



CHAPTER ONE

INTRODUCTION

This *Handbook* speaks directly to you, new telephone interviewers just starting your training. It aims to teach you the basic principles and procedures for conducting telephone interviews, from the moment you dial the telephone to the moment you say good-bye. It emphasizes best practices for collecting the highest-quality telephone survey data possible, minimizing interviewer-related error, and avoiding bias. This *Handbook* is based on standardized interviewing techniques. It incorporates psychologists' and sociologists' findings from studying interviewers, interviewing, and the interview process. The bibliography at the end of this volume presents the books, articles, and Web sites that underlie the guidelines presented here.

This *Handbook* will also help you understand how your job fits into the wider world of survey research. You will find explanations of what surveys are all about and why they are important. You will learn about the types of organizations that conduct telephone survey research, as well as what you can expect from your employer in terms of training, work culture, workplace policies, and the physical environments that you may encounter in the organization in which you work. You will also find out about your ethical responsibilities and your respondents' legal protections. If your employer's training materials and policies differ from those presented here, however, do not think something is wrong. Many reasonable variations occur across different types of survey organizations.

All organizations that conduct scientific telephone surveys to advance the understanding of society and human behavior should find this volume practical. Asking questions by telephone of a representative sample of people has been an accurate and efficient way to obtain survey data for decades and will continue to be so for many years into the future. This *Handbook* will enhance interviewers' ability to collect high-quality data about people's opinions, attitudes, beliefs, behavior, needs, knowledge, and characteristics. Interviewers can apply this training to surveys on all kinds of topics, for all types of survey sponsors, for studies representing large populations, such as a county, a state, or the nation, and for studies of special populations, such as elderly patients, welfare recipients, customers, or members of an organization.

I speak from experience, starting as an in-person interviewer in 1973 and ultimately founding and directing a survey research organization from 1992 to 2003. Even as a director, I always tried to find the time to conduct some telephone interviews side by side with the interviewers I trained. Why? The one essential lesson of my experience is that interviewers are critical to the success of any telephone survey project or organization.

Without highly trained and well-motivated interviewers, a telephone survey organization cannot persist. Consider this scenario. The finest thinkers develop a clever new theory that may help answer a pressing human problem. They find the most talented survey researchers to design an ideal instrument that will test the theory. A statistician selects a perfectly representative sample of people to take the survey. A computer programmer programs the survey software flawlessly. Everything up to this point is precise and complete. But none of it matters without highly trained interviewers to gather the data.

You are the one who dials the telephone and determines whether each telephone number belongs in the sample. You introduce the survey and orient respondents to it. You select the appropriate adults to interview in households and organizations. You ease reluctant respondents' concerns and convince them to participate. You ask the survey questions. You record respondents' answers. Without your knowledge, skills, and integrity, none of the rest matters. Poorly trained interviewers can sink the best-designed survey project.

Interviewers are critical to the success of telephone survey projects and organizations.

You are the heart and soul of all data derived from telephone interviews. A great deal of data crucial to public policymaking, human service delivery, and business come from the telephone surveys you conduct. For many surveys, telephone

interviewing is the best way or the only way to collect the data needed for planning and decisions. Your responsibility as a telephone interviewer is enormous. Fortunately, this job is also varied, flexible, and can be a lot of fun.

Finally, this *Handbook* is just one part of your training. Your employer is likely to have its own training materials to complement this volume. For example, the software for computer-assisted telephone interviewing (CATI) systems varies from one organization to the next. Therefore, this volume provides you with only general information about them. It is up to you to learn your employer's CATI system on the job. You are also responsible for learning your employer's workplace policies and procedures to the extent that they differ from those you find here.

To be an excellent telephone interviewer, you should refer back to this *Handbook* frequently to refresh your skills. If you encounter words or terms that you do not understand, refer to the glossary in Appendix A for definitions.

The rest of this chapter presents the big picture of survey research and your essential role in the survey process. You will learn why surveys exist, as well as the kinds of practical problems and theoretical issues that surveys help to solve. The last section introduces the concept of survey error and interviewers' role in minimizing it.

Why Have Surveys at All?

Why do surveys exist? A survey involves collecting data from a sample of people who have been specially selected to represent an entire population. Everyone in the sample is asked the same questions in the same way by interviewers, or they fill out a questionnaire themselves. Respondents' answers are then organized in a way that allows researchers to analyze the information and draw conclusions.

If all people were identical to each other, surveys would not be needed. Surveys help researchers, public policymakers, and businesses understand why and how people vary across groups. For example, how do Democrats' political beliefs systems differ from those of Republicans? Which people are most likely to buy gas-guzzling SUVs, and how do they differ from those who buy more fuel-efficient vehicles? Why do some people enjoy visiting shopping malls but others avoid them? Do the elderly encounter different barriers in obtaining adequate health care than younger adults? If people were all the same, politics, transportation, and health care could be delivered in the same way to everyone, because no individual would need anything different from another. Of course this is not the case. Each human differs deliciously from every other. Surveys enable researchers to examine broad-scale patterns of similarity and difference across human populations.

Surveys can be used for an infinite number of purposes, all of which help people to understand themselves.

The persons you interview are most likely to be adults speaking on behalf of themselves, but they may also speak on behalf of their family, their household, or an organization. Each person with whom you speak will have been selected randomly from a defined population of persons, families, households, or organizations. Random selection is a scientific procedure based on statistical probabilities, ensuring that each unit in the population has a known chance of being chosen for the survey. The persons selected are called a *random sample*, or a *probability sample*. A random sample of 400 persons can accurately represent tens of thousands of people in a population.

Handing out questionnaires in a shopping mall or on a street corner is not random, because the population is not defined and every person in the population does not have a known chance of being selected. These are called *intercept samples*, or *samples of convenience*. The results of such pseudosurveys cannot be generalized to any known population. They are not scientifically valid or accurate. They might, however, prove useful for initially exploring a topic.

