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CHAPTER 2

Comparing Survey Methods

It is risky at best to compare survey methods by specifying the advantages and disadvantages of each or by rating them on some scale of difficulty or “goodness.” Since most studies utilize only one form of survey research, few researchers are able to report on experiences with multiple methods. The problem of drawing comparisons is complicated by the fact that reports of surveys rarely contain the details necessary for a complete comparative assessment. For example, information on costs, response rates, administrative arrangements, sampling calculations, and questionnaire formats is not generally included when someone describes their research. Finally, the methodological comparisons that can be found in the literature, such as Hochstum (1967), Groves and Kahn (1979), and Siemiatycki (1979), are often based on research context (i.e., resource availability, population access) that are unique or that do not seem to duplicate those facing the researcher who is looking for guidance before making a crucial data-gathering decision. An additional problem with most of this literature is that only two or a small number of dimensions (e.g., response rate, follow-up procedure) are compared. As a result, we cannot be sure that all or even a portion of the variation in the results is not due to factors related to the chosen data-gathering techniques.

Choosing the most appropriate survey technique poses an important dilemma. A summary of comparative strengths and weaknesses can be a helpful, if only an “ideal” source of advice. Also, the increased use of multiple-survey or “dual frame designs” requires knowledge of each survey technique. In these cases high quality results can be obtained when the weakness of one technique can be offset by the strengths of another. Naturally, the research design, including the data-gathering
phase, depends on the nature of the problem being studied, the nature of the population being researched, and the extent of the resources available. Certainly, studying the participation of organizations in criminal activity calls for a different data-gathering strategy than does research on the attitudes of physicians to advertising. A national survey of the voting patterns of the general public requires different sampling and research design decisions than does a survey of the residents of an apartment complex.

The researcher should be motivated by a desire to conduct the best possible study that can be designed for the problem at hand. However, limitations imposed by time, resources, equipment, and other factors may force the researcher to "compromise" on the preferred choice of design; but, compromises do not have to mean that a less-than-adequate study will be conducted. They only mean that some factors will not be as fully implemented as desired. Attention to the tenets of good research is always retained, however, regardless of the extent of the limitations faced by the investigator.

At one time, it was easier to make a choice of survey techniques because developments in mail and telephone methodologies were not very sophisticated (Dillman, 1978). It was either the face-to-face approach or none at all.\(^1\) Tradition and developments in face-to-face survey procedures supported this choice, as did the well-known fact that the other survey techniques suffered from problems in sample coverage (e.g., only the wealthy owned telephones) and question requirements (e.g., sensitive questions could not be asked). Thus, choosing a data-gathering alternative to the face-to-face interview would have resulted in an even greater compromise of one’s research objective. Many of the earlier problems associated with mail and telephone surveys, however, have been overcome by developments in sampling procedure (i.e., random digit dialing), questionnaire construction, and questionnaire administration. Furthermore, at the same time that problems associated with mail and telephone surveys were being reduced, survey researchers were talking a closer look at

the assumptions and procedures associated with the face-to-face survey. As the result of this systematic review, they realized that the face-to-face technique contained some very apparent detractions such as high response error and greater field costs.

The survey researcher is often faced with a real and difficult choice of survey techniques. The following compares the telephone technique with mail and face-to-face data gathering on a number of survey dimensions. In addition to drawing comparisons among telephone, mail, and traditional household face-to-face interviews it is necessary to incorporate some observations on another very popular face-to-face survey technique, namely, the intercept interview. The intercept interview is conducted in a setting in which the respondent is an active participant. A standardized set of highly structured questions is administered by an interviewer who interrupts the activity of a potential respondent in order to ask the questions. Interviews in shopping malls, exit interviews at polling sites, interviews of patrons at amusement parks, restaurants, theatres, and sports events are examples of intercept interview settings. Intercept surveys utilize nonprobability sampling with some attention paid to quotas on gender, race, age, and other characteristics. Social scientists have paid no attention to this technique, while marketing and advertising researchers have adopted it with considerable enthusiasm (Bush and Hair, 1985). The intercept interview does not resemble the ethnographic field interview, which ordinarily utilizes a semi-structured or open-ended question format and which is designed to go to great lengths to obtain data. The intercept questionnaire is brief and structured and this perhaps explains why social scientists have not used this technique. However, it is highly likely that more survey researchers will use intercept interviews in the future as a sole data-gathering technique or in conjunction with other techniques. In fact, intercept techniques are now the most popular form of the face-to-face interview. A Walker Research survey of 1978 showed that, for those who had responded to a survey questionnaire that year, 38 percent were interviewed by
telephone; 24 percent completed a mail instrument; 18 percent participated in an intercept survey; and only 12 percent were interviewed in their households (Gates and Solomon, 1982/83: 43). Clearly, the household face-to-face interview is the least popular of the personal interview techniques. The rising use of the intercept survey makes it important for discussion even though the data for comparing this technique to others are very limited.

ADMINISTRATIVE FACTORS

Costs

Cost comparisons among survey techniques are difficult to make because costs are rarely reported with research results. When they are reported, we do not know on what basis they were calculated. For example, overhead or indirect costs are almost never reported and are probably not calculated in cost analyses, particularly for studies done by academicians. Variations in wage rates, telephone charges, supply prices, professional time, and sampling expenses also produce cost differentials that are not easily determined. One fact we do know, however, is that the costs of any type of research are going up.

