

5 EDITION

Survey Research Methods

Floyd J. Fowler, Jr.



1 APPLIED SOCIAL RESEARCH METHODS SERIES

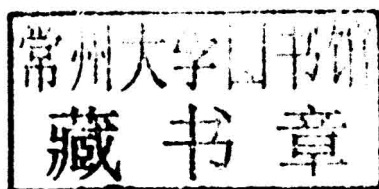


Survey Research Methods

Fifth Edition

Floyd J. Fowler, Jr.

*Center for Survey Research,
University of Massachusetts Boston*



Los Angeles | London | New Delhi
Singapore | Washington DC



Los Angeles | London | New Delhi
Singapore | Washington DC

FOR INFORMATION:

SAGE Publications, Inc.
2455 Teller Road
Thousand Oaks, California 91320
E-mail: order@sagepub.com

SAGE Publications Ltd.
1 Oliver's Yard
55 City Road
London EC1Y 1SP
United Kingdom

SAGE Publications India Pvt. Ltd.
B 1/1 1 Mohan Cooperative Industrial Area
Mathura Road, New Delhi 110 044
India

SAGE Publications Asia-Pacific Pte. Ltd.
3 Church Street
#10-04 Samsung Hub
Singapore 049483

Acquisitions Editor: Vicki Knight
Associate Editor: Katie Guarino
Editorial Assistant: Jessica Miller
Production Editor: Libby Larson
Copy Editor: Amy Freitag
Typesetter: C&M Digital (P) Ltd.
Proofreader: Dennis W. Webb
Indexer: Maria Sosnowski
Cover Designer: Candice Harman
Marketing Manager: Nicole Elliott

Copyright © 2014 by SAGE Publications, Inc.

All rights reserved. No part of this book may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

Printed in the United States of America

Library of Congress Cataloging-in-Publication Data

Fowler, Floyd J.
Survey research methods / Floyd J. Fowler, Jr., Center for Survey
Research, nUniversity of Massachusetts, Boston.—Fifth edition.

pages cm.—(Applied social research methods series)
Includes bibliographical references and index.

ISBN 978-1-4522-5900-0 (pbk).—
ISBN 978-1-4833-1240-8 (web pdf) 1. Social surveys. I. Title.

HN29.F68 2013
300.72'3—dc23 2013029356

This book is printed on acid-free paper.