Surveys are conducted on behalf of private companies, nonprofit organizations, school districts, counties, hospitals, and various agencies in federal, state, and local governments. The governmental agencies that might need a survey include crime prevention commissions, air pollution monitoring groups, local libraries, economic development organizations, state boards that accredit teachers, health insurers, and wastewater management districts. This variety keeps your work interesting.

All of these organizations have one thing in common: They need survey data to solve a problem, answer an important question, evaluate a program, or track social or economic indicators over time. Table 1.1 describes several studies in which a telephone survey helped to meet such needs. (The study details have been changed to protect the confidentiality of the persons and organizations involved.) The questions in the surveys were carefully designed and tested to address the issue at hand while also minimizing inconvenience to respondents.

These few examples only partially represent the wide array of telephone surveys conducted all the time, every day, in every state and almost every nation. The federal government requires survey data in order to calculate unemployment rates and poverty rates, to predict enrollment in educational institutions, and to track crime victimization, consumer purchases, energy consumption, and health care. State and local governments use surveys to gather information for planning and programs. Government agencies use survey results to examine trends, to help decide public policies, and to find out what citizens think about those policies. Governments also use survey results to determine whether certain places need

TABLE 1.1. EXAMPLES OF TELEPHONE SURVEY RESEARCH PROJECTS.

The Problem	How a Telephone Survey Helped Solve the Problem
<p>A dangerous highway ran through a medium-sized town. The state legislature found funds for the Department of Transportation (DOT) to reroute it. DOT estimated the project would take a year. DOT knew it would disrupt citizens' daily lives with dust, delays, noise, rubble, and potential danger from big machines rumbling through town. DOT needed data to help minimize these disruptions.</p>	<p>DOT hired a survey research organization to conduct three representative telephone surveys. (1) The first took place before the highway reconstruction project began, to obtain citizens' input on the best times of day and days of week to delay traffic, the maximum number of minutes citizens could bear delays, how they preferred to contact DOT when problems arose, and related matters. (2) DOT deployed a second survey partway through the project to find out how citizens thought the project was going, learn about particular problems, and solicit ideas for improvements. Respondents praised the project to date but said they could not see driveways for certain local businesses, causing near accidents and endangering pedestrians. DOT immediately made signs and placed them pointing at the driveways. (3) When the project ended, DOT conducted a third survey, asking respondents to evaluate the project overall and suggest what DOT could have done better. These surveys helped DOT plan future highway projects in other communities.</p>
<p>A regional newspaper publisher needed to convince advertisers that their limited budgets were better spent on his newspaper than on competing news outlets.</p>	<p>The publisher engaged a survey research organization to conduct a random sample survey of households in the newspaper's region. The interviews asked how often adults read the newspaper and for what purposes; how often they got their news from television, radio, and elsewhere; and which source they considered most accurate and fair. The results did not portray the newspaper as favorably as the publisher had expected, but he got enough data to persuade his advertisers.</p>
<p>An economically distressed county needed to determine the best ways to allocate scant resources to child and family services.</p>	<p>A county child and family services commission worked with a survey research organization to develop parallel surveys for both families and the agencies that provided services. The interviews asked about the</p>

(continued)

TABLE 1.1. (CONTINUED)

The Problem	How a Telephone Survey Helped Solve the Problem
<p>President Clinton's welfare reform policy in the 1990s drastically changed how states deliver services to needy families. State welfare employees had to change how they did their work, and needy families had to find ways to adapt.</p>	<p>adequacy of recreation, library, child care, medical, substance abuse, crisis intervention, crime prevention, arts, religious, and other family services, as well as why children and families did not get the services they need. The survey results showed that families and agencies voiced similar opinions about service adequacy. However, agencies said families themselves were the main barriers to service, believing they did not need help when they actually did and thinking it was too much hassle to get help. But families said the agencies created barriers, with bad locations, restricted operating hours, rude staff, fees for service, confusing rules, waiting lists, and overly personal questions.</p> <p>A state human services department (HSD) hired a survey research organization to conduct parallel studies of affected families and HSD staff over time. Interviewers called a random sample of needy families in the months that HSD denied them food stamps or Temporary Aid to Needy Families, then again six months later and ten months after that. Questions asked how the families adapted in jobs, housing, child care, food, health, and so forth. The interviews were difficult. They lasted over one hour. Many families had moved and could not be located. Families' situations upset interviewers. The telephone company had often disconnected and reconnected service. The paperwork to pay families \$25 per interview was complex. Interviewers also conducted semistructured in-depth conversations with HSD staff when the new policies started and a year later. These interviews proved difficult too. The policy changes conflicted with HSD employees' beliefs about how to serve the poor best. Some distrusted the confidentiality of the interviews. Some quit before the second interview. The survey findings resulted in a book.</p>

TABLE 1.1. (CONTINUED)

The Problem	How a Telephone Survey Helped Solve the Problem
A foundation planned to build a museum to celebrate a famous athlete's life. This man inspired many people, but enraged others. The planners needed ideas on how to present his life in a balanced way.	The planners estimated that most visitors would travel four hours to visit the museum in its planned location. That four-hour radius included ten states and over 130 counties, from which a random sample of households was selected. Respondents familiar with the athlete were interviewed about their impressions of him, why they held those impressions, and whether they thought certain qualities or themes in this man's life would inspire teenagers.

certain programs (for example, Meals on Wheels) and to identify the geographical areas needing those services most (for example, counties with large populations of impoverished persons aged sixty-five and over). Once a program is in place, surveys can help evaluate how well the program does what it intended to do. Each year in the United States, surveys help the federal government distribute over \$200 billion in funds and services to states, local governments, and tribal jurisdictions.

