

## CONDUCTING QUESTIONNAIRE SURVEYS.

### INTRODUCTION: -

Survey research has been an important tool in geography for several decades. The goal of survey research is to acquire information about the characteristics, behaviours and attitudes of a population by administering a standardized questionnaire, or survey, to a sample of individuals. Surveys have been used to address a wide range of geographical issues, including perceptions of risk from natural hazards; social networks and coping behaviours among people with HIV/AIDS; environmental attitudes; travel patterns and behaviours; mental maps; power relations in industrial firms; gender differences in household responsibilities; and access to employment. In geography, questionnaire surveys were first used in the field of behavioural geography to examine people's environmental perceptions, travel behaviour and consumer choices (Rushton, 1969; Gould and White, 1974). Survey research methods quickly spread to other branches of human geography, and today they are an essential component of the human geographer's toolkit.

Questionnaire survey research is just one method for collecting information about people or institutions. When does it make sense to conduct a questionnaire, rather than relying on secondary data (see Chapter 5) or information collected by observational methods (see Chapter 9), for example? Survey research is particularly useful for eliciting people's attitudes and opinions about social, political

and environmental issues such as neighbourhood quality of life, or environmental problems and risks. This style of research is also valuable for finding out about complex behaviours and social interactions. Finally, survey research is a tool for gathering information about people's lives that is not available from published sources (e.g. data on diet, health and employment characteristics). In developing countries where government data sources are often out of date and of poor quality, questionnaire surveys are a primary means of collecting data on people and their characteristics.

Before embarking on survey research, it is critically important to have a clear understanding of the research problem of interest. What are the objectives of the research? What key questions or issues are to be addressed? What people or institutions make up the target population? What are the geographical area and time period of interest? These issues underpin how the survey is designed and administered. Surveys can be expensive and time-consuming to conduct, so the quality and type of information gathered are all important.

Although each survey deals with a unique topic, in a unique population, the process of conducting survey research involves a common set of issues. The first step is *survey design*. Researchers must develop questions and create a survey instrument that both achieves the goals of the research and is clear and easy to understand for respondents. Second, we need to decide how the survey will be administered. Postal (or mail-back) questionnaires and telephone interviews are just a few of the many *strategies for conducting surveys*. Third, survey research involves *sampling* – identifying a sample of people to receive and respond to the questionnaire. This chapter provides a brief introduction to each of these issues, drawing upon examples from geographic research.

## QUESTIONNAIRE DESIGN: -

Questionnaires are at the heart of survey research. Each questionnaire is tailor made to fit a research project, including a series of questions that address the topic of interest. Decades of survey research have shown that the design and wording of questions can have significant effects on the answers obtained. There are well established procedures for developing a 'good' questionnaire that includes clear and effective questions (Fowler, 2002).

Good questions are ones that provide useful information about what the researcher is trying to measure. Although this may appear to be simple, straightforward advice, it is often challenging to implement. Questions can range from factual questions that ask people to provide information, to opinion questions that assess attitudes and preferences. Writing good questions requires not only thinking about what information we are trying to obtain but also anticipating how the study population will interpret particular questions. Let's examine the following question: 'Are you concerned about environmental degradation in your neighbourhood?' This item raises more questions than it answers. What does a person mean when he or she says that he or she is concerned? What does environmental degradation mean? Do people understand it? How does each respondent define his or?

her neighbourhood? Questions should be clear and easy to understand for survey respondents, and they should provide useful, consistent information for research purposes.

