



RESEARCH

Research Methods and Analysis

Lecture 10

Analytic Experimental Studies

Quasi Design

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Analytic

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graph TD; A[Analytic] --> B[Observational]; A --> C[Experimental]; B --> D[Cohort]; B --> E[Cross-Sectional]; B --> F[Case Control]; C --> G[Randomize]; C --> H[Quasi];
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The diagram is a hierarchical flowchart. At the top level is a purple-bordered box labeled 'Analytic'. A vertical line descends from this box and splits into two horizontal lines. The left horizontal line leads to a light green-bordered box labeled 'Observational'. The right horizontal line leads to a light blue-bordered box labeled 'Experimental'. From the 'Observational' box, a vertical line descends and splits into three horizontal lines leading to three light green-bordered boxes: 'Cohort', 'Cross-Sectional', and 'Case Control'. From the 'Experimental' box, a vertical line descends and splits into two horizontal lines leading to two light blue-bordered boxes: 'Randomize' and 'Quasi'. All boxes have a double border effect and are set against a light gray background.

Observational

Experimental

Cohort

Cross-Sectional

Case Control

Randomize

Quasi

Experimental

Randomized

Quasi

is random assignment used?

yes

no

**randomized or
true experiment**

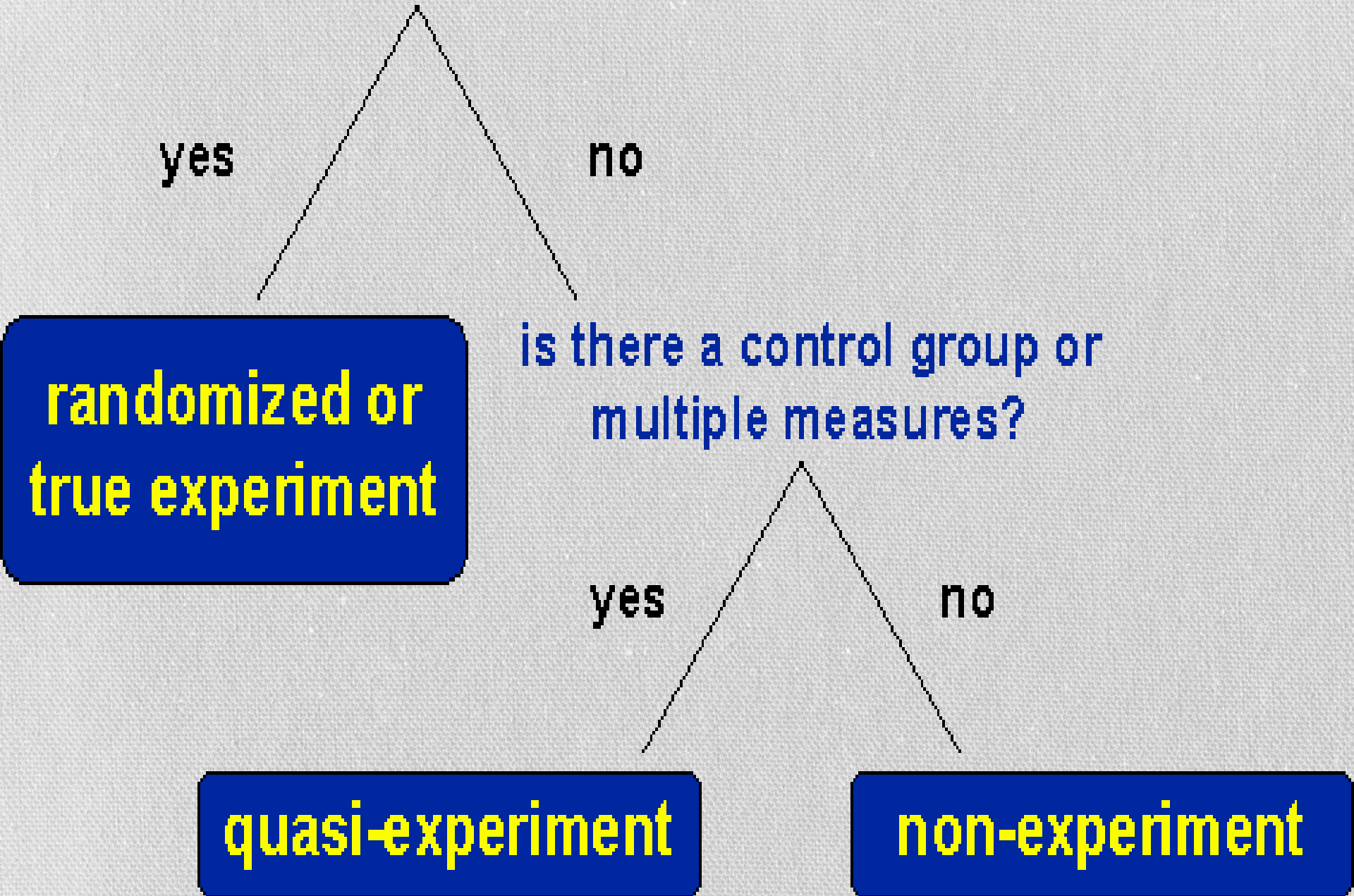
is there a control group or
multiple measures?

