Figure 3.6. SAMPLE SURVEY DESIGN/EXECUTION: Questionnaire Design

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Survey Methods Workshop on
QUESTIONNAIRE DESIGN

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Contents

INTRODUCTION TO QUESTIONNAIRE DESIGN

Definition of a Questionnaire

A questionnaire (or form) is a group or sequence of questions designed to obtain information on a subject from a respondent. A questionnaire could simply be a list of topics for which information is required. Or, a questionnaire could be a structured set of questions with pre-coded answer categories.

A questionnaire may be interviewer-administered or respondent-completed. It may be administered using paper-and-pencil methods or non-paper modes such as computer-assisted interviewing.

Questionnaire Development

Before designing the questionnaire, many decisions have to be made by the survey team. These decisions affect the questionnaire, and should form part of the draft plan for the survey. The draft plan should address the following issues:

- Survey objectives and data requirements
- Analysis plan
- Survey population
- Method of data collection
- Size of the survey
- Data processing plans
- Budget
- Time frame
- Questionnaire testing.

Questionnaires play a central role in the data collection process. They have a major impact on data quality and on the image that the survey organization projects to the public.

A well-designed questionnaire should collect data efficiently with a minimum number of errors. Moreover, well-designed questionnaires should facilitate the coding and capture of data. They should minimize the amount of edit and imputation that is required, and lead to an overall reduction in the cost and time associated with data collection and processing.

When designing the questionnaire, it is important to keep in mind the objectives and data requirements as well as how the information will be collected and processed. The questions must relate to the information needs and provide useful information for analysis purposes. They must be asked of the right people, at the right time, and in the right place.

The method of data collection (*i.e.*, whether the questionnaire will be completed by the respondent or by an interviewer in person or over the telephone) will determine how the questions will be worded.

The question wording must be clear. The questions must be sequenced logically. The questions must be designed so that they are easily understood and accurately answered by respondents. The questionnaire should be tested before implementation.

The questionnaire should be respondent-friendly. If administered by an interviewer, it should be interviewer-friendly.

QUESTIONNAIRE DEVELOPMENT AND TESTING

- Define the objectives and information requirements
- Consult with data users
- Look at previous questionnaires on the same topics
- Focus groups
- Draft questions
- Cognitive techniques
- Review questionnaire/revise questions
- Test questionnaire/revise questions
- Format and print questionnaires.

1. Objectives, Data Requirements, and Analysis Plan

- **Define the objectives and information requirements.**
  Prepare a document that provides a clear and comprehensive statement of objectives, data requirements, and the analysis plan. This document is a necessary step that leads to the determination of the variables to be measured and, ultimately, the survey questions and response alternatives.
- **Ensure that the questions are relevant to the survey objectives and information requirements.**
  Establish the rationale for each question, how the information will be used, and whether the questions will be good measures of what is required.

2. Consultation

- In formulating objectives and preparing the analysis plan, consult with clients and data users to understand fully their requirements and expectations.
- Contact subject matter experts for advice and guidance.
- If possible, consult with members of the target population. This will help identify issues and concerns that are important to the target population, and may affect decisions regarding the content of the questionnaire.

(*continued overleaf*)

3. Previous Questionnaires

Examine questions that were used in other surveys on the same or a similar topic. This provides a useful starting point in the formulation of questions.

In some situation (*e.g.*, for data comparability over time), the same questions may be used. Ensure that the questions provide valid, consistent, and effective measures of what is required.

4. The Use of Focus Groups in Developing Questionnaires

- *Focus group*: An informal discussion of a selected topic by participants who are chosen from the population of interest. A focus group is led by a moderator who is knowledgeable about group interviewing techniques and the purpose of the discussion.
- A focus group provides insights into the attitudes, opinions, concerns, experiences, and suggestions of the participants.
- Focus groups provide the opportunity to consult with the target population, data users, and interviewers.
- In the early stages of developing a questionnaire, focus groups are used to clarify the survey objectives and data requirements, to identify salient research issues, and to clarify definitions and concepts.
- Focus groups are useful in testing and evaluating questionnaires (see **7. The Use of Cognitive Methods in Testing Questionnaires** at the right). They are used to evaluate respondents' understanding of the language and wording used in questions and instructions, and to evaluate alternative question wordings and formats.
- Focus groups vary in size from 6 to 12 persons.
  The optimum size is 7 to 9 persons.
- Focus groups are audio-recorded (occasionally video-recorded). They are viewed by observers in an adjoining room behind a one-way mirror.

5. Considerations in Drafting the Questions

- Objectives, data requirements, and analysis plan
- Method of data collection
- Respondents
- Availability of the data
- Response burden
- Complexity of the data to be collected
- Confidentiality and sensitivity of the information
- Comparability of results with other surveys
- Data reliability
- Nonresponse
- Interviewers
- Data processing
- Administrative requirements.

