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DEVELOPMENT AND DESIGN OF SURVEY QUESTIONNAIRES

R. Platek, F.K. Pierre-Pierre and P. Stevens

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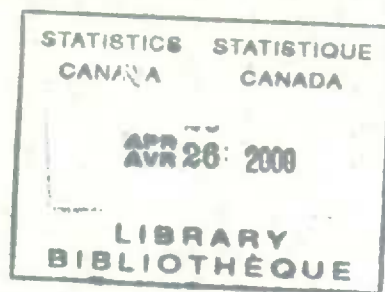
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PREFACE

Successful implementation of surveys demands, among other things, the design and development of questionnaires which can be used to collect the required information as accurately and as cost-effectively as possible. However, the failure to devote sufficient attention, care and resources to questionnaire development has been surprisingly common in survey practice with many surveys failing to achieve their full potential as a consequence. This document, which provides a discussion with numerous illustrations of general principles, is intended to contribute to the promotion of good questionnaire design and serve as a reference and training tool. For the design of questionnaires on specific topics, the general principles discussed herein will need to be supplemented by subject-matter knowledge and by evaluation and analysis of past experience.

Original material for the Development and Design of Survey Questionnaires was prepared in 1982 under contract to the United Nations Statistical Office in support of the **National Household Survey Capability Programme**. A review of the manuscript in Statistics Canada revealed that the conceptual framework was equally useful for survey designers in Canada. Accordingly the manuscript was revised to incorporate examples and illustrations drawn from Canadian experience.

I wish to thank the United Nations Statistical Office for allowing this version of the manuscript to be prepared. In the preparation of the original version, the authors were assisted by Mukund Nargundkar and Don Royce whose contributions are hereby acknowledged.

Finally, I wish to take this opportunity to pay special tribute to Simon Goldberg, former Coordinator of the National Household Survey Capability Programme, Director of the Statistical Office of the United Nations and Senior Assistant Chief Statistician of Canada whose untimely death in New York City on May 24, 1985 has deprived the statistical community of one of its most creative forces. It was Dr. Goldberg's belief in the ability of Statistics Canada to make a meaningful contribution in the area of questionnaire design which was instrumental in bringing this project to fruition. We hope that he would approve of this modest contribution to the art of survey taking.

Martin B. Wilk,
Chief Statistician of Canada.

TABLE OF CONTENTS

	Page
Introduction	7
Objectives and Audience	7
Scope	7
Content	7
The Questionnaire and Survey Design	7
Chapter	
1. The Process of Questionnaire Development	11
Introduction	11
Principal Steps in Questionnaire Development	11
Organizing to Design, Test and Administer the Questionnaire	12
Communicating with Users	13
Clarifying Content	13
Institutionalizing the Capability	15
2. Questionnaire Design	17
Introduction	17
Questionnaire and Data Quality	17
Grouping Subjects	18
Making Concepts Operational	19
Questionnaires vs. Schedules	20
Wording of Questions	21
Clarity, Precision and Choice of Words	22
Order Bias	22
Social Desirability and Politeness Biases	23
Double-barrelled Questions	24
Explanation of Technical Terms	25
Built-in Assumptions	25
Sensitive Questions	26
Statement of Alternative Answers	26
Flow of Questions	27
Filter Questions and "Skip" Instructions	28
Translation Considerations	29
Parts of the Questionnaire	30
Introduction	30
Administrative Data	31
Main Body	33
Classificatory Data	33
Open-ended vs. Closed-ended Questions	35
Advantages and Disadvantages	36
Varieties of Closed-ended Questions	38
Cautions	39
Choosing Between Open-ended and Closed-ended Questions	41
Attitude Scales	41
Thurstone Scale: A Composition of Two-choice Questions	41
Likert Scale: A Composition of Multiple-choice Questions	42
Guttman Scale: A Special Case of the Checklist Question	42
Conjoint Measurement: A Composition of Ranking Questions	43
The Semantic Differential: A Composition of Rating Questions	44

TABLE OF CONTENTS - Concluded

	Page
Chapter	
3. Questionnaire Production	45
Introduction	45
Layout	45
Abbreviations and Punctuation	45
Response Categories	45
Space	46
Answer Spaces	46
Interviewer Working Space	49
Differentiation	50
Colour	51
Numbering of Questions	51
Instructions	51
Language	52
Consistency	52
Data Coding and Capture	52
Printing Codes on the Questionnaire	53
Coding Systems	53
Location of Code Lists	54
Coding "Other (SPECIFY)"	54
Coding "No Answer" and "Not Available"	54
Printing	54
Paper Quality and Size	54
Single- vs. Double-sided	55
Quantities	55
Administering the Questionnaire	55
Visual and Audio-visual Aids	
4. Testing and Evaluation of the Questionnaire	59
Introduction	59
Testing Questionnaires	59
Review of the Draft Questionnaire	59
Review by Users	59
Respondent Sample	60
Pilot Test	60
Evaluation Methods	60
Observation	60
Interpenetrating Samples	61
Reinterviewing	61
Record Check Analysis	62
Benefits of Testing and Evaluation	63
5. Checklist Summary of Elements of Questionnaire Design	65
Bibliography	71

INTRODUCTION

Objectives and Audience

The main purpose of this handbook is to discuss and illustrate basic principles in the development and design of questionnaires.

It is primarily intended for survey designers and managers of surveys in government statistical organizations.

Scope

One of the most difficult problems in survey taking is the translation of complex ideas and concepts into usable questions. The variables to be measured by the survey have to be transformed into operational concepts and expressed as a logical series of questions which an interviewer can ask and a respondent can comprehend and answer. The structure and format of the questionnaire must facilitate the work of interviewers in asking questions and recording responses, and the work of coders and tabulators in capturing the data.

The escalating demand for appropriate and timely statistical information of various kinds and from various sources calls for an organized approach to the process of data collection. One important element of an organized approach is the questionnaire which may be defined as a form containing a set of questions designed to elicit information upon a subject from a respondent.

In the definition of questionnaire are included administrative forms as well as census and sample survey questionnaires.

Questionnaire development is a science and an art. It is a science to the extent that rules can be applied to the formation of questions which will elicit the information fully and accurately. It is an art because questionnaires are based on language and it is difficult to make language precise. Words often assume different shades of meaning in different parts of one country and more so in different parts of the world. Meanings also vary from one socio-economic group or age group to another. Different words or groups of words may be needed to stimulate the recall of the same event by different respondents. Thus, the success of a questionnaire depends to a great extent on the designer's ability to use language to convey to all respondents as consistent a request for information as possible.

Each survey presents new problems and pitfalls which must be anticipated and taken into account in developing questionnaires.

Questionnaire development is not a laboratory process. It is learned to a large extent by trial and error and perfected by practice.

Content

This handbook presents a number of chapters describing various elements in questionnaire design, development and administration.

Questionnaire development. This chapter provides an overview of the process of questionnaire development and identifies the steps involved.

Questionnaire design, production and administration. These chapters discuss general principles of questionnaire design such as types of questions, wording, sequencing, formatting, precoding and placement of instructions on the questionnaire, and other issues of form and content which influence the ease with which information can be collected and processed.

Testing and evaluation of the questionnaire. Testing of questionnaires eliminates problems related to design and interview and processing situations, reducing response error and improving overall management and control.

This chapter describes a number of techniques for testing which include: reinterview follow-up; field visits by senior survey personnel for spot check and observation; interviewer debriefing; experimental design studies, interpenetrating samples; and comparisons with other data, such as administrative data, or data from other surveys and consistency checks.

Checklist. Highlights recommended practices in questionnaire design and development in the form of a checklist.

A Bibliography of useful sources for further reading, as well as reference is appended.

The Questionnaire and Survey Design

In most surveys, questionnaires ranging from lists of undefined topics to highly structured sets of questions are the key to standardizing and controlling the data collection process. Without specific question wordings and instruc-

tions, respondents and interviewers inevitably change the meaning or emphasis of questions and bias the responses.

The questionnaire plays a central role in a complex process whereby information is transferred from those who have it to those who need it. For this transfer to be effective, the questionnaire must meet the requirements of users and respondents. The expression of information needs, in terms suitable to the respondent is not something that can be accomplished in one step. Instead, the questionnaire evolves and is refined as the survey development process unfolds.

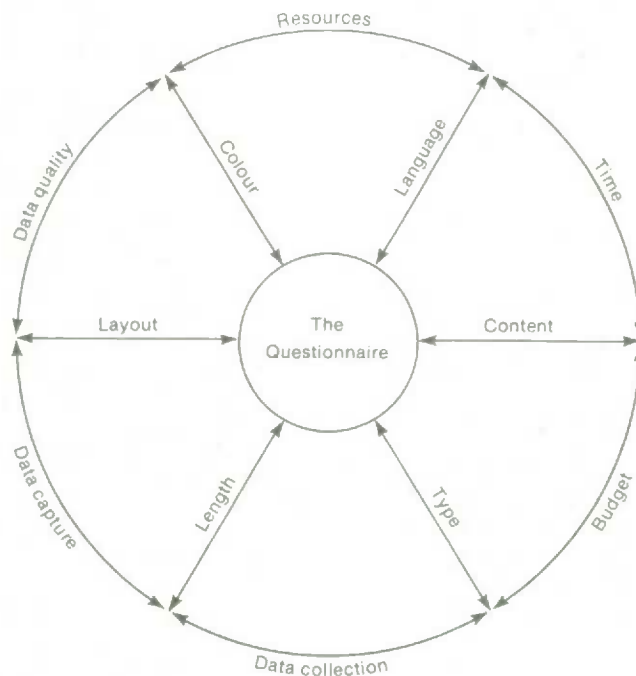
The process of questionnaire development consists of many elements such as content determination, question type and wording, sequencing and layout, testing and evaluation, etc.

Figure 1 illustrates the questionnaire and the elements which together make up the survey design. Virtually any element could be placed at the centre of the network, but for the purpose of our discussion, we have chosen to focus attention on the questionnaire.

In the actual design all elements interrelate to form a complex network which varies according to survey conditions and data requirements. Changes to one element will require changes in others. For example, the desired content often will be modified by considerations related to the resources, time, degree of reliability required, sample design, type of coding and processing.

The questionnaire's total content, style of questioning, format, length, etc., are all closely linked to the method of data collection and the survey's subject matter. Each method of data collection, creates its own survey conditions to which a well-designed questionnaire must be sensitive, through an appropriate style of questioning, content, format, length, and so on. The personal interview is often the only choice when a complex, long and demanding questionnaire is involved. In telephone interviews much of the social interaction between interviewer and respondent is lost: the extra distance between interviewer and respondent may actually make it easier to answer sensitive questions because the respondent may feel less threatened, more at ease. In mail surveys, the questionnaire itself assumes the role of

Figure 1
The Questionnaire and Survey Design



interviewer. It must introduce the survey, motivate the respondent to co-operate and guide the respondent in completing the interview.

The questionnaire may also have to adapt to different collection methods: for example, in the Labour Force Survey the first interview is conducted in person while in urban areas most subsequent interviews are conducted by telephone.

The heterogeneous nature of many survey populations frequently results in a need for cross-classified data. The degree of stratification affects the sample size, which in turn will affect the cost, timeliness, and amount of respondent burden which may legitimately be imposed.

Particular designs of questionnaires affect data processing and its cost. The format of questions, open or closed, has direct implications for operations such as coding, data capture, editing and tabulation. The presence of many open-ended narrative-type questions increases the time and effort required to code, and programs to edit and tabulate the data become more difficult and costly to write and test.

Whether the survey is one-time or continuing affects questionnaire design. In continuing surveys, such as the Canadian Labour Force Survey, the same respondents are interviewed several times. Consequently, the questionnaire must take into account the total response burden during the respondent's stay in the survey. With a continuing survey, there is more scope for learning from experience and refining the questionnaire over time. It becomes important to document problems associated with particular questions. Experiments in question wording, programs to monitor response errors, and other methods of evaluating and improving the questionnaire design constitute an invaluable source of learning for future purposes but are costly to conduct. The ability to improve the questionnaire must also be balanced against the disadvantages of change. The ability to make comparisons over time, the need to retrain interviewers, and the need to change expensive computer software must be taken into account when proposing changes in existing questionnaires.

While the questionnaire as an operational expression of user needs relates to the total survey design it neither fully determines the form of the other components nor is its form determined by the others. Questionnaire design flows from and is a part of the total survey design process.

Chapter 1

THE PROCESS OF QUESTIONNAIRE DEVELOPMENT

Introduction

Surveys of various kinds can be a cost effective way of collecting information. With proper planning computers enable the production of survey results quickly, by relatively inexperienced survey takers. Lack of planning however leads to errors, the correction of which will consume inordinate amounts of limited budgets and delay the production of essential information. Every effort should be made to ensure that collection procedures and survey documents are as free of error as possible before being implemented in a field trial. Defining the responsibility for questionnaire design clearly, and at an early stage of survey planning is a first step in creating a mechanism to deal effectively with some of the issues which may arise during questionnaire development.

Questionnaires can be designed by single individuals or by a team. In our opinion and experience, the team approach is particularly effective. Where questionnaire design must be assigned to a single individual the function and process remain essentially the same. What may be adversely affected is the efficiency or quality of the end product. In the discussion that follows, the use of a team approach is stressed.

The process of questionnaire development aims to bring together designers and users in a coordinated and systematic fashion to specify the content of the questions, develop appropriate instructions for interviewing, coding and editing, and establish the reports to be produced once the data have been cleaned of all collection and processing errors.

Principal Steps in Questionnaire Development

The first task for the designer is to list all the activities involved in developing the questionnaire and estimate for each the kind of resources required. These activities should be organized into a logical time sequence, the end of which is fixed by the date for approval of the final questionnaire. Some activities can be carried out concurrently while others need to be done in sequence as the completion of one determines the beginning of another. To illustrate, printing of questionnaires cannot start until specifications are finalized: that is, until the questions have been developed with

answer spaces, codes, instructions, etc., and issues such as format, flow, colour, layout, etc., have been resolved. But, negotiations to find a printer, to set a tentative date for printing and to obtain estimates of costs can begin as soon as the decision to take a survey is made.

The elapsed time to develop the questionnaire should be planned to be somewhat greater than the real time required to accomplish the steps which must be carried out in a sequential fashion, but it may be shorter than the time required for doing all the steps. The plan should provide for unanticipated delays. If resources cannot be made available when needed, time frames will have to be adjusted. If time frames are not flexible, the outputs may be of lesser quality or scope. Thus, the designer ought to separate in his plan the steps which are essential from those which may be omitted without affecting the quality of the end product, should he run into scheduling problems.

A general summary of the principal steps in questionnaire development follows:

1. Decision makers consider a new program or policy or change to an existing program or policy.
2. Program or policy analysts assess existing information, identifying gaps which require collection of data.
3. A survey manager is assigned and he assigns responsibility for questionnaire design.
4. Program/policy analysts describe their general plans and ideas with respect to:
 - expected uses of the data,
 - reports required.
5. Questionnaire designer assists analyst to define the need for information in relation to specific objectives, subject matter area, specific populations, timing, etc.
6. Questionnaire designer does a thorough review of the literature on existing designs and to determine what can be successfully modified and what needs a new design.
7. Questionnaire designer schedules activities and negotiates resources in terms of level, skills and availability.

8. Questionnaire designer consults users to clarify:

- major/minor objectives,
- content areas of enquiry,
- minimum quality,
- mode of production of results (tape, reports, tables),
- sample size,
- respondent nature and characteristics,
- language of interview,
- field method,
- data capture method.

9. Questionnaire designer negotiates with field collection and data processing to provide input to interviewing and data capture plans and guides.

10. Questionnaire design team starts drafting questions, testing them, recording the results and reporting back to the users.

11. As questions are finalized including their codes and appropriate editing specifications, the questionnaire designer arranges them into logical groupings.

12. Questionnaire designer negotiates printing and production of the questionnaires and logistics of getting them into the field.

13. Finally, the questionnaire is ready in a draft form with supporting instructions for the Pilot Test.

14. The Pilot Test is conducted. The questionnaire design team observes the training and the field work noting particularly what presents difficulties and the various ways interviewers resolve problems.

15. The test questionnaires are subjected to all coding, editing, data capture and processing routines and reports are prepared on the quality of the resultant data.

16. Final modifications to the questionnaires and supporting documentation are made by the designer and the team. Reports on test results are written and filed, along with examples of all documents used in the survey.

17. The full-scale survey takes place. The results are analyzed. Observations of problems and solutions are recorded and reports prepared to include the questionnaire designer's recommendations for future questionnaire design.

Working backward, the major critical dates for questionnaire design are:

- date of start of field work: questionnaire and documents must be finalized;

- date of Pilot Test: a draft questionnaire and manuals are required;

- the end of the period of consultation with users: after this there will be few opportunities to make changes to the overall timing, budget and objectives of the survey, although minor modifications can be made, e.g., increases or decreases in sample size which do not influence major objectives of the survey.

Organizing to Design, Test and Administer the Questionnaire

A successful questionnaire design results from a number of skilled individuals working together to develop, test and administer the questionnaire. Ideally, therefore, a team will combine expertise in social and economic sciences with behavioural, mathematical and computer sciences. If resources are scarce the designer will have to carry out many functions himself. As much as possible he should consult others who have designed questionnaires in the past.

Where a questionnaire design team is set up, each member should be given specific responsibilities.

Questionnaire designer conducts the consultation with users to determine what information is required; carries out a review of the literature and consults colleagues to obtain advice and assistance in designing the questionnaire. The questionnaire designer usually comes from a subject matter area and generally has some background in the social sciences. His principal strength is the ability to understand the needs of users and to translate these into a coherent set of questions.

Field expert provides technical support in the selection and training of interviewers, writing instructions, supervising assignments and resolving problems in the field. Generally the field expert is familiar with the characteristics of respondents. He can advise on the choice of respondents, and on wording questions so that respondents will understand them in a consistent fashion. The field expert will also be familiar with the peculiarities of language at the local level. His experience is of a practical nature and has been acquired in the field or in the delivery of programs.

Data processing expert provides advice on the best layout of the questions and answer spaces for rapid and easy data capture, and on how to facilitate manual editing and coding in the field.

His principal concern will be to structure the questionnaire so that the information can be captured efficiently to produce a data file which can be manipulated by users.

All team members must possess sufficient independent authority to make proper design and implementation possible. In the design phase these experts will work collectively. Once field work begins, each expert will be responsible for his own area.

In the course of questionnaire design, problems will arise and an efficient method needs to be developed for problem solving. Most disagreements can be resolved by relying on precedents or by referring the problem to other experts. "Content" or "Steering" Committees comprised of senior researchers or managers may usefully advise on content issues when users and designers fail to reach agreement. Often a Steering Committee will include representation from major user departments, creating a forum for discussion of issues and dissemination of results.

Where there is little prior experience in questionnaire design, the solutions adopted may be regarded as precedents against which to resolve future problems. As a consequence the problem and the solutions to which it gives rise ought to be clearly and fully described and filed for reference purposes.

Communicating with Users

Communication with users will be more or less formal depending on the statistical environment in which questionnaire design takes place: highly centralized; decentralized; or somewhere in between.

Where statistical planning is part of central planning, the central statistical agency often has a determining role with respect to the production of data, and is represented as a matter of course on sector committees. The agency's statistical programs will reflect the priorities assigned to sectors by the central planners.

Where the central statistical agency is located separately from central planning but with a mandate to coordinate the development of a national system of statistics, the agency may often create interdepartmental committees to obtain input from users. It generally sets its own priorities, recognizing the needs of various categories of users.

Statistical agencies with a history of carrying out continuing national surveys have developed a number of ways of communicating with users. Communications with users may be unstructured, taking place as the need arises, or may be planned to include periodic conferences with formal agendas fixed long in advance.

Formal consultations are time consuming. Resources are required to prepare background papers for discussion, present them at meetings and produce proceedings. More than one round of

meetings may be required. The timetable for questionnaire design must allow sufficient time for this kind of consultation to take place.

Communication is easier if standard recording procedures are developed and applied. These could include the preparation and distribution of some or all of the following:

- an "early warning memorandum" which advises senior officials of issues under discussion in user departments which may give rise to a need to collect information;
- a "proposal" form which describes the project as envisaged by users and designers;
- an "approval in principle" form which, when signed by senior management, not only constitutes formal approval of a project by sponsoring divisions but also notifies functional areas that they may be asked to commit resources to the project at some future date;
- a "questionnaire checklist" which ensures that questionnaires are reviewed by other interested divisions (outside the statistical organization or unit), and that their input has been obtained.

These forms help stimulate internal discussion of the project, clarify the proposal for the purpose of communicating with users and sponsoring organizations. They constitute a permanent record of the planning which took place at the time of questionnaire design.

Clarifying Content

Texts on survey taking often state that the first task for the questionnaire designer or team is to determine the objectives of the survey. But very little is written about how to do this except to suggest that users be contacted early to canvass their needs prior to drafting questions.

At the outset survey objectives are broadly stated, for example:

- to provide a descriptive statistical background for developing national policies and programs;
- to describe, on a continuing basis, and at national and regional levels, some social or economic trends and phenomena;
- to provide a general framework for more specific studies, policies and programs, etc.

