

**Chapter III**  
**An overview of questionnaire design for household surveys in developing countries**

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**Abstract**

The present chapter reviews basic issues concerning the design of household survey questionnaires for use in developing countries. It begins with the first step of questionnaire design, which is to formulate the objectives of the survey and then modify those objectives to take into account the underlying constraints. After these broad issues are discussed, more detailed advice is given on many aspects of designing household survey questionnaires. The chapter also provides recommendations on field-testing and finalizing the questionnaire.

**Key terms:** questionnaire design, survey objectives, constraints, pilot test, field test.

## **A. Introduction**

1. Household surveys can provide a wealth of information on many aspects of life. However, the usefulness of household survey data depends heavily on the quality of the survey, in terms of both questionnaire design and actual implementation in the field. While designing survey questionnaires and implementing household surveys may at first appear to be simple tasks, in reality successful household surveys require hard work and large amounts of time.

2. The present chapter provides a basic overview of the process of designing a household survey questionnaire for use in a developing country. The presentation here is only an introduction because questionnaire design is a very complex process which cannot be described in detail in a chapter of this length. The chapter aims to lay out the most important issues and provide useful advice on each of them. Any reader planning to undertake an actual survey will need to consult other materials to obtain more detailed advice. A good starting point is Grosh and Glewwe (2000), which provides very detailed information on the design of household surveys for developing countries. Although it was written with a specific type of survey in mind - the World Bank Living Standards Measurement Study (LSMS) surveys - much of the advice in it is relevant to almost any type of household survey. More general, though less recent, treatments of questionnaire design can be found in Casley and Lury (1987), United Nations (1985), Sudman and Bradburn (1982) and Converse and Presser (1986). A detailed discussion on how to design a labour-force survey is provided by Hussmanns, Merhan and Verma (1990).

3. Throughout this chapter, it is assumed that the survey questionnaire will be administered by interviewers who visit respondents in their homes and that the sampling unit is the household.<sup>4</sup> Since most household surveys collect information on each individual household member, they are based on samples of individuals as well as on samples of households.

4. The rest of this chapter is organized as follows. Section B discusses the "big picture", that is to say, the objectives of, and the constraints faced by, the survey. Section C provides advice on organizing the structure of the survey questionnaire, formatting and other details of questionnaire design. Section D gives recommendations on the overall process, from forming a survey team to field-testing and finalizing the questionnaire. A brief final section (E) offers some concluding comments.

## **B. The big picture**

5. Household survey questionnaires vary enormously in content and length. The final version of any questionnaire is the outcome of a process in which hundreds, or even thousands, of decisions are made. An overall framework, or "big picture", is needed to ensure both that this process is an orderly one and, ultimately, that the survey accomplishes the objectives set for it. To do this, survey designers must agree on the objectives of the survey and on the constraints

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<sup>4</sup> In some surveys, the sampling unit is the dwelling, not the household, but in such cases some or all of the households in the sampled dwellings become the "reporting units" of the survey. In addition, some populations of interest cannot be covered in a survey of households. Examples are street children and nomads. Even so, most of the material in the present chapter will apply to surveys of those types of populations. For more information on how to sample such populations, see United Nations (1993).

under which the survey will operate. The present section explains how to establish the overall framework starting with the fundamentals and then provides some practical advice.

### 1. Objectives of the survey

6. Government agencies and other organizations implement household surveys in order to answer questions that they have about the population.<sup>5</sup> Thus, as the objectives of the survey are to obtain answers to such questions, the survey questionnaire should contain the data that can provide those answers. Given limited resources and limits on the time of survey respondents, any data that do not serve the objectives of the survey should not be collected. Thus, the first step in designing a household survey is to agree on its objectives, and put them in writing.

7. To establish the survey objectives, survey designers should begin with a set of questions to which the organization(s) sponsoring the survey would like to have answers. Four types of questions can be considered. The simplest type comprises questions about the fundamental characteristics of the population at the present time. Examples of such questions are:

*What proportion of the population is poor?*

*What is the rate of unemployment?*

*What is the prevalence of malnutrition among young children?*

*What crops are grown by rural households in different regions of the country?*

8. A second type of question connects household characteristics with government policies and programmes in order to examine the coverage of those programmes. An example of this type of question is:

*What proportion of households participate in a particular programme, and how do the characteristics of these households compare with those of households that do not participate in the programme?*

9. A third type of question concerns *changes* in households' characteristics over time. Government agencies and organizations often want to know whether the living conditions of households are improving or deteriorating. Data from two or more surveys that are separated by a considerable length of time are required to answer this type of question, with the data of interest being collected in the same way in each survey. As explained in Deaton and Grosh (2000), even slightly different ways of collecting information can result in data that are not comparable and thus are potentially misleading.