13 14 15 16 17 10 9 8 7 6 5 4 3 2 1

Survey Research Methods

Fifth Edition

APPLIED SOCIAL RESEARCH METHODS SERIES

1. SURVEY RESEARCH METHODS (Fifth Edition)
by FLOYD J. FOWLER, Jr.
2. SYNTHESIZING RESEARCH (Fourth Edition)
by HARRIS COOPER
3. METHODS FOR POLICY RESEARCH (Second Edition)
by ANN MAJCHRZAK
4. SECONDARY RESEARCH (Second Edition)
by DAVID W. STEWART and MICHAEL A. KAMINS
5. CASE STUDY RESEARCH (Fifth Edition)
by ROBERT K. YIN
6. META-ANALYTIC PROCEDURES FOR SOCIAL RESEARCH (Revised Edition)
by ROBERT ROSENTHAL
7. TELEPHONE SURVEY METHODS (Second Edition)
by PAUL J. LAVRAKAS
8. DIAGNOSING ORGANIZATIONS (Second Edition)
by MICHAEL I. HARRISON
9. GROUP TECHNIQUES FOR IDEA BUILDING (Second Edition)
by CARL M. MOORE
10. NEED ANALYSIS
by JACK MCKILLIP
11. LINKING AUDITING AND META EVALUATION
by THOMAS A. SCHWANDT and EDWARD S. HALPERN
12. ETHICS AND VALUES IN APPLIED SOCIAL RESEARCH
by ALLAN J. KIMMEL
13. ON TIME AND METHOD
by JANICE R. KELLY and JOSEPH E. McGRATH
14. RESEARCH IN HEALTH CARE SETTINGS
by KATHLEEN E. GRADY and BARBARA STRUDLER WALLSTON
15. PARTICIPANT OBSERVATION
by DANNY L. JORGENSEN
16. INTERPRETIVE INTERACTIONISM (Second Edition)
by NORMAN K. DENZIN
17. ETHNOGRAPHY (Third Edition)
by DAVID M. FETTERMAN
18. STANDARDIZED SURVEY INTERVIEWING
by FLOYD J. FOWLER, Jr., and THOMAS W. MANGIONE
19. PRODUCTIVITY MEASUREMENT
by ROBERT O. BRINKERHOFF and DENNIS E. DRESSLER
20. FOCUS GROUPS (Second Edition)
by DAVID W. STEWART, PREM N. SHAMDASANI, and DENNIS W. ROOK
21. PRACTICAL SAMPLING
by GART T. HENRY
22. DECISION RESEARCH
by JOHN S. CARROLL and ERIC J. JOHNSON
23. RESEARCH WITH HISPANIC POPULATIONS
by GERARDO MARIN and BARBARA VANOSS MARIN
24. INTERNAL EVALUATION
by ARNOLD J. LOVE
25. COMPUTER SIMULATION APPLICATIONS
by MARCIA LYNN WHICKER and LEE SIGELMAN
26. SCALE DEVELOPMENT (Third Edition)
by ROBERT F. DeVELLIS
27. STUDYING FAMILIES
by ANNE P. COPELAND and KATHLEEN M. WHITE
28. EVENT HISTORY ANALYSIS
by KAZUO YAMAGUCHI
29. RESEARCH IN EDUCATIONAL SETTINGS
by GEOFFREY MARUYAMA and STANLEY DENO
30. RESEARCHING PERSONS WITH MENTAL ILLNESS
by ROSALIND J. DWORKIN
31. PLANNING ETHICALLY RESPONSIBLE RESEARCH (Second Edition)
by JOAN E. SIEBER and MARTIN TOLICH
32. APPLIED RESEARCH DESIGN
by TERRY E. HEDRICK, LEONARD BICKMAN, and DEBRA J. ROG
33. DOING URBAN RESEARCH
by GREGORY D. ANDRANOVICH and GERRY RIPOSA
34. APPLICATIONS OF CASE STUDY RESEARCH (Third Edition)
by ROBERT K. YIN
35. INTRODUCTION TO FACET THEORY
by SAMUEL SHYE and DOV ELIZUR with MICHAEL HOFFMAN
36. GRAPHING DATA
by GARY T. HENRY
37. RESEARCH METHODS IN SPECIAL EDUCATION
by DONNA M. MERTENS and JOHN A. McLAUGHLIN
38. IMPROVING SURVEY QUESTIONS
by FLOYD J. FOWLER, Jr.
39. DATA COLLECTION AND MANAGEMENT
by MAGDA STOUTHAMER-LOEBER and WELMOET BOK VAN KAMMEN
40. MAIL SURVEYS
by THOMAS W. MANGIONE
41. QUALITATIVE RESEARCH DESIGN (THIRD EDITION)
by JOSEPH A. MAXWELL
42. ANALYZING COSTS, PROCEDURES, PROCESSES, AND OUTCOMES IN HUMAN SERVICES
by BRIAN T. YATES
43. DOING LEGAL RESEARCH
by ROBERT A. MORRIS, BRUCE D. SALES, and DANIEL W. SHUMAN
44. RANDOMIZED EXPERIMENTS FOR PLANNING AND EVALUATION
by ROBERT F. BORUCH
45. MEASURING COMMUNITY INDICATORS
by PAUL J. GRUENEWALD, ANDREW J. TRENO, GAIL TAFF, and MICHAEL KLITZNER
46. MIXED METHODOLOGY
by ABBAS TASHAKKORI and CHARLES TEDDLIE
47. NARRATIVE RESEARCH
by AMIA LIEBLICH, RIVKA TUVAL-MASHIACH, and TAMAR ZILBER
48. COMMUNICATING SOCIAL SCIENCE RESEARCH TO POLICY-MAKERS
by ROGER VAUGHAN and TERRY F. BUSS
49. PRACTICAL META-ANALYSIS
by MARK W. LIPSEY and DAVID B. WILSON
50. CONCEPT MAPPING FOR PLANNING AND EVALUATION
by MARY KANE and WILLIAM M. K. TROCHIM
51. CONFIGURATIONAL COMPARATIVE METHODS
by BENOÎT RIHOUX and CHARLES C. RAGIN