yes

no

quasi-experiment

non-experiment



Quasi Study



- A quasi-experiment is an empirical study that is used to estimate the casual impact of an intervention on its target population. It is similar to randomized controlled trail but does not have the element of randomization on treatment and control groups. In its place, the quasi-experiment allow researcher to control the research by using some criterion other than random assignment such as eligibility cutoff mark and etc., therefore, have control over the research. The main concern is in regard to internal validity because the treatment and control groups may not comparable at the baseline. Quasi means “sort of” so a quasi-experiment is a “sort of” experiment. Although quasi-experiment lacks key components of a true experiment, but it includes pre and post design test, a treatment group and control group, random assignment of a research participants. The pre and post design with both a treatment group and control group makes quasi-experiment an ideal method for evaluation of a cause and effect.

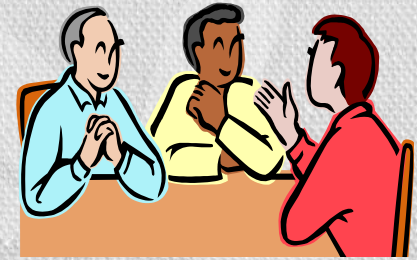
Designs



1-Non-Equivalent Groups Design: This design includes an existing group of participants who receive a treatment and another existing group of participants to serve as a control or comparison group. Participants are assigned to conditions treatment or control conditions along with all the others in their existing group.

- Envision if we wanted to do a study to compare student performance in advance math class with student performance in a standard regular math class. Imagine further that we scheduled two sections of the course, let students sign up for which one they wanted, and then taught one using advance math and the other using regular math. Note that this study includes a manipulated independent variable, but it lacks random assignment of participants to conditions. The problem with this approach is that there might be differences between the two groups of students other than the style of teaching to which they were exposed.

Designs Continues...



2-Pretest-Posttest Design: This design include a single group of participants to be measured on the dependent variable both before and after the manipulation of the independent variable.

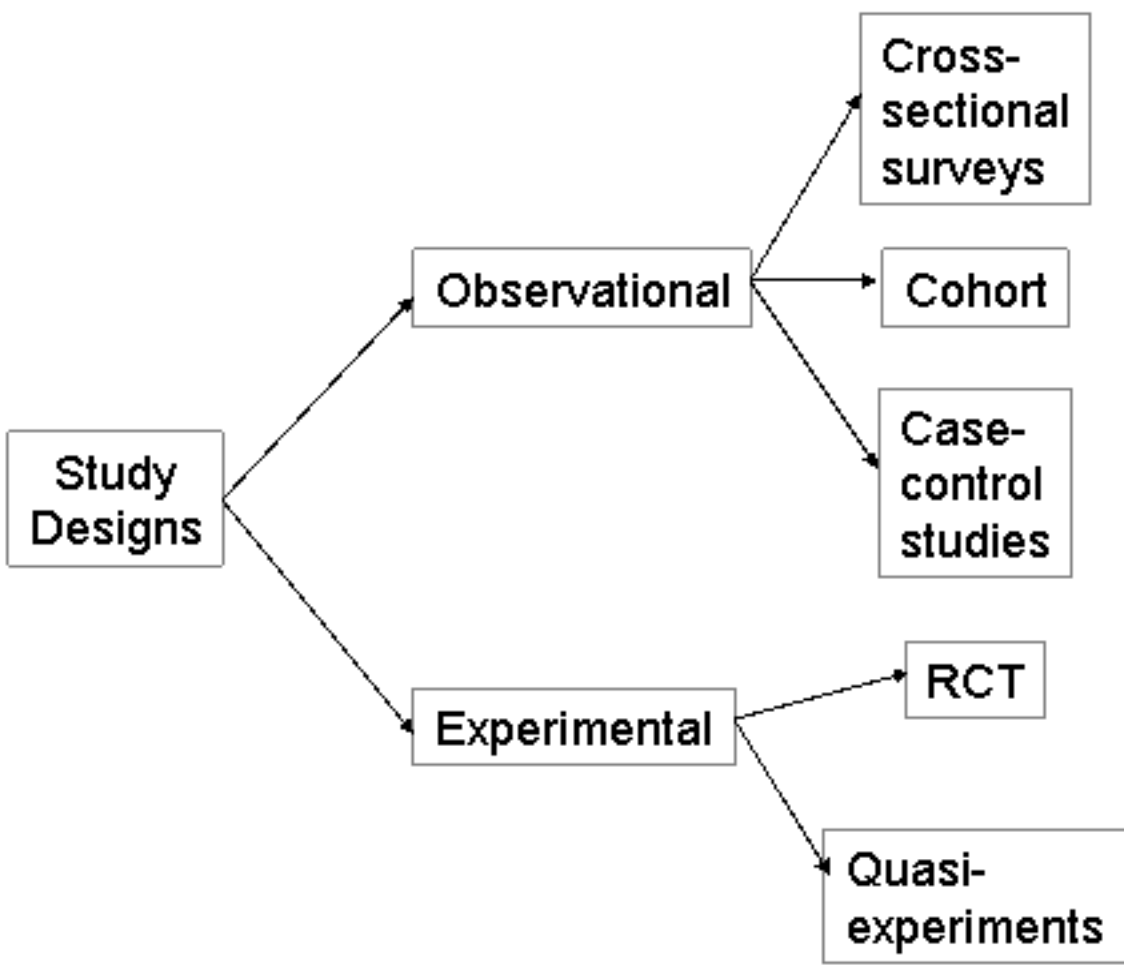
- Imagine there is a group of 100 sixth graders is given a test of their attitudes toward drugs, this is the pretest. Then, a week later, a police officer comes to school and presents an anti-drug program (complete with decorated car and performing police dog), this is the treatment. Then, in another week, the students are given another test of their attitudes toward drugs, this is the posttest. Obviously, the substantive question here is whether the students' attitudes toward drugs change after being presented with the anti-drug program.

