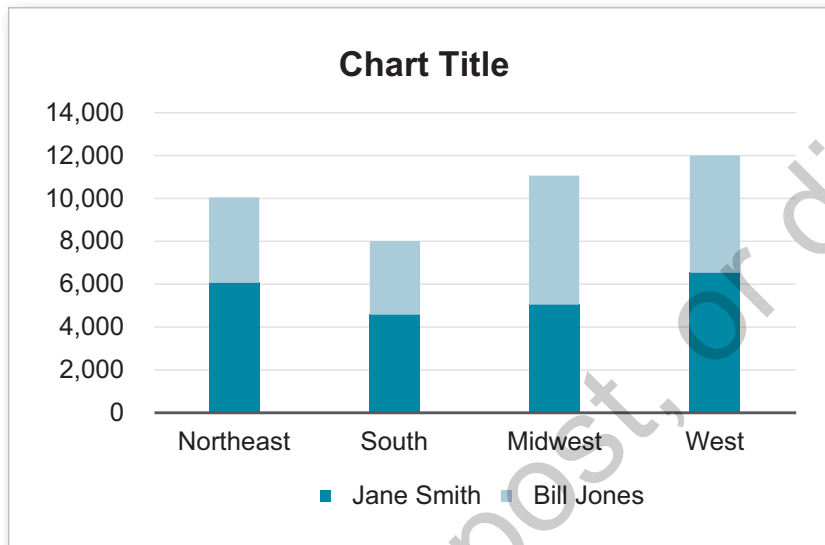
Creating a Stacked Column Chart

1. **Organize your data.** The data for a stacked column chart are organized the same as in the clustered column chart. The categories are listed in column A, the first data series is in column B, and the second data series is in column C.
2. **Select the range of cells to be included in the chart.** Select cells A1:C5.

3. **Choose the chart type.** From the **INSERT** tab, in the **Charts** group, click on the column chart icon and select the **Stacked Column** chart (see Figure 2.15).

The resulting chart will look like Figure 2.16.

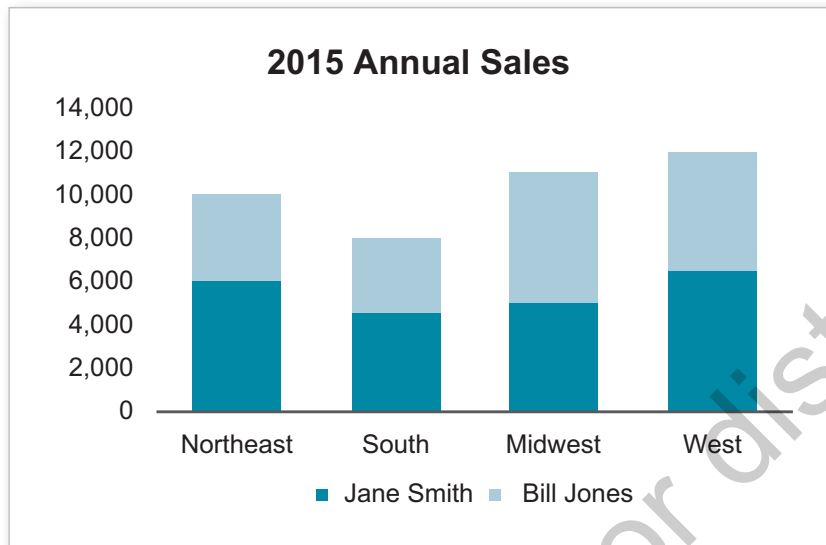
Figure 2.16 Default stacked column chart



4. **Add a chart title.** Replace *Chart Title* with a descriptive title.
5. **Adjust chart formatting.** Remove the gridlines from the chart by clicking on the **CHART ELEMENTS** shortcut menu (the plus sign at the upper right of the chart) and deselecting **Gridlines**. For this chart we have opted for the labeled vertical axis rather than using data labels (see Figure 2.17). Including data labels on a stacked column chart can create a cluttered chart that is difficult to read. We will discuss in greater detail the considerations surrounding when to choose data labels versus axis labels later in this chapter and also in Chapter 5.

In Figure 2.17 the four regions of the country are each represented in a column, and the columns are divided to show each salesperson's relative contribution to the total sales in that region. We can see that the West had the highest sales volume overall, and we have some information about how Jane and Bill performed in each region. In this type of stacked column chart it is somewhat

Figure 2.17 Formatted stacked column chart



difficult to tell at a glance how well Jane and Bill did relative to one another in each region. If it is important to compare the two salespeople in the regions, the original clustered column chart in Figure 2.14 is a better option.

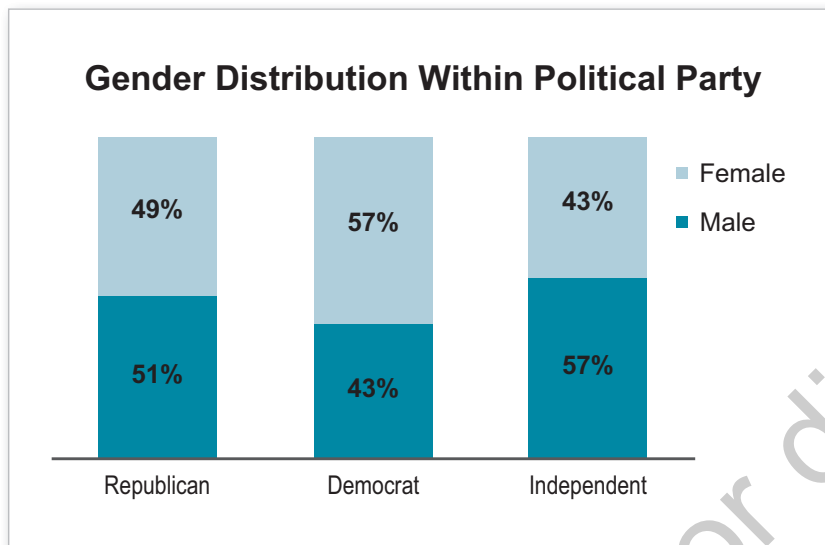
100% Stacked Column Charts

Like the stacked column chart, a 100% stacked column chart displays each data category in one column. The columns are divided to show the contribution of each series to the category. However, the column is stretched to fill the full height of the chart, and the sum of the categories in the column equals 100% (see Figure 2.18).

These charts are used to show percentage distribution, not frequency. Although similar to the other stacked column chart we discussed, the 100% stacked column chart is somewhat more complicated. In plotting the data series within the columns, Excel computes the proportion of the total that each series contributes to the column and assigns a column segment length based on that proportion. You can think of each column as an individual pie chart for that category.

These charts are useful for gaining visibility into the relative proportions of data series; however, it is important to exercise caution when the categories have

Figure 2.18 100% stacked column chart



vastly different frequencies. For example, to illustrate the racial distribution of the populations of five U.S. states we could use a clustered column chart (see Figure 2.19) or a stacked column chart (see Figure 2.20).