Detailed Contents

Preface	ix
About the Author	xi
1. Introduction	1
Reasons for Surveys	1
Components of Surveys	3
Purposes and Goals of This Text	7
2. Types of Error in Surveys	8
Error Associated With Who Answers	9
Error Associated With Answers	11
Recapping the Nature of Error in Surveys	12
3. Sampling	14
The Sample Frame	15
Selecting a One-Stage Sample	18
Multistage Sampling	21
Drawing Samples From Two or More Sample Frames	30
Making Estimates From Samples and Sampling Errors	32
How Big Should a Sample Be?	37
Sampling Error as a Component of Total Survey Error	39
4. Nonresponse: Implementing a Sample Design	42
Calculating Response Rates	43
Bias Associated With Nonresponse	43
Reducing Nonresponse	49
Two Other Approaches to Reducing Nonresponse Error	54
Nonprobability (or Modified Probability) Samples	55
Nonresponse as a Source of Error	58
5. Methods of Data Collection	61
Major Issues in Choosing a Strategy	61
Summary Comparison of Methods	71
Conclusion	73
6. Designing Questions to Be Good Measures	75
Increasing the Reliability of Answers	76
Types of Measures/Types of Questions	86

Increasing the Validity of Factual Reporting	91
Increasing the Validity of Answers Describing Subjective States	96
Question Design and Error	97
7. Evaluating Survey Questions and Instruments	99
Defining Objectives	100
Preliminary Question Design Steps	100
Presurvey Evaluation	102
Design, Format, and Layout of Survey Instruments	104
Field Pretests	105
Survey Instrument Length	108
Conclusion	109
8. Survey Interviewing	110
Overview of Interviewer Job	110
Interviewer Recruitment and Selection	113
Training Interviewers	115
Supervision	117
Survey Questions	120
Interviewing Procedures	120
Validation of Interviews	122
The Role of Interviewing in Survey Error	123
9. Preparing Survey Data for Analysis	127
Formatting a Data File	127
Constructing a Code	128
Approaches to Coding and Data Entry	129
Data Cleaning	132
Coding, Data Entry, and File Creation as Sources of Errors	132
10. Analyzing Survey Data	134
Adjusting for Sample Nonresponse and Sample Frame Deficiencies	134
Coping With Item Nonresponse	136
Adjusting for Different Probabilities of Selection	137
Calculating Sampling Errors	138
Conclusion	139
11. Ethical Issues in Survey Research	140
Informing Respondents	141
Protecting Respondents	142
Benefits to Respondents	144
Ethical Responsibilities to Interviewers	144
Conclusion	145

12. Providing Information About Survey Methods	146
13. Survey Error in Perspective	150
The Concept of Total Survey Design	150
Error in Perspective	150
Conclusion	153
References	155
Author Index	164
Subject Index	168

Preface

The goal of this fifth edition of *Survey Research Methods*, like that of 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 FIFTH EDITION

In the past decade or so, there are two profound changes that have been going on in the survey research world. One change is the growing challenge of collecting data about the general population by telephone survey. Driven by the increased use of cell phones and the declining rates at which people respond to telephone requests to do surveys, the reliance on random-digit dialing telephone samples as a way of doing general population surveys is declining. Those who still use this approach are finding it harder and harder to meet traditional standards for response rates. At the same time, there is a major effort to try to figure out what the best alternatives are. Technology, in the form of ever-growing access to the Internet, smart phones, and Interactive Voice Response (IVR) provide researchers with new options for how to collect data. Sampling addresses has also become easier as better lists of addresses have become available, leading to another look at the value of mail surveys. How best to use these resources, singly or in combination, to collect high-quality data is a work in progress. Change is inevitable, but a major challenge of this edition was to put these issues 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 5 years since the 4th edition was published. Keeping the information current is one of the main reasons for creating a new edition. However, as I was revising the book, I was struck by the number of issues for which the best, more informative studies were done

well in the past. So, when a reference from, say, the 1970s is used, readers should not think that the information is out of date. Most likely it is still one of the best sources of information about a particular issue.

