

Section 1.4

PART II

Random Sampling & Random Assignment

② Cross-sectional Observational Study.

Gathers data in a single moment in time.

③

Longitudinal Observational Study

Gathers data into the future!

① Retrospective Observational Study: Use data gathered previously. Ah, nostalgia!

Observational
Make inferences about population characteristics, Gather data, but don't interfere!

Types of Statistical Studies.

Experimental
Make inferences about the effects of an experimental treatment.

Apply a treatment & observe effects.

The Problem with experiments.

Confounding occurs when effects are due to causes that include the treatment and other factors.

Sometimes the treatment is not the cause of some effect!

A controlled experiment creates similar groups & treatment is given to treatment groups (at various levels). A placebo, or no treatment at all, is given to control groups. When a treatment improves significantly more than a control group, then we may infer that the treatment is the cause.

Ex: a little wine every night is associated w/ better health. Is it the wine? Wine drinking is associated w/ → higher education → higher income. These are confounding variables

Double Blinding: patients & workers don't know what group patients are in.

Blinding: members don't know what kind of group they're in.