Figure 2.19 Clustered column chart:
Racial distribution of five U.S. states

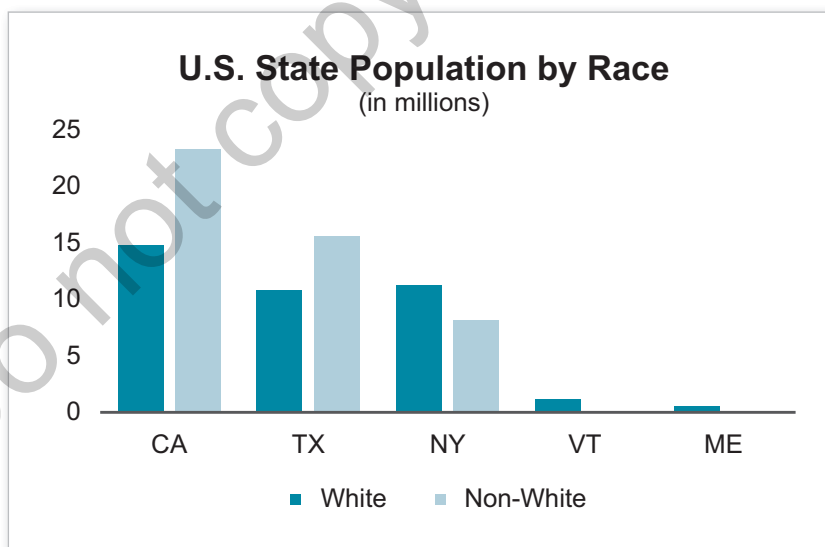
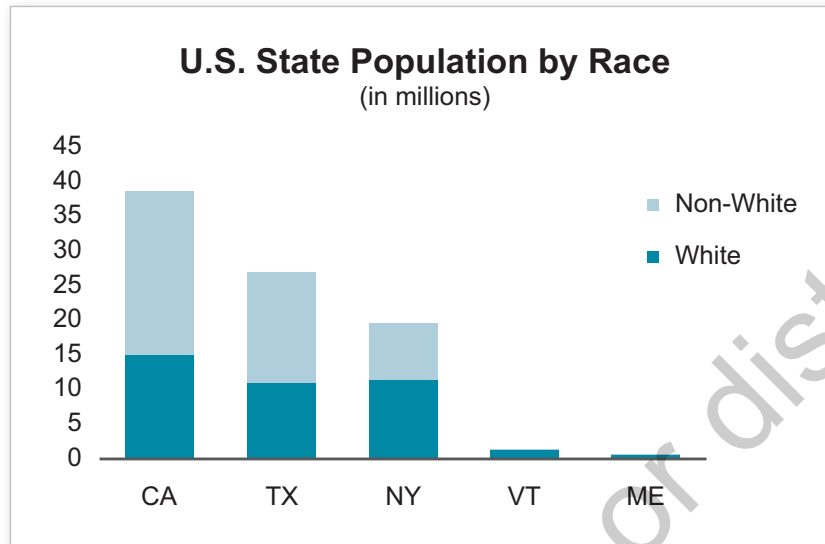


Figure 2.20 Stacked column chart: Racial distribution of five U.S. states



These charts are accurate; however, the Vermont and Maine data are almost impossible to see because the charts have been scaled to accommodate the large populations of California, Texas, and New York. The 100% stacked column chart in Figure 2.21 solves the scaling problem, and we can more easily see the proportions of white and non-white residents of all five states.

In this situation, most readers will realize that the populations of Vermont and Maine are significantly smaller than the other three states and interpret the proportions accordingly. However, to ensure that it is always clear to the audience, avoid potential confusion by adding the frequencies to the top of 100% stacked column charts. In Figure 2.22 we've added frequencies to the chart by inserting text boxes and manually typing in the values. To insert text boxes, from the **INSERT** tab, in the **Text** group, click **Text Box**, and draw a text box on the chart.

A common application of the 100% stacked column chart is for reporting responses to survey questions, especially when the number of responses to each survey question is the same (or approximately the same). In the following example, we chart five survey questions each as an individual column showing the relative proportion of three responses to each question.

Figure 2.21 100% stacked column: Racial distribution of five U.S. states

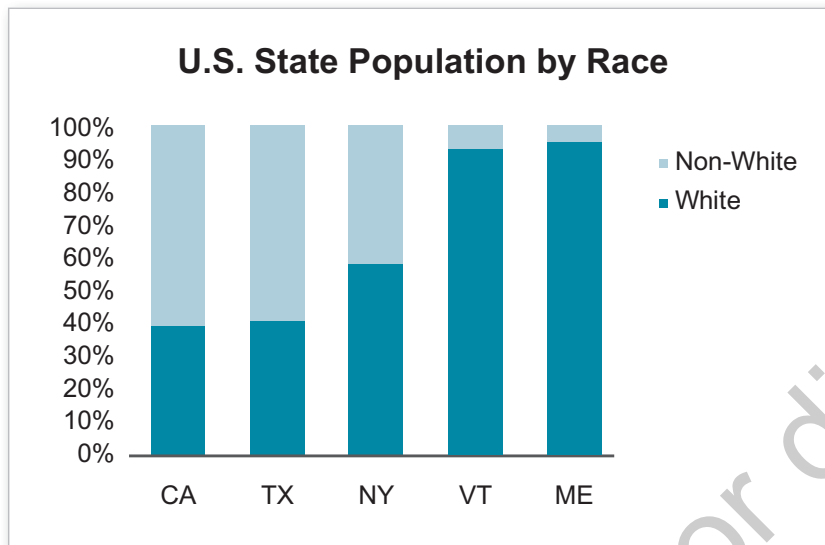
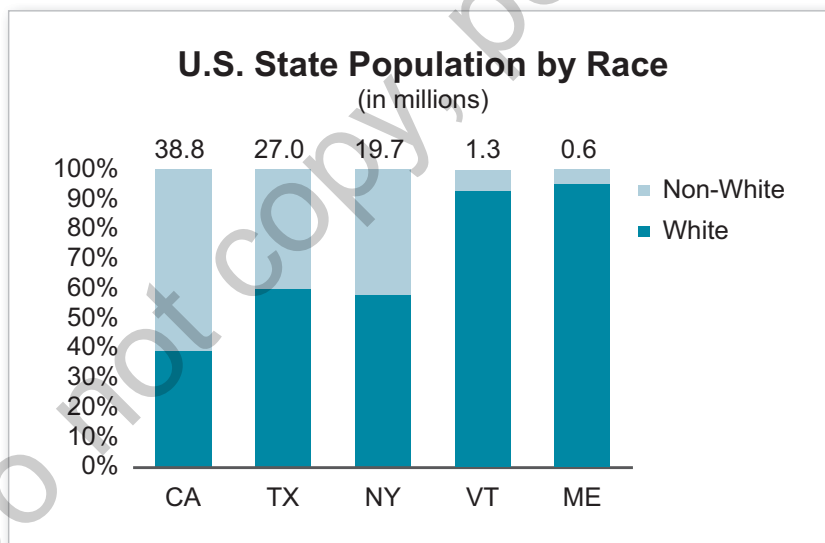


Figure 2.22 100% stacked column: Racial distribution of five U.S. states with frequencies