ACKNOWLEDGMENTS

Doing justice to the people who have contributed to this book gets harder with each edition, as the list inevitably grows. 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 Cannel. 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 like to specifically thank Tony Roman, Mary Ellen Colten, Trish Gallagher, Carol Cosenza, and Dragana Bolic-Jankovic at the Center for Survey Research for their reviews and helpful comments on various chapters. The Center for Survey Research provided critical support services. Five reviewers kindly provided feedback on the 4th edition that helped shape these revisions. They were Joseph C. Kush, Duquesne University; Gilbert A. Jacobs, Mercyhurst University; Claudette M. Peterson, North Dakota State University; Candan Duran-Aydinlu, University of Colorado Denver; and Karen A. Thornton, Barry University. Finally, 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 valuable contributions, but, of course, the responsibility for the final product, good and bad, is basically mine.

Jack Fowler

About the Author

Floyd J. Fowler, Jr., is a graduate of Wesleyan University and received a PhD from the University of Michigan in 1966. He has been a Senior Research Fellow at the Center for Survey Research at UMass Boston since 1971. He was Director of the Center for 14 years. In addition to this book, Dr. Fowler is the author (or co-author) of three other textbooks on survey methods, including *Improving Survey Questions*, *Standardized Survey Interviewing* (with Mangione), and *Survey Methodology* (with Groves, Couper, Lepkowski, Singer, & Tourangeau), as well as numerous research papers and monographs. His recent work has focused on studies of question design and evaluation techniques and on applying survey methods to studies of medical care. In 2013, Dr. Fowler received the American Association for Public Opinion Research (AAPOR) Award for Exceptionally Distinguished Achievement.

Contents

Preface	ix
About the Author	xi
1. Introduction	1
2. Types of Error in Surveys	8
3. Sampling	14
4. Nonresponse: Implementing a Sample Design	42
5. Methods of Data Collection	61
6. Designing Questions to Be Good Measures	75
7. Evaluating Survey Questions and Instruments	99
8. Survey Interviewing	110
9. Preparing Survey Data for Analysis	127
10. Analyzing Survey Data	134
11. Ethical Issues in Survey Research	140
12. Providing Information About Survey Methods	146
13. Survey Error in Perspective	150
References	155
Author Index	164
Subject Index	168

1

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 previously mentioned 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. As part of the census, it gathers information about age, how household members are related to one another, and ethnic

background. However, those data only begin to meet the information needs about the population. 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 is probably 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 routinely released by the Bureau of Labor Statistics, as well as many other statistics about jobs and work, are based on household surveys (Current Population Surveys) carried out by the Bureau of the Census. Parallel surveys of businesses and industries are carried out to describe production and labor force 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 thoroughly explore 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 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; also there 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 U.S. 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 (2009) 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; Madans, Miller, Maitland, & Willis 2011). 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 many surveys have respondents answer self-administered questions in paper forms or on computers), it certainly is common to use an interviewer to ask questions and record answers. When interviewers are used, it is important that they avoid influencing the answers respondents give, at the same time maximizing 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 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 been well documented (Billiet & Loosveldt, 1988; Fowler & Mangione, 1990).

Mode of Data Collection

Until the 1970s, most academic and government surveys were done by in-person, 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 Internet access is still not universal in the United States 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 is rapidly increasing. Mail surveys, which in the past were used primarily when good address lists were available for a target population, are also being used more widely as good quality lists of addresses for the whole population have become available. Thus, more than ever, researchers are making choices about the mode of data collection that will cost-effectively produce the best quality data.

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.