

In my opinion, the bible for the design of surveys is Don A. Dillmans' *Mail and Internet Surveys* (2000). Below I provide a brief overview.

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SURVEYS

Survey methods can avoid interaction among respondents. The lack of interaction is advantageous if a person's responses can be biased by others' reactions to her statements. The assumption is made that other people influence the responses but not the actual behavior. When the actual behavior can be influenced, it is important to account for this interaction; in such a case surveys would not be appropriate. If this is not the case, alternatives such as experiments or focus groups might be considered. An example is provided by Hofling *et al.*:

In Hofling *et al.* (1966), 33 graduate and student nurses were asked on a questionnaire what they would do if a doctor telephoned and asked that a patient be given medicine. They knew that it was a violation of hospital policy to order medication by phone. Also they were told that they did not know the doctor, that the medicine was not on the authorized list, and that the dosage was twice the

The basic survey methods are mail, telephone, personal interview, and Internet. Combinations of these methods exist, as do other approaches such as computer-led interviews (e.g., Greist *et al.*, 1973). These approaches differ primarily in the amount of interaction among respondents. Thus mail questionnaires (more precisely, self-administered questionnaires) involve less researcher-respondent interaction than do telephone or personal interviews.

The relative merits of the various methods are briefly considered here by examining them against five criteria: cost, speed of response, sampling error, nonresponse bias, and response bias. Details on how to conduct mail and Internet surveys are provided in Dillman (2000). For telephone surveys, see Dillman (1978).

Cost. Mail and telephone surveys are substantially cheaper per respondent than personal interviews. In some cases the personal interview is 3 to 10 times as expensive as mail and telephone surveys. The personal interview is especially expensive when the sampling units are widely dispersed geographically.

Speed. The telephone is the fastest survey method. Many organizations are equipped to have responses fed directly to the computer to immediately obtain summaries. Internet surveys are also fast. Mail surveys are the slowest method, generally requiring at least a month. Personal interviews, although substantially faster than mail, are not as fast as telephone surveys.

Sampling Error. Often, it is difficult to obtain a list of the desired sample. In most situations the advantage lies with the personal interview. Mail surveys suffer because people change addresses. Serious problems occur with telephone surveys; in addition to the fact that people move, some do not have telephones, and others do not list their telephone numbers. The percentage of unlisted numbers is higher in urban areas. For these reasons, the lists for telephone surveys represent only part of the households for general consumer intentions studies. Random digit dialing can be used for reaching the unlisted numbers, but this increases cost substantially and it is a rude way to contact people. In fact, surveys often fail to represent the destined target market.

Nonresponse Bias. The personal interview suffers least from non-response; it is more difficult to refuse someone face to face. Call-backs can be scheduled to ensure a higher probability of reaching the respondent. Although expensive, responses of 90% can sometimes be achieved.

Mail surveys have a serious problem with non-response. For example, general surveys face the problem that almost 10% of the population is illiterate. Fortunately, much research exists on ways to reduce the non-response rate (as summarized in Kanuk and Berenson, 1975; Linsky, 1975; Pressley, 1976). Follow-up has been shown to be an effective way to improve response rates. Monetary incentives up to about one dollar (1985 dollars) have also been found to be effective. (Armstrong, 1975, reviews this literature.) Other useful practices are to use first-class postage stamps for outgoing and return mail (do *not* use business reply postage, Armstrong and Lusk, 1985), to ask short and relevant questions at the beginning, and to enclose an interesting cover letter. Surprisingly, length of questionnaire has a negligible effect. Dillman (2000) provides other useful advice. With techniques like these, one generally expects more than a 50% response rate, and 80% has often been achieved.

It is also possible to *estimate* the non-response bias in mail surveys. This can be done by reaching almost all of a subsample of the non-respondents with a combination of mail, telephone, and personal contacts. The subsample can be used as an estimate for the non-respondents. Another approach is to extrapolate responses across two or more waves. Armstrong and Overton (1977) show how simple extrapolations can reduce non-response bias by half.

Telephone surveys suffer greatly from non-response. Although non-response is reduced substantially by callbacks, even after as many as four callbacks, not-at-homes can be high. Furthermore, it is easy to say “no” on the telephone. Although some studies have achieved refusal rates lower than 5%, the samples were special.

The best way to reduce non-response bias, when one considers both cost and error, is to use eclectic research. One may start, for example, with a mail survey, follow it with three mail follow-ups, and then telephone the non-respondents. Non-response bias can then be estimated by extrapolation and by intensive efforts to contact a small subsample of non-respondents. Of course, some people still will not respond. Simon (1969) says one should not be annoyed at them; the pay for this job is low, and it is a bother. It is nice that so many people *do* respond to surveys.

Response Bias. Although George Gallup argued that personal interviews are most accurate (Gallup, 1976), the research suggests that for most issues the responses from mail, telephone, and personal interviews are similar. Rogers (1976), in a long survey focused mainly on education, obtained similar responses from telephone and personal interviews. Colombotos (1969) and Hochstim (1967) got similar results from mail, telephone, and personal interviews in health surveys.

The responses frequently differ on sensitive issues, such as issues where “looking good” is of concern or where people feel that their response may be used against them. Sudman and Bradburn (1974) provide a thorough analysis of the literature on factors causing such response bias. Corrective procedures are examined in the review by Kalton and Schuman (1982). The following examples show how differences may arise on sensitive topics:

O’Dell (1962) used mail and personal interviews to study consumer behavior. On some questions there were sharp differences: 37% of the people interviewed used hair rinse, while 51% of the mail respondents did so; 17% of the interviewees borrowed money at a bank, compared with 42% of the mail respondents.

Wiseman (1972) compared mail, telephone, and personal interviews. For most questions there were no differences. Differences were found, however, on sensitive issues. For example, for a question on the use of birth control, 75% of Catholic mail respondents were in favor, versus 44% of Catholic respondents interviewed by telephone or in person.

So far, the discussion has considered similarities and differences. But which type of survey is most accurate? Wiseman’s study suggests that mail surveys have an advantage for sensitive issues. This was

verified by Sudman and Bradburn (1974) in their review of 935 studies; self-administered questionnaires (mail) are best for threatening questions. Cannell and Fowler (1963) found mail responses superior to personal interviews in a survey on hospitalization (records were available on the true situation in this study).

The superiority of mail surveys for reducing response bias was expected because there is less researcher-respondent interaction. There is also less possibility for cheating, which may be a problem with telephone and personal interviewers (Roth, 1966). The problems can often be controlled in interview studies by training the interviewers and by monitoring some of the interviews to guard against cheating. These procedures can lead to results that are highly replicable, as shown by the following study.

In **McMillan and Assael (1968)**, two different marketing research firms, Chilton Research and National Analysts, were given identical questionnaires and sampling plans and were asked to conduct independent interview studies on attitudes toward transportation. The responses were remarkably similar.

Projective questions might also serve to improve the capability of the survey methods to forecast sensitive issues.

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