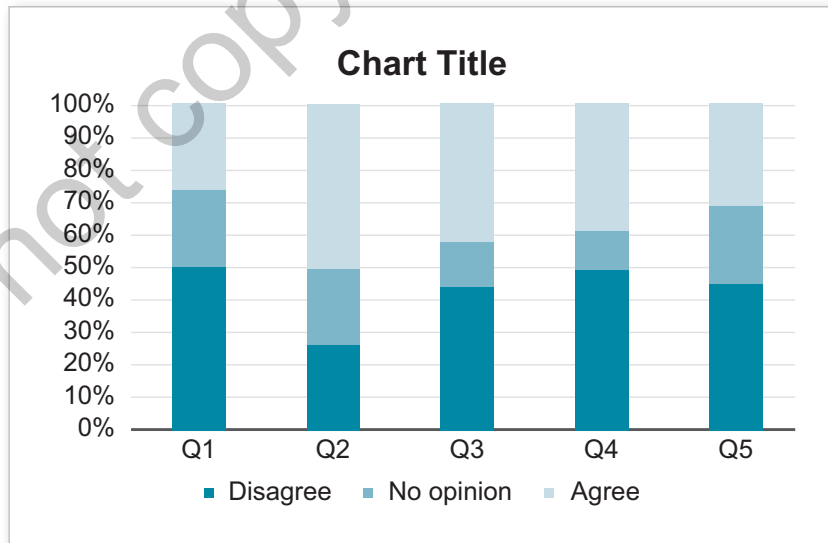
Creating a 100% Stacked Column Chart

1. **Organize your data.** For a 100% stacked column chart, organize your data so that the survey response options are in column A and the survey questions are in columns B–F. The data are in cells B2:F4 (see Figure 2.23).
2. **Select the range of cells to be charted.** Select cells A1:F4.
3. **Choose the chart type.** From the **INSERT** tab, in the **Charts** group, click the column chart icon and select the **100% stacked column** chart. The result will look like Figure 2.24.

Figure 2.23 Data source for 100% stacked column chart

	A	B	C	D	E	F
1		Q1	Q2	Q3	Q4	Q5
2	Disagree	85	33	98	125	85
3	Neutral	40	30	30	30	45
4	Agree	45	65	95	100	60

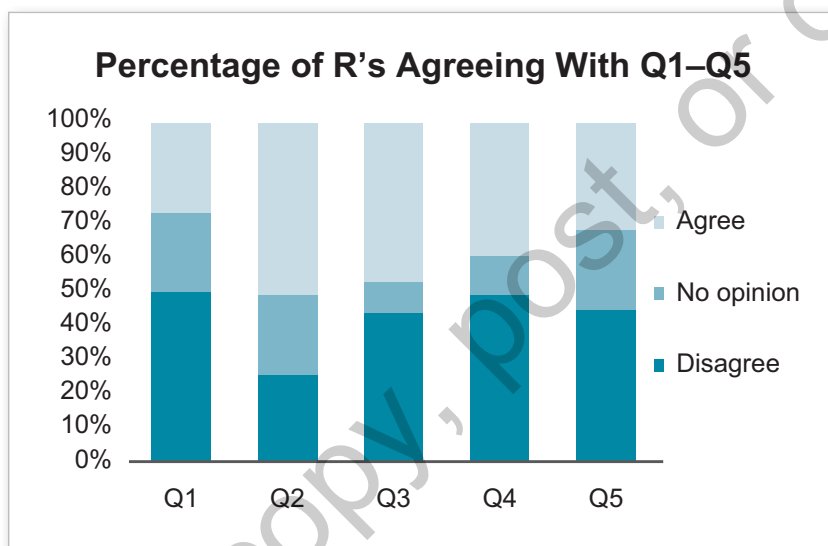
Figure 2.24 Default 100% stacked column chart



4. **Add a chart title.** Replace *Chart Title* with a descriptive title.
5. **Adjust chart formatting.** Remove the gridlines from the chart by clicking on the **CHART ELEMENTS** shortcut menu (the plus sign at the upper right of the chart) and deselecting **Gridlines**. As with the other stacked column chart, we have opted for the labeled vertical axis rather than data labels in this 100% stacked column chart (see Figure 2.25).

If your data are listed as percentages instead of frequency, ensure that all of the data values within a column sum to 100%. Failing to confirm this could result in a misleading chart as Excel will distribute the data in the columns as if they do sum to 100% even if this is not the case.

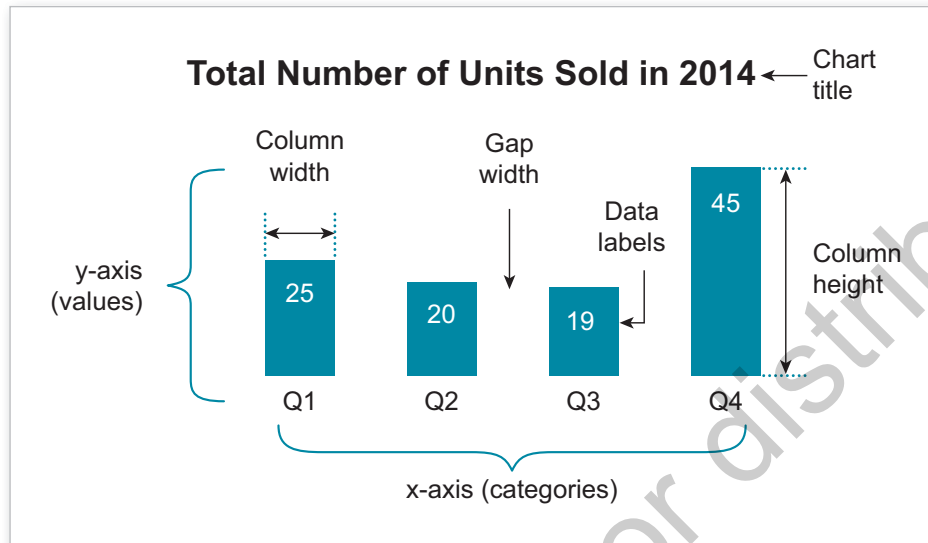
Figure 2.25 Formatted 100% stacked column chart



Best Practices for Creating Column and Bar Charts

Now that we've created a few basic column charts, let's explore in greater detail the elements of a column chart. Figure 2.26 is a basic single-series column chart. The **Chart Title** is a short headline that describes the contents of the chart. It almost always appears at the top of the chart, usually centered on the chart. Although you may click and drag the chart title to any location on the chart, there is seldom justification for placing it someplace other than at the top of the chart.

Figure 2.26 Anatomy of a column chart



Axes

Data values are graphed along the vertical axis of a column chart, and the categories are shown along the horizontal axis. On a bar chart this is flipped, with data values along the horizontal axis and categories noted along the vertical axis. By default Excel sets the minimum and maximum values on column and bar charts based on the data range selected for the chart. For data sets containing all positive values, the minimum for the value axis should always be set to 0.

How you set the minimum and maximum values for a column chart can greatly influence the appearance of variation among the data categories. The chart in Figure 2.27 shows the value axis minimum set to 0. We can see that there is little variation in the sales figures among the four salespeople. Because the sales figures appear relatively flat, you might be tempted to change the minimum value of the vertical axis to a value greater than 0 to highlight the differences (see Figure 2.28). Changing the minimum value of the vertical axis does indeed accentuate the differences among the salespeople; however, the resulting visual display misrepresents the magnitude of the differences. By narrowing the range of values shown on the chart we have made it appear that sales representative Givens had about half the sales volume as O'Connor. In reality, Givens only lagged O'Connor by 2.5%. Intentional manipulation of the values shown on a column chart to alter perception of the data is unacceptable.