A census is an ancient type of survey. Censuses count all persons in a specific geographical area (usually a nation) within a specified time period. The first-known censuses were conducted in Egypt, Rome, and China as early as 95 B.C. for purposes of taxation and military conscription. Think about the biblical story that Christians tell at Christmas, about Mary and Joseph traveling to Bethlehem and Mary delivering baby Jesus in a barn. Why would Mary and Joseph go to Bethlehem when she was nine months pregnant? Because their government was conducting a census that required people to return to their home villages to be counted.

The U.S. Constitution requires a census of population every ten years. Since 1790, the U.S. Census Bureau has counted every person in the nation in each year ending with a zero. The last U.S. census took place in 2000. The nation needs this count to reallocate the 435 seats in the House of Representatives across the fifty states, based on the number of persons in each state. Researchers, businesses, students, and others also use census data to describe the U.S. population and track how it changes over time.

A census differs from a survey in that everyone participates in it. In contrast just a small, representative group is asked to participate in scientific random

sample surveys. Surveys also differ from a census in that they are cheaper and less intrusive. Interviewing a few people who represent an entire population burdens that population much less than asking everyone.

Although we tend to think of surveys and censuses as uniquely about people, many surveys and censuses concern animals and inanimate objects. For example, in between conducting the population census every ten years, the U.S. Census Bureau conducts the Census of Agriculture, Economic Census, Census of Commercial Fisheries, Census of Construction Industries, Census of Manufacturers, Census of Mineral Industries, Census of Transportation, and numerous other censuses and surveys. The Census Bureau conducts these studies because the U.S. Congress requires it to do so. Private, for-profit companies and businesses widely use and benefit from regular data published by the federal government on such things as crop values, milk production, land use, communications, consumer prices, employment, earnings, inflation, salary trends, insurance, auto accidents, personal injuries, banking, and much much more. Almost all of these data come from surveys.

Political polls are another type of survey. Polls differ from surveys in that they tend to ask just a few questions (usually fewer than ten), they are often conducted in just a day or two, and the private companies that conduct them vary widely in their scientific rigor. Polls are typically used to determine what voters think about candidates for public office and about how well elected representatives perform their jobs.

Market research is one more type of survey research, differing from others mainly in subject matter. The market research industry uses surveys to assess consumer responses to products of all types, from toothpaste to Toyotas, and in all kinds of dimensions, such as color, name, taste, smell, associations, and feelings. This type of research helps both companies and nonprofit organizations develop advertising and public relations campaigns, identify their market niche, and test ideas for new products. (Would you buy grape-flavored toothpaste? Why or why not? What is the most you would pay for four ounces of this toothpaste? Would you prefer to use it from a plastic tube, a metal tube, or an upright container? Which do you like better, a screw-off end or a flip-top end? You get the idea.)

Respondents' cooperation with marketing surveys has steadily declined. Many say they do not trust the promise of confidentiality (especially when an interviewer asks for their name and address at the end of the interview). Respondents complain that market researchers' telephone interviews are too long and that interviewers do not display professionalism and courtesy on the telephone. They may also wonder about the extent to which such surveys contribute to their communities and advance understanding of human behavior.

Telemarketing is not survey research. Just because telemarketers call people at home on the telephone does not mean that they conduct a legitimate form of survey research. Rather, they engage in practices that professional survey researchers call *sugging*—selling under the guise of survey research—or *frugging*—fundraising under the guise of survey research. Similarly, *push polls* are not a legitimate form of election polling. These illicit forms of surveying presented serious challenges to the scientific survey community in the 1990s. Chapter Three discusses these issues in more detail.

Telemarketing is not survey research.

Thus, people conduct surveys for many reasons. Asking questions of a random sample of persons remains the most accurate and efficient way to obtain information about a population's opinions, knowledge, needs, attitudes, beliefs, behavior, and characteristics. Surveys are more valid and reliable than educated guesses. Indeed, sometimes surveys find the opposite of what researchers expect to find. Surveys are not new in human history, but they have become pervasive as societies have grown in numbers and become more complex and differentiated.

Why Have Interviewers?

Why not just give survey respondents a questionnaire on paper or on the Internet? Why bother with interviewers at all? Don't most people prefer completing surveys on their own? Sure, some people would rather complete a questionnaire on their own, but a certain number "forget" their promise to do so, or their partner "helps" by filling it out for them. Others are too embarrassed to admit they cannot read very well. When people completing self-administered questionnaires do not understand a survey question, no one is immediately available to help them. They might skip the problematic question or throw away the entire questionnaire in frustration. Many other reasons also underscore interviewers' importance.

The most recent National Adult Literacy Survey estimated that over one-fifth of adult Americans have limited reading and writing skills. This means that over forty million people might not be able to write a check, locate a meeting time on a handout, identify a piece of specific information in a short newspaper article, or accomplish other brief, routine, and uncomplicated reading tasks. Semiliterate people experience great difficulty completing questionnaires. They have problems understanding a survey's purpose, accurately reading questions,

correctly recording their answers, and following *skip logic* (that is, instructions to skip over questions that do not apply to them).

People with literacy problems are diverse. Some are well educated but have vision problems. Many can converse with ease but barely completed high school and did not fully develop their reading skills. Some were educated in another language and perform less well in English. Others might have temporary physical or mental conditions that limit their literacy. If no interviewer is present, these citizens' opinions, attitudes, beliefs, and knowledge could easily go unrecorded, making a survey unrepresentative. Thus interviewers are essential for accurate and representative data collection from this portion of the population.

Never underestimate your importance as an interviewer.