These broad statements of purpose need to be reduced to more manageable ones if they are to guide the questionnaire designer or the team in wording questions, preparing instructions for interviewers and designing the questionnaire for rapid data capture and processing.

Examining dummy Table 1 reveals that the questionnaire must collect information on the number of persons in each household, including information on the age of each member so that they can be grouped by age, but not necessarily single years of age, and on sex. The dummy table, however, does not indicate other variables such as if these persons must be related by marriage or blood, nor if boarders are to be included or excluded. It is necessary to examine the concept of household and relate it to the purpose of the information collection before deciding to include or exclude persons. If the information is collected to estimate demand on public services such as water, electricity, etc., it is important to know about all of the usual members of the household including domestics and permanent boarders. If, on the other hand, the objective is to know the size of the household whose members share their economic wealth, one may want to include all related family members including aunts, uncles and grandparents living together but not include boarders who do not share all their income with other members of the household.

Institutionalizing the Capability

Questionnaire design experience can be institutionalized by establishing a questionnaire design capability and allocating resources to it on a continuing basis. While a formally

constituted group may start by designing questionnaires, with time and experience it can expand its role to include developing guidelines, procedures and standards for questionnaire design by others.

Institutionalizing questionnaire design offers a number of potential benefits, some internal to the organization and others impacting more on the work outside.

- improved cost-effectiveness and efficiency in internal questionnaire design;
- improved quality of questionnaire design through development and application of consistent standards;
- questionnaires of predictably high quality leading to greater utilization of resultant data;
- provision of assistance and advice to others in questionnaire design;
- peer review as a mechanism to control expenditures on information collection.

Chapter 2

QUESTIONNAIRE DESIGN

Introduction

An essential first step of questionnaire design is a well-defined statement of objectives specifying the information required and its intended uses. While the process for reaching the objectives may require several rounds of discussions, at some point agreement will be general enough for the work of constructing a questionnaire to begin.

The work of drafting the questionnaire, and in particular, the review of the kinds of results likely to be obtained, may lead to a reformulation of objectives. But regardless of how satisfied everyone is, the questionnaire designer or project team will be left with considerable freedom in deciding what questions to ask and how to ask them.

This chapter discusses issues to be faced in the overall design of questionnaires: quality of data; grouping and ordering by priority of the topics to be covered in an individual survey; the parts of a questionnaire, and features leading to well-designed parts; types of questions and the advantages and limitations of each; wording problems; avoidance of "double-barrelled" questions (i.e., questions that are really two questions in one); limitations of hypothetical questions; and how to handle sensitive or threatening questions.

Questionnaire and Data Quality

There are no general rules to determine quality and reliability of survey data that apply to all surveys. For each survey, it is necessary to consider how the data will be used and how the survey results will be affected by errors of varying magnitude and kind.

Experience shows that certain types of surveys produce more respondent burden and more non-sampling error than others. As these errors affect the quality of data derived from surveys, their control is an integral and vital part of questionnaire design.

This section discusses the relationship of the questionnaire to a few of the more important sources of error and illustrates how the questionnaire can be designed to minimize error.

Many forces motivate people to respond to surveys; an interest in the topic, a desire to be helpful, a belief in the importance of the

survey, a feeling of duty, a belief in their own importance or even a belief that they have no choice but to co-operate. Other forces influence people to refuse; difficulty in understanding questions, fear of strangers, the feeling of one's time being wasted, difficulty in recalling information, and embarrassment at personal questions.

All of these forces will affect questionnaire design through the way the questions are worded, the length of the questionnaire, and how survey topics are introduced.

An appropriately designed questionnaire which helps respondents to respond will reduce error significantly. Unrealistic demands on the respondent's knowledge or memory, the use of overly difficult and technical language, or excessive demands on the respondent's patience are all causes of response error.

Response errors may be systematic (response bias) or random (response variance). Questions on sensitive topics, such as amounts and sources of income, use of alcohol and tobacco, illegal activities or mental illness are subject to large response errors: respondents may distort the answer to avoid embarrassment or to appear to conform to social norms (Warwick and Lininger (1975)).

Questions which depend on the respondent to remember events, such as taking a trip or the occurrence of a crime, are another source of response error. Events may be forgotten, or incorrectly included. Buser (1981), in an experiment with the U.S. National Crime Survey, found victimization rates per month with a three-month reference period much higher than those reported under a six-month reference period, which in turn were much higher than the victimization rates reported with a 12-month reference period. The bias due to recall loss with the longer reference periods was a much more serious source of error than sampling variability. The choice of an appropriate reference period for questions involving recall has been examined in a number of different subject matter areas (Sudman (1980), National Centre for Health Statistics (1973)). Bounded recall (see also Chapter 2, "Built-in Assumptions") where respondents are interviewed at the beginning and the end of the reference period, and the use of prominent dates (e.g., Christmas) or calendar aids to jog respondents' memories have shown to be of some value in reducing under-reporting (Neter and Waksberg (1965), Ashraf (1975)).

Response errors may also result from the way respondents interpret and answer questions, and the way in which interviewers interpret and record answers. The interview is a dynamic interactive process of communication between the interviewer and the respondent. How it is handled determines whether it will produce the desired information in an accurate and efficient fashion. It is the questionnaire, through its content, question wording, instructions and layout, which must play a major role in controlling the situation.

Once the interview is completed, the questionnaire becomes primarily a data processing document. Errors can occur at all phases of processing including coding, data capture, editing, imputation, estimation and tabulation. The way in which the questionnaire is designed will have a significant impact on the number and type of errors at this stage of the survey. By including codes right on the questionnaire, for example, data capture errors are usually reduced significantly. The data are captured directly from the questionnaire without first being transcribed onto another form.

Problems of missing or inconsistent data can often be traced back to faulty questionnaire design. The ability to reconstruct or impute for missing values often depends on other variables or fail-safe procedures included in the questionnaire. For example, in a survey which requests information on several detailed components of income, cases where the information is not given or is incorrect can often be salvaged by including a question asking for total income.

Response and data processing errors are a few of the non-sampling errors which are closely linked to the questionnaire. It must be designed to minimize these as far as possible. An important process in minimizing and controlling the non-sampling error is testing of various components of the questionnaire at the design stage. Subsequent chapters discuss various procedures and alternatives that may be undertaken before the final version of the questionnaire has been decided on.

Grouping Subjects

In an ongoing program of statistics, data may be wanted on a great number of subjects - employment, income, expenditure, education, health, agricultural production, housing, energy, and so on. A number of factors should be considered if this is the case. Apart from user needs, legislative requirements, and scope and timing, a major factor will be the compatibility of different subjects. For example, in expenditure surveys, the scope of the data wanted may require so much taxing of memory, and assembling of records, it may be unwise

to burden the same respondents with detailed questions on income beyond those needed to arrive at a rough total figure for balancing against reported expenditures. Some of the topics to be covered in a survey, may be incompatible with others. For example, detailed expenditure questions followed by questions on income may result in biased reports of income if tax has been evaded.

Although the aim may be to divide subjects into separate non-overlapping units, each of which will become the object of a separate survey, there can be some advantages to including a degree of overlap or repetition. In a program of continuing surveys, it becomes useful to establish a core of demographic questions that will be the same in each survey. It will then be possible to make comparisons between surveys, and to carry out comparative analyses between subjects. It may also be worth considering limited repetition of non-demographic questions as a means of checking the reliability of data obtained on a given subject.

While a logical or natural grouping of subjects is desirable, the questionnaire designer may have no choice but to combine seemingly incompatible subject matters and write instructions for a heterogeneous group of interviewers.

The designer will want to keep these considerations in mind in writing instructions to interviewers and in limiting questions and planning their flow.

Once selected, topics must be given an order and a priority. For example, in a survey on health, topics could include physical and mental health, the nature and seriousness of ill-health, duration and type of treatment sought and received, effects on employment or income, effects on the health, employment, etc. of others, illness-prevention practices of the household, use of health facilities and so on. Some of these data may be obtainable from administrative sources (e.g., hospital records) although linkage with other data obtained from household survey respondents may be difficult.

Usually, it is the questionnaire designer, in consultation with users, who will set priorities for topics, and for sub-topics and determine the amount of detail to be sought on each.

There are advantages to a division of the general topic of the questionnaire into a series of sub-topics.

- it is easier to develop one section, or a small number of sections, at a time, rather than all at once;

- it may be feasible to test one section, or a small number of sections, at a time, rather than wait for all sections or sub-topics of the questionnaire to be developed;
- if resources are available sections can be developed separately, by different designers or design teams, speeding up the development process;
- decisions on the flow of the questionnaire can be made more readily, as it becomes easier to consider the effects of different orders of sections when they are considered as separate.

Making Concepts Operational

While topics within a survey are being discussed, a number of concepts will have been considered. These concepts will later need to be turned into questions in a questionnaire. Terms must be defined and applied the same way in the questionnaire, the interviewer manuals and the instructions given to respondents, and in reports based on the data. This will ensure that the precise meaning wanted is conveyed at all times.

Where information from one round of survey taking is compared with information in a subsequent round, the concepts must withstand the test of time and the words to describe the concepts will need to be chosen with care. In fact many questions may be needed to convey the correct meaning. If terms such as "household" or "income" or "ill-health" or "production" are not defined, interviewers and respondents will interpret them in various ways. Because of the mixture of meanings, totals or averages from the data may be meaningless.

As an example, to some, unemployment means working less than full capacity, to others it means not working when one has an opportunity to do so, in other words refusing a job. Or unemployment may mean not working at the job for which one has been trained. In the Canadian Labour Force Survey unemployment means none of these. To Labour Force Survey statisticians, "unemployed" includes those persons in the civilian (non-military) non-institutional population, aged 15 and over who during the reference period (a given week each month):

- were without work, had actively looked for work in the past four weeks (ending with the reference week), and were available for work. The "available" are those (including full-time students seeking part-time work) saying that there was no reason why they could not take a job in the reference week, or, if they could not take a job it was because of "own illness or disability",

"personal or family responsibilities", or that they already had a job.

- (until 1984) had not actively looked for work in the past four weeks, but had been laid off (from a job to which they expect to return) for 26 weeks or less and were available for work (in 1984 these individuals were re-classed as "outside the labour force"); or
- had not actively looked for work in the past four weeks but had a new job to start in four weeks or less from the reference week, and were available for work.

The "institutional" population, excluded from the definition, comprises those living in prisons, mental hospitals, long-term disability institutions, and the like. Up to nine questions must be asked to ensure that the correct meaning and only that meaning is conveyed to respondents.

Questions should be asked in a manner that will be understood by the majority of respondents. As a general rule it is preferable to use words with which the majority of respondents will be familiar and continue to be familiar.

In a continuing survey program, only those changes which have been shown to be necessary should be made. Often special studies of the continued usefulness of concepts and wordings will assist questionnaire designers to decide about changing concepts. Because of their interest in producing data for trend analysis, questionnaire designers should generally be conservative towards the application of new concepts - arguing that concepts should reflect change, not precede it.

Besides the choice of words, the degree of detail must be considered at the time concepts are being turned into usable words and phrases for questionnaires. For example, if income data are wanted, is it enough to ask for a total figure of income from all sources, before (or after) taxes, and for a specified time period? Or should a detailed breakdown of income be obtained from each of the following:

- wages and salaries for each job held during the reference period;
- sales of household-produced goods or services;
- benefits or allowances from the government (and perhaps from each of several government agencies);
- cash benefits or allowances from private companies or organizations;
- gifts from private individuals;

- income from investments, loans, bank deposits;
- income received in kind (i.e., as merchandise or services), given as an estimate of the market value or what would have had to be paid if the items had been bought;
- benefits or allowances in kind from companies or organizations (such as, the use of equipment, houses, and so on, at no charge or at a charge less than the market value).

Similarly for family expenditure surveys - should expenditures be asked on, all clothing, or by detailed list of clothing items. Clearly such factors as the objectives for which the data are being sought, the likely extent of error (e.g., under-reporting for a "total income" or "total clothing expenditure" question), and the burden on respondent time

and memories in asking the itemized questions, must be considered in the development of usable questions from the concepts to be included.

Questionnaires vs. Schedules

Once a general organization plan has been established, attention must turn to the individual questions to be asked. At this stage, a choice is available as to the degree of completeness of wording to be provided to interviewers.

It is usually desirable to provide interviewers and respondents with as exact a wording as possible for any given question. Only then can the questionnaire designer be sure that each respondent has received the same question stimulus. In the absence of exact wording answers may differ primarily because of differences in wordings used by interviewers.



Statistics Canada Statistique Canada

Manufacturing and Primary Industries Division
ANNUAL CENSUS OF MANUFACTURES, 1984

In all correspondence concerning this questionnaire please quote this 7 digit number.

FOUNDATION GARMENT INDUSTRY

Si vous préférez recevoir ce questionnaire en français, veuillez cocher la case et retourner à la Division des industries manufacturières et primaires, Statistique Canada Ottawa, K1A 0T6

Physical Location of Establishment (Please correct if necessary)

SELECTED MANUFACTURING OUTPUTS

8. Shipments of goods of own manufacture (refer to Instruction 8 in the Reporting Guide)

BASIS OF VALUATION OF SHIPMENTS			Commodity code for Statistics Canada use	Unit of measure	Quantity shipped	Net value of shipments, excluding sales taxes, excise duties and excise taxes, shipping charges by common or contract carriers and net of any sales discounts, allowances, etc. (Canadian dollars (omit cents))
	Yes	No				
8.0.2	Are you reporting shipments as requested?	1 <input type="checkbox"/>	2 <input type="checkbox"/>			
8.0.3	Are reported Values at Final Selling Price? If "No" please specify basis of valuation:	1 <input type="checkbox"/>	2 <input type="checkbox"/>			
8.0.4						
8.1	Products shipped					
8.1.1	Girdles, all types, (excluding pantie-girdles)		788 71	dozen		
8.1.2	Pantie girdles, all types		788 72	"		
8.1.3	Corsets		788 73	"		
8.1.13	All other products (specify main items)					
8.2	Total value of shipments of goods of own manufacture (total of items in 8.1)					

Occasionally, the circumstances of data collection are such that use of exact wording, is impractical. Sometimes it may even be detrimental to the quality of response.

For example, it may not be practical to find, hire and train interviewers to use unvarying wording. As well, interviewers may not feel comfortable reading a text developed by others, one that does not correspond to their own pattern of speech, or allow for their own pauses and intonations. It may be desirable for the interviewer to be at ease and to speak in a natural-sounding manner. Depending on the characteristics of respondents, and the nature of the survey it may be better to provide no more than a summary of the important points that should be conveyed to respondents and allow interviewers to use their own words.

Local customs or culture may make respondents suspicious of any stranger, or even a local person working for the government. In this situation, it may be of benefit to allow interviewers considerable flexibility in improvising the wording of questions. There may be social, religious, or traditional beliefs such that abrupt direct questions would lead to biased answers, outright evasion, or even hostility. In these conditions, great reliance must be placed on the skill of interviewers to develop rapport with respondents through, a gradual leading-up to questions in a conversational style. No questionnaire could ever provide the exact wording an interviewer should use, or all the questions and comments needed to get a good answer.

Under interviewing conditions described in the last few paragraphs, it may be better to use a schedule type of form rather than a detailed questionnaire. By schedule is meant a form that does not give the exact wording to be used, but gives instead a summary of the information to be obtained. Often the summary descriptions look like column headings in a tabulation, e.g., "education-level" instead of "what is the highest level of schooling you have completed?" or "how many years of schooling have you completed?"; "number of children ever borne" instead of "how many children have you ever borne?"

While the questionnaire approach emphasizes the need for interviewers to use the wording as given, without changing it, the schedule approach emphasizes interviewer/respondent understanding of the concept that each question is to convey, to minimize bias that might come about because of differences in interpretation between interviewers. A schedule approach can work satisfactorily where there are well-trained interviewers/knowledgeable respondents.

The schedule approach cuts down on the bulk of the questionnaire and is most useful where limitations on availability of paper or printing facilities are significant, or where interviewers or field supervisors are required to carry questionnaires for long distances under poor transportation conditions.

Most self-completion business survey questionnaires use a schedule approach, in which column headings correspond closely to the way in which business records are kept. This principle is illustrated in the example above drawn from the 1984 Census of Manufacturers - Foundation Garment Industry.

Wording of Questions

The wording of schedule questions is generally limited to a summary description of the information to be obtained. Typically, the questions are "age", "education level", "occupation", "number of acres" and so on. Provided interviewers are informed thoroughly, by training and in their manuals, of all interpretations and shades of meaning that could apply, the exact wording used may not be very critical.

Where questions are worded completely, a number of aspects of the wording must be considered. The clarity and precision of the words used, biases in particular words or phrases, or as a result of the order of the words, or the degree of technical or other knowledge they presume respondents to have, must all be taken into account. It is all too easy to think that one can draft a perfectly worded questionnaire while sitting in an office. In fact, it is very difficult to imagine all the possible interpretations and the variety of answers respondents may give, or the different circumstances or conditions which may alter the sense of the questions.

A questionnaire designer should design questionnaires only after a period of experimental data collection. This means going out into the field and interviewing or observing interviewing. It is important to become familiar with speech patterns, vocabularies, and ways of thinking of the respondent population.

The questionnaire designer also should know the characteristics of the interviewers for whose use he is designing questionnaires. He will need to be aware of interviewers' methods of work, the shortcuts they may take, how they are paid (per hour or day, or per completed interview) and how that may affect their work.

A technique for question development that might be tried if resources permit is to call on staff members or professional interviewers to word their own questions, after a discussion of the survey objectives. Then select five to eight excellent interviewers and instruct them to go out for one day and interview people. The next day discuss their interviews concentrating on areas where the replies were incomplete or not relevant to the objectives. Repeat this process several times, each time sending the interviewers out with more standardized versions of the questions. Each time there will be fewer alternatives to consider and eventually agreement will be reached about how to ask the questions. By this time enough responses will probably have been obtained to begin to evaluate them in light of tabulation plans. Questionnaires incorporating questions developed this way should still be tested, for example, to see whether average interviewers can carry out the interview.

Clarity, Precision and Choice of Words

The language of a question should be simple. Words used should be familiar to respondents yet appropriate for the survey subject matter. The kind of vigorous language generally used by journalists could be worth aiming for. It is important to choose precise words carefully, avoiding vagueness and ambiguity. Compromises may be required between accuracy and length.

Consider the question: "What is your income?" Does "your" refer to the respondent or to his family or household?; what is the time period - last week? last month? the last 12 months before interviewing?; what is to be included in "income" - salary and wages? tips? piece-work pay? income from other sources? income in kind? How should this non-monetary income be valued? For farmers, is this the total income of the farm, or just the "profit" left over after all expenses of running the farm have been taken care of?

The term "household" can lend itself to a variety of interpretations, depending on the culture, social arrangements, housing available, and so on.

Belson (1981) gives a number of examples of widespread variations in understanding, or outright misunderstanding, of everyday words such as "usually", "have", "weekday", "children", "generally", "regularly", and so on.

In a U.S. survey, respondents were shown a bottle of orange drink and asked:

"How much orange juice do you think it contains?"

The following answers given by a number of respondents illustrate the kinds of answers that were given to such an imprecise question:

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
doubt it
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.

Better ways to word this last example might have been:

"This bottle holds 16 ounces of a drink. How many ounces 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?"

Examples are often useful, to clarify a concept. Where they are used it is desirable to give more than one and to make them as neutral as possible. Otherwise, respondents may have trouble understanding the underlying concept. They will tend to be misled by thinking just of the single example, rather than the class or group from which the example has been taken.

Where it is necessary to use technical or legal terms, definitions or explanations should be provided. Otherwise, respondents may not be sure if they are aware of or have had experience with the concept. They may guess, or claim awareness or experience more than is true in the researcher's terms.

Order Bias

When respondents are asked to choose among a number of alternatives that have no logical order, a pattern of answers may emerge that is the result of the order in which the alternatives are presented rather than their importance or relevance to the respondent. While the bias is most noticeable in opinion questions, it applies equally to supposedly factual questions. Lists of activities, or of items or articles purchased, owned or used, from which respondents are expected to select those that apply to them, can all suffer from the bias.

In an example from Payne (1951) several alternatives, A, B, C and D, were presented in different orders, to matching samples of respondents. Each one of A, B, C, D, was selected more often when it was at extreme ends of the list than when it appeared near the centre.

Alternative A was selected by:

27% when it appeared at the top of the list;
17% when it appeared near the centre; and
23% when it appeared at the bottom of the list.

Alternative B was selected by

11% when at the top;
7% when near the centre; and
7% when at the bottom.

A very similar pattern of responding was obtained for alternatives C and D.

This sort of situation is quite common. When a series of alternatives is read out, some respondents will find it easiest to remember the first, others tend to remember the last one. The items in the middle tend to lose out, either way. With an ordered set, such as a set of numerical values, respondents will tend to choose values in the middle (see Chevry, p. 136).

One solution to this problem is to present alternatives in all possible combinations, to as many randomly picked groups of respondents as there are orders. This will help balance out some of the bias due to ordering. But this can cause practical problems, such as requiring more than one version of the questionnaire, with consequent control problems in the field-work. Separate versions of the questionnaire would also need to be clearly identified to avoid confusion during capture of the data. It can also mean a large number of alternative versions - with three items, there are six possible combinations; with four items, there are 24, and so on. However, with some compromising and careful ordering, a practical smaller number can usually be found. Here is an example of how one question with a variety of choices and orderings, could be handled.

