TIM7100

Data File 1

Assignment 1

1. Consider the set of all students enrolled in a semester-long statistics course. Suppose you are interested in learning about the current grade point averages (GPAs) of this group.
   1. What is the population of interest?
   2. What is the variable of interest?
   3. Suppose you determine the GPA of every member of the class. Would this represent a population or a sample?
   4. Suppose you determine the GPA of 10 members of the class. Would this represent a population or a sample?
2. A researcher argues that US Postal zip codes are quantitative data because they measure location, with low numbers in the east and high numbers in the west. Is she correct? Why or Why not?
3. Colleges and universities require several items of information from prospective students. Classify each of the types of data below as either quantitative or qualitative.
   1. High school GPA.
   2. High school class rank.
   3. Applicant’s score on the SAT.
   4. Gender of the applicant.
   5. Parents’ income.
   6. Age of applicant.
4. Chemical and manufacturing plants often discharged toxic-waste materials such as DDT prior to its ban in the US in the 1980s into nearby rivers and streams. In the mid-1990s, the US Army Corps of Engineers conducteda study of fish in the Tennessee River (in Alabama) and its three tributary creeks: Flint Creek, Limestone Creek, and Spring Creek. A total of 144 fish were captured and five variables were measured for each fish:
   1. River/creek where the fish was captured
   2. Species (channel catfish, largemouth bass, or smallmouth buffalofish)
   3. Length (centimeters)
   4. Weight (grams)
   5. DDT concentration (parts per million)

Classify each of the five variables measured as quantitative or qualitative.

1. Determine if the data described are qualitative or quantitative.
   1. The blood groups of A, B, AB, and O.
   2. The white blood cell counts of different people, consisting of the numbers f white blood cells per microliter of blood.
   3. Breaking reaction times (in seconds) as measured as part of a driver education program.
2. All highway bridges in the United States are inspected periodically for structural deficiency by the Federal Highway Administration (FHWA). Data from the FHWA inspections are compiled into the National Bridge Inventory (NBI). Several of the nearly 100 variables maintained by the NBI are listed below. Classify each variable as quantitative or qualitative.
   1. Length of maximum span (feet)
   2. Number of vehicle lanes
   3. Toll bridge (yes or no)
   4. Average daily traffic
   5. Condition of deck (good, fair, poor)
   6. Bypass or detour length (miles)
   7. Route type (interstate, U.S., state, county or city)
3. Refer to Problem 6. Using the FHWA inspection ratings, each of the 470,515 bridges in the United States was characterized as structurally deficient, functionally obsolete, or safe. About 26% of the bridges were found to be structurally deficient while 19% were functionally obsolete.
   1. What is the variable of interest to the researchers?
   2. Is the data set analyzed a population or a sample?
4. Pollsters regularly conduct opinion polls in the United States to determine the popularity rating of the current president. Suppose a poll is to be conducted tomorrow in which 2,000 individuals will be asked whether the president is doing a good job or a bad job. The 2,000 individuals will be selected by random-digit telephone dialing to landlines and asked the questions over the phone.
   1. What is the relevant population?
   2. What is the variable of interest? Is it quantitative or qualitative?
   3. What is the sample?
   4. How likely is the sample to be representative?