Three factors seem most significant when costs are calculated—sample size, geographic dispersion of sample, and interview or questionnaire length—regardless of the survey technique. The larger the sample size, the more interviewing hours for telephone and face-to-face surveys, and the more postage or other mailing supplies for a mail survey. There is a point where the marginal costs of adding to the sample size begin to decline, but these costs may still be large, particularly for a face-to-face survey where additional travel and supervisory time must be added to actual interviewing time. Increas-

ing the size of a mail or telephone survey has less of an impact on marginal cost, since call-backs or follow-ups are not as costly. Intercept survey call-backs are not an issue since no effort is given to converting refusals; sampling with replacement generally takes place until a quota of interviews is completed.

The costs of reaching a dispersed sample must also include the price of making call-backs to respondents who were unavailable or who did not elect to respond when the first response appeal was made. These costs in mail surveys are generally limited to the time it takes to prepare another mailing package plus the postage. A telephone call-back consumes some phone charges and interviewer's wages. These costs are not extensive for either a mail or telephone survey, particularly when compared to the call-back charges associated with a face-to-face interview. These call-back costs include the wages of one or perhaps two interviewers, the expenses associated with getting to and from the site of the interview, plus additional supervisory costs. Very often a researcher will not factor call-back expenses into a budget and realizes the mistake too late, when it is discovered that the mailing or wages budget is virtually gone and the response rate is unsatisfactory.

Cost differentials among mail, telephone, and face-to-face surveys increase as the geographical dispersion of the sample expands. This is particularly true for the costs of face-to-face interviewing: going from a local to a regional or national sample increases dramatically the supervisory, training, and field costs of a face-to-face survey. There is virtually no additional cost to a mail survey utilizing a local, regional, or national sample. Telephone surveys are affected by a dispersed sample with increased phone charges but not in terms of other field costs such as supervision or follow-up. Dispersion and distance are not factors with intercept surveys since these are usually conducted in a restricted setting such as a shopping mall or street location. It is true, however, that the more accessible a population, the lower are sampling and field costs. If a specialized sample is the target, and if it is not readily acces-
sible, costs per interview will be higher (Sudman, Sirkan and Cowan, 1988:991). This fact is true for any type of survey.

Interview or questionnaire length also has a significant impact on costs. The mail questionnaire will not suffer increased costs, except where printing charges are raised or if additional length increases the mailing weight to the point where higher postage charges must be paid. Labor charges are not a factor, since it takes the same amount of time to stuff an envelope with a short questionnaire as it does with a lengthier version. Longer interviews increase field costs in terms of wages and travel time for the face-to-face survey. Data-gathering costs for telephone surveys and intercept surveys are similarly effected with response to labor and supervisory costs. In addition, open-ended questions are more expensive to administer than are the structured, closed questions. Unstructured items add to interviewing, coding and analysis costs for telephone and face-to-face surveys. Some national survey firms have charged up to 50 percent more for an open-ended question than a structured item. The ratio of open to closed items is not ordinarily a cost factor for mail surveys. Finally, the longer and more complex any questionnaire is, the greater are the costs that will be incurred for the development of that instrument. These costs include professional time, pretesting, wages, printing, and supervision.

The first question that need to be addressed to anyone who wants to construct a survey are: "What group are you interested in surveying?" The more accessible a population, the more likely it is that sampling and field costs will be lower. In addition, the researcher must ask: "How much are you willing to spend?" and "What are you trying to find out?" The answers to these questions make it possible to calculate how many persons in the population should be contacted within the established price guidelines. A fourth question is now appropriate: "How will these data be used?" This is conditioned to a large extent on the nature of the problem and will have an impact on the error rate that will be tolerated. If it is a fairly precise problem requiring that the error rate be low and the completion rate high, the survey will be more costly than a research effort requiring less stringent standards. The final budget is constructed when the decisions on respondent characteristics, sample size and error rate, interview or questionnaire length, question structure, and response rate have been made. The limitations presented by the budget has a major impact on the selection of the appropriate data-gathering technique.

The advantage in a cost analysis goes to the mail survey. The most expensive is the household face-to-face, with the telephone and intercept surveys in between, but the costs of the latter are increasing. Interestingly, an Australian study of health issues found comparable costs for the telephone and household components; these costs were twice as great as those of the mail survey (O'Toole, et al., 1986: 326). The primary advantage of the mail survey is that it is usually less expensive to administer to widely dispersed populations because of standardized postage rates and low labor requirements. Hochstim (1962) reported costs at that time of $10.35 for face-to-face, $6.84 for telephone, and $4.01 for mail surveys. More recently, Dillman (1981) reported that he was experiencing average mail costs of $4.50 and telephone costs of $10-11 per completion. Siemiatycki (1979: 241), in a metropolitan health study, reported rates of $6.08 for mail, $7.10 for telephone, and $16.10 for face-to-face interviews. He also discovered that follow-up by either mail or telephone was less costly than a face-to-face follow-up. Collesano reported costs of $66.00 per completed face-to-face interview and $26.00 per completed telephone interview in his analysis of a National Marketing Study (1985: 74).

The costliness of the face-to-face survey takes an even more dramatic turn when specifically compared to telephone surveys. In their victimization surveys, Klecka and Tuchfarber (1978) discovered that random digit dialing field work and sampling costs were 15-20 percent lower than those of the face-to-face interview. In a thorough analysis of comparative cost factors, Groves and Kahn (1979: 188-196) reported that the total direct telephone costs per completion were 45 percent of
those using the face-to-face interview. More precisely, for two national samples they show an average cost per telephone completion of $23.45, compared with a face-to-face cost of $54.87. The lower telephone cost was due to the need for fewer supervisory personnel, fewer required materials, lower communication requirements between field staff and interviewers, and little or no travel time by interviewers or supervisors. Telephone survey costs at The Center for Survey Research at the University of Nevada, Las Vegas are running at approximately $12.00 per completed interview for a local random digit dialing sample of 400 for a 7-8 minute interview, and four call-backs. National telephone surveys administered through the Center experienced costs of $25-28.00 per completion with four callbacks and referral conversion. A recent telephone and household combination survey produced costs of $114.00 per completion for a combined one and one-half hour interview.

