

**Surveys of economically
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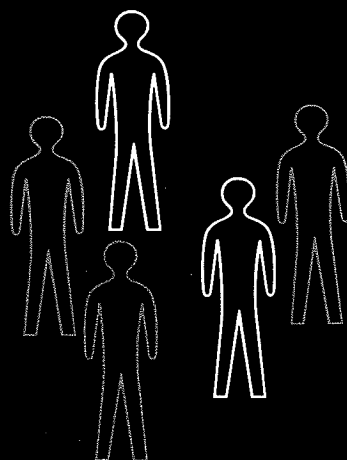
employment,

unemployment

and

underemployment

**An ILO manual
on concepts
and methods**



International Labour Office Geneva

**Surveys of economically active population,
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and underemployment**

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Surveys of economically active population, employment, unemployment and underemployment:

An ILO manual on concepts and methods

Ralf Hussmanns, Farhad Mehran
and Vijay Verma

INTERNATIONAL LABOUR OFFICE
GENEVA

International Labour Office Geneva

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Preface

The international standards on the various topics of labour statistics are reviewed and adopted by the International Conference of Labour Statisticians (ICLS). This Conference, convening every five years or so, has held 14 meetings since its first in 1923. The role of the international standards on labour statistics is to provide guidance to countries in developing their national statistical programme and, to the extent feasible, facilitate international comparisons.

In October 1982, the Thirteenth ICLS adopted new standards concerning statistics of the economically active population, employment, unemployment and underemployment (Resolution I of the Thirteenth ICLS). The resolution forms part of the standards and guide-lines referred to in the Labour Statistics Convention, 1985 (No. 160), and Recommendation, 1985 (No. 170), of the International Labour Office. It replaces Resolution I of the Eighth ICLS (1954) concerning statistics of the labour force, employment and unemployment, and paragraphs 4-9 and 13 of Resolution III of the Eleventh ICLS (1966) concerning measurement and analysis of underemployment and underutilisation of manpower.

The 1982 ICLS resolution on statistics of the economically active population, employment, unemployment and underemployment sets forth the objectives and scope of the statistical programme, the basic concepts and definitions, the principal classifications, particular topics for data collection, and general guide-lines on the evaluation and dissemination of the results. Paragraph 25 of the resolution calls on the ILO to prepare a manual detailing the application of the international standards, describing such aspects as methodology of data collection, tabulations and analysis.

It is to meet this demand of the ICLS that the manual presented here has been prepared. The manual can also be considered as forming part of the series of technical studies undertaken in pursuance of the United Nations National Household Survey Capability Programme (NHSCP) to assist developing countries in the organisation of household surveys.

The manual has, therefore, two main objectives: (1) to explain the international concepts and definitions in more detail than could have been provided in the necessarily tightly worded text of the 1982 resolution; and (2) to provide technical guide-lines on how to apply the international standards for collecting data on the economically active population through household surveys. To make it as self-contained as possible, general methodological issues (such as sampling, questionnaire design, field operations, data processing and data evaluation), in so far as they are relevant in the present context, are also discussed in the manual.

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The first of the 14 chapters of the manual gives an introduction to the subject; the other 13 chapters are grouped into two parts. The eight chapters of Part One focus on the conceptual issues involved in measuring the economically active population, employment, unemployment and underemployment. The five chapters of Part Two deal with the main methodological and technical issues that should be considered when conducting surveys of the economically active population and related topics.

In preparing the manual the ILO Bureau of Statistics organised two methodological surveys in 1983/84; one in Kerala (India) and the other in Costa Rica. The purpose of these surveys was to test alternative question formulations and to examine the application of the 1982 international standards in different cultural settings. The conclusions drawn have been taken into consideration in this manual. The analysis and the numerical results of these surveys have also been the subject of two separate publications.¹

The manual has also benefited from an extensive review of measurement issues arising in national survey applications and of different solutions adopted by various countries. Many of these have been incorporated in the manual and a summary of all of them can be found in a separate publication.²

A draft of the manual was examined by a special working group on household surveys jointly convened in Geneva by the United Nations National Household Survey Capability Programme and the International Labour Office in January 1989. The working group was composed of household survey experts from 13 developing countries, several representatives from international organisations and an observer from Statistics Sweden. Using their comments and suggestions, the manual has been revised and finalised in the form presented here.

The introductory chapter of the manual and the chapters of Part One were prepared by Ralf Hussmanns and Farhad Mehran of the ILO Bureau of Statistics, with the collaboration of Marie-Thérèse Dupré for Chapters 2-6, and of Marc Copin, Eivind Hoffmann, Ahmed Karim and Sophia Lawrence for Chapter 9. The chapters of Part Two were prepared by Vijay Verma, ILO consultant.

At various stages in the preparation of the manual, valuable suggestions for improvement were received from a number of colleagues, in particular Ralph Turvey, retired Chief Statistician of the ILO and Director of the Department of Labour Information and Statistics; K. M. Bashir, retired senior official of the ILO Bureau of Statistics; Robert Pember, ILO Regional Adviser in household surveys (Africa); A. C. Basu, retired ILO Regional Expert on household surveys (Asia and the Pacific); his successor, S. M. Vidwans, and his predecessor, M. V. S. Rao, now Technical Adviser, National Household Survey Capability Programme. Many experts from national statistical agencies also commented on the various drafts of the manual. The authors would like to express their gratitude to all who contributed to their work, including Rosalind Dearlove who edited the manual, and the staff of the Kerala Statistical Institute and the General Bureau of Statistics and Censuses in Costa Rica, who carried out the field work and part of the data processing of the two ILO methodological surveys.

As far as possible the manual tries to refer to the different employment situations and particular categories of workers which may exist in different groups of countries and require special statistical treatment. It should be borne in mind, however, that specific

¹ R. M. Trigueros: "ILO methodological survey on the measurement of employment, unemployment and underemployment in Costa Rica" (in Spanish, with summaries in English and French), in *Bulletin of Labour Statistics* (Geneva, ILO), 1986, Vol. 1; A. Mata: *Measuring employment and unemployment: Report from ILO methodological surveys in Kerala (India) and Costa Rica*, STAT Working Paper, No. 89-2 (Geneva, ILO, 1989).

² ILO: *Statistical Sources and Methods*, Vol. 3. Economically active population, employment, unemployment and hours of work (household surveys) (Geneva, ILO, second ed., 1990).

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national circumstances may be such that some of the principles recommended or illustrated will need to be further adapted or modified for particular survey applications. The ILO Bureau of Statistics welcomes any suggestions from the users of the manual that may help to improve an eventual future re-edition as well as to prepare a revision, at a later stage, of the international standards on statistics of the economically active population, employment, unemployment and underemployment.

Bureau of Statistics,
International Labour Office,
Geneva

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*Dedicated to the memory
of **Mr. K. M. Bashir***

Introduction

1

1. Purpose of the manual

This manual has been prepared with various groups of users in mind. First, it is aimed at statisticians who have to design or redesign a labour force survey, or, more comprehensively, a survey on the economically active population, employment, unemployment and underemployment. In particular, it should help in determining the scope and content of the survey, in specifying the concepts and definitions, in designing the questionnaire and in drafting the interviewers' instructions.

The manual reflects the international standards on the subject (Resolution I of the Thirteenth International Conference of Labour Statisticians (ICLS), 1982, is reprinted in full in Appendix 1), but goes beyond them in discussing matters of detail which could not be covered in such a brief document. In order for the manual to be as self-contained as possible, it includes discussions of general methodological issues such as sampling, questionnaire design, field operations, data processing and data evaluation, as applied to the subject in hand.

The manual is also addressed to statisticians who want to know more about particular aspects of the subject. For example, a survey statistician may need to know about the application of the international standards in specific circumstances, such as the statistical treatment of unpaid family workers not at work, of full-time students looking for full-time jobs, etc. In this respect, the manual is intended to serve as a reference document.

Another target group is that of statisticians involved in processing or retabulating the data of an already existing survey, or concerned with adjusting the aggregate figures, in order to produce results that are closer to the international standards and thus to facilitate international comparisons.

The manual is also intended for use as basic material for training courses on labour force surveys, as well as for training courses on population censuses, household income and expenditure surveys and, in general, all surveys that include items on the economically active population and its characteristics. In addition, the manual can serve as background material for training courses on labour market information systems, manpower planning and related topics.

Finally, the manual should also help data analysts, users of statistics, researchers, planners, journalists, politicians, trade unionists and others who may be interested in knowing about employment and unemployment statistics, and their problems and limitations. The manual can give these users a better understanding of the international concepts and definitions, and a more varied knowledge of data collection methods and procedures.

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2. Purposes of statistics on the economically active population

One of the fundamental considerations in designing a survey on the economically active population is the relative importance of the different purposes it is to serve, and the role of the survey in relation to other available sources of economic and social statistics. The international standards mention two broad objectives for a comprehensive system of statistics on the economic activity of the population:

- the measurement of the extent of available and unused labour time and human resources for the purpose of macro-economic monitoring and human resources development planning; and
- the measurement of the relationships between employment, income and other social and economic characteristics for the purpose of formulating and monitoring employment policies and programmes, income-generating and maintenance schemes, vocational training and other similar programmes.

The first broad objective in collecting data on the economically active population may be labelled as the economic perspective, and the second as the social perspective. Under each perspective, there are several more specific measurement objectives.

Macro-economic monitoring

From an economic point of view, a main objective of collecting data on the economically active population is to provide basic information on the size and structure of a country's workforce. Data collected at different points in time provide a basis for monitoring current trends and changes in the labour market and in the employment situation. These data, supplemented by information on other aspects of the economy, provide a basis for the evaluation and analysis of the macro-economic policies of a country. The unemployment rate, in particular, is widely used as an overall indicator of the current performance of a country's economy.

Human resources development

Another objective in collecting data on the economically active population is to provide a base on which to measure labour supply, labour input and the extent to which available human resources are being utilised in the production process of the economy. Such information is essential for planning and formulating policies on the development of human resources.

Labour supply refers to the population which furnishes the supply of labour for the production of goods and services during a given period; the amount of time that the population works or is available for work during that period; the intensity of work; and the level of training and skill of the population. Labour input is related to labour supply and refers to the actual utilisation of the available labour. It corresponds to the number of workers at work, their actual time input, productivity and use of skills. Most of these elements for measuring labour supply and labour input are obtainable from household surveys, but others, such as productivity, use of skills and intensity of work, may be better obtained from other sources of data or from combinations of data from different sources.

Employment policies

Statistics on the economically active population are essential in the design and evaluation of overall government policies aimed at promoting and creating employment. These may include training programmes, schemes to help people start or return to work, community work programmes, assistance in setting up an enterprise, wage subsidies, tax exemptions and other positive incentives for employment promotion. The relevant statistics, when broken down by sex, age group, occupational categories and branches

of economic activity, also provide essential material for assessing the social effects of government employment policies. Further to this purpose, information is needed on changes in the level of employment and unemployment among women, young persons, elderly workers and other population groups of particular social concern.

Incomes support and social programmes

Employment is the main source of income for most people, and therefore employment statistics constitute a major element in formulating and evaluating government policies on income-generation and maintenance, alleviation of poverty and redistribution of income. They can also be used in assessing the effects of price-stabilising, balance-of-payment and structural adjustment policies on the employment and income situation of the working population and its different subgroups. The joint measurement of employment and income provides the basis for analysing the adequacy of employment of different categories of workers, the income-generating capacity of different types of economic activities and the incidence of different forms of employment-related economic hardships. Data on employment and income, disaggregated by occupation, branch of economic activity and other socio-demographic characteristics, are needed in particular for negotiations among social partners, such as collective bargaining and programmes for equal opportunity and treatment in employment.

Other uses

Statistics on the economically active population may also serve a variety of analytical purposes. Data may be used to explain the past growth of an economy and to study the demographic and socio-economic factors affecting the size and composition of a workforce, or they can be used to make projections of the economically active population and its components as a basis for socio-economic planning. Employment characteristics can serve as explanatory variables in many fields of research, ranging from testing theories on the segmentation of the labour market to formulating demographic models. Data may be used to inform the public about the state of employment or to focus attention on particular issues such as child labour, and race or gender-based discriminations. Employment statistics may give useful indications to business planners on the future course of the economy. Data, appropriately broken down by geographic area, can furnish information on local labour markets, particularly on the numbers of persons available in specific occupational categories, that can be of great help to a company proposing to extend or set up operations in a given area.

3. Data collection programme

This wide range of measurement objectives needs a coherent data collection programme designed from the outset to meet both current and long-term needs, and to accord with related sets of economic and social statistics.

Current and long-term needs

The international standards state that the data collection programme should provide statistics for current purposes, compiled frequently on a recurrent basis, as well as statistics for structural in-depth analysis and as benchmark data, compiled at longer intervals.

The current statistics programme should cover statistics of the currently active population, the employed and the unemployed in such a way that trends and seasonal variations can be adequately monitored. As a minimum programme, it is suggested that

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statistics on the currently active population be collected twice a year, for example, for the agricultural peak and slack seasons.

The non-current statistics programme should provide comprehensive data on the economically active population and its activity patterns over the year, on the relationships between employment, income and other social and economic characteristics, and data on other particular topics, such as children and youth, women, households, as determined by the users' needs.

In practice, the design of a data collection programme on the economically active population and its components would involve decisions on exactly which items were to be covered by the current, and which by the non-current, statistics programme; decisions on the most appropriate sources and periodicities for the current statistics programme and for the different parts of the non-current statistics programme; and decisions on the best way to ensure the comprehensiveness of the programme whilst avoiding unnecessary duplications. The issues involved in the design of a data collection programme will be discussed in more detail in Chapter 10 on survey planning.

Relation to other economic and social statistics

Ideally, a data collection programme on the economically active population should accord with related economic and social statistics. Certain of the measurement objectives cited earlier require joint analysis of statistics on the economically active population and of statistics on related economic or social topics. Such joint analysis is facilitated if the different bodies of statistics correspond as regards reference dates, coverage, definitions, classifications and other essential aspects.

For example, the monitoring of macro-economic trends requires statistics on employment and unemployment as well as on national accounts. A sound analysis of the data presumes that the two bodies of statistics refer to the same time period, that the employment and unemployment data cover all categories of workers in line with the coverage of the national income data, that a common concept of economic activity is used and that the two sets of results can be broken down into the same industry divisions.