6. The Response Process

- Responding to a question involves four distinct processes:
  - *Understanding*
  - *Retrieving*
  - *Thinking/judging*
  - *Communicating an answer.*
- Respondents must first understand the question. They must then search their memores to retrieve the requested information. After retrieving the information, they must think about what the correct answer to the question might be and how much of that answer they are willing to reveal. Only then do they communicate an answer to the question.
- Surveys of businesses, farms and institutions involve the use of records. Respondents must normally access one or more external sources of information such as administrative or financial records. The ability of respondents to retrieve the requested information will depend upon their familiarity with and understanding of the external source of information. They must also understand the relationship between the survey questions and the external data source. Multiple sources of information may add to the difficulty or complexity of this task. Further complexities may be introduced if the respondent has to consult another individual who can provide the requested information and who, in turn, may have to use one or more data sources.

7. The Use of Cognitive Methods in Testing Questionnaires

Questionnaire testing is essential to developing questionnaires that collect useful data. Cognitive research methods, also referred to as qualitative testing, are especially useful in testing questionnaires.

Cognitive methods provide the means to examine respondents' thought processes as they answer the survey questions. They are used to ascertain whether or not respondents understand what questions mean. In this way, cognitive methods help assess the validity of questions and identify potential sources of measurement error.

Cognitive methods provide the opportunity to evaluate the questionnaire from the respondent's point of view. They focus on issues such as comprehension and reactions to the form. This brings the respondent's perspective directly into the questionnaire design process, and leads to the design of respondent-friendly questionnaires that can be easily and accurately completed.

Cognitive testing methods include:

- *Observation of respondents*: One-on-one or group observation of respondents completing the questionnaire. Observation provides information on respondents' behaviour as they complete the questionnaire. The observer notes areas of the form read, the sequence in which the questions are answered, reference made to instructions, types of records or other persons consulted, the time required to complete sections, and corrections or changes made to responses. Follow-up discussions are held with respondents to determine their reactions to the questionnaire, instructions, and individual questions.
- *Think-aloud interviews*: The respondent is asked to "think aloud" while answering the questions, commenting on each question, and explaining how the final response was chosen. An interviewer may probe the responses to get more information about a particular statement or to clarify the process through which a response was chosen. Think-aloud interviews help in identifying areas of the questionnaire where the respondent has difficulty and in understanding the process through which the questionnaire is completed.
- *Focus groups*: Used to evaluatei respondents' understanding of the language and wording used in questions and instructions. The moderator reviews the questionnaire with the participants and discusses any problems or diffculties they may have encountered when completing the form. Focus groups are especially useful in providing suggestions and recommendations about how the questionnaire can be improved.
- *Paraphrasing*: Respondents are asked to repeat the instructions or the question asked in their own words, or to explain the meaning of terms and concepts. Paraphrasing helps determine whether respondents have read and understood instructions and questions correctly.

(*continued*)

Figure 3.6. SAMPLE SURVEY DESIGN/EXECUTION: Questionnaire Design (continued 1)

- *Confidence ratings*: Respondents rate the degree of confidence they have in the accuracy of their answers. This technique indicates to what extent respondents had difficulty in formulating an answer to a question and whether they were guessing.

8. Pretesting the Questionnaire

- *Pretesting* is a fundamental step in developing a questionnaire. It involves an informal testing of questionnaires. The entire questionnaire or only a portion of it may be tested. In general, pretesting is easy and inexpensive.
- Pretests are used to:
  - discover poor question wording or ordering
  - identify errors in questionnaire layout or instructions
  - determine problems caused by the respondent's inability or unwillingness to answer the questions
  - suggest additional response categories that can be precoded on the questionnaire
  - provide a preliminary indication of the interview length and refusal problems.
- The size of the pretest sample can range from 20 to 100 or more respondents. If the main purpose is to discover wording or sequencing problems, only a minimum number of interviews may be required. More interviews (50 to 100) are necessary to determine pre-coded answer categories based on open-ended responses obtained in a pretest. Respondents are generally selected purposively rather than randomly.
- The questionnaire should be administered in the same manner as planned for the main survey (*e.g.*, interviewer-administered in person or by telephone). A pretest of a mail questionnaire is more effective if interviewers are used.
- Pretesting only indicates that there is a problem. Without further investigation, it does not identify why there is a problem or how it can be corrected.
- *Debriefing sessions with interviewers* often occur in conjunction with a pretest. Interviews can identify important problem areas where the questionnaire can be improved.
- *Behavioral coding* also can be conducted at the time of pretesting. The interview is audio-recorded, and the interviewer-respondent interaction is later analyzed. Behavioral coding helps identify problems such as the interviewer failing to read the question as worded or a respondent asking for clarification of the question or response task.