10. The fourth and last type of question concerns the determinants (causes) of households' circumstances and characteristics. Such questions are difficult to answer because they ask not

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<sup>5</sup> These general questions, for which the organization implementing the survey would like answers, are not necessarily the same as the more specific questions on the survey questionnaire that are to be asked of household members. The present section focuses on the former type of questions.

only *what* is happening but also *why* it is happening. Yet, these are often the most important questions because they seek to understand the impact of current policies or programmes, and perhaps even hypothetical future policies or programmes, on the circumstances and characteristics of households. Economists and other social scientists do not always agree on how to answer these questions, and sometimes they may not even agree that it is possible to answer a particular question. If such questions are important to the survey designers, very thorough planning is needed. However, the issues involved in such planning are beyond the scope of this chapter (see the various chaps. in Grosh and Glewwe (2000) for detailed discussions of what is required to answer this type of question).

11. Once a set of questions to be answered has been agreed upon, the questions can be expressed as objectives of the survey. For example, the presence of a question about the current rate of unemployment implies that one objective of the survey is to measure the incidence of unemployment among the economically active population. The next step is to rank these objectives in order of importance. If the number of objectives is large, it is quite possible that the survey will not be able to collect all the information needed to achieve all of them because of low budgets, capacity limitation and other constraints. When this happens, objectives that have low priority (relative to the effort required to collect the information needed to attain them) should be dropped.<sup>6</sup> In this process of deciding what objectives the survey will meet, one must check whether other data that already exist can be used to answer the question associated with the objective. Any objective that can be met using existing data from other sources should be dropped from the list of objectives for the new survey. This process of choosing a reasonable set of objectives is more an art than a science, and survey designers must also take into account factors such as past experience in collecting data relevant to the objective and the overall capacity of the agency implementing the survey. Yet, once such challenges are met, this approach should help survey designers agree upon a list of objectives that the household survey is intended to meet.

12. A final point to be noted is that some survey designers prefer to express the set of questions or objectives in terms of a set of tables to be completed using the survey data. This approach, which is often referred to as the “tabulation plan”, works best with the first three types of questions. More generally, the way in which the data collected in a household survey will be used to answer the questions (attain the objectives) can be referred to as the “data analysis plan”. Such plans, which can be quite detailed, should be worked out when the details of the household survey are being settled (this is discussed further in sect. C).

## 2. Constraints

13. The process of choosing the objectives described above must take place within an “envelope” of constraints that limit what is feasible. Survey designers face three major constraints. The first and most obvious is the financial resources available to undertake the survey. This constraint will limit both how many households can be surveyed and how much time interviewers can spend with any given household (which in turn limits how many questions

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<sup>6</sup> An alternative to dropping a less important objective is to collect the data needed to achieve it from only a subsample of households. This will require fewer resources, but it will also reduce the precision of the estimates and could also complicate the implementation of the survey in the field.

can be asked of a given household). In general, there are different combinations of sample size (number of households surveyed) and the amount of information that one can obtain from each household, and for a given budget there is a trade-off associated with these two characteristics of the survey. In particular, for a given quantity of financial resources, one can increase the sample size only by decreasing the amount of information collected from each household, and vice versa.<sup>7</sup> Clearly, this has implications for the number of objectives of the survey and the precision of those objectives (that is to say, the accuracy of the answers to the underlying questions): a small sample size can allow one to collect more data per household and thus answer more questions of interest, but the precision of those answers will be lower owing to the lower sample size. A related point is that the quality of the data, in the sense of the accuracy of the information, will also be affected by the resources available. For example, if funds are available to allow each interviewer more time to complete a questionnaire of a given size, the additional time could be used to return to the household to correct errors or inconsistencies in the data that are detected after an interview has been completed.

14. The second constraint that survey designers face is the capacity of the organization that will implement the survey. Large sample sizes or highly detailed household questionnaires may exceed the capacity of the implementing organization to undertake the survey at the desired level of quality. The larger the sample size, the greater the number of interviewers and data entry staff that it will be necessary to hire and train (assuming that the amount of time required to complete the survey cannot be extended), which means that the organization may have to reduce the minimum acceptable qualifications for interviewers and data entry staff in order to hire the requisite number. Similarly, more extensive household questionnaires will require more training and more competent staff, and well-trained, highly competent interviewers and data entry staff are often in short supply in developing countries. This constraint is often not fully recognized, with the consequence that many surveys that have been undertaken in developing countries have produced large data sets of doubtful quality and thus of uncertain usefulness.