Which of these crops would you say gives the greatest profit to most farmers? (SHOW CARD)

Card A	Card B	Card C
Wheat	Corn	Potatoes
Potatoes	Wheat	Wheat
Corn	Potatoes	Barley
Barley	Barley	Corn

In this selection, each crop appears once at an extreme end of the list (either first or last), and once in 2nd or 3rd position. As well, no two crops appear together twice. One third of respondents would see each card.

Another possibility is to mark questionnaires in the office before they are shipped to interviewers to show the item to be read first in each successive interview. Care will need to be taken to provide each interviewer with an equal number of questionnaires marked to start with each item. Alternatively, interviewers could be instructed to change the order of mention of the list of items by starting with the second item in the second interview, and ending the list with the first item. Then the third interview starts with item No. 3 and ends with item No. 2; and so on. Interviewers need to keep careful track of how many interviews they have completed, to keep the rotation order correct. There is a greater possibility of confusion and error with this method, since interviewers are already busy enough in a complex task.

It may also be possible to split the number of items into two (or more) groups. A respondent would be asked about each group separately; then a second question would ask about the preferred one of those marked first or most preferred from the preceding set of questions.

Social Desirability and Politeness Biases

Respondents will tend to choose answers that are most favourable to their self-esteem. They will also tend to choose answers that they think make them look intelligent or thoughtful or are in accord with social norms. In some cases there is a general desire to be polite and cooperative with interviewers and to slant answers towards the kind of answer respondents think interviewers would like to hear. This bias can be particularly strong if interviewers are perceived as powerful or threatening authority figures. In other cases non-response will increase.

Because of social desirability respondents often exaggerate their possessions, claim to be richer than they are, or lie about their age. They may claim more awareness or knowledge of something than they really have; or they may claim certain behaviour patterns that are not real. The history of birth control studies is filled with examples of spurious results from respondent politeness bias, in which, for example, an exaggeratedly high use of contraceptives was claimed.

Many studies have obtained high levels of claimed awareness and use of non-existent products and services; sometimes it can be useful to include such dummy items in a list just in order to measure the extent of spurious awareness or use that may be claimed for real products.

Family expenditure data from household surveys in the United States and in Canada consistently show reported expenditure on alcohol at about one half of actual industry sales. Surveys about alcohol consumption, followed by surreptitious examination of garbage put out for disposal, have also suggested gross under-reporting.

Regular surveys to measure the proportions of smokers in the general North American population have been registering a gradual decline during the last few years, although industry sales have been increasing. The decreased social acceptability of smoking, so that some smokers claim not to smoke, may be an element in the drop in the reported number of smokers.

The bias effects can be reduced, although never entirely eliminated, by minimizing the desirability of one response over any other, for example, by suggesting as a lead-in to the question that undesirable answers as well as desirable ones have been given by other respondents (e.g., "Many people have said... while others have said...What has been your experience?").

A related bias is the wishful thinking that can occur if respondents are asked about their future behaviour plans, or are asked about hypothetical situations ("what would you do if...?"). In general these sorts of questions should be avoided, as they seldom yield answers indicative of the actual behaviour once the time-period is over, or when the hypothetical situation in fact comes to pass.

For subjects that arouse strong feelings among respondents, the choice of words and the biases (or at least differences in results) that emerge can be quite striking. Clearly the choice of words in such questions must be made very carefully.

A U.S. poll in August 1980 asked a random sample of Americans about their views of abortion in several different ways, and obtained several results.

First, respondents were asked, "Do you think there should be an amendment to the Constitution prohibiting abortions, or shouldn't there be such an amendment?"

The respondents were solidly opposed to such an amendment. Only 29% of those surveyed favoured the proposal, while 62% were opposed and the rest were uncertain.

Later, the same people were asked a different question to measure attitudes on the same issue. It is the preferred question of the anti-abortion movement, and the results indicate why this group likes it so much.

The question read: "Do you believe there should be an amendment to the Constitution protecting the life of the unborn child, or shouldn't there be such an amendment?"

The result: 50% in favour, 39% opposed, the rest undecided.

About one fifth of those polled shifted position when the second question was posed. Fully one third of those who opposed the amendment when it was presented as "prohibiting abortions" supported it when it was presented as "protecting the life of the unborn child".

Among those who have a clear view - those who took a consistent position on the anti-abortion amendment however the question was phrased - those opposing the measure had the edge.

Over all, 36% of the respondents consistently opposed the amendment, while 26% consistently favoured it. The rest either switched from one side to the other or were undecided on one or both phrasings of the question. Those with lower levels of education tended to be more easily swayed by question wording, but nearly one in six among the well-educated respondents were also influenced by wording.

On another question in the same poll, the anti-abortion respondents were again in the minority.

Those polled were asked: "If a woman wants to have an abortion and her doctor agrees to it, should she be allowed to have an abortion or not?"

Sixty-two per cent said a woman should be allowed to have an abortion; 15% said it depended on the circumstances; only 19% said a woman should not be allowed to have an abortion.

Double-barrelled Questions

Double-barrelled questions or questions which have two or more questions "nested" within them should be avoided. Respondents

become confused in trying to answer the question, especially when they have different answers for each part.

One indicator of the likelihood of a "double-barrelled" question is the appearance of the conjunction "and" or "or" in the question. The best way to avoid confusion is to replace double questions containing "ands" or "or's" with two or more single questions.

Explanation of Technical Terms

It is useful to give an explanation or definition prior to utilizing a term that has a technical sense, especially where the term is a common one with a variety of non-technical or imprecise meanings. Here the questionnaire designer will want as much as possible to ensure that the term is understood by everybody in the same technical sense. If the term is used without being defined, or followed by the definition, the respondent may mentally frame his answer to the question before the explanation is given. In so doing he may answer incorrectly using his own definition rather than the one provided by the researcher. Example: "where were you living when Old City and New City joined together to become one city - that is, amalgamated?" would be better than "...when Old City and New City amalgamated?", confusing respondents who don't know what the word means.

Built-in Assumptions

It is desirable to make sure a question is applicable to respondents who encounter it. Difficulties can be avoided by proper lead-in questions which determine whether the respondent is qualified to answer it. For example, the question "How old is your wife?" should be preceded by questions that determine: (a) that the respondent is a male of marriageable age, (b) that he admits to having a wife, and (c) which wife is being referred to.

Questions should not assume that the respondent has knowledge or awareness in very specific areas. Such questions could embarrass or even annoy some respondents while others will claim knowledge they don't have, so as not to look foolish. Here is an example of a question that would not be suitable to ask the general public: "Please tell me all you know about the migration policies of the government of the Republic of San Marino".

The questionnaire for the 1946 Census of France included two questions: "Can you read?" and "Can you write?". An unusually high proportion of negative answers were received in Alsace, a region of France that is largely German speaking; a follow-up survey determined that many respondents had understood the question as referring to reading and writing French (Chevry, p. 121).

A 1958 housing survey among miners and steelworkers in several European countries asked "how many rooms (including the kitchen) do you occupy?" Some respondents, with families, understood the question as meaning "you personally" and answered "one" although the intention was to obtain data for the family (Chevry, p. 121).

A common assumption among researchers is that respondents can readily give answers that may in fact require a considerable amount of work to complete or may require some time searching for bills or household records. For example, surveys among farmers may ask for too much detail on amounts of land planted with different crops, the crop yields, costs of seed, fertilizer, machinery, gasoline and so on. Other questions may expect far too good a memory from respondents. Demographic surveys have consistently found that women, especially older women, under-report the number of children they have ever borne, particularly tending to forget children who have "left home" or died. The 1954 Census of France asked women "Have you had children?" (If yes) "How many?" with an instruction to count all children including those who had died but excluding still-births. A special questionnaire to a sample of women asked in addition for the first name, sex, date of birth, and date of death of those who had died. The special questionnaire yielded a higher birth-rate, and analysis revealed that women who answered the standard questionnaire tended to omit children from an earlier marriage, and (from not reading the instructions) those who had died (Chevry, p. 117).

Respondents who have been admitted to a hospital for treatment of a disorder often cannot give a clear complete explanation of what was done to them, either because they were never told by the hospital or doctor, or because the explanation was too detailed or impossible to understand. Health survey-takers have found it better to work with hospital records than to rely on patients' answers.

Another phenomenon that might occur is known as "forward telescoping" - the general tendency for people to think that an event occurred more recently than it did. In expenditure surveys asking for recall over, for example, 12 months, there is a tendency for respondents to report purchases that were in fact made longer ago. Some experimenting has been carried out with a technique known as "bounded recall" or "dependent interviewing".

In this approach, shorter time-periods, such as three months, are used with data obtained from the same respondents every three months over a 12-month period. Interviewers are provided with details of purchases reported by the respondent in the previous period (for example,

by providing them with a copy of the questionnaire they completed last time). Claimed purchase of, for example, an item of furniture in the current period can be checked against reported purchase of a similar item in the previous period. The respondent can be invited to confirm that the current period item is indeed different from the previous period.

Backward telescoping can also occur, but is much less common than forward telescoping (Sudman and Bradburn 1982, p. 18).

Sensitive Questions

Sensitive questions (that is, ones perceived as irritating or threatening), for example, questions on income or in some situations, age, tend to get low response rates and may trigger a refusal by the respondent to cooperate any further. They should not be placed at the beginning of a questionnaire. At this time, the designer is primarily concerned with gaining the respondent's trust and getting him interested in even answering the questionnaire.

They should be positioned in the questionnaire where they are least likely to be sensitive, such as where the subject being discussed would suggest they might fit. Thus in a survey on work experience that contains a set of questions on the current job, it would be logical to ask about the present hourly wage-rate, plus number of hours usually worked, at the same time as questions on when the respondent started the job, what the job is, who he works for, and so on. In this way, the sensitive income-question should not seem out of place or threatening. Sometimes, sensitive questions are better at the end of the questionnaire. Any hostility or bias evoked by them will influence few or no further questions. Most of the information will already have been obtained. If there is evidence that responses to following questions have been severely affected, it may be possible to develop procedures to impute answers that can be judged more acceptable, or to allow for a "no-answer" class in place of a doubtful answer.

Tests or past experience are desirable for determining first, whether any questions are perceived as being sensitive and secondly, the best location in the overall sequence for such questions.

The questionnaire designer should also look out for questions that are perceived by interviewers as being sensitive when in fact they are not seen as sensitive by the majority of respondents. A few hostile reactions from respondents early in an assignment could lead an interviewer to this view, when in fact

subsequent respondents may not have strong feelings. An interviewer may be tempted to omit or reword such questions, putting them in a form that the interviewer thinks is likely to make them less sensitive.

There are a number of other ways in which threatening questions may be made less sensitive:

- open-ended questions using familiar words may be better than closed-ended, and long better than short, to get frequency information, or by asking for a narrative response. Do not strive for a very precise response;
- try using words that suggest that many others behave in the sensitive way or have the characteristics that are seen as sensitive. Wording such as "did you happen to" may not help;
- put the threatening topic in the middle of a list of topics, some more threatening and some less, to reduce the perceived threat of the topic to the respondent.

As well, questions can be asked at the end of the interview on how sensitive the respondent found the topic, with responses used in evaluation of the quality of response (Sudman and Bradburn 1982, p. 55).

Statement of Alternative Answers

The respondent's train of thought is led by the choices offered in a question. If a question contains a selection of answers from which the respondent is to choose, it is best to present all possible answers and leave no alternative implied. If for example only one of two possible answers is presented, respondents are more likely to agree with the answer presented than to formulate the alternative in their minds and to choose objectively between the two. The following example presents two wordings of a question and the corresponding results when asked of two matched groups. Note that the first example presents only one possibility and leaves the alternative, that companies could avoid layoffs, to the respondent to formulate.

"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% said companies could avoid layoffs;
22% said they couldn't; and
15% had no opinion.

The question was then reworded to state the implied alternative that layoffs are unavoidable.

"Do you think most manufacturing companies that lay off workers in slack periods could avoid layoffs and provide steady work right through the year, or do you think layoffs are unavoidable?"

35% said companies could avoid layoffs; 41% said layoffs are unavoidable; and 24% expressed no choice.

About two thirds of respondents agreed with the idea presented in the first question. However, when the alternative was explicitly presented, the proportion agreeing with the initial idea fell to about one-third.

The problem of motivating the respondent to formulate alternatives is magnified when there is more than one alternative to be considered. The following example illustrates the distribution of responses to two questions, the first one with limited alternatives presented in the question and the second one with many more alternatives presented. The two questions were asked of the same group at two points in time. Note that the complex nature of the question presenting the larger number of alternatives required a visual aid. The responses were listed on a card which was handed to the respondent when the question was asked.

"Suppose they do set up a plan to provide workers with unemployment and health benefits through royalty payments, who should manage the fund: the companies, the government or the union?"

Results:	Per cent
Government	33
Union	18
Company	18
Company and union	7
Company and government	1
Union and government	1
All three	6
No opinion	16

"Which of these should manage the fund?"
(PRESENT CARD)

Government
Union
Companies
Companies and unions
Companies and government
Unions and government
Government, unions and companies

Results:	Per cent
Government	18
Union	4
Companies	13
Companies and unions	18
Companies and government	8
Unions and government	5
Government, unions and government	21
No opinion	13

When the possibility of combinations was not offered, only 15% went beyond the question's limited choice and volunteered combinations. Later, when the combinations were explicit and presented visually, about one half of the respondents chose from among the combinations. It is possible that the shift reflects changes in opinion that occurred from one survey to the next. However, the researcher (S. Payne) felt "it seems more likely that the difference in results arises from the explicit mention of the combinations in the second survey...".

Flow of Questions

Questions should be arranged in an order which meets the objective of good flow, without awkward or illogical jumps.

The principles outlined below supplement the principles for division of a survey subject into sub-topics, and ordering of the sub-topics, as discussed earlier.

Once a general topic has been raised, all questions on that topic should come together before a second topic is started. Thus, in a question on work experience, one group of questions could be about all the jobs the respondent has had since he entered the labour force. Then another group of questions could explore his present job, asking more details about it. There would be no further reference back to past jobs.

Each section of questions should have an introduction explaining the general topic to the respondent: "First, let's talk about all the jobs you've had since you started to work. What was the first job you had?..." "Now, let's talk about your current job. When did you first start working at that job?..."

Questions of family members in a reference period can best be ordered so that all details are obtained for a given individual, before details are obtained for a second person. Initial questions would determine a limited amount of information about the household (number of people, their age, sexes, and relationship to the head of the household). It might then be logical to follow with questions on each member over a longer reference period.

It can be confusing to respondents (and possibly to interviewers) to ask for a listing of events, go back to ask about a characteristic of each event in turn, then go back again to ask about another characteristic. The designer may be thinking of analysis of simple characteristics, i.e., for all events or wages, but the respondent is more likely to be thinking about all the characteristics of one event. As much as possible it is the logic of the respondent which should determine how questions are worded and laid out.

The approach commonly used in obtaining household data in a household roster or docket, is first to list all members of the household by age, sex, and relationship to the head. Then in a second stage, obtain all information about each individual in turn (e.g., education level, employment status, marital status, place of birth, places lived in, etc.). In this situation, it seems more logical to obtain a limited amount of information at initial questioning in order to ask questions more intelligently in the second round. This two-step procedure appears to work well for interviewers.

A pretest of the questionnaire on typical respondents is recommended as a means for determining whether the flow of items is in fact perceived as reasonable by respondents.

Not only should the general flow of questions appear smooth to the respondent, the respondent should also be able to see the

relationship of the questions to the stated objectives. Questions should relate to the overall purposes. Otherwise, suspicion may arise just as it may with irrelevant opening questions. Questions for which the only purpose in obtaining answers is that of being "nice to know", and which are only distantly related to the objectives, should be avoided.

Where applicable, questions should usually follow a chronological flow, and usually from present to past although sometimes reverse order can be more suitable. Chronological lead-ins can be valuable memory aids for questions on such topics as migration, or job history. For example, questions on job history could precede questions on formal schooling.

A further recommendation regarding flow is that a long sequence of questions in exactly the same form should be avoided, or be broken up by a different type of question. Lists of questions in the same form can be boring or irritating, or can put the respondent into a particular response set where he tends to answer mechanically without thinking carefully about the individual questions.

Filter Questions and "Skip" Instructions

A filter question can be used to exclude a respondent from a question sequence which does not apply to him because of his own particular characteristics or circumstances. For example:



Statistics Canada Statistique Canada

CANADIAN HEALTH AND DISABILITY SURVEY – CHILDREN

CONFIDENTIAL
when completed

"Authority Statistics Act, Statutes of
Canada, 1970 · 71 · 72, Chapter 15."

B4. Interviewer: If Vision Trouble (circle 36) in item A17,
on page 2, then . . .

- 1 go to B5
Otherwise 2 go to B15

Vision Trouble

B5. At the last interview, it was reported that . . . had vision
trouble not corrected by an aid.

B15. Interviewer: If Hearing Trouble (circle 34) in item A17,
on page 2, then . . .

- 1 go to B16
Otherwise 2 go to B27

Sometimes it is necessary to include an "interviewer check" question, whose purpose is to act as a guide to more complex branching through subsequent questions. The interviewer

is directed to check the answers to two or three questions, then follow the appropriate branching instructions.



Statistics Canada Statistique Canada

CANADIAN HEALTH AND DISABILITY SURVEY – CHILDREN		CONFIDENTIAL when completed	
<small>"Authority Statistics Act, Statutes of Canada, 1970-71-72, Chapter 15."</small>			
9. INTERVIEWER CHECK ITEM		Make an appointment to interview this respondent as per instructions in your Interviewer's Manual.	
<p>If any "Yes" in screening column of SECTION A and age on the label is greater than or equal to 05</p> <p>1 <input type="radio"/></p> <p>Otherwise 2 <input type="radio"/> END</p>		Date:	Time:

At times, a conditional question will be used to establish the relevance of subsequent questioning, for example, "If you are working or looking for work, what is your main reason?" as well as non-relevance, e.g., those who are neither working nor looking for work may ignore the question. The main disadvantage with the use of a conditional question is that a blank answer can be interpreted as a non-response to the question. It would be impossible to distinguish between a non-response to the question and a "not applicable" answer unless that answer category is also provided. In this case, a filter question such as "Are you now working or looking for work?" is preferable with respondents answering "Yes" being directed to the question on the main reason for working or looking for work. If the response is "No", the respondent can be instructed to skip to the next appropriate question.

Translation Considerations

In surveys sponsored by the federal government, documents are required in two languages. Translated versions of the questionnaire and the interviewer's guide and training manual will be needed.

In preparing translations, keep in mind that survey documents are technical instruments. As such, they should convey a consistent message or idea. Thus, the questionnaire designer will want to ensure that the terms used by the

translators are applied consistently throughout the documents and that the technical terminology is as simple and as direct as possible. In all cases, literary niceties will be secondary to the principal aim of communicating meanings clearly and consistently to respondents and interviewers and eventually to users of the results. One technique for improving the quality of translation is back-translation: the original is translated, then retranslated back by another translator. The two versions are compared to ensure that meanings have remained consistent throughout.

Since translation is time consuming and affects all related documents, it is advisable to test for and eliminate translation biases during the design phase with small back-translation tests. Alternatively, use of two or more translations in the pilot test can reveal the effects of differences.

A final opportunity exists for correcting an inadequate translation. Reports on survey field operations can include comments on difficulties caused by inadequate translation. This intelligence can be used to correct survey documents before the next round of interviews.

Once field work is underway, the success of the survey rests on the shoulders of the interviewers. Interviewers must be carefully trained in the concepts and wordings and have at hand a complete set of reference documents including translated versions of the questionnaire or schedule.

Parts of the Questionnaire

A well-structured questionnaire will help in meeting survey objectives by improving the quality and quantity of response. The design of the questionnaire must satisfy the respondent, the interviewer, and the questionnaire designer.

With respect to the respondent, the questionnaire should be designed to provide and maintain motivation to respond. Even for well-motivated respondents, interest may diminish:

- if the questionnaire skips from topic to topic irrationally;
- if many questions seem irrelevant;
- if the interviewer gets lost in a complicated, unclear questioning sequence.

Questionnaire design should overcome any suspicions or doubts that the respondent may have concerning the legitimacy of the survey. Careful and effective sequencing may facilitate the respondent's ability to recall specific items. For the interviewer's benefit, questions should flow in a clear and orderly manner to make administration of the questionnaire as easy as possible. Precise instructions should be included on how to move ahead, how and when to skip to certain questions, and so on.

In arranging the sections of a questionnaire into a sequence or order, a number of factors should be considered:

- There may be a substantive need to ask a certain group of questions before others. For example, questions on awareness of an item (such as, a program, a service, or a procedure) should precede questions on the extent of knowledge or of use of the item.
- Logic (particularly from the point of view of respondents) may suggest that some orderings of topics are better than others.
- Sensitive topics should not come before a good rapport has been reached between the respondent and the interviewer.
- Questions relating to common reference periods should be grouped together. The most recent reference period coming first with a systematic lengthening of the reference periods.
- The most important topics should be included first followed by sub-topics which could be cut back or cut out entirely in the interests of respondent fatigue, quality or bias.