9. Formal Testing Methods

- Formal testing methods are designed to provide a statistical evaluation of how the questionnaire performs. Pilot studies and split sample testing are two types of formal testing methods. They are more suitable for large scale and continuing surveys because of the significant cost associated with a large sample size and the analysis of the results.
- *Pilot study*: Conducted in order to observe all operations working together, including the administration of the questionnaire. A pilot study is a "dress rehearsal." It duplicates the final survey design on a small scale from beginning to end, including plans for data processing and analysis. It allows the survey researcher to see how well the questionnaire performs in relation to the other phases of the survey. Normally, the questionnaire should be thoroughly pretested before a pilot test takes place.
- *Split sample test*: Conducted to determine the "best" of two or more alternative versions of the questionnaire. Split sample testing is sometimes called a "split ballot" or "split panel" experiment. It involves an experimental sample design that is incorporated into the data collection process. In a simple split sample design, half of the sample receives one version of the questionnaire and half receives the other.

10. Review and Revision of the Questionnaire

- It is useful to have your questionnaire reviewed by people who are not directly involved with your project. Reviewers could include subject matter experts or persons who have experience in designing questionnaires. They can provide helpful comments and suggestions.
- A review can take place at any or all stages of the questionnaire development process.
- The review and testing of the questionnaire design lead to revisions in the questions and response categories. Throughout the whole process of questionnaire development and testing, changes will continually be made to improve the questionnaire. In this way, questionnaire design is an iterative process. Objectives and information requirements are stated, evaluated and decided upon, data users and respondents are consulted, proposed questions are drafted and tested, questions are reviewed and revised, until a final questionnaire is developed.

Every questionnaire must be handcrafted. It is not only that questionnaire writing must be "artful;" each questionnaire is also unique, an original. A designer must cut and try, see how it looks and sounds, see how people react to it, and then cut again, and try again.

[Taken from: Converse, J. and S. Presser, *Survey Questions: Handcrafting the Standardized Questionnaire*, Sage Publications (1986), page 48.]

TYPES OF QUESTIONS

1. Type of Information Required and Question Structure

- Factual information is sought
- The following examples illustrate the incorrect use of scale-type response format:

  (1) Did the accident happen in Canada, or not?

  DEFINITELY NOT IN CANADA ( ) ( ) ( ) ( ) ( ) *DEFINITELY IN CANADA*

  (2) What is your marital status now?

  UNMARRIED ( ) ( ) ( ) ( ) ( ) *MARRIED*

2. Types of Questions

- There are two main types of questions: open and closed questions. They are sometimes called open-ended and closed-ended questions.
- *Open questions* are answered in the respondent's own words. An open question allows the respondent to interpret the question and answer anyway that he/she wants. The respondent writes the answer or the interviewer records verbatim what the respondent says in answer to the question. Blank spaces are left in the questionnaire after the question for the response to be written in.
- *Closed questions* are answered by checking a box or circling the proper response from among those that are provided on the questionnaire. A closed question restricts the respondent or interviewer to select from the answers or response options that are specified.

(*continued overleaf*)

3. Open Question

- *What is the most important problem facing Canada?*

4. Closed Question

- *Which of these is the most important problem facing Canada?*
  - ○ Unemployment
  - ○ Economy/recession
  - ○ Federal deficit
  - ○ Taxes
  - ○ National unity
  - ○ Crime and violence
  - ○ Environment
  - ○ Other.

5. Example Demonstrating the Continuum from Open to Closed Questions

- *There has been a lot of concern about crime lately. What do you think about the problem?*
- *There has been a lot of concer about crime lately. During the last year, have you or has anyone living with you had any crime happen to them? If yes, please tell me what happened.*
- *There has been a lot of concern about crime lately. Here is a list of some of the crimes that happen to people. In the past year, has anything like this happened to you or to anyone living with you?*
  - ○ House broken into or robbed
  - ○ Pocket picked or purse snatched
  - ○ Car stolen
  - ○ Property damaged or destroyed
  - ○ People attacked or beaten up
  - ○ Other *(please specify)* ______________________
  - ○ Nothing.

6. Applications of Open Formats

- Qualitative research
- To obtain "natural" wording
- To provide the opportunity for self-expression or elaboration
- To obtain exact numerical data
- To add variety to the questionnaire.

7. Difficulties with Open Questions

- For the RESPONDENT:
  - Demanding
  - Time-consuming.
- For the RESEARCHER:
  - Recording the response
  - Coding
  - Analysis and interpretation.

8. Types of Closed Questions

- Two-choice
- Multiple choice
- Checklist
- Ranking format
- Rating scale.

Closed questions provide respondents with definite choices. The respondent indicates which choice is appropriate.

9. Two-hoice Questions

- *Did you have a job at any time during the last 12 months?*
  - ○ NO ⟹ Skip to Question 6
  - ○ YES

    ⇓

10. Multiple-choice Question

- *What type of dwelling is this? (Check one only)*
  - ○ Single house
  - ○ Double (side-by-side)
  - ○ Garden home, town house or row house
  - ○ Duplex (one-above-another)
  - ○ Low-rise apartment (less than 5 stories)
  - ○ High-rise apartment (5 stories or more)
  - ○ Other *(please specify)* ______________________.