15. A final constraint is the willingness and ability of the households being interviewed to provide the desired information. First, households' willingness to answer questions will be limited, so that the response burden of extremely long survey questionnaires will likely result in high rates of refusal and/or data that are incomplete or inaccurate. Second, even when respondents are cooperative, they may not be able to answer questions that are complex or that require them to recall events that occurred many months or years before. This has direct implications for questionnaire design. For example, one may not be able to obtain a reasonably accurate estimate of a household's income by asking a small number of questions, but instead one may need to ask a long series of detailed questions; this is particularly true with farming households in rural areas that grow many crops, some of which they consume and another part of which they sell.

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<sup>7</sup> The exact relationship between the information collected per household and the number of households interviewed, for a given budget, is usually not simple. In particular, it is not true that one can, for example, double the sample size by cutting the questionnaire in half, for a given amount of interviewer time. This is so because interviewers need a large amount of time to find households, introduce themselves, and move to the next household or enumeration area, and this time cannot be reduced by shortening the questionnaire.

### 3. Some practical advice

16. Survey designers will need to move back and forth between the objectives of the survey and the constraints faced until they “converge” on a set of objectives that are both feasible given those constraints and “optimal” in the sense that they constitute the objectives that are the most important to the organization undertaking the survey. Once the reality of what is feasible becomes clear, it may be possible to loosen the constraints by obtaining additional financial resources or providing additional training to future interviewers. Experience with other surveys recently completed in the same country should provide a good guide to what is feasible and what is unrealistic. As already mentioned above, achieving the right balance is more an art than a science, and both local experience and international experience are good guides to achieving that balance.

### **C. The details**

17. Once the “big picture” has been established in terms of the objectives of survey, survey designers will need to begin the detailed and unavoidably tedious work of designing the questionnaire, question by question. A general point to be made at the outset is that a data analysis plan is needed. This plan explains in detail what data are needed to attain the objectives (answer the questions) set out for the survey. Survey designers must refer to this plan constantly when working out the details of the survey questionnaire. In some cases, the data analysis plan must be changed as the detailed work of designing the questionnaire sheds new light on how the data should be analysed. Any question that is not used by the overall data analysis plan should be removed from the questionnaire.

18. This chapter is far too brief to go into detail on how to relate questionnaire design to specific objectives and their associated data analysis plans. See the various topic-specific chapters in Grosh and Glewwe (2000) for much more comprehensive advice for different kinds of surveys. The remainder of the present section will provide some general but very useful advice on how to go about the task of working out the details of a household survey questionnaire.

#### 1. The module approach

19. A household survey questionnaire is usually composed of several parts, often called modules. A module consists of one or more pages of questions that collect information on a particular subject, such as housing, employment or health. For example, the Demographic and Health Surveys series discussed in chapter XXII has modules on contraception, fertility preferences, and child immunization. More generally, in almost any household survey questionnaire that has several questions on a given topic, such as the education of each household member, it is convenient to put those questions together on one or more pages of the questionnaire and to refer to that page or those pages as the module for that topic; for example, the questions on education mentioned above would become the “education module”. In this way, the entire questionnaire can be viewed as a collection of modules, perhaps as few as 3 or as many as 15 or 20, depending on the number of topics covered by the questionnaire. Each module contains several questions, sometimes only 5 or 6, but other times as many as 50 or even more

than 100.<sup>8</sup> Very large modules, such as those with more than 50 questions, should be further divided into sub-modules that focus on particular topics. For example, a large module on employment could be divided into the following sub-modules: primary job, secondary job, and employment history. In any event, the overall number of questions on a questionnaire should be kept to the minimum required to elicit the desired information.

20. The module approach is convenient because it allows the design of the questionnaire to be broken down into two steps. The first step is to decide what modules are needed, that is to say, what topics will be covered by the questionnaire, and the order that the modules should follow. The second step is to choose the design of each module, question by question. During both steps, constant reference must be made to the objectives of the survey and the data analysis plan.

21. The choice of modules and the details of each module will vary greatly, depending on the objectives of, and the constraints faced by, the survey. Yet some general advice can be given that applies to almost any survey. For example, almost all household surveys collect information on the number of people belonging to the household, and some very basic information on them, such as their age, sex and relationship to the head of the household. These questions can be put into a short one page "household roster" module. This module should be one of the first modules -- and in most cases, the first module -- in the questionnaire. Many household survey questionnaires will later ask questions of individual household members on topics such as education, employment, health and migration. Any such topics for which about five or more questions are asked, should probably be put into a special module on that topic. If only one, two or three questions are asked, it may be more convenient to include them in the household roster, or perhaps in another module that asks questions of individual household members.