4. Rationale for emphasis on household surveys

Sources of statistics on the economically active population

The sources of statistics on the economically active population or its components may be grouped into three broad categories: (1) population censuses and household sample surveys; (2) establishment censuses and establishment sample surveys; and (3) various types of administrative records, such as employment exchange registers, unemployment insurance records, social security files, public sector payrolls and personnel lists.

These various sources may differ in the type and detail of information they provide, in coverage and periodicity, in concepts, definitions and measurement units, in cost of operation, quality and timeliness of the results, etc. Some differences are due to the nature of the sources themselves, each of which has its own particular advantages and limitations. Generally, one source tends to be stronger where the others are somewhat deficient, and vice versa. Thus, the statistics obtained from certain sources may be more suitable to the needs of one particular group of users than of another, for whom other sources may provide more appropriate results. The various sources should therefore be regarded as complementary rather than interchangeable.

Essential to statistical planning is the best choice of an appropriate combination of data collection instruments to meet the measurement objectives and the data needs of

a given situation. Statistics derived from one source may then usefully be linked with those derived from other sources, or compared for the purposes of evaluation, provided that care has been taken to match, wherever possible, concepts, definitions, classifications and reference periods.

The special role of household surveys

The international standards do not make references or recommendations as to any specific data source. While in theory meant to be applicable to various data sources, the international standards are in practice better suited to data collection through household surveys. In fact, some of the criteria specified in the international standards can only be implemented precisely in personal interviews, i.e. through household surveys. This is one reason why the present manual focuses on household surveys.

Another reason for the emphasis on household surveys is that such surveys combine a number of particular advantages as compared with other sources:

- (1) Household surveys are the most flexible of all data collection instruments. A large variety of topics can be explored, and information obtained on a particular topic, such as employment, can be linked to that obtained on other topics covered by the same survey, such as education or income. Concepts, definitions and subject details can be easily adapted to data requirements. Such flexibility makes household surveys particularly suited to serve different users' needs and to provide internationally comparable results.
- (2) Household surveys are the only data source which, with an appropriate survey design, can cover virtually the entire population of a country, all branches of economic activity, all sectors of the economy and all categories of workers, including the self-employed, unpaid family workers, casual workers, multiple jobholders. They include not only persons at work but also persons with a job or enterprise who are temporarily absent from work. In addition, household surveys are the only data source which allow joint and mutually exclusive measurement of the employed, unemployed and the economically inactive. This is an essential requirement for the application of the labour force framework, on which the international standards are based.
- (3) Household surveys have as basic units households or individuals, as opposed to sources which have as basic units establishments, jobs, etc. Data from household surveys can thus be related to supplementary information not only on individuals but also on households or families obtained from the same survey.
- (4) Household surveys, by measuring individual changes between and within labour force categories, can be designed to provide not only stock data for a given point or period of time, but also data on flows and gross changes over time.

A further reason why the manual gives emphasis to household surveys is that in many countries other sources, such as establishment surveys or administrative records, are non-existent or unacceptably incomplete. In many countries, given the existing statistical infrastructure, the development of a household survey programme may be a more immediate and less demanding prospect than that of an appropriate data collection programme on the economically active population based on establishment surveys and administrative records.

It should be mentioned, however, that data collection through household surveys does have certain implications as to cost, data quality, ability to provide data for small areas or groups, etc. These issues are discussed in more detail in Chapter 10 on survey planning, where the relative advantages and limitations of the various sources are compared.

5. Scope and contents of the manual

The manual consists of 14 chapters, this introduction being the first of them. The other 13 chapters are organised into two parts: Part One focuses on conceptual issues and consists of eight chapters; Part Two deals with methodological issues and consists of five chapters. The manual is supplemented by appendices, including the full text of the international standards on statistics of the economically active population (Resolution I, Thirteenth ICLS, 1982), and a set of selected national labour force survey questionnaires.

Part One covers the following topics: the economically active population (Chapter 2); the currently active population (the labour force) (Chapter 3); the usually active population (Chapter 4); employment and hours of work (Chapter 5); unemployment (Chapter 6); underemployment (Chapter 7); employment and income relationships (Chapter 8); major economic classifications, including industry, occupation and status in employment (Chapter 9).

The chapters explain in detail the concepts and definitions laid down in the international standards. Under each heading, an attempt is made to discuss the appropriate application of the international standards with respect to borderline cases and particular categories of workers. Examples are casual workers, seasonal workers, unpaid family workers at work or temporarily absent from work, apprentices and trainees, discouraged workers, full-time students seeking work, persons without work trying to establish their own enterprise, persons engaged in production for own consumption only, persons on lay-off without formal job attachment, conscripts and regular members of the armed forces.

Each chapter also describes the measurement problems that arise in survey applications, and gives examples of solutions adopted in practice by different countries. Such issues are covered as age limits for measuring the economically active population, choice of reference periods, cognitive aspects involved in the measurement of various concepts, problems related to the measurement of hours of work (usual hours of work and actual hours worked) in the case of persons with irregular work schedules.

All chapters in Part One start with the relevant international definition, and most include a questionnaire flow chart showing how that definition may be transformed into a sequence of question items for survey measurement. These charts have been designed by using survey questionnaires from a wide range of countries. They can be used not only as a reference for questionnaire design, but also as a means for facilitating full understanding of the underlying concepts and their relationships to each other. To supplement these questionnaire flow charts, extracts from national labour force survey questionnaires, translated into English, have been added as Appendices 5-13, so as to give examples of the variety of question wordings and data collection forms.

Part Two of the manual discusses the technical issues involved in the design and operation of a comprehensive survey programme on the economically active population, and in this respect deals with the major aspects to be considered when conducting household surveys. The five chapters of this part cover: survey planning, design and redesign (Chapter 10); sample design (Chapter 11); questionnaire development and design (Chapter 12); survey operations and data processing (Chapter 13); data accuracy and evaluation (Chapter 14).

In Chapter 12, the various questionnaire flow charts presented in Part One of the manual are put together. Based on these, at the end of Chapter 13 a minimum tabulation programme is given for presenting the main results of surveys on the economically active population. Where appropriate, cross-classifications by sex, age, marital status, household size, relationship to the reference person of the household and other background variables are indicated. The manual does not, however, deal with the

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measurement of such background variables;¹ for a discussion of the conceptual and practical issues involved, reference is made in particular to the *Handbook of household surveys* (United Nations, 1984) and the *Principles and Recommendations for population and housing censuses* (United Nations, 1980).

References

- United Nations, 1980. *Principles and Recommendations for population and housing censuses*. Statistical Papers, Series M, No. 67, New York, UN Statistical Office.
- 1984. *Handbook of household surveys*. Revised ed., Studies in Methods, Series F, No. 31, New York, UN Statistical Office.

¹ The same applies to variables such as educational level, participation in vocational training, receipt of unemployment benefits, which, though related to statistics on employment, unemployment and underemployment, do not belong to the core programme of surveys of the economically active population as outlined in the international standards.

PART ONE

CONCEPTS

The economically active population

2

1. Introduction

A survey of the economically active population is an inquiry into the number and characteristics of persons who are economically active. According to the international standards, the “economically active population” comprises all persons of either sex who furnish the supply of labour for the production of goods and services as defined by the United Nations systems of national accounts and balances, during a specified time reference period. According to these systems, the production of goods and services includes all production and processing of primary products, whether for the market, for barter or for own consumption, the production of all other goods and services for the market and, in the case of households which produce such goods and services for the market, the corresponding production for own consumption.

The international standards use the term “economically active population” as a generic term and identify, in particular, two useful measures of the economically active population without excluding other possibilities: the “usually active population” measured in relation to a long reference period such as a year; and the “currently active population” measured in relation to a short reference period such as one week or one day. An equivalent term for the latter is “labour force”.

The measurement of the economically active population involves three basic considerations: the scope of the population to be covered; the dividing line between economic activities and non-economic activities; and a measurement framework for applying this dividing line to that population. The purpose of this chapter is to examine the first two points in detail. The issues related to the measurement framework are discussed in the following two chapters on currently active population and usually active population.

2. Scope of the population

Surveys of the economically active population should, in principle, cover the entire population irrespective of activity status, sex, marital status, ethnic group, etc. In practice, however, certain restrictions may be necessary. In this respect, two considerations should be emphasised. The first involves determining the scope of the survey population, i.e. the population which is to be represented by the survey (total or civilian population, including or excluding the institutional population, etc.). The second involves determining the scope of the population of interest, i.e. the population for which inquiry on economic activity is meaningful (setting age limits, including or excluding categories of disabled persons, etc.).

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Age limits

Young people below a certain age are either too young to be physically able to work or, due to national labour legislation or compulsory schooling, not allowed to work. The main considerations in the choice of a minimum age limit for defining the population for which inquiry on economic activity is to be made are: (a) the extent and intensity of participation in economic activities by young people; and (b) the feasibility and cost of measuring such participation with acceptable accuracy.

In countries where compulsory schooling and legislation on the minimum age for admission to employment have broad coverage and are widely respected, the age specified in these regulations may be used as a basis for determining an appropriate minimum age limit for measuring the economically active population. It should, however, be borne in mind that legislation on the minimum age for admission to employment generally provides exceptions for particular types of activities (work in family enterprises, work as part of vocational or technical education, light work, work in the performing arts, etc.).

In other countries, however, this approach may not be appropriate. In such situations, the minimum age limit for measurement should be determined empirically on the basis of considerations (a) and (b) above, by using, for example, expert knowledge or specially designed pilot studies. In connection with (b) it should be mentioned that where children and young people are knowingly engaged in illegal work, this work is unlikely to be reported in regular surveys. Lowering the minimum age limit just for the purpose of covering illegal child labour is therefore unlikely to be effective.

It should be emphasised that the purpose of setting a minimum age limit for measurement is not to cover *in extenso* each and every child and young person engaged in some economic activity, but to ensure that all those with non-negligible participation in economic activity be covered. This means that, having set a minimum age limit for measurement, there could still be children or young people below the specified age who may be engaged in some economic activity. Where this is of particular interest, additional data on children and young people below the specified minimum age limit adopted for measuring the economically active population may be collected on a periodic basis.

The minimum age limit adopted for measuring the economically active population in surveys varies among countries (ILO, 1986). It may be as low as six (Egypt) or ten years (Brazil), or as high as 16 (Sweden, United States). The majority of countries, however, use 14 or 15 years as the minimum age limit. Certain countries have used dual minimum age limits: a lower minimum age limit for collecting information on economic activity, and a somewhat higher age limit for classification into the economically active population. Examples are Canada (14 and 15), India (five and 15), and Venezuela (ten and 15).

The international standards do refer to a minimum age limit for the measurement of the economically active population and its components, though a particular value is not specified. This means that the minimum age limit should be determined in accordance with the prevailing conditions in each country. The United Nations Principles and Recommendations for Population and Housing Censuses specify that the minimum age limit adopted for the census questions on economic activity should never be higher than 15 years. It is further mentioned that countries where a large proportion of the labour force is engaged in agriculture (a type of activity in which, normally, many children participate) will need to select a lower minimum age than highly industrialised countries, where employment of young children is rare. In order to permit international comparisons, it is recommended that any tabulations of economic characteristics which are not cross-classified by detailed age should at least distinguish

between persons under 15 years of age and those 15 years of age and over (United Nations, 1980, para. 2.187).

Whatever minimum age limit is adopted, there may be in certain countries a substantial number of children below that age who are engaged in various economic activities, e.g. on plantations and in other agricultural undertakings producing for commercial purposes, or in family and small-scale enterprises producing for own or local consumption. In such situations, there may be a need to obtain supplementary data on the number, characteristics and working conditions of such children, whether or not they are included as economically active in the regular statistics. A provision for collecting periodically additional data on children and young persons below the specified minimum age limit adopted for measuring the economically active population has explicitly been made in the international standards, with a view to studying the transition phases from learning to earning activities, to revealing the relationship between school attendance and participation in economic activity, and to developing, where necessary, appropriate policy measures.

In addition to using a minimum age limit, certain countries use also a maximum age limit. Adoption of a specified upper age limit means that all persons above that age limit are excluded from the count of the economically active population. Some industrialised countries (e.g. Denmark, Sweden, Norway, Finland) have set an upper age limit of .74 years. Among developing countries, some (e.g. Egypt, Malaysia, Mexico) have restricted the inquiry on economic characteristics to persons under 65 years of age. Most countries, however, do not use a maximum age limit. Similarly, the international standards do not refer to a maximum age limit for the measurement of the economically active population and its components.

Particular population groups

In principle, the statistics on the economically active population should represent the situation of the total population of the country. In the broadest sense, the total population consists of either all usual residents of the country or all persons present in the country at the time of the survey. The total of all usual residents is generally referred to as the *de jure* population, and the total of all persons present as the *de facto* population. The implications of the choice between the two population concepts on sample design and data quality are discussed in Part Two of the manual.

In practice, surveys do not always cover the total population of the country, whether defined on a *de jure* or on a *de facto* basis. This is because one or another group of the population may be excluded, depending on national circumstances. A major group often excluded from the scope of the survey population are members of the armed forces. Information on the armed forces is generally regarded as secret; moreover, the bulk of the members of the armed forces live in barracks or military zones, locations which are often excluded from the scope of the survey for practical reasons.

Where members of the armed forces are not covered by the survey, separate information on their total number should, whenever possible, be obtained from the government agencies concerned, so as to provide a figure for the total economically active population in line with the international standards. A definition of “members of the armed forces” and their statistical treatment is discussed later in Chapter 5 on employment.

Apart from members of the armed forces living in military installations, many surveys also exclude all other persons living in institutions. The institutional population comprises persons who are not members of ordinary households. These include persons living in military installations, correctional and penal institutions, dormitories of schools and universities, religious institutions, hospitals and so forth. The exclusion of the institutional population is basically due to practical considerations of sampling. Its

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impact on the size of the total economically active population should not, however, be significant. Apart from personnel attached to the institutions and members of the armed forces (who are excluded only if they are not members of households but living in dormitories, barracks or similar accommodation) the number of inmates of institutions who are engaged in economic activities will usually be very small.

