

1.20 Annual survey of computer crimes. The Computer Security Institute (CSI) conducts an annual survey of computer crime at United States businesses. CSI sends survey questionnaires to computer security personnel at all U.S. corporations and government agencies. In 2006, 616 organizations responded to the CSI survey. Fifty-two percent of the respondents admitted unauthorized use of computer systems at their firms during the year. (*Computer Security Issues & Trends*, Spring 2006)

- a. Identify the population of interest to CSI.
- b. Identify the data-collection method used by CSI. Are there any potential biases in the method used?
- c. Describe the variable measured in the CSI survey. Is it quantitative or qualitative?
- d. What inference can be made from the study result?

2.18 Consider the stem-and-leaf display shown here.

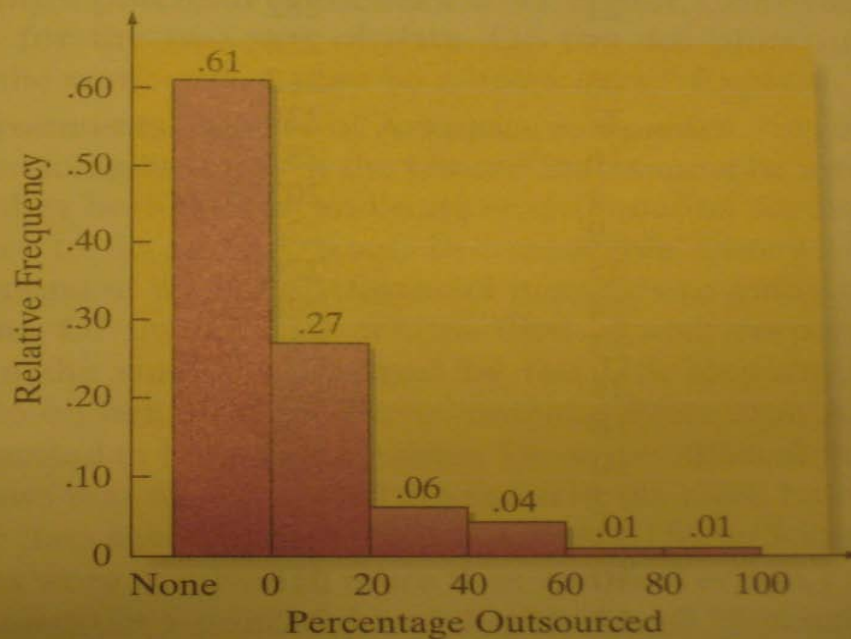
Stem	Leaf
5	1
4	457
3	00036
2	1134599
1	2248
0	012

- How many observations were in the original data set?
- In the bottom row of the stem-and-leaf display, identify the stem, the leaves, and the numbers in the original data set represented by this stem and its leaves.
- Re-create all the numbers in the data set and construct a dot plot.

2.20 **Computer security survey.** Refer to the 2006 CSI/FBI Computer Crime and Security Survey, Exercise 1.20 (p. 23). One of the survey questions asked respondents to indicate the percentage of computer security functions that their company outsources. Consequently, the quantitative variable of interest is measured as a percentage for each of 609 respondents in the 2006 survey. The following histogram summarizes the data.

- a. Which measurement class contains the highest proportion of respondents?
- b. What proportion of the 609 respondents indicate that they outsource between 20% and 40% of computer security functions?

- c. What proportion of the 609 respondents outsource at least 40% of computer security functions?
- d. How many of the 609 respondents outsource less than 20% of computer security functions?



2.76 Blogs for Fortune 500 firms. Refer to the *Journal of Relationship Marketing* (Vol. 7, 2008) study of the prevalence of blogs and forums at Fortune 500 firms with both English and Chinese Web sites, Exercise 2.9 (p. 40). In a sample of firms that provide blogs and forums as marketing tools, the mean number of blogs/forums per site was 4.25, with a standard deviation of 12.02.

- a. Provide an interval that is likely to contain the number of blogs/forums per site for at least 75% of the Fortune 500 firms in the sample.
- b. Do you expect the distribution of the number of blogs/forums to be symmetric, skewed right, or skewed left? Explain.

