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Elementary Statistics

Section 1.1

For each of the following eight exercises, identify: a. the population, b. the sample, c. the parameter, d. the statistic, e. the variable, and f. the data. Give examples where appropriate.

44) A cardiologist is interested in the mean recovery period of her patients who have had heart attacks.
This would be labeled as a parameter. A parameter is numerical data from a population.

Use the following information to answer the next three exercises: A Lake Tahoe Community College instructor is interested in the mean number of days Lake Tahoe Community College math students are absent from class during a quarter.

50) What is the population she is interested in?

a. all Lake Tahoe Community College students
b. all Lake Tahoe Community College English students
c. all Lake Tahoe Community College students in her classes
d. all Lake Tahoe Community College math students

B) all Lake Tahoe Community College students in her classes

52) The instructor's sample produces a mean number of days absent of 3.5 days. This value is an example of a:
a. parameter.

b. data.

c. statistic.

d. Variable.

C) Statistic

Section 1.2

For the following exercises, identify the type of data that would be used to describe a response (quantitative discrete, quantitative continuous, or qualitative), and give an example of the data.

53) number of tickets sold to a concert
Quantitative Discrete. An integer of counting data.

54) percent of body fat
Quantitative Continuous. May result in fractions, not always an integer.

55) favorite baseball team

Qualitative. Commonly not a numerical piece of data. A description of the data.

74) A “random survey” was conducted of 3,274 people of the “microprocessor generation” (people born since 1971, the year the microprocessor was invented). It was reported that 48% of those individuals surveyed stated that if they had $2,000 to spend, they would use it for computer equipment. Also, 66% of those surveyed considered themselves relatively savvy computer users.

a. Do you consider the sample size large enough for a study of this type? Why or why not?

- **No, the number of people surveyed does not represent the entire population’s viewpoint on their prefrence to spend 2,000 American dollars for computer equipment or consider themselves savvy computer users.**

b. Based on your “gut feeling,” do you believe the percentages accurately reflect the U.S. population for those individuals born since 1971? If not, do you think the percentages of the population are actually higher or lower than the sample statistics? Why?

Additional information: The survey, reported by Intel Corporation, was filled out by individuals who visited the Los Angeles Convention Center to see the Smithsonian Institute's road show called “America’s Smithsonian.”

- **Yes, because this random survey, like stated is answering the question of whether this group of individuals follow under the factor of having some knowledge in computers or even investing in some equipment. Although it does not include every single person or population in the category it is sampling from, it still gains data and percentages. I would say it is somewhat accurate. With the additional information given, it is still a question whether the people were honest in the survey or not.**

c. With this additional information, do you feel that all demographic and ethnic groups were equally represented at the event? Why or why not?

- **No, because that information was not being asked. If it was, then there was no way of telling. Again, this is a random sampling, so there really is no accurate proportions of the people being surveyed.**

d. With the additional information, comment on how accurately you think the sample statistics reflect the population parameters.

- **The sample statistics would be false, incorrect, or unreliable sources to fall upon if seeking for accurate population parameters within the data because there is no investigation in the entire population’s answeres.**

76) In advance of the 1936 Presidential Election, a magazine titled Literary Digest released the results of an opinion poll predicting that the republican candidate Alf Landon would win by a large margin. The magazine sent post cards to approximately 10,000,000 prospective voters. These prospective voters were selected from the subscription list of the magazine, from automobile registration lists, from phone lists, and from club membership lists. Approximately 2,300,000 people returned the postcards.

- Think about the state of the United States in 1936. Explain why a sample chosen from magazine subscription lists, automobile registration lists, phone books, and club membership lists was not representative of the population of the United States at that time.

- There was a war going on making families and troops to not exactly have the spendings to be subscribed to magazine lines.

- What effect does the low response rate have on the reliability of the sample?

- There is no total population or even target aufdience to have accurate intel to the data being received.

- Are these problems examples of sampling error or nonsampling error?

- Sampling error because this survey is not based on the whole population.

- During the same year, George Gallup conducted his own poll of 30,000 prospective voters. These researchers used
  a method they called "quota sampling" to obtain survey answers from specific subsets of the population. Quota sampling is an example of which sampling method described in this module?

- Qualitative sampling because of the nonprobability sampling.

Section 1.3

81)

# of flossing per week	frequency	Relative frequency	Cumulative relative frequency
0	27	0.4500	0.8322
1	18	0.0630	0.0143
3	22	0.4000	0.9333
6	3	0.0500	0.2100
7	1	0.0167	0.0182

- Fill in the blanks in **Table 1.34**.

- What percent of adults flossed six times per week?

  5%

- What percent flossed at most three times per week?

  4%

82) Fix the errors in **Table 1.35**. Also, explain how someone might have arrived at the incorrect number(s).

- Explain what is wrong with this statement: “47 percent of the people surveyed have lived in the U.S. for 5 years.”

- This would not be the whole population as relative frequency, only the 47% mentioned.

- Fix the statement in **b** to make it correct.

- 47% of the people who were surveyed have lived inh the US for 5 years or less.

- What fraction of the people surveyed have lived in the U.S. five or seven years?

- 29.4%

- What fraction of the people surveyed have lived in the U.S. at most 12 years?

- 88.23%

- What fraction of the people surveyed have lived in the U.S. fewer than 12 years?

- 76.4%

- What fraction of the people surveyed have lived in the U.S. from five to 20 years, inclusive?

- 64.7%