

AN OVERVIEW OF THE SAMPLE SURVEY PROCESS

Surveys have become a widely used and acknowledged research tool in most of the developed countries of the world. Through reports presented by newspapers, magazines, television, and radio, the concept of considering information derived from a relatively small number of people to be an accurate representation of a significantly larger number of people has become a familiar one. Surveys have broad appeal, particularly in democratic cultures, because they are perceived as a reflection of the attitudes, preferences, and opinions of the very people from whom the society's policymakers derive their mandate. Politicians rely heavily on surveys and public opinion polls for popular guidance in mapping out campaign strategies and carrying out their professional responsibilities. Commercial enterprises use survey findings to formulate market strategies for the potential widespread use, distribution, and performance of new and existing products. Television and radio programs are evaluated and scheduled largely in accordance with the results of consumer surveys. Government programs designed to provide assistance to various communities often rely on the results of surveys to determine program effectiveness. Private social organizations obtain information from their members through the use of survey techniques. Libraries, restaurants, financial institutions, recreational facilities, and churches, among many others, make use of polls to solicit information from their constituents and clientele concerning desired services.

As a research technique in the social sciences and professional disciplines, survey research has derived considerable credibility from its widespread acceptance and use in academic institutions. Many universities have established survey research institutes where the techniques of survey research are taught and surveys can be conducted within the confines of propriety and scientific rigor. Students are often encouraged to use survey research for gathering primary data, thereby satisfying the requirement of conducting original research. Professors publish countless articles and books based on the results of funded and unfunded survey research projects.

Despite the broad-based societal acceptance of survey research, there remains a lingering doubt, especially within the general population at large, concerning the reliability of information derived from relatively few respondents purporting to represent the whole. They frequently ask, for instance, "How can fifteen hundred respondents to a survey be said to represent millions of people?" or, "Why should two thousand television viewers dictate to program directors on a national scale what Americans choose to watch?" The answers to these and other such questions lie in the systematic application of the technique of scientific sample survey research.

Survey research involves soliciting self-reported verbal information from people about themselves. The ultimate goal of sample survey research is to allow researchers to generalize about a large population by studying only a small portion of that population. Accurate generalization derives from applying the set of orderly procedures that comprise scientific

sample survey research. These procedures specify what information is to be obtained, how it will be collected, from whom it will be solicited, and how it will be analyzed.

If the researcher needs personal, self-reported information that is not available elsewhere and if generalization of findings to a larger population is desired, sample survey research is the most appropriate method as long as enough general information is known or can conveniently be obtained about the subject matter under investigation to formulate specific questions and as long as the population that is needed to be sampled is accessible and willing to provide self-reported information. The theoretical underpinnings of scientific sample survey research, its procedural applications, and analysis of the data it generates constitute the substance of this book.

Gathering Information through Research

Researchers must be aware that survey research is only one among several methods associated with the process of data collection. The three main techniques used to collect primary data (data collected firsthand, directly from the subjects under study) are survey research, direct measurement, and observation, all of which in one way or another can make use of sampling. Secondary research is a fourth means of data collection. It consists of compiling and analyzing data that have already been collected and exist in usable form. These alternative techniques, when they are not appropriate in and of themselves, can often be used as complements to the survey research process. A brief description of these alternative techniques follows:

- *Secondary research:* Certain data may already exist that can serve to satisfy the research requirements of a particular study. Any study should investigate existing sources of information as a first step in the research process to take advantage of information that has already been collected and may shed light on the study. Sources of secondary information include libraries, government agencies, and private foundations, among others.
- *Direct measurement:* This technique involves testing subjects or otherwise directly counting or measuring data. Testing cholesterol levels, monitoring airport noise levels, measuring the height of a building to make certain it complies with local ordinances, and counting ballots in a local election are all examples of direct measurement.
- *Observation:* A primary characteristic of observation is that it involves the direct study of behavior by simply watching the subjects of the study without intruding on them and recording certain critical natural responses to their environment. For example, a government official can obtain important information about the issues discussed in a speech by observing the audience's reactions to that speech.

However, there is no better method of research than the sample survey process for determining, with a known level of accuracy, detailed and personal information about large populations. Opinions, which are the keys to public policy, are obtainable with defined and determinable reliability only through the survey research process. By combining surveys with scientific sampling, the researcher is using the only method of gaining this information to a known level of accuracy. The survey process is particularly suited to collecting data that can inform the researcher about research questions such as the following:

- How do Americans feel about proposed changes in social security regulations?
- What is the average income of people twenty-five years of age and older whose highest level of completed education is high school?
- What factors influence people's choice of banks?
- What are the reactions among employees of a local factory concerning a newly proposed union policy?
- How do members of the New York State Bar Association feel about capital punishment?
- What do various state legislators think about a proposed mandatory balanced-budget amendment?
- What proportion of drivers observe seat belt laws?
- To what extent has the Latino community in Texas experienced job discrimination?

The particular use for which a survey is conducted determines the informational requirements of that survey. Surveys typically collect three types of information: descriptive, behavioral, and attitudinal.

Surveys frequently include questions designed to elicit descriptive information or facts about the respondent. Such important data as the respondent's income, age, education, ethnicity, household size, and family composition are integral to most sample survey studies. These socioeconomic characteristics provide important information that enables the researcher to better understand the larger population represented by the sample.

In many survey research projects, the researcher is interested in the respondent's behavior. Patterns of transportation use, recreation, entertainment, and personal behavior are often the desired information in sample survey studies. For example, such information as frequency of public transit ridership or use of various types of recreational and entertainment facilities is typical of behaviorally oriented information that can be obtained from sample surveys.

In addition to descriptive and behavioral information, many surveys solicit, as their primary focus, the respondent's attitudes and opinions about a variety of conditions and circumstances. The hallmark of this type of sample survey is the public opinion poll, which seeks opinions and preferences regarding issues of social and political relevance. The primary objective of such studies is to be predictive and future oriented.

Very rarely does a study include only one of the informational categories we have noted. Scientific investigation requires that relationships be identified in terms of descriptive, behavioral, and attitudinal data so that we may fully understand the differential complexities of the population from which a sample has been drawn. For instance, in a political public opinion poll, it is much more desirable to know not only the breakdown of votes for each candidate but also such factors as the voter's political party, age, gender, past voting patterns, and opinion on a variety of key issues. Such a survey requires the researcher to derive information from each of the above categories in one sample survey.

Advantages of Sample Survey Research

Generalizations based on a mere fraction of the total population (a sample) did not gain acceptance until the beginning of the twentieth century, when a researcher for a liquor distillery in England named W. S. Gossett was faced with the problem of testing the quality of his company's product. Testing the plant's output involved tasting, and therefore consuming, the product. Testing the entire output of the plant, or even as few as one in ten bottles, was clearly not economically feasible. Gossett, writing under the pseudonym "Student," developed a theoretical basis for making generalizations about the quality of the plant's product by sampling only a small portion of that output.

The foremost advantage of the sample survey technique, as indicated by Gossett's experience, is the ability to generalize about an entire population by drawing inferences based on data drawn from a small portion of that population. The cost and time requirements of conducting a sample survey are significantly less than those involved with canvassing the entire population. When implemented properly, the sample survey is a reasonably accurate method of collecting data. It offers an opportunity to reveal the characteristics of institutions and communities by studying individuals and other components of those communities that represent these entities in a relatively unbiased and scientifically rigorous manner.

Surveys can be implemented in a timely fashion. That is, the survey project can be organized so that the actual data gathering is performed in a relatively short period of time. Besides the convenience afforded by this approach, there is also the advantage of obtaining a snapshot of the population. Other techniques may involve a longer-term study, during which opinions or facts may change from the beginning of the study to the end.

Well-structured sample surveys generate standardized data that are extremely amenable to quantification and consequent computerization and statistical analysis. This quality has been enhanced through rapid advances in computer technology as well as through the development and refinement of complex analytical statistical software packages and techniques. For purposes of comparisons among individuals, institutions, or communities, surveys offer a further advantage: replicability. A questionnaire that has been used in one city or community can be reimplemented in another community or administered once again in the same community at a later date in order to assess differences attributable to location or time.

Sampling started gaining general acceptance beginning in 1935 when George Gallup established the American Institute of Public Opinion in order to conduct weekly polls on national political and consumer issues for private and public sector clients. In as much as Gallup was operating a business for profit and since he was committed to delivering weekly polls, he was necessarily highly sensitive to cost and time factors. Gallup developed a method of sampling fifteen hundred to three thousand respondents—quite a small number compared to other surveys at that time. His method established sample quotas based on age, sex, and geographical region. In the 1936 presidential election between Franklin D. Roosevelt and Alfred Landon, Gallup forecast a Roosevelt victory, while one of the most respected polls at that time, the Literary Digest poll of 2.5 million subscribers, forecast a Landon landslide. The final results are well known: a Roosevelt victory with 61 percent of the vote. The scientifically implemented small sample

thereafter became established as the survey method of choice. Advancements in the understanding of sample survey methodology that were developed in World War II and refined thereafter now provide even greater accuracy than Gallup had in 1936, with still smaller sample sizes.

Types of Sample Survey Research

Survey information can be collected by means of any of five general methods of implementation: mail-out, web-based, telephone, in-person interviews, and intercept. This section addresses the advantages and disadvantages of these types of surveys and discusses the procedures for administering the surveys.

Mail-Out Surveys

The mail-out format for collecting survey data involves the dissemination of printed questionnaires through the mail (commonly the postal service) to a sample of predesignated potential respondents. Respondents are asked to complete the questionnaire on their own and return it by mail to the researcher (postage paid by the researcher).

Advantages and Disadvantages.

The advantages of the mail-out technique can be stated as follows:

- *Possible cost savings:* Other techniques require trained interviewers, and the recruitment, training, and employment of interviewers can be quite costly. Access to respondents by mail can, under some circumstances, be less expensive than telephone surveys and certainly less expensive than in-person interviews.
- *Convenience:* The questionnaire can be completed at the respondent's convenience.
- *Ample time:* The respondent has virtually no time constraints. There is enough time to elaborate on answers and consult personal records if necessary to complete certain questions.
- *Authoritative impressions:* The researcher can prepare the mail-out questionnaire form so that it has significant legitimacy and credibility.
- *Anonymity:* Because there is no personal contact with an interviewer, the respondent may feel that the responses given are more anonymous than is the case with other formats.
- *Reduced interviewer-induced bias:* The mail-out questionnaire exposes all respondents to precisely the same wording on questions. Thus, it is not subject to interviewer-induced bias in terms of voice inflection, misreading of the questions, or other clerical or administrative errors.
- *Complexity:* Mail-out questions can be longer and more complex than telephone questions.
- *Visual aids:* Mail-out questionnaires can make use of photographs and maps that would be impossible to use in a telephone survey.

Mail-out questionnaires, however, have the following disadvantages:

- *Comparatively long time period:* Many follow-ups and substitutions of sample respondents are required in order to achieve the appropriate sample size and adequate random distribution necessary for purposes of generalization. The mail-out therefore generally requires a few weeks for questionnaires to be returned.
- *Self-selection:* Mail-outs typically achieve a lower response rate than telephone surveys. Low response rates can imply some bias in the sample. For instance, poorly educated respondents or those with reading or language deficiencies tend to exclude themselves from this form of survey more often than from surveys administered by an interviewer.
- *Lack of interviewer involvement:* The fact that no interviewer is present means that unclear questions cannot be explained, there is no certainty that the questions will be answered in the order written (which may be important), and spontaneously volunteered reactions and information are not likely to be recorded by the respondent and cannot be probed by an interviewer as would be the case with other methods.
- *Incomplete open-ended questions:* It is more likely that questions requiring an original written response in lieu of fixed answers will be avoided.

