Tip Sheet: Longitudinal Design

Basics

Longitudinal Design is: A correlational research study that involves repeated observations of the same variables over long periods of time (often decades).

Key Question: How changes over time on outcome differ based on program participation?

Study Designs

Some designs lend themselves to longitudinal evaluations better than others. Biggest issue for this design is attrition.

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<tr>
<th>Study Design</th>
<th>Pros</th>
<th>Cons</th>
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<td>Cohort or Sequential Studies:</td>
<td>“Gold standard,” generalizable, most even distribution of confounders; timing and directionality established Useful for exploratory studies, not expensive or time-consuming</td>
<td>Unscheduled sample attrition with the passage of time may cause biases in the data since not all individuals are equally likely to be lost Limited generalizability because it was not a randomized. Difficult to account for and interpret variation</td>
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<td>Cross-sectional Studies:</td>
<td>Provides a snapshot Focus on drawing conclusions/inferences from existing differences between groups Can use large number of subjects because its not geologically bound Relatively inexpensive and takes little type to conduct</td>
<td>Studies cannot be utilized to establish cause and effect No follow up findings Unequally distributed confounders</td>
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<td>Panel Studies:</td>
<td>Simple and inexpensive Allows more flexibility with population surveyed</td>
<td>Cross-sectional cons, PLUS: changes in distributions in population over time not accounted for</td>
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<td>Retrospective Studies:</td>
<td>Can provide insight even when it’s “too late” Increased efficiency and reduced cost</td>
<td>Instrument deficiencies-reliability &amp; bias. Obtaining representative samples of cases and controls</td>
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Steps to Keep in Mind:

- **Sampling:**
  - Pure: where every individual should be measured on every single occasion
  - Mixed: where not all individuals are designed to be measured on all occasions
- **Measurement:** Well-defined method of collection
  - Nominal, Ordinal, Interval, and Ratio
- **Statistical Models:** How well it works- analysis stage
  - Time Scales: Historical, Age, Events, Patterns
  - Developing Standards and Norms: Reference population
  - Tracing and Gaining Participation: Locating participants
  - Piloting and Quality Control: Questionnaires and Procedures
  - Coding and Documentation: Atypical or suspicious values
  - Confidentiality and Informed Consent: Anonymity and Cross-checking

Modeling Study Data

Multilevel Growth Modeling: Useful analytic method for longitudinal designs because it effectively models trends of a continuous variable over time

Process-Use Design

Anyone performing a longitudinal evaluation should be interested in process use. This examines how program staff and organizations change as a result of participating in an evaluation, independent of the evaluation findings.

 Measures:

1) Whether an evaluation contributed to new knowledge
2) Changes in feelings and attitudes about evaluation
3) Emergent behaviors regarding institutionalizing evaluation

Shoestring Evaluation

Sometimes you don’t have the luxury of:

| Time          | Evaluator called in late in the game
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<td>Longitudinal, or for end-of-project evaluation</td>
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<td></td>
<td><strong>Budget</strong></td>
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<td>Not enough $ to conduct optimal data collection instruments</td>
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<td>Not enough $ to reconstruct baseline data or control groups</td>
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<td></td>
<td><strong>Data</strong></td>
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<td>No baseline data Systemic reporting biases</td>
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<td>Poor record-keeping</td>
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But you can address these problems!

- Modify evaluation design, use creative ways to find or recreate data, use multiple methods, negotiate with key players...
- If you have no choice, admit your threats to validity and stand by your results

Shoestring Evaluation Approach Overview

Step 1: Planning and scoping the evaluation
A. Defining client information needs
B. Defining the program theory model
C. Identifying the time, budget, and data constraints to be addressed by the Shoestring Approach

Step 2: Addressing budget constraints
A. Modify evaluation design
B. Revise sample
C. Rationalize data needs
D. Economical data collection methods
E. Look for reliable secondary data

Step 3: Addressing time constraints
All Step 2 tools plus:
F. Commissioning preparatory studies
G. Revising format of project records to include critical data for impact analysis
H. Hand-held computers to record survey responses
I. Optical scanning

Step 4: Addressing data constraints
A. Reconstructing baseline data
B. Recruiting control groups
C. Working with non-equivalent control groups
D. Collecting data on sensitive topics or from difficult to reach groups
E. Multiple methods

Step 5: Assessing the strengths and weaknesses of the evaluation design
A. Identifying threats to validity of quasi-experimental designs
B. Assessing the adequacy of qualitative designs
C. An integrated checklist for multi-method designs

Step 6: Addressing the identified weaknesses and strengthening the evaluation design
A. Objectivity/credibility
B. Replicability/dependability
C. Internal validity/credibility/mathemticity
D. External validity/transferability/fittingness
E. Utilization/application/action orientation

Examples & Models:

References
- http://libguides.usc.edu/content.php?pid=83009&sid=818072