22. Almost all of the modules in a household survey can be divided into two main types: those that ask questions of individual members, as discussed above, and those that ask general questions about the household. Regarding the former type, note that the questions that are asked of individual household members need not be the same for each member; many household surveys have questions that apply only to some types of household members, such as children younger than five years of age or women of childbearing age. Examples of the latter type are questions on the characteristics of the dwelling in which the household lives and questions on the expenditures of the household as a whole on food and non-food items. Of course, the length of any of these modules, and the types of questions in them, will depend on the objectives of the survey.

23. Finally, a few general points can be made about the order of the modules in the household survey. First, the order of the modules should match the order in which the interview is to be conducted, so that the interviewer can complete the questionnaire by starting with the first page and then continuing on, page by page, until the end of the questionnaire. Exceptions may be needed in some cases, but in general it is "natural" for the modules to be ordered in this way.

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<sup>8</sup> A module with more than 100 questions may lead to a total interview time that is excessive. See section D for further discussion of the length of the overall questionnaire.

24. Second, the first modules in the questionnaire should consist of questions that are relatively easy to answer and that pertain to topics that are not sensitive. The suggestion above to utilize the household roster as the first module is consistent with this recommendation, since basic information on household members is usually not a sensitive topic. Starting the interview with simple questions on non-sensitive topics will help the interviewer put the household members at ease and develop a rapport with them. This implies that the most sensitive modules should be put at the end of the questionnaire. This will give the interviewer as much time as possible to gain the confidence of the household members, which will increase the probability that they will answer the sensitive questions fully and truthfully. In addition, if sensitive questions cause the household members to stop the interview, at least all of the non-sensitive information will already have been obtained.

25. A third principle is to group together modules that are likely to be answered by the same household member. For example, questions on food and non-food expenditure should be together because it is likely that one person in the household is best able to answer both types of questions. This allows that person to answer all the questions of these modules that he or she can, and then end his or her participation, leaving other household members to answer the remaining modules. The general point here is to use the household members' time efficiently, which will be appreciated and thus will increase their co-operation. It is also likely to save the interviewer's time because each respondent need be called only once to make his or her contribution to the interview.

## 2. Formatting and consistency

26. Once the modules have been selected, and their order determined, the detailed and admittedly tedious task of choosing the specific questions and writing them out, word for word, must be performed. When carrying out this work in a given country, it is useful to begin by reviewing past household surveys on the same topic that have been conducted in that country, or perhaps in a neighboring country. In general, although the best questions and wording will depend on the nature and purposes of the new survey, some general advice can still be given that applies to almost all household surveys.

27. The first recommendation is that, in almost all cases, the questions should be written out on the questionnaire so that the interviewer can conduct the interview by reading each question from the questionnaire. This ensures that the same questions are asked of all households. The alternative is for a survey questionnaire to be designed as a form with minimal wording, which requires each interviewer to pose questions using his or her own words. This should not be done because it leads to many errors. For example, suppose that a module on employment has a "question" that simply reads "main occupation". This is unclear. Does it refer to the occupation on the day or week of the interview, or the main occupation during that past 12 months? For persons with two occupations, is the main occupation the one that has the highest income or the one for which the hours or days worked is the highest? This confusion can be avoided if the question is written out in detail, as in the following example: "During the past seven days, what kind of work did you do? If you had more than one kind of work, tell me the one for which you worked the most hours during the past seven days." Figure III.1 provides an example of a questionnaire page that collects information on housing (note that all questions are written out in

**Figure III.1: Illustration of questionnaire formatting**

1. Is this dwelling owned by a member of your household?

YES .....1

NO .....2 (»12)

  

2. How did your household obtain this dwelling?

PRIVATIZED .....1

PURCHASED FROM A PRIVATE PERSON .....2

NEWLY BUILT .....3

COOPERATIVE ARRANGEMENT .....4

SWAPPED .....5 (»7)

INHERITED .....6 (»7)

OTHER .....7 (»7)

  

3. How much did you pay for the unit ?

  

4. Do you make installment payments for your dwelling?

YES .....1

NO .....2 (»7)

  

5. What is the amount of the installment?

AMOUNT (UNITS OF CURRENCY)

TIME UNIT

  