Administration of Mail-Out Surveys.

Certain guidelines should be followed in administering a mail-out questionnaire. First, the questionnaire should be designed in the form of a booklet in order to ensure a professional appearance and to make it more usable by the respondent. Any resemblance to an advertising brochure should be strictly avoided. The aesthetic appearance of the questionnaire is important in terms of generating satisfactory response rates. There should be adequate spacing between questions, and questions should not begin on one page and end on another. Instructions to the respondent should be clear and easily distinguished from the survey questions themselves. Graphics, such as maps and illustrative photographs, should be carefully integrated into the design of the questionnaire.

The cover letter should be prepared in accordance with the principles discussed in chapter 2 and should become the first page of the booklet. The last page of the booklet should be reserved for three purposes only: to express appreciation to the respondents for their participation, provide a return mailing address and prepaid postage through a business reply permit, and provide instructions for returning the completed questionnaire. An alternative is to provide postage-paid, preaddressed return envelopes, but the cost of this approach is somewhat higher.

Questionnaires should be stamped with an identification number or bar code for purposes of monitoring the follow-up process. This number or code must be explained to the respondent in the cover letter, accompanied by assurances of privacy and confidentiality.

The questionnaire booklet is mailed by first-class postage to the respondent in an envelope. The envelope is addressed with the name and address of the respondent individually imprinted (in the case of small, more personalized surveys) or with a mailing label (most commonly used in large-scale, high-volume surveys). A target date should be designated for the return of the questionnaire; this target date is generally recommended to be approximately two weeks from the initial mailing date. Two weeks after the initial mailing, a follow-up postcard reminder should be sent to potential respondents who have not yet replied, as determined by their

prestamped identification number. The reminder should be friendly in tone and indicate that if the completed questionnaire and the reminder postcard have crossed in the mail, the respondent should disregard the reminder; it should also again express appreciation for the respondent's cooperation.

Four weeks from the initial mailing, a second follow-up can be mailed to all survey recipients who have not yet responded. This follow-up should include a new cover letter that does not specify a target due date but instead stresses the importance of responding. Another copy of the questionnaire should accompany the letter in case the original questionnaire has been misplaced or discarded.

It can be reasonably expected that this procedure will yield a response rate that can approach 50 percent for the general public and a somewhat higher rate for specialized populations. The researcher should wait two weeks after the second follow-up before closing the mailing process. A response rate of 50 percent can be considered satisfactory for purposes of analysis and reporting of findings as long as the researcher is satisfied in the representativeness of the respondents (see chapter 9). If the researcher wishes to increase the response rate and has adequate resources and time to do so, the following additional procedures are suggested:

- In lieu of using mailing labels, envelopes and the cover letter can be individually imprinted with the potential respondent's name and address.
- The cover letters should be individually signed in blue ink to avoid the impression that they were impersonally mass-produced.
- The follow-up mailings should include eye-catching but tasteful illustrations and graphics.
- Six weeks after the initial mailing, nonrespondents can be given a reminder telephone call.
- A third follow-up mailing, again with a new cover letter and copy of the questionnaire, can be sent to all nonrespondents eight weeks after the first mailing. This third follow-up should be delivered by certified mail.

These additional procedures are designed to achieve a response rate higher than 70 percent for the general population and as high as 90 percent for certain specialized groups.

Web-Based Surveys

The web-based survey is an alternative to the traditional mail-out technique; individuals are contacted by e-mail and asked to participate in a survey that is designed to be completed and submitted through the Internet.

Advantages and Disadvantages.

The advantages of the web-based survey method are as follows:

- *Convenience:* This technique represents a convenient and efficient way of reaching potential respondents. They are able to receive the questionnaire and complete it in the

privacy of their home or office. This advantage is becoming particularly significant as the availability of computers becomes increasingly widespread.

- *Rapid data collection:* Information, especially information that must be timely (e.g., a political public opinion poll related to an upcoming election), can be collected and processed within days.
- *Cost-effectiveness:* This technique is more cost-effective than the traditional mail-out survey because there is no need for postage or paper supplies. It is also more cost-effective than the telephone and in-person surveys because it is not at all labor intensive.
- *Ample time:* The respondent is not pressed for time in responding to the web-based survey and has the opportunity to consult records in answering the questions. There is time to consider response choices and respond to open-ended questions in the form of text.
- *Ease of follow-up:* Potential respondents can be reminded to respond to the survey through follow-up e-mail messages.
- *Confidentiality and security:* Personal or sensitive information supplied by the respondents can be protected on a secure server through the efforts of the research team.
- *Specialized populations:* The survey is particularly useful in reaching specialized or well-identified populations whose e-mail addresses are readily available. For example, we have successfully used this technique to conduct surveys of satisfaction among employees and stakeholders of large public organizations.
- *Complexity and visual aids:* As with mail-out surveys, web-based surveys can use visual images and more complex questions.

Web-based surveys also have certain disadvantages:

- *Limited respondent bases:* A major disadvantage of this technique is that it is limited to populations that have access to e-mail and a computer. Furthermore, the technique assumes a certain minimal level of computer literacy that is necessary for the completion and submission of the questionnaire. Such literacy is improving rapidly within the general population.
- *Self-selection:* As in the traditional mail-out, there is a self-selection bias that leads to lower response rates. Those who do not use e-mail or are not comfortable with web-based technology exclude themselves from the sample. Also, individuals with reading or language issues tend not to respond to web-based surveys. Some researchers send the survey by e-mail in multiple languages in an effort to obviate this problem.
- *Lack of interviewer involvement:* Since there is no interviewer involvement in the web-based survey, unclear questions cannot be explained, and respondents may not follow instructions. These problems can seriously compromise the scientific reliability of the survey even though telephone contacts are provided to the respondents in the event that they need help.

Administration of Web-Based Surveys.

The web-based survey requires expertise to prepare a survey instrument for online administration. If the research team members have the necessary expertise and the necessary equipment, including a secure server, they may set up the survey for online response themselves.

Alternatively, the researcher can use a service that can be purchased, such as Survey Monkey, where the instructions for setting up the survey structure, sending it to the intended recipients, and receiving responses are explicit and relatively straightforward. If such a service is used, it is possible to convert the data file to the Statistical Package for the Social Sciences (SPSS) for a more robust analysis. The following administrative tasks are required to implement a web-based survey successfully:

- The researcher must have the capability of providing a survey Internet link to the intended respondents. For example, respondents may be employees in a company who are asked to complete an online job satisfaction survey. The researcher will be given access to the e-mail addresses of these respondents in order to send them the survey link. The researcher should be able to send e-mail messages to everyone simultaneously as well as to other selected individuals as desired and necessary. In other types of research efforts, the researcher may be interested in a survey with a broader base of potential respondents—perhaps extending to an entire community. In this case, the researcher can advertise in local newspapers and through community organizations that the survey is available by visiting a specific website and clicking on the appropriate survey link.
- The researcher should strive to prepare an online questionnaire that is as user friendly as possible. The online program should guide the respondent efficiently through the questions to the final submission of the completed survey.
- The initial e-mail message or the introduction to the online survey itself should specify a deadline for the return of the survey form—about ten days. If the researcher knows the e-mail addresses of those who received the survey link, approximately five days after sending the initial e-mail, the researcher may consider sending a reminder e-mail to those who have not yet responded.

It is important that the questionnaire be submitted to a secure server so that the privacy of the respondents is maintained.

Web Panels.

Web panels are large reservoirs or banks of potential survey respondents who are recruited to participate in various online surveys. Panel or web companies generally recruit potential respondents to join the web panel through advertisements on the Internet and in local newspapers and newsletters. Web companies encourage panel participation through a series of incentives, including an opportunity to earn money, a chance to have a voice in new products and services, and an avenue to enjoy a variety of interesting surveys and thereby become introduced to various subject areas.

Potential panel recruits are directed to the company's website, where they are asked to provide varying amounts of personal and demographic information. This information is used to screen respondents for participation in surveys requiring a specific demographic profile. For example, a researcher may wish to purchase from the web panel administrator the e-mail addresses of panel members who are women between the ages of twenty and forty and who live in the New England states. Large web panels consist of 2 million to 3 million people. Like all other Internet surveys, those using a web panel have two essential disadvantages: (1) participant self-selection negates

random selection and (2) individuals who do not have access to the Internet cannot join a web panel. The absence of such individuals can create a systematic bias in the sample population.¹

The Telephone Survey

The telephone survey collects information through the use of telephone interviews between a trained interviewer and selected respondents.

Advantages and Disadvantages.

The advantages of the telephone survey interviewing process can be stated as follows:

- *Rapid data collection:* Information, especially information that must be timely (e.g., a political public opinion poll related to an upcoming election), can be collected and processed within days. It is possible to complete a telephone survey in the time it would take simply to plan a mail-out or in-person survey.
- *Possible cost savings:* The cost of implementing a telephone survey is considerably less than that of in-person interviews; under certain circumstances, it can even be less than that of a mail-out survey.
- *Anonymity:* A telephone survey is more anonymous than an in-person interview. Hence, the interviewer can conduct in-depth questioning in a less-threatening environment than exists in face-to-face situations.
- *Assurance that instructions are followed:* As with the in-person interview, the telephone interviewer can make certain that the questions are answered in precisely the order intended so that the integrity of the questionnaire sequence is maintained.

Telephone surveys also have certain disadvantages:

- *Less control:* The interviewer has less control over the interview situation in a telephone survey than in an in-person interview. The respondent can easily end the interview at any time by hanging up the telephone.
- *Less credibility:* The interviewer will have greater difficulty establishing credibility and trust with a respondent over the telephone than would be the case in person or by mail.
- *Lack of visual materials:* Unlike the mail-out survey and the in-person interview, the telephone survey does not permit the use of visual aids, such as maps, pictures, or charts, as components of the questions.
- *Less complexity:* Related to the lack of visual materials is the fact that telephone questions must be much less complex than most other survey forms.

Administration of Telephone Survey.

The telephone survey is less complex to implement than the mail-out. The most important aspect of this survey technique is the use of personal interviewers; the proper selection and training of these interviewers is critical to the success of the research project.

Selection of Telephone Interviewers.

Individuals may be recruited from a number of sources to serve as telephone interviewers. The single best source of interviewers, when available, is a local university. Students, especially upper-division undergraduate students and graduate students, are motivated to become involved in the interviewing process for two basic reasons. First, there is frequently some substantive interest in the research project and its potential findings. Second, students often seek ways to augment their income to help fund their education while at the same time gaining relevant experience and therefore may be willing to work for wages that are relatively modest in relation to their skill level. If the researcher does not already have an affiliation with a university, professors in appropriate disciplines should be contacted and arrangements made to recruit potential interviewers. University bulletin boards and newsletters can also be used. If universities are not easily available, temporary agencies can be a source of employees, and when universities and temporary agencies are not readily accessible or when additional assistance is required, newspaper "help wanted" ads may be of some additional help. Newspapers that can be considered for placement of such ads include not only the major metropolitan dailies but also neighborhood weekly newspapers. Another source of recruitment is contact with local organizations such as social service delivery groups, civic organizations, and church groups, which are frequently able to publicize recruitment needs among their memberships.