Figure 2.27 Column chart with vertical axis set to 0

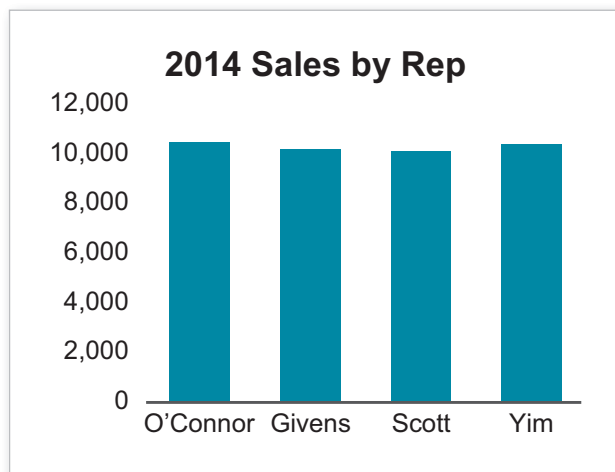
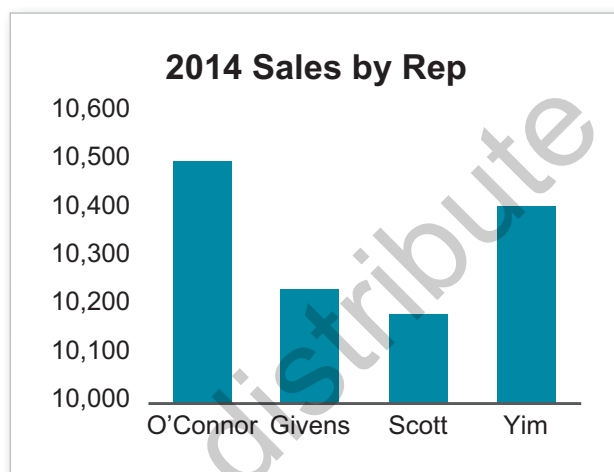


Figure 2.28 Column chart with vertical axis set to 10,000



Changing the Minimum Value of the Vertical Axis on a Column Chart

1. Right-click on the vertical axis and select **Format Axis** to activate the **AXIS OPTIONS** menu.
2. In the **Bounds** section, highlight the value in the **Minimum** box and replace it with 0. (See Figure 2.29.)

Figure 2.29 Format Axis menu

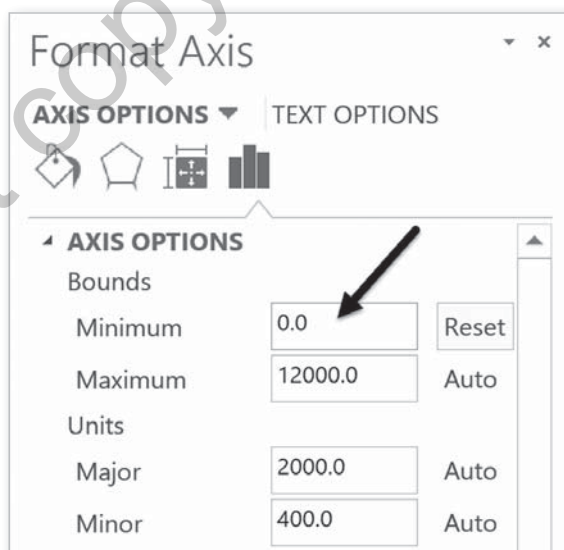


Chart categories

Chart categories should be sorted. The three common ways to order chart categories are 1) by data values—high to low or low to high; 2) alphabetically by category name, such as Afghanistan to Zimbabwe; or 3) by a natural order, such as days of the week or months of the year. Alphabetical order is useful if readers will be looking for a particular category, for example, how Norway is doing in the Olympic medal count (see Figure 2.30). If you're charting time series data, such as days of the week, use the order in which the days occur.

Lacking other considerations, sorting by data values is the typical and preferred method of organizing the columns or bars. This allows the reader to easily see which category is the largest and smallest as well as the relative differences in the values of each of the data elements. The chart in Figure 2.30 can be resorted by data values (largest to smallest) with a highlight used on the bar that might be of particular interest to the report's audience (see Figure 2.31).

Sorting Chart Categories

1. Chart categories are sorted by sorting the data to which the chart is linked. First select the data range you wish to sort. From the **DATA** tab, in the **Sort & Filter** group, click **Sort**.

Figure 2.30 Bar chart of Olympic medal count sorted alphabetically

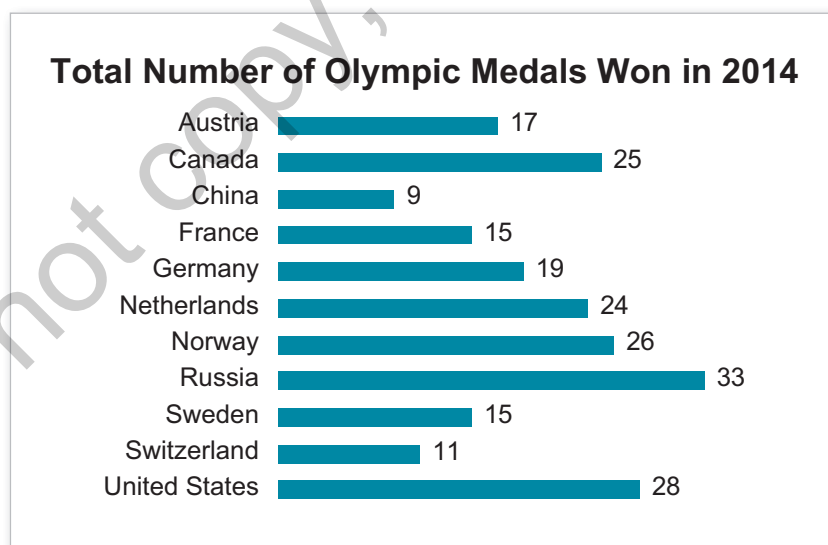
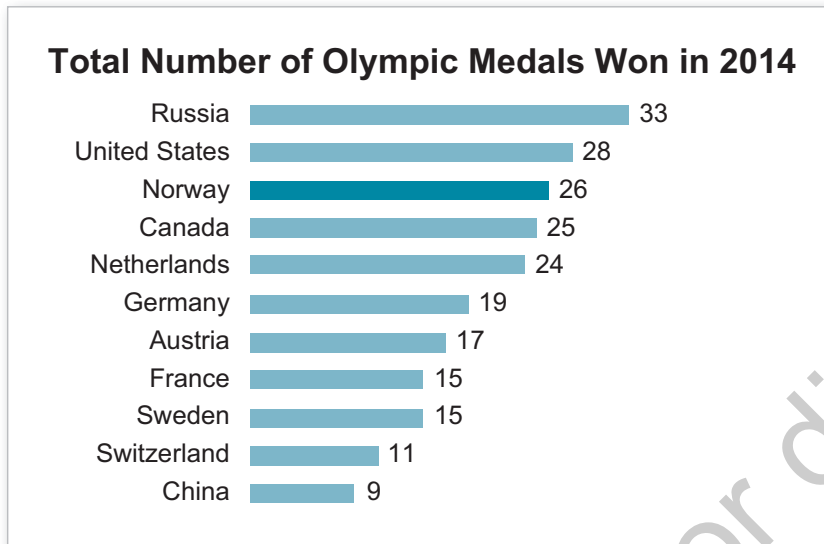
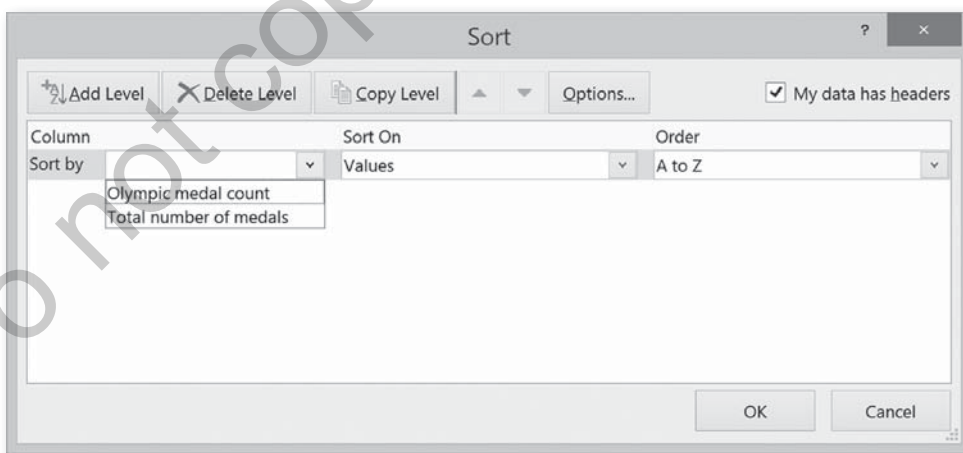


