

2.28 The following table indicates the percentage of residential electricity consumption in the United States, in a recent year organized by type of use.

Type of Use	Percentage %
Cooking	2%
Cooling	15%
Electronics	9%
Heating	15%
Lighting	13%
Refrigeration	10%
Water heating	10%
Wet cleaning	3%
Other	23%

Source: Department of Energy.

a. Construct a bar chart, a pie chart, and a Pareto chart.
 b. Which graphical method do you think is best for portraying these data?
 c. What conclusions can you reach concerning residential electricity consumption in the United States?

2.29 Visier's 2014 Survey of Employers explores current workforce analytics and planning practices, investments, and future plans. U.S.-based employers were asked what they see as the most common technical barrier to workforce analytics. The responses, stored in **Barriers**, were as follows:

Barriers	Frequency
Data must be integrated from multiple sources	68
Lack of automation/repeatable process	51
Metrics need to be identified or defined	45
Production is cumbersome	42
Data quality is not reliable	36
Sharing findings is challenging	21
Analytic tools are too complex	17
Ensuring security and integrity of workforce data	17
Other	3

Source: Data extracted from *The State of Workforce Analytics and Planning, 2014 Survey Report*, available at bit.ly/1zuM99Z.

a. Construct a bar chart and a pie chart.
 b. What conclusions can you reach concerning technical barriers to workforce analytics?

2.30 For the companies in which they invest, pension fund managers seek to ensure the independence of the boards of directors. For one company, fund managers determine that the board had 7 inside directors, 5 independent (outside) directors, and 7 directors that the company labeled as independent, but whom officials consider to be insiders. Seeking more independence of this board, the fund managers ask for change. The company responds and fund managers evaluate

2.4 Visualizing Numerical Variables

You visualize the data for a numerical variable through a variety of techniques that show distribution of values. These techniques include the stem-and-leaf display, the histogram, percentage polygon, and the cumulative percentage polygon (ogive), all discussed in this section as well the boxplot, which requires descriptive summary measures as explained in Section 3.5

the company's new board as having 5 inside directors, 10 independent directors, and 6 directors improperly labeled as independent. Examine the two charts stored in **BoardAnalysis** that are based on these findings. If you were a corporate affairs officer at the company, would you choose Chart 1 or Chart 2 to highlight the changes in the composition of the board? If you were one of the pension fund managers seeking to ensure an independent board of directors, which chart would you choose? Explain your answer.

2.31 A study of selected Kickstarter projects showed that over all a majority were successful, achieving their goal and raising at a minimum, the targeted amounts. In an effort to identify project types that influence success, selected projects were subdivided into project categories (Film & Video, Games, Music, and Technology). The results are as follows:

CATEGORY	OUTCOME		Total
	Successful	Not Successful	
Film & Video	17,024	26,857	43,881
Games	5,105	10,075	15,180
Music	19,275	17,050	36,325
Technology	2,556	8,770	11,326
Total	43,960	62,752	106,712

Source: kickstarter.com/help/stats.

a. Construct a side-by-side bar chart and a doughnut chart of project outcome and category.
 b. What conclusions concerning the pattern of successful Kickstarter projects can you reach?

2.32 Do social recommendations increase ad effectiveness? A study of online video viewers compared viewers who arrived at advertising video for a particular brand by following a social media recommendation link to viewers who arrived at the same video by web browsing. Data were collected on whether the viewers could correctly recall the brand being advertised after seeing the video. The results were as follows:

ARRIVAL METHOD	CORRECTLY RECALLED THE BRAND	
	Yes	No
Recommendation	407	150
Browsing	193	91

Source: Data extracted from "Social Ad Effectiveness: An Unruly White Paper," www.unrulymedia.com, January 2012, p. 3.

a. Construct a side-by-side bar chart and a doughnut chart of arrival method and whether the brand was promptly recalled.
 b. What do these results tell you about the arrival method and brand recall?