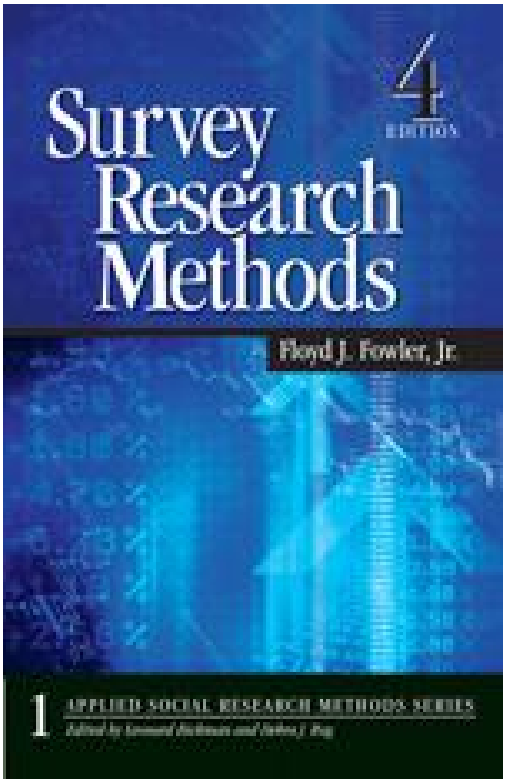

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Preface

The goal of this fourth edition of *Survey Research Methods*, like its predecessors, is to produce a summary of the basic concepts and current knowledge about sources of error in surveys for those who are not primarily statisticians or methodologists. Surveys are fundamentally a matter of asking a sample of people from a population a set of questions and using the answers to describe that population. How the sample is selected, which questions are asked, and the procedures used to collect the answers all have the potential to affect how well the survey is likely to accomplish its goals. If one is going to commission a survey or use survey data collected by others, it is important to understand why these issues matter and how they affect survey results. Readers should have that understanding by the time they finish this book.

Considerable effort has been made to make this book accessible to a general audience. Although familiarity with social science research and statistical concepts is a plus, no special background should be required to grasp the material in this book.

This is also designed to be a comparatively brief book. Choices have been made about the level of depth given to the various topics. Throughout the book, there are suggestions for further reading for those whose interests go beyond an introductory level.

New in the Fourth Edition

This edition contains two new chapters that were not in previous editions. Error in surveys is potentially confusing because there at least four different kinds of potential error that survey methodology is designed to minimize. When I have taught survey methods, I often have devoted a class solely to the topic of the nature of error in surveys. In previous editions, those concepts were distributed throughout the book as they seemed relevant. A new Chapter 2, “Types of Error in Surveys,” now introduces those concepts up front.

In a similar way, the implications of the sample design and nonresponse for the analysis of survey data were discussed as they became relevant throughout earlier editions. Since these issues usually are addressed after data have been collected, a new Chapter 10, “Analyzing Survey Data,” concentrates the discussion of how to address these issues during analysis after all of the data collection topics have been covered.

In the 6 years since the third edition was published, one of the biggest emerging issues in survey methodology is increased concern about the future of telephone surveys as the main way to collect data about the general

population. At the same time, there is a major effort to try to figure out how to use the Internet most effectively. Both of these developments are works in progress as this edition is completed, but this edition reflects an effort to put both in perspective, even as we know that practices will continue to evolve. In addition, of course, this edition integrates new studies and publications from the past 6 years.

Acknowledgments

Finally, doing justice to the people who have contributed to making this book what it is gets harder, as the list inevitably grows with each edition. I think it is still appropriate to start with the three people who probably had the most effect on my understanding of survey research methods: Robert Kahn, Morris Axelrod, and Charles Cannell. In many respects, the task of the book is to pull together and summarize what others have written and learned, so the references and, in particular, those suggested for further reading were key resources. However, the name of Robert Groves is probably found as often as any other in this edition, and that certainly reflects his large and varied contributions to the field of survey research.

I would also like to specifically thank Tony Roman, Mary Ellen Colten, Trish Gallagher, and Dragana Bolcic-Jankovic for their reviews and helpful comments on various chapters. We would like to thank the reviewers, Mark Berends, Vanderbilt University; Adam Berinsky, Massachusetts Institute of Technology; Amie L. Nielsen, University of Miami; and Patric R. Spence, Western Kentucky University, who provided feedback on the 3rd edition that helped to shape the 4th edition. The Center for Survey Research provided critical support services. Judy Chambliss, as always, played a crucial role in helping me to maintain the mental health this effort required. I thank these and others for their contributions, but the responsibility for the final product, good and bad, is basically mine.