One of the most important rules in preparing survey questions is keep it simple. Avoid complex phrases and long words that might confuse respondents. Do not ask two questions in one. The question ‘Did you choose your home because it is close to work and inexpensive?’ creates confusion because there is no obvious response if only one characteristic is important. Jargon and specialized technical terms cause problems in survey questions. Terms like ‘accessibility’ or ‘power’ or ‘GIS’ are well known among geographers, but ambiguous and confusing for most respondents. Don’t assume that respondents are familiar with geographic concepts! Define terms as clearly as possible and avoid vague, all-encompassing concepts. Asking people about their involvement in community activities, without specifying what kinds of activities and what level of involvement, is unlikely to produce useful responses. It is better to ask a series of questions about specific types of involvement rather than a single vague question. Finally, one should avoid negative words in questions. Words like ‘no’ and ‘not’ tend to confuse respondents (Babbie, 2003) (see Box 6.1).

Responses to survey questions are as important as the questions themselves. *Open-ended* questions allow participants to craft their own responses, whereas *fixed-response* questions offer a limited set of responses. Open-ended questions have several advantages. Respondents are not constrained in answering questions. They can express in their own words the fullest possible range of attitudes, preferences and emotions. Respondents’ ‘true’ viewpoints may be better represented.

#### Guidelines for designing survey questions

##### Basic principles:

- Keep it simple.
- Define terms clearly.
- Use the simplest possible wording.

##### Things to avoid:

- Long, complex questions.
- Two or more questions in one.
- Jargon.
- Biased or emotionally charged terms.
- Negative words like ‘not’ or ‘none’.

Open-ended questions provide qualitative information that can be analysed with qualitative methodologies, as discussed elsewhere in this volume. Increasingly, geographers are using open-ended responses in questionnaire surveys as part of the broader shift towards qualitative methodologies. Relying on a mix of open-ended and fixed-response questions, Gilbert (1998) analysed survival strategies among working, poor

women and their use of place-based social networks. The fixed-response questions provided data on the demographic and household characteristics of the women and their social interaction patterns, while the open-ended questions offered detailed insights about women's coping strategies and life circumstances.

Fixed-response questions are commonly used in survey research, and the principles for designing such questions have been in place for decades. There are several advantages to fixed responses. First, the fixed alternatives act as a guide for respondents, making it easier for them to answer questions. Second, the responses are easier to analyse and interpret because they fall into a limited set of categories (Fink and Kosecoff, 1998). The downside is that such responses lack the detail, richness and personal viewpoints that can be gained from open-ended questions.

A simple type of fixed-response question is the factual question that asks about, say, age, income, time budgets or activity patterns. Responses may be numerical or involve checklists, categories or yes/no answers. The key in framing these types of questions is to anticipate all possible responses. As in all phases of survey design, it is important to think about the kind of information needed for research as well as characteristics of the study population that might influence their responses. A 'don't know' or 'other' option is generally included to allow for the fullest range of responses. For numerical information (age, income), one must decide between creating categorical responses (i.e. age < 15, 15–25), or recording the actual numerical value. Creating categories involves a loss of information – a shift from interval to ordinal data<sup>1</sup> – but the categorical information may be easier to analyse. Also, for sensitive topics such as age, respondents are more likely to answer if the choice involves a broad category rather than a specific number.

Although factual questions appear straightforward, they often reflect an uneasy balance between the needs and views of survey administrators and those of respondents. Questions about 'race' are a good example. Race is a social construction that does not fit easily into the discrete response categories used in questionnaire surveys. In the census of the United States, the categories and options used to elicit information about race have changed over time reflecting changes in social understandings of race. The 1850 Census presented three options – 'white', 'black' and 'mulatto'<sup>2</sup> – for respondents to choose in identifying their race. In contrast, the 2000 Census provided six racial categories and permitted respondents to check multiple categories to identify themselves as mixed race. Even with this wider range of alternatives, in completing the recent census many people did not select a racial category, responding instead by writing in an ethnic identification.