Figure 2.31 Bar chart of Olympic medal count sorted by data values



2. The **Sort** dialog window will appear (see Figure 2.32). If your data has a header row, ensure that the box marked **My data has headers** is checked. If it is not, your column headers may be sorted along with your data.

Figure 2.32 The Sort dialog box, Sort by field



If you have attempted to accommodate long data labels by increasing the width of your chart columns, but you are getting too close to having your column chart look like a histogram, consider changing the number format of the data labels. For example, show the labels in \$Thousands or \$Millions instead of including the precise value. See Chapter 5 for a discussion of how to change number formats.

3. From the **Sort by** drop-down menu, choose the column you wish to use to sort your data. From the **Order** drop-down menu, you may sort based on data values, either from smallest to largest or largest to smallest. When sorting text, the options are from A to Z or Z to A.
4. Click **OK** to complete the sort. The chart linked to the data will then be sorted.

Gap width

Gap width is the space between the columns on a column chart. It is important to maintain a balance between the width of the columns and the space around them. As you reduce the gap width, the columns get wider. Reducing the gap width to 0 will produce a histogram. We recommend gap widths between 50% and 150%. Gap widths less than 50% (other than 0 to create a histogram) can be problematic because there is not enough space separating the columns, sometimes causing visual vibrations—an illusion that the columns are moving.

You may wish to change the gap width on a column chart to enhance the visual appeal of the chart. For example, if the columns appear to lack sufficient visual weight because they are too narrow, you can correct the situation by decreasing the gap width and thus increasing the column width. Similarly, if your chart contains long data labels, such as numbers in the thousands, creating wider columns on which to situate the data labels will result in a more visually appealing chart.

Changing a Column Chart's Gap Width

1. To change the width of the columns, you must adjust the width of the gap separating them. Right-click on any of the columns and select **Format Data Series**.
2. In the **SERIES OPTIONS** section, either drag the slider next to **Gap Width** or enter a value between 50% and 150% in the box (see Figure 2.33).

Series overlap

For single-series column and bar charts there is only one gap width to consider, the gap separating each column or bar. When we introduce a second data series

to the chart there is another gap, the one between the pairs of columns or bars (see Figure 2.34). This space separating the data series is known as the **Series Overlap**.

Figure 2.33 Format Data Series task pane

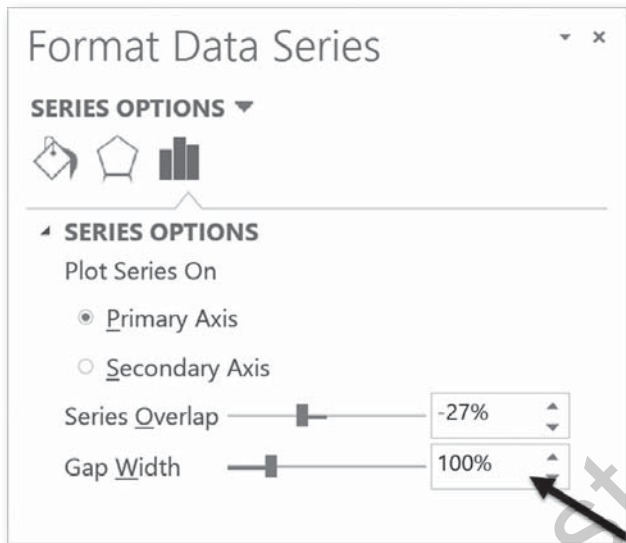


Figure 2.34 Clustered column chart with two data series

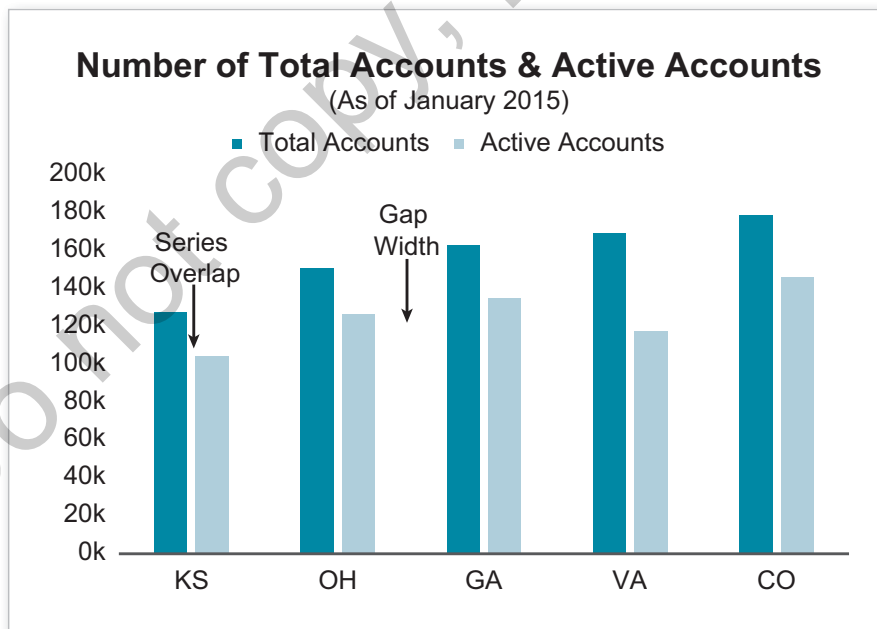
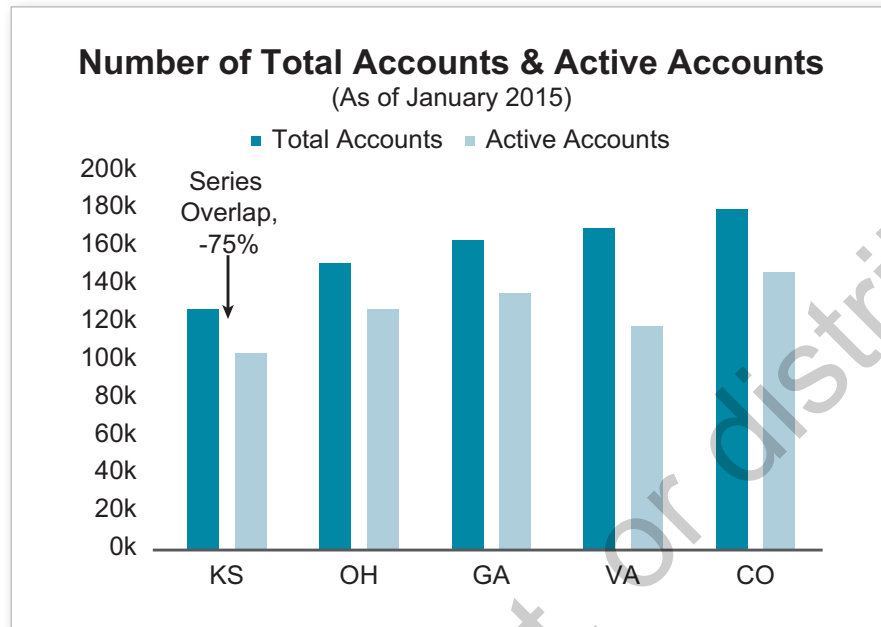