In practice, therefore, the scope of many surveys on the economically active population is limited to the civilian non-institutional population. For various practical reasons, surveys may further exclude certain other population groups from their scope, such as aliens, nomads, ethnic minorities, seasonal migrant workers, homeless people, people living in mobile homes, persons living in remote places or in areas to which access is difficult, merchant seamen and fishermen resident in the country but at sea at the time of the survey.

A related issue is whether the economically active population should be measured at the place of residence or at the place of work. This issue is relevant to regional subclassifications of the statistics, particularly when a survey is intended to provide data for small areas. Depending on whether the measurement is based on the place of residence or on the place of work, the results obtained may differ substantially in small areas where daily or weekly commuting to the workplace is common. The national total of the economically active population may even be affected by such differing measurements, especially where frontiers are daily crossed by residents living in one country but working in a neighbouring State.

In general, it is important for proper interpretation and analysis that the scope of a survey be carefully defined and a full description given. It should be clearly specified which group is excluded or included, which concept of population is used (*de jure* or *de facto*) and how the economically active population is measured (place of residence or place of work).

3. Scope of economic activity

Economic activity and the SNA production boundary

A clear understanding of the concept and boundary of economic activity is fundamental to the correct application of the definitions of employment, unemployment and economically active population in surveys of households or individuals. The exact boundary between economic and non-economic activities is a matter of convention, but unless a precise line is drawn the correct statistical treatment of many situations encountered in practice cannot be determined and, in consequence, the resulting statistics are more likely to be subject to controversy and to higher response errors.

The concept of economic activity adopted by the Thirteenth ICLS (1982) for the measurement of the economically active population is defined in terms of production of goods and services as set forth by the United Nations System of National Accounts (hereafter SNA; United Nations, 1968a). Thus persons should be counted as economically active if (and only if) they contribute or are available to contribute to the production of goods and services falling within the SNA production boundary. The use of a uniform definition of economic activity serves to ensure that the activity concepts of employment statistics and production statistics are consistent, thus facilitating the joint analysis of the two bodies of statistics.

Economic activity as defined by the present SNA covers all market production and certain types of non-market production, including production and processing of primary products for own consumption, own-account construction and other production of fixed assets for own use. It excludes unpaid activities such as unpaid domestic activities and volunteer community services.

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The production of goods and services as specified in the SNA comprises:

- (a) the production of goods and services normally intended for sale on the market at a price that is designed to cover their cost of production (SNA para. 6.2 and p. 232);
- (b) the production of other goods and services which are not normally sold at a price intended to cover the cost of production; these items range from government services and private non-profit services to households, to domestic services rendered by one household to another (SNA para. 6.2 and p. 235); and
- (c) specified types of production for own consumption and fixed capital formation for own use (SNA paras. 6.19 and 6.23):
 - (c1) all production of primary products for own consumption, that is, the characteristic products of agriculture, hunting, fishing, forestry and logging, and mining and quarrying;
 - (c2) the processing of primary commodities by the producers of these items in order to make goods such as butter, cheese, flour, wine, oil, cloth or furniture for their own use, whether or not they sell any of these products on the market;
 - (c3) production for own consumption of other commodities only if they are also produced for the market by the same households;
 - (c4) all production of fixed assets for own use, that is, own-account construction of buildings, roads and similar works as well as fabrication of tools, instruments, containers and similar items which have an expected life of use of one year or more; and
 - (c5) the total rent of owner-occupied dwellings.

The concept of economic activity for the measurement of the economically active population covers all activities corresponding to (a), (b) and (c) defined above, except for (c5). This last item represents an imputed monetary value rather than an activity. For convenience, the activities corresponding to (a) and (b) are designated here as market production (or market activities), while those corresponding to (c1) to (c4) are called non-market production (or non-market activities). The aggregate of market production and non-market production constitutes the set of economic activities. All other activities are called non-economic activities. The distinction between market and non-market production conveniently highlights the fact that economic activity includes certain types of non-market production; furthermore, the methods to be used for identifying the economic activity of individuals in surveys may differ according to the type of production. The scope of economic activity in terms of the different types of production carried out is shown schematically in Figure 1.

Note that the present SNA production boundary excludes the following types of production for own consumption: the processing of primary commodities by households who do not produce them; the production of other commodities by households who do not sell any part of them on the market; and the repair and maintenance of buildings and other constructions by households for themselves. It also excludes unpaid domestic activities such as cooking food for own consumption, sewing or mending clothes for own use, teaching or nursing own children.

The rationale for the inclusion of certain types of non-market production and the exclusion of others in the present SNA definition lies in the relative importance of these activities in many countries and the frequent existence of “close” market parallels, i.e. the existence of identical or very similar goods and services which are usually also available on the market (United Nations, 1986a). There are also practical considerations involved. When the same persons are engaged in both market and non-market production, it is often in practice impossible to measure the two components separately; thus, in setting the SNA production boundary either both components were to be

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included or both excluded. Since the SNA definition is meant to cover market production completely, it becomes necessary to include the inseparable non-market component as well. A similar argument applies to the particular treatment of the processing of primary products for own consumption, which cannot be separated from the production of those products when carried out by the same households.

In centrally planned economies using the material product system, the concept of production is confined to material production, that is, production of (1) goods and (2) services related to the production, repair, transportation and distribution of goods (usually referred to as material services). It excludes all other services covered by the SNA concept (for details see United Nations, 1977). In measuring the economically active population, however, employment in both the productive and the non-productive spheres is covered. The statistics are generally compiled showing the two categories separately (United Nations, 1986b).

Market production

Market production includes the activities of workers employed in factories, business enterprises, farms, shops, service undertakings, household enterprises and other economic units engaged in the production of goods and services intended for sale on the market, whether at market or subsidised prices. It also includes the activities of employees of government and other social and cultural institutions, even though their output may not be sold on the market (or may be sold at a price often not intended to cover the cost of production). In general, market production is spread over all activities found in the International Standard Classification of All Economic Activities (hereafter ISIC 1968), i.e. agriculture, hunting, forestry and fishing; mining and quarrying; manufacturing; electricity, gas and water; construction; wholesale and retail trade, restaurants and hotels; transport, storage and communication; financing, insurance, real estate and business services; and community, social and personal services (United Nations, 1968b).

Typically, market production involves some form of remuneration to those who contribute to it. Remuneration may be in the form of pay or profit. Pay includes cash payment or payment in kind, whether or not payment is received in the period the work is done. Cash payment includes wages or salaries at time or piece rates, fees or tips, bonuses or gratuities, and all other payment received directly by workers for time worked or work done, and for time not worked, such as paid leave and paid holidays. Payment in kind may be in the form of food, drink, fuel, housing and rental allowances, or other goods and services. Payment in kind as the sole means of remuneration is not uncommon in some countries, particularly for agricultural workers receiving a share of the harvest or for certain types of apprentices working in exchange for board and lodging.

Production for profit is another form of market production. It includes the activities of farmers, traders, craft-workers, shopkeepers, doctors, lawyers, and others who operate their own enterprise with or without employees and with or without sales or clients during the specified time period set for the inquiry, even if no profit is currently made. Similarly, it includes the activities of family members participating in the operation of a household enterprise producing for the market, even if no payment is received directly for the work done. It also includes production for barter.

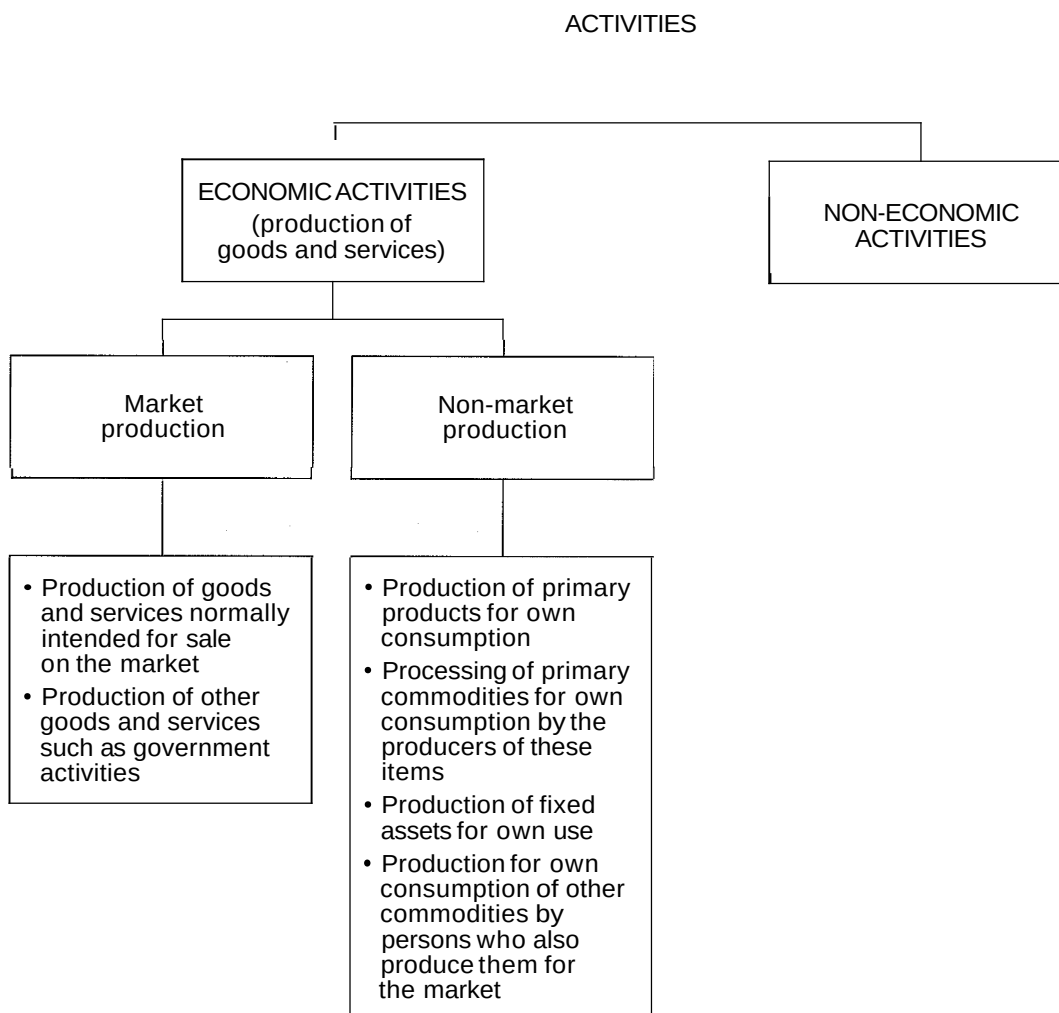
Non-market production

The four relevant types of non-market production included in the SNA production boundary are explained below :

Primary production for own consumption comprises the characteristic products of agriculture, hunting, forestry, fishing, mining and quarrying. It corresponds to the

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Figure 1. The scope of economic activity in terms of the present SNA concept of production of goods and services



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Table 1. Examples of non-market activities covered by the present SNA concept of production of goods and services

All included			Mainly excluded (unless also produced for the market or to be considered as fixed capital formation)
Primary production	Processing primary products ¹	Fixed capital formation	
Growing or gathering field crops, fruits and vegetables	Threshing and milling grain	Construction of dwellings	Current repair and maintenance of dwellings and farm buildings
Producing eggs, milk and food	Making butter, ghee and cheese	Construction of farm buildings	Storing crops ²
Hunting animals and birds	Slaughtering livestock	Building boats and canoes	Carrying water ²
Catching fish, crabs and shellfish	Curing hides and skins	Clearing land for cultivation	Dressmaking and tailoring ²
Cutting firewood and building poles	Preserving meat and fish		Handicrafts made from non-primary products ² (e.g. metal hollow-ware, rubber shoes)
Collecting thatching and weaving materials	Making beer, wine and spirits		Midwife services
Burning charcoal	Crushing oil seeds		Funeral services
Mining salt	Weaving baskets and mats		
Cutting peat	Making clay pots and plates		
	Weaving textiles		
	Making furniture		

¹ These activities are only included if they involve the processing of *primary* products by the producers of these items. Pounding maize (a primary product) to make cornflour is included in gross output, but using flour (a processed product) to bake bread is excluded. ² Under consideration for inclusion within the revised SNA production boundary, see p. 24.

Source: Based on *Conceptual framework of the revised SNA*, Joint paper prepared by the Statistical Offices of the UN, OECD, EEC, IMF and the World Bank for the Inter-Secretariat Working Group on National Accounts (Geneva, ECE), 3-7 March 1986.

activities of major divisions 1 and 2 of ISIC 1968. Throughout the world many farmers, hunters, fishermen and other persons feed themselves and their families with the crops they grow, the cattle they raise, the animals they hunt and the fish they catch. Many also use the stones they collect or the wood they cut for shelter and heating. Primary commodities produced by households for their own use form a major part of total household consumption in many countries, and the corresponding output is generally included in their national accounts and balances. Furthermore, since, as economic specialisation and development proceed, a shift may take place from production for own consumption to market production, it is essential to account for these household activities in the employment statistics as well, so as to obtain a comparable measure of the economically active population at different periods or for different countries. Examples of primary production for own consumption which, according to the *SNA*, should be included as economic activity are listed in the first column of Table 1.

Processing of primary commodities for own consumption covers activities such as milling grain, slaughtering, preparing and preserving meat, making butter, cheese and other dairy products, spinning and tanning, making baskets and mats, constructing wooden furniture and fixtures, etc. They mostly correspond to major groups 31, 32 and 33 of the major division 3 (Manufacturing) of ISIC 1968. In a number of countries many households undertake a substantial amount of primary processing of this kind for their own use. Whether or not they sell any of these items, such activities are conventionally considered as economic activity and, where significant, are generally accounted for in the national accounts and balances. It should be emphasised that these various activities are considered as economic activity only if they involve the processing of *primary* products. Thus, pounding maize (a primary product) to make cornflour is included, but using flour (a processed product) to bake bread is excluded. Similarly, spinning cotton fibres (a primary product) is included, but using cloth (a processed product) for sewing is excluded. Further examples are given in the second column of Table 1.