- Some questions or sets of questions must be asked before others as they serve as screens or filters to route respondents to different sets of questions.
- Topics ought to be grouped into those that can be expressed in questions that will be answered adequately by proxy, and those that can only be answered by direct response.
- Questions on use should not precede questions on general knowledge.

In self-enumeration surveys, where the respondent is free to read the entire questionnaire before answering any questions and may go back and change his response to earlier questions, awareness cannot reliably be measured. Questions on use or experience will often say enough about the degree of awareness that the latter need not be asked.

Introduction

For most surveys, respondents are under no legal obligation to respond. Even where response is mandatory, the law is rarely invoked to force response.

Consequently, other means must be found to arouse the respondent's interest. He must be motivated to think carefully about the answers to the set of questions asked so that high quality data are assured. An explanation of the purpose of the survey and a request for cooperation should be a part of the first information provided to him. This can be done through an introductory statement. In interviewer-administered surveys, the interviewer can make the statement, immediately after he introduces himself. The statement can be printed on the first page of the questionnaire or be included in the interviewer's manual or an introductory letter can be mailed in advance to the respondent. The interviewer may also carry a copy of the letter with him to show to respondents.

The statement of purpose should demonstrate to the respondent how survey results are likely to be of benefit to him. Other elements of the introductory statement can be:

- an assurance of confidentiality but only if such assurances can in fact be made. Confidentiality assurance is especially important when the survey contains questions that an individual perceives as personal, or requests information which a business establishment would not want a competitor to obtain;
- an identification of who is responsible for the survey, and who is carrying it out;

- a statement for the legal authority to carry out the survey, if there is one;
- the name of a manager or other person who could be contacted if the respondent has any

questions about the survey. Providing this kind of assurance often leads to greater willingness to respond, even if the respondent never contacts the senior official. An example of an introductory statement is given below:



Statistics Canada Statistique Canada

Special Surveys Co-ordination Division

1976 SURVEY OF FITNESS, PHYSICAL RECREATION & SPORT

October 1976

Dear Respondent,

The purpose of this survey is to provide comprehensive data on Canadian participation in fitness, physical recreation and sport activities. It is being conducted for the Fitness and Amateur Sport Branch of Health and Welfare Canada. Data from the survey will be analysed by the Fitness and Amateur Sport Branch to aid in the planning and development of new programs, and in the investigation of exercise, physical recreation and sport participation of Canadians.

The Statistics Canada interviewer has left this questionnaire for you to complete and will call back to pick it up on the date shown below.

We would like you to take a few minutes to answer the questions on the next few pages. Answers to most questions in this survey require only a check mark in the appropriate box or circle . If you should have any difficulties with a question, note this in the space on the back of the form and ask your Statistics Canada interviewer for assistance when he/she returns. I assure you that the information given by you is confidential and will be used for statistical purposes only.

Thank you for your co-operation.

Peter G. Kirkham.

Chief Statistician of Canada.

This survey is conducted by Statistics Canada on behalf of the Fitness and Amateur Sport Branch, Health and Welfare Canada, under authority of the Statistics Act, Chapter 15, Statutes of Canada 1970-71-72.

Administrative Data

Administrative data, usually recorded near the beginning of the questionnaire, include:

- identification codes for the survey ("Survey No. 1982-04" or "Form 82-H1"), and for the interviewer assignment;
- geographical codes (identifying the province, city, district or other class) and a serial numbering code for interviews within a district;
- dates of interview and follow ups; and starting and ending times;

HOUSEHOLD RECORD CARD

01

DOCKET No	MULT OF	ASSIGNMENT	TYPE
REF.	SEGMENT	LIST No	MO DATE YR

ADDRESS

02 IS THIS A SINGLE DETACHED DWELLING? NO YES (06)

03 FLOOR LEVEL OF MAIN ENTRANCE OF DWELLING

04 TOTAL NUMBER OF FLOORS IN BUILDING

05 TOTAL NUMBER OF UNITS IN BUILDING

06 RECORD OF CALLS

CALL No	DATE		TIME
	DAY	MONTH	
1			
2			
3			
4			

HOUSEHOLD RESPONSE CODE INT N CODE

07 PERSON No = PAGE No AND COLUMN No

	PAGE No 1	PAGE No 2	PAGE No 3	PAGE No 4	PAGE No 5	PAGE No 6
08. Please name the members of your family who now live here.	GIVEN NAME 05	GIVEN NAME 18	GIVEN NAME 31	GIVEN NAME 44	GIVEN NAME 57	GIVEN NAME 70
09. Are there any other members of your family who usually live here? NO <input type="radio"/> YES <input checked="" type="radio"/> WHO? <input type="text"/>	SURNAME 08	SURNAME 20	SURNAME 34	SURNAME 48	SURNAME 62	SURNAME 76
10. Is there anyone else who usually lives here? (If yes, please name by family)						
11. ASSIGN THE FAMILY NUMBER(S)	FAMILY No 07	FAMILY No 21	FAMILY No 35	FAMILY No 49	FAMILY No 63	FAMILY No 77
12. What is _____'s date of birth? MONTH YEAR CALCULATE AGE	MONTH 26 YEAR 09	MONTH 32 YEAR 23	MONTH 46 YEAR 37	MONTH 60 YEAR 51	MONTH 74 YEAR 65	MONTH 88 YEAR 79
13. That would make _____'s age	AGE 10	AGE 24	AGE 38	AGE 52	AGE 66	AGE 80
14. VERIFY SEX AND "X" APPROPRIATE CIRCLE	MALE 1 FEMALE 2	MALE 1 FEMALE 2	MALE 1 FEMALE 2	MALE 1 FEMALE 2	MALE 1 FEMALE 2	MALE 1 FEMALE 2
15. What are the relationships of household members to (the reference person)? Reference person 01	CODE 13 OR SPECIFY	CODE 27 OR SPECIFY	CODE 41 OR SPECIFY	CODE 55 OR SPECIFY	CODE 69 OR SPECIFY	CODE 83 OR SPECIFY
SEE REFERENCE CARD FOR OTHER CODES						
CONTROL	FIRST VISIT					
	I.A.Q. COMPLETION STATUS					
	S.A.Q. DROPPED-OFF					
	APPOINTMENT DATE					
SECOND VISIT						
S.A.Q. PICKED-UP						
COMPLETION STATUS						
ISSUED - NURSE'S INITIALS						
REC'D - INTERVIEWER'S INITIALS						

COMMENTS

06-77

HHLD TELEPHONE No

INTERVIEWER No

SIGNATURE _____

CONTINUED ON PAGE

- codes to indicate the extent or quality of response, or a reason for non-response;
- codes to identify who gave the response (e.g., the specific respondent intended, or a proxy such as another member of the family or household);
- codes for field editing (i.e., to verify that the field supervisor has checked the questionnaire and answers are where they should be, and legible and complete). A separate code may be useful for field coding (i.e., to verify that the interviewer or supervisor has coded questions that need coding in the field);
- name and address of the respondent, particularly if the design calls for response from "the head of the household" whose name may not be known in advance, and must be obtained at the beginning of the interview.

Placing control or identification information at the top of the first page often makes it easier to find a specific questionnaire later if it has to be retrieved from storage, as may happen during office editing or capture of the data for machine processing.

The preceding example is taken from the Canadian Health Survey of 1978/79. The upper part of the Household Record Card contains, to the left, spaces for sample identification codes and for the household address. The upper right corner provides space for interviewers to record dates and times of contact with the household, and for a code for response. The shaded area in the lower part of the questionnaire (marked "CONTROL") was used to record completion of stages of the survey (several questionnaire forms were used).

Main Body

After the introductory parts of the questionnaire including administrative data, comes the main body of the questionnaire which contains the substantive questions on the subjects of the survey. As discussed, these may be subdivided according to logical breakdowns or groupings of sub-topics.

The opening questions of the main part of the survey must gain the respondent's attention and interest. Generally, the opening questions should put the respondent at ease. Difficult or especially threatening questions in the early stages may lead to inaccurate response or non-response and should be avoided.

In some surveys, the opening questions may serve to establish that the respondent is a member of the survey population. For example,

in a survey of employment, the initial contact with a responsible adult could be to list all those persons living permanently in the household who have a job. The next question addressed to that person could serve to confirm that he is a member of the household and qualified to respond. In the affirmative, the third question could be to ascertain if he is "employed".

The opening questions also serve as a learning process, educating the respondent on his expected role concerning the topics raised, the detail required in answers and how to answer questions. This further emphasizes that the initial questions should be easy to answer. The respondent is required not only to become attuned to the topic introduced on the questionnaire but also to learn what is required of him as a respondent.

Classificatory Data

Questions to be used in classification and analysis are usually grouped together. Often these are demographic descriptors (e.g., age, sex, education level, occupation, income, and so on) as illustrated in the example below drawn from the 1976 Survey of Fitness, Physical Recreation and Sport.

Sampling or respondent-selection procedures may require some of these questions to be asked early in the survey (e.g., in order to pick a respondent according to certain characteristics such as physical variables or position in the household). Most commonly the classificatory questions are together at the end of the questionnaire because they can be more readily justified to respondents at that point as wanted just for analytical purposes.

It is generally argued that only those classificatory questions that are expected to be used for specific analyses should be asked. But questionnaire designers in government agencies often cannot foresee all the analytical uses that are likely to be made of their survey data. At some future time somebody somewhere may wish to make comparisons by age or marital status with other survey results, or with administrative data. To satisfy these future researchers, all the usual demographic and classificatory questions should be asked.

Since some classificatory questions are asked of respondents in almost all household surveys, it is useful to consider the benefits of aiming for long-term comparability among surveys. All too often, an analysis of two or more surveys, seeking differences or trends, is flawed because it is not possible to group respondents in both surveys according to the same demographic classifications. For example,

1976 SURVEY OF FITNESS, PHYSICAL RECREATION & SPORT

ABOUT YOURSELF

This section collects information which is useful in grouping your replies with other Canadians in this survey.

46 Were you born in Canada? ^{B4} Yes ^{B5} No

In which province or territory of Canada were you born?

- ^{B6} Newfoundland
- ^{B7} Nova Scotia
- ^{B8} New Brunswick
- ^{B9} Prince Edward Island
- ^{B10} Quebec
- ^{B11} Ontario
- ^{B12} Manitoba
- ^{B13} Saskatchewan
- ^{B14} Alberta
- ^{B15} British Columbia
- ^{B16} N.W.T. Yukon

In which country were you born?

- ^{B17} Great Britain
- ^{B18} United States
- ^{B19} Germany
- ^{B20} Italy
- ^{B21} France
- ^{B22} Other (specify)

Print country of birth

47 What language do you most often speak at home?

- ^{B23} English
- ^{B24} French
- ^{B25} German
- ^{B26} Italian
- ^{B27} Other (specify)

48 When you were 13 years old what was the population of the city, town, village, municipality in which you were living?

- ^{B28} 100,000 or more
- ^{B29} 30,000 to 99,999
- ^{B30} 15,000 to 29,999
- ^{B31} 1,000 to 14,999
- ^{B32} less than 1,000
- ^{B33} don't know

49 How tall are you? ^{B34} Feet ^{B35} Inches ^{B36} Centimetres

50 How much do you weigh? *check only one*

<input type="checkbox"/> ^{B37} 40.9 and less lbs. <input type="checkbox"/> ^{B38} 40.9 and less kg.	<input type="checkbox"/> ^{B39} 91-100 lbs. <input type="checkbox"/> ^{B40} 41.4-45.5 kg.	<input type="checkbox"/> ^{B41} 101-110 lbs. <input type="checkbox"/> ^{B42} 45.9-50.0 kg.	<input type="checkbox"/> ^{B43} 111-120 lbs. <input type="checkbox"/> ^{B44} 50.4-54.5 kg.	<input type="checkbox"/> ^{B45} 121-130 lbs. <input type="checkbox"/> ^{B46} 55.0-59.1 kg.
<input type="checkbox"/> ^{B47} 131-140 lbs. <input type="checkbox"/> ^{B48} 59.5-63.6 kg.	<input type="checkbox"/> ^{B49} 141-150 lbs. <input type="checkbox"/> ^{B50} 64.1-68.2 kg.	<input type="checkbox"/> ^{B51} 151-160 lbs. <input type="checkbox"/> ^{B52} 68.6-72.7 kg.	<input type="checkbox"/> ^{B53} 161-170 lbs. <input type="checkbox"/> ^{B54} 73.2-77.3 kg.	<input type="checkbox"/> ^{B55} 171-180 lbs. <input type="checkbox"/> ^{B56} 77.7-81.8 kg.
<input type="checkbox"/> ^{B57} 181-190 lbs. <input type="checkbox"/> ^{B58} 82.1-86.6 kg.	<input type="checkbox"/> ^{B59} 191-200 lbs. <input type="checkbox"/> ^{B60} 86.8-90.9 kg.	<input type="checkbox"/> ^{B61} 201-210 lbs. <input type="checkbox"/> ^{B62} 91.4-95.4 kg.	<input type="checkbox"/> ^{B63} 211-220 lbs. <input type="checkbox"/> ^{B64} 95.9-100.0 kg.	<input type="checkbox"/> ^{B65} Over 220 lbs. <input type="checkbox"/> ^{B66} Over 100 kg.

51 To what extent has your weight changed or fluctuated over the past 12 months? *Check only one*

- ^{B67} Remained steady to within 5 pounds/ 2.3 kilograms
- ^{B68} Fluctuated 6 to 10 pounds/ 2.7 to 4.5 kilograms
- ^{B69} Fluctuated more than 10 pounds/ 4.5 kilograms

52 In the last 12 months, has your doctor told you that you suffer from a heart related ailment? ^{B70} Have not seen a doctor ^{B71} No ^{B72} Yes

53 What was your total personal income before taxes and deductions in the last 12 months from all sources? (include earnings from employment, pensions, family allowances, interest, dividends, rents) (Please check one box.)

- ^{B73} None
- ^{B74} Less than \$4,000
- ^{B75} \$4,000-6,999
- ^{B76} \$7,000-9,999
- ^{B77} \$10,000 - 14,999
- ^{B78} \$15,000-19,999
- ^{B79} \$20,000-29,999
- ^{B80} \$30,000 or over

54 How many automobiles are available for use by members of your household?

- ^{B81} None
- ^{B82} One
- ^{B83} Two
- ^{B84} Three or more

office use only ^{B85} ^{B86}

THANK YOU FOR PARTICIPATING IN THIS SURVEY!

We would appreciate any comments which you wish to make on government programs related to fitness and amateur sport. Please use the next page to do so

ages of respondents may have been obtained according to precoded age-ranges, with the ranges different between the studies; or the geographical classifications were different so that a major city turns out to include a neighbouring or suburban area in one study, but exclude it in the other.

Statistics Canada's "Social Concepts Directory" and Sudman and Bradburn (1982), Chapter 7, are two sources among many of standard classifications, particularly of demographic data. Others include: classifications of occupations (from the International Labour Organization), of education (UNESCO), diseases (World Health Organization), and the UN Statistical Office reports. These standards have been carefully developed, so a survey designer should consider their usefulness before repeating any of this work.

Geographical information, frequently wanted for classification purposes, can raise some problems. Identification of regions or districts can be difficult if there have been name changes. Changes of names or, even more, changes of boundaries, can lead to complications in getting correct answers (e.g., in place-of-birth questions). In general, it is preferable to use names with which the majority of respondents are familiar, even if they may mean the use of a name that is no longer officially correct.

Interviewers should be advised, particularly when interviewing older or less-well-educated respondents, to check whether they are referring to a district or region by its old or new name or boundaries. Place names may be ambiguous in the areas they cover, or may refer to a part (usually the older or core part) of a city, as well as a larger urban area that includes the core part. Respondents may have to be asked if they mean the original core area or the larger city area, e.g., Toronto or Etobicoke.

Open-ended vs. Closed-ended Questions

Questions may be classified into the following recognizable type: factual versus opinion, and narrative versus numeric. However in discussion of advantages and disadvantages, the most important and useful distinction to be made in the classification hierarchy is that of "open-ended" versus "closed-ended" questions.

The distinction between open-ended and closed-ended questions concerns the degree of freedom given the respondent in choosing his answer. An open-ended question allows the respondent to create a response on his own, and in his own words or numbers; a closed-ended question restricts him to choosing among alternative answers specified in the questionnaire.

The following is an example of a question whose content can be adapted to either type:

Open response or open-ended question:

Q. 22 Crime Incident Report 1984

22 How were you threatened? Any other way?
(Mark all that apply)

- 1 Verbal threat of rape
- 2 Verbal threat of attack (other than rape)
- 3 Weapon present or threatened with weapon
- 4 Attempted attack with weapon e.g. shot at
- 5 Object thrown at person
- 6 Other (specify) _____

Go to 31

Q. 82 Crime Incident Report 1984

Closed response or closed-ended question:

82 I am now going to describe different circumstances that may affect whether or not an incident is reported to the police. Did any of the following have anything to do with why this incident was not reported to the police?

	Yes	No	Don't know
1. Nothing was taken or the items were recovered	01 <input type="radio"/>	02 <input type="radio"/>	03 <input type="radio"/>
2. The police could not do anything about it	04 <input type="radio"/>	05 <input type="radio"/>	06 <input type="radio"/>
3. There was fear of revenge by the offender	07 <input type="radio"/>	08 <input type="radio"/>	09 <input type="radio"/>
4. Did not want to get the offender in trouble with the police	10 <input type="radio"/>	11 <input type="radio"/>	12 <input type="radio"/>
5. The incident was too minor or it was not important enough	13 <input type="radio"/>	14 <input type="radio"/>	15 <input type="radio"/>
6. It was too inconvenient or did not want to take the time	16 <input type="radio"/>	17 <input type="radio"/>	18 <input type="radio"/>
7. The incident was a personal matter and did not concern the police	19 <input type="radio"/>	20 <input type="radio"/>	21 <input type="radio"/>
8. The incident was reported to another official, such as a security guard	22 <input type="radio"/>	23 <input type="radio"/>	24 <input type="radio"/>
9. Concern with the attitude of the police or courts towards this type of incident	25 <input type="radio"/>	26 <input type="radio"/>	27 <input type="radio"/>

A third category is made up of those nominally open-ended questions that have an implicit finite number of choices. Examples are questions such as:

"What was your age at last birthday?", "How many people were living permanently at this address on June 3, 1981?" These examples would become closed-ended questions if lists of acceptable answers or answer classes are provided.

For example, a respondent could be asked to provide his age in 5-year or 10-year age ranges by asking for the range in the question:

"In which of these age-ranges did your age at last birthday fall?" (INTERVIEWER: READ LIST)

<input type="checkbox"/> under 20		<input type="checkbox"/> under 20
<input type="checkbox"/> 20-24		<input type="checkbox"/> 20-29
<input type="checkbox"/> 25-29	or	<input type="checkbox"/> 30-39
<input type="checkbox"/> 30-34, etc...		<input type="checkbox"/> 40-49, etc.

A variation of the types described above is sometimes called a partially closed-ended or a semi-open-ended question. To the respondent, the question sounds open. He is simply asked, for example, "What have you done to look for work during the last four weeks?". But the interviewer has a precoded sheet for the responses. As the respondent talks, the interviewer matches the comments against the list of acceptable responses and codes them. The time required by interviewers to write out verbatim responses is eliminated. However, the questionnaire designer must predict the likely range of responses to the question, not always a straightforward task. Pretesting can be helpful to check whether the major choices have been included. Because of the difficulty of predicting all the possible answers and incorporating them into precoded answers, such questions often finish with a category "other (SPECIFY)", providing space for the interviewer to write in an answer that does not fit one of the listed categories.

The "Other" answer category can also be useful for an interviewer who cannot immediately see which of the listed categories is suitable for the answer. After the interview, he can re-code the answer into the correct category. It may also become apparent that a class or concept not precoded receives enough mentions to merit separate analysis.

Advantages and Disadvantages

Open-ended questions calling for numerical responses, or responses that are clearly limited to a small number of categories, require that a quantified answer be given, that the amount of space on the questionnaire accommodate the largest likely answer and that the size of the field in the computer record layout be large enough to capture that largest likely answer.

It might be assumed that a question calling for a numerical answer is likely to be understood the same way by all respondents, but this may not be the case. Open-ended numerical response questions such as "How many cattle do you have?" leave the respondent free to name any number, whether exact or rounded off or to come up with answers such as "40 or 50", "a lot", "not enough", or "not as many as last year". The questionnaire designer must accept them and provide appropriate answer spaces. Alternatively, he can add supplementary questions designed to change the respondent's understanding of the question to yield the required single numerical answer, or train interviewers to probe for a more precise answer. Failing this the questionnaire designer must attempt to utilize the closed-ended format in an effort to achieve consistency and reduce questioning.

In preliminary exploratory studies, open-ended questions are useful in generating ideas on how respondents view the world. Words and phrases used by respondents can be gleaned for use in questionnaire development. Contributions from several respondents may also help determine a reasonable range of responses for a structured multiple-choice question. The questionnaire designer may obtain a more objective view and word his questions more appropriately after an exploratory study using open-ended questioning techniques.

