

Section 1.6

The Design of Experiments

Definitions

- Experiment = a controlled study conducted to determine the effect that varying one or more explanatory variables (factors) has on a response variable.
- Treatment = any combination of the values of each factor.
- Experimental Unit = A person, object, or some other well-defined item to which a treatment is applied (aka "subject")

Definitions

- Control Group = serves as a baseline treatment that can be used to compare to other treatments
- Placebo = an innocuous medication, such as sugar tablet, that looks, tastes, and smells like the experimental medication
- Blinding = refers to nondisclosure of the treatment an experimental unit is receiving

Definitions

- Single-Blind Experiment = One in which the experimental unit (or subject) does not know which treatment he or she is receiving
- Double-blind = means that neither the experimental unit nor the experimenter knows what treatment is being administered to the experimental unit.

Definitions

- Completely Randomized Design = one in which each experimental unit is randomly assigned to a treatment.

Definitions

- Matched-Pairs Design = an experimental design in which the experimental units are paired up. The pairs are matched up so that they are somehow related (same person before and after a treatment, husband and wife, same geographical location)

Definitions

- Blocking = Grouping similar (homogeneous) experimental units together and then randomizing the experimental units within each group to a treatment. Each group of homogeneous individuals is called a block.

Definitions

- Randomized Block Design = used when the experimental units are divided into homogeneous groups called blocks. Within each block, the experimental units are randomly assigned to treatments.