Finding out about attitudes and opinions involves more complex kinds of fixed-response formats. In general, respondents are asked to provide a rating on an ordinal scale that represents a wide range of possible responses. The Likert scale presents a range of responses anchored by two extreme, opposing positions (Robinson, 1998). For example, residents may be asked to rate the quality of the schools in their neighbourhood from 'excellent' to 'satisfactory' to 'poor'. The two extreme positions, 'excellent' and 'poor', serve as anchor points for the scale, and any number of alternative responses can be included in between (Box 6.2). It is best to use an odd number of responses – 3, 5 and 7 are common – so that the middle value represents a neutral opinion. Respondents often want the option of giving a neutral answer when they do not have strong feelings one way or the other. Odd-numbered scales

give such an option, whereas even-numbered scales force the response to one side. Another approach is to present the scale as a continuous line connecting the two anchors. Respondents are asked to draw a tick mark on the line at the location representing their opinion, and the distance along the line shows the strength of opinion. This gives maximum flexibility, but respondents are often confused about the process and it is difficult to compare results among respondents. Consequently, most researchers work with fixed Likert scales.

Examples of Likert-type responses						
Please rate the quality of schools in your neighbourhood:						
Excellent	_____				Poor	(continuous)
Excellent		Satisfactory		Poor		(three-point scale)
Excellent	Good	Satisfactory	Fair	Poor		(five-point scale)

Attitudinal scales can be difficult to evaluate because there is no ‘objective’ standard for knowing whether or not a response is accurate. However, researchers can take several steps to improve validity. In general, it is better to offer respondents more possible answers than fewer – i.e. a five-point scale provides more information than a three-point scale. But as the number of categories increases, respondents lose their ability to discriminate among categories and the responses lose meaning. An intermediate number of categories (five or seven are commonly used) works best. Because responses often vary depending on how a question is worded, another good practice is to use multiple questions, with different wording and formats, to measure the same concept. By comparing responses across questions one can check if people give consistent responses. If so, the responses can be averaged or combined statistically to represent the underlying concept or attitude. This strategy was used in a study of the links between residents’ perceptions of neighbourhood quality in Bristol and objective indicators of social deprivation (Haynes *et al.*, 2007). To measure perceived neighbourhood quality, the authors asked respondents to evaluate levels of noise, pollution, friendliness, crime and social interaction in the local neighbourhood. Responses to these diverse questions were combined statistically to create composite measures that were correlated with area-based indicators of housing quality and social deprivation.

Questionnaires should also include a clear set of instructions to guide individual responses. For self-administered surveys – those that do not involve an interviewer – the questionnaire has to be self-explanatory. The instructions for respondents must be written in simple, direct language and be as clear and explicit as possible so that the questionnaire can be filled out without assistance.

Fixed-response questions work best in self-administered questionnaires, and the design and layout of the questionnaire are critically important. For questionnaires involving interviewers, the key is to have a clear and consistent set of instructions for interviewers to follow. There are well-tested guidelines for designing and formatting interviewer-administered questionnaires (Fowler, 2008).

The final and critically important step in questionnaire construction is pretesting (pilot-testing). In this phase, we test the questionnaire on a small group of people to check the questions, responses, layout and instructions. Are the questions understandable? Does the questionnaire allow all possible responses? Are the instructions clear and easy to follow? Is the questionnaire too long? Do any questions make respondents uncomfortable? Pretesting often reveals flaws in the questionnaire that were not obvious to researchers. The questionnaire is then modified, and it may be pretested again before going to the full sample. Several pretests may be needed to achieve a well-designed questionnaire. For interview-based surveys, pretesting has other benefits. It builds interviewing skills and helps interviewers develop confidence and rapport with respondents. In sum, pretesting is an essential step in ensuring a successful questionnaire survey.

### **STRATEGIES FOR CONDUCTING QUESTIONNAIRE SURVEYS: -**

There are many strategies for conducting questionnaire surveys. Among the traditional methods are telephone surveys, face-to-face interviews and postal surveys. Advances in computer technology have stimulated the growth of internet and email-based survey research. Survey strategies differ along many dimensions – from practical issues like cost and time, to issues affecting the quality and quantity of information that can be collected. Some survey strategies require the use of interviewers whereas others utilize self-administered questionnaires.