11. Checklist Question

- *In what types of accommodation did you stay? (Check as many as apply)*
  - ○ Hotel (including tourist home)
  - ○ Motel
  - ○ Camping or trailer park
  - ○ Home of friends or relatives
  - ○ Private cottage or vacation home
  - ○ Commercial cottage or cabin
  - ○ Other (hostels, universities, etc.).

12. Ranking Question -- Example 1

- *Here is a list of some of the ways that people go about finding jobs. Please rank them in order of effectiveness by placing the number "1" beside the method you think would be most helpful, a "2" beside the method you think would be second most helpful, and so on.*

  ___ Mailing out resumes
  ___ Newspaper or magazine ads
  ___ Canada Employment Centres
  ___ Checking with friends
  ___ A private placement service
  ___ Direct contact with employers
  ___ Other *(please specify)* ______________________.

13. Ranking Questions

- Respondents often find it difficult to do rankings, especially if the items to be ranked are very different from one another.
- Ranking of preferences is easiest when respondents can see or remember all items.
- The sizes of the rank intervals are unknown and unlikely to be equal. Hence, the interval between 1 and 2 cannot be assumed to be the same as that between 2 and 3.
- Respondents sometimes rank two or more items the same. For example, a respondent might rank both "Newspaper or magazine ads" and "Canada Employment Centres" as 1.

14. Ranking Question – Example 2

- *Please rank the 5 most important factors that influence your company's choice of a transportation carrier. This infortion will help us to focus our attention and resources on areas that are critical to meeting your service needs.*

  Please rank their importance by placing the number "1" beside the factor that you think is the most important, a "2" beside the factor that you think is the second most important, and so on.

  ___ Damage-free transportation
  ___ Price
  ___ Marketing and sales representatives
  ___ Customer service representatives
  ___ Prompt resolution of service problems
  ___ Freight claims handling
  ___ Service consistency
  ___ Service frequency
  ___ Transit time
  ___ Timely notification of service delays
  ___ Invoicing accuracy
  ___ Other *(please specify)* ______________________.

(*continued*)

Figure 3.6. SAMPLE SURVEY DESIGN/EXECUTION: Questionnaire Design (continued 2)

15. Rating Question – Example 1

- *How satisfied are you with our customer service?*
  - ○ Very satisfied
  - ○ Satisfied
  - ○ Dissatisfied
  - ○ Very dissatisfied

16. Rating Question – Example 2 (with a middle alternative)

- *How satisfied are you with our customer service?*
  - ○ Very satisfied
  - ○ Satisfied
  - ○ Neither satisfied nor dissatisfied
  - ○ Dissatisfied
  - ○ Very dissatisfied

17. Issues in the Design of Rating Questions

In formulating rating questions, the following issues need to be addressed:

- How many response categories should there be?
- Should there be a middle alternative?
- Should a "Don't know/No opinion" or "Not applicable" response category be provided?

The answer to these questions will depend on the survey objectives, the item to be rated, the method of data collection, and the questionnaire designer's own preferences.

18. Rating Question – Example 3

- *Most people feel differently about their physical looks. How would you rate your looks on a scale of "1 to 10," with "1" being the lowest rating and "10" the highest rating?*

1	Lowest -----------------	1%
2	---------------------------	1%
3	---------------------------	1%
4	---------------------------	3%
5	---------------------------	24%
6	---------------------------	17%
7	---------------------------	27%
8	---------------------------	17%
9	---------------------------	4%
10	Highest -----------------	6%
No	opinion (volunteered)	2%

Average rating = 6.59

(Source: The "Maclean's" Poll, January 7, 1985)

19. Rating Question – Example 4

- *Please rate the quality of our customer service for each of the following items by circling the appropriate number.*

	Excellent	*Good*	*Fair*	*Poor*
Availability of service representatives .	1	2	3	4
Promptness	1	2	3	4
Courtesy	1	2	3	4
Resolving your service needs	1	2	3	4
Overall quality of service	1	2	3	4

20. Rating Question – Example 5

- Compare to the ranking question 14 starting in column 8.
- *Listed below are a number of factors that influence a company's choice of a transportation carrier. Some may be more or less important to your company than others. According to your company's priorities, please rate the importance of each factor from 1 to 10.*

Use the scale below where 1 means "Not at all important" and 10 means "Extremely important," or you can choose any number in between.

Extremely important			Somewhat important				Not at all important		
10	9	8	7	6	5	4	3	2	1

Importance Rating

___ Damage-free transportation
___ Price
___ Marketing and sales representatives
___ Customer service representatives
___ Prompt resolution of service problems
___ Freight claims handling
___ Service consistency
___ Service frequency
___ Transit time
___ Timely notification of service delays
___ Invoicing accuracy.