Interviewers can also answer respondents' questions about a survey's purpose or about a specific question. Interviewers make sure that the randomly chosen person takes the survey, not a well-meaning but nonrepresentative volunteer. Trained interviewers can guide respondents through complex parts of a survey, screen out a fourteen-year-old trying to have some fun, and keep impatient respondents on the telephone (who might have quit partway through a self-administered questionnaire). Good interviewers know when to probe an open-ended question, which cannot be done in a self-administered questionnaire.

An interviewer's presence can enhance the survey experience for respondents who might otherwise not understand, care about, or participate in a research project. In these ways, interviewers improve the quality of data that respondents provide, ease the respondents' burden, reduce potential respondent error, and—overall—optimize the value of survey data.

The Basic Survey Process

Before going further, you need to gain some understanding of the overall survey process. Every survey involves six basic, predictable steps. As an interviewer, you will participate mainly in the fourth step.

1. Study design and planning
2. Survey instrument design
3. Sampling
4. Data collection and entry
5. Data analysis
6. Reporting

Stages in the Survey Process

The first step in a survey is study design and planning. Survey research organizations work with clients to define the scope and content of the study's objectives, assess their feasibility, and consider alternatives. What does the client need to know? What information is necessary to describe and analyze it? Could the information be obtained somewhere else? Will the results of the survey be used in such a way that it is worth the time and cost for respondents and survey sponsors? At this stage, researchers identify the survey's target population; define key concepts; select methods of sampling, data collection, and analysis appropriate to the survey's objectives; and develop budgets and time schedules.

The second step is survey instrument (questionnaire) design. This step involves determining the content, structure, and sequence of survey questions. It includes writing each question in a way that makes sense to respondents and maintains their interest, while simultaneously avoiding bias and minimizing inconvenience. In addition, instrument designers must ensure that respondents' answers are clearly recorded in an efficient form for later data processing. Then the instrument is pretested, revised, and pretested again as needed until it is as perfect as possible. Experienced interviewers often participate in survey pretesting and offer suggestions on question wording, answer categories, and question ordering.

The third step is sampling. This includes choosing an appropriate sample size to meet study objectives, deciding the best sample design for the project, and identifying potential sample sources, such as lists, directories, organizational records, or vendors that sell sample lists. The sample size is based on the number of persons in the target population and the sample design. Some sample designs are simple, involving just a certain number of completed interviews from the target population. Other sample designs are complex. For example, in quota, cluster, and stratified samples, interviewers must obtain a specified number of completed interviews with population units having certain characteristics or residing in certain geographical areas.

Sampling itself is the process of selecting a certain number of units from the target population. For simple random samples, it involves randomly selecting a small fraction of a target population in such a way that that fraction represents the whole population. When a simple random sample is properly executed, each person in the target population has a known and equal chance of selection; that is the definition of a probability sample.

Telephone interviewers typically work from *listed* samples or *random-digit-dial* (RDD) samples. A list sample is drawn from a record of all members of an entire population, such as all the patients treated at a certain clinic in a given month or all the automobile owners who paid Jiffy Lube to service their cars in

a certain period. Certain businesses specialize in compiling and selling sample lists to survey research organizations. Purchasing lists from vendors can be very useful for rare and difficult-to-locate populations, such as households with known tobacco users. Once a list is obtained, a staff person in the survey research organization selects a random sample from that list. List samples can be very efficient for rare populations, but for general populations RDD samples tend to be more up-to-date, comprehensive, and representative. For this reason, RDD samples are very common in telephone surveys.

The RDD sampling process goes something like this. Statisticians use a computer to generate all the telephone numbers that could possibly occur in a particular geographical area (that is, all the telephone numbers that could follow each area code and its assigned prefixes). Then they randomly select telephone numbers from this list.¹ Often interviewers are responsible for further sampling, for example, by randomly selecting an adult in each household. Legitimate survey research organizations never sell lists of working telephone numbers or cooperative respondents to others, such as list vendors.

After sampling, some send precontact letters to randomly selected respondents. Precontact letters explain that an interviewer will call, from where, and why. They present the survey's purpose and tell respondents how they were selected and why they are important. These letters explain confidentiality and other elements of informed consent. They also offer contact information (such as a Web site or telephone number) for respondents who have questions. Some survey research organizations involve interviewers in the process of signing these letters, stamping envelopes, and folding and stuffing the letters into envelopes. Interviewers often welcome these tasks as a break from interviewing.

Legitimate survey research organizations never sell lists of working telephone numbers or cooperative respondents.

The fourth step, data collection and data entry, is your job. Telephone interviewing is not always fun and easy. People contacted in an interview situation may be unlike anyone you have ever met, and most do not know how to be a "good" respondent. Some are anxious to tell their opinions and flattered to be chosen. Others will talk because they are lonely. Some will hang up before you have a chance to explain why you called. You will find respondents who are sincerely interested in the survey topic, answer questions frankly, and are a delight

to interview. Other people honestly know little and care nothing about the survey subjects and tell you so from beginning to end; but you still must interview them.

Respondents represent the opinions and attitudes of many others in their community. Each respondent's participation is intrinsic to the survey's integrity. The great diversity of people makes interviewing a demanding and challenging, yet interesting, job. The best interviewers genuinely enjoy the variety. A good interviewer is committed to obtaining the best possible data in every interview and will rise to the challenge of a difficult interview by using the techniques described in this *Handbook*. As a practicing interviewer, you will learn to relax and guide each interview with more and more success.

As a telephone interviewer you are very important because you are the link between the researchers who need data and the respondents whose answers provide it. The statistical validity of the survey results depends on many interviewer qualities, such as your ability to persuade reluctant respondents to participate, your skill in reading questions exactly as worded yet conversationally, and your proficiency in accurately recording answers. More qualitative aspects of interviewing also affect the quality of survey results, such as your tone of voice, pace, timing, awareness, sense of impartiality, and professionalism.

