

The objectives for this section include:

1. Understand the difference between a sample and a population.
2. Identify types of bias.
3. Use a frequency table, bar graph, histogram, and stem-and-leaf display to represent data.

_____ : the science of data. Understanding how to represent situations using statistics (plural of “statistic” defined below), how to interpret statistics, and how to decide if the statistical information is appropriate to the questions being asked and the decisions being made.

Data: a _____ fact. For example your height, age, weight are all examples of data because you state those facts as numbers. The word “data” is plural. If you have only one, you have a datum.

Population: the entire group we want to describe with the statistics; the individuals or objects the statistics refer to. The population may be people, animals, or things. Usually we are unable to get information about the entire population. Usually we deduce or infer the information about the population based on a statistical sample. The population size is represented with “_____”.

Sample: a selected part of the population; subset of the population. The sample size is denoted as “*n*”.

Class Practice 1– Describe the population and sample.

1. A polling company working for a congressional candidate surveys 500 Moorhead registered voters of the 820,000 Minnesota registered voters to determine if they are in agreement with the candidate’s stand on education funding.

Population: _____

Sample: _____

2. In a 2006 study of the drinking habits of college students in the United States, we asked 500 college students at MSUM their age and how many alcoholic drinks (cans, bottles, or glasses) they consume each week.

Population: _____

Sample: _____

N-Value: _____ Sample size _____

A sample is _____ if it does not represent the population with regard to the data being gathered.

Selection Bias: A tendency built into the sampling methodology (whether intentionally or not) that systematically under-represents a group or characteristic within the population.

Ex. _____

Leading-question bias _____

Ex. A 53 year old woman has been charged for the rape of a 13 year old boy. How much prison time should the woman receive?

- Drop all charges
- 1 year in prison
- 5 years in prison
- 10 years in prison
- Life in prison

Class Practice 2 – Describe (a) the kinds of bias that may result from the survey method described and (b) predict how you think the survey results may be different from the true opinion of the stated population.

Survey families of violent crime victims to determine the attitude of Americans towards capital punishment.

(a) _____

(b) _____

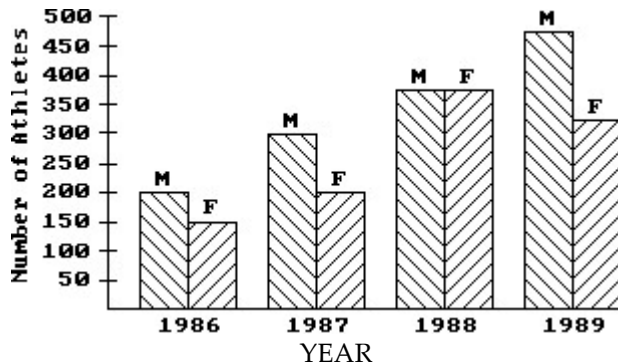
2. Survey a random sample of 100 women from a membership list of a local businesswomen’s club to determine the opinions of employed adult women about government funding of daycare. The following question is asked: “Do you think that the government should pay for the daycare of the poor?”

(a) _____

(b) _____

Bar Graph: is a way to visualize a frequency distribution, where you plot the frequency on the vertical axis and the scores/independent variable on the horizontal axis. This graph is best for discrete data (those values that cannot be measured with a more accurate scale).

Class Practice 3- This double-bar graph shows the number of male (M) and female (F) athletes at a university over a four-year period. Answer the questions.



- What is the only year in which the number of female athletes declined from
- How many students were involved in athletics in 1989?
- What percentage of all students involved in athletics in 1986 was female?

Histogram: a special type of bar graph that is best of _____ data that can be measured with a more accurate scale or has a large number of possibilities that require grouping data. Ex. 786

Class Practice 4 – Create a stem-and-leaf display of the following quiz scores:

4, 10, 12, 14, 16, 18, 20, 20, 22, 22

Assignment for Friday 4/9

Read pp. 780-789, Finish Sec. 14.1 Guided Notes

Complete # 1, 3, 5, 7, 8, 9, 17, 19, 23, 25 on pp. 789-791

Test 3 Corrections for the In-class part are due on a separate sheet of paper with your exam on Monday 4/12