### **FACE-TO-FACE INTERVIEWS: -**

Face-to-face interviews are one of the most flexible survey strategies. They can accommodate virtually any type of question and questionnaire. The interviewer can ask questions in complex sequences, administer long questionnaires, clarify vague responses and, with open-ended questions, probe to reveal hidden meanings. The personal contact between interviewer and respondent often results in more meaningful answers and generates a higher rate of response. Interviews require careful planning. Interviewers need training and preparation to ensure that the process is consistent across interviewers. Thus, face-to-face interviews are generally the most expensive and time-consuming survey strategies. Another drawback is the potential for interviewer-induced bias. The unequal relationship between interviewer and respondent, embedded in issues of gender, 'race', ethnicity and power, can influence responses (Kobayashi, 1994).

### **TELEPHONE INTERVIEWS: -**

Telephone interviews are widely used in market research and are becoming a more common strategy in social-science research. They combine the personal touch of interviews with the more efficient and lower-cost format of the telephone. In many

places, firms can be hired to conduct telephone surveys, saving researchers the time and expense of training interviewers and setting up phone banks. Phone surveys, however, are generally limited to short questionnaires with fixed-response questions. Such surveys miss people who do not have telephones or who are frequently away from home. Finally, although the interviewer and interviewee are only connected remotely, issues of power and bias can creep into phone surveys.

### **POSTAL SURVEYS: -**

Postal (or mail) surveys are self-administered questionnaires distributed in a post-out, post-back format. A stamped, addressed envelope is included for returning the completed survey, and reminder notes may be sent later to encourage people to respond. For interviewees, there is no time pressure to respond; forms can be completed at a convenient time. The main weakness of postal surveys is the low response rate. Typically, less than 30 per cent of questionnaires will be completed and returned, and those who respond may not be representative of the target survey population. People with low levels of education or busy lives are less likely to respond. The unevenness of responses often violates random or stratified sampling plans and makes it difficult to estimate sample sizes. Finally, low response means that more surveys must be sent out, increasing the cost of the survey effort.

### **DROP AND PICK-UP QUESTIONNAIRES: -**

A related strategy is the drop and pick-up questionnaire. This involves leaving self-administered questionnaires at people's homes and picking the surveys up at a later date. The person dropping off the surveys can give simple instructions and a brief description of the survey effort. The personal contact in dropping off the survey gives response rates close to those for face-to-face interviews, but with much less time and interviewer training. Thus, the method combines the strengths of interview and self-administered strategies. This comes at a cost – the costs are substantially higher than are those for postal or telephone surveys, though still less than those for personal interviews.

### **INTERNET SURVEYS: -**

A new approach is the internet survey, which is similar to a postal survey but conducted via email or the internet. The questionnaire can have the same format as a standard postal questionnaire or it may be an 'intelligent', computer-assisted questionnaire that checks and directs people's responses (Couper *et al.*, 1998). Geographers Claire Madge and Henrietta O'Connor (2002) used an internet questionnaire to find out how new parents use the internet in acquiring information on parenting and in developing social-support networks. Every phase of their research methodology relied on the internet. Respondents were solicited online: they volunteered for the project by clicking on a 'cyberparents' hotlink on a prominent parenting

website. The web-based questionnaire included a series of fixed format questions and hyperlinks to related websites ([caspi.geog.le.ac.uk/baby/babyworldform.asp](http://caspi.geog.le.ac.uk/baby/babyworldform.asp)). Online interviews and discussion groups were conducted. Because their study emphasized internet usage, it made sense to gather information online.

Internet surveys like the one used by Madge and O'Connor have several advantages. They are inexpensive to administer; they provide access to geographically dispersed populations and they can be used to reach physically immobile groups (Madge and O'Connor, 2004). Another important advantage for geography research is that web-based questionnaires can include detailed colour graphics, such as maps, photographs, video clips and animations. On the negative side, distributing questionnaires via the internet raises a host of sampling issues. Who are the respondents? Where are the respondents? Do they represent the target population? What types of people respond and don't respond to internet surveys? Clearly people without access to email and the internet will be left out of the sample. Although many questions remain, internet surveys represent a significant innovation whose use will continue to expand in the years to come (see Chapter 13).