21. THURSTONE SCALE: A Composition of Two-Choice Questions

- The respondent is presented with a list of statements, each of which he/she is asked to either endorse or reject.
- Statements are selected to represent several different "positions" on the issue in question. Each statement should be clear, brief, and easy to understand. It should be relevant to a respondent's overall attitude to the issue. As a package, the statements should represent the whole range of possible opinions about the attitude variable. The package of statements is called an *attitude scale.*

22. Example: Thurstone Scale

	Agree	*Disagree*
The physical surroundings at your work are pleasant	○	○
There is a lot of freedom to decide how to do your work . .	○	○
You do the same things over and over	○	○
Your job requires a high level of skill	○	○
The pay is good	○	○
Your chances for promotion or career advancement are good . .	○	○

23. LIKERT SCALE: A Composition of Multiple-Choice Questions

- The Likert scale is a collection of statements. The respondent considers each statement and reports how closely it reflects his/her own opinion.
- The main difference between Thurstone and Likert scales is the number of response alternatives for each statement. For Thurstone scales, there are two response alternatives. For Likert scales, there usually are at least five. The respondent indicates not only whether he/she agrees or disagrees, but how much he/she agrees or disagrees. "Agreement" is not the only response dimension that can be used. Other response dimensions include "satisfaction," "usefulness," "importance," *etc.* Degrees of frequency are another possibility.

24. Example: Likert Scale

	Strongly agree	*Agree*	*Neither agree nor disagree*	*Disagree*	*Strongly disagree*
The police are doing a good job of enforcing the law	○	○	○	○	○
The police respond quickly to calls in my neighbourhood	○	○	○	○	○
The police are approachable and easy to talk to	○	○	○	○	○

(*continued overleaf*)

25. Advantages of Closed Questions

- For the RESPONDENT:
  - Easier to answer
  - Faster to answer.
- For the RESEARCHER:
  - Easier to code
  - Easier to analyze
  - Cheaper
  - Consistent response categories.
- Closed questions are an advantage when:
  - You can anticipate all (or most) of the responses
  - An exact value is not needed.

26. Limitations of Closed Questions

- More effort is required to develop closed questions than open questions
- May elicit an answer where no knowledge or opinion exists (including a "Don't know" or "No opinion" response option may help)
- May oversimplify an issue
- May force answers into an unnatural mold
- May not be in the same format as the respondent's record-keeping practices
- May be boring to answer
- Response categories must be inclusive and non-overlapping.

CONSIDERATIONS IN QUESTION DESIGN AND WORDING

1. Ensure that questions and instructions are easy to understand

- Avoid abbreviations and jargon:

  Do you know the location of the nearest PFRA office?

  Are you aware that NSC Week was held recently?

- Do not use words and terminology that are too complex:

  Are you aware of the impending amalgamation of surrounding constituencies into the "New Metro" area?

  How would you rate the usefulness of the provision of information on the psychological and sociological aspects of transition such as access to the computerized interactive vocational counselling program provided by the departmental regional office to retiring employees where available and as determined by the regional personnel officer?

  Grants: *Report only grants considered as revenue earned in the reporting period (*i.e., *do not include revenues deferred to the following year and include grants awarded in the previous year and not recognized as earned revenue the previous year but are treated as revenue this year).*

  Land and depreciable assets – gross: *Include real estate and ground rents, machinery, equipment, buildings, leasehold improvements for own use and vehicles and equipment in the hands of lessees under operating leases; before deduction of accumulated depreciation and amortization, and encumbrances.*

2. Specify the frame of reference – Example 1:

What is your income?

- "Your" – respondent personally, family, household
- Time reference – income last week, last month or last year
- "Income" – salary and wages only, tips, income from other sources.

Better: *What was your household's total income from all sources before taxes and deductions in 1994?*

Or: *In 1994, what was your total household income before deductions? Include income that you received from wages, salaries, and all other sources.*

Example 2:

Please report sales and receipts.

- Specify time reference period – financial year, calendar year, or other time period
- Specify what to include or exclude.

Better: *Please report sales and receipts for the 1994 calendar year. Exclude GST and all other taxes collected by you for remittance to a government agency.*

Or: *Please report sales and receipts for your most recent fiscal year ending no later than March 31, 1995.*

Note: Respondents find it difficult to combine data from two fiscal years to coincide with a fixed time frame.

3. Specificity: Make questions as specific as possible – Example 1

- Respondent is shown a bottle of orange drink.
  How much orange juice do you think it contains?

  Results:
  One orange and a little water and sugar
  25% orange and 75% carbonated water
  Juice of one-half dozen oranges
  3 ounces of orange juice
  Full strength
  A quarter cup of orange juice
  None
  Not much
  A small amount of orange juice
  One-fourth orange juice
  Very little, if any, orange juice
  Don't know
  Not very much
  3 to 4 ounces of orange juice
  A pint
  Most of it
  A little water mixed with orange juice
  About a glass and a half

  This example is taken from U.S. vs. 88 cases "Bireley's Orange Beverage," Civil Action 47LL (1945) (U.S. D.C. N.J.).