Open-ended questions can be used in a number of ways in main survey questionnaires. They imitate the every day process of human communication. They may be used to warm up a respondent at the beginning of an interview, to introduce him to the topic, to put him at ease. They give the respondent an opportunity for self-expression which acts as an incentive for continued participation.

Open-ended questions are advisable when it is expected that some respondents may have no information about an issue, where structured items might induce a false response, any response being better than no response at all for fear of appearing ignorant.

25. WHO PAID THE FEE OR TUITION FOR THE COURSE?

Sell or family	1	<input type="radio"/>
Employer	2	<input type="radio"/>
Other (Specify in Notes)	3	<input type="radio"/>
No fee	4	<input type="radio"/>
Don't know	5	<input type="radio"/>

Requests for further explanation, more detail, and general probing for a more complete answer, usually take the form of a series of open-ended questions.... "Can you tell me more about that?", "Why do you say that?" etc.,.... After a staccato series of closed-ended questions, open-ended questions may lend a pleasant change of pace.

Open-ended questions can be useful as a transition between two different topic areas in a questionnaire.

Open-ended questions that call for a narrative response, such as on knowledge, experience, attitudes or beliefs, have a number of limitations. Their disadvantages become apparent when attempts are made to code the data for statistical analysis:

- first there is a need to develop a coding frame, and a procedure and organization for coding. Precoding which is possible with closed questions, as well as eliminating this work, cuts down on office-coding error, although interviewer-coding error remains unknown.
- secondly, the coding process makes implicit assumptions that the results of the categorizations will yield data that can be analyzed statistically as though they came from closed-ended questions, an assumption that may or may not be valid. Reticent people are often less detailed in their comments though equally aware and knowledgeable in terms of experience. Variations in respondent verbosity suggest that the final questionnaires will capture unequal proportions of each respondent's experience, particularly where the number of different answers is left to the discretion of the respondent as is the case in open-ended questions.

With the close-ended approach the designer can present a complete list of possible answers or of answer categories to respondents, and be sure that all respondents are answering the question in the same frame of reference. He can also be sure that all respondents have had an equal opportunity to select their answer(s) from the same range of answer choices. If it is difficult or impractical to present a complete list of answer choices, the list as presented can end with "other (SPECIFY)" to give respondents and interviewers a place to record this answer. However, no more than a small proportion of all answers should fall in the "other (SPECIFY)" class; otherwise, there will be an extensive need for the work of coding and analysing.

Commonly a long list is presented in written form to respondents. In telephone surveys where this is not possible, the item-list will have to be read out. Difficulties in retaining the respondent's attention can arise if the list is too long.

Calling for a quantitative answer in a pre-coded range can serve to make sensitive questions less sensitive. For example, asking for exact income figures is frequently met with a refusal and sometimes with a complete termination of the interview. It may be adequate for analysis to accept the range within which the respondent's income falls. Respondents can even be shown a prompt card on which income ranges are identified by a letter, for example:

- A - Under \$5,000 a year;
- B - \$5,000-\$9,999 a year;
- C - \$10,000-\$14,999 a year;

and be asked to name the letter identifying the income-class in which their income falls. This technique is also useful with questions calling for a narrative answer, about knowledge or experiences, that may tend to be sensitive to some respondents (e.g., health, family planning). Presentation of a list suitably worded may encourage a respondent to indicate a correct answer that he would have hesitated to express in his own words in reply to an open-ended question.

Open-ended questions tend to be less satisfactory in self-enumeration questionnaires. They call for some effort on the part of respondents to write out their answers, a more difficult job than checking off answers from a list. There can also be no control over the words used by respondents, or whether the answer is even relevant to the question. Often the answers are incomplete or vague. At times, too, skill may be needed to interpret poor handwriting. The result can be less complete answers than for closed-ended questions.

The main disadvantages of "closed-ended" questions are that they assume that the questionnaire designer is able to identify the most commonly made responses and to design categories for them. Closed questions also tend to "lead" the respondent.

Care must be taken in drawing up closed-ended questions to provide categories that reflect the respondent's characteristics or experiences. For questions asking for quantitative answers, the classes should reflect "reasonable" distributions depending on the objectives of the question, the expected analyses to be made of results and on prior knowledge from other sources of the likely distribution of the variable in the question.

Using income classes as an example, it may be reasonable to ask for income in five or six classes, aiming to arrive at roughly one fifth or one sixth of the respondents per class. But if an analysis is planned of characteristics of respondents at subnational levels, the use of income classes that reflect national averages may lead to grossly skewed distributions where there is regional disparity, and consequent loss of analytic power. In such a case considerably more than five income classes may be necessary with the option to collapse classes differently for each region.

Sometimes prior studies are available where open-ended questions have been asked, to develop a pattern of classes of answers. In using these sources, care must be taken to use words for the items that were used by respondents. Technical descriptions given by the questionnaire designer or analyst, possibly not meaningful to respondents, should be avoided. Where there are no prior studies, it is very desirable to carry out a small-scale exploratory study using open-ended questions, just in order to have a source of answers from which a closed-ended list can be developed.

Presentation of a list of answers to a question asking about knowledge or experiences may turn the question into a leading question, suggesting answers to the respondent that he or she may not otherwise have thought of, or had considered insignificant or irrelevant. Respondents will often wish to appear knowledgeable or intelligent and pick answers that make them

appear to have had wider experiences or knowledge than is true.

Varieties of Closed-ended Questions

The three simplest variations of closed-response questions are the "limited-choice", "multiple-choice" and "checklist". The most common version of the "limited-choice question" is any that expects a "yes" or a "no" as an answer, such as "Did you smoke any cigarettes yesterday?"

The "multiple-choice" question asks the respondent to select one and only one answer from a list of three or more categories or classes. The "checklist" question invites the respondent to pick one or more answers from a list of two or more items where, by the nature of the question and the subject-matter, more than one answer is logically possible. To make this clear to respondents, checklist questions are often accompanied by an instruction "Choose one or more" or "Pick as many as apply". The interviewer must pause after each item to obtain a "yes" or "no" answer. Sometimes, it is not immediately apparent whether the question is a multiple-choice or a checklist; instructions to interviewers or respondents ought to make clear which it is. An open-ended "anything else?" may usefully be added.

The three kinds are illustrated below, in three sequential questions taken from a 1983 Tourism Attitude and Motivation Study.

Limited-choice Question

22. BEFORE YOU STARTED THIS TRIP DID YOU TRY TO OBTAIN ANY INFORMATION ABOUT THE DESTINATION?

Yes ¹

No ² Go to 25

Multiple-choice Question

21. HOW LONG BEFORE YOU STARTED THIS TRIP DID YOU DECIDE ON THE DESTINATION?

During the trip ⁰¹

Same day as departure ⁰²

1 to 3 days ⁰³

4 to 6 days ⁰⁴

1 week ⁰⁵

2 weeks ⁰⁶

3 weeks ⁰⁷

4 weeks ⁰⁸

5 to 7 weeks ⁰⁹

2 to 3 months ¹⁰

4 to 6 months ¹¹

7 to 11 months ¹²

12 or more months ¹³

Checklist Question

29. WHAT TYPE(S) OF ACCOMMODATION DID YOU USE ON THIS TRIP? (MARK ALL THAT APPLY.)

- | | | | |
|---------------------------------|-------------------------|-------------------------------|-------------------------|
| Home of friends/relatives | 1 <input type="radio"/> | Campground/Trailer park | 5 <input type="radio"/> |
| Hotel/Motel/Resort Lodge | 2 <input type="radio"/> | Cruise ship | 6 <input type="radio"/> |
| Tourist home/Guest house | 3 <input type="radio"/> | Private cottage/Cabin | 7 <input type="radio"/> |
| Commercial cottage/Cabin | 4 <input type="radio"/> | Other (specify) | 8 <input type="radio"/> |

A further type is the ranking question, in which respondents must arrange all of the given alternatives in an order corresponding to some specified criterion. Here is an example:

"Here is a list of reasons you might have for buying your foodstuffs at the store you usually buy them from. Please rank them in order of importance for you. Put a (1) beside the reason that is most important to you for using the store, then a (2) beside the reason that is the second most important reason, and so on."

- Convenient, close to home or workplace
- Low prices
- Good quality
- Possible to buy on credit
- Good range of choice
- Convenient hours of business

CautionsThe Need for Exhaustive and Exclusive Lists

The validity of the data from closed-ended questions rests on an assumption that the alternatives or choices offered in the question are mutually exclusive and exhaustive. Data from the following question, for example, could not be meaningfully analysed:

"What is your age in years?"

- 20-30
- 30-40
- 40-50
- 50 or more

The categories are not mutually exclusive. In an interviewer-administered questionnaire, the interviewer, receiving an answer "30" has two places to record the number, and no guid-

ance on which one to choose. It is impossible to judge what would be the likely pattern of choice of interviewers in distributing the answer between the "20-30" and "30-40" answer categories. The same applies to self-enumerated questionnaires.

The categories are also not exhaustive. Where is the interviewer, or respondent, to record the answer if the respondent is aged 18?

One way in which the list of categories could be improved is:

- under 20
- 20-29
- 30-39
- 40-49
- 50 or more
- not stated, refused
- not known.

Sometimes it is not easy to be sure that list categories are mutually exclusive. This is particularly the case for questions on knowledge or experience. Testing and other developmental work may be required to arrive at items that are perceived as mutually exclusive by most respondents. Exhaustiveness may need to be accounted for by use of a final "other" category.

Multiple-choice Questions

Sometimes, for multiple-choice questions, collapsed frequency counts are employed in analysis. A respondent could be asked if he takes part in some activity, or has some experience, and if so with what regularity; "very often, quite often, not particularly often, or not very often at all". Subsequent analysis could be such that the first two and last two classes are combined or collapsed to reduce the classes to two: "often" and "not often".

If the data are going to be collapsed anyway, the reader may ask, why not ask a two-choice question in the first place? Shouldn't one use the simplest question formatting that will test the hypothesis of interest?

In general, it is desirable to make questions as simple as possible. However, there is always the possibility that the planned combining of answer classes is found to be unsatisfactory or even incorrect for analysis, once the pattern of answers to the broader-choice question is examined. As well respondents can sometimes be discouraged by not being offered what they see as a wide enough choice of answers. They prefer to be able to indicate greater degrees of difference in behaviour or experience than a simple two-choice answer would provide. Thus, in order to keep respondent interest in the survey at a high level, it may be desirable to offer more than two answer-classes, regardless of anticipated analysis of results.

Checklist Questions

A checklist question is appropriate when there is more than one alternative which may be "correct" for a given respondent. He is asked, by a series of yes-no questions, to report all the alternatives which apply to him.

Most statistical analyses of checklist data presume:

- that the alternatives are distinct, that is, that the items are exclusive. Otherwise, a respondent may use two categories to reflect the same response, and that response will be "double-counted";
- that the alternatives are independent. The checking-off of one alternative should have no effect on whether or not some particular other alternative is chosen;
- that all respondents perceive the same constraints in the number of allowable alternatives. Respondents should be advised to pick as many as they want. Interviewers could be instructed to ask "any others?" after each choice until the respondent ceases choosing.

Ranking Questions

In deciding whether or not to use ranking questions, some consideration must be made of the special analytical problems they present. Not only are there several ways to analyse ranking data, but different ways may give different results. Thus it is particularly

important to be precise concerning the research question the analysis is intended to answer. Two possible indices for analysis are:

- frequency counts of favoured alternative or most frequent experience. For what percentage of people is alternative X the favourite or most frequent, i.e., chosen as first-choice in the rankings? How does alternative X compare with others in this respect?
- favourability judged by taking all rankings into account: What is the **average** rank that alternative X obtained? How does alternative X compare with others in this respect?

Averaging of ranks relies on an assumption, that the ranks are on an "interval scale", i.e., that the interval between rank 1 and 2 is perceived to be the same distance as the interval between 2 and 3, 3 and 4 and so on. Only this equivalence of distance between ranks makes valid the arithmetic manipulations involved in averaging.

However, it is unlikely that many respondents will be presented with a list for ranking, where it happens that they perceive the relative worth of all items as in any sense equally distant from each other. More commonly, respondents will feel strongly about one or two items as being much better than all the rest, and maybe about one or two items as being much worse than all the rest, but be indifferent towards all the others.

When there is doubt about whether the equal-distance assumption applies in a given context, analysis should be limited to frequency counts only, with no adding or multiplying operations on the numerical ranks.

Several other problems can arise in interpretation of responses, usually resulting from errors in administration of ranking questions. A respondent may consider two of the items equal for first choice, so he gives them both a score of one. Or, he may show a ranking for three items out of a list of six, and show nothing at all for other three. Or, in a complete misunderstanding of what he is asked to do, he puts a check-mark beside one (or more than one) of the alternatives. Sometimes these errors occur because the list of items is read out only once to the respondent. He is expected to remember all the items in order to be able to rank them. This excessive demand on the respondent's memory makes ranking questions generally quite unsuitable for any questioning procedure where the questions are just read out. The interviewer should be equipped with a prompt-card giving all the items that can be shown to the respondent as the question is read

out to him. Clearly, in self-enumeration questionnaires, the respondent can contemplate the list as long as he/she wishes. Conversely, in telephone surveys where nothing can be shown, ranking questions are in general quite unsuitable.

Choosing Between Open-ended and Closed-ended Questions

There is no simple set of rules that can be offered, in deciding whether a given question or set of questions would be better in open-ended form or in closed-ended. As has been described above, each type has its advantages and its limitations. The various factors having a bearing on the choice - the objectives of the question and of the survey as a whole, the positioning of the questions in the flow of the questionnaire, the likely extent of knowledge or experience of respondents, the extent of prior knowledge of probable answer-patterns from other sources, the availability and skills of respondents, interviewers, editors, coders, and data-capturers, the resources available to train them all, the method of data collection, and so on - must be considered. The relative importance of these factors varies from survey to survey, from topic to topic or even question to question within the survey.

If most of the apparent advantages of one form of question appear to balance equally its disadvantages, then it is probably better to aim for the closed-ended version. Provided the categories are correct from the respondent's and the analyst's point of view, the ease of administering and processing closed-ended questions seems often to be the deciding factor. Clearly, more developmental work is required to be able to draw up adequate closed-ended questions, and questionnaires in the early stages of development often tend to have a higher proportion of open-ended questions than established regular surveys. Established surveys have the advantage of being able to learn from earlier waves or phases of development, in terms of creating (or improving) closed-ended questions.

Attitude Scales

This handbook does not propose to go deeply into problems of design of attitude scales. There is a voluminous literature on attitude measurement, with many examples of specialised scales used in psychological measurement (e.g., scales measuring sociability, powerlessness, and so on). A major caution to anyone planning to use attitude scaling questions is that the path to a successful scale is long. Repeated testing and refinement of a scale may be

required before the designer can be certain that it is valid (i.e., that it is really measuring the attitude the designer thinks it is). Commonly, items in an attitude scale must be checked for adequate independence from one another (using such statistical techniques as factor analysis and discriminant analysis). Otherwise, the designer may unwittingly be measuring the same attitude element more than once by including, for example, phrase items in a scale that appear to be asking about different things but are perceived by respondents as meaning effectively the same. Rather than trying to develop his own scale, a designer would be better to use one already developed, tested and validated by someone else.

A second problem with all types of attitude questions is the extent to which such questions are subject to social desirability and politeness bias. Open-ended questions such as "What do you like about...?" followed by "And what do you dislike?" tend, overall, to receive many more comments about things liked than about things disliked. The reluctance of respondents to express themselves to an interviewer as disliking something can give a spurious impression of "real" attitudes. Only when comparative analyses are made (e.g., ratio of liking/disliking comments for item A compared to item B), or respondents are forced into a preference choice, then asked reasons for preference, can a more accurate indication of real attitudes be obtained.

In the case of attitude scale questions, the bias shows as a tendency for the average rating, overall, to be on the favourable side of any neutral mid-point. Again, any analysis must be comparative - e.g., the average rating this year compared to last year, or men relative to women, and so on. An interpretation that an average rating is "favourable" independent of comparison with some benchmark or standard average rating, could be spurious and misleading.

There are some widely used kinds of attitude scales. The next few pages describe the most common ones, for the most part known by the name of the person who first developed them.

Thurstone Scale: A Composition of Two-choice Questions

In a Thurstone scaling procedure, a subject is presented with a list of statements, each of which he is asked to either endorse or reject. Thus, a Thurstone scale is simply a collection of two-choice questions. An example follows, part of an attitude scale consisting of statements about war (adapted from Thurstone, 1932).

The details of how one translates responses into scores can be found in Oppenheim (1966). Areas of application of Thurstone scaling have included attitudes toward ethnic and cultural groups (MacCrone, 1937; Hinckley, 1932; Eysenck and Crown, 1949), social institutions (Remmers, 1943), war (Dudycha, 1943; Ferguson, 1935),

political candidates (Beyle, 1932), and religion (Granneberg, 1955).

Instructions: For each of the following statements, please indicate with a checkmark whether you agree with it or disagree with it.

	Agree	Disagree
1. War is a futile struggle resulting in self-destruction	<input type="checkbox"/>	<input type="checkbox"/>
2. We want no more war if it can be avoided without dishonour	<input type="checkbox"/>	<input type="checkbox"/>
3. War is sometimes necessary because right is more important than peace	<input type="checkbox"/>	<input type="checkbox"/>
4. War is glorious	<input type="checkbox"/>	<input type="checkbox"/>

Likert Scale: A Composition of Multiple-choice Questions

Like a Thurstone scale, a Likert scale is a collection of statements. The respondent considers each statement and reports how closely it reflects his own opinion.

The chief difference between Thurstone and Likert procedures lies in the number of response alternatives for each statement. For Thurstone scaling, there are two; for Likert scaling there are usually at least five. The respondent indicates not only whether he agrees

or disagrees, but how much he agrees or disagrees. An example follows, a Likert scale based on statements about the glorification of sports (adapted from Jones' (1972) study of athletes).

The output of a Likert scale is a numerical score, compiled from all the statements. The score has its use only in a relative sense, when compared to scores of other individuals in a population. The reader may consult Likert (1932) for the original outline of the procedures, with more recent summaries being found in Oppenheim (1971) Boyd, Westfall and Stasch (1981) and Scott (1968).

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
It's not how you play the game, it's whether you win or lose	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
An athlete is a gentleman who represents his school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Champions come in all sizes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Winning isn't everything, it's the only thing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Guttman Scale: A Special Case of the Checklist Question

A Guttman scale is a checklist question with special properties. Each of the items repre-

sents an increasingly strong expression of a single attitude. The most well-known example of a Guttman scale was used in an attempt to measure peoples' attitudes toward racial groups, as shown below.

"Into which of the following relationships would you be willing to accept a member of the ethnic group?"

- Close kinship by marriage
- Personal chums in the same club
- Neighbours on the same street
- Employment in same occupation
- Citizenship in the country
- Visitor to country
- None of the above. Exclude members of group from the country.

The aspect of interest is clearly in the respondent's **cutoff level**. Because the items are ordered according to a decrease along a variable, we would expect a respondent to check all items below his/her cutoff level.

The researcher may consult Guttman (1950) for the complete theory and scaling procedures

which characterize the technique, and will find selected applications in Podel and Perkins (1957), Wallin (1953) and Clark and Kreidt (1948).

Conjoint Measurement: A Composition of Ranking Questions

Conjoint measurement is an attitude scaling technique whose potential is even yet being explored. The technique relies on the respondent's ability to rank-order a set of alternatives, and from this rank ordering it attempts to assign quite precise measures of "value" to each alternative. For example:

Suppose you were in the market for a house, and the three houses described below were available. Based on these very brief descriptions, please indicate which house you would prefer most, second most and third most. Answer by putting a "1" beneath the description of your most preferred house, a "2" beneath the house preferred second most, and so on.

House A

Room sizes: generally large

Number of rooms: 7

Price: \$60,000

Location: city suburbs

Your rank

House B

Room sizes: generally small

Number of rooms: 9

Price: \$70,000

Location: downtown

Your rank

House C

Room sizes: generally large

Number of rooms: 9

Price: \$85,000

Location: outside city limits

Your rank

After respondents make several such choices in which the "levels" of several factors (room size, price, etc.) are varied, a statistical analysis is undertaken with the following outputs:

- the relative importance of the different factors (room size, price, etc.) in respondents' overall choices;
- the relative value of individual levels of each factor (for example, how much large rooms are "worth" in comparison to small rooms);

- an overall numerical value for each possible choice (Houses A, B and C), reflecting its favourability to the others.

The evident advantage of the conjoint measurement technique is that it simulates lifelike situations in which consumers consider benefits in combination with each other - often having to give up some of one benefit in order to get more of another.

Detailed analytic procedures for conjoint measurement are set out in Green and Rao (1971) and Johnson (1974).

The Semantic Differential: A Composition of Rating Questions

The semantic differential method of scaling attitudes involves presenting the respondent with a concept (e.g., the name of the attitudinal object)

followed by rating scales along many dimensions. Each rating scale is "anchored" by a bipolar adjective, such as cool and hot, mild and strong, and so on. For example:

Brand X Cigarettes

	Rating							
	1	2	3	4	5	6	7	
Cool	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hot
Thick	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Thin
Mild	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Strong
Masculine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Feminine
Savory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Tasteless
Unusual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Usual

The output of a semantic differential task is not one score for each respondent, but several. First, there is a score out of seven for him along each dimension. But statistical analysis (usually, factor analysis) of his several ratings results in a more compact set of scores, a set of scores which isolates the most important variables among all the ratings.

