

1. POPULATION:

Parameter [Greek variables] :

2. SAMPLE:

Statistic [English variables] :

3. List reasons why you might use a **SAMPLE** study instead of a **POPULATION** study?

4. A recent survey by the alumni of a major university indicated that the average salary of 8,500 of its 250,000 graduates was \$123,000. Does this value describe a parameter or a statistic? WHY?

5. A survey of 976 American households found that 32% of the households own two cars. Identify the population and the sample.

SAMPLE: _____

POULATION: _____

For # 6– 8 Identify each of the following data sets as either: (P) Population or (S) Sample

_____ 6.the age of a few randomly selected participants in a study about a race of runners

_____ 7.the annual salary of each full-time teacher in a study about Phoenix High School

_____ 8.a survey of 750 Georgia homeowners in a study about all of Georgia’s homeowners.

For # 9 – 11 Identify each of the following numerical values as either: (P) Parameter or (S) Statistic

_____ 9. of a company’s employees the opinion of just those that were there on time one morning about what they thought of a new training program.

_____ 10. in a study about a small company of 25 employees, the range of their employee’s salaries

_____ 11. in a study about the value of American homes in 2012, the average decrease of all the homes sold in Gwinnett.

TYPES OF SAMPLES

12. Random sample:

13. Stratified sample:

14. Cluster sample:

15. Systematic sample:

16. Convenience sample:

Choose which sampling technique is used.

(R) Random (STR) Stratified (CLS) Cluster (CON) Convenience (SYS) Systematic

- _____ 17. There are 250 seventh graders and 300 eighth graders at Generic Middle School. We ask 45 seventh graders and 50 eighth graders how many siblings they have to compare the two groups.
- _____ 18. I ask all freshmen, no sophomores, no juniors, and all seniors if they prefer Vanilla or Cherry Coke (these four groups are my only four groups) to create a study of what should be in the vending machines.
- _____ 19. I ask everyone in my 5th period class who has more than one computer at home in a study about all of my students for the year.
- _____ 20. I collect data from every 15th student on my list of the entire school population.
- _____ 21. After using a random number table to generate two-digit numbers, I decide on 10 people to choose from the population.

Rank the sampling types in order from what would usually be the WORST to BEST representation of a POPULATION. Provide brief explanations (especially if the ranking depends on the study).

(R) Random (STR) Stratified (CLS) Cluster (CON) Convenience (SYS) Systematic

TYPES of STUDIES and DATA COLLECTION METHODS

1. **Observational:**

2. **Experimental:**

Treatment Group:

Control Group & Placebo:

3. **Simulations:**

4. **Census:**

5. **Sampling:**

Choose the type of Study that is most likely to be used (each is used just once).

(E) Experimental (SIM) Simulation (C) Census (SMP) Sampling (O) Observational

_____ 6. You want to know how many pets the teachers at Phoenix High School own.

_____ 7. A drug is given to 15 patients and a placebo to another group to determine its effect on an illness.

_____ 8. You are doing a study at a mall in which you are counting the number of men that wash their hands after using the restroom.

_____ 9. You want to know the g-forces a person would experience during a fall from a 90 foot high bridge into a lake.

_____ 10. You need data on the average number of hours worked per week by an American teenager with a part-time job.

11. Define Data Types.

a. Qualitative:

b. Quantitative:

For numbers 12 - 20 choose (QL) Qualitative or (QN) Quantitative

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|------------------------------------------------------|----------------------------------------------------------------|
| ___ 12. The colors of automobiles on a used car lot. | ___ 17. The amount of fat grams of 24 different cookies. |
| ___ 13. The number of seats in a movie theater | ___ 18. The years the Olympics were held in the United States. |
| ___ 14. Numbers on shirts of a girls' soccer team. | ___ 19. Marriage status (married, single, divorced). |
| ___ 15. Ages of the students at North High School. | ___ 20. Social Security Numbers of the employees of a school. |
| ___ 16. The temperatures of 30 refrigerators. | |

11. Bias:

- **Sampling Bias:**

Which would most likely be the **best representative sample** and which would be the **worst sample** to use in determining the voting preference for the next president of the U.S. in the city of Lawrenceville?

- A. A reporter asks everyone in front of the court house who they plan on voting for and keeps a record.
- B. An analyst gets a spreadsheet list from public records of a telephone number of each resident of the city and has the computer randomly sort the list and calls the first 100 residents to ask their preference.
- C. A surveyor leaves a survey at the front of all of the restaurants in the city to ask customers their preference.
- D. A surveyor asks all of the students at the local middle school their preference.

- **Non Response Bias:**

Explain why looking on the internet at reviews of a product may suffer from a Non-Response Bias.

- **Response Bias:**

Are there any concerns of Response Bias in the following survey questions?

- What is wrong with your current school?
- To improve education, should taxes be raised to fund building more schools?
- Why are teen age drivers dangerous?
- How long does it take you to get to school?