Figure 2.35 Clustered column chart with -75% series overlap



Like the gap width, the series overlap can be changed to alter the appearance of the chart. The range of possible values for the series overlap is -100% to 100%; negative values produce a gap between the columns, positive values create overlapping columns. The series overlap in Figure 2.34 is -25%. Changing the series overlap to -75% creates a wider gap between the data series (see Figure 2.35), and changing the series overlap to 0 results in no gap between the data series (see Figure 2.36).

Always leave more space between the clusters of columns than within the clusters. When the columns on a multiseries column chart are spaced equally the chart becomes difficult to interpret. The columns on the chart in Figure 2.37 are all equally spaced. Although the different colors of the two data series will help readers distinguish the series, the previous versions of this chart with the two columns within each state close together and a wide gap between the states is considerably easier to read.

The gap widths and series overlap of a clustered column chart may be further manipulated to illustrate when one data series is a subset of another. For example, suppose we wanted to more clearly show that Active Accounts in

Figure 2.36 Clustered column chart with no series overlap

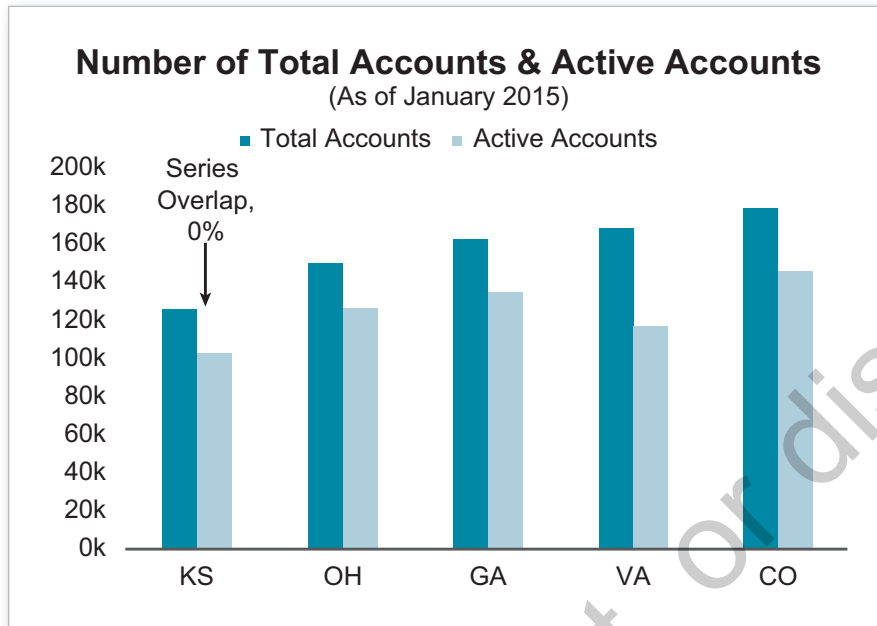


Figure 2.37 Clustered column chart with even series overlap and gap width

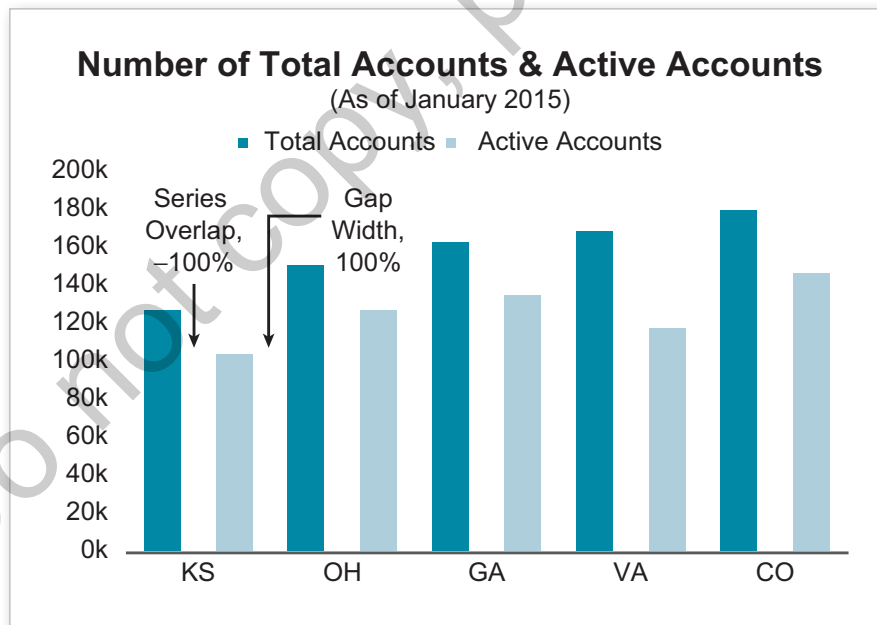
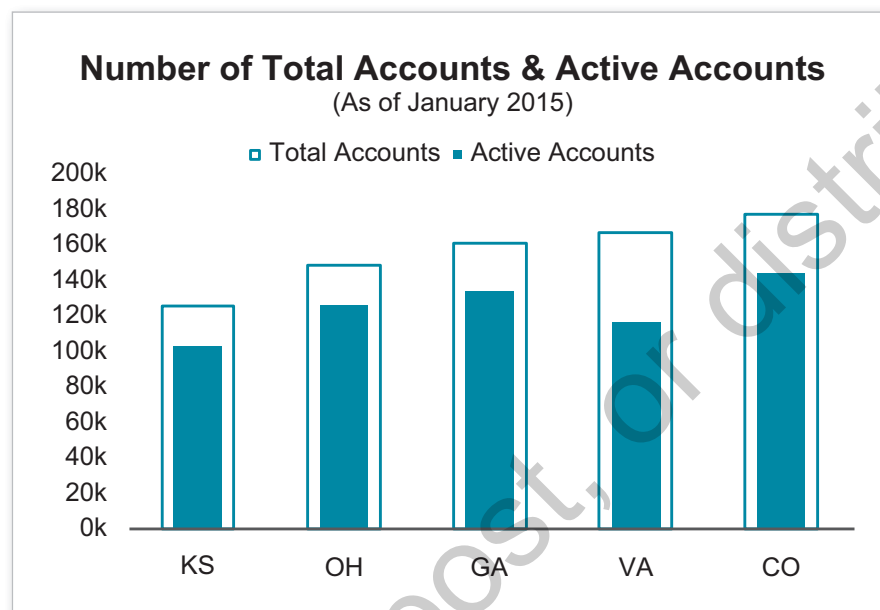


Figure 2.34 represents a portion of Total Accounts. We can change the series overlap to 100% and make a few other adjustments to produce a chart where one set of columns sits within the other set (see Figure 2.38).