Your presence as an interviewer should not affect respondents' perceptions of questions or the kinds of answers they give. Each interview demands and exercises skills in different combinations. Your importance in the survey process is why survey research organizations conduct intensive interviewer training, carefully supervise and monitor data collection, and randomly verify completed interviews by calling respondents back. The bulk of this training manual is about this step in the survey process.

But this fourth step is not just about interviewers. In modern telephone interviewing you will work interactively and seamlessly with a CATI system, which integrates sampling, calling, interviewing, and data entry. You will sit under a telephone headset in a sound-reduced carrel at a computer workstation connected to a computer network. In CATI the survey instruments and telephone numbers are preprogrammed to appear automatically on the computer monitor at each workstation. You enter the data into a computer as you speak with each respondent. The CATI system helps you gather high-quality data by eliminating out-of-range responses and by accurately guiding you through complex skip logic. The CATI system also helps maintain standardized calling and callback procedures, and it automatically stores your call records. Thus, high-quality telephone survey data collection in this fourth crucial step involves two components: (1) a specially trained staff of interviewers to collect data one on one from carefully

selected and motivated respondents and (2) a CATI system that facilitates interviewers' work and helps prevent errors.

Interviewers must not affect respondents' perceptions of questions or their answers.

Data reduction and data analysis is the fifth step of the survey process. Once the survey data have been gathered by the interviewers and entered into the computer, programmers clean the data of any wild codes (out-of-range numbers), prepare variable labels, construct statistical weights, create scales and indexes, and combine the data with any necessary linked or nested files. At this stage, open-ended coding also may occur. For example, specially trained coders may translate respondents' narrative answers to occupation questions into the U.S. Census Bureau's detailed occupational code categories.

In the final step of the survey process, researchers produce reports explaining all the survey steps up to this point. They also prepare descriptive statistics on each question asked in the survey and present full documentation on the survey data set's structure and content. Sometimes clients also need detailed data analysis reports describing the survey's findings, with graphs and statistical analyses. All this is delivered to the client, sometimes with a formal, in-person presentation. This step may also involve a press release describing certain survey findings for the media. After a number of months or years, many survey organizations publicly archive their data for future researchers' use.

Note that not all research organizations perform all these research operations. Your employer might specialize in just one or two, subcontracting one or more steps to another organization. Some clients prefer to conduct some of these steps themselves. At some point, however, each of these steps will be performed by someone, somewhere in the survey process.

How Telephone Surveys Compare to Other Survey Modes

You are being trained to conduct telephone interviews using your employer's CATI system. Telephone interviewing is a significant tool of survey data collection but not the only one. In order to understand how telephone interviewing fits into survey data collection more generally, this section briefly reviews different survey modes, why researchers choose them, and some of their advantages and disadvantages.

Researchers have used face-to-face interviewing and self-administered questionnaires for generations. But telephone interviewing became feasible only in the 1970s, when the percentage of U.S. households with telephones exceeded 90 percent.² Early on, telephone interviewers recorded respondents' answers on paper questionnaires. CATI systems became widely available in the 1980s and 1990s. Currently, the U.S. Census Bureau estimates that over 96 percent of U.S. households have at least one telephone line. Telephone surveys are cost effective, reaching the maximum number of people in the shortest period of time while maintaining representative samples. Interviewers can speak with respondents living all over the nation from a single location. Calling from one location allows interviewers to obtain on-the-spot directions from supervisors as needed, and supervisors can easily monitor interviews for accuracy, completeness, and comparability.³ Also, many respondents are more comfortable discussing sensitive topics on the telephone with an interviewer than doing so face-to-face with a stranger in their home (see Exhibit 1.1).

But telephone interviewing also has important disadvantages compared to in-person interviews and self-administered questionnaires. For example, telephone surveys need to be short, with simpler questions, fewer questions, and fewer answer categories than other types of surveys. Most telephone interviews last ten to twelve minutes or less, while face-to-face interviews often last thirty minutes or more. Telephone interviewers also cannot use visual aids to help respondents understand a complex concept or calculate something. Although

EXHIBIT 1.1. WHY ARE SENSITIVE TOPICS EASIER TO DISCUSS ON THE TELEPHONE?

The social psychologists Argyle and Ingham⁴ discovered that people have *personal space*, something like little social bubbles. People invite others into their spaces with nonverbal cues, such as eye contact and body language. In experiments on social distance, eye contact, and surveys, Argyle and Ingham found that people need more social distance when discussing sensitive topics. Thus respondents who speak with interviewers on the telephone about sensitive topics should feel more comfortable and give more accurate answers than they would with in-person interviewers.

In additional experiments, Argyle and Ingham found that when the physical distance between two people remains the same (say, when sitting at a dining table in a face-to-face interview), they start avoiding eye contact when a conversation's topic becomes sensitive, to increase their social distance. For this reason, face-to-face interviewers are trained to look down when asking sensitive questions, giving respondents more personal space.

telephone interviewers may be able to “read” a respondent’s tone of voice for impatience or misunderstanding, they cannot see that respondent’s body language for the additional nonverbal clues that an in-person interviewer can.

Telephone surveys also do not reach all households. The growth of cell phone–only households, especially among young adults, is problematic for telephone surveys, because RDD samples typically exclude cell phone numbers. To date, however, most cell phone users maintain land lines at home. Telephone surveys also tend to exclude households whose residents are rarely home (for example, unmarried young men living alone). By definition telephone surveys exclude the homeless and households lacking telephones (typically those who are very poor or living in very remote places). These issues contribute to low response rates and low coverage rates, which can cause random sample telephone survey results to not represent their underlying populations.