6. In what year do you expect to make your last instalment payment?

YEAR

  

7. Do you have legal title to the land or any document that shows ownership?

YES .....1

NO .....2

8. Do you have legal title to the dwelling or any document that shows ownership?

YES .....1

NO .....2

  

9. What type of title is it?

FULL LEGAL TITLE, REGISTERED ..1

LEGAL TITLE, UNREGISTERED ....2

PURCHASE RECEIPT .....3

OTHER .....4

  

10. Which person holds the title or document to this dwelling?

WRITE ID CODE OF THIS PERSON FROM THE ROSTER

1ST ID CODE:

2ND ID CODE:

  

11. Could you sell this dwelling if you wanted to?

YES .....1

NO .....2 (»14, NEXT PAGE)

  

12. If you sold this dwelling today how much would you receive for it?

AMOUNT (UNITS OF CURRENCY)

  

13. Estimate, please, the amount of money you could receive as rent if you let this dwelling to another person?

AMOUNT (UNITS OF CURRENCY)

TIME UNIT

»» QUESTION 28, NEXT PAGE

  

TIME UNITS:	DAY.....3	MONTH.....6	YEAR..9
	WEEK.....4	QUARTER.....7	
	FORTNIGHT..5	HALF-YEAR...8	

complete sentences). The advantage of writing out all questions was clearly demonstrated in an experimental study by Scott and others (1988): questions that had not been written out in detail produced 7 to 20 times more errors than did questions that had been written out in detail.

28. The second recommendation is closely related to the first: the questionnaire should include precise definitions of all key concepts used in the survey questionnaire, primarily to allow the interviewer to refer to the definition during the interview when unusual cases are encountered. In addition, the questionnaire should contain some instructional comments for the interviewer; examples of such comments are given for question 10 in Figure III.1. More elaborate instructions and explanations of terms should be provided in an interviewer manual. Such manuals are discussed in chapter IV.

29. A third recommendation is to keep questions as short and simple as possible, using common, everyday terms. In addition, all questions should be checked carefully to ensure that they are not “leading” or otherwise likely to induce the respondent to give biased responses. If the question is complicated, break it down into two or more separate questions. An example illustrates this point. Suppose that information is needed on whether a person was either an employee or self-employed (or both) during the past seven days. Trying to elicit all this from one question using somewhat technical jargon could produce the following:

*During the past seven days, were you employed for wages or other remuneration, or were you self-employed in a household enterprise, were you engaged in both types of activities simultaneously, or were you engaged in neither activity?*

This question should be replaced with the following two separate questions using less technical terms:

- 1. During the past seven days, did you work for pay for someone who is not a member of this household?*
- 2. During the past seven days, did you work on your own account, for example, as a farmer or a seller of goods or services?*

Questions 8, 9 and 10 in figure III.1 offer another illustration of this point. Survey designers may be tempted to “shorten” the questionnaire by combining these questions into one long question such as:

*What kind of legal title or document, if any, do you have for the ownership of this dwelling, and who in the household actually holds the title?*

Yet, this longer question could confuse many respondents, and if this happens, explaining the question could take more time than asking the three questions separately.

30. Fourth, the questionnaire should be designed so that the answers to almost all questions are pre-coded. Such questions are often called “closed questions” by survey designers. For example, the responses to questions for which the answer is either *yes* or *no* can be recorded in

the questionnaire as "1" for *yes* and "2" for *no*. This is easier for the interviewer, who needs to write only a single digit instead of an entire word or phrase.<sup>9</sup> More importantly, it bypasses the "coding" step in which questionnaires with the interviewers' (often illegible) handwritten responses consisting of one or more words are given to an office "coder" who then writes out numerical codes for those responses. This extra step can produce more errors, but in almost all cases it can be avoided. (However, the coding of more complex classifications, such as occupation and industry, requires skills and time that the field staff are unlikely to have, and it is recommended that these should be coded by skilled office coders, based on interviewers' written descriptions.) In figure III.1, all possible responses to questions are pre-coded, and all codes are given on the same page as the question (usually immediately after the question).