  - Better ways to word the question might have been:

    This bottle holds 300 ml of a drink. How many millilitres of that would you say is orange juice?

    What percentage of this drink would you say is orange juice?

    What part of this drink – a quarter, a half, three-quarters, or what – would you say is orange juice?

4. Make the questions as specific as possible – Example 2

The question needs to be understood by all respondents in the same way. Respondents can interpret even a simple question in different ways.

- *How much diesel fuel did your farm operation use during the last year?*

  Possible answers:
  900 gallons
  4,091.4 litres
  $1,700 worth
  more than last year

A better way to ask the question could be:

- *How much did your farm operation spend on diesel fuel during the last year?*

  $

(*continued*)

Figure 3.6. SAMPLE SURVEY DESIGN/EXECUTION: Questionnaire Design (continued 3)

5. Ensure that the questions can be answered by all respondents

- Are the questions relevant?

  What is your present occupation?
- Do respondents know enough about the subject to answer the question knowledgeably?

  Do you think that incineration at 1600°C for 30 minutes is an adequate way to dispose of polychlorinated biphenyls?

6. Avoid double-barrelled questions

- *Do you plan to leave your car at home and take the bus to work during the coming year?*
- *Does your company provide training for new employees and retraining for existing staff?*
- *During 1992, did this farm operation invest any money in capital items or improvements, receive any money from the sale of capital items, or receive any capital through gifts or inheritances?*
- *What is the language you first learned in childhood and still understand?*

7. Impact of Question Wording

- *In your opinion, should Sunday shopping be allowed in Ontario; that is, should stores that want to stay open on Sunday be allowed to stay open on Sundays if they want to?*

  Results: 73% In favour of Sunday shopping
  25% Opposed to Sunday shopping
  2% No opinion
- *In your opinion, should a Sunday pause day be adopted in Ontario; that is, should the government make Sunday the one uniform day a week when most people do not have to work?*

  Results: 44% In favour of a Sunday pause day
  50% Opposed to a Sunday pause day
  6% No opinion.

Source: *Toronto Area Survey (1991), an annual survey conducted by the Institute for Social Research at York University. 535 residents of Metropolitan Toronto participated in a 30-minute telephone survey. Each version of the question was administered to a random half-sample of the survey's respondents. (Reported in Newsletter, York Institute for Social Research, September, 1991, Vol. 6, No. 3.)*

8. Implied Alternative

- *Do you think most manufacturing companies that lay off workers during slack periods could arrange things to avoid layoffs and give steady work right through the year?*

  Results: 63% Companies could avoid layoffs
  22% Companies could not avoid layoffs
  15% No opinion
- *Do you think most manufacturing companies that lay off workers during slack periods could avoid layoffs and provide steady work right through the year, or do you think layoffs are unavoidable?*

  Results: 35% Companies could avoid layoffs
  41% Companies could not avoid layoffs
  24% No opinion.

9. Considerations in Question Wording

√ Are the words simple, direct and familiar to all respondents?
√ Are the questions as clear and as specific as possible?
√ Are the questions applicable to all respondents?
√ Are any of the questions double-barrelled?
√ Are the response categories mutually exclusive and exhaustive?
√ Are any questions leading or loaded?
√ Do the questions read well?

SEQUENCING OF QUESTIONS

1. Issues in Sequencing

- Introduction
- The opening questions
- The location of sensitive items
- The location of demographic items
- The flow of the items.

The order of the questions should be designed to:

√ Encourage respondents to complete the questionnaire and to maintain their interest in it
√ Facilitate respondents' recall
√ Appear sensible to the respondents
√ Focus on the topic of the survey
√ Follow a sequence that is logical to the respondents
√ Flow smoothly from one question to the next.

2. The Introduction

√ Provide the title or subject of the survey
√ Identify the sponsor
√ Explain the purpose of the survey
√ Request the respondent's cooperation.

Respondents frequently question the value of information to themselves and to users. Some like to receive feedback about the survey.

Therefore:

√ Explain why it is important to complete the questionnaire
√ Ensure that the value of providing information is made clear to respondents
√ Explain how the survey data will be used
√ Explain how respondents can access the data.

Also:

√ Indicate the degree of confidentiality and any data sharing arrangements
√ In mail surveys, provide the return address and the date for return.

3. The Opening Questions

The opening questions should establish respondents' confdence in their ability to answer the remaining questions. If necessary, the opening questions should establish that the respondent is a member of the survey population.

The opening questions should:

√ Relate to the introduction and the survey objectives
√ Be applicable to all respondents
√ Be easy and interesting to answer.

4. The Location of Sensitive Questions

√ Introduce at the point where the respondent is likely to have developed trust and confidence
√ Locate sensitive questions in a section where they are most meaningful in the context of other questions

(*continued overleaf*)

√ Introduce gradually by warm-up material that is less threatening

√ Other solutions include:
- Self-enumeration
- Anonymous questionnaire
- Careful wording of questions
- Use ranges for response categories.

