

Population Parameters and Sample Statistics Practice

- For each statement, identify whether the numbers underlined are statistics or parameters.
 - Of all U.S. kindergarten teachers, 32% say that knowing the alphabet is an essential skill.
Parameter
 - Of the 800 U.S. kindergarten teachers polled, 34% say that knowing the alphabet is an essential skill.
Statistic
- Of the U.S. adult population, 36% has an allergy. A sample of 1200 randomly selected adults resulted in 33.2% reporting an allergy.
 - Describe the population. US Adults.
 - What is the sample? 1200 Adults.
 - Describe the variable. Having an allergy.
 - Identify the statistic and give its value. 33.2%
 - Identify the parameter and give its value. 36%

- In your own words, explain why the parameter is fixed and the statistic varies.

A Parameter represents everyone in a fixed group.

A Statistic represents a sample and will vary.

- The admissions office wants to estimate the cost of textbooks at USC. Let the variable x be the total cost of all textbooks purchased by a student this semester. The plan is to randomly identify 100 students and obtain their total textbook costs. The average cost for the 100 students will be used to estimate the average cost for all students.

- Describe the parameter the admissions office wishes to estimate. Cost of textbooks at USC

- Describe the population. All students at USC.

- Describe the variable involved. Total cost of textbooks by a student this semester.

- Describe the sample. 100 random students.

- Describe the statistic and how you would use the 100 data values collected to calculate the statistic.

Total cost of textbooks for 100 students; Find

- Select 10 students currently enrolled at USC and collect data for these three variables. 1) Number of courses enrolled in. 2) Total cost of textbooks and supplies. 3) Method of payment used for textbooks and supplies. the mean

- What is the population? All students enrolled at USC.

- What is the sample? 10 students currently enrolled at USC.

6. Suppose a 12 year old asked you to explain the difference between a sample and a population, how would you explain it to him/her? How might you explain why you would want to take a sample, rather than surveying every member of the population?

A sample is a part of a population, much like a single classroom is a part of an entire school. Taking a sample is much quicker and normally less expensive.

7. In your own words, explain the difference between a statistic and a parameter.

A statistic is a number about a sample.

A parameter is a number about a population.

8. Television station QUE wants to know the proportion of TV owners in Virginia who watch the station's new program at least once a week. The station asked a group of 1000 TV owners in Virginia if they watch the program at least once a week.

a. Identify the individuals of the study and the variable.

TV owners in VA; watching the new program.

b. Do the data comprise a sample?

Yes, assuming there are more than 1000 TV owners.

c. If so, what is the underlying population?

All of the TV owners in VA.

d. Is the proportion of viewers in the sample who watch the new program at least once a week a statistic or a parameter?

Statistic.

9. A study reveals that there are exactly 100 Senators in the 109th Congress of the United States, and 55 % of them are Republicans.

a. Identify the individuals of the study and the variable.

100 Senators (109th Congress); party affiliations.

b. Do the data comprise a sample or a population?

Population

c. Does the study represent a statistic or a parameter?

Parameter

d. For a set population, does a parameter ever change?

No!

10. Identify the population and the sample:

a) A survey of 1353 American households found that 18% of the households own a computer.

Population: All American households.

Sample: 1353 American households.

b) A recent survey of 2625 elementary school children found that 28% of the children could be classified obese.

Population: Elementary school children.

Sample: 2625 Elementary School children.

c) The average weight of every sixth person entering the mall within 3 hour period was 146 lb.

Population: All Adults/People.

Sample: Every sixth person entering the mall.

11. Determine whether the numerical value is a parameter or a statistic (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.

Statistic

b) The average salary of all assembly-line employees at a certain car manufacturer is \$33,000.

Parameter

c) The average late fee for 360 credit card holders was found to be \$56.75.

Statistic

12. Consider the students in our class as the sample and all of the students at our high school as the population. Identify the following as a parameter or a statistic.

a. The proportion of students in our class who use instant messaging or text messaging on a daily basis.

Statistic

b. The proportion of students at our school who use instant messaging or text messaging on a daily basis.

Parameter

c. The average number of hours that students at our school spent watching television last week.

Parameter

d. The average number of hours that students in our class slept last night.

Statistic

13. Identify each of the following as a parameter or a statistic. If you need to make an assumption about who or what the population is, explain your assumption.

a. The proportion of voters who voted for President Bush in the 2004 election.

Parameter

b. The proportion of voters surveyed by CNN who voted for John Kerry in the 2004 election.

Statistic

c. The proportion of voters among our school's faculty who voted for Ralph Nader in the 2004 election.

Parameter

d. The average number of points scored in a Super Bowl game.

Parameter (assuming from all Super Bowl Games ever).