31. The fifth recommendation is related to the third. The coding scheme for answers should be consistent across questions. For example, in almost all household surveys there are many questions for which the answer is either *yes* or *no*. The numerical codes for all such questions in the questionnaire should always be the same, for example, "1" for *yes* and "2" for *no*. Once this (or some other) coding rule is established, it should be used for all *yes* or *no* responses to questions on the questionnaire. Thus, the interviewer will learn that he or she should always code 1 for *yes* and 2 for *no* for all *yes* or *no* questions in the questionnaire. This can be extended to other types of responses as well. Many questionnaires will have questions for which the answers are in terms of time units or distance, such as "When was the last time that you visited a doctor?" or "How far is your house from the nearest road?" Time units could be coded as follows: 1 would indicate minutes, 2 hours, 3 days, 4 weeks and so forth. Thus, a response of "10 days" would be recorded with two numbers, "10" and "3", where 3 is the time unit code. Similarly, for distance, code 1 could indicate metres and 2 could indicate kilometres. The precise coding scheme can differ across surveys; the important point is that, as far as possible, all questions that require a code of this type should use the same coding scheme.<sup>10</sup> Figure III.1 also illustrates this recommendation. Note that the time unit codes given at the bottom of the page are given once for use in two questions on that page, namely, questions 5 and 13.

32. This discussion of coding schemes raises the question whether the interviewer should tell the respondents the possible responses to questions, or should read only the question and not the response codes. In general, the latter method is better. Respondents may indicate one of the first responses simply because they heard that response first, even when a later response is more accurate. Also, if there are a large number of responses to be read out, respondents may make errors in choosing among the many different possible responses.

33. A sixth recommendation is that the survey questionnaire should include "skip codes" which indicate which questions are not to be asked of the household, based on the answers to previous questions. For example, a survey may include the question, "Did you look for work in the past seven days?" If the answer is *yes*, the questionnaire may then ask about the methods

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<sup>9</sup> Another option is to allow the interviewer to put an "X" or a check mark into a box next to a pre-coded response.

<sup>10</sup> While it should not matter that the code numbers for simple concepts, such as time and distance units, differ across surveys in the same country, there is a good reason to use the same coding scheme for more complex concepts, such as types of occupations or types of diseases, in order to ensure comparability over time in different surveys.

used, but if the answer is *no*, such a question would be irrelevant. Very brief instructions, such as “IF NO, GO TO QUESTION 6” should be included right next to the first question, so that the interviewer does not ask irrelevant questions. Certain conventions could be adopted to express those instructions more succinctly; for example, the above instruction could be written “IF NO, → Q.6”. In figure III.1, the instructions governed by the conventions are very brief: they are given by numbers in parentheses following the relevant response codes. For example, the mark “(»12)” after the NO code in question 1 indicates that if the answer to that question is *no* the interviewer should go to question 12.

34. There is a final point to be made regarding formatting, namely, that the questions should be asked in ways that allow the respondent to answer in his or her own words. This is best explained by an example. In a survey on housing, there may be a question on rent paid for the household’s dwelling. Depending on the rental contract, some respondents will pay a certain amount each week, while others will pay rent once per month and still others will make annual payments. The point here is to let the respondent choose the unit, so that the question should be “How much do you pay in rent for your dwelling?” instead of “How much do you pay per month to rent your dwelling?” The problem with the latter question is that it forces the respondent to answer in terms of monthly rent. A respondent may know very well that he pays \$50 per week, but he may make an error multiplying \$50 by 4.3 and thus may report some answer other than the correct one (\$217 per month). It is best to design the questionnaire so that the interviewer can write down numerical codes for different time units, as illustrated in question 5 of figure III.1, so that \$50 per week, for example, may be recorded as 50 in one space plus 4 (numerical code for week) in an adjacent space. When the data are analysed, the researcher, who will be much less likely to make a mistake than the respondent, can easily convert the amounts into a common unit such as rent paid per year.

### 3. Other advice on the details of questionnaire design

35. Finally, a few more general pieces of advice can be given on the design of the questionnaire. First, for questions that are very important, such as the number of people in the household or the different sources of income of the household, it may be useful to ask a “probe” question that helps the respondent remember something that he or she may have forgotten. For example, after obtaining a list of all household members, the interviewer could pose the following question:

*According to the information that you have given me, there are six persons in this household. Is that correct, or does someone else belong to this household, such as someone who may be temporarily away for a few days or weeks?*

36. Second, the questionnaire should be designed so that each household and each person in the household has a unique code number that identifies that person in all parts of the questionnaire. This will assist data analysts in matching information across the same households and the same individuals. In almost all cases, there should be one questionnaire per household; in the exceptional case where two or more questionnaires are used, extra care must be taken to ensure that the same household code is written on each of the questionnaires completed for that household.

## **D. The process**

37. The discussion so far has provided advice on how to design household survey questionnaires but almost no information on those who will be involved and how they can check the questionnaire that has been drafted. The present section makes recommendations regarding the process used to draft, test and finalize the questionnaire.