The content of the recruiting advertisement should enable potential applicants to determine if they are interested in the job and meet its requirements. Thus, the job notice should include such information as work hours, pay rate, location of the work site (home or central telephone facility), and whether fluency in a language other than English is necessary. The job notice should also indicate times and dates for group meetings, which are designed to dispense additional information, answer questions, and receive interviewer job applications; these applications should contain questions about work history, education, professional references, and availability to perform the required tasks. Group sessions are an efficient way to avoid unscheduled and frequent individual recruitment sessions, which can be time consuming for the researcher.

Having reviewed the job applications, the researcher should narrow the list of applicants by screening out those who clearly do not meet the basic requirements. After a brief personal interview, the remaining applicants are asked to administer a practice questionnaire as a final screening device. This process will enable the researcher to determine an applicant's ability to read at the appropriate level, follow directions, and relate to other people. Final selection should be based on the written application, the personal interviews, the practice questionnaire, and any potential biasing characteristics that the interviewer feels the applicant may possess. A poor performance during the practice questionnaire should not necessarily eliminate the applicant from consideration; interviewer training after selection may help to mitigate some of the problems that are seen during the practice session.

Training of Telephone Interviewers.

Interviewer training consists of a two-pronged process. The researcher first provides the interviewer with general training regarding the fundamental techniques of the interviewing process and then instructs the interviewer in proper administration of the specific survey questionnaire. Several procedures can be used to assist in the training process. To begin, an overview of the questionnaire should be provided that is specific to the study, with the various

types of questions identified and all interviewer instructions pointed out, especially those pertaining to filtering and screening. It is advisable to pay particular attention to questions that permit more than one response and to make certain that “Other” categories and open-ended questions are recorded with precision. The researcher should also discuss the answer code format and explain the purpose of the variable fields.

Interviewers should be provided with a general understanding of the scope and substantive purpose of the research project. The organization sponsoring the survey should also be indicated. It is also important to make interviewers aware of the role they play within the survey process as a whole; that is, the interviewers should become aware of the sample size, the sample selection process employed, and how their role relates to the entire survey process, including data entry, data analysis, and the preparation of the final report. Trained telephone interviewers become very valuable to the researcher, and the services of these employees will be in demand for many subsequent surveys. These interviewers become a bank of part-time or even full-time personnel to call on as the need arises.

The interviewer must be careful to minimize the amount of bias introduced into the interviewing process. The introductory greeting, as discussed in chapter 2, should be delivered with sincerity. Questions should be read verbatim with appropriate pacing and in a pleasant conversational tone. The interviewer should be satisfied that the respondent understands the question and must be careful to record responses accurately.

The interviewer should not express any opinions or make extraneous comments in reaction to statements made by the respondent. Despite these efforts to minimize bias, there is always the potential for the respondent’s answers to be affected to some extent by her or his reaction to one or more characteristics of the interviewer, such as ethnic or regional accents, gender, or age. The researcher should be cognizant of these potential problems and plan the conduct of the research study accordingly. For example, during the survey pretest, if it is found that a large number of respondents are having difficulty understanding an interviewer with a particularly heavy regional accent or it appears that their responses are affected in some manner by the accent, the researcher may find it necessary to reassign that interviewer to another aspect of the study.

In the not-too-distant past, telephone surveys were conducted by traditional paper-and-pencil procedures. That is, interviewers would ask the question and mark the respondent’s answer on an interview form. During the past twenty years, computer technology has displaced these traditional techniques. Questions on the survey are programmed to appear on the computer screen designed to be read by the interviewer. The respondent’s answer is recorded by marking the button that corresponds to the appropriate numerical code and having that response entered directly into the computer. One of the most popular programs for computer-based telephone interviewing is the Computer-Assisted Telephone Interviewing (CATI) program. The primary advantages of computer technology for telephone interviewing are as follows:

- This technology enables the interviewer to follow complex question skip patterns. For example, if the respondent provides the answer “yes” to question 3 and the survey directs such responses to question 6, the computer would automatically place question 6 on the computer screen.

- These programs minimize interviewer error because they remove a great deal of interviewer discretion in the conduct of the interview. Such technology saves interview time, which has important cost implications.
- Computer-assisted technology allows the recorded responses to be stored and transferred into an SPSS data file for immediate analysis.
- These programs have the ability to rotate response categories in order to minimize the potential bias associated with presenting responses in the same patterned order.
- Other features of the program include tracking nonresponses and programming automatic callbacks.

Computer-assisted telephone interviewing has become common practice and the state of the art in telephone interviewing. As such, it is important that telephone research makes use of this technology in order to remain competitive and to achieve the most accurate survey results.

Conducting Telephone Surveys.

Interviewing should be conducted in the early evening (6:00 p.m. to 9:00 p.m. local time) and on weekends (noon to 9:00 p.m.). Evenings provide the interviewer greater opportunity to reach working adult household members, whereas daytime calling during the week reaches only adults who are not working outside the home. After 9:00 p.m., the interviewer should stop placing calls to avoid disturbing those who may have retired for the night. Similarly, on weekends, calls prior to noon may interfere with needed extra hours of sleep or time spent at religious services. The overriding principle is to reach as many adult household members as possible at a convenient time.

If the interviewer encounters a busy signal, the call should be tried again in thirty minutes; if the line is still busy, the call should be placed again the next day. If the first call on the next day is once again met with a busy signal, the interviewer should again wait thirty minutes and try one more time. When there are repeated busy signals, the interviewer is required to contact the telephone company to ascertain the working status of the number. If the telephone company indicates that the line is operating, the interviewer may try calling on another day at a time totally different from the previous attempts. If the line is still busy, the interviewer should classify the number as “nonresponse” to avoid spending an inordinate amount of time in pursuit of one potential respondent. When, instead of a busy signal, the first call elicits no answer, the call should be repeated the next day. If there is still no answer after four or five such attempts, the telephone number can be treated as a nonresponse.

When the sample comprises households rather than specific individuals at a given phone number, the interviewer must speak to an adult member of the selected household unless the survey is specifically geared to minors. The interviewer should try to speak to a representative mix of men and women and sometimes may have to specifically request to speak to an “adult male” or “adult female” in order to maintain representativeness by gender.

When the interviewer has exhausted the sample list of telephone numbers, he or she should tell the researcher how many nonresponses have been encountered. The researcher will provide the interviewer with a list of replacement telephone numbers selected in accordance with the

appropriate sample selection method (see chapter 9). The interviewer then proceeds to make these calls as described, returning to the researcher once again reporting all nonresponses from the list. This process continues until the interviewer has completed the number of interviews assigned.

Types of Telephone Sampling.

The type of telephone sampling method to be used in a telephone survey depends on the requirements of the survey and the source of telephone numbers. The three major types of telephone sampling techniques are random digit dialing, cell phone–only dialing, and dialing from a fixed list of telephone numbers.

Random digit dialing (RDD) has become the most prevalent method of conducting a telephone survey since its inception in the mid-1960s. RDD telephone samples typically use a random sample of telephone numbers generated from the entire universe of telephone numbers that could be assigned within a specified geographic area. These random telephone numbers are associated with traditional landline telephones, the basic telephone service that was used almost exclusively by American households through the late 1980s. Researchers purchase lists of random landline telephone numbers, according to zip code, from independent sample suppliers.

Cell phone–only dialing: The growing popularity of cell phones in the United States threatens the representativeness of telephone surveys when RDD of landline numbers is conducted exclusively. The reason is that the prevalence of cell phones has been increasing at a steady pace since the early 2000s. More and more households are eliminating their landline phone entirely in favor of cell phone use exclusively. Overall, according to a Centers for Disease Control (CDC) report, two in every five American homes (39 percent) had only wireless phones as of the first half of 2013. About 38 percent of US adults (or 90 million) and 45 percent of US children (33 million) lived in wireless-only households. The wireless-only share has been rising steadily ever since the CDC began asking people about their phone status in 2011 when only 26.6 percent of US households were wireless only.²

Wireless-only households are especially predominant among the poor and the young. According to the CDC, nearly two-thirds (66 percent) of adults ages twenty-five to twenty-nine lived in households with only wireless phones, as did three in five (59.9 percent) thirty- to thirty-four-year-olds and a majority (54 percent) of adults ages eighteen to twenty-four. A majority of adults living in poverty (54.7 percent) lived in a wireless-only household versus 48 percent of what the CDC calls the “near-poor” and 35 percent of nonpoor adults; wireless-only households also predominate among Hispanics, renters, and adults living with roommates.

Based on these data, it is suggested that telephone surveys that use RDD of landline telephones also include a random sample of cell phone–only users. This represents a dual-frame telephone sampling design and will mitigate against the geographic and demographic biases that are likely to result if cell phone–only users are excluded from the survey. Random cell phone numbers can also be purchased from sample suppliers that maintain current lists.

The growing body of research suggests that the quality of data obtained from cell phone calls is not different from the data quality obtained from landline calls. Nonetheless, there are reasons to suspect that data obtained from cell phones may be less reliable.

When individuals receive cell phone calls, they could be located at a variety of different public places. Although these cell phone users appear to be perfectly willing to carry on the telephone conversation, they may feel somewhat constrained in answering certain questions of a sensitive and private nature. This reluctance, either conscious or unconscious, could threaten the integrity of the responses and the validity of the entire survey.

The location of a cell phone user (generally outside of the home) may be associated with a number of distractions that could cause the respondent to be less focused on the telephone interview at hand. The data provided may be less accurate and less thoughtful than if the respondent were located in a more serene location. The respondent may be walking or in a restaurant or coffee shop where others in the vicinity are engaged in a somewhat loud conversation.

At times, cell phones receive poor transmission signals, jeopardizing the audio quality of the call. This can potentially cause problems for the respondent to clearly understand the question and for the interviewer to correctly record the appropriate response.

As a result of potentially poor sound quality and the possibility of distractions, cell phone calls may last longer than landline calls. If the interview begins to run inordinately long, the user may very well break off the interview before the survey is completed. By the same token, the interviewer, in sensing that the interview is running long, may rush through the interview. In both cases, data quality is jeopardized. If these circumstances come to pass, the cost of the project is likely to increase since more cell phone calls will have to be made to make up for the incomplete data and ultimately complete the survey project.

Cell phone samples are sold according to area code and zip codes much as landline samples are. However, cell phone owners frequently retain their cell phone area code even when they move to another part of the state or country where a different area code is used. These individuals may well be included in a sample of numbers associated with a zip code that is relevant to the project but must be excluded from the survey when contacted. This screening process can be time consuming and adds to the cost of the survey project.

Fixed List of Telephone Numbers: In some survey projects, the client provides the researcher with a fixed list of telephone numbers from which the random sample is to be drawn. These are simply the contact numbers provided by the potential respondents and can be either landline or cell phone numbers. The fixed lists often represent a customer base where the contact information is frequently updated. For example, a water district may be interested in conducting a satisfaction survey among its customers or a bus company may wish to survey customers who are enrolled in their special service for the disabled.