Gates and Solomon (1982/83) estimate that an intercept questionnaire can be administered at one-fourth the cost of a household personal interview. They are also less than telephone surveys. Survey Center experience shows intercept costs at about $12.00 per completed interview on a questionnaire that usually takes less time than five minutes with no incentive (Frey and Carns, 1987). It appears that the costs for an intercept survey will approximate those of a telephone survey but will be much less than the costs of a traditional door-to-door survey.

Clearly, the cost differentials between the mail, telephone intercept, and face-to-face survey are significant but they must be evaluated with some caution because it is difficult to know just what factors were included in any cost calculation. At times telephone survey costs may be comparable to those of a mail survey and, at other times, the costs are more like those of a face-to-face effort. Telephone surveys usually cost less than the face-to-face variety but researchers should be cautioned that costs are rising even with lower long distance rates available. This trend is due to the greater investment that has been put into telephone interviewing technology, questionnaire development, professional supervision, and interviewer training and supervision. That is, one of the results of the effort to raise the status of the telephone survey in the eyes of the survey community has been to increase the expense of doing surveys by telephone.

**Personnel Requirements**

The administrative component that has been drastically affected by the switch to telephone surveys is that of personnel. This is particularly true where the geographical dispersion of the population being studied is great. The face-to-face survey requires a central staff and field supervisors. This labor force must be expanded as the area to be covered expands; a telephone survey needs only to add a few numbers, not people. A local, regional, or even national telephone survey can be conducted with two supervisors and a pool of 12-15 interviewers. A national face-to-face study would require up to 100 interviewers and several supervisors. A mail survey requires only clerical and data entry personnel, while an intercept survey needs 1-2 supervisors for a crew of 8-12 interviewers.

In addition, face-to-face and intercept surveys require people who have sufficient social skills to be able to establish almost instant rapport with respondents and who have the time available (for example, daytime hours) to conduct the interviews. They must be able to provide their own transportation and often be willing to work at night—as, of course, must telephone interviewers. Face-to-face and intercept interviewers require more extensive training in order to be able to deal independently with sampling and interview situations, anticipated and unanticipated, that may rise in the field. Both require persons with the ability to persuade respondents to interrupt what they are doing in order to answer questions on a topic that may or may not be appealing. Not everyone is able or willing to interview “cold turkey” in these settings. In addition, face-to-face surveys require supervisory personnel who also must be readily available to go into the field to deal with
research problems that were not anticipated in the training or to resolve difficult situations for an interviewer.

Telephone interviewers typically do not require such extensive skills in independent decision making since close supervision provided in a centralized location makes it less likely that these interviewers will have to make significant decisions without input from a supervisor. However, this is not to imply that telephone interviewers are less skilled than their face-to-face counterparts. It takes considerable training and experience to be able to persuade a respondent to participate in the interview, to follow what are sometimes very complex orders without breaking the “rhythm” of the interview, and to be able to maintain rapport without the aid of visual cues for what is usually a longer-than-average telephone conversation. At times, telephone interviewing can be even more difficult than the face-to-face variety. The requirements for supervisory positions in a telephone survey are equal to those for a face-to-face interview. Telephone supervisors must be familiar with all of the nuances of the questionnaire, the purposes of the study, the variations in interviewer style, and most other facets of the research effort. They must be able to listen to and follow 8-15 interviews simultaneously and to discuss problems quickly when they are encountered. Face-to-face and intercept supervisors usually have some time to either consult with their associates or to contemplate a response to an interviewer problem. Telephone supervisors have no such luxury; they must respond immediately to the inquiry. For this reason alone, supervisors should be involved in all preinterview planning, questionnaire development, particularly with the pretest, and training. Closer supervision in a telephone survey means that fewer interviewers are needed because a small crew can complete many interviews in a short period of time. As few as eight interviewers can complete nearly 100 five-minute interviews in a three-hour time frame. Thus, the time-per-interview for a telephone survey will be considerably less than that of a household face-to-face survey.\(^3\) Intercept interviewers can also be very productive because of the requirements of a quota sample and the concentrated setting. For example, 10 to 12 interviews per hour were completed for UNLV’s transit survey of tourists in the spring of 1987.

The mail survey requires almost no personnel trained in research methods. Actually, someone with minimum clerical skills can monitor the mailings, record the returns, and send out follow-up mailings. The other major personnel cost is for data entry. Therefore, the mail survey is considerably less labor-intensive than either the telephone, face-to-face, or intercept surveys, with the latter two techniques demanding more of labor, both in number and skills, than the telephone survey.

### Implementation Time

It is not unusual for a researcher to be called upon to conduct a survey within a very constricted time frame, say 4-6 weeks. This time limit could be imposed by a contract or fiscal deadline, by the desire to complete a survey before the occurrence of a major event that could skew responses (for example, an election or a presidential announcement), or because the research is part of a field experiment with the event as the treatment.

When time is a consideration, the telephone survey is by far the most advantageous, even with a national sample. Mail surveys generally take 3-4 months to complete (that is, to obtain an acceptable response rate), and face-to-face surveys may take at least that long. Recruiting and training personnel, locating respondents, following up on nonresponses, and other organizational arrangements call for a lengthier timetable in face-to-face surveys. Thus, face-to-face and mail surveys, if they have any defined follow-up, are locked into that schedule and must wait for sufficient returns before data analysis can begin. Intercept surveys can be conducted in a matter of days but will take longer to complete than a telephone survey. On the other hand, once a telephone survey questionnaire is developed (and that may not take much time if it is short), data
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Getting a Representative Sample

Sample Coverage Response Bias

The greater the coverage (the ability to reach all eligible respondents) permitted by a survey, the more valid the results because a representative sample is possible. All members of a potential population who are known or reachable should have an equal or known chance of being selected for a sample. This would not be the case if the location of a respondent could not be determined.