Face-to-face or in-person interviews put the respondent and the interviewer together in the respondent’s home or a neutral location to complete paper-and-pencil or laptop computer questionnaires. They include persons without telephones, but hard-to-reach and homeless persons remain as difficult to reach as for telephone surveys. In-person interviewers have a high degree of control over the interview situation. For example, by observing body language, they can judge respondents’ understanding, attention, and the appropriateness of responses. Interviewers also can employ visual aids—for example, handing respondents a card that lists complex answer categories. To obtain sensitive information, interviewers can turn a laptop computer toward respondents to let them type in their own answers or hand them a short self-administered section that respondents can seal in an envelope when they finish.

The process of conducting face-to-face interviews builds rapport and trust between the interviewer and respondent, which allows for longer interviews and may enhance data quality. Rapport can backfire, however, when interviewers inadvertently influence respondents’ answers. For example, respondents sometimes answer questions in ways they think will please or impress the interviewer. This is called social desirability bias. Sensitive questions—about religion, money, social status, sexuality, drugs, alcohol, culturally deviant behavior and opinions, and political and moral issues—are particularly vulnerable to social desirability bias. Face-to-face interviews are more susceptible to social desirability bias than telephone interviews because respondents can see and react to interviewers’ social characteristics, such as age, sex, race, and ethnicity, as well as perceived social class and educational attainment.

Telephone interviewing minimizes the potential effects of interviewers’ social characteristics on respondents’ answers, because all respondents experience it by voice. Voice is not a reliable predictor of age, race, ethnicity, social class, or

education. Voice is not even a consistent indicator of sex.⁵ Only interviewers with strong regional or foreign accents might affect respondents' answers, but few survey research organizations hire interviewers with strong accents. Instead of seeing you, telephone respondents can create a visual image of the type of person they want you to be, consistent with their decision to cooperate.

Additional disadvantages for face-to-face data collection are trust and cost. Survey research organizations must completely trust their interviewers to carry out the interviews in exactly the way they were trained—and trust them not to fabricate the data altogether. Supervisors cannot tag along, monitoring interviewers' skills. Instead they verify each interviewer's work by recontacting a certain percentage of respondents who completed interviews and checking the accuracy of the answers interviewers recorded. But the biggest issue in face-to-face interviewing is its extreme cost in time, training, tracking, and travel. Many face-to-face interviews cost over \$500 each, compared to \$30 to \$100 for each completed telephone interview.

Respondents complete self-administered questionnaires without an interviewer's assistance. Researchers distribute such questionnaires via the postal service, Internet, e-mail, or in group settings. Mailed questionnaires are typically sent to a random sample of homes or businesses, with an explanatory cover letter, a token incentive (for example, a crisp dollar bill), and a stamped envelope for return to the survey research organization. Interviewers are sometimes employed to drop off questionnaires that respondents will mail back, to pick up questionnaires that were mailed out, or to call respondents to remind them to complete their questionnaire.

Internet and e-mail questionnaires are most appropriate for closed populations, such as employees of a firm or members of a voluntary organization. Even these populations, however, often lack universal Internet access. No list of e-mail addresses is available for the general U.S. population. Moreover, household Internet access varies significantly by geography in the United States, with higher penetration in the West than the South. Although very cheap to administer, these self-administered questionnaires typically suffer very low response rates. Nonetheless, self-administered Internet-based surveys will continue growing in importance as Internet access grows.

Self-administered questionnaires in group settings include customer service evaluations and teaching assessments. They generally seek short-term appraisals rather than represent basic research that can be generalized to the social world. Similarly, questionnaires distributed at special locations, such as a ski lift or county fair, and questionnaires strategically placed in a motel, restaurant, or doctor's office, are not scientific surveys because they lack random samples.

The advantages of self-administered questionnaires over interviewer-administered surveys include the ability to employ visual aids, such as photos or charts. Respondents also can take their time to think about questions before answering and answer sensitive questions outside the presence of a stranger (the interviewer). Hard-to-reach respondents may be more reachable by mail or e-mail.

However, self-administered questionnaires are not necessarily cheap, and data collection can take many months to complete. When mail questionnaires are properly administered, with multiple mailings, incentives, and telephone reminders, the cost-per-complete is about the same as for a telephone interview, with similar response rates. Data collection for mailed surveys often takes several months, because multiple mailings must be staggered over many weeks. In contrast, many telephone surveys can be completed in two or three weeks.

Additional disadvantages of self-administered questionnaires include potential biases associated with illiteracy, non-native language speakers, and lack of control over who actually completes the questionnaire. Respondents may skip questions or entire groups of questions, or answer questions out of order. If they become confused by skip logic, do not understand a question, or have unanswered concerns, they may set aside the task indefinitely or toss it into the recycling bin. For such reasons, a persistent problem of self-administered questionnaires is a low response rate.

This overview of the advantages and disadvantages of different survey data collection methods has illustrated how telephone interviewing compares to other types of survey data collection. It should now be clear why telephone interviewing is the most appropriate method for collecting data for certain types of surveys. This summary has also given some clues about potential sources of error and bias in survey research, which is the next section's topic.

Interviewers and Survey Error

The goal of a random sample survey is to accurately represent the target population under study. Any difference between a sample estimate and a population parameter is considered an error. For example, Census 2000 found that 25 percent of persons aged twenty-five and older in Oregon had completed a bachelor's degree or more. This is the best available population parameter defining Oregonians' educational attainment. If I had conducted an RDD survey of 400 adults in Oregon in the same year and found that 28 percent of my sample had completed a

bachelor's degree, the 3 percent difference between the population and the sample would be considered error.

This *Handbook* aims to minimize survey errors attributable to interviewers.

The problem is to determine the source of that error and, for the purposes of this *Handbook*, whether interviewers contributed to that error, and if so, how interviewers can avoid it. Standardized interviewing aims to minimize errors attributable to interviewers.

