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MAT380

Introduction to Experimental Design

Simple random sample: A method in which all possible samples of n objects are equally likely to occur

Stratified sampling: The population is divided into groups based on some characteristic. Then, within each group, a SRS is taken. In stratified sampling, the groups are called strata.

Cluster sampling: Every member of the population is assigned to one, and only one group. A sample of clusters is randomly chosen and only individuals within sampled clusters are surveyed.

Experimental Design: A well-designed experiment includes design features that allow researchers to eliminate extraneous variables as an explanation for the observed relationship between the independent and dependent variable.

Types of design

- 1.) Completely randomized design
 - Subjects are randomly assigned to a treatment

- 2.) Randomized block design
 - The experimenter divides subjects into subgroups called blocks. Then subjects within each block are randomly assigned to treatment conditions. Because this design reduces variability and potential confounding, it produces a better estimate of treatment effects.

- 3.) Matched pairs design
 - A special case of blocking. It is used when the experiment has only two treatment conditions, and subjects can be grouped into pairs based on some blocking variable. Then, within each pair, subjects are randomly assigned to different treatments.