Each survey method has its peculiar problems associated with respondent location and subsequent availability for selection. Until recently, the most prominent criticism of telephone survey coverage had to do with the unavailability of a sampling frame or list containing a complete enumeration of those who were assigned phone numbers. The basic problem was that a list (for example, the telephone directory) did not contain unlisted numbers, new numbers, or recently changed numbers. The development of random digit dialing has virtually eliminated this criticism. The other coverage problem for tele-
phone surveys is that those without phones—nonsubscribers—cannot be included in the sample. The latter is especially a problem in rural and inner-city areas. While we have little information on the characteristics of nonsubscribers, what we do know suggests that these persons are single, renting, poor, under educated, and nonwhite (Tull and Albaum, 1977; Survey Sampling, 1988: 3). However, even this is less of a problem than it was ten years ago, since the United States has more phones per 100 persons than any other country in the world (outside of Monaco and Sweden) and since the household coverage in America has reached nearly 97 percent—well above the 1970 figure of 83 percent (U.S. Bureau of the Census, 1986).

Since most households can be reached by phone, the sample coverage of the telephone compares favorably to that of face-to-face, household surveys, particularly those that depend on area probability samples. The area probability sample was developed to utilize a built-in clustering procedure that made it possible to group interviews and reduce field costs. Most area probability samples are inclusive of at least 95 percent of all local households. However, there are still those “floaters” who are not permanently located and for whom even as temporary address cannot be determined (Groves and Kahn, 1979). Hence, just as the telephone survey faces the difficulty of not being able to reach those without phones, the face-to-face survey has a similar problem with those who lack a permanent residence. If this value does not exceed 3-5 percent of the population, then we can probably assume that any bias as a result of their omission will be small. However, for the study of some subpopulations, such as the poor, elderly, or rural, accounting for households without phones is very important. If this is the case, the researcher may have to implement a procedure to identify these households. Such a technique is to use respondents as informants (also called network sampling) by asking them if they know of a neighbor or other designated respondents who can be reached by telephone. Another possibility is to place a sample enumeration team into the field to identify subpopulation member locations and to investigate the status of a telephone listing with each. Any procedure to identify nontelephone households will, of course, increase costs.

The problems of changing numbers, temporary disconnects, and a sort of transience in telephone number assignment make the coverage of the face-to-face survey slightly better than that of the telephone survey (Groves and Kahn, 1979). However, since travel costs are eliminated with telephone designs, it is not necessary to cluster potential respondents. Thus, it is possible to contact each individual in a population by telephone at a lower cost and, as a result, the telephone sample will be more pure or representative than the area probability sample that depends on clustering sample units. However, the same criticism does apply to telephone sampling procedures, such as the Waksberg RDD technique, that utilize clustering. Thus, it is preferable to select a technique that does not require clustering, but often resources do not permit a purely random sample design. Mail surveys have approximately the same potential for coverage as the telephone survey, since it is also possible to identify all dwelling or sample units.

In addition to providing contact with respondents who are difficult to locate and interview by the face-to-face method, mail surveys permit wide coverage at reduced costs. Unfortunately, the coverage factor for mail surveys is compromised by the quality of available lists more so than either of the other techniques. In some cases it is possible to utilize a list to generate an area probability sample for a mail survey, but this is rarely done and is only possible if the household is the relevant sampling unit. The result would reflect biases similar to those of the face-to-face sample. The potential for coverage is excellent with the mail survey because everyone has a potential address and is, therefore, locatable. In reality, the coverage is somewhat less than desirable because of the mobility of respondents and the inadequacy of most lists. However, if the study is exploratory or preliminary in scope or the researcher does not expect to generalize results then representativeness is
not necessarily an important consideration. In this case, a deficient list could be used for a mail sample, or for any survey, for that matter.

Complete lists of the general public or other large homogeneous samples are usually not available and the lists that do exist suffer from several flaws. They may not include every person, either because the enumeration was out-of-date or incomplete (some people chose not to be on a list, as in the case of unlisted telephone numbers) or because they were overlooked by the enumerators. In some cases persons may be listed more than once (e.g., two telephone lines or several auto registrations) and so have a better chance than others for selection. In addition, household ownership lists exclude renters and include those who own several homes. Finally, even if a good list were available, getting the list from the owner may be a problem. Thus, mail coverage for the general population is often restricted to available and often inadequate lists, which telephone and face-to-face household surveys can sample without such dependence.

Where complete lists are available for homogeneous populations, representativeness as provided by coverage is possible for mail, telephone, and face-to-face surveys. In general, there is no possibility for obtaining a representative or probability sample utilizing an intercept survey. This means that certain types of surveys such as public opinion polls or voter preference inquiries that require a representative sample could not utilize the intercept method. However, this does not mean that sampling considerations do not enter into the design of an intercept survey. For example, when planning an intercept survey of Las Vegas tourists, interviews are scheduled at various high-traffic locations, at different times of day, and on different days of the week. Interviews have even been conducted at two o'clock in the morning near the busiest locations in the city. In addition, interviewers can be instructed to obtain a predetermined quota of interviews from persons exhibiting certain characteristics (e.g., male, nonwhite, old, young). Even these precautions do not solve the problems of coverage and representativeness; intercept samples are based on convenience, quota, or judgment, not on random selection. For example, at the time the intercept survey is being conducted many members of the population of interest are not present or some members are at the site (e.g., mall) more frequently than others and, therefore, have a greater likelihood of selection. It is also a problem to draw people out of a "stream" of activity rather than a "pool" as is the case with other surveys (Gates and Solomon, 1982/83). Thus, intercept surveys leave a lot to be desired when it comes to obtaining representative samples (Sudman, 1980) despite the work by Bush and Hair (1985) that showed no significant difference in the background characteristics of those who were sampled by telephone and a sample for an intercept survey. There is no way to change the fact that intercept surveys utilize nonprobability sampling, and this means that generalizing results from this type of survey is very questionable.