There are a number of additional rules of interviewing that the researcher should insist on having followed. These rules include the following:

- An interviewer should never interview more than one adult in the same household.
- A friend or relative of the research team should not be interviewed. If a friend or relative is part of the sample list, the researcher should be notified so that the person in question can be reassigned to another interviewer.
- The interviews should be conducted in as much privacy as possible to avoid distraction. It is likely that a professional facility will ensure privacy and quiet.
- The interviewer should not delegate assigned interviews to anyone else unless for reasons of language.
- Interviews should never be falsified.

In-Person Interviews

In-person, or face-to-face, surveys are structured to permit an interviewer to solicit information directly from a respondent in personal interviews.

Advantages and Disadvantages.

The advantages of the in-person interview survey technique are as follows:

- *Flexibility:* The interviewer can probe for more detail, explain unclear questions, and use visual aids such as maps or photographs.
- *Greater complexity:* Interviewers can administer highly complex questionnaires and provide detailed instructions and lengthy lists of alternative responses that many respondents would find confusing and intimidating if the questionnaire were administered by any other means.
- *Ability to contact hard-to-reach populations:* Certain groups, for instance, the homeless or criminal offenders, are difficult or impossible to reach by any method other than personal interviews.
- *Assurance that instructions are followed:* The interviewer can make certain that the questions are answered in precisely the order intended so that the integrity of the questionnaire sequence is maintained.

In-person interviews also have certain disadvantages:

- *High cost:* Administering in-person interviews can be very costly in terms of time per interview, travel time, interviewer training, and field supervision.
- *Interviewer-induced bias:* Although the interviewer obviously serves many useful functions in this process, he or she can also be a source of bias. For example, the interviewer may inadvertently react in some way to a response rather than remaining neutral. This action could affect future responses by the interviewee and, hence, the validity of the entire questionnaire. By the same token, the respondent may alter his or her responses to gain perceived approval from the interviewer.
- *Respondents' reluctance to cooperate:* If respondents must allow interviewers into their homes to participate in a face-to-face survey, they may tend to be somewhat less inclined to participate than in a telephone survey. Many telephone calls and return visits may be necessary in order to complete an interview.

- *Greater stress:* The in-person interview format is clearly the most intense and stressful for both the respondent and the interviewer. It tends to be a longer and more complex interviewing process, and it is the only one in which a stranger is present in the respondent's environment. Such situations can cause increased stress and fatigue, which may have unfavorable effects on the quality of the responses.
- *Less anonymity:* The advantages of the anonymity perceived by the respondent in mail-out and telephone surveys are greatly reduced in the face-to-face format.

Administration of In-Person Interviews.

The administration of in-person, or face-to-face, interviews creates even greater challenges for the researcher than do other methods. As with the telephone interview, the selection and training of interviewers is critical to the successful solicitation of data.

Selection of In-Person Interviewers.

The process of selecting in-person interviewers should be precisely the same as that used for selecting telephone interviewers, with a certain emphasis on physical characteristics that is not as important in the telephone survey process. Because in-person interviewing involves face-to-face interaction between the respondent and the interviewer, the respondent's willingness to participate is highly dependent on the comfort level the respondent perceives. Physical characteristics such as attire, cleanliness, neatness, manners, and overall grooming loom considerably larger in the in-person format than in the telephone survey, and they set the tone for the seriousness of the research study. Consequently, these characteristics must be emphasized in the selection process.

A secondary component of the interviewer's physical characteristics can bear strongly on the in-person interview. A series of studies throughout the years has established that people have been socialized to react differently to another person depending on his or her sex, age, ethnicity, and social status. These studies indicate that an interviewer with roughly the same characteristics as the respondent will tend to obtain more reliable information, especially if this information pertains to issues that the respondent perceives are sensitive in nature. In the interest of obtaining as much reliable information as possible, the researcher must incorporate these considerations into the interviewer selection process.

Training of In-Person Interviewers.

The principles of interviewer training that have been stated with regard to the training of telephone interviewers apply also to in-person interviewers. A few additional considerations exist, a result of the differences in format between the two methods. Such considerations include maintaining a neat personal appearance and developing a facility for displaying visual material to the respondent.

Prearranging the In-Person Interview.

It is important to remember that in-person interviews must be prearranged in order to protect the privacy and safety of both the respondent and the interviewer, in contrast to telephone calling,

which is performed spontaneously. In addition to refraining from making verbal reactions to the respondent, the interviewer should avoid any facial expressions or other gestures that may bias or otherwise disturb the respondent. It is recommended that all potential respondents be sent a letter not dissimilar from the one that introduces a mail-out questionnaire, including a description of the nature of the study and a statement concerning the importance of the recipient's participation. The letter should further state that a telephone call will soon follow in which the interviewer will seek to arrange an appointment for a personal interview at a place convenient to the respondent—often the respondent's home or place of work. Approximately one week after delivery of the letter, interviewers should begin placing the telephone calls. The guidelines for conducting these calls should follow the same format in terms of time of day and follow-up calling procedures as telephone interview calls.

Intercept Surveys

The intercept survey is a variation of the in-person survey whereby information can be obtained from respondents as they pass by a populated public area such as a retail mall, a workplace, a transit station, or an airport, among others. The interviewer actually "intercepts" individuals and asks them to participate in the survey. If the intercept survey is particularly long, some respondents may not have time to complete the survey. To avoid this problem, the researcher may wish to build a mail-back option into the survey. This can be readily accomplished by using a business reply permit, which can be purchased through the US Postal Service. When this permit is printed on the survey form, the respondent simply drops the completed survey in a mailbox and it will be returned to the researcher (postage paid by sponsoring agency).

Advantages and Disadvantages.

The advantages of the intercept survey can be stated as follows:

- *Complexity:* The availability of an interviewer provides the opportunity to explain unclear questions and use visual aids in the conduct of the interview. The use of maps and graphs is particularly important for transportation-related surveys.
- *Interviewer involvement:* The interviewer can ensure that questions are not skipped and that all questions that the respondent wishes to answer are completed.
- *Informs larger questionnaires:* The intercept survey is useful in informing the preparation of questionnaires for larger telephone, web-based, mail-out, and in-person interview surveys and can also be helpful in structuring the discussion guide for focus groups.
- *Observed data:* The interviewer can observe certain personal characteristics of the respondent (such as gender, ethnicity, age, or physical disability), thereby avoiding the need to ask the respondent. This advantage serves to maintain the brevity of the survey and minimizes verbalizing potentially sensitive questions.
- *Cost-effective:* The intercept survey is more cost-effective than the traditional telephone, mail-out, and in-person surveys.

The disadvantages of the intercept survey are as follows:

- *Interviewer errors:* Interviewers may fail to follow a preestablished random procedure for selecting potential respondents. This can occur because interviewers may sense that certain potential respondents are threatening or unfriendly.
- *Limited information:* Since the intercept survey is of necessity quite short, the amount of information that can reasonably be obtained is limited. The researcher faces the challenge of asking the most important and relevant questions.
- *Lack of anonymity:* The anonymity of the respondent that is perceived in the telephone and mail-out surveys is greatly compromised in the intercept survey.
- *Interviewer bias:* The interviewer can inadvertently serve as a source of bias through hand gestures, body language, facial expressions, and extraneous comments. Similarly, the respondent may respond to the interviewer in a less objective fashion in an effort to seek the interviewer's approval.

Administration of the Intercept Survey.

The appropriate administration of an intercept survey requires adherence to certain rules and guidelines:

- A questionnaire should be prepared that takes about three minutes to administer. The survey should be pretested to ensure its effectiveness and brevity.
- The researcher should select a suitable location for the intercept survey. This location should be an area populated by potential respondents who are the target for the survey. The researcher should make sure that all legal requirements for the use of the location have been met.
- Ideally, a small incentive or prize should be offered to the respondent for completing the survey (e.g., a pen or candy).
- Response rates are higher when the interviewer represents a public agency such as a city or county government since these affiliations tend to provide credibility to the research effort.
- Interviewers should wear a badge or some other form of observable identification that identifies them as part of the research project underway. They should carry legal identification in the event that authorities challenge their presence at the designated location.
- The researcher should establish time periods on weekdays as well as weekends as appropriate and necessary for the study to ensure that a reasonable cross section of the target population has been accessed.
- Interviewers who reflect the demographic characteristics of the population to be surveyed should be recruited and trained by the researchers. This training should include interviewing techniques, obtaining the attention and eventual participation of respondents, accurate recording of responses, and the importance of conviviality and confidentiality.
- The researcher must inform interviewers of the procedures to follow if they encounter problems during the administration of the survey instrument, procedures for contacting supervisors, and the importance of cleanliness and proper attire.
- The researcher should provide interviewers careful instructions concerning where to pick up blank surveys and where and when to return the completed ones.

- Survey forms should be prepared in the language or languages of the potential respondents, and interviewers must be selected who are bilingual in the appropriate languages. For intercept surveys in most states, survey forms must be prepared in both English and Spanish at a minimum. In several states, various Asian and African languages may also be necessary.
- The researcher should establish procedures for monitoring interviewers in the field as a form of quality control.

On-Board Surveys.

The on-board bus and rail survey is a form of intercept that can be an effective and useful method for collecting information for transportation planning. It enables researchers to gain information about travel patterns that aid in the planning of bus and rail routes. Also, it elicits opinions about customer satisfaction with bus and rail service so that service improvements that meet the needs of bus and rail riders can be considered in the planning process. The on-board survey involves placing an interviewer on buses or rail cars to interview riders in person or provide survey forms for them to complete and return on-board or by business reply mail, as discussed. Many of the instructions provided for the administration of the more general intercept survey can be readily adapted for the on-board surveys.

Stages of the Survey Research Process

To conduct any of the major types of surveys in a rigorous and unbiased fashion, it is important to adhere to specific procedures and apply them in a systematic manner. Although the stages are presented here as distinct steps, there is actually a great deal of overlap over the course of the survey research process. An overview of the process is presented here, with each stage explained in the following chapters. The following list displays these stages, which are explained more fully below it:

1. Stage 1: Identifying the focus of the study and method of research
2. Stage 2: Determining the research schedule and budget
3. Stage 3: Establishing an information base
4. Stage 4: Determining the sampling frame
5. Stage 5: Determining the sample size and sample selection procedures
6. Stage 6: Designing the survey instrument
7. Stage 7: Pretesting the survey instrument
8. Stage 8: Selecting and training interviewers
9. Stage 9: Implementing the survey
10. Stage 10: Coding the completed questionnaires and computerizing the data
11. Stage 11: Analyzing the data and preparing the final report

Stage 1: Identifying the Focus of the Study and Method of Research

During the initial stage, the researcher must be satisfied that sample survey research is the most appropriate method of collecting the necessary information for the study under consideration

among the other potential data-gathering techniques of secondary research, direct measurement, and observation. The following factors make sample survey research appropriate:

- Adequate secondary data are not available.
- There is a desire to generalize findings from a small subpopulation to a larger population.
- The target respondent population is accessible.
- The data to be obtained are of a personal, self-reported nature.

Once survey research has been determined to be the most appropriate research method, the researcher has two fundamental tasks to consider: (1) the goals and objectives of the study should be elaborated and refined, (2) the researcher should identify the format for collecting the data (mail-out, telephone, web-based, intercept, or in-person interview). The second decision will be greatly influenced by the complexity of the data to be obtained, the accessibility of the sample population, the budget available for the study, and the time constraints that have been imposed for completing the project.