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However, attention should be drawn to the fact that, due to the particular nature of some activities, it may in practice be difficult or even impossible to make a clear-cut distinction between the processing of primary and other products. This is the case where an activity simultaneously involves the processing of both primary and other products (e.g. cooking), or where the processing of non-primary products is closely linked to that of primary products carried out by the same persons (e.g. weaving cloth out of home-spun yarn). It should further be noted that the **SNA** includes only the processing of primary commodities *by the producers of these items*, which means that the processing for own consumption of primary commodities by those who do not produce them is excluded. Thus, for example, crushing oil-seeds bought at the market is not included, but crushing oil-seeds produced by oneself is.

Production of fixed assets for own use essentially covers own-account construction (major division, ISIC 1968). It includes the building of houses, private roads, wells and other private facilities. In a number of countries, housebuilding is undertaken to a significant extent on an own-account basis and contributes to the housing stock of the nation. On the same basis, own-account production of tools, instruments, containers and similar items which have a significant life expectancy (i.e. long enough to be classified as investment goods, say, one year or more) is, in principle, also considered as economic activity. Examples are given in the third column of Table 1. It should be mentioned that own-account construction does not generally include repair. It may, however, include certain types of improvements such as a farmhouse extension, the construction of a second floor, or the major renovation of a dwelling.

Production of other non-primary products for own consumption mostly covers manufacturing but can also include transportation, communication and other services. These activities carried out for own consumption are considered as economic activity *only* if they are conducted in conjunction with market production. Thus, when a shoemaker, who normally produces for the market, makes shoes for the family, that activity is considered economic even though it is non-market production. This type of non-market production affects the measurements of output, of value added, of income, etc., but does not generally have an impact on the measurement of the economically active population. This is because persons producing for both the market and own consumption will be included among the economically active on the basis of their market production, irrespective of the additional production for own consumption. The non-market part of production can, however, affect the measurement of hours worked and related concepts.

It is clear from the above descriptions that non-market production (as well as market production) is defined in terms of the end use of the product and not on the basis of the paid or unpaid nature of the production. For example, growing vegetables for own consumption is non-market production not because the activity is unpaid but because the product is not intended for sale on the market. Also, it should be noted that the use of the term “non-market” does not mean that no market transaction at all is taking place in the production process. An example of non-market production involving market transactions is the activity of a person who buys seeds in the market for growing vegetables, but retains the output for his or her own consumption.

The international standards contain a separate provision with respect to persons only engaged in the production of goods and services for own and household consumption. They specify that such persons should be considered as economically active if their production comprises an “important contribution to the total consumption of the household”. This provision serves to exclude from the economically active population persons merely engaged in some minor non-market activity, such as persons who grow some vegetables in their backyard but whose subsistence does not

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significantly depend on it. The special treatment of such persons is in line with national accounting statistics which often exclude non-market economic activities considered negligible. The issue of how to apply the “important contribution” provision in surveys is discussed in Chapter 5 on employment.

Examples of particular activities

In many countries a substantial part of the population is working in paid jobs in enterprises or government, or running a farm, business or service undertaking which produces goods and services for sale on the market. There are also many individuals, particularly in rural areas in developing countries, who work on the land to produce agricultural and allied products for their own consumption. Given the definition of economic activity mentioned earlier, it is clear that all these activities are economic and the persons involved are part of the economically active population. However, there are many borderline situations where it is not immediately obvious whether certain types of activities should be considered economic and the persons involved economically active.

List **A** below gives some examples of particular activities which should be considered economic in line with the **SNA** concept of production of goods and services described earlier (market or non-market production). **A** second list (**B**) gives examples of other activities which should not be considered economic for the measurement of the economically active population. The two lists supplement the examples in Table 1 which concern non-market production.

List **A**: Examples of situations which *should be considered as economic activity* in line with the **SNA** concept of production of goods and services:

- A1.** vending newspapers or lottery tickets in the street; cleaning car windshields for tips at traffic lights;
- A2.** managing one's own business or farm even though not involved in producing the output;
- A3.** repair of work equipment for future operation, e.g. a fisherman repairing his boat or net for future outings;
- A4.** buying or installing equipment and ordering supplies in preparation for opening a new business;
- A5.** work in a household enterprise without pay, but with a share in the earnings of the enterprise;
- A6.** unpaid work in an economic enterprise operated by a related person living in the same household (e.g. work such as cleaning and grading cash-crops);
- A7.** outwork, i.e. a practice prevalent in some enterprises where all or part of the production is allocated to different persons or households to be carried out at home and for which these persons or households receive payment on a piece-rate basis, e.g. the master weaver assigning jobs to different households, or the *bidi* manufacturer in India arranging for the *bidis* (local leaf-wrapped cigarettes) to be produced through the distribution of work to different households;
- A8.** exchange work, i.e. a practice in some countries whereby labour is exchanged between households for productive purposes, such as the work performed by arrangement by a farm operator or members of his family on the farm of another operator;
- A9.** the production of goods or services for barter, e.g. the practice among some nomadic households of exchanging sheep-milk, butter or other home-made products for clothing or footwear produced by other households;

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- A10. bonded labour, i.e. work for an employer, a landlord or a money-lender to meet an obligation (usually a debt) without pay or less than normal pay till the obligation has been settled;
- A11. paid domestic services, including babysitting and teaching children in other persons' homes in exchange for cash payment, board and lodging or other payment in kind such as clothing;
- A12. cooking food for labourers working on one's farm when food is provided as part of the labourers' wages;
- A13. apprenticeship and on-the-job training which is associated with the productive activities of an enterprise, even if no pay is received;
- A14. paid religious activity of members of religious orders;
- A15. military duties of career military personnel and conscripts as well as engagement in equivalent civilian service.

List B: Examples of situations which *should not be considered as economic activity*, i.e. falling outside the SNA production boundary :

- B1. work done without pay for a member of the household who does not own a farm or business but is himself or herself a salaried employee, such as typing for a spouse who is a lawyer employed in a corporation;
- B2. work without pay for an unrelated member of the household, e.g. work in a grocery store owned by a lodger;
- B3. work without pay for a relative who does not live in the same household, e.g. helping out in the tea-shop of an uncle who lives in another household (however, as suggested in the United Nations Principles and Recommendations for Population and Housing Censuses (United Nations, 1980), where it is customary, in particular for young persons, to work without pay in an economic enterprise operated by a related person who does not live in the same household, such work may be considered as economic activity);
- B4. unpaid domestic activities such as housework, cutting the lawn, painting the house;
- B5. training which is not associated with the productive activities of an enterprise, even if a financial allowance is received which enables the person to undergo the training, e.g. student nurses, laboratory students;
- B6. volunteer services for organisations such as local hospitals, parent and school associations, or unpaid community work for local road surfacing, etc.;
- B7. work in prison farms or workshops even if some form of compensation is received for the work. In the SNA, payments to prisoners and the costs of feeding and housing them are not regarded as production but as part of government intermediate consumption;
- B8. investing in a business but not contributing to its management or actual operation, e.g. holding shares or stocks in a company.

The two sets of examples given above are not exhaustive. Many other particular situations present themselves in practice, such as the employment-training schemes now being developed in most European countries and the various types of unpaid apprenticeships common in many African countries. Some guidelines for the appropriate statistical treatment of such situations will be given in Chapter 5 on employment. In general, the inclusion or exclusion of an activity from the scope of economic activity should be examined with reference to the details of the SNA definition of the production of goods and services, in the context of the measurement of the economically active population and of the prevailing national circumstances.

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Treatment of illegal activities

The SNA concept of economic activity does not distinguish between the legal and *illegal* nature of activities. Two types of illegal activities should, however, be differentiated. The first are activities which are by themselves legal, but which are conducted in an illegal fashion, such as the work of an illegal immigrant on a citrus farm, working in the construction industry without a permit, selling merchandise without a licence, working off-the-book for tax evasion purposes or for fear of losing unemployment insurance benefits or because the employer wants to avoid social security payments or implementing other labour legislation requirements. These activities should, in principle, be considered as economic activity. In practice, however, their measurement is problematic. As a result, their effects on employment and unemployment statistics are difficult to assess (United States, 1984).

The second type of illegal activity refers to activities which are illegal in themselves, such as, in some countries, prostitution through solicitation, loan-sharking and drug dealing. The appropriate statistical treatment of these activities is not conceptually clear and a general recommendation cannot be given here. The present SNA does not refer to the legality of an activity when deciding whether or not it should be included in gross output. In a recent international examination of this issue, the following conclusion was reached: “*In principle* the production of illegal goods and services is included in gross output, but whether a country should *in practice* include any particular type of illegal production would depend on its relative importance and on the possibilities of making plausible estimates” (United Nations, 1986c). The issue is to be discussed further as part of the forthcoming revision of the SNA.

Non-economic activities

While the SNA definition of the production of goods and services covers a wide range of activities, many other activities still remain outside its scope. Prominent examples are unpaid activities such as domestic tasks, nursing of own children, dressmaking for own use, do-it-yourself repair, crop storage, water carrying for domestic use, volunteer help in hospitals, and free delivery of food to the elderly.

That these activities fall at present outside the boundary of economic activity as defined by the SNA does not mean that they should not be statistically measured at all (Goldschmidt-Clermont, 1988). Many of these activities are mainly carried out by women and are recognised as a major contribution to the welfare of society and the development of the economy. The international standards contain a provision to identify persons engaged in unpaid community and volunteer services, as well as persons engaged in unpaid domestic activities falling outside the boundary of economic activity, and to classify them separately among the population not economically active.

Given the importance of these activities, their measurement should be based on an appropriate conceptual framework, separate from the framework for measuring the economically active population. Separation of the two frameworks is necessary to ensure comprehensive measurement, covering all persons who have been engaged in volunteer services or unpaid domestic activities, whether or not they have also been engaged in an economic activity.

Unpaid community and volunteer services

In most countries, social services such as education, medical, child and elderly welfare services are often supplied or augmented by volunteers working in community projects or private non-profit organisations. Sometimes emergency services such as sea rescue and fire services are organised on a volunteer basis. In many developing countries, particularly in rural areas, household members often work on a volunteer basis on

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community development tasks such as building schools, digging wells, filling ditches, cleaning tanks, etc.

In general, the purpose of voluntary work is to provide a service to others which would not be available otherwise. In a survey conducted as a supplement to the Canadian Labour Force Survey, volunteer activities have been defined as “unpaid acts of free will where an individual transmits a good or service to another individual, an organisation or a community” (Canada, 1987). The three basic features of a volunteer activity are: (a) the activity is essentially unpaid; (b) it is carried out freely without coercion, as opposed, for example, to compulsory military service; and (c) it is performed for an organisation, a community or an unrelated individual outside one's own household. For a more detailed discussion on voluntary work in different countries see, among others, Gidron (1980), Paterson (1982), Le Net and Werquin (1985), Jonkers (1988), and references therein.

Unpaid domestic activities

Many unpaid domestic activities lie near the outside boundary of economic activity and their exclusion is a matter of convention. For instance, in rural households where fresh food is prepared daily, the dividing line between food processing (an activity falling within the boundary) and cooking for the family (an excluded activity) is difficult to draw. Furthermore, while cooking for one's own family is excluded from the scope of economic activity, cooking food for labourers working on one's farm is included on the ground that food is provided as part of the labourers' wages.

For measurement purposes, unpaid domestic activities may be defined on the basis of the so-called “third-person” criterion. According to this criterion, unpaid domestic activities are to be distinguished from other unpaid activities of household members (e.g. eating, studying, watching television, playing tennis) by the fact that the latter can only be performed by the household member in question, whereas the former may be done by someone else (a third person) without diminishing its indirect utility. Thus, doing school work at home or playing the piano at home for pleasure are not domestic activities, but washing the dishes or repairing the oven are. For a more precise formulation of the third-person criterion, reference is made to Hawrylyshyn (1977).

The identification and measurement of unpaid domestic activities are best carried out on the basis of time-use surveys, where individuals are asked about their daily activities over a certain time period, using suitable data collection methods. For a discussion of time-use surveys in connection with labour force surveys, reference is made to Hoffmann (1981).

Revision of the SNA production boundary

The SNA is currently under revision by the United Nations Statistical Office and other international and national organisations (IARIW, 1986). One issue the revision will examine is the delineation of the production boundary. This has already been discussed at the Fourth Expert Group Meeting on the Revision of the SNA (World Bank, 1987). The conclusions reached at that meeting regarding the SNA production boundary and related issues are summarised below.

It was agreed that the present SNA production boundary should not be changed significantly. However, it was felt that some clarification should be made, in particular with regard to production for own consumption.

Production was provisionally defined as creation of goods and services which are (a) exchanged on the market, or (b) capable of being marketed, or (c) produced with factors of production bought in the market (e.g. production of government services).

It was agreed that this general definition should be supplemented in the SNA publication by an extended list of examples of the kinds of *goods* typically produced for

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own consumption, particularly in developing countries, that might eventually be included within the production boundary. In practice, these goods should only be included in the accounts where their production on own-account represents a significant proportion of the total supply of these goods in a given country. A further recommendation would remove the present restrictions that such goods are only to be included if the raw materials used are primary products and if they are made from own produced materials, or if some of the output is sold in the market.

It was stated, however, that all *services* produced on own-account should be excluded from the production boundary. The argument advanced for the exclusion of such services was that, in contrast to goods, services once produced on own-account are always immediately consumed and thus not available for sale in the market.

The Expert Group Meeting also discussed the treatment of particular activities performed for own consumption. It was agreed that storing crops and carrying water should be included within the production boundary. Storing crops was regarded as part of the process of growing and producing crops. Carrying water was considered equivalent to gathering fruits and vegetables and should be treated as the production of a good (i.e. making water available where it is needed). Both activities are at present excluded from the production boundary unless some of the output is sold.

It was further agreed to include the following own-account activities within the production boundary, provided the amount of own-account production is a significant proportion of the total production of these items in a given country: dressmaking and tailoring; making handicrafts from non-primary products; weaving baskets and mats; making clay pots and plates; weaving textiles; making furniture. The present restrictions that the materials used have to be primary products produced by the same households or that some of the output has to be sold would then be removed.

It was confirmed that construction and major repairs or alterations of dwellings and farm buildings, undertaken by the owners, are already included in the production boundary as fixed capital formation. In this connection, a major repair or alteration was specified as one which lengthens the expected lifetime of the building or increases its productivity, as opposed to current repairs and maintenance which fix breakage or keep buildings in proper working order. Current repairs and maintenance on own-account could be subdivided into two categories by reference to commercial renting of property. Minor repairs which would normally be carried out by a tenant (e.g. painting walls) should not be treated as falling within the production boundary. More substantial repairs (e.g. replastering a wall) are expected to be financed by the owner, who would normally employ a commercial firm to carry them out; where such activities are undertaken by the owner himself, either in respect of an owner-occupied dwelling or a dwelling rented to others, they should be included within the production boundary.