JackFowler

Introduction

This book is about standards and practical procedures for surveys designed to provide statistical descriptions of people by asking questions, usually of a sample. Surveys meld sampling, question design, and data collection methodologies. Those who want to collect, analyze, or read about survey data will learn how details of each aspect of a survey can affect its precision, accuracy, and credibility.

The subject of this book is data collection in social surveys. It includes common procedures, standards for good practice, and the implications of various design decisions for the quality of survey data. The purpose of the book is to give a sound basis for evaluating data collection procedures to those who would collect, analyze, or read about survey data. Readers will come to understand the ways in which the details of data collection are related to the confidence they can have in figures and statistics based on surveys.

There are many data collection and measurement processes that are called surveys. This book focuses on those surveys that have the following characteristics:

- The purpose of the survey is to produce statistics, that is, quantitative or numerical descriptions about some aspects of the study population.
- The main way of collecting information is by asking people questions; their answers constitute the data to be analyzed.
- Generally, information is collected about only a fraction of the population, that is, a sample, rather than from every member of the population.

Reasons for Surveys

In the U.S. Constitution, it is specified that a survey meeting the above criteria must be carried out every 10 years. In the decennial census, statistics are produced about a population by asking people questions. No sampling, though, is involved; data are supposed to be collected about every person in the population.

The purpose of the decennial census is to count people as a basis for ensuring appropriate representation in the House of Representatives. The census, however, also has become a major source of information for many other purposes. In addition to simple counts, it collects data about the race, age, household composition, education, type of housing, and many other characteristics of the people counted.

The content of the decennial census has expanded to meet the needs of government agencies and researchers for descriptive data. It covers only a small portion of what people want to know about populations, however, and its value is limited because it occurs only once per decade. To provide data to fill those information gaps, special-purpose surveys have become a prevalent part of American life since the 1930s.

Most people are familiar with three uses of survey techniques: the measurement of public opinion for newspaper and magazine articles, the measurement of political perceptions and opinions to help political candidates in elections, and market research designed to understand consumer preferences and interests. Each of these well-developed programs of survey research is aimed primarily at tapping the subjective feelings of the public. There are, in addition, numerous facts about the behaviors and situations of people that can be obtained only by asking a sample of people about themselves. There probably is no area of public policy to which survey research methodology has not been applied. The following is an abbreviated list of some of the major applications:

- Unemployment rates, as released routinely by the Bureau of Labor Statistics, as well as many other statistics about jobs and work, are based on household surveys carried out by the Bureau of the Census. Parallel surveys of businesses and industries are carried out to describe production and manpower needs.
- People's incomes and the way they spend their money constitute another area in which only surveys can provide reliable data. Patterns of consumer expenditures and their expectations have proven to be important predictors of trends in the economy.
- The National Health Interview Survey has been carried out by the Bureau of the Census for the National Center for Health Statistics since the late 1950s. This survey collects basic data about health conditions, use of health services, and behaviors that affect the risk of illness. These are all topics about which only good survey research can provide adequate data.
- The main source of data about criminal events traditionally has been police department records. Police records, however, only include events that people report to the police. For most crimes involving victims, surveys provide more reliable measures of the rates at which crimes occur and the characteristics of the victims. The National Crime Survey was launched in the 1970s to provide such figures. In addition, surveys are the only way to measure people's concerns and fears about crime.
- One of the oldest applications of surveys is by the U.S. Department of Agriculture. The department surveys farmers to estimate the rate at which different crops will be planted and to predict the availability of various food products.
- Mental health, transportation needs and patterns of use, political behavior, characteristics of housing

such as its cost and appropriateness to familial needs, and worker satisfaction are other examples of areas where survey research is used extensively. The largest collector of survey data in the United States is undoubtedly the federal government, particularly the Bureau of the Census and the Department of Agriculture. In addition, thousands of individual surveys are done each year by university, nonprofit, and for-profit survey organizations.

Sponsoring a special-purpose survey data collection is a rather expensive solution to an information problem. Before launching such an effort, one should explore thoroughly the potential for gathering the same information from existing records or from other sources. Although some people think of a survey as a first effort to try to learn something about a population, a full-scale probability sample survey should be undertaken only after it is certain that the information cannot be obtained in other ways. Even taking such a conservative approach, it is common to find that only a special-purpose survey can provide the information that is needed. In addition to meeting needs for data that are not available elsewhere, there are three potential properties of data from a properly done survey that may make them preferable to data from other sources:

- *Probability sampling* enables one to have confidence that the sample is not a biased one and to estimate how precise the data are likely to be. Data from a properly chosen sample are a great improvement over data from a sample of those who attend meetings, speak loudest, write letters, or happen to be convenient to poll.
- *Standardized measurement* that is consistent across all respondents ensures that comparable information is obtained about everyone who is described. Without such measurement, meaningful statistics cannot be produced.
- To meet analysis needs, a *special-purpose survey* may be the only way to ensure that all the data needed for a given analysis are available and can be related. Even if there is information about some set of events, it may not be paired with other characteristics needed to carry out a desired analysis. For example, hospital discharge records invariably lack information about income. Hence a survey that collects both income and hospitalization data about people is needed in order to study the relationship between a person's income and hospitalization experience.

