Introduction to Statistics

1.2   Sample Statistics and Population Parameters

*To complete this section of homework watch Chapter One, Lecture Examples: **1**, **2**, and **3**.*

1. Identify the population and the sample: A researcher wants to know the average salary of South Floridians. She polls a random selection of 100 registered voters leaving different polling stations around South Florida on election day.   Is there any problem with surveying only people who are registered voters?

2. Identify the population and the sample: A researcher wants to know the average waist size of women living in South Florida who are between 20 and 25 years old. She randomly selects 500 women who are between 20 and 25 from four local universities. Is there any problem with her approach?

3. Explain the difference between a parameter and a statistic.

    In problems 4 – 8, identify the given value as a statistic or a parameter:

4. A study of every national park's sales receipts for August shows they brought in an average of ten million dollars of revenue. 📹 VS

5. Sixty male shoppers at Aventura Mall were randomly chosen, and their waist lines were measured revealing an average waist size of 37 inches. 📹 VS

6. A study of all homes sold at auction in Miami last year showed that the average sale price for such homes was $109,823.00. 📹 VS

7. Five hundred Americans were randomly chosen and asked if they think the US should drill for oil off of its coast, and 72% said they were not in favor of drilling. 📹 VS

8. After reviewing the arrival times of every flight that landed at MIA last month it was determined that the on-time rate for flights into MIA was 68%. 📹 VS

📹: *indicates the exercise has a video devoted to it in the corresponding section of STATSprofessor.com*

1.2   Answers:

1. Pop: All of the salaries of South Floridians; Sample: the 100 salaries sampled at the different polling stations; Registered voters may be different from the general population—they may be more or less affluent from the general population.
2. Pop: All the waist size measurements of South Florida woman between the ages of 20 and 25; sample: the 500 measurements taken from the university women; The problem is that college women are probably more affluent and educated than the general population. This could mean they are more likely to be thinner.
3. Parameters describe an attribute of a population and are calculated from the entire set of values in the population. Statistics describe an attribute of a sample and are calculated from a sample of a larger population.
4. Parameter
5. Statistic
6. Parameter
7. Statistic
8. Parameter

Need more exercises?

1.3   Types of Data - Discrete VS. Continuous

To complete this section of homework watch Chapter One, Lecture Examples 5.

9. Explain the difference between qualitative and quantitative data.

10. Explain the difference between discrete and continuous data.

In problems 11 – 17, determine if the given values are from a discrete or continuous data set:

11. The amounts of time customers are forced to wait in line at local Publix supermarkets. VS

12. The number of calculators sold by the bookstore each week. VS

13. The number of cousins each FIU student has that attends university somewhere in Florida. VS

14. Length of the commute to campus for each student who lives off campus. VS

15. The heights of buildings in downtown Fort Lauderdale. VS

16. The ounces of beer consumed by college freshman. VS

: *indicates the exercise has a video devoted to it in the corresponding section of STATSprofessor.com*

17. The number of times college freshman have been sick the next day after drinking too much the night before. 📹 VS

In problems 18 – 22, determine the level of measurement for the data being described:

18. A professor times her students during an exam and records the time each student completes the test. These times are an example of data at the _____ level of measurement.

19. A publisher creates a list of the years of publication for all of its authors' works. These years are an example of data at the _____ level of measurement.

20. A historian records the surname of every person who fought in the United States of America's war for independence. These names are an example of data at the _____ level of measurement.

21. Physicists record the speed of Olympic ice skaters as they race around a test track. These speeds are an example of data at the _____ level of measurement.

22. Psychologists ask students, "How would you rate your happiness on the following scale: very unhappy, unhappy, happy, very happy." The responses to this question are an example of data at the _____ level of measurement.

1.3   Answers:

9. Qualitative data are non-numerical in nature. Quantitative data is numerical in nature.
10. Discrete data is numerical data that is finite or countable, such as the set of whole numbers: 0, 1, 2, 3, … Continuous data is uncountable, and it falls on an interval that has no interruptions, gaps, or jumps.
11. Continuous
12. Discrete
13. Discrete
14. Continuous
15. Continuous
16. Continuous
17. Discrete
18. Ratio
19. Interval
20. Nominal
21. Ratio
22. Ordinal

Need more exercises?

📹: *indicates the exercise has a video devoted to it in the corresponding section of STATSprofessor.com*

Chapter 1   Mixed Review

23. A media researcher counts the number of commercials that air during a popular primetime television show. Are these data qualitative or quantitative? If they are quantitative, are they discrete or continuous?

24. A local bank randomly samples 32 accounts and determines the average balance for those accounts is $1,203. Is this average an example of a statistic or a parameter?

25. Researchers weigh a set of subjects during an experiment design to test a low carbohydrate diet. These weights are an example of data at the _____ level of measurement.

26. A car insurance company records the commute distances of its customers. Are these data qualitative or quantitative? If they are quantitative, are they discrete or continuous?

27. An appliance repairman takes measurements of the internal temperature of a stove in degrees Celsius. The measurements are an example of data at the _____ level of measurement.

28. A small business reports that the average salary for all of its employees is $57,280 per year. Is this average an example of a statistic or a parameter?

29. An auto appraiser makes a couple of qualitative observations on each car he appraises. He notes the color of the car and the condition on the following scale: poor, fair, good, excellent. The car colors are an example of data at the _____ level of measurement. The conditions of the cars are an example of data at the _____ level of measurement.

Chapter 1 Mixed Review   Answers:

23. quantitative data which is discrete
24. a statistic
25. ratio
26. quantitative data which is continuous
27. interval
28. parameter
29. The colors are at the nominal level, and the conditions are at the ordinal level.

: *indicates the exercise has a video devoted to it in the corresponding section of STATSprofessor.com*