Random Error Versus Bias

The process of designing and administering a telephone survey is complex, involving many separate but interrelated tasks, often conducted by different people. Errors can emerge at any step in this complex process, from instrument design to programming to interviewer training and so on down to what respondents say. Some errors are accidental or random—for example, a respondent says she is age forty-five, forgetting that she just celebrated her forty-sixth birthday last month. Or an interviewer's finger slips and hits the wrong key—for example, accidentally typing in “45” instead of “46.” Random error is difficult to locate and correct because it has no pattern. Careful interviewer training and supervision helps to minimize random error. Researchers hope that random error is infrequent and balances out in the end, thereby minimizing its effect on survey findings.

Bias is a type of error much worse than random error because it is systematic. Often bias is not discovered until the last step of a survey project, during data analysis, when something seems wrong, or “off,” in the survey findings. Here is one example of a situation in which a systematic error had the potential to cause bias:

A research assistant noticed several *outliers* (out-of-range numbers) during data analysis. In tracing the source of those outliers, she discovered that a certain interviewer accidentally hit the “6” key about half of the time when he intended to hit the “5” key. He finished 55 out of the 403 completed interviews in that survey. Fifteen of the seventy-five possible questions in the survey allowed interviewers to record a “5.” To determine whether the interviewer's systematic

error actually caused bias, the research assistant had to examine all of his 4,000 or more possible keystrokes across his 55 completed interviews.

Errors such as this can be very costly to identify and correct, especially when they remain invisible until the late stages of a survey project. By then, bias is often impossible to correct. Respondents may need to be recontacted but can be difficult to locate—and they may give different answers many months later than they did the first time. Rarely can researchers just throw away the contaminated data. If a potential source of bias is noticed and corrected early in the survey process, its damage is less. Because both systematic and random error can occur at any step in the survey process, research teams build in checks and balances to try to avoid sources of error altogether.

Total Error

To understand the sources of error, survey methodologists divide it into two logical groups: error due to sample selection, called *sampling error*, and error due to everything else, called *nonsampling error*. Together, they comprise *total error*. Both sampling and nonsampling error can have random and systematic components. The next sections describe sampling and nonsampling error and the telephone interviewer's role in avoiding and catching both. Chapters Five, Six, and Seven provide specific techniques for minimizing interviewer error.

Sampling Error Sampling error occurs naturally when researchers interview a random sample of the population instead of the entire population. If I had asked the entire population of Oregon adults their educational attainment in 2000, I should have found the same results as Census 2000, that is, that 25 percent had completed a bachelor's degree. But few researchers have the means to interview millions in an entire population. If I had conducted numerous RDD surveys of 400 adults in Oregon in 2000, some of my estimates of educational attainment would likely have been high and some low, but the average across all surveys should, theoretically, have equaled the true population parameter. Again, few researchers have the means to conduct numerous RDD surveys to prove such correspondences. If my original sample size had been 4,400 respondents instead of 400, the results would more likely have matched the population parameter, but my clients could not have afforded me to conduct so many interviews.

Instead, researchers rely on a single, well-chosen, and well-implemented random sample to provide the best sample estimates of a population. A random sample of a population is like a slice of bread representing the whole loaf or like a

spoonful of soup representing the entire pot of soup. Sampling theory, combined with strategic decision making about how to best use a survey's budget, allows researchers to predict the amount of sampling error a survey can tolerate.

A random sample of a population is like a slice of bread representing the whole loaf or spoonful of soup representing the entire pot of soup.

The keys here are the terms *well-chosen* and *well-implemented*. If something goes wrong with the way in which a random sample is chosen or implemented, sampling error can result. For example, once (and only once) one of my research assistants programmed a computer to generate an RDD sample, but he forgot to *randomize* the list after it was selected. The computer generated a *sequential* list of random telephone numbers, which was then distributed sequentially to the interviewers. This meant that the telephone numbers at the bottom of the list did not have as much chance of being called as did those at the top of the list. If telephone companies assigned telephone numbers randomly, this would not pose a problem. However, telephone companies assign area codes and prefixes to geopolitical areas, such as towns, cities, and counties. (For example, where I live, these combinations of area codes and prefixes are common: 541-343-xxxx, 541-344-xxxx, 541-345-xxxx, and 541-484-xxxx.) This error resulted in the systematic underrepresentation of several counties whose telephone numbers fell at the bottom of the list. We saved the survey from bias only by quickly going back into the field with additional RDD telephone numbers for the underrepresented areas, proportional to their representation in the target population.

Alert interviewers can help prevent difficulties such as the one described in the preceding paragraph. For example, you might notice that you have not called telephone numbers or conducted interviews in a county or city that should have been in the sample. If you notice a potential sample problem, tell a supervisor right away. In this way your awareness can help to ensure that the sample is adequately put into practice and help to avoid sample bias.

Properly trained telephone interviewers should never be a source of sampling error. However, interviewers can directly contribute to sampling error if they fail to follow sampling-related instructions. For example, random sample telephone interviews with individual adults typically require two steps: (1) obtaining the cooperation of the household attached to a telephone number, and (2) obtaining the cooperation of the randomly selected adult in that household. The second step can be difficult if the person who agreed in the first step is not the same as the person randomly selected. The second step is especially tricky if the person who agreed in the first step adopts a gatekeeper role or if the

randomly selected adult is rarely home. Lazy or easily intimidated interviewers may be tempted to substitute another person for the randomly selected but difficult-to-reach respondent, but substitutions are not allowed. Interviewers who do not consistently follow random selection instructions contribute to sampling error and restrict a survey's generalizability. When such deceit is discovered, the interviewer will be promptly fired.

Interviewers should never allow substitutions for the randomly selected respondent.

Sampling theory allows researchers to predict the amount of sampling error in their surveys. Sample implementation problems are avoidable and should never contribute to sampling error. Interviewers, in particular, should never contribute to sampling error. Moreover, by attending to your work closely, you may help to prevent sample problems.