Figure 2.38 100% overlapped clustered column chart



Creating a Clustered Column Chart With 100% Overlapping Columns

1. Select the two data series and create a standard clustered column chart as we have done previously in this chapter.
2. Right-click on the subset data series in the chart; in our case that's the Active Accounts data series, and select **Format Data Series**.
3. In the **Format Data Series** task pane, click the **Secondary Axis** radio button from the **SERIES OPTIONS** section. Change the **Series Overlap** to 100% and the **Gap Width** to 200%. It is necessary to put one of the data series on the secondary axis so that we may specify different gap widths for the two data series.
4. When you assign one of the data series to the secondary axis, Excel will add the axis values on the right side of the chart.

Ensure that the secondary axis has the same minimum and maximum values as the primary axis. If it does not, right-click the secondary axis on the chart, click **Format Axis** to open the **Format Axis** task pane, and adjust the **Minimum** and **Maximum** values to match the primary axis. After adjusting the axis values, click on the axis, and press **Delete** on your keyboard. Labeling the primary vertical axis on the chart is sufficient.

5. Click on one of the columns of the Total Accounts data series to select the series. It should be charted on the Primary Axis. Change the **Series Overlap** to 100% and the **Gap Width** to 75%. Changing the gap width so that the columns of the secondary data series are spaced farther apart than the columns of the primary data series creates the impression that the Active Accounts columns are inside the Total Accounts columns. If we had set the series overlap to 100% without adjusting the gap widths, the chart would resemble a stacked column chart. You could stop at this point; however, to reduce the ink on the page, we'll take one more step and format the chart further.
6. With the Total Accounts data series still selected, click on the **Fill & Line** menu on the **Format Data Series** pane. Change the **FILL** to **No Fill**. In the **BORDER** section, select a **Solid line**. Choose a **Color** and change the width of the line to between 1 and 2 points depending on your preference. Eliminating the column fill color and adding a border creates an outline of the columns and concentrates focus on the Active Accounts data series, which is the intent of this chart.

Some experts claim that it is always necessary to include a labeled y-axis on column charts. This is to ensure that the analyst has been forthright in data reporting and has not manipulated the 0 point of the scale to distort the chart. We assume that readers of this text will not intentionally, nor accidentally, commit such an infraction. Therefore, feel free to delete the y-axis if you have properly labeled your columns.

Data labels

There are two primary methods for labeling the values represented by the columns on a column chart: include data labels on the chart's y-axis (see Figure 2.39) or label the columns themselves (see Figure 2.40). It is unnecessary to do both. It is preferable, space permitting, to opt for data labels on the columns. This method is easier for the reader than the alternative and allows you to label the values of the columns precisely.

Figure 2.39 Column chart with y-axis labels

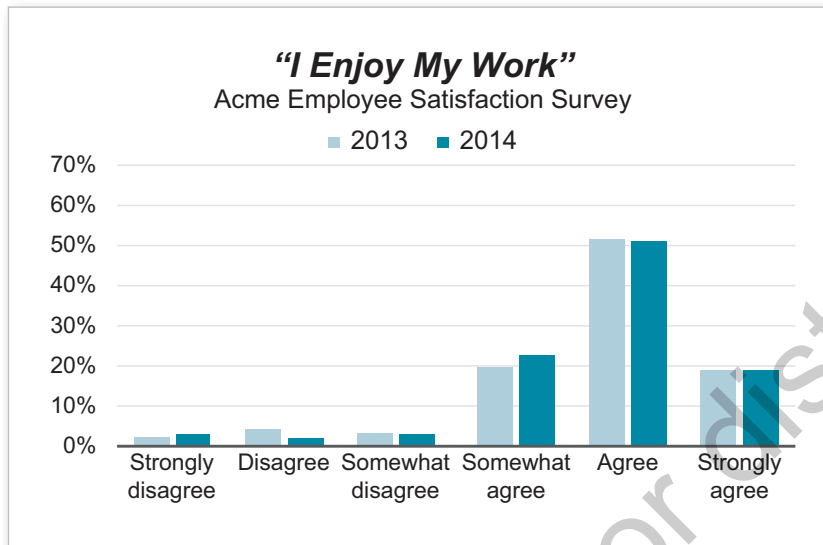
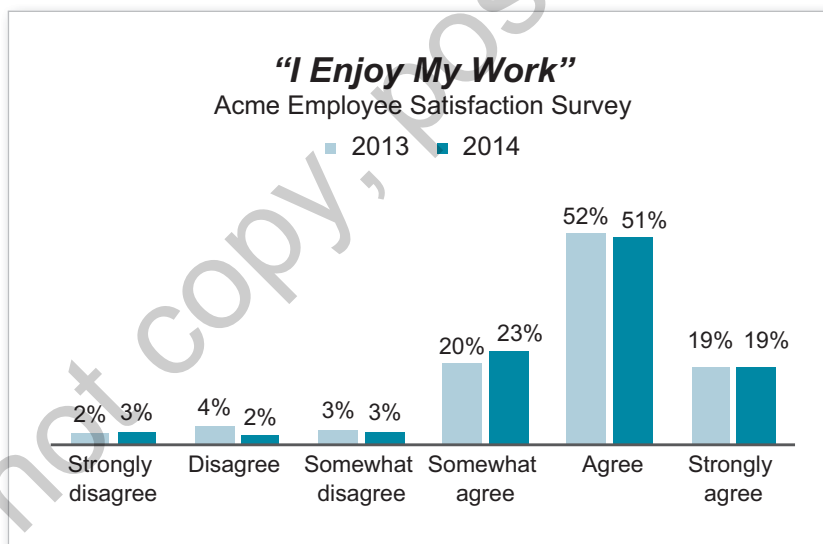


Figure 2.40 Column chart with individual data labels



The decision about y-axis labels versus data labels hinges on the number of data points on the chart and the specificity requirements of the data report. The more data points there are the more difficult it will be to label each data point. If trends are being examined, individual data labels are unnecessary; however, if individual performance is being monitored, data labels may be needed.

If there are too many columns to label each one or your data reporting does not require precision, the y-axis solution is serviceable. Employing the y-axis labels requires the reader to look to the axis and then over to the column and draw a horizontal line (actual or imaginary) from the column back to the axis to determine the data value. You can help the reader by including **Major Gridlines**, which will appear automatically if you have selected one of the built-in Excel charts. This solution could result in crowded and messy charts that don't achieve the desired result of aiding the reader. If you find yourself facing this dilemma, consider alternatives such as creating multiple charts.

Excel's solution to the overlapping label problem is to orient the labels at a 45- or 90-degree angle. This is never a good option as it results in an awkward reading experience. If the bar chart alternative is not a viable solution, consider abbreviating the labels.