5. The Location of Demographic and Classification Data

√ Place at the end of the questionnaire

√ Locate in relevant sections.

6. The Flow of the Items

√ Follow the logic of the respondent

√ Ensure that time reference periods are clear to the respondent

√ Group questions similar in content together

√ Provide titles or headings for each section of the questionnaire.

Example: INFORMATION FOR RESPONDENTS
Survey objective
Confidentiality
Instructions and definitions

SECTION 1: General Information
Main activity
Reporting year
Type of organization

SECTION 2: Statement of Income
Revenue
Expenses

SECTION 3: Capital Expenditures
Buildings and structures
Machinery and equipment

SECTION 4: Labour Force
Number of employees
Hours worked

SECTION 5: Comments

√ Use transitions for continuity

Example: ⟹ Part A -- Let's talk about your education .....
⟹ Part B -- Let's talk about your work experience ..... .

7. Instructions

Respondents read only what they think it is necessary to read. They read the boldface print first, and then decide whether they should read further.

Respondents rarely read the instructions, and proceed directly to the questions. They only refer to the instructions when they *think* they need help. As a result, important instructions and definitions may be missed.

Errors in reporting often are due to a lack of instructions or to misunderstanding what to include or exclude.

Therefore:

√ Ensure that instructions are short and clear

√ Tell the respondent where to find the instructions

√ Provide definitions at the beginning of the questionnaire or in specific questions as required

√ Use **boldface print** to emphasize important items such as the reference or reporting period

√ Specify "include" or "exclude" in the questions and items themselves (not in separate instructions).

LAYOUT OF THE QUESTIONNAIRE

1. General Guidelines

√ The questionnaire should appear interesting and easy to complete

√ The questionnaire should be respondent-friendly

√ The cover letter and front cover should create a positive first impression

√ If administered in person or over the telephone, the questionnaire should be interviewer-friendly

√ The instructions and answer spaces should facilitate proper answering of the questions

√ Illustrations and symbols (such as arrows and circles) should be used to attract attention and guide respondents or interviewers

√ The last page or end of the questionnaire should provide space for additional comments by respondents

√ Include an expression of appreciation (thank you).

2. Typography

Considerations in organizing the printed word on a page include:

√ Typeface/font
- ensure consistency
- use **boldface print** to highlight important instructions or words

√ Form title

√ Section headings

√ Questions

√ Question numbers

√ Data entry or processing codes
- should not take precedence over or conflict with the question numbers.

3. Other Layout Considerations

√ Front cover

√ Paper

√ Size of page

√ Page margins

√ Number of pages

√ Colours and shading – text and background

√ Ruled lines

√ Response (check) boxes and circles

√ Graphics

√ Translation into other languages.

4. Ways to Improve the Respondent-Friendliness of Questionnaires

√ Provide a respondent-friendly introduction and front cover

√ Tell the respondent where to begin and how to complete the form

√ Guide the respondent step-by-step through the questionnaire

√ Ensure that instructions are short and clear.

The benefits of respondent-friendly questionnaires include:

√ Improved respondent relations and cooperation

√ Improved data quality

√ Reduced response burden

√ Reduced cost.

RESPONSE ERRORS

1. Response Errors

- *Response error* – difference between the true answer to a question and the respondent's answer to it
- Can occur anywhere during the question-answer-recording
- Two types: (1) *Random errors* – variable; tend to cancel out
  (2) *Biases* – tend to create errors in the same direction.

(*continued*)

Figure 3.6. SAMPLE SURVEY DESIGN/EXECUTION: Questionnaire Design (continued 4)

2. Sources of Response Error

- Questionnaire design
  - wording, complexity and order of the questions
  - question structure
  - complicated skip patterns
  - length of the questionnaire
- Respondent problems of understanding, recall, judgment, motivation, and reporting
  - social desirability bias
  - questions requiring recall
- The interviewer.

3. Social Desirability Bias

- *Social desirability bias* – the tendency to choose those response options which are most favourable to one's self-esteem or most in accord with social norms, at the expense of expressing one's own position.
- Examples of sensitive questions that may result in social desirability bias:

  Have you ever driven a motor vehicle after having had too much to drink?

  In the past 12 months, what is the highest number of drinks you can recall having on any one occasion?

  Have you ever used any of the following?
  Marijuana or hash, Cocaine or crack, LSD, Heroin.

  Have you ever shoplifted anything?

4. Techniques for Handling Sensitive Questions and Countering Social Desirability Bias

√ Self-enumeration
√ Anonymous questionnaire
√ Careful wording of questions
√ Use ranges for response categories
√ *Randomized response* – In the simplest form of the randomized response technique, the respondent answers one of two randomly selected questions without revealing to the interviewer which question is being answered. One of the questions is on a sensitive topic; the other question is innocuous. Since the interviewer records a "yes" or "no" answer with*out* knowing which question has been answered, the respondent should feel free to answer honestly.