Communal activities should be included within the production boundary when the activities, by their nature, fall within the boundary. In these cases, the definition of production for own-account would be interpreted in a broader sense than production for the consumption of an individual household producing the good. In accordance with the delineation of the production boundary, capital assets produced on a communal basis, such as the construction of roads, schools, etc., should be treated as goods and valued at market prices, including an imputed value for the labour involved in constructing the asset. By contrast, labour provided free of charge or at very reduced costs for the operation of mission schools, hospitals, communal associations, private aid agencies and other non-profit institutions should be treated as services and valued at actual compensation paid, which might be very low or, in the case of volunteer work, actually zero.

The proposed modifications of the SNA production boundary would affect the measurement of the economically active population to a greater or lesser degree,

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depending upon the production structure of the country. The present scope of economic activity would be both narrowed and extended.

The scope of economic activity would be *narrowed* by introducing the provision that non-market activities should fall within the production boundary only if they relate to the production of goods as opposed to services. The present SNA, though also referring largely to goods in this connection, makes no such categoric exclusion of services produced for own consumption. Another provision which might reduce the scope of economic activity is the proposal to include production for own consumption only in the case of goods which are to a significant extent produced on own-account in a given country.

The scope of economic activity would be *extended* by including the activities of storing crops and carrying water for own consumption within primary production, and by removing the present restrictions concerning the processing of primary products and the production of non-primary products for own consumption. As long as such activities represent an important contribution to the total supply of these goods in a country, the proposed modifications would tend to include all processing of such goods, irrespective of the primary or non-primary nature of the materials used and of how these materials have been obtained. Similarly, the production of non-primary products for own consumption would be included whether or not the producers sell any of these goods in the market. There would also be an extension of the production boundary with respect to repairs and maintenance of dwellings and farm buildings. In addition to major repairs or alterations considered as fixed capital formation, other repairs and maintenance of dwellings and farm buildings on own-account would be included, provided they were of a type which, in the case of rented dwellings, would normally be carried out by the owner of the dwelling.

As for activities falling outside the SNA production boundary, it follows from the conclusions of the Expert Group Meeting that unpaid domestic activities would continue to remain outside the boundary, except for those own-account activities mentioned in the preceding paragraphs. The exclusion from the production boundary applies particularly to unpaid domestic *services* because, once performed, they do not satisfy the criterion of being marketable.

The proposed revision would clarify the field of volunteer work. If the proposals are approved, volunteer work for the construction of capital assets (e.g. roads, wells, school buildings) will be considered as economic activity, whereas volunteer services (e.g. school teaching, health care, food delivery) will remain excluded from the scope of economic activity.

4. Measurement issues

National practices

For measuring the economically active population in household surveys, the concept of economic activity described in this chapter must be translated into appropriate questions for the survey questionnaire. “Appropriate” means that the questions must be easily understood by interviewers and respondents and at the same time be suitable for meeting the statistician’s requirement to obtain accurate data. Due to the complexity of the concept of economic activity, this may turn out to be rather a difficult task. It is, however, a fundamental requirement, and sets the frame for the classification of the economically active population and for all subsequent information collected in the course of the interview. A misunderstanding at this initial stage may have an irreparable impact on the entire interview and on the survey results. It is therefore

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essential that careful attention be paid in survey design and operation to the practical application of the notion of economic activity.

Most surveys try to achieve this by formulating one or more carefully designed precoded questions for the survey questionnaire and by providing interviewers, through oral or written training, with explanations of the scope of economic activity for the measurement of the economically active population, illustrated with various examples of activities which are to be included and of those which are not.

A review of some 40 questionnaires of national labour force surveys indicates that almost invariably the leading question on economic activity is formulated around the key word “work”. Typically, the term “work” is qualified by further specifications such as: gainful work; work for pay, profit, or family gain; work for money or share of output; work in a job, business or farm; work as employee or self-employed.

In many cases, the leading question is followed by explanatory notes or by one or more additional probing questions. The most common of these concern unpaid family work, casual labour and other types of economic activities which experience has shown respondents may omit in their response to the initial question. Certain questionnaires include very specific probing questions formulated to suit national conditions. Three examples used in three different countries are:

- (1) Are you or any member of your household self-employed, e.g. as a farmer, owner of a shop or workshop? Did you do any work without pay in this business during the last week? (Norway, 1986.)
- (2) Did you work for at least one hour in your own business or in a business owned by someone else? Did you work for a wage or salary in cash or kind? Did you work in your family’s farm, lands or cattlepost? Did you collect firewood, make beer or make baskets, etc., for sale? Did you carry out a trade, business or profession, or provide services (such as transport) for sale? Did you work as a learner or apprentice for a wage or salary in cash or kind? Did you work without pay on a neighbour’s house, farm, etc., as part of a mutual exchange of labour? (Botswana, 1984.)
- (3) Did you carry out or help to carry out any activity last week, paid or unpaid, at home or outside, in the street or on the main road, even if it was only for a few hours? For example, did you help in a store, a side-street stand, a greengrocers; did you sell food, vegetables, newspapers, lottery tickets, cosmetics or artisanal goods; did you sow soil, reap produce, or breed animals for sale; did you wash, iron, or sew clothes for others; did you make cakes, cheese; did you weave cloth for sale; did you take care of children or elderly people for pay? (Argentina/Paraguay, 1985.)

A review of the interviewers’ instructions in different countries shows that, with respect to the leading and probing questions on economic activity, training manuals essentially contain three types of guidelines: (a) an explanation of the concept of work and economic activity; (b) a warning that the respondents’ or the interviewers’ understanding of the concept may be different from the concept intended to be measured; and (c) a list of supplementary examples of borderline activities which are to be included or excluded for the purpose of the survey. Examples taken from the labour force surveys of four countries (United States, Federal Republic of Germany, Egypt and Botswana) are given in the appendix to this chapter.

Cognitive aspects

Respondents’ and interviewers’ subjective understanding of the notion of “work” and “economic activity” is unlikely to be as encompassing as that envisaged by survey definitions. This may be further influenced by cultural perceptions of sex roles. There is for instance a general tendency in many cultures to consider women primarily as

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housewives and thereby to ignore any economic activity they may perform. This may particularly be the case when the economic activity is carried out at home rather than in a workplace outside the home. An additional problem is that certain activities, commonly performed by women, particularly agricultural and related activities performed for own consumption, are on the borderline of economic activity as defined by the SNA, and as such are liable to misinterpretation, not only by interviewers or proxy-respondents, but also by female respondents themselves. Cognitive problems often lead to an underreporting of economic activity in surveys. This has been found to be particularly important when measuring the economic activity of women (Agarwal, 1985; Ware, 1986; Wainerman, 1988).

The international standards emphasise the importance of having an adequate base of statistics on women's participation in economic activities to use in developing and monitoring programmes concerned with the participation of women in development and the promotion of equality between the sexes. Recognising the measurement problems involved, the international standards recommend that data collection methods be carefully reviewed to obtain more accurate statistics on women's participation in economic activities and to ensure unbiased coverage of men and women. Countries are urged to carry out, where necessary, research in order to identify the extent, nature and sources of the possible biases and to develop appropriate methods of reducing them. Among the possible sources of sex biases leading to underestimation of women's participation in economic activity, three are particularly mentioned by the international standards: incomplete coverage of unpaid economic activities, failure of respondents and enumerators to take account of women's multiple activities, and use of proxy-respondents.

Recent research (Schwarz, 1987) indicates that subjective understanding of terms like "economic activity" or "work for pay or profit" depends on the form and probably the amount of remuneration received, on the respondent's own employment history, and, when the respondent is reporting for another person in the household, on the employment history of the target person. Proper understanding of how people comprehend these terms (as well as other terms commonly used in surveys, such as "absence from work", "seeking work") may have important implications on questionnaire design and survey operations. Such cognitive aspects are receiving increasing attention from those conducting national household surveys of the economically active population. The following paragraphs give some examples based on studies conducted in the United States, India, and Costa Rica.

In response to a question on "paid work performed last week" asked in an experimental study conducted in the United States and analysed in Schwarz (1987), a small sample of college students reported, among other responses, having donated blood, mowed a neighbour's lawn, done babysitting. Later, other students and a sample of university employees were asked which of these activities they considered as paid work. The results showed that not everyone considered these activities as paid work. But the college students were more likely to include these activities in the paid work category than were the university employees, indicating how the notion of paid work may be influenced by the respondent's employment status. It was also found that the number of student respondents who classified these activities as paid work dropped sharply when it was qualified that the payment was in kind and not in cash. This indicates that respondents, in general, may be inclined to consider payment in kind as an exchange of favours rather than as compensation for work done. A conclusion drawn from this study was that leading questions in national surveys formulated in terms like "paid work" tend to be understood as referring only to regular forms of employment, omitting casual work and work remunerated in kind, and thus may cause overall underreporting of economic activity.

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This measurement problem is even more acute in countries where regular forms of employment are less widespread, particularly when measuring women's economic activities in rural areas. Some evidence is provided by the results of an ILO-sponsored study conducted in three districts of Uttar Pradesh, India (Anker et al., 1987). One of the purposes of the study was to analyse the effect of different approaches in collecting information on the economic activities of women in rural areas. A sample of 1,621 households was divided into a hierarchy of subsamples according to a specific survey design, which combined two different types of questionnaire format, the assignment of male as opposed to female interviewers, and rules for choosing proxy- as opposed to self-respondents. The first questionnaire format was based on questions centred around key words such as "main activity", "secondary activity", "any work for earnings," etc. The second was based on an activity schedule asking every respondent to report engagement in any of the 14 activities listed in the schedule.

As far as question comprehension was concerned, the results showed sharp increases in reported activities when the activity schedule was used as opposed to the most basic key-worded format. The activity schedule produced an activity rate of 88.3 per cent, compared to the 15.7 per cent obtained when only one key-word question, formulated in general terms, was asked. However, the difference decreased the more key-word questions were asked, particularly when the additional questions referred to specific activities. Thus, the differences in results by type of questionnaire format became insignificant when an appropriate sequence of key-word questions was asked. The conclusion drawn was that one questionnaire type is not inherently superior to the other. Concerning the issues of male as opposed to female interviewers and proxy- as opposed to self-response, it was found that the effects on survey results are of secondary importance and in general vary depending on the questionnaire format used.

Similar but less extreme results were obtained in two other ILO methodological surveys conducted in Costa Rica and Kerala, India in 1983/84 (ILO, 1983-84), where only respondents who gave a negative answer to the leading question on "work for pay, profit or family gain" were probed by using the activity lists in Flow chart 1. Regarding the items included in these lists, it should be noted that some of them (e.g. dressmaking, tailoring, repairing shoes, fetching water) are to be considered as economic activities only if carried out in conjunction with market production, as indicated in Q42 of the Costa Rica list. Where such activities performed on own-account are important in an economy, collecting information on them may be useful, whether or not the persons engaged in these activities are to be classified as economically active.

Out of 2,055 persons in the Costa Rica survey who initially reported not having worked for pay, profit or family gain, 102 were found, when probes using the activity list were made, nevertheless to have been engaged in some kind of economic activity during the reference week. This represented a 4.2 per cent increase in the reported number of persons engaged in economic activity. A preliminary estimate for the corresponding percentage increase in the Kerala survey was 5.4 per cent. In addition to its probing function, the activity list, being an integral part of the questionnaire, may have indirectly reminded the interviewer throughout the whole interview of the range of activities to be considered as economic. This may explain to some extent the relatively small effect of the activity list observed in the Costa Rica and Kerala surveys, as compared with the Uttar Pradesh results cited earlier.

It should be mentioned that apart from the wording of questions there are other factors which can influence the results of a survey, such as the ordering of questions, the form of questions (open-ended versus precoded) and the mode of administering the questionnaire (personal interview, telephone interview or self-administered questionnaire). Some of these issues are discussed in Chapter 12 on questionnaire development and design. For further details see United Nations (1984; 1985).

Flow chart 1. Activity list, ILO survey in Costa Rica

Q20. Please indicate whether you worked last week.
Yes 1 → Q21 No 2 ↓

Q30. Even if you did not work last week, did you hold any job or have your own enterprise/business?
Yes, a paid employment 1 } → 031 No 3 ↓
Yes, an own enterprise or business 2 }

Q40. Did you carry out any of the following activities during the last week? Code

Prepare the land, sow/plant, cultivate (weed, water, etc.) or harvest sugar-cane, coffee, beans, yucca, fruits, vegetables, others	11
Rear and look after cattle, poultry, etc., or produce milk, eggs, etc.	12
Other activities related to agriculture, mining, hunting, fishing, forestry	13
Work in the industrial processing of food products	35
Manufacture baskets, carpets/mats, other handicrafts	37
Manufacture thread, cloth, men's or women's clothing	38
Other manufacturing activities	39
Work in the construction, [major] repair and maintenance of:	
Barn	51
Own house/dwelling	52
Other activities related to construction	53
Help in the sale/distribution of meals/beverages	61
Help in the sale of agricultural products and in other retail trade establishments	62
Transport loads for marketing/storage	71
Other activities related to transport	72
Repair tools, shoes, etc.	92
Collect firewood, fetch water, other services	93

Q41. Interviewer check item If no activity marked → Q50
If at least one activity marked ↓

Q42. Please fill in the codes (upto four activities), tick the appropriate box and fill in the total number of hours. Then go to Q50.

Code	All or part for sale	All for consumption by own household	Number of hours
	☐ 1	☐ 2	_____
	☐ 1	☐ 2	_____
	☐ 1	☐ 2	_____
	☐ 1	☐ 2	_____

Note: original in Spanish.

Source: Dirección General de Estadística y Censos/República de Costa Rica, Organización Internacional del Trabajo: *Encuesta Metodológica sobre la Medición del Empleo, el Desempleo, el Subempleo y el Ingreso* (Costa Rica, 1983), Cuestionario C.