Response Rate—General Public

One of the major problems in determining the actual response rate for a survey is to arrive at an agreement on how this rate is to be calculated. This rate should reflect the degree to which a researcher is successful in obtaining cooperation from all potential and eligible respondents within a sample (Kviz, 1977). There is not a single response rate value that is accepted as the standard. However, if rates of 70-80 percent are achieved then one can feel comfortable with the analysis or reports that are based on this rate. The response rate is often calculated in one of two ways. The first rate is based on the number of completions compared to the number of potential respondents who may or may not have been contacted for a response, but who are deemed eligible. Refusals, partial completions, illness or disability, language barriers, and those unable to be contacted after several times are included. The latter are all potentially eligible to participate in the survey. This
usually means households with working telephone numbers in a telephone survey. This formula demonstrates how well a survey has done in making contact with all possible respondents, and it is the preferred rate for reporting results.

\[
\text{Response Rate No. 1} = \frac{\text{Number of Completed Interviews}}{\text{Number in Sample (all Eligibles)}} \times 100
\]

The second rate compares the number of interviews completed in full to the completions plus refusals and partial completions less all uncompleted interviews, except for refusals, regardless of cause. This rate can be misleading because all those but the confirmed, contacted refusal are counted as ineligible (Goyder, 1987:9). The use of this rate is also self-serving since it produces a higher response rate, thereby making the research look better in the minds of those who evaluate it. That is, a respondent is not counted in the calculation of a response or completion rate unless actually contacted and an interview is attempted.

\[
\text{Response Rate No. 2} = \frac{\text{Number of Completed Interviews}}{\text{Number in Sample} - \frac{\text{Not eligible (and not reachable)}}{}} \times 100
\]

These formulas have gained some acceptance among survey researchers (Kviz, 1977; Rosdian and Sharp, 1980; Federal Committee on Statistical Methodology, 1984). Usually those not eligible, not reachable, or otherwise not able to participate (e.g., language or illness) are not included in this calculation. This rate indicates how well the survey does when a response is possible.

Response rates are calculated in various ways by different research organizations. The basis on which these rates are calculated is not often reported. Response rates of 70 to 75 percent telephone and face-to-face surveys are probably the best one can expect these days using the second formula. Rates of 40-50 percent for those surveys can be expected with the first calculation. Mail surveys will achieve a 25-30 percent return with no follow-ups and near 50 percent with two or three efforts to obtain response. Given the variability in rates, it is more feasible to operate with a range (e.g., 65-75 percent) rather than a single value as a guideline for response success.

An additional complicating factor in reporting response or completion rates is the extent to which substitution is permitted. Proper sampling technique suggests that substitution (for example, in place of a refusal by someone originally selected) should not be done, as the characteristics of the newly selected substitute may not reflect the characteristics of the original respondent, thereby increasing the potential for response bias and sampling error. Many research firms academic and commercial, are able to "pad" their response rates by employing an unreported substitution procedure. As a result, their sampling effectiveness and image look better than they otherwise might. Instead, all research firms should realistically accept the fact that all eligible respondents are not going to be accessible and then report response and completion rates that do not reflect substitution.

In general, we still find response rates for the household face-to-face survey to be higher than those for telephone and mail surveys, although the gap is not as pronounced as in past years. This is reflected in the most recent literature. Groves and Kahn (1979) reported a response rate for their national telephone samples of 70.4 percent and of 74.3 percent for the face-to-face surveys. These rates were generally consistent with those obtained by studies conducted by the Survey Research Center at Michigan. In both cases, all categories of nonresponse were higher for metropolitan areas. When comparing the response rates for all three methods, Siemiatycki (1979: 241), using a regional samples, produced initial rates of 70.3 percent for mail, 73.5 percent for telephone, and 84.1 percent for face-to-face. Subsequent follow-ups to the mail and telephone surveys pushed these rates to equal or exceed that of the face-to-face. Dillman (1978: 51) provides ample evidence for a similar distribution of rates. Utilizing his TDM approach, mail response rates for general public surveys ranged from 50 to 70
percent, depending on the extent of follow-up; his telephone surveys obtained rates of 80-85 percent. He projects these to be somewhat lower than what could be obtained in a face-to-face situation. A summary of response rates from 40 intercept surveys reported a response rate of 55 percent after eligible respondents were identified. However, this rate would be even lower—22 percent—when all refusals are included (Gates and Soloman, 1982/83). On the other hand, Bush and Parasuraman (1985) produced a 73.5 percent response rate for an intercept survey and 63 percent for the telephone (1985: 38). It is not clear how the latter calculated these rates. Since not much is generally known about response rates for intercept surveys, it is difficult to draw comparisons. The best evidence would suggest that the rates of response for intercept surveys are lower than those of telephone and household face-to-face surveys and at least equivalent to those of a mail survey. This would mean that mail and intercept surveys have the greatest incidence of response bias in that the characteristics of those who return mail questionnaires or who are willing to be intercepted during an activity will exhibit characteristics much different than the profile of the population they represent.

