Sec 7.1 – Inferences & Conclusions From Data
Statistical Studies & Definitions

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

_____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.


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?