There is always some information available on a given topic from what people say, from impressions, or from records; there also are always imperfections in available data. In addition to an assessment of information needs, the decision to do a survey also should depend on available staff resources. Unless the needed staff and expertise, or the resources to buy them, are available, the data resulting from a survey may not be very good. That brings us to the topic of the next section: What constitutes a good survey?

Components of Surveys

Like all measures in all sciences, social survey measurement is not error free. The procedures used to conduct a survey have a major effect on the likelihood that the resulting data will describe accurately what they are intended to describe.

A sample survey brings together three different methodologies: sampling, designing questions, and data collection. Each of these activities has many applications outside of sample surveys, but their combination is essential to good survey design.

Sampling

A *census* means gathering information about every individual in a population. A major development in the process of making surveys useful was learning how to *sample*: to select a small subset of a population representative of the whole population. The keys to good sampling are finding a way to give all (or nearly all) population members the same (or a known) chance of being selected and using probability methods for choosing the sample. Early surveys and polls often relied on samples of convenience or on sampling from lists that excluded significant portions of the population. These did not provide reliable, credible figures.

The Department of Agriculture actually developed the procedures for drawing the comprehensive probability samples needed to provide statistically reliable descriptions of populations living in a definable area. The procedures evolved from work designed to sample land areas for predicting crop yields; sampling housing units and the people living in those housing units was simply an extension of that work. During World War II, a group of social scientists was housed in the Department of Agriculture to do social surveys related to the war effort. It was then that area probability sampling became firmly entrenched for sampling general populations in social surveys. Area probability sampling is still the method of choice for personal interview surveys of households. Converse (1987) provides an excellent description of the evolution of survey methods in the United States.

Strategies for sampling have been refined since 1950. One major advance was the development of random-digit dialing (RDD), which permitted the inclusion of households in telephone surveys that did not have listed telephone numbers (Waksberg, 1978). The principles of good sampling practice, however, have been well

developed for a long time.

Question Design

Using questions as measures is another essential part of the survey process. The initial survey efforts, representing extensions of journalism, were not careful about the way that questions were posed. It soon became apparent, however, that sending an interviewer out with a set of question objectives without providing specific wording for the questions produced important differences in the answers that were obtained. Thus, early in the 20th century, researchers began to write standardized questions for measuring subjective phenomena. Again, researchers at the U.S. Department of Agriculture are given credit for extending the use of standardized questions in the 1940s to situations in which factual or objective information was sought. Payne (1951) published a landmark book providing practical guidelines for writing clear questions that interviewers could administer as worded. Likert (1932) generally is credited for building a bridge between the elaborate scaling techniques developed by psychophysical psychologists for measuring subjective phenomena (e.g., Thurstone & Chave, 1929) and the practical requirements of applied social survey research.

The major advance in question design in the last 20 years has been improved strategies for evaluating questions. More than before, researchers now evaluate questions to find out if they are well understood and if the answers are meaningful (see Presser et al., 2004). Pretests of surveys have become more systematic, using analyses of tape-recorded interviews to identify problem questions. As a result, the choice of question wording is becoming more objective and less a matter of research judgment.

Interviewing

Although not all surveys involve interviewing (as some surveys have respondents answer self-administered questions), it certainly is common to use an interviewer to ask questions and record answers. When interviewers are used, it is important to avoid having them influence the answers respondents give, and at the same time to maximize the accuracy with which questions are answered.

The first major step in increasing interviewer consistency was to give them standardized questions. It subsequently was found that interviewers also needed to be trained in how to administer a survey so as to avoid

introducing important biases in the answers they obtained (Friedman, 1942). Hyman, Feldman, and Stember (1954) published a series of studies documenting ways other than question wording that interviewers could influence the answers they obtained. Their work led to more elaborate training of interviewers with respect to strategies for probing when incomplete answers are obtained and for handling the interpersonal aspects of the interview in nonbiasing ways. Cannell, Oksenberg, and Converse (1977) advanced the process of trying to reduce between-interviewer variation by specifically scripting the introductions and encouragement that interviewers provide to respondents, while limiting unstructured discussion. The importance of interviewer training and supervision for ensuring data quality has now been well documented (Billiet & Loosveldt, 1988; Fowler & Mangione, 1990).