Each survey strategy has distinct advantages and disadvantages and the 'best' choice varies from one research project to another. Choosing a survey strategy involves weighing practical considerations, such as time and cost constraints, with research considerations, such as response rate, types of questions and the need (or lack of it) for interviewer skills. Frequently, the research context limits one's choice. Surveys in developing countries often rely on personal interviews (Awanyo, 2001); map-perception surveys often use computer-assisted questionnaires and the internet. Regardless, researchers should note the limitations of the chosen method and attempt to minimize their effects.

## **SAMPLING: -**

Sampling is a key issue in survey research because who responds to a survey can have a significant impact on the results. The sample is the subset of people to whom the questionnaire will be administered. Typically, the sample is selected to represent some larger population of interest – the group of people or institutions that are the subject of the research. Populations can be very broad – e.g. 'all people in the UK' – or they can be quite specific, for example 'married women with children who work outside the home and live in Chicago'. Populations are bounded in time and space, representing a group of people or institutions in a particular geographical area over a particular time period. Effective sampling requires that this population of interest be clearly defined.

The first step in sampling is to identify the sampling frame – those individuals who have a chance to be included in the sample (Fowler, 2008). The sampling frame may include the entire population or a subset of the population. Sometimes the design of the survey limits the sampling frame. For instance, in a telephone survey drawn from a telephone directory, the sampling frame only includes households that have telephones and whose telephone numbers are listed in the directory. Similarly, an internet survey excludes people who do not have access to the internet or who do



not use it. The resulting sample will be biased if those excluded from the sampling frame differ significantly from those included.

Sampling also involves decisions about how to choose the sample and sample size. Commonly used sampling procedures include random sampling, in which individuals are selected at random, and systematic sampling, which involves choosing individuals at regular intervals – i.e. every tenth name in a telephone directory (Robinson, 1998). The former ensures that each individual has the same chance of being selected, whereas the latter provides even coverage of the population within the sampling frame. Sometimes the population consists of subgroups that are of particular interest – for example, different neighbourhoods in a city or ethnic groups in a population. If these subgroups differ in size, random sampling will result in the smaller subgroups being under-represented in the sample.

Stratified sampling procedures ensure that the sample adequately represents various subgroups. In stratified sampling, we first divide the population into subgroups and then choose samples randomly or systematically from each subgroup. Surveys that explore differences among groups or geographical areas often rely on stratified sampling. A recent study by Fan (2002) utilized stratified sampling to examine differences in labour-market experiences among three groups – temporary migrants, permanent migrants and non-migrants – in Guangzhou City in China. The sample consisted of more than 1500 respondents, stratified to represent not only the three migrant groups but also various occupational groups and districts within the city (Fan, 2002). Respondents were chosen randomly within each occupational and geographical group, with adjustments to ensure that the three migrant groups were appropriately represented.

Another important issue is how large a sample should be. Large sample sizes give more precise estimates of population characteristics and they provide more information for addressing the research problem. However, large samples also mean more questionnaires and more time and effort spent in interviewing and analysis. The cost of survey research increases proportionately with sample size. In choosing a sample size, analysts must trade off the benefits of added information and better estimates with the costs of administering and analysing the surveys.