Stage 2: Determining the Research Schedule and Budget

Once the parameters and objectives of the study have been identified, the researcher must establish a timetable for completing the survey research project. The timetable should be flexible enough to accommodate unforeseen delays and yet be capable of satisfying the needs of the research sponsor. In conjunction with this timetable, a detailed budget should be prepared. Insofar as budgetary and time considerations permeate and constrain each step of the survey research process, it is critical that this stage be carefully implemented.

Stage 3: Establishing an Information Base

Prior to the development of a survey instrument (questionnaire), it is necessary to gather information about the subject matter under investigation from interested parties and key individuals. Such individuals might be brought together in an informal group setting where relevant issues and problems can be freely discussed and debated. The goals and objectives of the research can be clearly defined, and the practical relevance of the proposed survey can be explained. For example, a research organization may have the objective of studying the travel behavior and travel preferences of economically disadvantaged residents in a major city in the United States. At the outset, it would be important to hold a focus group meeting where representatives of social service organizations such as the county welfare agency, economically disadvantaged residents, and the researchers involved in conducting the study gather to exchange ideas and concerns. The hope is that an open and frank discussion will reveal the type of survey information that would be helpful in outlining key issues and identifying relevant sectors of the population to be targeted in such a study. A detailed treatment of the focus group technique is presented in chapter 4.

In some research endeavors, the subject matter is found to be new or vague, and as a result of this lack of general knowledge, it is not immediately feasible to devise a series of specific questions to be used in a formal survey process. In such situations, it may be necessary to conduct, as a preliminary technique, some form of semistructured direct observation of the

population using professional observers who are trained to record information about the subject population in a systematic way. Such semistructured research techniques have been successfully used in anthropological and sociological studies of geographical, economic, and behaviorally distinct subcultures. This base level of information may then be used to devise a questionnaire for the formal survey process. Without such preliminary information, the survey questions could prove to be peripheral or tangential to the goals of the research study. A thorough reconnaissance of information at this point is critical in terms of producing a focused and well-directed study. This chapter has already provided some background discussion regarding information collection. A more detailed treatment of this topic is in chapter 2.

Stage 4: Determining the Sampling Frame

The population that is identified for formal interviewing derives from applying the sampling frame for the survey research project. The researchers must be confident that the sample possesses the knowledge and information required to fulfill the requirements of the research project. That is, the sample represents the population from which they are supposed to be selected (called the *general population*).

After the general population, or *universe*, is defined in a conceptual sense, a list of identifiable and contactable members of this general population must be obtained. From this list, a sample of respondents will be drawn. This list is called the *working population*. The sequence of steps that moves the researcher from the general population to the sample is known as the *sampling frame*. For example, in a survey project concerning residential preferences and relocation tendencies, the general population may be defined as one that has demonstrated some mobility within a given metropolitan area. One way of operationalizing this concept of mobility is to obtain a list of residents who have recently moved. Local utility companies record changes of address whenever a new gas or electric hookup is requested, so new hookups within a given period of time could easily identify a mobile population. Concepts related to identifying an appropriate population are discussed in chapter 8.

Stage 5: Determining the Sample Size and Sample Selection Procedures

The researcher must attempt to select a sample that is an approximate microcosm of the working population. Given equally representative samples, larger samples generally yield a higher degree of accuracy than smaller ones. The researcher must weigh the desired degree of accuracy against the increased time and cost that a larger sample size entails. Once the overall sample size is determined, several alternative procedures must be considered for selecting a sample. Foremost among these are simple random sampling, systematic random sampling, stratified random sampling, and cluster (multistage) sampling. The theoretical basis of sampling is discussed in chapters 6 and 7, the criteria for determining sample size are described in chapter 8, and various sampling procedures are given in chapter 9.

Stage 6: Designing the Survey Instrument

The development of the survey instrument or questionnaire is a crucial component of the survey research process. At this stage, the researcher must devise a series of unbiased, well-structured

questions that will systematically obtain the information identified in stage 1. Developing the questionnaire can be an extremely detailed and time-consuming process. Decisions must be made concerning the wording of questions and the format depending on whether the survey is an in-person interview, intercept, mail-out, web-based, or telephone survey. The number of fixed-answer and open-ended questions must be determined, and the element of time with respect to questionnaire length should be considered. The longer the questionnaire is, the greater are the variable costs associated with its implementation, such as interviewing time, computerization of data, and production and distribution costs. Furthermore, longer questionnaires tend to lead to lower response rates. The questionnaire must be easily understood and internally consistent and must lend itself to appropriate and meaningful data analysis. Questionnaire design is fully discussed in chapters 2 and 3.

Stage 7: Pretesting the Survey Instrument

After a draft questionnaire has been prepared and the researcher believes that the questions will obtain the information necessary to achieve the goals of the study, it is important to pretest the instrument under actual survey conditions. During the course of the pretest, poorly worded questions will be identified and the overall quality of the survey instrument refined. Based on the experience of the pretest, the questionnaire will be fine-tuned for use in the actual survey process. The pretest is discussed in chapter 2.

Stage 8: Selecting and Training Interviewers

Telephone and in-person surveys require trained interviewers. These interviewers can be selected from the student ranks, they can be trained professionals, or they can be part-time nonstudent interviewers. Researchers select interviewers according to the nature of the study and the characteristics of the sample respondents.

Prospective interviewers should be thoroughly trained by the researchers in the use of the questionnaire. It has been found that when interviewers have facility with the survey instrument, they are better able to generate and sustain respondents' interest in the survey. In order to gain this facility with the survey instrument, interviewers should receive specific instructions on conducting their interviews and should also be given guidelines for handling uncooperative respondents. They should practice survey implementation many times before actually engaging in the field research. Interviewer selection and training is described previously in this chapter.

Stage 9: Implementing the Survey

The implementation of the survey instrument is a critical phase of the research process. Care must be taken that the established random sampling procedure is adhered to and that the timetable is strictly maintained. Ensuring the privacy and minimizing the inconvenience of potential respondents should be major concerns. In addition, the researcher must adhere to a number of ethical standards in the conduct of the survey research process. Some ethical guidelines can be found at the end of this chapter. (The administrative procedures in the conduct of survey research have already been discussed previously in this chapter.)

Stage 10: Coding the Completed Questionnaires and Computerizing the Data

The final questionnaire must be formatted in such a way that responses can be entered directly into the computer for data processing. (We discuss coding and formatting issues in chapter 2.) Once the questionnaires have been returned, the very important process of cleaning up the forms begins. This is especially important for mail-out surveys, where no interviewer was present to make certain that instructions were followed. The cleanup entails making certain that the appropriate number of entries have been marked for each question, ensuring that there are no extraneous responses, and making sure that enough questions have been answered to validate the questionnaire. All open-ended answers must be categorized and coded on the form itself for ready computer entry. A variety of statistical software packages are available for this purpose including the SPSS.

Stage 11: Analyzing the Data and Preparing the Final Report

The recorded data input must be summarized, placed in tabular or graphical form, and prepared for statistical analyses that will shed light on the research issues at hand, using statistical significance tests, measures of central tendency, determinations of variability, and correlations among variables. These formal statistics and data summaries form the basis of the report that will be the culmination of the survey research process. Chapters 10 through 12 elaborate on the essential statistical concepts involved in the analysis of survey data. Chapter 13 provides guidelines for the preparation of the final report.

Monitoring and Supervision of the Interview Process

For larger projects, a supervisor, hired by the researcher, should be expected to work at least twenty hours per week, especially in the early stages of the interview process. With smaller projects, the researcher may also be able to serve as the supervisor, thereby eliminating the need to employ additional staff.

Telephone interviewing and the scheduling of personal interviews are best conducted from a centralized facility. This tends to produce higher response rates compared with interviews conducted or arranged privately from interviewers' homes or offices. It also affords the supervisor ample opportunities to directly monitor telephone conversations by listening to them. When such direct monitoring takes place, the respondent must be informed.

When telephone interviews and scheduling are conducted from private locations, the supervisor should randomly select at least 10 percent of the proposed sample and call these households to verify that contact has in fact taken place and to ascertain the respondents' degree of satisfaction with the conversation.

The supervisor should review the interviewers' work, be available for questions, and have frequent contact with the interviewers in the form of regular telephone or personal conferences. The supervisor should be prepared to reassign cases among interviewers if this is necessitated by such factors as language difficulties or varying completion rates. Production objectives should be established in terms of the number of interviews to be completed in a given amount of time. It is

the supervisor's responsibility to constantly monitor interviewer performance in terms of these objectives.

Ethical Considerations in Survey Research

The American Association of Public Opinion Research (AAPOR) has approved a code of ethics (latest revision in May 2010). This organization has established ethical guidelines for survey and opinion researchers and stated its goals as follows: "Our goals are to support sound and ethical practice in the conduct of survey and public opinion research and in the use of such research for policy and decision-making in the public and private sectors, as well as to improve public understanding of survey and public opinion research methods and the proper use of those research results."

The key principles from this code of ethics can be summarized as follows:

- Researchers should avoid practices or methods that may harm, endanger, humiliate, or seriously mislead survey respondents or prospective respondents.
- Regarding private clients, all proprietary information obtained about the client and about the conduct and findings of the research undertaken for the client must be held in confidence by survey researchers.
- Public sector clients should be informed about the AAPOR standards for disclosure. Survey researchers should make efforts to encourage public clients to disclose essential information about the research that is being conducted: a description of the sampling frame, sampling design, sample sizes and associated margins of error, respondent selection process, and any weighting or estimating procedures that may have been used.
- Researchers must make it clear to potential respondents that participation in surveys and other forms of public opinion research is voluntary, except for the decennial US Census and other government surveys as specified by law.
- Researchers should not misrepresent their research or conduct other activities, such as sales, fundraising, or political campaigning, under the guise of conducting survey and public opinion research.
- Unless the respondent explicitly waives confidentiality, researchers will hold as privileged and confidential all information that could be used, alone or in combination with other reasonably available information, to identify a respondent with his or her responses.
- Researchers must not knowingly engage in fabrication or falsification of survey data or survey results.

DESIGNING EFFECTIVE QUESTIONNAIRES

Basic Guidelines

At the heart of survey research is the questionnaire development process. The key considerations in this process, including the placement of questions within the survey instrument and their format in terms of the method of implementation (telephone, mail-out, web-based, intercept, or in-person interviews), form the basis of this chapter. The discussion of these issues takes place within the context of sample questions and exhibits derived from actual questionnaires and survey instruments that we have implemented in our professional sample survey projects. This chapter discusses certain general, macro-questionnaire development considerations; chapter 3 delves more deeply into specific questions—or a microlevel examination of questionnaire development.

Be aware that no questionnaire can be regarded as ideal for soliciting all the information deemed necessary for a study. Most questionnaires have inherent advantages as well as inherent flaws. The researcher must use experience and professional judgment in constructing a series of questions that maximizes the advantages and minimizes the potential drawbacks. The guidelines detailed in this chapter recognize that there are a large number of considerations that the researcher must address in the process of questionnaire development. Sound questionnaire construction is a highly developed art form within the practice of scientific inquiry.

In the initial stages of the survey research process, it is important to determine the relevant issues that bear on the purpose of the research. Because social science research spans so many disciplines, it is impossible for any researcher to be fully knowledgeable in all the fields of study that might call on survey research services and skills. In addressing the complex multidisciplinary nature of survey research in the social sciences, the researcher can respond in two ways.