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Flow chart 2. Activity list. ILO survey in Kerala

Q20. Did (s)he do any work for pay, profit or family gain during the last seven days?
 Yes 1 → Q23 No 2 ↓

Q21. Check again whether the person did any work during the last seven days in the production or processing of any primary products, whether for the market, barter or household consumption, or in any other household or non-household economic activities, such as

(circle codes as appropriate)

	Code
Growing/attending:	
coconuts	11
paddy	12
tapioca	13
other vegetables or fruits	14
other crops	15
Engaged in activities related to:	
livestock and livestock products	16
poultry and poultry products	17
Other agriculture/mining activities including hunting/forestry/fishing	18
Hand pounding	31
Curing and preserving fish	32
Making copra and crushing	33
Other food processing activities	34
Retting coconut husk/making coir fibre	35
Making and repairing fishing nets	37
Making baskets/mats/other handicrafts	38
Spinning/weaving/dressmaking/tailoring	39
Other manufacturing activities	40
Construction [major] repair and maintenance of:	
farm buildings	51
own dwellings	52
Other construction activities	53
Engaged in tea shops/street vending/etc.....	61
Assisting in sales of agriculture products and other retail trades	62
Carrying loads to market/for storage	71
Other transport activities	72
Operating informal chit funds	81
Other financial activities	82
Giving tuition to students (private tutoring)	91
Repair services (tools, shoes, etc.)	92
Collection of firewood, fetching water and other services	93

Source: Kerala Statistical Institute. International Labour Office: *Methodological survey on the measurement of employment, unemployment, underemployment and income* (Trivandrum, 1983). Questionnaire C.

Conclusions

The SNA concept of economic activity is complex and, therefore, not always easy to apply in surveys of the economically active population. However, measurement should not be difficult in the case of persons working in regular full-time full-year paid employment or self-employment. Any of the conventional leading questions on “work” or “economic activity” used in well-established surveys should suffice to elicit accurate responses from persons with these employment characteristics. But the more the work situation deviates from these “core” situations, the more important the cognitive problems discussed in this section may become. Persons engaged in economic activities such as part-time work, casual work, home-based work, unpaid family labour and non-market production may not recognise the leading question as applying to their situation. Many activities may thus go unreported if only this question is asked.

Empirical evidence has shown that the risk of underreporting economic activity is much higher for females than for males. Underreporting may be reduced by supplementing the conventional leading question with appropriate probing questions, particularly when these are not formulated in general terms but refer to specific activities, or by avoiding leading or key-word questions altogether. What is appropriate depends on national conditions, in particular, on the extent and nature of non-core work situations prevailing in the country. Where such situations are widespread and varied, probes formulated in terms of an activity list may prove more useful in practice than adding a lengthy sequence of separate questions to the questionnaire. The activity list should, to the extent practically feasible, cover as many as possible of the activities commonly carried out in the country but suspected as going unreported without probing. The length and content of appropriate activity lists may thus vary from one country to another.

It has been found that the design of the questionnaire itself has a greater impact on the survey results than the training of interviewers (Wainerman, 1988). However, the use of additional probing questions or of an activity list as part of the survey questionnaire does not make superfluous good training of interviewers and clear explanations of the scope of economic activity in the instruction manual. The definitions and lists of examples given in this chapter may serve as a basis for organising training material and drafting that part of the instruction manual dealing with the concept and boundary of economic activity.

Appendix: Interviewer instructions on the concept of economic activity: examples from four national labour force surveys

United States, Current Population Survey

The interviewer’s reference manual of the Current Population Survey (United States, 1987) mentions the following activities to be considered as “working”: paid work for wages or salary, including work at piece rates, on commission, for tips or for pay in kind; work for profit or fees in one’s own business, profession or farm, even if a loss is made financially, no sales are made, no professional services rendered, or no actual farm work done but time is merely spent repairing farm equipment or doing farm chores; keeping children on a “foster parent” basis, renting rooms or providing meals to boarders; work without pay (other than home housework) in a family business or family farm, such as arranging stock, selling, bookkeeping, making appointments, sending out bills, feeding chickens, cattle or other livestock, cleaning milking utensils, hauling grain, feed, fertiliser or other materials used on the family farm, working in the farm garden (if the produce raised would otherwise have to be purchased), or any chores done in connection

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with the cultivation, harvesting, threshing, preparation for market or delivery to market of any agricultural product; exchange work or share-work among farm households, even if no money is exchanged; paid jury duty; participation in government work and on-the-job training programmes if any pay is received for the work done or the training undergone.

The following activities not to be considered as “working” are brought to the attention of the survey’s interviewers: unpaid work which does not contribute to the operation of a family farm or business, such as home housework, cutting the lawn, painting the house, working in the garden (other than on a family farm); unpaid work done for a related member of the household who does not operate a farm or business, but is her/himself a salaried employee; unpaid work for an unrelated member of the household or for a relative not living in the same household; ownership of a business solely as an investment, without contributing to the management or actual operation of the business; volunteer work without pay for organisations like the Red Cross, Community Fund, fraternal lodge, etc.; temporary duty in the Armed Forces reserve or National Guard.

Federal Republic of Germany, Mikrozensus

The interviewers’ manual for the German Mikrozensus (Germany, Fed. Rep. of, 1986) refers to the following categories of persons or types of activities for illustration of the notion of work: persons who have an employment contract with a private or public employer, including members of the armed forces; persons who operate their own farm or other enterprise or who are engaged independently in a profession or trade; unpaid work without formal employment contract in an enterprise operated by a member of the household or family; help on a farm operated by the household, such as land cultivation, animal husbandry, clerical work, etc., even if done on an occasional basis only; apprenticeship; work of only few hours (possibly only one hour per week); casual work such as labour on call, vacation jobs, etc.; paid work performed by pensioners or by recipients of unemployment benefits to supplement their incomes. The examples given for activities not to be considered economic refer to housework and to unpaid civil duties as juryman, legal guardian, municipal councillor, etc.

Egypt, Labour Force Sample Survey

As compared with surveys conducted in industrialised countries, the interviewer instructions for labour force surveys in developing countries give more emphasis to activities related to non-market production. The instructions for the Labour Force Sample Survey of Egypt, for example, define the concept of economic activity by stating “that the work be intended for achieving a gain or revenue to the household; that the work be aimed at producing economic goods and services for marketing or exchange even if some of the product is assigned to home consumption; that production not be exclusively limited to home consumption except for the production and processing of primary products in agriculture, fishing and hunting, and mining and quarrying” (Egypt, 1987).

In addition to these general guidelines, certain activities are explicitly to be considered economic, “even if they are exclusively for home consumption”: assisting the household head in agricultural activities in the field, vegetable production, fruit production; fishing; hunting; gathering wood and stalks; animal husbandry; poultry and pigeon rearing; milk, egg, cheese and butter production. Further examples of economic activities are mat and basket weaving, wool and cotton spinning, sewing for others, vegetable and fruit retailing, etc. Activities not to be considered economic are cooking, baking or doing laundry for the household, teaching the children of the household, and sewing for household members.

Botswana, Labour Force Survey 1984/85

The interviewers’ manual for the Botswana Labour Force Survey indicates that apart from working for an employer or in a person’s own business the following activities should be considered as “work”: time spent by self-employed persons in seeking customers for a product or service (e.g. tendering for contracts, visiting prospective clients); time spent on attending a training course conducted by the employer with continued receipt of wage or salary; time off from work to attend an educational institution on a part-time basis when lectures take place during normal working hours (Botswana, 1984). With respect to rural areas, an extensive list of examples is given concerning activities to be considered as work, such as land clearing, uprooting, planting,

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weeding, scaring birds from crops, harvesting or picking, transporting crops to a store-house or to the market, cattle herding, collecting grass for livestock, milking, slaughtering, hunting and fishing for sale or for own consumption, collecting firewood, making bread, scones, etc., for sale and selling them, bulking, grading and preparing products for the market, construction of farm buildings on own-account, building or repairing someone else's house for remuneration in any way, working in another household's garden without pay in anticipation of returned labour.

Regarding activities not to be considered as "work", mention is made of unpaid work for charitable organisations, unpaid communal self-help work, school attendance, unpaid domestic activities such as cooking, washing, cleaning, fetching water for the household, merely owning a business (such as a shop or a farm) but having someone else to manage and operate it, travel to and from work, repair and maintenance of one's own house, hunting and fishing not for the purpose of capturing food (i.e. as a hobby or sport for pleasure), etc.

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The currently active population (the labour force)

3

1. Introduction

The “currently active population” comprises all persons above a specified minimum age who fulfil the requirements for inclusion among the employed or the unemployed as described in Chapters 5 and 6 of this manual. The term “labour force” is used synonymously with “currently active population”. The currently active population (or labour force) is the most widely used measure of the economically active population. It is based on a short reference period, such as one week or one day, and used for measuring the current employment and unemployment situation of the economy and the current employment characteristics of the population. Current changes over time can be monitored when measurement is repeated at sufficiently frequent intervals. The measurement of the currently active population is based on the labour force framework.

The term “labour force” as defined by the international standards and used in statistical literature over the last four decades is associated with a particular approach to the measurement of employment and unemployment. Essentially, this approach is the categorisation of persons according to their activities during a short reference period (such as one week or one day) by using a specific set of priority rules. This approach has led to the development of a particular measurement framework known as the “labour force framework”. Another measure of the economically active population, called the “usually active population” in the international standards, refers to the main activity status of persons over a longer reference period such as a year (see Chapter 4).

The purpose of this chapter is to give an overview of the labour force framework and the rationale behind it. The basic categories (“employed”, “unemployed” and “not in the labour force”) and the main features of the labour force framework (the activity principle, the priority rules and the one-week or one-day reference period) are described in Section 2. The categorisation of persons not in the labour force (population not currently active) by reason of inactivity is outlined in Section 3 and its rationale explained. Finally, Section 4 deals with the applicability of the framework and certain related issues, namely, borderlines between categories and heterogeneity within categories.

The measurement of employment and unemployment and the particular borderline issues involved are dealt with in more detail in two separate chapters, one on employment and hours of work (Chapter 5) and the other on unemployment (Chapter 6). The problems of heterogeneity within the employment and unemployment categories will also be discussed there in more detail. A separate chapter deals specifically with underemployment (Chapter 7).

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2. The labour force framework

Basic categories and identities

On the basis of a specific set of rules, the labour force framework classifies, at a given moment of time, the population above a specified minimum age for measuring the economically active population into three mutually exclusive and exhaustive categories: employed, unemployed and not in the labour force. The employed and unemployed categories together make up the labour force, or the currently active population, which gives a measure of the number of persons furnishing the supply of labour at a given moment in time. The third category (not in the labour force), to which persons below the age specified for measuring the economically active population are added, represents the population not currently active. These relationships may be expressed as:

$$\text{Population} = \text{Labour force} + \text{Not in the labour force},$$

and

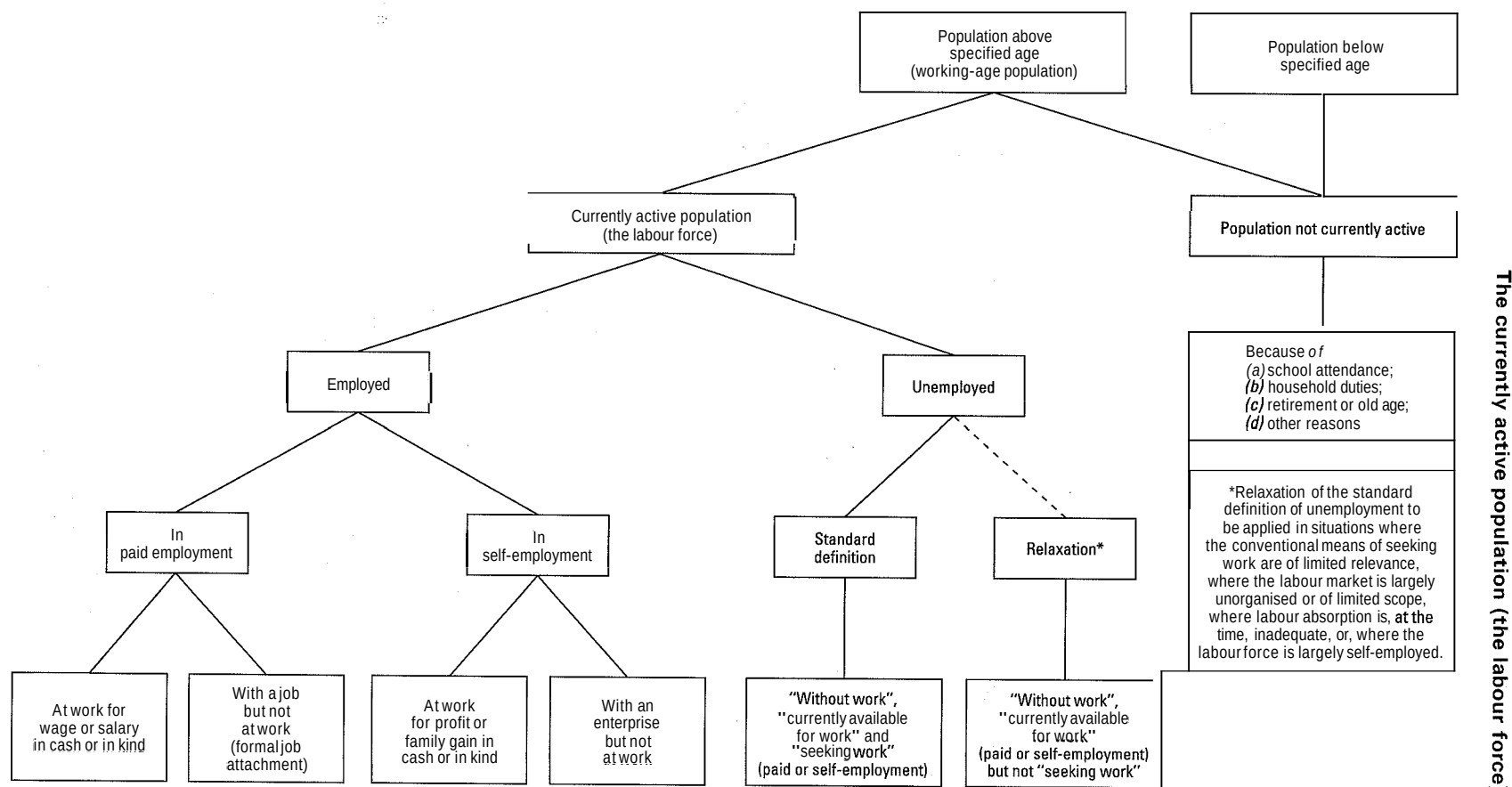
$$\text{Labour force} = \text{Employed} + \text{Unemployed}.$$

The exact contents of the categories depend on how each is defined. The Thirteenth International Conference of Labour Statisticians (ILO, 1983) defines employment in terms of paid employment and self-employment: paid employment covers persons who during the reference period performed some work for wage or salary, in cash or in kind, as well as persons with a formal attachment to their job but temporarily not at work; self-employment covers persons who during the reference period performed some work for profit or family gain, in cash or in kind, and persons with an enterprise but temporarily not at work. The standard definition of unemployment covers persons who during the reference period were (a) without work; (b) currently available for work; and (c) seeking work. The resolution adopted by the ICLS in 1982, however, provides for relaxation of the “seeking work” criterion in situations where the conventional means of seeking work are of limited relevance. These elements of the international definitions of employment and unemployment which conform to the labour force framework are shown graphically in Figure 2.