One way to decide on a sample size is to focus on subgroups rather than the population as a whole. The sample must be large enough to provide reasonably accurate estimates for each of the subgroups that are being compared and analysed. Large sample sizes shrink quickly when divided into subgroups. For example, in analysing travel patterns by gender, urban/rural residence and three categories of ethnic origin, there will be 12 ( $2 \times 2 \times 3$ ) subgroups. An overall sample size of 100 yields just eight responses on average for each subgroup, which is too small to produce reliable subgroup estimates. To avoid this problem, the researcher should first identify the various subgroups and choose an adequate sample size for each. This is easy to do in a stratified sampling design. With other sampling procedures the issue is trickier. Small subgroups will be missed unless the overall sample size is large. Researchers should carefully assess the various subgroups of interest in choosing a sample size.

Sample size decisions also involve thinking about how much precision or confidence is needed in various estimates. Precision always increases with sample size, but the improvements in precision decrease at larger sample sizes. The benefits of larger samples begin to level off at sample sizes of 150–200 (Fowler, 2008).

It is also important to think about how the survey data will be analysed. Typically researchers use statistical procedures such as chisquare and analysis of variance (ANOVA) in analysing survey responses. These procedures require sample sizes of approximately 25 or more. Larger sample sizes are needed for multivariate statistical procedures such as multiple regression analysis and logistic regression. If separate statistical analyses will be performed for different subgroups in the sample, each subgroup must have a sample size that is sufficient for statistical analysis.

Finally, sample size decisions also involve very real budgetary and time constraints and these may well be beyond the researcher's control. In sum, there is no single answer to the sample size decision. The decision involves anticipating what the data will be used for and how it will be analysed, and balancing those considerations with the realities of time and money.

Sampling procedures are important because they can introduce various sources of bias into a research project. Sampling bias arises when the sample size is not large enough accurately to represent the study population or subgroups within it. More importantly, the sampling frame may be biased, as occurs in telephone or Internet surveys. Many survey procedures under-represent disadvantaged populations, including poor and homeless people and ethnic and racial minorities. Special efforts are needed to ensure that these groups are not excluded from the research project. Finally, non-response bias occurs when those who refuse to respond differ significantly from those who do respond. Non-response often correlates with age, social class, education and political beliefs, resulting in a sample that is not representative of the study population. Although non-response bias cannot be eliminated, its effects can be minimized with a good sampling design. Because survey results are often highly dependent on the characteristics of the sample, bias is a crucial issue in sampling and survey design.

## **CONCLUSION: -**

Conducting questionnaire surveys involves a series of steps, including designing and pretesting the questionnaire; choosing a survey strategy; identifying a sample of potential respondents; and administering the survey. These complex decisions are closely interconnected. The design of the questionnaire affects whether or not face-to-face interviews are needed. For many projects, financial constraints dictate the use of postal or telephone surveys and relatively small sample sizes. Thus, in any survey project there is a continual give and take between different factors, framed by the goals and constraints of the research endeavor.

Questionnaire surveys have well-known limitations, as discussed at various points in this chapter. For geographical research, poorly worded questions, ambiguous responses and non-response bias are all issues that raise major concerns. Some geographers contend that survey information is of limited value, especially when compared to the rich and detailed information that can be gleaned from depth interviews and participant observation (Winchester, 1999). A more balanced view recognizes the strengths of questionnaire surveys – their ability to gather information from large samples, about large and diverse populations; their ability

to incorporate both open and fixed questions and their use of trained interviewers to elicit information; and, finally, in the internet era, their ability to reach widely dispersed populations with innovative, computer-assisted, graphically based questionnaires. Despite their limitations, surveys remain the most efficient and effective tool for collecting population-based information.

Questionnaire surveys have a long history in geographic research, a history that continues to evolve as the discipline of geography changes. During the 1970s, survey methods facilitated the shift away from statistical analysis of secondary data towards behavioural and environmental perception research. During the 1980s and 1990s, survey methods became less popular as a result of a 'qualitative turn' in human geography. Today, as geographers search for a common ground between quantitative and qualitative methods, questionnaire surveys are playing an important role in innovative 'mixed' methodologies (Sporton, 1999). As these developments unfold, questionnaire surveys will continue to provide a rich array of information about people's lives and well-being in their diverse geographical contexts.