First, the principal investigator often seeks to construct a team of experts who jointly plan and implement the research study. This team represents both technical expertise and substantive knowledge of the political, socioeconomic, and cultural environment associated with the project. Second, with or without such a research team in place and as a prelude to the development of survey questions, the investigators must gather preliminary information about issues of importance from interested parties and key individuals. These issues will derive in whole or in part from the three types of information elaborated on in chapter 1: descriptive, behavioral, and preferential. This preliminary information is best generated in a group setting where issues and problems of relevance to the study can be debated, discussed, and refined openly and constructively. Foremost among these preliminary information-gathering techniques is the focus group, a semistructured discussion among individuals deemed to have some knowledge of or interest in the issues associated with the research study. Group participants are brought together in roundtable discussions run by a group leader or moderator. The discussion that ensues should contribute significantly to an understanding of the key substantive issues necessary for the

development of the questionnaire. A full discussion of the use of focus groups in the survey research process is presented in chapter 4.

At the conclusion of this preliminary information-gathering stage, the key issues that have emerged must be outlined and specified. This list of issues should be submitted to members of the discussion groups for clarification, confirmation, and perhaps further explanation. After this review, the researchers can prepare a draft questionnaire or survey instrument. If the research study has been commissioned by public agencies or private clients, as is frequently the case, the draft questionnaire should be reviewed by these parties for content and to ensure that the questions are consistent with the objectives of the study.

Once the researcher is satisfied with the draft questionnaire, the next step is to conduct a pretest—a small-scale implementation of the draft questionnaire that assesses such critical factors as the following:

- *Questionnaire clarity:* Will respondents understand the questions? The researchers may find that certain ambiguities exist that confuse respondents. Are the response choices sufficiently clear to elicit the desired information?
- *Questionnaire comprehensiveness:* Are the questions and response choices sufficiently comprehensive to cover a reasonably complete range of alternatives? The researchers may find that certain questions are irrelevant, incomplete, or redundant and that the stated questions do not generate all of the important information required for the study.
- *Questionnaire acceptability:* Such potential problems as excessive questionnaire length or questions that are perceived to invade the privacy of the respondents, as well as those that may abridge ethical or moral standards, must be identified and addressed by the researchers.

The sample size for the pretest is generally in the range of twenty to forty respondents; however, for very large sample surveys, it is not uncommon for a pretest to contain a larger sample. The researcher is not really interested in statistical accuracy at this point; rather, interest centers on feedback concerning the overall quality of the questionnaire's construction. Accordingly, the researcher will select respondents from among the working population but need not be concerned about selecting them through a random sampling procedure (chapter 9) or in accordance with sample size requirements (chapter 8). Because statistical inferences are not the primary intent of the pretest, the researcher can be particularly sensitive to cost and time considerations—hence, the relatively small number of respondents. For example, a study that attempts to obtain information about teenagers might conduct a pretest using one or two high school classes. The members of the classes would very likely be individuals in the appropriate age category, and the classes could be surveyed quickly, conveniently, and efficiently. Clearly not all teenagers are high school students; therefore, the high school classes would not necessarily represent the exact characteristics of the respondents in the final study. However, this degree of precision in the selection of pretest respondents is not required. The only requirement is that the pretest respondents bear a reasonable resemblance to the study's actual general population.

Following the pretest, the researchers must revise the questions as needed. They may want to perform a further pretest if these revisions are extensive. Otherwise the final questionnaire can be drafted and prepared for implementation in an actual study.

Introducing the Study

A questionnaire is a conversation, and, like most other conversations, it builds on itself, beginning with an introduction. It is important to inform potential respondents about the purpose of the study in order to convey its importance and alleviate any concerns that potential respondents are likely to have. From the researcher's point of view, there is a need to convince potential respondents that their participation is useful to both the survey's sponsor or client and the respondents themselves. Any concerns that respondents may have regarding time and inconvenience, confidentiality, and safety should be allayed. The respondent must be assured that all answers are valuable—that there are no “correct” or “incorrect” responses.

An introductory statement should contain certain components. First, the organization or agency conducting the study should be mentioned (unless that information itself would be biasing). The introduction should state the relationship between the sponsoring institution and the potential respondent. A great deal of credibility can be gained for the study if the sponsor is a governmental body that in some way represents the respondent. An introduction that contains a reference similar to the following can be quite successful in establishing credibility: “The City of Chicago is conducting a survey of residents in order to assess community opinions about services provided by your local police department.”

A general statement establishing the objectives and goals of the study and the significance of the results to the respondents themselves should follow the client reference. Potential respondents are more likely to participate when they perceive that the study's findings will have a direct impact on their well-being—for example: “It is the purpose of this study to identify those needs that the residents of the city feel should be addressed in order to maintain a peaceful and secure community.”

The basis of sample selection should be made clear so that the respondent understands that there are no hidden agendas or undisclosed motivations behind the questionnaire. The characteristics the respondent possesses that led to his or her inclusion in the sample should be clearly delineated—for example: “Chicago is particularly interested in the opinions of new residents, and as such you have been selected at random from a list of new residents of the city.”

The respondent must be assured that his or her participation is valued and that answers are neither correct nor incorrect. He or she must be assured that participation is strictly protected in terms of confidentiality—for example: “You should know that there are no right or wrong answers and that your responses will be treated confidentially. Survey results will in no way be traceable to individual respondents.”

Because of the more personal nature of telephone, intercept, and in-person interviews, the interviewer should, as a matter of courtesy, identify himself or herself by name and obtain permission to proceed with the survey questions.

A telephone, intercept, or in-person interview preamble might also include some estimate of the time required in order to complete the questionnaire. In the case of a mail-out questionnaire, the respondent should be able to judge this by direct observation of the instrument received in the mail.

A mail-out questionnaire should also include brief return mail instructions, such as, “Please drop your postage-paid, preaddressed response in the mail by June 15.”

[Exhibit 2.1](#) is an example of a mail-out or web-based introduction that addresses the issues discussed above. Verify that the preamble contains the essential information. [Exhibit 2.2](#) is an example of a telephone interview introduction. Once again, cross-check the highlighted issues against the example.

EXHIBIT 2.1. MAIL-OUT INTRODUCTION.

Dear Omaha Resident [*applicable respondent characteristic*]:

We need your help [*participative value*]! The City of Omaha [*organization identification/credibility*] is conducting a survey of all households in the city [*basis of sample selection*]. The information you provide will be useful in helping your City Council provide services and programs to meet the needs and wishes of the residents [*goals and objectives of study*].

Please take the time to complete the enclosed questionnaire. There are no correct or incorrect responses, only your much-needed opinions [*responses neither right nor wrong*]. This form contains an identification number that will be used for follow-up purposes only. All responses will be treated confidentially and will in no way be traceable to individual respondents [*confidentiality*] once the survey process has been concluded. Please drop your postage-paid, preaddressed envelope in the mail by June 24 [*return mail instructions*].

Thank you for your assistance. We care what you think [*participative value*].

Sincerely,

Joan W. Jensen

Mayor [*credibility*]

EXHIBIT 2.2. TELEPHONE INTRODUCTION.

Good evening (afternoon/morning). My name is Joseph Sparks [*interviewer's name*]. The City of Lincoln [*organization identification/credibility*] is currently conducting a survey of Lincoln residents [*applicable respondent characteristic*] concerning the future development of library facilities for the city [*goals/objectives of study*].

Your household was selected at random [*basis of study selection*] to provide information and opinions regarding library facilities in the city of Lincoln.

We would greatly appreciate a small amount of your time [*time*] and your input on this important issue [*participative value*]. There are no correct or incorrect responses, so please feel free to express your opinions [*responses neither right nor wrong*]. Your responses will be treated confidentially and will in no way be traceable to you [*confidentiality*].

May I ask you a few short questions [*time/permission*]?

Because of the personal, physical presence of the researcher in face-to-face interviewing, [exhibit 2.2](#) can be revised into a somewhat less formal, more conversational format in this type of questionnaire administration. [Exhibit 2.3](#) reflects these changes.

EXHIBIT 2.3. IN-PERSON INTRODUCTION.

Hello, my name is Emily Norton [*interviewer name*]. The City of Lincoln [*organization identification/credibility*] is conducting a survey of its residents [*applicable respondent characteristic*] concerning the city's future development of library facilities [*goals/objectives of study*].

Your household was randomly selected [*basis of sample selection*] to provide information and opinions about library facilities.

Would you be willing to answer a few short questions [*time/permission*] on this important issue [*participative value*]? Please feel free to express your opinions, because there are no correct or incorrect responses [*responses neither right nor wrong*].

The questionnaire form we complete today will not be marked in any way that would identify you [*confidentiality*].

Sequence of Questions

The order in which questions are presented can affect the overall study quite significantly. A poorly organized questionnaire can confuse respondents, bias their responses, and jeopardize the quality of the entire research effort. The following series of guidelines for sequencing questions has been created to enable researchers to develop a well-ordered survey instrument.

Introductory Questions

The first questions should be related to the subject matter stated in the preamble but should be relatively easy to answer. Introductory questions should elicit a straightforward and uncomplicated opinion or derive basic factual—but not overly sensitive—information—again, as would a conversation. The main purpose of the early questions is to stimulate interest in continuing with the questionnaire without offending, threatening, confusing, or boring the respondent.

For a study designed to determine customer satisfaction among residents of a water district in Southern California, the authors developed a questionnaire that began with the following questions:

1. Q1. How long have you been a customer of the Applewood Water District?
 1. _____ Less than 1 year
 2. _____ 1 year and under 3 years
 3. _____ 3 years and under 5 years
 4. _____ 5 years and under 10 years
 5. _____ 10 years and under 15 years
 6. _____ 15 years and under 20 years
 7. _____ 20 years or more
2. Q2. In what area of the Applewood Water District do you live?
 1. _____ Canyon District
 2. _____ Foothill District
 3. _____ Beach District
3. Q3. On a scale of 1 to 5, where 1 = very good and 5 = very poor, how would you rate your overall satisfaction with the Applewood Water District as your water service provider?
 1. _____ Very good
 2. _____ Good
 3. _____ Neither good nor poor
 4. _____ Poor
 5. _____ Very poor

The first two questions are of a basic, factual nature. The third question, although eliciting an opinion, is uncomplicated; however, it is germane to the key focus and sufficiently stimulating to secure the respondent's continued interest.

Sensitive Questions

Certain questions deal with sensitive issues, such as religious affiliation, ethnicity, sexual practices, income, and opinions regarding highly controversial ethical and moral dilemmas. It is recommended that these questions be placed late in the questionnaire, for two fundamental reasons.

First, if respondents react negatively to such questions and decide to terminate their participation in the questionnaire, the information obtained on all previous questions may still be usable in the overall survey results, because enough information may have been obtained to warrant acceptance of the interview as a completed survey with only a few questions remaining unanswered. Second, if rapport has been established between the interviewer and the respondent during the course of the survey process, there is an increased likelihood that the respondent will answer sensitive questions that come late in the questionnaire.

Related Questions

Questionnaires generally have a certain frame of reference, as indicated by their goals and objectives. Within this overall context, there are several categories of questions. For instance, the questionnaire soliciting opinions from water district customers contained questions relating to communication, water rates, conservation, outdoor watering, desalination, water recycling, social media, and demographic data.

Proper questionnaire design dictates that related questions be placed together within the questionnaire so that the respondent can focus and concentrate on specific issues without distraction. In order to facilitate this, it is sometimes appropriate to separate categories of questions by providing a distinct heading that characterizes each section. In terms of communication issues regarding the Applewood Water District website, the following question sequence can be considered to be an acceptable one.

