

# The SAGE Encyclopedia of Social Science Research Methods

## Sequential Sampling

Contributors: Gary T. Henry

Editors: Michael S. Lewis-Beck & Alan Bryman & Tim Futing Liao

Book Title: The SAGE Encyclopedia of Social Science Research Methods

Chapter Title: "Sequential Sampling"

Pub. Date: 2004

Access Date: October 14, 2013

Publishing Company: Sage Publications, Inc.

City: Thousand Oaks

Print ISBN: 9780761923633

Online ISBN: 9781412950589

DOI: <http://dx.doi.org/10.4135/9781412950589.n914>

Print pages: 1027-1028

This PDF has been generated from SAGE Research Methods. Please note that the pagination of the online version will vary from the pagination of the print book.

<http://dx.doi.org/10.4135/9781412950589.n914>

Sequential sampling involves drawing multiple samples and administering them one after another until, cumulatively, they meet the objectives of the survey. Frequently, it is difficult or impossible to know in advance what the response rate or cost per interview will be for a particular survey, especially for special populations or when response patterns are changing. In these cases, it is difficult to accurately project the size of the sample that must be drawn in order to meet research objectives such as obtaining the desired number of completed responses or staying within the budget for data collection. Sequential sampling relies on the principle that probability samples drawn from the same study population can be combined and estimates calculated as if they were initially drawn as a single sample. Sequential sampling allows researchers to control more precisely the number of completed responses obtained by a survey without unduly compromising the criteria of probability selection or absence of nonresponse (Kish, 1965).

Sequential sampling is often implemented by drawing three samples: an initial sample of one-half the size that could be optimistically expected to meet the study objectives; an additional sample of the same size as the first drawn from the same population; and a final, supplemental sample that is drawn from the same study population. The sample that is optimistically expected to meet the study objectives can be calculated using somewhat but not too ambitious response rates. This is generally done by dividing the response rate into the number of completed responses desired by the survey and using this as the optimistic sample size for data collection ( $n$

$n$

$= n/r$ , where  $n$

$n$

is the optimistic size of the sample needed for data collection,  $n$  is the number of completed responses desired, and  $r$  is an optimistic estimate of the response rate). In practice, the first sample ( $n$

$n$

$/2$ ) is fully administered using all of the callback procedures specified in the survey design. When the data collection for the first sample is nearly completed, the second

sample is placed in the field and data collection proceeds as planned. Researchers calculate estimates of nonresponse and cost per interview from the first sample. Using these estimates, the size of the third sample is calculated, the third sample is drawn from the same study population, and it is placed in the field for data collection according to the survey design. Sequential sampling allows researchers to hedge their bets against uncertain outcomes.

Although it provides obvious benefits, sequential sampling can increase costs of field operations and make survey administration more difficult. A common problem with sequential sampling has been the interruption of field operations while the results from the first sample were tabulated. The use of the second sample in the steps above minimizes the disruption to field operations. In addition, it is now common for interviewers to enter data directly into automated files, reducing the time needed for the calculations that are required to establish the size of the final sample.

Although the three-sample, sequential sample, described above, is generally adequate for obtaining cross-sectional survey data, the technique has [p. 1027 ↓] been expanded in two ways. First, telephone survey administrators often obtain multiple samples or replicates from commercial sampling firms that are administered as sequential samples, usually with several replicates being administered at the beginning of the survey and additional samples being activated for data collection as response rates are estimated from the first batch of samples. Because commercial sampling firms constantly update their files of useable telephone numbers and charge set-up fees for each separate sample, many telephone survey units routinely obtain excess samples in several replicates to maximize control over the uncertainties of data collection while controlling their costs.

Second, sequential sampling techniques are employed in tracking polls or rolling sample surveys that allow both cross-sectional and time-series estimates from the study population. Tracking polls are used primarily in political campaigns by candidates, media outlets, and scholars (John, 1989; Moore, 1999; Rhee, 1996). Tracking polls allow estimates of the current level of support for a candidate and change in the support over time (Green, Gerber, & De Boef, 1999). Usually, a sample replicate is opened for data collection every day, and candidate support is estimated as 3-or 5-day moving averages. Rolling sample surveys use similar techniques to investigate a broader range

of social science research questions, such as the dynamics of opinion change (Henry & Gordon, 2001).

Gary T. Henry

<http://dx.doi.org/10.4135/9781412950589.n914>

#### REFERENCES

Green, D. P. , Gerber, A. S. , and De Boef, S. L. Tracking opinion over time: A method for reducing sampling error. *Public Opinion Quarterly* vol. 63 pp. 178–192 (1999).

Henry, G. T. and Gordon, C. S. Tracking issue attention: Specifying the dynamics of the public agenda. *Public Opinion Quarterly* vol. 65 no. (2) pp. 157–177 (2001).

John, K. E. The polls—A report. *Public Opinion Quarterly* vol. 53 pp. 590–605 (1989).

Kish, L. (1965). *Survey sampling*. New York: Wiley.

Moore, D. W. (1999, June/July). Daily tracking polls: Too much “noise” or revealed insights? *Public Perspective* , pp. 27–31.

Rhee, J. W. How polls drive campaign coverage. *Political Communication* vol. 13 pp. 213–229 (1996).