38 Social networking Web sites in the United Kingdom. In the United States, MySpace and FaceBook are considered the two most popular social networking Web sites. In the United Kingdom (UK), the competition for social networking is between MySpace and Bebo. According to Nielsen/NetRatings (April 2006), 4% of UK citizens visit MySpace, 3% visit Bebo, and 1% visit both MySpace and Bebo.

- a. Draw a Venn diagram to illustrate the use of social networking sites in the United Kingdom.
- b. Find the probability that a UK citizen visits either the MySpace or Bebo social networking sites.
- c. Use your answer to part b to find the probability that a UK citizen does not visit either social networking site.

3.40 Guilt in decision making. The effect of guilt emotion on how a decision maker focuses on the problem was investigated in the Jan. 2007 issue of the *Journal of Behavioral Decision*

Making (see Exercise 1.26, p. 24). A total of 171 volunteer students participated in the experiment, where each was randomly assigned to one of three emotional states (guilt, anger, or neutral) through a reading/writing task. Immediately after the task, students were presented with a decision problem where the stated option has predominantly negative features (e.g., spending money on repairing a very old car). The results (number responding in each category) are summarized in the accompanying table. Suppose one of the 171 participants is selected at random.

Emotional State	Choose Stated Option	Do Not Choose Stated Option	Totals
Guilt	45	12	57
Anger	8	50	58
Neutral	7	49	56
Totals	60	111	171

Source: Gangemi, A., and Mancini, F. "Guilt and focusing in decision-making." *Journal of Behavioral Decision Making*, Vol. 20, Jan. 2007 (Table 2).

- Find the probability that the respondent is assigned to the guilty state.
- Find the probability that the respondent chooses the stated option (repair the car).
- Find the probability that the respondent is assigned to the guilty state and chooses the stated option.
- Find the probability that the respondent is assigned to the guilty state or chooses the stated option.

60 **Monitoring quality of power equipment.** *Mechanical Engineering* (Feb. 2005) reported on the need for wireless networks to monitor the quality of industrial equipment. For example, consider Eaton Corp., a company that develops distribution products. Eaton estimates that 90% of the electrical switching devices it sells can monitor the quality of the power running through the device. Eaton further estimates that of the buyers of electrical switching devices capable of monitoring quality, 90% do not wire the equipment up for that purpose. Use this information to estimate the probability that an Eaton electrical switching device is capable of monitoring power quality and is wired up for that purpose.

- d. Find $P(X \leq 10)$.
- 22 **Choosing portable grill displays.** Refer to the *Journal of Consumer Research* (Mar. 2003) marketing study of influencing consumer choices by offering undesirable alternatives, Exercise 3.21 (p. 130). Recall that each of 124 college students selected showroom displays for portable grills. Five different displays (representing five different-sized grills) were available, but the students were instructed to select only three displays in order to maximize purchases of Grill #2 (a smaller-sized grill). The table shows the grill display combinations and the number of times each was selected by the 124 students. Suppose one of the 124 students is selected at random. Let x represent the sum of the grill numbers selected by this student. (This value is an indicator of the size of the grills selected.)
- Find the probability distribution for x .
 - What is the probability that x exceeds 10?

Grill Display Combination	Number of Students
1-2-3	35
1-2-4	8
1-2-5	42
2-3-4	4
2-3-5	1
2-4-5	34

4.26 **Appeals of federal civil trials.** Refer to the *Journal of the American Law and Economics Association* (Vol. 3, 2001) study of appeals of federal civil trials, Exercise 3.41 (p. 140). A breakdown of the 678 civil cases that were originally tried in front of a judge (rather than a jury) and appealed by either the plaintiff or defendant is reproduced in the next table. Suppose each civil case is awarded points (positive or negative) based on the outcome of the appeal for the purpose of evaluating federal judges. If the appeal is affirmed or dismissed, +5 points are awarded. If the appeal of a plaintiff trial win is reversed, -1 point is awarded. If the appeal of a defendant trial win is reversed, -3 points are awarded. Suppose one of the 678 cases is selected at random and the number, x , of points awarded is determined. Find and graph the probability distribution for x .

Outcome of Appeal	Number of Cases
Plaintiff trial win — reversed	71
Plaintiff trial win — affirmed/dismissed	240
Defendant trial win — reversed	68
Defendant trial win — affirmed/dismissed	299
Total	678