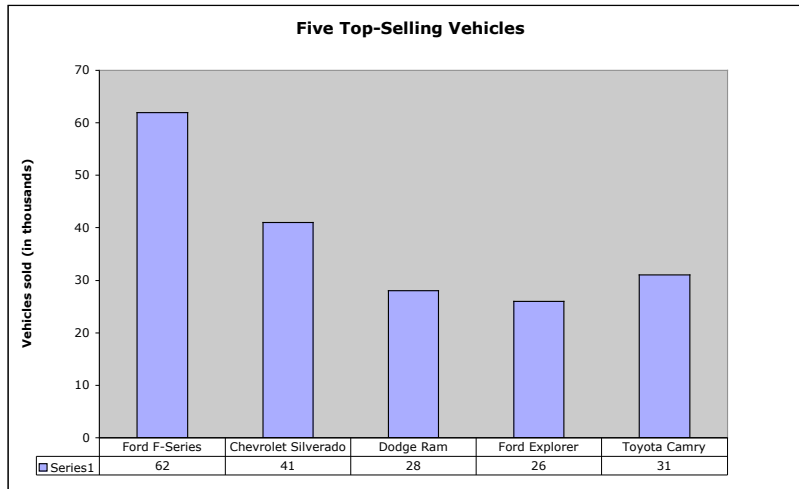


# WORKSHEET

## (Chapter 1: sections 1.1.,1.2,1.3)

1. Identify the population and the sample:
  - a) A survey of 1353 American households found that 18% of the households own a computer.
  - b) A recent survey of 2625 elementary school children found that 28% of the children could be classified obese.
  - c) The average weight of every sixth person entering the mall within 3 hour period was 146 lb.
2. Determine whether the numerical value is a parameter or a statistics (and explain):
  - a) A recent survey by the alumni of a major university indicated that the average salary of 10,000 of its 300,000 graduates was 125,000.
  - b) The average salary of all assembly-line employees at a certain car manufacturer is \$33,000.
  - c) The average late fee for 360 credit card holders was found to be \$56.75.
3. For the studies described, identify the population, sample, population parameters, and sample statistics:
  - a) In a USA Today Internet poll, readers responded voluntarily to the question “Do you consume at least one caffeinated beverage every day?”
  - b) Astronomers typically determine the distance to galaxy (a galaxy is a huge collection of billions of stars) by measuring the distances to just a few stars within it and taking the mean (average) of these distance measurements.
4. Identify whether the statement describes inferential statistics or descriptive statistics:
  - a) The average age of the students in a statistics class is 21 years.
  - b) The chances of winning the California Lottery are one chance in twenty-two million.
  - c) There is a relationship between smoking cigarettes and getting emphysema.
  - d) From past figures, it is predicted that 39% of the registered voters in California will vote in the June primary.
5. Determine whether the data are qualitative or quantitative:
  - a) the colors of automobiles on a used car lot
  - b) the numbers on the shirts of a girl’s soccer team
  - c) the number of seats in a movie theater
  - d) a list of house numbers on your street
  - e) the ages of a sample of 350 employees of a large hospital
6. Identify the data set’s level of measurement (nominal, ordinal, interval, ratio):
  - a) hair color of women on a high school tennis team
  - b) numbers on the shirts of a girl’s soccer team
  - c) ages of students in a statistics class
  - d) temperatures of 22 selected refrigerators
  - e) number of milligrams of tar in 28 cigarettes
  - f) number of pages in your statistics book

- g) marriage status of the faculty at the local community college
- h) list of 1247 social security numbers
- i) the ratings of a movie ranging from “poor” to “good” to “excellent”
- j) the final grades (A,B,C,D, and F) for students in a chemistry class
- k) the annual salaries for all teachers in Utah
- l) list of zip codes for Chicago
- m) the nationalities listed in a recent survey
- n) the amount of fat (in grams) in 44 cookies
- o) the data listed on the horizontal axis in the graph



7. Decide which method of data collection you would use to collect data for the study (observational study, experiment, simulation, or survey):
- a) A study of the salaries of college professors in a particular state
  - b) A study where a political pollster wishes to determine if his candidate is leading in the polls
  - c) A study where you would like to determine the chance getting three girls in a family of three children
  - d) A study of the effects of a fertilizer on a soybean crop
  - e) A study of the effect of koalas on Florida ecosystem
8. Identify the sampling technique used (random, cluster, stratified, convenience, systematic):
- a) Every fifth person boarding a plane is searched thoroughly.
  - b) At a local community College, five math classes are randomly selected out of 20 and all of the students from each class are interviewed.
  - c) A researcher randomly selects and interviews fifty male and fifty female teachers.
  - d) A researcher for an airline interviews all of the passengers on five randomly selected flights.
  - e) Based on 12,500 responses from 42,000 surveys sent to its alumni, a major university estimated that the annual salary of its alumni was 92,500.
  - f) A community college student interviews everyone in a biology class to determine the percentage of students that own a car.
  - g) A market researcher randomly selects 200 drivers under 35 years of age and 100 drivers over 35 years of age.
  - h) All of the teachers from 85 randomly selected nation’s middle schools were interviewed.

- i) To avoid working late, the quality control manager inspects the last 10 items produced that day.
- j) The names of 70 contestants are written on 70 cards, The cards are placed in a bag, and three names are picked from the bag.

9. Explain what bias there is in a study done entirely online.

10. A local newspaper ran a survey by asking, "Do you support the development of a weapon that could kill millions of innocent people?" Determine whether the survey questions is biased and why.

## SOLUTIONS:

1. a) population: all American households  
sample: collection of 1353 American households surveyed
  - b) population: all elementary school children  
sample: collection of 2625 elementary school children surveyed
  - c) population: all people entering the mall within the assigned 3 hour period  
sample: every 6<sup>th</sup> person entering the mall within the 3 hour period
  2. a) statistic – part of 300,000 graduates are surveyed
  - b) parameter – all assembly-line employees were included in the study
  - c) statistic – 360 credit cards were examined (not all)
  3. a) population: all readers of USA Today; sample: volunteers that responded to the survey; population parameter: percent who have at least one caffeinated drink among all readers of USA Today; sample statistic: percent who have at least one caffeinated drink among those who responded to the survey
  - b) population: all stars in the galaxy; sample: the few stars selected for measurements; population parameter: mean (average) of distances between all stars and Earth; sample statistics: mean of distances between the stars in the sample and Earth
  4. a) descriptive
  - b) inferential
  - c) inferential
  - d) inferential
  5. a) qualitative
  - b) qualitative
  - c) quantitative
  - d) qualitative
  - e) quantitative
  6. a) nominal
  - b) nominal
  - c) ratio
  - d) interval
  - e) ratio
  - f) ratio
  - g) nominal
  - h) nominal
  - I) ordinal
  - j) ordinal
  - k) ratio
  - l) nominal
  - m) nominal
  - n) ratio
  - o) ratio
  8. systematic
  - cluster
  - stratified
  - cluster
  - random
  - convenience
  - stratified
  - cluster
  - convenience
  - random
7. a) survey
  - b) observation
  - c) simulation
  - d) experiment
  - e) simulation
9. It is limited to people with computers.
  10. Yes – it tends to encourage negative responses.