5. Questions Requiring Recall of a Past Event or Behaviour

- Recalling an event or behaviour can be difficult if:
  - the decision was made almost mindlessly in the first place
  - the event was so trivial that people have hardly given it a second thought since it occurred
  - the question(s) refer to event(s) that happened long ago
  - the question(s) require the recall of many separate events.
- Examples:

  In the last 12 months, how many times did you visit a medical doctor?

  During the last month, which magazines have you read?

  During the last week, which TV programs did you watch?

  During the last year, how much did you spend on fuel purchases for your car?

6. Memory Errors

- *Recall error* – respondents may fail to report certain events or fail to report them accurately
  - leads to the under-reporting of events
  - generally speaking, the longer the reference period, the greater is the recall loss
- *Telescoping error* – some events may be reported that actually occurred outside the reference period
  - leads to the over-reporting of events
  - generally speaking, a shorter reference period tends to increase telescoping errors.

7. Techniques to Reduce Memory Errors

√ Shorten the reference period
  - helps control recall errors, but may increase telescoping errors

√ Bounded recall
  - respondents are interviewed at the beginning and end of the reference period
  - events identified at the time of the first interview can be discounted if they are reported again during the second interview
  - aims at eliminating telescoping errors.

√ Use of records

√ Aided recall
  - use of memory cues
  - tends to increase reported activity, but also may increase telescoping errors

√ Ensure that the time reference periods are clear to the respondent

√ Diary
  - the respondent records the event at the time, or shortly after, it happens
  - used for surveys on household expenditures, food consumption, time use, TV viewing, and radio listening

√ Long vs. short questions (interviewer-administered questionnaires):

Short question: *What health problems have you had in the past year?*

Long question: *The next question asks about health problems during the past year. This is something that we ask everyone in the survey. What health problems have you had in the past year?*

Research suggests that the longer question may stimulate the respondent to talk more, and that this additional talk may also aid the respondent's recall. At the same time, it may give the respondent more time to think and to provide a more complete answer.

COMPUTER-ASSISTED INTERVIEWING

1. Computer-Assisted Interviewing Methods

- Computer self-administered questionnaire
- Computer-assisted personal interviewing (CAPI)
- Computer-assisted telephone interviewing (CATI).

2. Advantages of Computer-Assisted Interviewing

- Automatic branching
- Inserting text in questions
- Randomizing order of questions and response categories
- On-line editing and consistency checking
- Automatic scheduling of callbacks.

(*continued overleaf*)

3. Considerations

- The questionnaire is restricted to size of video screen
- Response time for screen replacement
- Each new screen must be immediately comprehensible
- Avoid crowding the screen
- Nonstandard movement (backing up to a previous question, changing an answer)
- Open-ended questions
- Computer program
- Costs and timeliness.

OMNIBUS SURVEYS

1. Omnibus Surveys

- Shared cost
- "Piggy-backing" of questions
- Questionnaires consist of several modules or sections, each dealing with a different topic and each conducted for a separate organization
- Organizations are charged on the basis of their level of participation in the omnibus survey:
  - number of questions (open-ended questions are more expensive)
  - sample size (*e.g.*, full or half sample, males or females)
- An effective means of reducing the major costs associated with carrying out a survey
- Useful for a researcher who has only a few questions to ask.

2. Omnibus Surveys – Design

- Frequency: monthly, quarterly
- Method of data collection: face-to-face, telephone
- Sample design:
  - Random sample of Canadians 15 or 18 years of age and older
  - Representative of age, gender, and community size
- Sample size: 500 to 2,000 interviews
- Standard classification data: age, gender, region, community size, family income, occupation, education, and mother tongue.

1 Introductory statistics courses offered for students in our Faculty of Mathematics, particularly STAT 231, use the five-step FDEAC cycle as the basis of a systematic approach to empirical problem solving. Identify how the discussion in the first three columns of this Figure 3.6 corresponds to the Formulation and Design steps of the FDEAC cycle.

- What step(s) of the FDEAC cycle are mentioned *least* often in this Figure 3.6? Explain briefly.

2 In the middle of the ninth column (in **Rating Question – Example 3**), an average rating of 6.59 is given. Show how this value is calculated and indicate how it should be interpreted.

- Explain briefly how this value should be described from a *probabilistic* perspective.

3 Some of the terminology in this Figure 3.6 is different from that used in STAT 332. For each of the following excerpts from this Figure 3.6, indicate briefly how it would be phrased in the language of STAT 332.

- *If possible, consult with members of the target population. This will help identify issues and concerns that are important to the target population, and may affect decisions regarding the content of the questionnaire.* [bottom of column 2]
- *If necessary, the opening questions should establish that the respondent is a member of the survey population*. [Point 3 of column 14]
- *Response error(s)* [A section title in column 16 and also used elsewhere in columns 16 and 17]
- *Random errors* [Point 1 of column 16]
- *Social desirability bias* [upper half of column 17] – explain how this term fits into *our* categorization of bias.