As indicated above, comparing response rates is difficult because of the unstandardized methods of their calculation. It still appears that mail surveys are obtaining lower (but not unreasonable) response rates than either telephone or face-to-face. In general, response rates for general public surveys are on the decline, regardless of method, but that the rates for homogeneous samples are still at high levels. It also can be demonstrated that producing response to surveys is a complicated matter. Salience, call-backs, timing, setting, and a host of factors affect response. Recent research suggests that the mail questionnaire and telephone interviewing are most appropriate for modern, fluid, postindustrial society. In fact, it is the mail questionnaire that has held and improved on response rates, while the face-to-face interview rates of response have declined (Goyder, 1987). It may be that a similar phenomenon will occur with future response rates to telephone surveys.

What is really needed at this point is research on response rates for specialized populations such as senior citizens, elite professionals, or distinctive leisure groups. We know a great deal about responses from the general public, but not enough about how survey mode affects responses from specialized groups.

Refusal Rates

It is more informative to discuss responses to surveys in terms of refusals, since this component seems to make up a significant portion of nonresponses to surveys. In addition, most efforts to enhance response rates, short of the less desirable tactic of substitution, are aimed at reducing refusals. The refusal rate is defined as the proportion of eligible respondents contacted who decline to be interviewed. This would include persons who turn down the interview before the interview starts or who discontinue the interview at any time during the introduction to the questionnaire or sometime after the first question has been asked. When any survey uses a within-household selection procedure, the refusal could come at two points. First, the person who is initially contacted could refuse to permit the interview to continue or refuse to locate the selected respondent. It is also possible for the designated respondent to refuse to be interviewed. Obviously, one cannot determine just when the recipient of a mail questionnaire decided not to participate, since it is possible that the mailing was tossed into the garbage before it was even opened or that the respondent decided not to continue his or her participation even after completing many of the questions. Refusals for telephone and face-to-face surveys can be determined and usually occur during the introductory comments or just before the first question. Refusals for intercept surveys also take place at the point of first contact and these rates of refusal can be as high as 20 or 80 percent. However, it is rare to have an intercept interview terminated once questioning has begun.
Refusal rates for mail surveys are difficult to establish because of the inability to sort out intentional nonresponses from those due to undelivered or lost mail. It is probably best to assume that if a completed questionnaire is not returned or the original mailing is not returned because of the inability to locate the respondent, a refusal has taken place. As a result, researchers have done considerable work on stimulating returns in order to bring up the response rate from respondents who do receive the questionnaire. Heberlein and Baumgartner (1978) have identified 71 factors, including personalization, first-class postage, and color of stationery, that have been used in studies designed to stimulate responses. The conclusions are mixed, but follow-up appeals seem to be the most consistent factor in pushing up responses or reducing refusals. In the final analysis, it is much easier to refuse to participate in a mail survey because the researcher has no control over the respondent’s reaction. A representative of the research is not present, as is the interviewer in telephone and face-to-face surveys, to either persuade the respondent to participate or to make it appear socially undesirable to refuse.

Refusals of telephone interviews have been the subject of some specific research, though not a great deal. However, refusal rates are often reported. Wiseman and McDonald (1979: 482) reviewed 182 studies utilizing telephone interviews and were able to calculate a median refusal rate of 28 percent. In most cases, this rate was reduced when call-back appointments were made, but efforts to convert refusals produced unappreciable results. This rate did not vary by length of questionnaire, survey topic, or geographical location of respondents. In a review of consumer and election surveys from 1953 to 1979, Steeh (1981: 54) determined that refusal rates for telephone surveys had stabilized at 24 percent. Groves and Kahn (1979) reported a refusal rate of 28 percent on their telephone studies, or about 5 percent lower than what was expected for face-to-face surveys. My own experience with several metropolitan and statewide surveys is consistent, in that I have obtained initial refusal rates averaging 20-25 percent. These rates seem to be slightly better than those obtained in face-to-face interviews, particularly when the latter are conducted in urban settings.

The reasons for refusal are difficult to determine, especially since it has been established that most respondents neither resist surveys as an invasion of privacy nor have had bad experiences with surveys (Groves and Kahn, 1979; DeMaio, 1980). It is also true that refusals are rising because households are now being inundated with requests for information either for sales or survey purposes. Perhaps a fatigue factor is operating and people are simply tired of these requests, or they associate all survey requests with sales solicitation, or they are being more discerning about which survey requests they will honor. It is probably the case that completing a questionnaire or taking the time for an interview does not have high priority with the public. Therefore, it does not take much of a diversion to replace any interest in survey research participation.

The major problem is to be able to determine the characteristics of refusals in order to compare these to the characteristics of those who respond. If the differences are great, then bias is present. Assessment of the characteristics of nonrespondents to face-to-face surveys is possible because of the ability to note visually certain traits of person and location. Some clues can be obtained in phone surveys (for example, sex, race, and location), but it is virtually impossible to know anything about the characteristics of those who refuse to participate in mail surveys.

In all surveys refusals are a problem. It is difficult to say that one survey has an advantage over the other. Even though refusal rates seem to be on the rise for every type of survey, the household version is in somewhat better position because the physical presence of the interviewer makes it more difficult to refuse. The refusal rate for mail surveys is indeterminable and that of intercept is also very difficult to calculate. But, it is my experience that intercept refusals are not as great as you might think. That is, they do not exceed the 20-25 percent that seems to be the norm for other types of surveys. Telephone refusal
rates are on the rise and exceed to some extent those of the face-to-face surveys.