Choosing Between Bar and Column Charts

Deciding between a bar or column chart is largely an aesthetic choice, typically based on the length of the category labels and the amount of space available in the report for the chart. If data labels are long, a bar chart is a better choice than a column chart. Figure 2.41 is a column chart that shows the population of 12 U.S. states. The state names beneath the columns overlap, making it impossible to read labels. Figure 2.42 shows the same data in a bar chart. Here we can easily read the state names without loss of information.

Figure 2.41 Column chart with long category labels

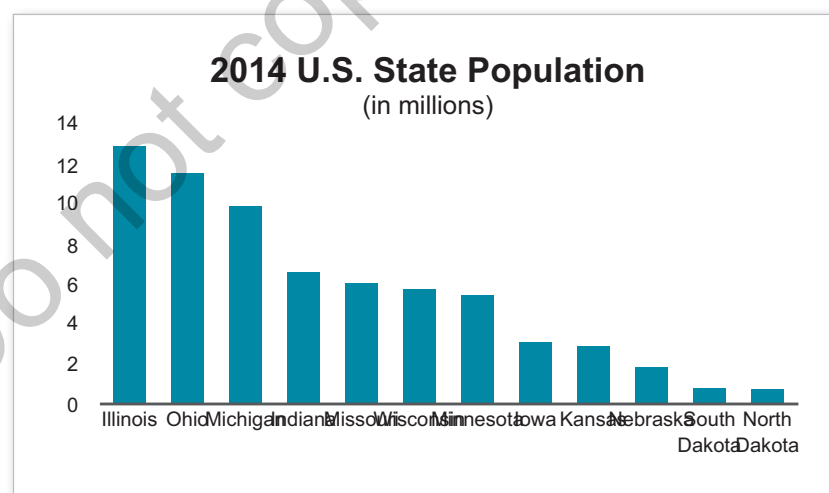
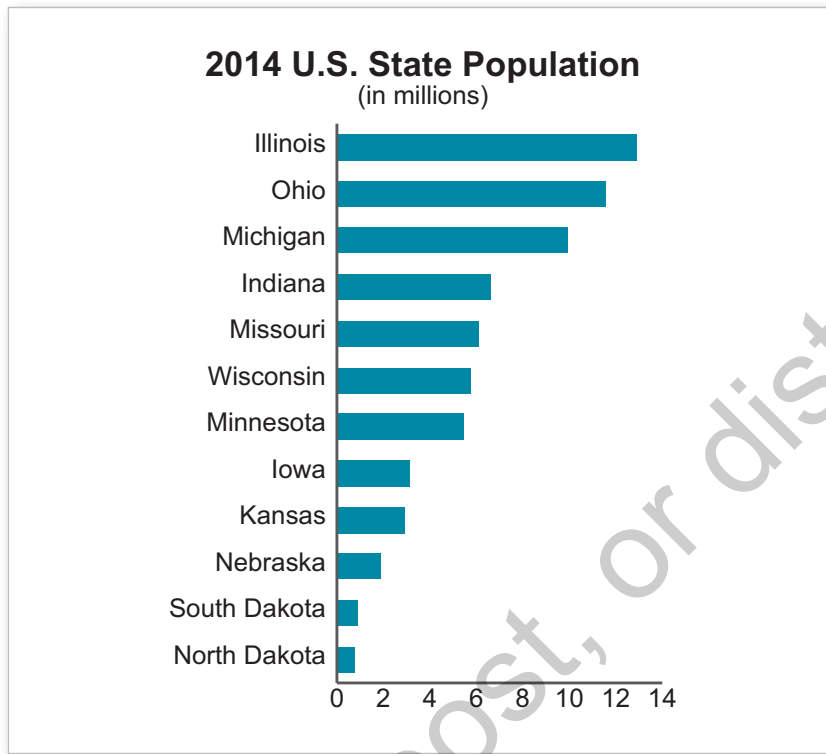


Figure 2.42 Bar chart with long category labels



SUMMARY

Column and bar charts are the most common forms of data visualization in use today. They are handy multipurpose tools that work well for describing categorical or continuous data and also may effectively illustrate time series data. Creating basic column charts is a simple process that involves organizing data into rows and columns in an Excel worksheet with appropriate column headers and row labels, selecting the range of data to be charted, and choosing the correct chart type from Excel's **INSERT** tab.

Stacked column and bar charts have an added level of complexity introduced by the addition of multiple data series; however, they also offer the possibility of displaying a large amount of data in a relatively small space. Likewise, 100% stacked column and bar charts are effective for displaying large quantities of data in compact spaces but with the added feature of the sum of the segments of the columns or bars totaling 100%.

The deceptively simple column chart contains multiple elements, many of which may be manipulated to enhance the chart's ability to clearly and accurately communicate a data story or, alternatively, to distort a message. As we noted, changing the range of values of the y-axis on a column chart can substantially alter the perception of the data values. By attending carefully and intentionally to chart elements such as axes, gap widths, data labels, and titles, you will create column and bar charts that are clear and visually appealing representations of the underlying data.

Column and Bar Chart Checklist

1. Include a descriptive title at the top of the chart.
2. If your data include only positive values, set the minimum data value set to 0.
3. Sort the chart categories.
4. Adjust the width of the columns or bars to enhance the visual appeal of the chart and accommodate data labels.
5. Choose between data labels for the columns or bars or value axis labels.
6. Delete redundant or unnecessary information.
 - a. Data labels when y-axis labels are present
 - b. Gridlines when data labels are used
7. Select a bar chart instead of a column chart if data labels are long.

CHAPTER BONUS

Recall that when discussing stacked column charts earlier in this chapter we noted that it may be useful to add a total to the top of the stacked columns. Excel allows you to add data labels to the individual segments of each column; however, there is no function that automatically sums the frequencies of the column segments to add a total for the entire column. There are two ways to accomplish this task. One way is to insert text boxes above each column and manually enter the totals. Use this option when working with 100% stacked column charts. Another way is to add another data series that represents the total of each column and add that series to the chart. Use this option for standard (not 100% stacked) column charts.

Adding Total Data Labels to a Stacked Column Chart

1. In your worksheet, create a column showing the total of your stacked components (see Figure 2.43).

Figure 2.43 Worksheet cells with total column added

	A	B	C	D
1		White	Non-White	Total
2	CA	15,132,975	23,669,525	38,802,500
3	TX	11,052,353	15,904,605	26,956,958
4	NY	11,452,812	8,293,416	19,746,228
5	ME	1,263,585	66,505	1,330,090
6	VT	582,703	43,859	626,562

2. Add the new “Total” series to your chart by right-clicking on the chart, choosing **Select Data**, and selecting the range of cells that includes the Total column. Because of the radical change in scale, this will temporarily distort the appearance of the stacked columns.
3. Change the chart type of the Total series. Right-click on the Total data series and select **Change Series Chart Type**. Chart type **Combo** should be highlighted. If it is not, select it. Change the Total series to a **Line**. Click **OK**. Leave the other data series as **Stacked Column**.
4. Click on the line. From the **CHART ELEMENTS** shortcut menu, select **Data Labels**.
5. Format the data labels so that they appear **Above** the line. Right-click the data labels and select **Format Data Labels** to open the **Format Data Labels** task pane. Select **Above** from the **Label Position** section.
6. Right-click on the line and choose **Format Data Series**. Expand the **LINE** menu and click the **No Line** radio button.
7. Delete the Total data series entry from the chart legend. Click on the legend once to activate it, click again on Total, and press the **Delete** key on your keyboard.