Embedded in the labour force framework are certain rules for sorting the population into the three basic categories (employed, unemployed and not in the labour force). These rules have three main features. The first feature is the notion of a reference period which must be short enough to reflect the labour supply situation at a specified moment of time. The second feature is the concept of activity status, according to which the population is classified into the three categories on the basis of activities performed during the specified short reference period: a person must be working or, more precisely, must have a job or enterprise in which he or she normally works (employed) or be seeking and/or available for work (unemployed) to be included in the labour force. The third feature of the labour force framework is the use of a set of priority rules for ensuring that each person is classified into only one of the three basic categories of the framework.

These rules are applied in surveys of households or individuals through three stages. First, the working-age population is identified so as to target the inquiry only on this population group. The “working-age population” refers to the population above a specified minimum age, which may differ from country to country depending on national circumstances (see Chapter 2). The second stage is to identify persons among the working-age population who, during the short reference period chosen for measurement, were either at work or temporarily absent from work (the employed category). The final stage is to identify among the remaining persons those who were seeking and/or available for work (the unemployed category). The third category (persons not in the labour force) is then made up, as it were, residually of those without

Figure 2. Labour force framework (ICLS 1982)



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work who were not seeking and/or not available for work, including persons below working age. The essence of this scheme is shown graphically in Figure 3.

Activity principle

The activity principle of the labour force framework stipulates that a person's labour force status should be determined on the basis of what the person was actually doing during the specified short reference period. Thus, only persons who were engaged in an economic activity or who were seeking and/or available for such an activity are to be considered for inclusion in the labour force. There are only a few exceptions to this rule, such as the inclusion among the employed of persons who were temporarily absent from work, or the inclusion among the unemployed of persons without work who are not seeking work because they have already found a job to start at a date subsequent to the reference period.

The scope of economic activity, in as far as it applies to the labour force framework, is, by convention, based on the concept of production of goods and services as defined by the United Nations System of National Accounts. This concept includes all activities related to market production and certain types of activities related to non-market production. The latter include (1) all production of primary products for own consumption; (2) the processing of primary commodities by the producers of those items; (3) production for own consumption of other commodities if they are also produced for the market by the same households; and (4) all production of fixed assets for own use. The concept and boundary of economic activity for the measurement of the economically active population have been described in detail in Chapter 2.

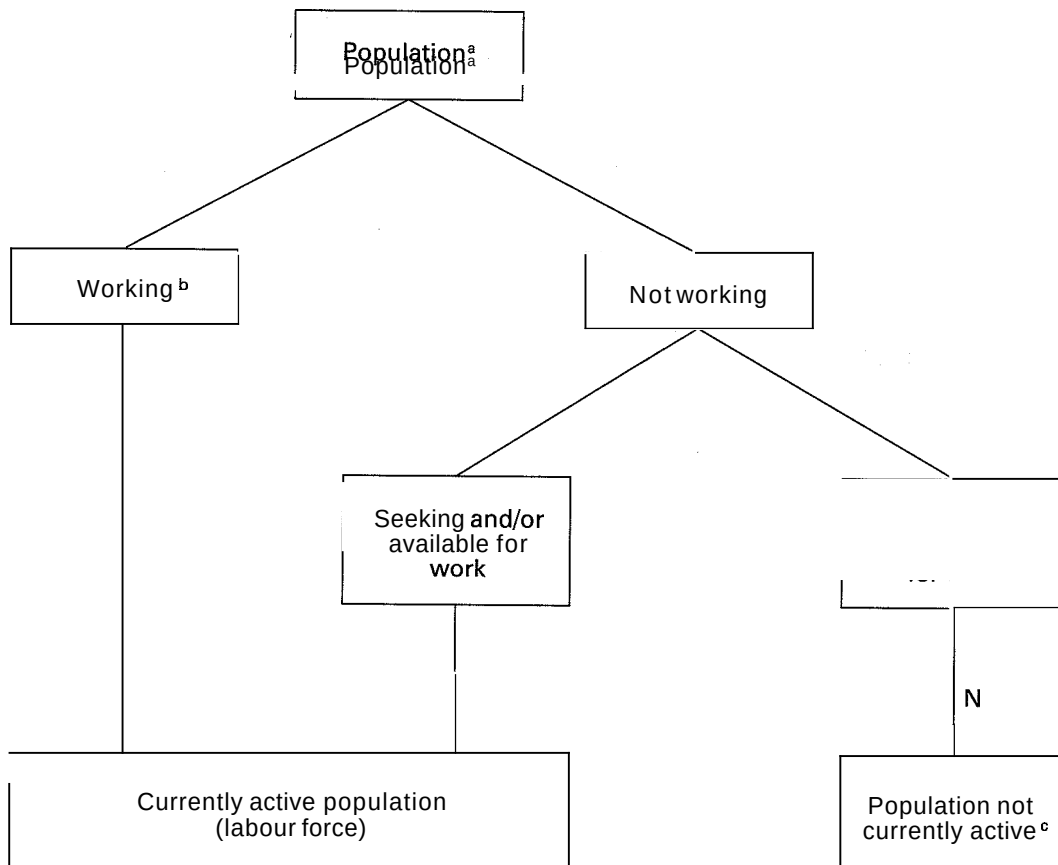
The purpose of the activity principle is to make labour force measurement as objective as possible. Prior to the adoption of the labour force framework, the classification of the population was commonly based on the concept of "gainful occupation" leading to the measurement of the "gainfully occupied population" (League of Nations, 1938). The gainfully occupied population comprised persons who reported themselves as having an occupation or a profession or a trade from which they had earned income, in cash or in kind, or in which they had assisted in the production of goods and services, regardless of whether they had actually worked or sought work during the current period. The measurement of the gainfully occupied population was useful to the extent that the interest at the time was focused on broad measures of potential labour supply and available skills. However, it was not a suitable measure of the current labour force, because, being based on the reporting of an occupation, it included retired persons who were no longer available for work, while it excluded new entrants to the labour force who did not yet have an occupation to report. Furthermore, the measurement did not readily lend itself to subdivision into the employed and the unemployed. Another problem was that the measurement involved more subjective interpretation, and therefore gave more scope to response and interviewer biases than does the labour force framework based on the activity principle.

Priority rules

The labour force framework uses a set of priority rules for classifying the working age population into the three basic categories of the framework: precedence is given to employment over unemployment and to unemployment over economic inactivity. Thus, a person who is both working and seeking work is classified as employed, while a student who is attending school and also seeking work is classified as unemployed. One corollary of the priority rules is that employment always takes precedence over other activities, regardless of the amount of time devoted to it during the reference period; a person working even for only one hour during the reference period will be classified as

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Figure 3. Labour force classification scheme, basic elements



Notes: ^aOr working-age population; ^bAt work or temporarily absent from work; ^cIncluding persons below working age; E = Employed; U = Unemployed; N = Not in the labour force.

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employed on the basis of the labour force framework, though he or she may at the same time be seeking additional work or going to school.

The priority rules serve several purposes. They provide unambiguous criteria for dealing with multiple activity situations. They ensure that a single labour force status is ascribed to each person, thus making the three labour force categories mutually exclusive. They also limit the concept of unemployment to total lack of work. Furthermore, they permit a straightforward link between employment, hours of work and income from employment, which is useful for productivity, and other, analyses. If, instead of the priority rules, other rules were used, such as a majority rule or a minimum x-hour rule, there could be difficulty in interpreting the resulting employment and unemployment statistics without additional information. With such rules, unemployment would no longer mean total lack of work. The measurement of total or average hours of work, or of total or average earnings per worker would have to be computed on the basis not only of the hours worked and the earnings of the employed, but also of the hours worked and the earnings of the unemployed and even of persons classified as not in the labour force.

The priority rules were originally adopted in the United States in 1940, but have been somewhat modified over the course of time. The original rules had the following order of priority: (1) at work; (2) unemployed; (3) with a job but not at work; and (4) not in the labour force (Ducoff and Hagood, 1946). As now, those at work and those with a job but not at work made up the employed category. But, according to the former priority rules, persons with a job but not at work who were seeking and available for work were classified as unemployed. Persons with a job but not at work are now always classified as employed since it is assumed that a person who has a formal attachment to his or her job, but is temporarily absent from it, is not available for other employment. This is in line with the present priority rule according to which *any* subcategory of employment takes precedence over *any* subcategory of unemployment.

Reference period

The labour force framework is designed to monitor current changes in the employment and unemployment situation, primarily on the basis of data obtained from household surveys. This means that the concepts of employment and unemployment should relate to a relatively short time period and that the measurement should be made at sufficiently frequent intervals, the frequency depending on the national statistical system and the availability of current data from other sources as well as on the seasonal patterns of employment. In surveys of households or individuals, a short recent reference period minimises recall and other memory-dependent response errors. It also lessens the statistical problems that may arise due to population movements and changes in the activity status, occupation and other characteristics of the population, since the longer the reference period the higher the likelihood of such changes and movements.

The international standards identify two appropriate choices for the length of a short reference period: one week or one day. When this recommendation was made, two particular points, in addition to the general points made earlier, were borne in mind: (a) the practicality of measurement; and (b) consistency with other data. Since employment and unemployment are viewed as stock concepts, the corresponding statistics must, in principle, refer to a precise instant in time. But the nearest practical stretch of time to reflect an instantaneous situation is a day or a week. Population census counts, establishment payroll statistics, unemployment insurance data and many other related data derived from administrative records are also often compiled with reference to a specific day or week, e.g. the census date, the payroll day, the last Friday in the month, the calendar week containing the 12th of the month, etc.

The currently active population (the labour force)

An examination of the historical development of the one-week or one-day international standard is instructive. It demonstrates the relationship between the choice of the reference period and the source of the statistics used. With reference to statistics from trade unions and unemployment insurance records, the Second ICLS in 1925 defined unemployment as being “not at work for one day at least” (ILO, 1925); later revised at the Sixth ICLS in 1947 to being “out of a job on a given day and (having) remained out of a job and seeking work for a specified minimum period not exceeding one week” (ILO, 1948b). When the labour force framework was first introduced at the international level at the Sixth ICLS, the draft recommended reference period for the combined reporting of employment, unemployment and labour force was “a particular day” (ILO, 1948a, p. 18), but this was not adopted in the resolution (ILO, 1948b). At the Eighth ICLS, when the use of labour force surveys had become more widespread, the draft report to the conference suggested “a specified brief period, preferably one week” (ILO, 1954), but this definition was not accepted either. The Eighth Conference, however, did adopt (ILO, 1955) a combination of “either one week or one day” for the measurement of employment and “the specified day or a specified week” for the measurement of unemployment, in order to cover the different reference periods corresponding to the various sources of statistics of employment and unemployment. Finally, the Thirteenth ICLS in 1982 introduced a slight additional flexibility in stipulating a “short reference period *such as* one week or one day” (ILO, 1983).

The statistical results may be substantially different depending on whether a reference week or a reference day is used. The labour force measured on the basis of a reference week is necessarily larger than or at least equal to the labour force measured on the basis of any reference day within the same week. This is because of the priority rule which gives precedence to economic activity of any duration over other activities. A person who was economically active on one reference day is also regarded as having been economically active in the encompassing reference week. The same argument applies to employment and, therefore, employment measured on the basis of a reference week is necessarily higher than or equal to employment measured on the basis of a reference day in the same week. The situation is more complex as regards unemployment. In theory, unemployment measured on the basis of the reference week should be lower than or equal to unemployment measured on the basis of any reference day within that week. This is because some persons classified as employed during a reference week may have been working only part of the week and seeking and/or available for work on the other days of the week. If one of these “other” days had been chosen as the reference period, these persons would have been classified as unemployed. However, the results will also be influenced by how the unemployment criteria of “seeking work” and “available for work” are applied in practice.

The magnitude of the difference between the weekly and daily measurements depends essentially on the relative number of persons who change activity status during a week. If there are no fluctuations during the week, the weekly and daily measurements will be identical. On the other hand, if there is random change of activity status from one day to another in every day of the week, it can be calculated that the difference between the weekly and daily labour force participation rates could be theoretically as high as 62 per cent.¹ In practice, of course, the differences do not reach this extreme case,

¹ Denoting the daily labour force participation rate by p , it can be shown by simple algebra that under simplified assumptions the weekly labour force participation rate is equal to $1 - q(q + \pi p)^6$, where $q = 1 - p$ and π is the correlation coefficient between the activity status in two consecutive days and assumed to be constant during the given week (n is a measure of the variability in status over time). The coefficient permits an evaluation of the weekly participation rate on the basis of the daily rate and vice versa. The difference between the two rates is given by $q - q(q + \pi p)^6$, which is minimum for $\pi = 1$ and maximum for $\pi = 0$ and $p = 28.7$ per cent, corresponding to the maximum value of 62 per cent.