Noncontact with or Lack of Accessibility of Respondents

The portion of nonresponse not attributed to direct refusals from potential respondents is called the noncontact rate (NCR). This rate is rarely reported, but it is crucial to understanding the extent to which respondents can be located or are accessible by each method. It is calculated as:

\[
NCR = \frac{\text{TOTAL not contacted}}{\text{TOTAL known eligibles}}
\]

The noncontact rate is considerably lower for face-to-face surveys when the clustering approach includes a quota-block sample rather than a specific household selection sample. In intercept surveys noncontact is not a problem since all persons at the interview site are presumably eligible and available for interview. The problem for intercept surveys is refusal, not the availability of respondents. Noncontact can be a problem if persons deliberately break their stream of activity to avoid an interviewer or if the interviewer is not willing to contact persons who do not seem "ready or available" for an interview (e.g., walking fast and in a purposeful manner). Still, the inability to get a response because a respondent is unavailable is one of the more serious factors contributing to the overall lower completion rates that face-to-face surveys experience today. The noncontact rate for face-to-face surveys is compounded by the apparent increased resistance of householders to allowing strangers to enter their homes. Whatever the cause, the rate for face-to-face surveys remains, however, lower than that of the telephone survey.

The accessibility of respondents is a significant problem for telephone surveys, particularly where random digit dialing is used. Busy signals, answering machines, disconnected numbers, tape recordings, and no answers inflate this figure. Wiseman and McDonald (1979: 481) noted that for 182 telephone surveys, the median noncontact rate was 39.1 percent. This figure is somewhat inflated because one cannot be sure than all of the numbers called were working. At least four call-backs could have reduced this rate to 20-25 percent, according to these authors. Of course, call-backs or repeated efforts to contact a respondent can be made at considerably less cost over the phone than is the case with a face-to-face survey.

Mail surveys present a severe dilemma in locating or contacting respondents. On the one hand, the mail survey may be better for hard-to-reach respondents (such as those who are rarely home or those available only after work hours). On the other hand, one cannot know if the questionnaire was received, discarded, lost, or forwarded. Noncontact rates for mail surveys are difficult to determine but may actually be lower than those for either telephone or face-to-face surveys.

Screening for Specialized Respondents

Elite Groups. The ability to contact prospective respondents who are members of elite populations is one that needs further exploration. Most discussions of survey research relate to the general public, not specialized subpopulations such as elite groups. The research that does exist indicates that elites such as political figures, lawyers, Nobel Prize winners, and so forth are more amenable to interviews in a face-to-face context than by either mail or telephone (Dexter, 1970; Denitch, 1972; Zuckerman, 1972; Becker and Meyers, 1974). Very often elite or professionals are not willing to cooperate with a survey appeal. Sudman (1985: 350-51) notes four reasons for noncooperation. They are: (1) the respondent is too busy and time would be better spent on more worthwhile endeavors; (2) the value of the survey is not clear or it is clear and the value is viewed as low; (3) there is concern about the confidentiality of results; and (4) the questions appear biased or they do not allow the
respondent a full range of choices. Researchers need to be attentive to these factors and prepared to deal with this resistance. Sudman (1985) goes on to offer several suggestions to overcome this reluctance, but the advice is directed at mail questionnaires. However, suggestions such as “Clarify the title, purpose, and sponsor,” “Stick to a single professional topic,” and, “Leave room for expanded comments” can serve all types of surveys.

Appeals by mail or telephone often end up diverted by “gate-keepers” or others who guard the time and energy of the potential respondent. Those who have done this type of research assert that it is often better just to “appear” at the respondent’s office without an appointment and to be prepared to insist on an immediate meeting or an appointment. Once the respondent grants the interview, he or she will usually be very good about answering questions. Apparently, the best role for a mailing and/or a telephone call with these populations is to arrange appointments. As stated above, mail and telephone appeals may be very practical for research on elites, but more information on the best circumstances for using these appeals is needed. For example, there is some evidence that incentives produce higher responses to mail surveys from economic elite households and corporate directors (Stanley and Sewall, 1986; Godwin, 1979). There is not data on the use of intercept surveys with elite or specialized populations because this type of research is not ordinarily utilized with these groups.

Sampling Within Households

There are well-known sampling techniques for telephone surveys available for selecting a designated respondent within a household (see Chapter 3) once an eligible household has been determined. However, the problem is complicated by the fact that very often other members of the household will not be willing to locate the designated respondent for the interview or even allow that respondent to be interviewed. For example, a rather autocratic husband may not allow his wife to be interviewed or household members will resist attempts to interview an elderly grandparent. In most cases, selection of the household respondent can be controlled by the interviewer in telephone and face-to-face situations, and this control can be extended to resisting the motive to substitute respondents, which is a generally undesirable alternative. It is most difficult, however, to control respondent selection within a household for mail surveys. Even though instructions may specify the desired respondent, it is entirely possible that de facto substitution occurs and that the questionnaire is completed or refused by someone other than the desired respondent. Telephone and household face-to-face surveys have a clear advantage in this procedure but both can suffer from the problem of being prevented from obtaining access to the designated respondent.

Specialized Subpopulations

Very often it is necessary to survey a very distinct and specialized group. On rare occasions a list is available, but it is usually the case that one must begin with a general public sample and screen to the subpopulation in question. Any time a screen is necessary, costs for any type of survey rise considerably, and sample size adjustments have to be made depending on the success of the screen. Cooperation rates must then be estimated and sample size adjusted to achieve this cooperation rate (Sudman, 1983: 172). Surveys of special groups are complicated by the fact that estimates of the size of a subpopulation are either unavailable or they are unreliable. This means that estimates have to be made about the descriptive characteristics and the accessibility of the specialized population (e.g., families experiencing Alzheimer’s Disease) as well as about the best survey techniques to reach these groups. The goal of any sampling strategy is to maximize the “take” rate, or the percentage of screens that yield members of the specialized subpopulation (Tourangeau and Smith, 1985: 352). In some cases screening
costs may exceed interviewing costs (Sudman et al., 1988: 991). Sampling is further complicated if the subpopulation is not geographically clustered or if it is highly mobile. These conditions may force the researcher to implement a convenience sample forgoing the opportunity to make estimates about the characteristics of that population (Sudman, Sirken, and Cowan, 1988: 991).