1. Q1. Have you ever visited the Applewood Water District website?
 1. ☐ Yes
 2. ☐ Have access to Internet but have not visited website ⇒ GO TO Q3
 3. ☐ Do not have access to the Internet——⇒GO TO Q4
 4. ☐ Do not know ⇒ GO TO Q4
2. Q2. [IF Q1 = 1] On a scale of 1 to 5, with 1 being very good and 5 being very poor, how would you rate the user friendliness of the website? Would you say:
 1. ☐ Very good
 2. ☐ Good
 3. ☐ Neither good nor poor
 4. ☐ Poor
 5. ☐ Very poor
3. Q3. [IF Q1 = 2] Do you think that you would use the website more if a chat function were available that allows you to ask questions directly to a customer service representative?
 1. ☐ Yes
 2. ☐ No
 3. ☐ Do not know

If these same questions were to be commingled with questions from other categories, the resulting questionnaire would be much less likely to produce clear, well-formulated responses. You should be able to verify this by examining this less acceptable question order:

1. Q1. Do you feel that water costs too much, too little, or priced about right?
 1. ☐ Water costs too much
 2. ☐ The cost of water is just about right
 3. ☐ Water costs too little
2. Q2. Does your landscaping include a lawn?
 1. ☐ Yes
 2. ☐ No
3. Q3. Have you ever visited the Applewood Water District website?
 1. ☐ Yes
 2. ☐ Have access to Internet, but have not visited website

3. _____ Do not have access to the Internet

While it is generally desirable to arrange questions pertaining to a particular subject in the same section of the questionnaire, it is also important to be cognizant of creating a patterned series of responses. Consecutive questions that tend to evoke reflexive responses, given without adequate thought, should be minimized.

Note that the sequence of questions in [exhibit 2.4](#), which is part of a commercial business survey, could well produce an automatic, unidirectional set of responses unless the respondent is sensitized to the subtle but important differences among the questions. This process of sensitizing will tend to minimize the risk of reflexive responses and is accomplished in this example by italicizing the essential distinctions.

EXHIBIT 2.4. SERIES OF QUESTIONS DEMONSTRATING SENSITIZING OF RESPONDENTS.

1. What types of additional businesses, if any, do you feel are needed in the City of Poway to help serve *your business needs*? (Please check no more than three types of businesses.)
 1. **Types of Businesses**
 2. _____ Food/market
 3. _____ Food/specialty store (bakery, deli, etc.)
 4. _____ Restaurant/dinner house
 5. _____ Restaurant/other (specify)
 6. _____ Retail/department store
 7. _____ Retail/specialty store
 8. _____ Professional
 9. _____ Services/supplies/equipment
 10. _____ Light industry
 11. _____ Other (specify)

 12. _____ Other (specify)

 13. _____ Other (specify)

2. What types of additional businesses, if any, do you feel are needed in the City of Poway to help serve the needs of *your employees*? (Please check no more than three types of businesses.)
 1. _____ Food/market
 2. _____ Food/specialty store (bakery, deli, etc.)
 3. _____ Restaurant/dinner house
 4. _____ Restaurant/other (specify)
 5. _____ Retail/department store
 6. _____ Retail/specialty store
 7. _____ Professional
 8. _____ Services/supplies/equipment

9. _____ Other (specify)

10. _____ Other (specify)

11. _____ Other (specify)

3. What types of additional businesses, if any, do you feel are needed in the City of Poway to help serve the needs of *your customers*? (Please check no more than three types of businesses.)
 1. **Types of Businesses**
 2. _____ Food/market
 3. _____ Food/specialty store (bakery, deli, etc.)
 4. _____ Restaurant/dinner house
 5. _____ Restaurant/other (specify)
 6. _____ Retail/department store
 7. _____ Retail/specialty store
 8. _____ Professional
 9. _____ Services/supplies/equipment
 10. _____ Other (specify)

 11. _____ Other (specify)

 12. _____ Other (specify)

Alternative approaches to minimizing this risk of patterned responses may include the more frequent use of open-ended questions (without fixed alternative responses), questions that change the order of the fixed responses from question to question, or questions that vary substantially in terms of wording or length. The potential disadvantages of such tactics are that the respondent's thought focus may be disrupted or the respondent might become confused, thereby defeating the purpose of grouping these questions in the first place. Because several considerations must be balanced in the grouping of questions, the pretest becomes of paramount importance to identify the potential for inadvertently eliciting response patterns and to minimize any such impact on the study.

Logical Sequence

There is frequently a clear, logical order to a particular series of questions contained within the survey instrument. For instance, an appropriate time sequence should be followed. If questions are to be posed concerning an individual's travel behavior by bus, they should be structured in such a way that the respondent is asked to answer them in a sequential or temporal order—for instance, from the most recent to the least recent bus over a specified period of time:

Please list all buses you will use to complete your one-way trip today:

1. First bus: Route # _____

2. Transfer to second bus: Route # _____
3. Transfer to third bus: Route # _____

Filter or Screening Questions

Other portions of the questionnaire might involve establishing the respondent's qualifications to answer subsequent questions. Through what are called filter or screening questions, as shown in [exhibit 2.5](#), the researcher can determine whether succeeding questions apply to the particular respondent. The first question requires that some respondents be screened out of certain subsequent questions. Only those who have read the district's newsletter or bill inserts are asked how they would rate the usefulness of these materials. After the appropriate respondents are asked about the newsletter or bill inserts, respondents who read these materials as well as those who do not are asked about how they pay their water bill most months.

EXHIBIT 2.5. FILTER OR SCREENING QUESTIONS.

1. Q1. Do you read the newsletter or bill inserts that come in the mail with your monthly water bill . . .
 1. _____ Every time,
 2. _____ Most times,
 3. _____ Sometimes, or
 4. _____ Never⇒ GO TO Q3
2. Q2. [IF Q1 = 1 or 2 or 3] On a scale of 1 to 5, with 1 being very good and 5 being very poor, how would you rate the usefulness of these materials? Would you say . . .
 1. _____ Very good
 2. _____ Good
 3. _____ Neither good nor poor
 4. _____ Poor
 5. _____ Very poor
3. Q3. How do you pay your water bill most months?
 1. _____ Send check by mail
 2. _____ Automatic bank deduction
 3. _____ Credit card over the telephone
 4. _____ In person at the Applewood Water District office
 5. _____ In person at payment center
 6. _____ Online (Internet) [GO TO Q5]
4. Q4. [IF Q3 ≠ 6] What can the district do to make paying online a more appealing option for you? _____

Further screening occurs among those who do not use the Internet to pay their bill. These respondents are asked how the district can make bill paying online more appealing.

Under some circumstances, filter questions may be used to disqualify certain respondents from participating in the survey process at all. [Exhibit 2.6](#) draws from a telephone questionnaire that was used in a survey of registered voters. It was the intent of the survey to query not all registered voters but only those who were likely to vote. For purposes of the survey, those who

were most likely to vote were considered to be those who had voted for the mayor or US senator in the previous major election. The survey screened out entirely those who did not satisfy the appropriate preconditions by providing explicit instructions for the interviewer concerning disqualification.

EXHIBIT 2.6. SCREENING USED TO DISQUALIFY RESPONDENTS.

1. Are you registered to vote in the City of Sonoma?
 1. Yes _____ (CONTINUE)
 2. No _____ (DISQUALIFY)
 3. Not sure _____ (DISQUALIFY)
 4. Refused _____ (DISQUALIFY)
2. Did you vote in the 2012 elections for mayor or US senator?
 1. Yes _____ (ASK QUESTION C)
 2. No _____ (DISQUALIFY)
 3. Not sure _____ (DISQUALIFY)

Reliability Checks

When a question is important or is particularly sensitive or controversial, the degree of truthfulness or thoughtfulness of the response may be in doubt. In such situations, it may be appropriate to include in the questionnaire a check of the respondent's consistency of response by asking virtually the same question in a somewhat different manner and at a different place within the survey instrument.

In a survey research project seeking to identify the demand for market rate housing in downtown San Diego, the following question was asked of respondents:

Please indicate the likelihood of your choosing to live in downtown San Diego.

1. ____ Very possible
2. ____ Somewhat possible
3. ____ Not very likely
4. ____ Highly unlikely

The researchers suspected that there might be a casual or less careful response pattern to this question, in which respondents might indicate their willingness to live downtown without giving the matter adequate thought. Therefore, later in the questionnaire, this question was posed:

When you consider the possibility of living in downtown San Diego, do you feel

1. ____ Excited
2. ____ Interested
3. ____ Indifferent
4. ____ Uncomfortable
5. ____ Frightened

6. ____ Other; please specify:

In this study, in order for a respondent to be considered a “possible downtown resident,” he or she had to choose the first or second response to both questions. Because any other combination might indicate a tentative or inconsistent willingness to consider downtown as a possible place to live, respondents with such answers were not considered strong candidates for downtown living. Without the benefit of this reliability check, respondents who were less likely to live downtown might well have been wrongly included with those who were more inclined to do so.

Question Format: Open-Ended or Closed-Ended

Most questions in a questionnaire have *closed-ended* response choices or categories. Such questions provide a fixed list of alternative responses and ask the respondent to select one or more of them as indicative of the best possible answer. In contrast, *open-ended* questions have no preexisting response categories and permit the respondent a great deal of latitude in responding to them.

Advantages of Closed-Ended Questions

There are several advantages to closed-ended questions. One is that the set of alternative answers is uniform and therefore facilitates comparisons among respondents. For purposes of data entry, this uniformity permits the direct transfer of data from the questionnaire to the computer without intermediate stages. The respondent’s answers can be directed by a fixed list of alternatives, which limits extraneous and irrelevant responses. Here is an example of a closed-ended question:¹

What is the highest level of formal education that you have achieved?

1. ____ Some high school or less
2. ____ High school graduate
3. ____ Some college
4. ____ Four-year-college graduate
5. ____ Postgraduate degree

If, instead, the question were open-ended, as shown below, the responses might not be quite so specific:

How much education do you have?

Another advantage is that the fixed list of response possibilities tends to make the question clearer to the respondent. A respondent who may otherwise be uncertain about the question can be enlightened as to its intent by the answer categories. Furthermore, such categories may in fact remind the respondent of alternatives that otherwise would not have been considered or would have been forgotten.

Sensitive issues are frequently better addressed by asking questions with a preestablished, implicitly “acceptable” range of alternative answers rather than by asking someone to respond with specificity to an issue that might be considered particularly personal. For example, for medical purposes, an abortion clinic might require information about a client’s history in terms of previous abortions. The questions, “Have you ever had an abortion? If so, how many have you had?” will tend to intimidate certain respondents who have had prior abortions and perceive that abortion carries a degree of social stigma. Their responses therefore might be biased toward minimizing the actual number. Recognizing that this tendency exists and always will in regard to socially sensitive issues, the researcher would improve response accuracy by constructing the question as follows:

How many abortions have you had?

1. ☐ None
2. ☐ One
3. ☐ Two
4. ☐ Three
5. ☐ Four
6. ☐ Five or more

Phrasing sensitive questions in this way, with alternative responses that extend significantly beyond normally expected behavior, implies that an accurate response is not outside the realm of social acceptability. In this case, it implies that many other women may have similar histories and that having had an abortion is not necessarily aberrant behavior.

