

## Data Collection Methods:

1. Observation: collect information on what you can see, hear, touch, etc. Ex: record color of cars who are tardy to see if car color determines if a student will be tardy. Note: No interference, just observe and write down. Used for studying one group.
2. Experiment: control at least one part. Ex: Have one group drink orange juice before bed and a second group drink no orange juice to see if drinking orange juice affects how long people sleep. Used for comparing at least two groups.
3. Survey: ask questions and record responses. Ex: Approach random people on the street and ask how many hours of tv per week they watch. Used for studying one group.
4. Simulation: computer/machine representation without having to actually experiment. Good for expensive things like rocket launch or for unethical things like making someone stay up for 100 hours in a row.

## Other key words:

Population: entire group you want to know about.

Census: ask or get data from *everyone* in the population. Ex. Ask every student in the school if their tablet was broken. Usually too expensive and time consuming to use this option.

Sample: Ask or get data from a “few” people in a group and use their answers to make a conclusion about the whole group. Ex: Ask 20 random students their favorite food and use this data to make an assumption about the whole school’s favorite food.

Random Sample: Everyone in the population has equal chance of being picked. (Best choice if possible!)

Systematic Sample (not random): Record or test every 10<sup>th</sup> (or 20<sup>th</sup> or 23<sup>rd</sup>, etc) item or person. Ex: Record the color socks of every 18<sup>th</sup> person who walks in to Kroger and use this data to make an assumption about the color socks of all Kroger customers.

Convenience Sample (not random): Just ask the people nearby who are conveniently available. Ex: Ask my 10 closest neighbors what they think about Michigan road conditions to make an assumption about what all Michigan people think about the roads.

Bias: questions worded poorly so the responder feels pressure to answer a certain way or unfairly picking who will participate. This can affect any type of data collection, but has the most effect on Surveys.