### 1. Forming a team

38. Household surveys almost always entail a very large number of decisions and actions, which typically prove to be more complicated than initially expected. This implies that a single person or even a small group of people may simply not have enough time or expertise to successfully design a household survey questionnaire. Therefore, a team of “experts” must be formed at the very beginning of the process to ensure that no aspect of the survey is neglected. The team should have representatives from several key groups.

39. Perhaps it is most important to have one or more members of the group of policy makers on the team, that is to say, one or more persons representing the interests of the group or groups that plan to use the information gathered in the survey to make policy decisions. Although these people are not technical experts, they are needed to inform (and remind) other team members of the ultimate objectives of the survey. By including this group, the communication between the data users and the data producers will be greatly increased.

40. A second key group, comprising researchers and data analysts, will use the information in the data to answer the questions of interest to the policy makers. Their role is to develop the data analysis plan, which will ensure that the data collected are adequate to answer those questions. In some cases, answering the questions of policy makers is a simple task but in other cases, it can be quite complicated.

41. Last but not least is the group of data collectors, which includes interviewers, supervisors and data entry staff (including computer technicians). These people are usually the staff of the organization that has the formal responsibility of collecting the data. Their previous experience in collecting household survey data is indispensable. They know best what kinds of questions households can answer and what kinds they cannot answer. Within this group, there should be someone who is experienced with the data entry stage of the data-collection process. Simple suggestions by that person can significantly increase the accuracy of the data collected and reduce the time required to make the data ready for analysis.

### 2. Developing the first draft of the questionnaire

42. The first draft of almost any household survey questionnaire is developed in a series of meetings of the survey team members. As with first drafts of any type, the product will inevitably have many errors. The modular approach advocated in this chapter implies that the first draft will consist of a collection of different modules. When putting the different modules together in the first draft, several things must be checked.

43. First, the survey team should check whether the modules as a group collect all the information desired. It may be that a key question for one module is assumed to have been included in another module, when in fact it has not been included. A joint meeting of all participants on all modules is needed to ensure that some important pieces of information have not been left out of the questionnaire. An analogous point holds concerning overlaps. When all the modules are combined, some questions may turn out to have been asked twice in two different modules. Such redundancy should usually be eliminated in order to save the time of both the respondents and the interviewers. The only case where duplicate questions should not be eliminated is that in which they provide confirmation of a very important piece of information, such as whether an individual is really a household member. The age of household members may be checked by including questions on both current age and date of birth, and the fact that an individual really is a household member may be verified by asking if the individual has lived in other places during the past 12 months and, if so, how many months he/she has lived there (after initially asking a question about how many months he/she lived in the household that is being interviewed).

44. Second, the overall length of the questionnaire should be checked. In any country, there is a limit to how much time respondents are willing to devote to answering questions for a household survey. At the same time, survey designers have a tendency to ask a large number of questions, making the final product much larger than originally envisioned. The field test (discussed below) can be used to answer the question how long it takes to interview a typical household (and how much time the respondents are willing to devote to being interviewed), but experienced interviewers and supervisors can give the team a rough idea by examining the questionnaire. Eliminating questions that would collect “low priority” information is a painful but necessary part of developing the first draft of any household survey questionnaire.

45. Finally, the first draft of the questionnaire should be checked for consistency in recall periods. For example, one goal of a survey may be to collect the household income from all sources in the past month or past year. The questionnaire needs to be checked to ensure that all sections that collect income data have the same recall period.<sup>11</sup> The main exception to this rule arises in those occasional cases where, as explained above, respondents need to be permitted flexibility in choosing the recall period that is easiest for them to use.

### 3. Field-testing and finalizing the questionnaire

46. No household survey questionnaire, however small or simple, should be finalized without being tried out on a small number of households to check for problems in the questionnaire design. In almost all cases, a new household questionnaire has many errors and shortcomings that do not become apparent until the questionnaire is tried on some typical households from the population of interest. A few general rules are given below; for a more detailed treatment see Grosh and Glewwe (2000) and Converse and Presser (1986).

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<sup>11</sup> Some surveys include reference points in time, for example, when asking about circumstances that existed 5 or 10 years ago. These reference points, which sometimes involve a specific date, month or year, should also be checked for consistency throughout the questionnaire.