Nonsampling Error Every step of the basic survey process outlined earlier is a potential source of nonsampling error. For example, in the design and planning step the principle investigators may overlook a key concept. In designing the survey instrument, pretesters might not understand a concept well enough to realize that a question is misworded, or in a rush to get into the field, they might neglect to notice an error in complex skip logic. Even when a researcher has created a perfect RDD sample, a certain number of persons will always refuse to participate, and even willing respondents can err in reporting. (Not all people can accurately recall, for example, how many hours they exercise or commute to work each week.) While conducting an interview, you might not notice that your finger slipped on the keypad, recording a "1" instead of a "4." During data analysis, researchers can easily make mistakes in sorting their data sets or in creating scales and indexes of respondents' answers. Survey researchers invoke many techniques to check and recheck their work to avoid common errors.

Minimizing Errors Attributable to Interviewers Telephone interviewers are a potential source of four broad types of nonsampling error and must exercise vigilance to avoid contributing to it.

First, avoid unit-level refusals. (A unit is the household, person, organization, or other entity that the survey seeks to ask questions of.) You will learn to use all techniques and personal powers of persuasion effectively in order to avoid such refusals (Chapter Six provides specific methods). Each person, household, or

organization that refuses to participate represents hundreds of others like them. If certain types consistently refuse to participate in a survey, the results will be biased and misleading.

While individuals are an absolute puzzle, in the aggregate they become a mathematical certainty. You can never foretell what any one person will do, but you can say with precision what an average number will be up to. Individuals vary, but averages remain constant.⁶

Second, avoid item nonresponse, that is, answers such as “don’t know,” “refuse,” “other,” “no opinion,” “no answer,” and “if volunteered”—unless specifically instructed otherwise. Respondents most often refuse to answer sensitive questions, such as those related to sexuality, religion, illegal behavior, and drug and alcohol use. Nonresponses are nonanswers; they give the researchers no data to analyze for those cases. Use the techniques in Chapter Seven to encourage respondents to select from the answer categories provided.

Third, make sure that the numbers you record and words you type are accurate. Although most survey research organizations require only minimal typing speed of their interviewers, accuracy is essential. Expect to be tested and retested on this. If your finger often slips down when you intend to record a “4” to the adjoining “1” key, you may be accidentally recording, for example, “strongly agree” instead of “strongly disagree.” Consistent errors such as this will bias the data. Failure to correct a tendency to such errors may result in dismissal. No one wants this. Your employer invests a lot in your skills, so keep them accurate.

Although you will most often use the number pad on the right-hand side of your computer keyboard, for recording answers to open-ended questions and *thumbnail sketches* (or *interviewer observations*) you will use the letters on the regular keypad. Naturally, interviewers find it difficult to type as fast as respondents speak when answering open-ended questions. To make this task easier, use the shorthand, acronyms, and abbreviations in Table 1.2, or use other shortcuts approved by your employer. After you have completed an interview, review your narrative answers to open-ended questions to ensure their legibility.

Fourth, use standardized interviewing techniques combined with your knowledge of how respondents answer questions (see Chapter Seven). In brief, read all questions in their entirety, in the order presented, and exactly as they are written, using a neutral tone of voice. Use only scripted definitions and standard probes. Probe to clarify respondents’ answers and offer neutral feedback only as scripted and as trained. Never utter a word or make a sound that could influence

TABLE 1.2. COMMONLY USED ACRONYMS AND ABBREVIATIONS IN SURVEY RESEARCH.

Term	Acronym or Abbreviation
Adult	A
Because	bc
Business	bus
Call forwarding	CF
Callback	CB
Cell phone	CP
Cell phone only household	CPO HH
Could you tell me what you mean by that?	WM
Don't know	DK
Elderly	E
Elderly female respondent	EFR
Elderly male respondent	EMR
Female	F
Female respondent	FR
Gatekeeper	GK
Household	HH
Identification number	ID#
Information	info
Interviewer identification number	Ir ID#
Inappropriate question; does not apply	inap
Interview	Iw
Interviewed	Iwed
Interviewer	Ir
Interviewing	Iwing
Institutional Review Board	IRB
Knowledgeable adult	KA
Male	M
Male respondent	MR
Message	msg
Not ascertained or not asked	NA
Number	#
Proxy respondent	PR
Question	Q
Question by question survey objectives	Q by Q
Random digit dial	RDD
Randomly chosen adult in household	RA
Refusal	ref
Repeat question	RQ
Respondent	R
Respondent unavailable	RUN
Standard neutral probe, such as "whatever it means to you," "uh-huh," or "thank you"	(P)
Survey research organization	SRO
Telephone	TP
Telephone number	TP#
Telephone answering machine	TAM
With	w/

or change a respondent's answers. Do not suggest answers, ask unscripted questions, make comments on a respondent's answers, or try to make a respondent's answers consistent across questions. Finally, use a congenial, methodical tone of voice that conveys self-assurance, attentiveness, and professionalism. These are the key elements of standardized interviewing.

Summing Up

This chapter has explained why researchers conduct surveys and the crucial role of professional telephone interviewers in survey research. You have learned the basic, overall survey process and where you, as an interviewer, fit into it. In examining the different types of survey data collection, you learned the advantages and disadvantages of interviewer-administered compared to self-administered surveys. You should understand now that the goal of a survey is to accurately represent the population under study, but the road to accuracy is fraught with potential error. By the end of your interviewer training, you will know the best practices for avoiding any contribution you might make to survey error.

Now you have some understanding of survey research in general and where you fit into it. The next chapter narrows our focus, discussing the types of organizations that conduct surveys, what you should know about your employer, and what your employer needs from you.