Designs Continues...



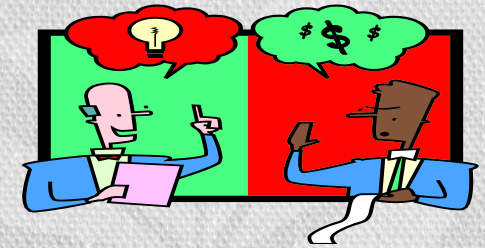
3-Interrupted Time-Series Designs: This design includes a set of measurements of a variable taken at various points in time.

- Visualize if we could measure the moods of the students in a class each day throughout the semester, and we could see how people's moods changed (or did not change) over time. In an interrupted time-series design, a time series like this (the dependent variable) is interrupted (usually near the middle) by the manipulation of the independent variable.



Advantages	Disadvantages
Quick; can cover whole population, giving representative information whether or not people are seeking care	Based mainly on self-report (biases?); diagnostic information usually inaccurate; can't establish causal sequence
Prospective, so can establish causal sequence; can estimate incidence	Time-consuming; costly; attrition of cohort?
Relatively cheap way of focusing on causal factors	Requires recall of past events (inaccurate?); controls not equivalent to cases
Controls for all main forms of bias; good for both etiological and evaluative research	Ethical concerns in etiological applications; Often uses selected populations: issue of generalizability?
May be more practical than RCT: can use "natural experiments"	Allocation bias often significant (exp'tal and control groups not equivalent)

Advantages and Disadvantages



Advantages

- It can be replaced randomization experiment easily.
- It minimizes risks of external validity.
- The finding of one quasi-experiment may be applied to other subjects and settings and allowing for generalizations to be made about the population.
- It is efficient in longitudinal research that involves longer time period that can be followed to a different environment.
- It gives researchers the freedom to control the experiment to enhance ethics and accuracy.

Disadvantages

- It estimates the impact of contamination by confounding variables.
- It lacks of random assignment.
- The lack of randomization poses many challenges for researchers for internal validity.
- The lack of randomization also makes it harder to rule out confounding variable.
- The lack of randomization data, conclusion and casual relationship are difficult to be determined and are threats to internal validity.

Real-life Example

[Psychiatr Serv](#). 2014 May 15. doi: 10.1176/appi.ps.201300380. [Epub ahead of print]

Full-Service Partnerships Among Adults With Serious Mental Illness in California: Impact on Utilization and Costs.

[Gilmer TP](#), [Stefancic A](#), [Tsemberis S](#), [Ettner SL](#).

Abstract

- **OBJECTIVE** California's full-service partnerships (FSPs) provide a combination of subsidized permanent housing and multidisciplinary team-based services with a focus on rehabilitation and recovery. The goal of the study was to examine whether participation in FSPs is associated with changes in health service use and costs compared with usual care.
- **METHODS** A quasi-experimental, pre-post, intent-to-treat design with a propensity score-matched contemporaneous control group was used to compare health service use and costs among 10,231 FSP clients and 10,231 matched clients with serious mental illness who were receiving public mental health services in California from January 1, 2004, through June 30, 2010.
- **RESULTS** Among FSP participants, the mean annual number of mental health outpatient visits increased by 55.5, and annual mental health costs increased by \$11,725 relative to the matched control group. Total service costs increased by \$12,056.
- **CONCLUSIONS** Participation in an FSP was associated with increases in outpatient visits and their associated costs. As supportive housing programs are implemented nationally and on a large scale, these programs will likely need to be more effectively designed and targeted in order to achieve reductions in costly inpatient services.

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Todd, P. Gilmer, Ph.D.; Ana Stefancic, M.A.; Sam Tsemberis, Ph.D.; Susan L. Ettner, Ph.D. (2014). **Full-Service Partnerships Among Adults With Serious Mental Illness in California: Impact on Utilization and Costs.** *Psychiatric Services* 2014; doi: 10.1176/appi.ps.201300380

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