Other types of sensitive questions may pose issues more closely associated with privacy than with social acceptability, for example, when the subject of a question is income. A respondent may very well feel that his or her privacy is violated when asked, “What is your annual household income?”

Giving alternative choices in the form of income ranges will tend to mitigate such feelings and will therefore generate a much higher level of response. A question about income is much better constructed to read as follows:

Please indicate the range that best describes your annual household income:

1. ☐ Less than \$15,000
2. ☐ \$15,000–\$29,999
3. ☐ \$30,000–\$44,999
4. ☐ \$45,000–\$59,999
5. ☐ \$60,000 and above

Finally, fixed responses are less onerous to the respondent, who will find it easier to choose an appropriate response than to construct one. Thus, use of fixed-alternative questions increases the likelihood that the response rate for particular questions, and for the questionnaire in general, will be higher.

Disadvantages of Closed-Ended Questions

Closed-ended questions have certain disadvantages that researchers should consider when developing a questionnaire. For example, there is always the possibility that the respondent is unsure of the best answer and may select one of the fixed responses randomly rather than in a thoughtful fashion. It is also possible that the simplicity of the fixed-response format may lead to a greater probability of inadvertent errors in answering the questions. For instance, an interviewer or a respondent may carelessly check a response adjacent to the one that was actually intended. The advantage of ease of response therefore comes with some potential negative consequences. In a similar vein, a respondent who misunderstands the question may select an erroneous response.

Closed-ended questions in a sense compel respondents to choose a “closest representation” of their actual response in the form of a specific fixed answer. Subtle distinctions among respondents cannot be detected within the preestablished categories. This particular drawback is frequently addressed by inserting another alternative in the fixed-response format: “Other; please specify.” This alternative represents an excellent compromise between closed- and open-ended response formats in that it is an open-ended question within a closed-ended format, as shown in this example:

1. Q1. *What is the most important reason that your organization developed a telework policy?*
 1. ____ Initiative by upper management
 2. ____ Response to employee requests
 3. ____ Effort to save money/attain higher level of efficiency
 4. ____ Effort to retain qualified staff
 5. ____ Other (please specify) _____

For simplicity and ease of response, however, the use of this option must be carefully controlled. The decision to include an “Other” response category for a particular question must be based on evidence obtained during the pretest of the survey instrument. If the evidence shows that a relatively large number of responses to the question do not conform to the preliminary set of fixed alternatives (a minimum of 3 percent), the researcher should formulate additional fixed categories for the responses that appear frequently and retain the “Other, please specify” category for the responses that appear less frequently. If there is no indication that an “Other” category is needed, it should not be included.

Using Open-Ended Questions

Researchers use open-ended questions in situations where the constraints of the closed-ended question outweigh the inconveniences of the open-ended question for both the researcher and the respondent. It is recommended that open-ended questions be used sparingly and only when needed. To the extent that they are used, the researcher must be aware of certain inherent problems.

First, open-ended questions inevitably elicit a certain amount of irrelevant and repetitious information. In addition, the satisfactory completion of an open-ended question requires a greater degree of communicative skills on the part of the respondent than is true for a closed-ended question. Accordingly, the researcher may find that these questions elicit responses that are difficult to understand and sometimes incoherent.

A third factor is that statistical analysis requires some degree of data standardization. This entails the interpretative, subjective, and time-consuming categorization of open-ended responses by the researchers. And finally, open-ended questions take more of the respondent's time. This inconvenience may engender a higher rate of refusal to complete the questionnaire.

Follow-Up Open-Ended Questions

As discussed, it is desirable to have relatively simple, fixed-answer questions wherever possible. However, most surveys find it necessary to seek information that cannot be fully answered within the fixed-answer format. In such cases, follow-up open-ended questions are asked in a manner that connects them to the fixed-answer question. For instance, during the study of customer satisfaction in the Applewood Water District, the following questions were asked:

1. Q1. How likely are you to choose to go paperless in your bill paying to the district and other regular monthly accounts within the next year or two? Please provide your answer on a scale of 1 to 5, where 1 is very likely and 5 is very unlikely.
 1. ____ Very likely
 2. ____ Somewhat likely
 3. ____ Neither likely nor unlikely
 4. ____ Unlikely
 5. ____ Very unlikely
2. Q2. [IF Q1 = 4 or 5] What is your major objection to going paperless for bill paying?

Efforts should be made to place such open-ended questions as late in the appropriate section of the questionnaire as possible, while remaining cognizant of the need to have a logical and temporal order of questions.

Open-Ended Venting Questions

At the end of the entire questionnaire, it is often beneficial to use one or more open-ended "venting" questions—ones in which the respondent is asked to add any information, comments, or opinions that pertain to the subject matter of the questionnaire but have not been addressed in it. For example, a survey about the potential development of a formal telework policy among major employers in the Syracuse region posed the following question at the end of a survey:

What, in your opinion, would motivate the management or decision makers in your organization to consider the development of a formal telework program?

Questionnaire Length

The questionnaire should be as concise as possible while still covering the necessary range of subject matter required in the study. The researcher must be careful to resist the temptation of developing questions that may be interesting but are peripheral or extraneous to the primary focus of the research project.

The purpose of being sensitive to questionnaire length is to make certain that the questionnaire is not so long and cumbersome to the respondent that it engenders reluctance to complete the survey instrument, thereby jeopardizing the response rate.

As questions increase in complexity and difficulty, the questionnaire may be perceived as being tedious and longer than it actually is. Hence, the researcher must factor in such considerations as the number of questions and the time and effort required of the respondent to complete them.

As general guidelines, telephone interviews should occupy absolutely no more than twenty minutes of the respondent's time—and preferably closer to twelve to fifteen minutes; mailed questionnaires should take thirty minutes or less—preferably closer to fifteen minutes; web-based surveys should also be targeted for fifteen minutes; in-person interviews should be limited to thirty minutes; and intercepts must be accomplished in four or five minutes at most—preferably three minutes.

Editing the Completed Questionnaire

An important part of the interviewer's task is to examine finished questionnaires for accuracy, legibility, and completeness. Despite this preliminary examination, the researcher must review each questionnaire for quality control purposes, especially with regard to filtering, multiple answers, and open-ended questions. Since mail-out questionnaires receive no intermediate interviewer examination, the researcher must be particularly careful in reviewing them.

In the review, the interviewer must be sure that questions that were designed to be skipped (through a filtering process) have indeed been skipped. If the interviewer has mistakenly asked an inapplicable question or has inadvertently marked a response to that question, the response should be deleted. In the case of questions that permit multiple responses and request a ranking, the first choice should be ranked by a code of 1 and the second choice by a code of 2. Such a question should be examined for accuracy in the following way:

- If only one response was made, it should receive a code of 1.
- Two responses should be coded with a 1 and a 2. If two responses are provided but are not ranked (e.g., they are indicated with a check mark), in-person interviewers should recontact the respondent immediately. This is an important reason for interviewers to examine the accuracy of their completed interviews at the time they are given. In the mail-out format, if there are only a few such responses, follow-up telephone calls, using the cross-referenced identification code, are in order. If there are many such inaccurately coded responses, the researcher can establish a new category for response categories that have been indicated but not ranked (see the discussion of postcoding below for the procedure for introducing new variable categories).

- More than two responses are not permitted. The intercept and in-person formats enable immediate corrections, and web-based and telephone surveys can prohibit such errors as part of the programming. The mail-out can involve recontacting the respondent or creating an “Indicated but not ranked” category, and the final report should caution the reader that some respondents provided more than two responses.

After the review of the questionnaire has been completed, the researcher can begin the postcoding process.² In postcoding, responses to open-ended questions and “Other, please specify” response categories of the questionnaire are coded. To facilitate this process, the researcher should ask the interviewers to provide lists of all open-ended and “Other, please specify” responses.

With regard to “Other, please specify” responses, the researcher should first review these responses, identify those that reasonably belong to an existing, precoded category, and code them in accordance with that category by writing the code number directly on the questionnaire next to the response. This should be done in a different-colored ink from the one used to typeset the form and the one used by the respondent or interviewer to mark the questionnaire. This will permit the data entry technician to easily identify the postcoded response. The original “Other” response code should be crossed out for further clarity. “Other” responses that cannot be categorized into the precoded response categories can be treated in one of two ways, requiring a certain degree of judgment by the researcher:

1. When there is a sufficiently large number of the same or similar responses that do not belong in a precoded category, the researcher should consider creating a separate category with a new numerical code, starting with the first available number following the existing codes (the code for “Other” should also be adjusted to the highest code number so that it will print out last in the computer output). Therefore, it is not uncommon for “Other” categories to be precoded 9 if there are to be a few categories, or given a larger code number (for example, 20) if there might be a double-digit number of categories. If the frequency of any of these similar responses approaches the frequency of one of the existing categories, it is probable that a new code is warranted. This code should be marked on the questionnaire in a different color. Recoding is a frequent necessity in survey research in order to accommodate unexpected responses.
2. All responses that have a relatively low frequency of response can remain in a “Miscellaneous” or “Other” category.

The following question and answer demonstrate this process. This completed questionnaire contains a response that has been proven to occur with great frequency on other completed questionnaires (e.g., restaurant). Consequently, another category and associated code are merited (hospitality coded as 5).

What kind of new business in Scranton do you feel would give you the best opportunity for employment?

1. ____ Retail
2. ____ Light industry

3. ____ Heavy industry
4. ____ Office/professional
5. ____ Other, please specify: *restaurant*

Open-ended questions require a similar postcoding process. That is, based on a verbatim listing of all responses to an open-ended question, the researcher again uses judgment to develop categories into which these responses can be placed. The number of categories should be limited to approximately ten, with a maximum of fifteen to twenty, while adhering to the guideline that each should contain a respectable percentage (3 to 5 percent) of the total responses.

[Table 2.1](#) was derived from the categorization of responses to the open-ended question, “How can the city government better serve your community?” By way of elaborating on the process of categorizing open-ended responses, the category of “Improve zoning/planning process” in [table 2.1](#) contains such verbatim responses as “fewer apartments,” “more open space,” “make developers pay fair share,” and “protect property values.”

[TABLE 2.1.](#) WAYS IN WHICH CITY GOVERNMENT CAN SERVE COMMUNITY NEEDS.

	<i>f</i>	%
Provide improved local police protection	90	22.5
Ease traffic congestion	83	20.8
Enhance public education	74	18.5
Improve zoning/planning process	70	17.5
Provide more community funds	35	8.7
Improve communication	21	5.3
Other	27	6.7
Total	400	100.0
<i>f</i> = frequency or number of responses.		

Notes

[1.](#) It is important that the categories of a closed-ended question be associated with numerical codes. The codes assigned during the questionnaire development stage are necessary for data entry and useful for data analysis. [2.](#) When they have been completed, edited, and coded, the questionnaires are ready for the data entry process. There are numerous statistical software programs from which to choose. The researcher selects the most appropriate program based on the size and scope of the project, the sophistication of statistical analysis envisioned, the importance of the integration of graphics into the final report, ease of operation, and program cost. A major statistical program for survey research is the Statistical Package for the Social Sciences (SPSS), which is sophisticated, comprehensive, and capable of processing large amounts of data. It can generate both the very basic and the most highly advanced descriptive

and analytical statistics and graphics. Microsoft Excel is also useful as a statistical analysis tool in the conduct of survey research.