Mode of Data Collection

Until the 1970s, most academic and government surveys were done by inperson, household interviewers. When telephone ownership became nearly universal in the United States, telephone interviewing became a major mode of data collection. The current frontier for data collection is the Internet. At the moment, its use is limited because many people lack Internet access and because the lists and strategies for sampling e-mail addresses are limited. However, as access increases and sampling strategies evolve, the use of the Internet to collect survey data will certainly increase as well.

Total Survey Design

In many ways, the principles for good research practice were well developed in the 1950s. However, understandably, the procedures and tools have changed in response to new technologies and scientific advances. In some cases, we lack good studies of how best to collect data for a particular purpose. However, even when best practices have been well established, there is variability in the quality of the procedures that are used.

There are many reasons for variation in the quality of surveys. For some surveys, imprecise figures will suffice. Lack of funding and of adequate staff, as well as lack of methodological knowledge, no doubt all contribute to poor practice in some cases. There also are some controversies about the value of strict probability sampling and standardized question wording (see Converse, 1987; Groves, 1989; Schober & Conrad, 1997; Turner & Martin, 1984). One feature of survey research design that is partly to blame, however, is the failure

of researchers to put together high-quality procedures in all three of the salient areas; it is not uncommon to see researchers attend carefully to some aspects of good survey design at the same time as they neglect others. A critical orientation of this book is the so-called total survey design perspective.

Every survey involves a number of decisions that have the potential to enhance or detract from the accuracy (or precision) of survey estimates. Generally, the decisions that would lead one to have better data involve more money, time, or other resources. Thus the design of a survey involves a set of decisions to optimize the use of resources. Optimal design will take into account all the salient aspects of the survey process.

With respect to sampling, critical issues include the following:

- the choice of whether or not to use a probability sample
- the sample frame (those people who actually have a chance to be sampled)
- the size of the sample
- the sample design (the particular strategy used for sampling people or households)
- the rate of response (the percentage of those sampled for whom data are actually collected)

With respect to question design, the researcher must decide the extent to which previous literature regarding the reliability and validity of questions will be drawn upon, the use to be made of consultants who are experts in question design, and the investment to be made in pre-testing and question evaluation. With respect to interviewers, researchers have choices to make about the amount and kind of training and supervision to give. A design decision cutting across all these areas is the mode of data collection: whether the researcher will collect data by telephone, by mail, by personal interview, over the Internet, or in some other way and how, if at all, computers will be involved. The decision about which mode of data collection to use has important cost implications and affects the quality of the data that will be collected.

These pieces, taken together, constitute what is called the *total survey design.* The components of the design are interrelated in two important ways. First, the quality of data will be no better than the most error-prone feature of the survey design. In the past, researchers sometimes have focused on one or two features of the survey, such as the size of the sample or the response rate, to evaluate the likely quality of data. Current best practice, however, requires examination of all of the above design features. If there is a major compromise or weakness in any aspect of the survey design, major investments in other portions of the survey are not sensible. For example, if one is asking questions that respondents are unlikely to be able to answer with great

precision, a very large sample aimed at reducing sampling error to a minimum is likely to be unwarranted. Similarly, and perhaps even more common, a large number of survey responses will not increase credibility if the sample is poorly designed, if the rate of response is so low as to make the sample unlikely to be representative, or if the interviewers are poorly trained and supervised.

For designers and users of survey research, the total survey design approach means asking questions about all of these features, not just a few, when attempting to evaluate the quality of a survey and the credibility of a particular data set.

Purposes and Goals of This Text

This text presents a discussion of the major decisions that go into the design of any survey research project, the options available to the researcher, and the potential significance of the various options for the amount of error and the credibility of survey estimates. When appropriate, a set of procedures that would constitute good survey practice is presented. A serious effort is made to discuss the realities and the practical problems with which researchers must wrestle, as well as the theoretical and methodological issues at stake; many of the shortcomings of data collections stem from faulty execution of details rather than a lack of general understanding.

A book of this relatively short length obviously has to reflect a set of choices. Entire books can be, and have been, devoted to topics such as sampling, questionnaire design, and research on interviewers. Persons planning to carry out survey research projects will want to read further. Moreover, reading a book such as this (or any book) is no substitute for practical apprenticeship and training with experts who have both sound methodological backgrounds and extensive experience in the design and execution of surveys. Nevertheless, there is an important role that this book, by itself, can play: to provide a comprehensive overview of the sources of error and the range of methodological issues in survey data collection.

There are many people for whom such understanding will be appropriate and valuable. Certainly social scientists who use data collected by others in their work should have a sophisticated understanding of the sources of error. In the same way, people who read about statistics based on surveys need to understand the data collection process. This book identifies the questions that people who use data need to ask and to have an-

swered. In addition, it provides the overview that those who are considering purchasing or commissioning a survey need to have. In short, this book is intended to provide perspective and understanding to those who would be designers or users of survey research, at the same time that it provides a sound first step for those who actually may go about collecting data.

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