47. Field-testing the draft questionnaire can be divided into two stages. The first stage, which is often called pre-testing, involves trying out selected sections (modules) of the questionnaire on a small number of households (for example, 10-15), to obtain an approximate idea of how well the draft questionnaire pages work. This can be done more than once, starting in the early stages of the questionnaire design process. The second stage is a comprehensive field test of a draft questionnaire. It is often referred to as the pilot test. This is a larger operation, involving 100-200 households. The households should belong not to one small area but to several areas that represent the population of interest. For surveys intended for both urban and rural areas, the pilot test must be conducted in both urban and rural areas. It should also be conducted in different parts of the country or region where the final questionnaire will be used. Finally, the choice of households should be such that all modules are tested on at least 50 households – but ideally, more than 50. This implies, for example, that if the questionnaire has a module that collects data on small household businesses, then at least 50 of the households interviewed for the pilot test should have such businesses.

48. Most pilot tests require a period of from one to two weeks for the conduct of interviews for the 100-200 households. All members of the survey team should participate in the pilot test and watch as many interviews as possible. Indeed, pilot tests provide an excellent training experience for anyone with little experience in designing household survey questionnaires. One important piece of information provided by the pilot test is an estimate of the amount of time needed to complete a questionnaire.<sup>12</sup> Yet, one should also realize that the figure obtained will overestimate (by as much as a factor of two) the time required to interview a household in the actual survey, both because the pilot survey interviewers will have had little experience with the draft questionnaire, and because they will be slowed down by flaws in the draft questionnaire that will be corrected in the actual survey questionnaire.

49. Another key point is that in countries where more than one language is spoken, the questionnaire should be translated into all major languages and the pilot test should be carried out in those languages. This is extremely important. In particular, the practice during an interview of having interviewers translate from one language into another because the questionnaire is in a language different from the one used by the respondent, should be avoided as far as possible. Studies have shown, (for example, Scott and others, 1988) that such on-the-spot translation, compared with the use of a questionnaire previously translated into the language of the respondent, increases errors by a factor of from two to four. To check the accuracy of a translation, a person or group other than the one(s) that produced the original translation should “back-translate” the translated questionnaire into the original language. This back-translation should be compared with the content of the original questionnaire to determine whether the translation clearly conveyed the content of the original questionnaire; any differences indicate that something was “lost in translation”. A useful reference for questionnaire translation is Harkness, Van de Vijver and Mohler (2003).

50. A final important aspect of the pilot test is that it should test not only the draft questionnaire but also the entire fieldwork plan, including supervision methods, data entry, and

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<sup>12</sup> In the conducting of both pre-tests and pilot tests, the draft questionnaire should include space to write down the starting and finishing times for completing each questionnaire module, which are to be recorded for each household interviewed. This will indicate how much interview time is needed to complete each module.

written materials such as interviewer manuals (all of these are discussed further in chap. IV). Only by testing the entire process can the team be assured that the survey is ready for implementation. A useful last step is to undertake a “quick analysis” of the data collected in the pilot test to check for problems that may otherwise be overlooked.

51. Immediately after the pilot test, the survey team should hold several days of meetings to discuss the results and modify the questionnaire in light of the lessons learned. The quick analysis of the pilot test data mentioned in the previous paragraph, which will usually be presented in the form of some simple tables, should be prepared for these meetings. In some cases, there may be so many problems that a second pilot test, perhaps not as large as the first, must be scheduled to verify whether large changes in the questionnaire will actually work well in the field. All team members must be present at these meetings, which should also include most or all of the individuals who actually conducted the interviews during the pilot test.

52. A considerable amount of research has been conducted on questionnaire design in recent years and valuable new methods for constructing effective questionnaires have been developed. Although these methods are not yet widely used in developing and transition countries, their use is likely to increase markedly in the future. There is no space to describe these methods here, but readers are encouraged to consult the literature on them. The methods include focus groups, cognitive interviews, and behavior coding. Esposito and Rothgeb (1997) and Biemer and Lyberg (2003) provide good general overviews of these methods. See also Krueger and Casey (2000) for focus groups, Forsyth and Lessler (1991) for cognitive interviews, and Fowler and Cannell (1996) for behavior coding. Chapter IX of this publication also provides details on focus groups and behavior coding in sections C.2 and C.6, respectively.

## **E. Concluding comments**

53. This chapter has provided general recommendations for the design of household questionnaires for developing countries. The focus has been on questionnaires administered to households. Some household surveys also collect data on the local community in a separate “community questionnaire”. Such questionnaires are not covered in this chapter owing to lack of space. See Frankenberg (2000) for detailed recommendations on the design of community questionnaires.

54. While this chapter has covered many topics, each topic was treated only briefly. Anyone who is planning such a survey must consult other material in order to obtain much more detailed advice. The references given at the end of this chapter are a good place to start.

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