Semantic differentials are valuable when a respondent's attitude is expected to be too "complex" for measuring on a single dimension, and when comparisons among several objects are desired. By choosing bipolar adjectives judiciously, one can obtain insights into how specific feelings and perceptions contribute to the overall emotional appeal of a given object.

Chapter 3

QUESTIONNAIRE PRODUCTION

Introduction

Once a stage has been reached where it is felt that the proposed type and wording of questions are adequate, attention must be directed to the physical layout of the questionnaire as a form, and printing of enough copies for all the interviews.

Although these aspects are being discussed separately most designers will consider elements of questionnaire production at the same time as they are reviewing wording.

Layout

There are several principles governing the physical layout of a questionnaire. Close attention to these at the design stage can serve to reduce error by interviewers, editors, coders, and key-operators or those manually transcribing answers from the questionnaires. The principles apply to the use of abbreviations and punctuation, justification and positioning of answer and instruction spaces, and typographical, colour and graphic elements.

Abbreviations and Punctuation

Abbreviations should be spelled out unless they are very common ones all respondents are likely to understand, or ones that have already been well defined earlier in the interview. Critical words may be underscored or printed in bold letters to ensure uniform emphasis by interviewers, and uniform interpretation by respondents.

"Now we'd like to talk about **last week**. Did you ...?"

Writing last week in bold face helps emphasize a change in time reference.

Commas, colons and dashes, improperly used may cause a break in the interviewer's verbal flow and lead the respondent to formulate an answer prematurely, before the question is finished.

Response Categories

Answer spaces for questions requiring short answers (e.g., check-mark or numerical) can usefully be margin justified rather than being strung out across the page. It is easier to

edit, code and tabulate answers when scanning is kept to a minimum by aligning spaces. As a general rule when form design has an inner logic which is readily grasped, data capture operations will be accomplished more rapidly and with fewer errors.

<p>44. (a) In this job were you mainly:</p> <p>02 <input type="checkbox"/> working for wages, salary, tips or commission? ▶ Go to Question 45</p> <p>03 <input type="checkbox"/> working without pay for a relative in a family farm or business?</p> <p>04 <input type="checkbox"/> self-employed without paid help? ▶ Continue with Question 44(b)</p> <p>05 <input type="checkbox"/> self-employed with paid help?</p> <p>■ (b) If self-employed, was your farm or business incorporated?</p> <p>06 <input type="checkbox"/> No</p> <p>07 <input type="checkbox"/> Yes</p>
<p>45. (a) In how many weeks did you work during 1980 (not including housework or other work around your home)?</p> <p>■ Include those weeks in which you:</p> <ul style="list-style-type: none">• worked full-time or part-time;• were on vacation or sick leave with pay;• were self-employed. <p>08 <input type="checkbox"/> None ▶ Go to Question 46</p> <p style="text-align: center;">OR</p> <p>09 <input style="width: 40px; height: 15px;" type="text"/> Weeks</p> <p>(b) During most of those weeks, did you work full-time or part-time?</p> <p style="text-align: center;">Mark one box only</p> <p>10 <input type="checkbox"/> Full-time</p> <p>11 <input type="checkbox"/> Part-time</p>

Sometimes it may not be practical to allow the answer categories to be justified to the margin of the page. If there is a large number of list-type questions, putting them all one under the other would lengthen the questionnaire yet leave much of the space completely unused.

In these circumstances, it may be better to spread answer-categories across the page, in the form of a matrix or a table or allow a column (say, 21 cm or 31 cm wide) at the right margin, headed "For Office Use Only", with coding boxes into which answers can be coded, by interviewers or by coding clerks.

Even if capture takes place directly from the matrix, boxes are generally needed for entry of codes for open-ended narrative questions (e.g., occupations). An example follows from the 1981 Census of Canada. Although this

particular survey was self-completed by the respondent, the layout could equally well have been used in an interviewer-administered questionnaire.

41. **NOTE:** Questions 41 to 44 refer to your job or business last week. If none, answer for your job of longest duration since January 1, 1980. If you held more than one job last week, answer for the job at which you worked the most hours

(a) For whom did you work?

 Name of firm, government agency, etc.

 Department, branch, division, section or plant

(b) What kind of business, industry or service was this?

 Give full description. For example, paper box manufacturing, road construction, retail shoe store, secondary school, dairy farm.

42. At what address did you work? If no usual place of work, see Guide.

Mark one box only

- Worked at home (includes living and working on the same farm)
- Worked outside Canada
- Worked at address below (please specify)

 Number Street
 If street address is not known, give the building name, shopping centre or street intersection, etc.

 City, town, village, borough, township or other municipality
Important: If you worked in a suburban municipality within a large urban area, specify that municipality, not the main city.

 County Province or territory

Space

Ideally the form should not be too crowded or cluttered. If it is, interviewers/respondents will miss instructions or questions, or record answers confusingly (e.g., spread over two answer spaces). Roughly, one centimetre of space should be allowed for two written digits in a numerical answer. Enough room should be allowed for answers to questions requiring a narrative. If there is too little space, interviewers/respondents will be tempted to edit or abbreviate the answers or to be selective in what they record eliminating parts which may be important to users of survey results. In self-completion questionnaires respondents may abbreviate their answers to fit the space available, leading to difficulties of interpretation in coding the response.

On the other hand, if a questionnaire is used over a long period of time for a continuing survey, interviewers and other users of the form will become used to a layout that may at first sight appear cluttered. The following example from the Current Population Profile (1982) illustrates the latter point. This questionnaire is interviewer-administered, both in person and by telephone.

Answer Spaces

Answer spaces should be clearly identifiable with the question to which they apply. The following example illustrates the kind of confusion that arises when the answer spaces are crowded together:

___ under 20 ___ 20-24 ___ 35-49 ___ 50-64
 ___ 65 or over.

An interviewer could easily enter the check-mark to the right rather than to the left of the correct category. A better layout would be to list each class and corresponding answer space on a separate line.

- under 20
- 20-24
- 25-49
- 50-64
- 65 or over

If this is not feasible, the following layout would be an improvement:

- under 20 50-64
- 20-24 65 or over
- 25-49

If the answer spaces are listed one under the other, and margin justified, errors may still occur if the space between the question and the answer space is too great. The interviewer's or respondent's eye could slip up or down a line in the middle of the following layout:

- Under 20
- 20-34
- 35-44
- 45-54



SURVEY OF PUBLIC SERVICE EMPLOYEES
(confidential when completed)

This questionnaire is to be filled out only by Indigenous people, disabled persons and members of visible minorities. Please read questions 1 to 3 carefully to determine whether you belong to any of these groups.

This information is supplied on a voluntary basis, and will not be used in relation to any personnel decisions which relate to individuals. It will be augmented with data from other files in order to analyse and monitor the situation and progress of the survey groups in terms of such characteristics as regional and occupational distribution, training and mobility. This information will be retained for a period of 10 years under Personal Information Bank TB-C-P110. Under the Privacy Act, you have the right of access to, and protection of, information relating to you.

1. Please check the appropriate box, if you are:

- 1 Inuit 2 Metis 3 Non-Status Indian 4 Status Indian

2. Do you have a permanent disability which relates to:
(check more than one, if appropriate)

- 11 Co-ordination or dexterity 12 Mobility 13 Speech 14 Epilepsy 15 Mental retardation
Vision ► 16 Blind 17 Partially sighted Hearing ► 18 Hard of hearing 19 Deaf

3. Do you consider yourself to be of: (check more than one, if appropriate)

- i) **African origin (Black)** 41 Includes Caribbean and Canadian/American
- ii) **Asian origin**
- 42 Bangladeshi 43 Cambodian 44 Caribbean 45 Chinese 46 Indian (India)
47 Japanese 48 Korean 49 Laotian 50 Pakistani 51 Filipino
52 Vietnamese 53 Other (please specify) _____
- iii) **Oceanic origin** 54 Includes Polynesian, Melanesian, Micronesian, etc.
- iv) **Any combination of African, Asian or Oceanic origins** 55

If one or more of the above applies to you, please complete the section below, and mail this questionnaire to the Treasury Board Secretariat, Ottawa, using the envelope provided.

4. Family name

5. Initials

6. Social Insurance Number (optional)

7. Department (e.g., Department of National Defence, Transport Canada, etc.)

8. Classification
Group Sub-group Level

9. Place of work: (please check one only)

- 35 Ont. 12 N.S. 13 N.B. 10 Nfld. 61 N.W.T. 24 Quebec 48 Alta.
47 Sask. 11 P.E.I. 60 Yukon 59 B.C. 46 Man. 99 Outside Canada

OFFICE USE ONLY

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TBC 330-249 (Rev. 85/2)

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Statistics Canada / Statistique Canada

CURRENT POPULATION PROFILE

CONFIDENTIAL when completed

Docket No. **2** _____ Survey date **3** Assignment No. **4** _____ Surname **7** _____
 5 6 7 **1 FORM NO 06**

10 INTERVIEWER CHECK ITEM
 If age 00 to 14 in item 33 on FORM 03 Go to 48
 Otherwise Go to 11

20 HAS ... LIVED IN ANY OTHER PROVINCE, TERRITORY, OR OTHER COUNTRY SINCE JUNE 1, 1976?
 Yes No Go to 48

LANGUAGE

MIGRATION HISTORY

11 WHAT IS THE LANGUAGE ... FIRST LEARNED IN CHILDHOOD AND STILL UNDERSTANDS? (Mark all that apply)
 English
 French
 Other

21 IN WHICH PROVINCE, TERRITORY OR OTHER COUNTRY DID ... LIVE ON JUNE 1, 1976?
 Enter code

12 CAN ... SPEAK ENGLISH OR FRENCH WELL ENOUGH TO CONDUCT A CONVERSATION?
 ND - Neither English nor French
 YES - English only } Go to 14
 YES - French only
 YES - Both English and French Go to 13

22 TO WHICH PROVINCE, TERRITORY, OR OTHER COUNTRY DID ... FIRST MOVE AFTER JUNE 1, 1976?
 Enter code

13 IN GENERAL, WHICH OF THESE TWO LANGUAGES DOES ... PREFER TO SPEAK?
 English
 French
 Neither
 Don't know
 No preference

23 WHEN DID ... MAKE THIS MOVE?
 Mo. Yr.

14 WHAT LANGUAGE DOES ... SPEAK MOST OFTEN AT HOME? (Mark all that apply)
 English
 French
 Other

24 TO WHICH PROVINCE, TERRITORY, OR OTHER COUNTRY DID ... MOVE NEXT?
 Enter code
 If code 99 (No other moves) go to 34

15 HAS ... (EVER) ATTENDED A UNIVERSITY, COMMUNITY COLLEGE OR OTHER POST SECONDARY INSTITUTION AS A FULL-TIME STUDENT?
 Yes No Go to 20

25 WHEN DID ... MAKE THIS MOVE?
 Mo. Yr.

16 WHAT IS THE HIGHEST LEVEL OF EDUCATION ... COMPLETED?
 Enter code
 If code 99 go to 20

26 TO WHICH PROVINCE, TERRITORY, OR OTHER COUNTRY DID ... MOVE NEXT?
 Enter code
 If code 99 (No other moves) go to 34

17 IN WHAT YEAR WAS ...'S LAST DEGREE, DIPLOMA OR CERTIFICATE GRANTED?
 Year

27 WHEN DID ... MAKE THIS MOVE?
 Mo. Yr.

18 IN WHICH PROVINCE, TERRITORY, OR OTHER COUNTRY WAS THIS DEGREE, DIPLOMA OR CERTIFICATE GRANTED?
 Enter code

28 TO WHICH PROVINCE, TERRITORY, OR OTHER COUNTRY DID ... MOVE NEXT?
 Enter code
 If code 99 (No other moves) go to 34

19 WHAT WAS ...'S MAJOR FIELD OF STUDY?
 Enter code

29 WHEN DID ... MAKE THIS MOVE?
 Mo. Yr.

30 TO WHICH PROVINCE, TERRITORY, OR OTHER COUNTRY DID ... MOVE NEXT?
 Enter code
 If code 99 (No other moves) go to 34

31 WHEN DID ... MAKE THIS MOVE?
 Mo. Yr.

32 TO WHICH PROVINCE, TERRITORY, OR OTHER COUNTRY DID ... MOVE NEXT?
 Enter code
 If code 99 (No other moves) go to 34

33 WHEN DID ... MAKE THIS MOVE?
 Mo. Yr.

Use an ANNEX if more than 6 moves
 Otherwise go to 34.

If it is not possible to position the category names close to the answer spaces, a dotted line (leaders) connecting the answer and the recording space could help cut down line slips.

55-64

65-74

75 and over

Don't know

Refused

For open-ended narrative questions, space into which codes can be entered (or better, boxes) should be provided at the right margin at the end of the last line.

Interviewer Working Space

If numeric units are to be converted to other units by interviewers, working (or "Office Only") space should be allowed for this on the questionnaire. This also applies if interviewers are to total a set of numerical answers as a first editing check, before finishing the interview. For example, in expenditure surveys, income and expenditure for the reporting period must be the same (or within acceptable margins of difference). If they are not, the interviewer must often re-question the respondent to determine whether income or expenditure items have been overlooked or recalled inaccurately. Expenditure survey questionnaires must therefore provide working space for interviewers to enter totals of expenditures and incomes, and calculate differences between them.



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TOURISM ATTITUDE AND MOTIVATION STUDY

14. I WOULD LIKE TO KNOW HOW IMPORTANT EACH OF THESE FACTORS WERE IN YOUR DECISION TO TAKE YOUR MOST RECENT VACATION OR PLEASURE TRIP. PLEASE READ OVER THIS LIST OF STATEMENTS AND MARK HOW IMPORTANT EACH WAS TO YOU. (GO TO PAGE 6, HAND QUESTIONNAIRE TO RESPONDENT TO COMPLETE ITEMS 34 AND 35.)

	A		B		C		D	
	July, August, September 1983		April, May, June 1983		January, February, March 1983		October, November, December 1982	
15. WERE ANY OF THESE TRIPS TAKEN DURING THE MONTHS OF	Yes 1 <input type="radio"/>	No 2 <input type="radio"/>	Yes 3 <input type="radio"/>	No 4 <input type="radio"/>	Yes 5 <input type="radio"/>	No 6 <input type="radio"/>	Yes 7 <input type="radio"/>	No 8 <input type="radio"/>

FOR EACH 'YES' ASK Q. 16, 17 AND 18.

16. HOW MANY NIGHTS WERE YOU AWAY ON THE TRIP OF THE LONGEST DURATION IN ... (MONTHS)?	No. of Nights <input type="text"/>	No. of Nights <input type="text"/>	No. of Nights <input type="text"/>	No. of Nights <input type="text"/>
17. IN WHICH MONTH DID YOU START THIS TRIP?	Enter code for month <input type="text"/>	Enter code for month <input type="text"/>	Enter code for month <input type="text"/>	Enter code for month <input type="text"/>
18. WHAT WAS YOUR DESTINATION ON THIS TRIP? (FURTHEST POINT AWAY FROM HOME.)	City or town:	City or town:	City or town:	City or town:
	Prov. or state	Prov. or state	Prov. or state	Prov. or state
	Country:	Country:	Country:	Country:
	For office use only <input type="text"/>	For office use only <input type="text"/>	For office use only <input type="text"/>	For office use only <input type="text"/>

Differentiation

The questionnaire can be designed so that one kind of answer space, e.g., a small circle is used whenever a check-mark is called for, as in "yes/no" questions or selections from lists, and a different kind, e.g., square boxes whenever numbers are called for, as in ages, numbers of times something has been done in a time period. This can be useful to editors checking each questionnaire before data capture. They can learn to expect checks in circles and numbers in boxes. In the preceding example, from the Tourism Attitude and Motivation Study (1983) circles were used for check-marks and boxes were used for numerical answers.

The use of heavy solid lines (known as "rules") as a visual aid to the interviewer can be helpful between questions or sets of ques-

tions. The same applies to column-divisions, if they are to be used.

An illustration of lines clearly separating questions can be seen in the earlier examples from the 1981 Census of Canada.

Shading or cross-hatching of those parts of the questionnaire that are not to be used for answers that are to be captured, can be a useful device. In this way, the right margins or other parts of the questionnaire, from which responses are to be keyed will stand out. An example is given below from a wildlife survey done by Statistics Canada for the Canadian Wildlife Service, Environment Canada. All questions and instructions to respondents in this self-enumeration survey were on a coloured shaded background. Only the squares and circles for responses to be captured used a white background.

D. HUNTING WILDLIFE

35. HAVE YOU EVER HUNTED WILDLIFE?

Yes

No → Go to Question 78.

36. DURING 1981, DID YOU HUNT WILDLIFE?

Yes

No → Go to Question 78.

37. IN TOTAL, ON HOW MANY DIFFERENT DAYS DID YOU HUNT WILDLIFE IN 1981?

Days

→ Go to Question 38.



38. DURING 1981 DID YOU HUNT WATERFOWL?

Yes

No → Go to Question 48.

39. ENTER THE NUMBER OF DAYS BESIDE THE LOCATION(S) WHERE YOU HUNTED WATERFOWL IN 1981.

	Days		Days
Newfoundland	01 <input type="text"/>	Saskatchewan	08 <input type="text"/>
P.E.I.	02 <input type="text"/>	Alberta	09 <input type="text"/>
Nova Scotia	03 <input type="text"/>	British Columbia	10 <input type="text"/>
New Brunswick	04 <input type="text"/>	Yukon	11 <input type="text"/>
Quebec	05 <input type="text"/>	N.W.T.	12 <input type="text"/>
Ontario	06 <input type="text"/>		
Manitoba	07 <input type="text"/>	Outside Canada	13 <input type="text"/>



48. DURING 1981 DID YOU HUNT OTHER BIRDS?

Yes

No → Go to question 58.

49. ENTER THE NUMBER OF DAYS BESIDE THE LOCATION(S) WHERE YOU HUNTED OTHER BIRDS IN 1981.

	Days		Days
Newfoundland	01 <input type="text"/>	Saskatchewan	08 <input type="text"/>
P.E.I.	02 <input type="text"/>	Alberta	09 <input type="text"/>
Nova Scotia	03 <input type="text"/>	British Columbia	10 <input type="text"/>
New Brunswick	04 <input type="text"/>	Yukon	11 <input type="text"/>
Quebec	05 <input type="text"/>	N.W.T.	12 <input type="text"/>
Ontario	06 <input type="text"/>		
Manitoba	07 <input type="text"/>	Outside Canada	13 <input type="text"/>

Instructions should be in a clearly different type face or type size, or in bold type or capital letters, or in a box, so that interviewers and respondents will not confuse them with the questions. They should be short and clear.

A dwelling is a separate set of living quarters with a private entrance from the outside or from a common hallway or stairway inside the building. This entrance should not be through someone else's living quarters.

7. Enter the name of the person (or one of the persons) who lives here and is responsible for paying the rent, or mortgage, or taxes, or electricity, etc., for this dwelling.

07

01

Last name Given name and initial

This person should answer the following questions about this dwelling.

NOTE: If no one living here makes any such payments, mark here and answer the dwelling questions yourself.

Arrows and boxes can often help as an adjunct to skip instructions. It can sometimes be useful to repeat questions that are to be asked of everybody, on both sides of the skip, just to make the questionnaire easier for interviewers to follow.

Instructions ought to be consistent with the questions to which they apply. In the interviewer's control docket for the Census of France in 1946 confusion was introduced by the lack of clarity and consistency between the questionnaires and the interviewer's instructions. The section on housing began with the question:

Dwelling:

Occupied? (yes or no)
Vacant? (yes or no)

A presentation which suggested that there might be a third status, i.e., temporarily unoccupied). Further on in the docket there appeared an instruction: (use one line for each dwelling that is occupied, unoccupied or vacant) which could be interpreted as reinforcing the three-class classification. However, the interviewer's instructions spoke only of dwellings that were "vacant, that is unoccupied", suggesting clearly that only two classes were intended.

Language

For national surveys where questionnaires are to be printed in two languages, and on both sides of the paper, the most convenient layout is to print separately back-to-back in a "tumble" format. This is practiced only if printing on large (e.g., 30 cm by 42 cm) paper folded once (to make 21 cm by 30 cm pages) and saddle-stitched (i.e., stitched or stapled in the fold or "gutter"). Quite commonly, questionnaires are printed on 21 cm by 30 cm or 21 cm by 35 cm stapled only in an upper corner, or stitched (stapled) two or three times down the side. If the questionnaire is to be printed single-sided and in both languages, with one language followed on the next line by the other, then the second language should be in a distinctly different type face (e.g., in italics), or in bold type. Alternatively, the questions can be laid out in a columnar fashion, but providing a common central answer space for both languages.

If more than two languages are involved, for example in surveys among ethnic minorities, it is probably better to use separate self-contained questionnaires for each group.

