

### Quick Review

#### Sampling Types:

- Voluntary Response Sample  
Consists of people who choose themselves by responding to a general invitation.
- Convenience Sample  
choosing individuals from the population who are easy to reach.
- Simple Random Sample (size  $n$ ).  
Chosen in such a way that every group of  $n$  individuals in the population has an equal chance to be selected as the sample.
- Stratified Random Sample  
Classify the population into similar (homogeneous) groups called strata and do an SRS within each strata. Combine to form a complete sample.
- Cluster Sample  
Classify the population into groups of individuals that are located near each other (clusters). then choose an SRS of the clusters (sample entire cluster) and combine. ideal = heterogeneous and representative of the population.
- Systematic Random Sample  
members are selected from a random starting point at a regular (fixed) interval.
- Multi-stage Sample  
Combines multiple types of sampling methods.

#### Sources of Bias:

- Non-Response Bias  
(\*not voluntary response) occurs when individuals chosen for the sample cannot be contacted or refuse to participate
- Response Bias  
a systematic pattern of inaccurate answers in a survey. people lie, misremember, make up answers.
- Undercoverage  
occurs when some members in a population cannot be chosen in a sample.
- Wording of Questions  
most important influence!  
\*leading questions      \*confusing questions

#### 4 Principles of Design:

1. Comparison: Compare 2+ treatments.
2. Random Assignment: describe how you assign experimental units to treatments.
3. Control: hold something constant for all experimental units.
4. Replication: use enough experimental units per treatment so that treatment effects can be distinguished from chance differences between the groups.

Factors:

explanatory variable(s) of treatments

Levels: magnitude or types of values per factor

Treatments: a specific condition applied to the individuals in an experiment

Experimental Units/Subjects: the (collection of) individuals to which treatments are applied.  
humans

#### Completely Random Design:

the experimental units are assigned to the treatments completely by chance.

#### Blocking:

the random assignment of experimental units to treatments is carried out within each block (groups of similar experimental units in a pertinent way).

#### Matched Pairs:

- a type of blocking: (compares 2 treatments)
- 1) 1 subject gets both treatments in a random order
  - 2) 2 similar subjects each get one treatment (different).