There are several techniques that are designed to reach the specialized or “rare” population. These are usually discussed with reference to household, face-to-face surveys. The techniques include: (1) piggybacking, or the use of data collected in one survey for screening purposes in another, (2) cluster selection, or the sampling of a cluster in hopes of it including the requisite proportion of eligible respondents, (3) batch testing, or screening one unit in a cluster to see if the cluster should be retained for further screens, (4) disproportionate sampling, or the overrepresentation of groups if they include a high concentration of the target population, and (5) networking where a single informant provides information on other members of a household or block (Kish, 1965: 404-415; Tourangeau and Smith, 1985; Sudman, et al., 1988). In a comparison of the piggyback and the disproportionate sampling techniques in a face-to-face household survey on urban blacks, the disproportionate sampling technique produced a higher take rate at a lower cost per completed case (Tourangeau and Smith 1985: 362). Few other comparisons are available.

Batch testing was developed by Waksberg (1978) for use in random digit dialing samples. It is most efficient when eligible respondents are concentrated in some clusters and not others. Variations on this and other techniques of sampling specialized populations could possibly be developed for mail surveys but they would be very inefficient and unreliable. Intercept surveys are also inefficient for this type of sampling. They would only be used if the distinguishing feature was visible and the target population was readily accessible. The most promising technique is networking, or multiplicity sampling, since it retains probability sampling and it reduces screening by more than one-half (Sudman, 1983: 179; Dutka, no date). In any case, if the target subpopulation is rare, not easily accessible, and without an available list, the screening is difficult and costly to implement.

One particular special population that is drawing attention from survey researchers is the elderly. Surveys of the elderly can be problematic since physical impairments and fears of crime and strangers reduce the potential of getting quality responses from this group. West (1987) describes how affective response can be limited by hearing malfunctions, decline in the ability to recall, the inability to afford a telephone, and lower levels of educational achievement. The fact that many surveys depend upon a healthy respondent, the ability to recall, and accessibility means that many surveys of the elderly will be biased by response error and missing data (West, 1987: 4). Elderly appear to be resistant to being surveyed by telephone, but the data quality differences among the type of surveys are not great (Herzog, 1986). The advantage, however, still seems to rest with the face-to-face survey. It will be necessary for those who conduct surveys by telephone to be prepared to make adaptations to the problem of elderly respondents (e.g., amplification devices, questions that require limited recall, etc.). This consideration is especially crucial since persons over 60 represent the fastest growing portion of the population.

In sum, the advantage goes to telephone and household face-to-face surveys when reaching a specialized subpopulation is the goal. Both permit the implementation of network sampling even though screening procedures heighten costs. The latter is compensated for by a better sample with lower sampling variance. Blocks, zip codes, and telephone exchanges provide natural clusters where a group of the subpopulation may be concentrated. The mail survey is only useful where a complete list of the specialized subgroup exists. The intercept method can be implemented where the subpopulation can be easily identified (e.g., physical handicap) but the sample out-
come can only be one of convenience. None of the survey techniques is effective if the rare population is mobile or transient.

DATA QUALITY

The goal of any survey project is to obtain complete and accurate responses from respondents. There are, however, many factors that can produce responses that are less than complete and that do not reflect the “true” feelings, attitudes, beliefs, or behavior of the respondent. The occurrence of these types of nonsampling error or measurement effects can be attributed to conditions of the interviewing situation, the response situation, and the questionnaire/interview schedule.

Interviewer Effects

The potential for compromises in data quality as a result of interviewer differences is a greater problem for face-to-face household and intercept surveys than for the telephone survey. Groves and Kahn (1979) found lower interviewer variance in their telephone survey than on the face-to-face component. Interviewer effects are reduced in the telephone survey by virtue of the close supervision provided in a centralized setting. Variations in question order or the manner in which a question is asked can be corrected rather easily in this type of calling facility. The supervisor of an interviewer conducting face-to-face interviews does not have the same control and cannot always prevent interviewers from interjecting their expectations or values into the manner in which they approach a respondent or ask a question. As we shall see in the section on the “social desirability” answering pattern, interviewers contribute significantly to the “demand” characteristics of the interview situation.

The effects of an interviewer can be relatively subtle or they can be more pronounced. Question wording, instruction guidelines, probing, and questionnaire completion are all factors that can be variously distorted by interviewers. This is particularly the case with a face-to-face interviewer where the survey director is extremely dependent on the field staff. Every once in a while we hear a horror story of how an interviewer completed every one of the assigned interviews in his or her own living room. A centralized telephone facility reduces this source of distortion to a considerable extent because of the ability to monitor the interview. (This can include listening in to the interview via monitoring devices). Validity checks by reinterviews on certain items or by following up with respondents to determine if, in fact, they have been interviewed can reduce this problem to some extent in the face-to-face survey. Follow-up checks are impossible with intercept surveys but can be done quite easily for telephone interviews. Even then, this is not infallible since the resources available for validation are usually only sufficient to permit a small portion of the interviews to be checked.

The ability to control interviewer effects by supervision is best achieved in a telephone survey and presents the most difficulty in a face-to-face household survey. Controlling the interviewing or field process is a greater problem for the intercept survey than for the household interview. Even though supervisors cannot listen to intercept interviews unobtrusively as they can with telephone interviews, they can observe the interview, listen casually to the questions and responses, and immediately edit the completed interview for errors (Gates and Solomon, 1982/83). The control problem with intercept surveys is the inability to neutralize the influence of the interview environment.

In general, the data on the effect of interviewers is mixed (Bradburn, 1983: 311) It does appear, however, that student