Consistency

Once a layout pattern has been arrived at, it should be used consistently throughout the questionnaire. Changing the layout may only serve to confuse the interviewers, editors and coders. For example, if instructions are in capital letters, or boxed, or however they are differentiated from the questions themselves, they should be shown the same way on all questionnaires and control sheets.

Data Coding and Capture

The present study assumes that data for all except the smallest surveys will be processed by computer. If adequate computer facilities are not available, the benefits in terms of speed, cost, accuracy and flexibility are so overwhelming that every effort should be made to rent them on a temporary basis or contract to have the processing carried out by a private computer service. Only the most basic counts should be carried out by hand.

If it is impossible to obtain computerised processing and there is a requirement to provide quick summary statistics, the questionnaire should be designed so that summary totals can be produced directly from it. Thus wherever there is a listing of items, a summary total space should also be included and interviewers should be trained to make these calculations as soon as the interview is completed. If values

must be calculated, formulae for calculating values ought to be provided directly on the form.

Consideration must be given to the capture of the data for subsequent processing at the design stage or the designer will certainly be faced with a long expensive error-prone task of manually coding and possibly transcribing data onto large sheets for the remaining processing operations.

It is essential to consult early, regularly, and often with the processing staff, to design the questionnaire for rapid data capture. One way of ensuring that the concerns of data capture are addressed is to make the individual responsible for this aspect of the survey a permanent member of the questionnaire design team.

Printing Codes on the Questionnaires

If data are to be processed by computer, codes for the fields into which answers are to be keyed should be printed directly on the questionnaire. If keying is to be done directly

from the questionnaires, pre-coding, that is, showing the codes on the printed questionnaires is an obvious convenience for keyers, decreasing the possibility of keying an answer into a wrong field. If answers are to be posted onto 80-column sheets showing the field codes on the questionnaire can indicate to clerks where they are to write the answers on the sheets. The code numbers should be printed relatively inconspicuously, in order not to confuse interviewers, or respondents if the questionnaire is to be completed by them.

Coding Systems

There are two basic systems of coding - fixed field coding and source coding.

In fixed field coding, each unit of data (e.g., each question for which an answer must be captured) is assigned a number of columns on a record or "positions" sufficiently great to accept the longest possible answer. The record length for each questionnaire will be fixed equal to the total number of columns assigned. Once a column is assigned it must contain a value. If there is a blank answer, then the

Statistics Canada Statistique Canada		ADULT EDUCATION SURVEY		CONFIDENTIAL when completed
Docket No. 2	<input style="width: 80%;" type="text"/>	Survey date 3	<input style="width: 40%;" type="text"/> <input style="width: 40%;" type="text"/>	Assignment No. 4 <input style="width: 80%;" type="text"/>
HRD page - line No. 5	Given name 6	Mo	Yr	Surname 7
				1 FORM NO 06

THIS SURVEY CONCERNS ANY COURSES, CLASSES OR INSTRUCTION ... HAS TAKEN DURING THE PAST YEAR. THESE WOULD INCLUDE INSTRUCTION TO IMPROVE JOB SKILLS, UPGRADE ACADEMIC QUALIFICATIONS, FOR PERSONAL DEVELOPMENT OR FOR RECREATION AND LEISURE.

10. WAS ... A FULL-TIME STUDENT AT A SCHOOL, COLLEGE OR UNIVERSITY DURING 1983?

Yes ¹ No ² Go to 11

IN THE FOLLOWING QUESTIONS DO NOT INCLUDE CLASSES OR COURSES THAT WERE PART OF ... FULL-TIME COURSE OF STUDIES.

20. WAS THAT COURSE ... (Mark only one)

An academic course? ¹

A job-related course? ²

A hobby, craft, or recreation course? ³

A personal development, general interest course? ⁴

Other ⁵

Don't know ⁶

11. DURING 1983, DID ... ENROLL IN ANY COURSES TO UPGRADE ACADEMIC QUALIFICATIONS?

Yes ¹ No ² Don't know ³

21. WHO ORGANIZED THE LAST COURSE ... TOOK, THAT IS, WHO OFFERED THE COURSE?

Code

12. DURING 1983, DID ... RECEIVE ANY INSTRUCTION OR TRAINING TO UPGRADE JOB SKILLS, INCLUDING COURSES TAKEN AT WORK?

Yes ¹ No ² Don't know ³

22. WHICH WAS THE MORE IMPORTANT REASON FOR TAKING THIS COURSE, TO

Improve job opportunities? ¹

Or for personal interest and development? ²

Don't know ³

13. DID ... ENROLL IN ANY CLASS OR COURSE FOR PERSONAL INTEREST OR TO DEVELOP PRACTICAL KNOWLEDGE SUCH AS AN ART OR CRAFT CLASS, DURING 1983?

Yes ¹ No ² Don't know ³

23. HOW MANY HOURS OF INSTRUCTION WERE THERE EACH WEEK?

Hours Don't know ⁸⁸

24. HOW MANY WEEKS DID THE COURSE LAST?

Weeks Don't know ⁸⁸

columns must be "packed" with zeros or some such no-value symbol. Even partly completed questionnaires will need a full record and questionnaires will need to be coded with "0"'s in each position which has been left blank by the interviewer or respondent. What this system saves in design time, it spends in processing as each record must be fully read at the time of tabulation.

In source coding, each unit of data is assigned a source code - a sequential number which has no regard to the length of the largest potential answer. Often this number is the number of the question itself. In source coding, the keyer ignores blank fields. Resources are economized in data capture. For example, in a survey with, say 1,200 fields, an average of only 200 or so may need to be captured for each respondent. Resources are economized even more significantly in data processing where the computer usually deals with shorter records, that is, records not "packed" with no-value symbols. One limitation of source coding is that many computer programmes for statistical use, e.g., SPSS were developed at a time of fixed field coding. There must be a computerised step of conversion from source coding to fixed field coding to use these programs. The decision as to which system to adopt is a specialised one, but it must be made prior to printing the questionnaires.

Location of Code Lists

If interviewers are expected during the interview to code from a separate list, i.e., one that is not part of the question itself (example: region or occupation), the codes should be provided right on the same page of the questionnaire, for example, at the bottom of the page.

Maintaining the code list separately, such as in the interviewer's manual, is not convenient and is likely to lead to error. If the list is too long to put right on the questionnaire, the next most convenient location is on a separate code card that may contain codes for a number of questions.

Coding "Other (SPECIFY)"

If the questionnaire contains answer lists that end with "other (SPECIFY)" a decision must be made on how to capture answers to the "SPECIFY": are all to be captured together or separately? If they are to be captured individually, a code must be allowed for each. A checklist of leisure activities might yield as many as 20 further activities beyond those already listed and it might be necessary to allow for a two-column field or for several extra fields to capture all answers. It is more probable however that limits on record lengths

will dictate some decision, however arbitrary, on procedures to limit the number of extra items to be captured.

Coding "No Answer" and "Not Available"

"No answer" and "not available" classes can often be assigned the same code. Once assigned the code for this class should be the same for all questions. In this way, confusion among coders, editors, keyers and analysts is decreased. In some circumstances, a "don't know" answer can be given the same code, although it is generally desirable to give it another code, as conceptually, a "don't know" answer is different from a "no answer" and "not available".

Similarly, "yes" and "no" should be treated consistently throughout the questionnaire (for example, "1" and "2", although some researchers prefer "1" and "0", considering "0" more symbolically representative of "no" than "2").

Printing

Questionnaires should be attractive looking, especially if respondents are to complete them independently. Care must be taken to use good quality presses and paper. If the questionnaire is to be typed and then photocopied or reproduced in an offset process, or through a Gestetner or similar process, a good electric typewriter is desirable, to give an evenness of quality to letters, boxes, circles, pairs of brackets, etc. Since few electric typewriters can reproduce such symbols as arrows or circles, these will likely have to be drawn by hand. It may be feasible to acquire sets of symbols that can be cut and pasted onto pages being prepared for the camera in the offset process, or may be possible to access computer facilities that include a text-editing program with symbols, and these can be used to prepare camera-ready copy.

In certain situations, limited printing or supply may be a factor in determining the length of the questionnaire, and whether a "schedule" format should be used. If there is any doubt, the questionnaire designer should determine early in the planning process just what printing or duplication processes will be available. Shorter questionnaires dictated by limited printing facilities may require better trained interviewers and clearer instructions, i.e., better design.

Paper Quality and Size

Questionnaires should be printed on sturdy paper, since they will generally be handled a number of times by printers, shippers, supervisors, interviewers, respondents, editors,

coders, key-operators, file clerks or storage-clerks. The physical size and bulk of the questionnaire should be convenient for interviewers and/or respondents to handle in different interviewing circumstances.

Single- vs. Double-sided

Questionnaires are often printed only on one side of the paper commonly because of the printing equipment available. If necessary, the reverse side may be used for notes or for overflow answers to questions although this is not a recommended practice. Single-sided printing may also be more convenient in the interview situation. A disadvantage is that questionnaires take twice as many sheets of paper compared with double-sided printing, increasing the bulk that must be handled and shipped.

Quantities

Questionnaires should be printed to provide for the maximum number of interviews and to have as extra for:

- training - trainers and trainee interviewers need copies to work on, such as in dummy or mock interviews, or in test interviews with "real" respondents;
- spoilage or loss, or when additional respondents may be found. In some interview situations, it may not be possible to tell accurately in advance how many respondents each interviewer will find (e.g., surveys of all members of a household, where household sizes could vary widely; users of a park or a museum during a certain number of hours on given days, where the number might vary unpredictably according to weather conditions);
- files for superiors and others interested in other Ministries, or international agencies;
- inclusion as an appendix in final reports.

At minimum 10% more than the expected number of completed interviews may be required, depending on the nature of the survey, respondent population, sample design, and so on. As a general rough rule-of-thumb, 25% more than the expected number of interviews will usually be adequate for surveys of up to 3,000 interviews. If the expected total sample size is not known a larger margin of printing over-run will be required. Extra copies should be printed in each major language version. If there are several minority languages 25% or so extra for each should suffice.

All copies should be obtained in one printing run, as it is often costly and difficult to arrange second printing runs: preparation

charges may be incurred for each printing run, regardless of the number of copies; sometimes, a fresh original must be prepared (either typeset or typed); and there may be scheduling delays in obtaining use of the presses.

Administering the Questionnaire

In interviewer-administered surveys, training and instructions must be given to so that each interview is as complete as possible at the first attempt.

As a questionnaire for a new survey is being developed, or as it is being modified, the designer will want to review the main documents for training or retraining of interviewers to clarify what is being sought and the kinds of answers expected. If probing questions are required at any point in the survey, the training manual will specify in detail the wording that should be used. The manual will also describe the coding lists and provide rules to follow if the interviewer is expected to code the answers to the questions.

The manual will contain details of procedural and administrative steps the interviewer is expected to carry out during the interview. Contents can include: details of the contents of the interviewing "kit" or bundle of supplies that each interviewer should receive, a description of the interviewer assignment, rules on how to locate respondents, other details of sample-selection procedures (this can include some elaboration on how to follow maps, or how to find the exact location at which interviews are to start, plus the routine to be followed to find the second, third, fourth, ...interview); suggestions for general department and relations with the public; procedures to be followed in the event of a refusal; instructions on what to do with completed questionnaires and other supplies at the end of interviewing.

The interviewer's manual can be useful to show the question in the actual format in which it appears in the questionnaire, complete with instructions and may include an entire completed questionnaire, as if filled out by an imaginary interviewer during an interview. Sometimes, a dummy completed questionnaire can be presented with deliberate errors, so that interviewers can be asked to comment on how it should have been completed, although it is not a good practise to emphasize "the wrong way" as interviewers may be confused as to which is right and which is wrong.

Visual and Audio-visual Aids

While the questionnaire is being prepared, each question and each section of the questionnaire should be considered from the point of view of aids or additional documents that would

'Q' CARD

SURVEY OF SKILLS & TRAINING

50D

HAS...EVER TAKEN A SPECIFIC COURSE(S) AT A SCHOOL, COLLEGE OR UNIVERSITY WHICH PROVIDED HIM/HER WITH THE SKILLS OR TRAINING REQUIRED FOR HIS/HER MAIN JOB?

IF YES, ENTER 1 IN COLUMN "D" AND GO TO QUESTION 50E

IF NO, ENTER 2 IN COLUMN "D" AND GO TO QUESTION 50E

50E

HAS...EVER RECEIVED ANY FORMAL ON-THE-JOB TRAINING WHICH WAS INTENDED TO IMPROVE HIS/HER SKILLS OR OPPORTUNITY FOR ADVANCEMENT IN THIS TYPE OF BUSINESS? BY ON-THE-JOB TRAINING, I MEAN TRAINING PROVIDED BY...S EMPLOYER AT...S PLACE OF WORK DURING...S NORMAL WORKING HOURS.

IF YES, ENTER 1 IN COLUMN "E" AND GO TO QUESTION 50F

IF NO, ENTER 2 IN COLUMN "E" AND GO TO QUESTION 50F

50F

AT THE PRESENT TIME, IS...TAKING A COURSE OR PLANNING TO TAKE A COURSE AT A SCHOOL, COLLEGE OR UNIVERSITY IN ORDER TO IMPROVE HIS/HER JOB SKILLS OR OPPORTUNITY FOR ADVANCEMENT IN THIS TYPE OF BUSINESS?

IF YES, ENTER 1 IN COLUMN "F" AND END SUPPLEMENTARY QUESTIONS FOR THIS RESPONDENT.

IF NO, ENTER 2 IN COLUMN "F" AND GO TO QUESTION 50G

50G

IS THERE ANY REASON WHY...IS NOT TAKING OR PLANNING TO TAKE A COURSE(S) AT A SCHOOL, COLLEGE OR UNIVERSITY?

ENTER THE NUMBER OF THE APPROPRIATE CODE IN COLUMN "G"

CODES FOR ITEM 50G

1. NO COURSE AVAILABLE
2. HOURS OF WORK PROHIBIT ATTENDANCE
3. PERSONAL OR FAMILY RESPONSIBILITIES
4. COURSE COSTS TOO MUCH
5. NOT INTERESTED IN TAKING A COURSE
6. NO REASON
7. OTHER

be useful for training interviewers, or to use during the interview process itself. The most common aids are "show-cards" or "prompt-cards", i.e., lists of answers from which the respondent is to make a choice for a given closed-ended question. These are particularly helpful if there are more than four answer categories, or if the answer category descriptions are more than one or two words each. Each interviewer will need a set of such cards (often identified by letters or colours rather than numbers, to avoid confusion with the questions themselves) with instructions for their use. Sometimes it may be more convenient to identify the cards with the number of the question they are to be used for, although this may be confusing if a given card is to be used with more than one question.

Other visual aids such as drawings can sometimes facilitate recall, for example, drawings showing the enumerator seated with the members of the household asking about household composition, drawings of a typical farm showing the location of the farm house, land under production, land lying fallow, a variety of animals, etc., have been used successfully in a number of censuses. The application of the technique (as illustrated below in an example from the 1981 Census of Canada) is limited only by the ability of the questionnaire designer to translate a concept into an appropriate visual aid.

Films and tape recordings of interviews may also serve questionnaire development or evaluation. It may be useful to try out parts (or all) of a questionnaire, with a recording for convenience of survey designers to hear how respondents accepted certain questions. Respondents' hesitation, misunderstandings and intonation, together with "um, er" can indicate questions that may be giving some difficulty to answer. As well, quotes from respondents' answers, from tape recordings, can be used in reports to add colour or flavour to an otherwise dry content analysis. However, tape recorders are relatively expensive and can easily be mislaid, damaged or stolen. This can particularly be a problem for interviewers, who may have trouble finding a place to leave a tape recorder unattended during field work. Adequate supplies of batteries, preferably of the reusable kind, together with equipment for recharging them, must also be obtained.

12. Is this dwelling a:

Mark one box only

- 05 **single house** — a single dwelling not attached to any other building and surrounded on all sides by open space?



- 06 **semi-detached or double house** — one of two dwellings attached side by side but not attached to any other building and surrounded on all other sides by open space?



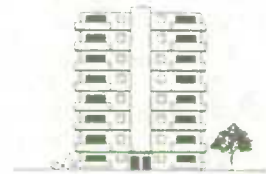
- 07 **duplex** — one of two dwellings, one above the other, not attached to any other building and surrounded on all sides by open space?



- 08 **row house** — one of three or more dwellings joined side by side but not having any other dwellings either above or below?



- 09 **apartment in a building that has five or more storeys** — for example, a dwelling unit in a highrise apartment building?



- 10 **apartment in a building that has less than five storeys** — for example, a dwelling unit in a triplex, quadruplex or a dwelling unit in a non-residential building or in a house that has been converted?



- 11 **house attached to a non-residential building** — a single dwelling attached at ground level to another building (such as a store, etc.) but separated from it by a common wall running from ground to roof?



- 12 **mobile home** (designed and constructed to be transported on its own chassis and capable of being moved on short notice)?



- 13 **other movable dwelling** (such as a tent, travel trailer, railroad car or houseboat)?



OFFICE USE ONLY

- 14 Trans.

- 15 Coll.

- 16 Ref.

- 17 Miss.

- 18 JIC — A

- 19 JIC — B

Chapter 4

TESTING AND EVALUATION OF THE QUESTIONNAIRE

Introduction

The questionnaire can have a major influence on non-sampling errors and consequently on the overall quality and value of a survey. The extent and seriousness of some non-sampling errors will be greatly determined by such elements as questionnaire length, language, sequence, flow and layout. Experience with surveys alone does not always provide sufficient guidance as to what question formats are likely to be most successful in controlling non-sampling errors. Where there is doubt about the design of a particular question or a set of questions, consideration should be given to a test of alternatives. Testing should become part of a formal program of questionnaire evaluation. The usefulness of the program will lie in the accumulation of information on the nature of errors associated with questionnaires and in the analysis of their behaviour over time. The extent of testing will depend not only on the importance of the survey, but on the amount of time and resources available.

Testing of questionnaires is undertaken to ensure the relevance of data and to reduce the risk of errors: evaluation of a questionnaire, on the other hand, identifies and measures the error which remains after testing. Thus, questionnaire testing including its analysis is carried out before the introduction of a survey into the field, while evaluation is carried out during and after the collection of data.

Testing Questionnaires

Testing of a questionnaire is usually an iterative process during which successive versions of the questionnaire can be analysed to detect difficulties due to lack of clarity, relevance or sensitivity of the information sought. Questions can be eliminated or modified by asking them differently or positioning them elsewhere in the questionnaire. If difficulties can't be resolved through improvements in design, offending questions can be dropped altogether.

Review of the Draft Questionnaire

A first step is a thorough examination by all who will be involved once the interviewing has been completed. This includes editors, coders, key-punchers, programmers, and survey

data analysts. It is a good idea to organize a formal discussion with some or all, once they have made trial attempts to edit, code, and capture data to see if there are any aspects of the questionnaire that merit revision.

A second step in the examination of the draft questionnaire is a review by some of the more senior and experienced persons in the Ministry/Department and members of the Steering Committee. The reviewers could be provided with a checklist of points to assist them in organizing their comments.

The following checklist will guide the review of the questionnaire.

- concepts and definition of terms,
- availability of information from other sources (relevant to the survey),
- adequacy of the questions,
- clarity of the questions,
- language,
- sensitivity of information,
- flow or sequencing of questions,
- length of interview,
- coding and data processing requirements,
- other comments.

Review by Users

After the internal review a third stage of testing involves asking a small group of data users to comment on the following:

- the appropriateness of terminology in a particular subject matter (agriculture, health, employment, as examples);
- whether the reference period is suitable for the subject matter under consideration;
- whether the units and ranges implied by the question are suitable;
- the respondent burden;

- the relationship between the questions asked and the tabulations to be produced.

Respondent Sample

The next step consists of submitting the questionnaire to a sample of respondents, asking them to complete it.

Tests involving respondents are often small scale. They should be carried out with "real" respondents - that is, with individuals or households selected from the population of interest. It is essential to include respondents of different ethnic or linguistic groups, or regions, or sizes of community depending on judgements as to whether these variables are likely to be related to differences in important results in the full survey.

Following the interview a debriefing session for interviewers and other field staff should be arranged to pinpoint the inefficiencies, ambiguities and difficulties associated with administering the questionnaire. A debriefing session involves interviewers and relevant field staff in discussion about field operations from the time the interviewer knocks on the door to the time he leaves the respondent. This type of discussion generates a wealth of information that can be used to improve or modify the questionnaire.

Typical questions include:

- How did the interview go?
- Did you have any problems with the questionnaire?
- Were there any parts that respondents didn't seem to understand, or that you had to explain to them?
- Were there any parts that required respondents to think hard, or to hunt for papers or documents to be able to give answers?
- Were there any questions where you felt respondents were guessing the answers?
- Were they embarrassed or irritated?
- Were there any questions whose wording you found awkward or that used words that seemed strange to you, not the kinds of words or phrases that people commonly use?
- Did you have any trouble in following the sequence of questions, or the skip patterns or instructions?
- Were there any places where there wasn't room enough to write in the answers?

- Were there any semi-open or closed-ended questions where the list of answers was not complete or categories were not clear, or overlapped with one another, or where it was hard to tell which category was the right one for answers given by respondents?

- Were there situations where the numerical answers given didn't fit the categories, or were given in vague quantities that respondents couldn't or wouldn't make more specific?

