

Experimental Design Class Work (Data Collection Methods)

🦋 **Objective:** You will be able to understand statistics as a process for making inferences, and recognize the purposes and differences among study types and sampling techniques.

☆ **Four Types of Studies/Data Collection Methods**

★ **Observational Studies**

- The researcher DOES _____ and _____ characteristics of interest.

- The researcher DOES NOT _____.

Example: Researchers observed a room of people to determine if age had any correlation between who each person decided to interact with.

★ **Experiments**

- The researcher DOES _____ to part of the sample/population at interest

Example: Researchers performed an experiment on forty students. Twenty students were allowed to work in groups on problem-solving tasks, while the other twenty were instructed to work individually. The twenty who worked in groups scored higher on a summative exam than the twenty who had to work individually.

★ **Simulations**

- A _____ is used to _____ the conditions of a situation or process.

- Simulations are often used to study situations that are _____, _____, _____, and/or _____.

Example: Acura manufacturers use simulations with dummies to study and make improvements on the safety features of Acura vehicles.

★ **Surveys**

- The researcher DOES _____ to investigate the characteristics of the sample/population at interest

Example:

*When a survey is administered to a population, it is called a _____.

*When a survey is administered to a sample, it is called a _____.

☞ Which do you think is often more practical, and why?

✍ Consider each study. Which method of data collection would be the most appropriate for each? Support your reasoning.

1. A study of the effects on cashews improving one's mood

2. A study of how rats approach a maze

3. A study of how United States citizens feel about Donald Trump running for president

4. A study of the effects of lengthening the time a traffic light stays green on accidents at a certain intersection

5. A study of which frozen yogurt flavor is preferred by teenagers at a local shop

*6. Create any situation that could be studied. Then state which type of data collection would be most appropriate, and why.

➡ What does the term "biased" mean to you?

	Biased/Unbiased & Why
A. Politicians from N.Y. were surveyed about a certain national policy.	
B. Every 5 th person at a dentist office was surveyed on how often they floss.	
C. The first ten people who signed up to work for a soup kitchen were surveyed about how often they do community service work.	

★ If a study were biased, the results would be _____.

★ In order to be sure that the data collected is unbiased the _____ must be _____ of the entire _____.

Of course, each data collection method has its pros & cons. Create a short advertisement/slogan for the study type you are assigned, highlighting why it "is the best."

If breakfast is your favorite meal, you are assigned...

Observational Studies

If lunch is your favorite meal, you are assigned...

Experiments

If dinner is your favorite meal, you are assigned...

Simulations

If you have two favorite meals, you are assigned...

Census Survey

If you do not have a favorite meal, you are assigned...

Sampling Survey