Cross-Sectional Survey Design

In: Encyclopedia of Survey Research Methods

By: John Hall
Edited by: Paul J. Lavrakas
Book Title: Encyclopedia of Survey Research Methods
Chapter Title: "Cross-Sectional Survey Design"
Pub. Date: 2011
Access Date: September 21, 2016
Publishing Company: Sage Publications, Inc.
Print ISBN: 9781412918084
Online ISBN: 9781412963947
DOI: http://dx.doi.org/10.4135/9781412963947
Print page: 173

A cross-sectional survey collects data to make inferences about a population of interest (universe) at one point in time. Cross-sectional surveys have been described as snapshots of the populations about which they gather data. Cross-sectional surveys may be repeated periodically; however, in a repeated cross-sectional survey, respondents to the survey at one point in time are not intentionally sampled again, although a respondent to one administration of the survey could be randomly selected for a subsequent one. Cross-sectional surveys can thus be contrasted with panel surveys, for which the individual respondents are followed over time. Panel surveys usually are conducted to measure change in the population being studied.

Types Of Cross-Sectional Surveys

Cross-sectional surveys can be conducted using any mode of data collection, including telephone interviews in which landline telephones are called, telephone interviews in which cell phones are called, face-to-face interviews, mailed questionnaires, other self-administered questionnaires, electronic mail, Web data collection, or a mixture of data collection modes. A variety of sampling frames can also be used to select potential respondents for cross-sectional surveys: random-digit dialing frames, lists of addresses or (landline) telephone numbers, lists of cell phone numbers, lists of businesses or other establishments, and area probability frames. They may also use a multiple-frame approach to sampling.

Examples of cross-sectional surveys include the American Community Survey, the Decennial Census long form, and many political and opinion polls.

Design Considerations

The principles of cross-sectional survey design are those that one would normally think of for survey design in general. Designing a panel survey would be similar, except that provisions would need to be made in sampling, operations, and questionnaire design in light of the need to maintain contact with respondents and collect repeated measurements on variable of interest. Some of the considerations particular to panel surveys could apply to a cross-sectional survey that is to be repeated in the future.

The steps in designing a cross-sectional survey may be thought of as (a) conceptualization (or research design), (b) sample design, (c) questionnaire (or other data collection instrument) design, and (d) operations planning.

Conceptualization

Conceptualization includes the following:

1.
- Defining the study population
2.
- Formulating hypotheses, if any, to be tested
3.
- Defining the outcome (dependent) variables of interest and important classification or independent variables
4.
- Specifying levels of precision, such as standard errors, confidence intervals ("margins of error"), or statistical power
5.
- Deciding whether the survey will be repeated
6.
- Establishing cost limits
7.
- Specifying whether the nature of the data to be collected—cost or other considerations—requires a certain data collection mode

These components of the conceptualization process should define the parameters for decisions made later in the design phase, and of course can be interrelated. The researcher should also be aware that as the design progresses, some initial decisions may have to be revisited.

While the process of conceptualization occurs in designing a study, it may not always occur in a neat and orderly fashion. A researcher may be bidding in response to a request for a proposal (RFP) or have been approached by a client with a survey design in mind. In these cases, the decisions mentioned previously may have been made and not subject to much discussion, even if the researcher thinks the design could be improved considerably.

Sample Design

The sample design builds on the process of conceptualization. Steps in designing the sample include the following:

1.
- Selecting (or planning to construct) a sampling frame
2.
- Defining the strata, if any, to be employed
3.

- Deciding whether the sample is to be a single-stage, clustered, or multi-stage design, and 4.
- Determining the sample size

The sampling frame (or alternative frames) should provide adequate coverage of the study population. The nature of the frame may be determined by the study population itself, cost, or the nature of the data to be collected. In a clustered or multi-stage design, frames will be needed at each level of sample selection.

Stratification can be used to ensure proportionate representation or to allow oversampling. Multi-stage and clustered designs are usually used when the costs of data collection are high. The sample size required is a function of the parameters being estimated, the precision desired, and the expected effects on sampling error of stratification, oversampling, and clustering.

Questionnaire Design

The questionnaire design also flows from the conceptualization process. The questionnaire or other instrument translates the dependent and independent variables into specific measurements. Often, questions available from previous studies can be used or adapted; sometimes new items must be developed. Scales to measure attitudes or psychological constructs may be available from the survey research or psychological literature. New items will require cognitive testing and pretests. The form of the questions will depend in part on the mode of data collection: for example, show cards cannot be used in a telephone survey.

Other considerations in questionnaire design include the overall length of the instrument, skip patterns, and the possibility of question ordering effects.

Operations Planning

Operations planning will depend largely on the mode of data collection. Elements of the plan include staffing, scheduling, training, and monitoring.

Telephone and in-person surveys will require a staff of interviewers, supervisors, and perhaps others, such as coders, data entry personnel, and field listers. Programmers and perhaps other information systems (IS) personnel will also be needed. If the data collection is to be done by Web, or by computer-assisted telephone or in-person methods (CATI or CAPI), the IS team may play a larger role.

The schedule for the data collection can be driven by the immediacy of the needs for survey data. Relatively short data collection schedules are often called for. Cross-sectional data can be

affected by seasonally and by events such as natural disasters, wars, terrorist attacks, or even something as mundane as an election or a sports event.

Training and quality control monitoring at all levels, especially of interviewers, can have a great impact on data quality.

- surveying
- Cross-sectional surveys

John Hall

http://dx.doi.org/10.4135/9781412963947.n120

See also

- American Community Survey (ACS)
- Coverage
- Cross-Sectional Data
- Longitudinal Studies
- Mode of Data Collection
- Questionnaire Design
- Panel Survey
- Repeated Cross-Sectional Design
- Sampling Frame

Further Readings

Dillman, D. (2007). Mail and Internet surveys (2nd ed.). Hoboken, NJ: Wiley.

Groves, R. M. , **Fowler, F. J., Jr.** , **Couper, M. P.** , **Lepkowski, J. M.** , **Singer, E.** , & **Tourangeau, R. (2004)**. Survey methodology. New York: Wiley.