Pilot Test

A pilot test is a final stage in testing procedures and it is designed to replicate the conditions of the actual survey. The test involves all aspects of questionnaire design. The purpose is to discover major problems that exist when all aspects of survey design are in operation at the same time. Careful attention is paid to the cost of various operations in relation to the total cost. Equally important is the test of management and control of operations. At this stage, evaluation tends towards overall performance rather than that of individual components and may cover only quality aspects of the questionnaire and data processing.

Evaluation Methods

Evaluation methods are primarily designed:

- to provide systematic procedures for identifying errors, their sources and causes;
- to analyse them in order to discover means of eliminating, reducing, or controlling their impact on data quality;
- to provide a measure of their impact on data quality in order to assist in the interpretation and use of the data.

A brief discussion of evaluation methods is given below.

Observation

In an observation program actual interviews are observed to detect problems related to both interviewers and respondents. Conditions where interviews are observed may not be fully representative of the situation where interviewers are left on their own. Consequently observation cannot consist of merely being present and "looking on". But observers must keep in the background of the interview situation not to bias the responses. They will need to be trained in observation programs and operate with a well planned check list of things to watch for. This applies whether the observa-

tions are used for qualitative or quantitative purposes.

An observation program may be expensive since highly qualified interviewers must travel to different areas to cover a subsample of respondents from each assignment. The sample size in an observation program is usually small, consequently quantitative data on evaluation must be accumulated over time. Qualitative evaluation data however, can be gathered and reported on at any time.

Observation programs are most useful for continuous or repeated surveys as deficiencies can be ironed out over time. They can also be used to redirect operations in one-time surveys providing the survey period is lengthy and the observation undertaken near the beginning of the survey period.

The character of an observation program is similar to debriefing. If the observers are experienced and well trained they can evaluate the interviewer training as well as make judgments on the quality of the questionnaire and the field procedures.

To ensure an efficient program, observers should be provided with instructions on the procedures for observation.

The instructions should stress:

- how interviewers introduce observers to respondents and how observers introduce themselves;
- observer's behaviour during the interview;
- interviewer's introduction of the survey(s) to respondents;
- interviewer's interviewing technique and respondent's reaction to it;
- respondent's ability to answer the questions as asked;
- length of interview;
- deficiencies of the questionnaire;
- any other important aspects of the questionnaire and/or interview.

All the information obtained from observation should be documented thoroughly for subsequent analysis.

Interpenetrating Samples

When the process and content of the interview are being tested simultaneously, it is difficult to separate the effects of the

questionnaire on the quality of data, from those of operational procedures, area differences or interviewers.

To separate these effects, experimental designs such as interpenetrating samples or split panels can be used. If, within a given area: (i) a sample is selected in the form of two or more sub-samples according to a specified plan; and (ii) the same sample plan is such that each sub-sample provides an independent estimate of the characteristic under consideration; then the sub-samples are referred to as interpenetrating samples. The technique of interpenetrating samples helps in providing an assessment of the quality of information. For example, it may be of interest to find out whether different forms of the same question produce important differences in the answers received. It would be impractical to ask both forms of the questions of the same respondent. However, the differences can be assessed by interpenetrating samples of respondents using the same interviewers for both forms.

More elaborate tests of differences resulting from different questions and questionnaires can be also carried out by various methods developed in the design of experiments. The methodology of such designs is described in text books dealing with sampling methods. The application of these methods, although theoretically sound, may present practical problems. First of all, they are costly and time consuming. Their cost is associated with the size of the samples that may be required in order to detect differences reliably. They are time consuming because the analysis of the results from large samples takes a long time. Thus, such designs should be used only in very exceptional cases.

In general, purely statistical tests and experiments based on sampling are seldom conclusive and they create practical and theoretical problems both in the field and in the interpretation of results. Sampling error tends to dominate the non-sampling errors on account of the small sample sizes; for a given level of reliability, different sample sizes may be required for different elements to be evaluated and it is frequently impossible to select a random sample of respondents, due to the restricted sample size, the cost and time constraints.

Reinterviewing

A major technique for questionnaire evaluation is reinterviewing a sample of households to attribute the observed differences between the two sets of responses to one of several sources: the questionnaire, the respondent, the interviewer, or the time lapse between the first and second interview.

Cost and respondent burden restrict this method of evaluation to a relatively small sample of respondents. The longer the time lag between the reference period and the reinterview the more likely outside events will affect results. A short time lag on the other hand may simply reproduce the original results as the respondents may recall too well their original responses. These conditions must be taken into account in interpreting reinterview results.

A reinterview program can serve several purposes: for a one-time survey, early reinterviewing reveals difficulties in questions in time to make changes to improve the balance of the survey. In a continuous survey program, it is a powerful tool both for the control and evaluation of the questionnaire. For example, in a continuous survey program, reinterviewing may establish an acceptable level of differences between the original interview and the reinterview by type of questions. Any significant departure from that level will serve as a warning to investigate the questionnaire or the methods of interviewing. Reinterview corresponds to normal quality control measures of any well maintained commercial production process.

A reinterview program can also be used to help estimate response bias and simple response variances resulting from a particular question or group of questions in the survey. This may be accomplished by the following design: each month, a number of reinterviews are carried out as a repetition of the original survey under similar conditions. Additional reinterviews are conducted by a senior interviewer responsible for a group of interviewers, without knowledge of the original results. The senior reinterviewer compares his results with those on the original schedules, and with the reinterviews of the subordinate, and attempt is made to reconcile discrepancies between these interviews.

The accumulation of data from both parts of the sample will make possible a study of general aspects of response errors. Thus, a simple response variance may be estimated from the first part of the sample, under the assumption of a "repetition of the original survey conditions", and response bias may be estimated from the second part of the sample if it is assumed that the reinterviewer provides the "true" answers under the survey conditions. The program makes it possible to conduct a general study of the variation of interviewers' performance, according to interviewers' experience, duration of training, type of area, season of the year and so on. Furthermore, the field control aspect is not neglected. The reinterviewers will have the responsibility of determining specific instances where the information

originally collected by the interviewer is incomplete, wrong with respect to the coverage of the household or persons within, and when reconciliation is to take place.

Periodic analysis of the data produced by the program will permit detection of sources of errors and should lead to a continuous improvement of the general survey methodology.

Like interpenetrating samples, the reinterview program may help evaluate many aspects of the questionnaire. Sensitivity, recall problems, effect of length and type of question can be reviewed by comparing for a number of questions the response biases and simple response variances. As in the observation program, the costs may be large because of the spread and size of the sub-sample needed for reinterview. Observed differences cannot always be evaluated precisely because of time lag (for example, respondents may forget some of the characteristics by the time a reinterview operation is undertaken). As in a well-designed interpenetrating sample, a well-designed reinterview program, especially for continuous surveys, may monitor many aspects of questionnaire design over time.

For more details on reinterview see: (1) United Nations (1982b) "National Household Survey Capability Program. Non-Sampling Errors in Household Surveys". (2) Platek and Timmons (1975).

Record Check Analysis

It has been emphasized that evaluation of a questionnaire will achieve a great deal of its aims through detecting deficiencies in operations which might contribute to errors in survey data. An indication of these deficiencies will manifest itself in high refusal rates, incomplete responses, inconsistency in responses, lack of responses, claimed unavailability of the information required, and the cost or duration of interviews. Complex experimental designs may not be needed to detect such deficiencies. Rather a comparison with appropriate data from other surveys or a regular repeated review of these data in a continuing survey would indicate whether results are worse than usual.

Many non-sampling errors such as low response rates, blank and partially completed questions may be detected from the survey itself. Careful analysis of the behaviour of such errors over time is invaluable for monitoring data quality. Criteria for tolerance limits of certain errors will be governed by the type of survey, the particular type of error and the cost involved in eliminating or reducing them to acceptable levels.

An equally important source of analysis of errors is the processing stage. For example, format, sequence, or open questions, may contribute to the majority of errors at the processing stage. Analysis of errors is particularly of value in a continuous program. Examination of fluctuations in the number of errors from question to question over time or the continuity of a trend would provide valuable information which can be used in making suitable changes in the questionnaire.

Many aspects of a questionnaire may also be evaluated by a study of edits and imputations, whether manual or by computer. If this is done question by question, it can be useful in determining the extent to which errors are related to the difficulty of the questions with regard to complexity, length, flow, order or sensitivity. This method of evaluation can be integrated with processing operations. Automation is quite feasible, making it a relatively inexpensive procedure for a large volume of questionnaires. It is primarily useful in post-survey evaluation. Most of the measures are quantitative although a study of original questionnaires (especially of comments placed on them) may also reveal qualitative problems.

In order to record and analyse survey errors systematically, special forms with headings for particular errors should be designed. This will assist in accumulating the data in a uniform manner and facilitate processing and analysis.

Associated with an analysis of errors is a data quality report which should be produced at regular intervals by type of survey. For example, in Canada a quarterly quality report is produced for the Canadian Labour Force Survey. The report provides a review of sampling and non-sampling errors. The sources of these errors are carefully monitored and an immediate feedback to specific operations is provided to control quality on a month-to-month basis. The report examines sampling errors and non-sampling errors inherent in total non-interview rates by type, non-response rates by type of question, coverage rates, data entry errors, and the extent of edit and imputation. The **Error Profile** publication of the U.S. Bureau

of the Census also provides a sound basis for error collection and analysis.

Benefits of Testing and Evaluation

In reviewing the various methods of evaluation it can be seen that many items related to questionnaires may be evaluated by several different techniques. The use of these techniques is dependent on cost, time, availability of trained personnel and sophisticated equipment, etc. The particular programs of testing and evaluation have to be developed with these factors in mind, as well as the need for reliability if the data are to be truly useful.

An evaluation program is particularly important in a continuous program of surveys. Evaluation of questionnaires, of the operations involved in data collection, of data processing stages, and of the results of the previous cycle of data collection all become input towards modifications of both the questionnaire and operational procedures for the next cycle. However, in order not to interrupt a time series which has been developed on the basis of a continuous survey, the questionnaire should not be modified on the basis of evaluations of just the previous cycle. Nevertheless, some improvements in operations procedures can be implemented. Experience gained from evaluation, after a significant number of cycles, is used to revise the questionnaire. Moreover, to smooth out the impact of the changes in the questionnaire on the time series or to provide adequate data for linkage between versions, a parallel run of the old and revised versions may be undertaken over a number of cycles.

Feedback from interviewers and from respondents can be organized as a part of any continuing program of surveys. Indeed, the possibility for feedback and corrective action for all aspects of survey operations is increased immensely in a continuing program. Regular repeated discussions with interviewers, and regular field visits by survey planners to hear for themselves how respondents react to the questionnaire, can be put in place as a part of survey procedures.

Chapter 5

CHECKLIST SUMMARY OF ELEMENTS OF QUESTIONNAIRE DESIGN

The previous chapters of this study have attempted to put forward some principles and practices of good questionnaire design.

As a summary guide, a checklist follows of many of the important elements in design of good questionnaires.

1. General planning of questionnaire development

Has the rationale for wanting a survey been developed?

This must be done in consultation with users.

Have background papers, discussion documents, interdepartmental and departmental correspondence and files and documents from any previous surveys been reviewed?

This can serve to identify users and areas of concern.

Have meetings been held with users to clarify objectives, needs, negotiate priorities and deadlines?

Is there agreement on subject matter, timing and desired quality of data?

Has the communication process, internal and external, i.e., between all those involved in development and others interested, been designed?

Memoranda as required? Regular progress reports? Meetings? Technical papers?

Does the needed information already exist?

Administrative data that have not been captured or analysed, or unanalysed results from other surveys may be available.

Sometimes such data may not correspond exactly to what is wanted, but are close enough that they can substitute for much more expensive fresh collection of original data.

2. Creation of an organization to design the questionnaire

Have members of design team (resources permitting) been selected: project manager, subject matter representative, sampling, field and data processing experts and technical and clerical support?

Have departmental and interdepartmental advisory committees or "steering" committees been organized?

Has an overall plan and progress reporting system been developed?

Includes development of schedule of principal events in development of the questionnaire.

Will there be adequate documentation of planning, carrying out and reporting experiences?

To help in institutionalisation of questionnaire design capability.

3. Constraints on drafting of the questionnaire and supporting documents
- Have concepts, topics, and units of measurements been decided? Have dummy tables been prepared and concepts reviewed, to check that the data required for the dummy tables will be obtained?
- Has the survey population, length and timing of interview, and nature of interview documents (schedule or questionnaire or mix) been determined?
- Have methods of selection of respondents (including sample design), been designed?
- Have data collection method(s), and skills and characteristics of interviewers been reviewed?
- The effects of each on the wording, layout, etc., of the questionnaire must be reviewed.
- These provide some constraints on questionnaire design.
4. General framework of the questionnaire
- Have the topics and sub-topics to be covered in the questionnaire been arranged by order of priority?
- Have the sections of the questionnaire been organized (introduction, administrative identifiers, main body of questions, classificatory data)?
- Drafting in successive sections makes the work easier to organize and manage.
- Is there need for comparability with other studies?
- Is each question relevant to the intended uses of the data?
- The advantages in using established concepts and definitions, for example, from other agencies, countries, or international bodies should be considered.
- Are there time, cost and any other constraints (political, legal, availability of field force, and so on)?
- Keep the objectives and the analysis plans firmly in view all the time.
- Does the first statement interviewers make succeed in "selling" the questionnaire to respondents?
- The introduction is vital to get full respondent cooperation.
5. Question wording problems
- Is the wording simple and clear?
- Aim for journalese - everyday words, short sentences few negatives.
- Are there complex concepts or technical terms that must be used?
- Definitions may be needed to be sure an imprecise everyday word (and most of them are imprecise) has only one exact meaning.
- Can examples be quoted of what is meant by a concept?
- Two or three neutral examples can help clarify a concept. Beware of leading or misleading examples.
- Does a given question require a time reference? Is the time reference clear from the context (last birth, last job)?
- Unguided, respondents will pick different time references, possibly conflicting and certainly non-additive.

5. Question wording problems - Concluded
- Have lists of non-ordered items been presented in more than one order?
- Order bias in lists of non-hierarchical (cardinal) items can be seen in favouring of first and last items.
- Are the questions, or is the subject, likely to be affected by social-desirability or politeness bias?
- This kind of bias can be reduced by careful wording and sequencing (e.g., by suggesting that the socially undesirable answer is quite acceptable) but never eliminated. Most questions are likely to be affected by these biases.
- Are any questions leading or emotively loaded?
- Questions should avoid suggesting the answer or favouring one answer over another.
- Is any question really two questions in one?
- Beware the double-barrelled question! Watch out for "and"!
- Do any questions aim at future plans or expectations?
- Projecting from past behaviour is generally more accurate than relying on respondents' future plans, which may contain wishful thinking.
- Are any questions sensitive or threatening?
- Careful wording and placement can help defuse such questions although sometimes not entirely.
- Do any questions call for recall of details over a long period, or for effort by the respondent to compile an answer?.
- Recall periods should be kept relatively short, and not expect much effort to dig out documents or contact others in order to be able to provide an answer. Forward telescoping bias might occur.
- Does the order of the questions affect answers?
- (a) Don't give away answers to later questions;
(b) grouping subjects can give better quality responses.
6. Schedule vs. full questionnaire
- Does the subject matter require completely worded questions?
- Factual questions or ones with simple concepts lend themselves to a schedule approach.
- Can interviewers handle a schedule approach adequately?
- The schedule method calls for a well trained field force with low turnover.
- Are there limitations on paper quantities or printing quality?
- Schedules make for less bulky questionnaires (fewer pages).
- Are there questions requiring that the respondent be shown something?
- Does the question sequence call for much branching or skip instructions?
- Schedules do not readily lend themselves to complex branching procedures in question flow.
- Can a mixed schedule versus questionnaire method be used?
7. Layout
- Is it clear how much freedom the interviewer has in wording the question?
- The questionnaire should provide the complete wording (avoiding too many abbreviations and including punctuation), or the wording(s) should be

7. Layout - Concluded

Are answer spaces clearly identified with the question?

clear from interviewer training or in the interviewer's manual. Often interviewers must be left some freedom to probe or ask their own supplementary questions.

Do answer spaces give enough space for interviewers to enter the answer?

They should be close to their questions, separated from other questions, and if needed connected by lines or dots.

Are tabulated answer spaces margin justified for questions with lists, or for coding of answers?

For ease of tabulation.

Have lines and shading been used to highlight answer spaces?

These visual guides help interviewers, coders and key-punchers.

Are questions all consecutively numbered, or otherwise clearly numbered?

To avoid confusion in reference to the questionnaire.

Are interviewer instructions readily identifiable, separate from, but together with the question(s) they refer to?

Instructions in boxes or in different type styles can be helpful.

Is the layout (use of type faces and sizes, lines, arrows, shading, positioning of answer spaces, etc.) consistent throughout the questionnaire?

To minimize interviewer error.

8. Interviewer instructions

After each question, is it clear what question should be asked next?

Interviewer instructions, verbal or graphic, should be plentiful.

Are there blocks of questions that apply only to certain respondents?

Filter questions (with skip instructions) can steer interviewers past a group of questions that do not apply to a given respondent.

9. Translation

Must the questionnaire be produced in more than one language? How many more?

A two-language questionnaire can be printed using alternate lines, or using a back-to-back ("tumble") format. More than two languages usually require separate questionnaires.

Is the translation accurate?

Back-translation helps check on translation accuracy.

Is the translation too formal, not colloquial enough?

Colloquial terms or dialects should be used rather than a correct standard or formal translation.

10. Two basic types of questions - open versus closed

For each question, would it be better expressed as an open-ended or a close-ended question?

Open-ended are good:

- as openers, change of subject;
- where not enough is known of likely answer classes to be able to draw up a closed-end list;

10. Two basic types of questions - open versus closed - Concluded

- where responses are technical or complex;
- where respondent cooperation would be better than to a closed-ended question;
- as a source of hypotheses, and of wording for closed ended questions;
- to get more detail or elaboration of an answer;
- in avoiding leading respondents (i.e., no answers are suggested).

Closed-ended are good:

- all respondents answer in the same frame of reference, from the same choice of answers;
- variations in respondent articulateness are irrelevant; codes for capture and analysis can be determined before interviewing. Separate coding for each answer is eliminated;
- easier for interviewers and respondents - no need to write a verbatim narrative answer in full thus quicker and cheaper to administer;
- sensitivity of some topics can be reduced (e.g., income in range classes);
- more complete information can be obtained through lists that can be read out;

but

closed-ended lists must be drawn up carefully, reflecting respondent experiences in categories meaningful to respondents; list must be exhaustive and exclusive (non-overlapping).

Is enough information available to draw up a closed-ended question?

Desk research (other studies, etc.) and/or developmental work may be needed.

11. Coding and data capture

If not pre-coded, has provision been made for entry of computer codes next to answer spaces?

For capture directly from the questionnaire.

Are interviewers to code questions during or just after the interview?

Codes and space for coding must be provided.

What codes are to be given to "other(SPECIFY)", "no answer" and "not applicable" answers?

To ensure consistency, and comparability between surveys.

- | | | |
|------------------------------|--|---|
| 12. Printing | Is the paper quality sturdy enough? | Questionnaires may be handled many times. |
| | Can it be printed on both sides of the paper? | Depends on interviewing conditions and other aspects of handling. |
| | Have enough copies been printed? | To allow for unavoidable wastage, file copies, spare copies. |
| | Are special shipping control forms, covers or envelopes needed? | |
| 13. Administration | Where and for how long should questionnaires be stored after capture? What is to be done with them after the storage review? | |
| | Who will have access to completed questionnaires and under what conditions? | |
| 14. Supporting documentation | Are training and procedures manuals consistent with the questionnaire? | Careful editing is needed to eliminate inconsistencies and errors. |
| | Could visual aids such as "show-cards" help the interview? | Some minimum level of literacy may be needed. |
| 15. Testing and evaluation | Are the objectives and hypotheses clear enough for testing? | The scope and methods of testing and evaluation depend on the completeness and clarity of these factors. |
| | Are questionnaire designers to observe or take part in tests or evaluation interviewing? | Designers cannot draft questionnaires adequately without first-hand experience of data collection problems. |
| | Has a debriefing meeting with test or evaluation interviewers been organized? | Interviewers can comment on the adequacy of the questionnaire, supplementing analysis of results. |
| | Has enough time been allowed for analysis of test results? | Lip-service acceptance of testing is useless unless results can be incorporated into a revised final questionnaire. |
| | Are documentation procedures adequate for evaluation to have an impact on other surveys or later waves of a given survey? | |
| | Are evaluation objectives clear enough for a choice of technique(s) to be made? | |
| | What is to be the scope, format and distribution of an evaluation report? | |

BIBLIOGRAPHY

The Bibliography has been divided into two sections. The first contains a list of suggested further readings, for any reader of this study who wishes to develop his knowledge of theories and principles of questionnaire design still further. Many of these books also provide practical ideas the questionnaire designer may wish to adopt. Some of the examples in the study have been taken from these readings. Most

of the suggested readings are in print at time of writing (1983).

The second section contains the sources of references made in the text, where these refer to periodicals or to books that are out of print. Texts that merit examining only if few or none in section A are available, have been included under B.

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