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Table 2. Comparison of weekly and daily labour force participation and unemployment rates by sex and residence (India 1977-78)

Rate/Reference period	Urban		Rural	
	Male	Female	Male	Female
Participation rate				
Weekly	59.7	16.0	62.4	28.1
Daily	59.0	14.6	60.9	24.8
Difference	0.7	1.4	1.6	3.2
Unemployment rate				
Weekly	7.1	10.9	3.6	4.1
Daily	9.4	14.6	7.1	9.2
Difference	-2.3	-3.7	-3.5	-5.1

Source: "Report on the second quinquennial survey on employment and unemployment, National Sample Survey: 32nd round (July 1977-June 1978)" in *Sarvekshana* (New Delhi, National Sample Organisation), 1981.

and are usually less than 5 per cent for the average of all age groups. Since during a typical week change of status between unemployment and another labour force category in either direction is more likely to occur than change of status from inside the labour force to outside the labour force, one should expect larger weekly-daily differences for the unemployment rate than for the labour force participation rate.

Table 2 provides some numerical evidence. It compares the weekly and daily labour force participation and unemployment rates among males and females in urban and rural areas of India for the period July 1977 to June 1978. It can also be observed that the differences in labour force participation rates as well as the differences in unemployment rates are higher among females and in the rural areas, i.e. among population groups with a higher propensity to change in activity status.

The appropriate choice between the week or the day as the reference period depends on national conditions, particularly on the extent of weekly and daily fluctuations of activity status. Where the dominant form of employment is regular full-time employment, the "week" should be the preferred reference period. In such employment conditions, a reference week or a reference day (of the same week) will generally give similar *average* results, but the advantage of choosing the week is that it will likely lead to results with lower *variances*. Where a week of employment does not generally represent a whole week of full-time employment, i.e. where casual and intermittent work and part-time and temporary jobs and other types of short-term employment are widespread, then the one-day reference period may be preferable, since it should give a sharper snapshot picture of the employment and unemployment situation of the country than a weekly measure. However, it should be borne in mind that the resulting data may have relatively higher variances for the very reason that measurement is based on just one day.

It is worth noting that the choice of a reference period of one week is the most common one in national labour force surveys. Certain countries combine the one-week and the one-day reference periods in the same surveys in order both to account for the daily status fluctuations and to obtain more stable results. This method of combining two reference periods in one survey is described in Chapter 7 in the context of measuring underemployment. It should also be mentioned that the timing of the measurement, the choice between fixed or moving reference periods and the size of the sample are other important considerations in the process of deriving results with a sufficient degree of accuracy.

3. Persons not in the labour force

Categorisation by reason for inactivity

Persons not in the labour force, or, equivalently, the “population not currently active”, comprises all persons not classified as employed or unemployed during the reference period and hence not currently active, including children and young people below the age specified for measuring the economically active population. According to the Thirteenth ICLS 1982, the population not currently active is to be classified by reasons for inactivity, which are listed as: (a) attendance at educational institutions; (b) engagement in household duties; (c) retirement or old age; (d) other reasons such as infirmity or disablement, which may be specified.

Where the standard definition of unemployment is adopted, persons not classified as unemployed who were available for work but not seeking work during the reference period may be identified and classified separately under the population not currently active (ILO, 1983).

It should be noted that classification by reason for inactivity is different from classification by status such as student, homemaker, pensioner, etc. The latter classification is relevant in the case of the “population not *usually* active”, where the activity status is determined on the basis of the main activity over a long reference period. Thus, it is fair to assume that, by and large, persons mainly engaged in studies, household duties, etc., will turn out to be “not usually active” and can therefore appropriately be classified as students, homemakers, etc.

According to the priority rules of the current activity classification, students, homemakers, etc., are to be regarded as employed or unemployed and hence currently active if they had any economic activity, even a minor one, during the short reference period. Only students, homemakers, etc., who had no economic activity at all are classified as not currently active. It follows that persons classified as not active because of attendance at educational institutions do not include all students, and persons classified as not active because of engagement in household duties do not include all homemakers. In such a system, therefore, classification categories like students, homemakers, etc., can be misleading.

Moreover, in the past the categorisation of persons not currently active as students, homemakers, etc., has often tended to preclude their classification as economically active even if they had worked part time or on different occasions during the reference period. The present recommendation to classify currently inactive persons by reason for inactivity rather than by their usual status should help to minimise this anomaly and to reduce possible sources of underreporting of economic activity, particularly with respect to women, young and elderly people.

Order of the categories

Since a considerable number of individuals may be classifiable in more than one category of the not currently active population (e.g. a person may attend school or be retired and have household duties at the same time), an order of preference for classifying such persons into one or another of the categories should be established in order to avoid double-counts. A single categorisation may be achieved directly at the data collection stage by limiting each respondent to one answer. Consideration should then be given to presenting the categories on the survey questionnaire in the preferred order, partly as a reminder to the interviewer, but also because persons tend to answer with the first category that applies to them. An alternative solution would be to allow for more than one answer per respondent and to establish an order of preference for classification purposes later on when the data are processed.

4. Applicability of the framework

Situations in which the framework applies best

The labour force framework described above is best suited to situations where the dominant type of employment is regular full-time paid employment. In these situations, a working person falls unambiguously into the employed category, a person seeking and/or available for employment falls into the unemployed category, and others fall outside the labour force. In practice, however, the employment situation in a given country (or economic sector or geographic region) will to a greater or lesser degree differ from this pattern. Some deviations may be unimportant or may be minimised by proper application of the underlying concepts and definitions, but more radical deviations will demand more elaborate handling, with particular statistical implications. For example, an employment situation might fall on the borderline between labour force categories, raising questions about its appropriate statistical treatment. Another situation, while clearly belonging to one labour force category or another, might add to the heterogeneity of that category, creating difficulties in the interpretation of the resulting statistics. There are also situations that may render one of the labour force categories inoperative, such as the non-existence of unemployment in the sense in which it is understood in the present context in centrally planned economies (Gouriev, 1984).

Borderline between categories

A person's employment situation may be said to be on the borderline between labour force categories if a slight alteration in one or more of the features of the labour force framework would entail a change in the labour force status ascribed to that person. Thus, borderline issues may arise in connection with the concept of economic activity, the priority criterion, the length of the reference period and other features of the labour force framework. For example, currently inactive persons, who may be reclassified as employed as a result of a slight extension of the concept of economic activity, are on the borderline between the categories of employed and not in the labour force. Similarly, persons working a few hours per week who are seeking and/or available for more work are on the borderline between the employed and unemployed categories, since their labour force status would change from employed to unemployed with a different set of priority rules or with a change in the minimum number of hours of work required for being classified as employed. Workers whose services are for hire by the day and who convene every morning at special assembly places to be recruited by an employer for a day's work, are on the borderline between the employed and unemployed categories, since a change in the length of the reference period may result in reclassification from one labour force category to another.

In general, given the three labour force categories (E, U, N), there are four types of borderline situation possible: between employment and unemployment (EU); between employment and inactivity (EN); between unemployment and inactivity (UN); and between all three categories (EUN). Table 3 below gives two examples for each type of borderline situation. To resolve borderline issues the definitions of employment and unemployment need to be carefully interpreted in the light of the particular aspects of the situations under scrutiny. This requires sound definitions and accurate measurement tools. In developing national definitions of labour force, employment and unemployment, a balance should be reached between the need for specific details essential to meaningful analysis of a country's particular employment situations and the need for general principles to provide flexibility in the face of future unanticipated situations. Starting with a set of definitions of employment and unemployment, a body of experience is built up as new situations are tackled over a period of time. This experience can be called upon to resolve new borderline issues and to augment the starting

The currently active population (the labour force)

Table 3. Examples of situations or persons falling on the borderlines of labour force categories

Borderline	Example 1	Example 2
EU	Daily worker	Temporary lay-off
EN	Production wholly for own consumption	Employment alternating with institutional training
UN	Available for work but not seeking because such is not the practice in the region	Discouraged worker, no longer seeking, in the belief that no suitable job is available
EUN	Unpaid family worker in the off-season	Worker in subsidised training who otherwise would be laid off

Note E = employed, U = unemployed, N = not in the labour force.

definitions of employment and unemployment, and so on. There is of course a limit to this process, set by the limitations inherent in the data collection activities (e.g. interviewer training, respondent burden).

Heterogeneity within categories

The general trend observed in the development of labour force concepts has been toward making the employed and unemployed categories as inclusive as possible, in order to cope with the diversity of types and degrees of economic activity of individuals in different national situations. The definition of economic activity to include certain non-market activities as well as all market activities, the priority rules and the associated one-hour criterion in the definition of employment, and the possibility of relaxing the seeking work criterion in the definition of unemployment, all contribute to the expansive nature of the labour force framework. This aspect, together with the restricted number of categories in the framework, makes the employment and unemployment categories to a greater or lesser degree heterogeneous. This in turn may necessitate further differentiations in data analysis. Appropriate differentiation, where necessary, should compensate for any oversimplification inherent in the three-category labour force framework. Identification of more homogeneous groups should not only improve interpretation of the resulting statistics, but also help to better understand changes over time.

It is important to differentiate, among the employed, between workers whose employment is insufficient in terms of number of hours worked, utilisation of skill and remuneration, and other workers. The first group may be referred to as “inadequately employed” and the second group as “adequately employed”. Measurement of the inadequately employed may be as important as measurement of the unemployed when it comes to indicating the degree to which a given situation falls short of meeting full employment goals. The “inadequately employed” include: (a) those who do not have a sufficient amount of hours of work (visible underemployment), and (b) those whose skill is underutilised or who get substandard returns per hour of work because of low productivity or because they are working for substandard wages (invisible underemployment). Other important areas of differentiation among the employed might be aspects of employment security and distinctions between regular and casual work, or between permanent and temporary employment.

Significant heterogeneity may also exist among the unemployed. A substantial number of them may not customarily be members of the labour force and may be joining the labour force at a given time in response to the current situation. Some may only be seeking special types of work, such as part-time or temporary employment, and others may be in a state of indecision as to whether to continue seeking gainful employment or to withdraw from the labour force. To interpret the meaning of a given level of unemployment, it may be necessary to differentiate the total according to the degree

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of the worker's attachment to the labour force or the kind of work for which he or she is available. One simple differentiation could, for instance, be between: (a) unemployed persons seeking full-time employment, and (b) unemployed persons seeking part-time employment. Another differentiation could be between: (a) unemployed persons seeking long-term employment, and (b) unemployed persons seeking short-term employment. Other areas of significant differentiation could include duration of unemployment, family status of the unemployed, etc.

Within the third category of the labour force framework (persons not currently active), there is also some degree of heterogeneity as regards their attachment to the labour force. For example, a substantial number, customarily members of the labour force, may be out of it for the time being because of discouragement over job prospects (discouraged workers), or because of having inadequate skills, or because of physical or mental handicaps, or for other reasons. Many of these persons will return to the labour force when the economic situation improves, or when they acquire new skills, or when they overcome their handicaps following training or other remedial actions.

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The usually active population

4

1. Introduction

The international standards identify two useful measures of the “economically active population” without excluding other possibilities: the usually active population, measured in relation to a long reference period such as a year; and the currently active population, measured in relation to a short reference period such as one week or one day. The currently active population is used for measuring the current employment situation of countries and the current employment characteristics of their populations. Its measurement is based on the labour force framework as described in Chapter 3.

The current activity measurement provides a snapshot picture of the economically active population at a given point of time. In situations where the dominant pattern of work is year-round, with little or no seasonal variations and relatively few net movements into and out of the labour force or between its main components, such a snapshot picture is probably sufficient to provide an adequate representation of the employment situation for the whole year. However, where there are significant seasonal patterns of activity or other substantial labour force movement, the employment picture obtained for one short reference period may not be representative of others. In situations where this is the case and no other data sources exist, household survey measurements should be made over a longer period of time, either by repeating or staggering the current activity measurement so as to cover the desired longer period, or by using the longer period itself as the reference period for measurement. The first approach requires that the frequency of the survey be increased or that the sample be spread over the period of time. The second approach calls for retrospective measurement on the basis of a long reference period with an appropriate conceptual framework.

It should be noted that, in principle, the two approaches will give different results. Apart from conceptual matters, such differences are due to the fact that data on the usually active population and its characteristics, when based on retrospective measurement, are subject to more recall and other memory-dependent response errors than are data on the currently active population.

The usual activity framework was introduced as an international standard for the first time at the 1982 Thirteenth **ICLS**. Its chief purpose is to be a framework for the collection of data reflecting the dominant pattern of activities, particularly where the data collection programme does not permit repeated measurement in the course of the year (e.g. population censuses or surveys conducted only once a year). The use of the usual activity framework is particularly relevant in developing countries where, due to agriculture and other seasonal activities, the dominant pattern of activities over the year of a significant proportion of the population differs from the current situation

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at given points of time during the year. The measurement of usual activity is thus frequently combined with that of current activity in the same survey.

The use of a long reference period permits collection of information not only on the main activity of individuals over the year, but also on their other activities during the year. Furthermore, data can be obtained on the duration of the activities, which may supplement the statistics of the usually active population. Such duration data are also necessary for the analysis of employment and income relationships measured over a year. This issue is discussed in more detail in Chapter 8.

Like the framework of the currently active population (the labour force framework), the measurement of the usually active population is based on activity status, but an activity status determined by the “main activity” criterion over a long reference period, as opposed to the priority criterion of the labour force framework used over a short reference period. Another fundamental difference between the two frameworks concerns subdivisions. In the usual activity framework, individuals are first classified as usually active or not usually active, and then the usually active can be further subdivided into categories of employed or unemployed. In the labour force framework, however, individuals are first identified as employed or unemployed, and then the two categories are added together to obtain the currently active population.

This chapter is organised as follows. In Section 2, the issues involved in choosing an appropriate long reference period are discussed. Arguments in favour of a fixed calendar year or a moving 12-month reference period are shown to depend on the survey programme. In Section 3, the usually active population and its components are defined and the role of two additional concepts, “population economically active at some time during the year” and “duration of employment and unemployment over the year”, is explained. Section 3 also discusses the issue of measuring underemployment over a long reference period. In addition, examples are given of cross-classifications of usual and current activity status. Finally, in Section 4, different methods for retrospective measurement of employment and unemployment over the year are examined, illustrated by question sequences taken from national surveys. These may be used as references for the design of a questionnaire module on usual activity.

2. Long reference period

The choice of an appropriate long reference period for the measurement of the usually active population involves essentially two issues: (a) the length of the reference period; and (b) whether it is fixed or moving.

Length of the reference period

Where a year encompasses an entire agricultural cycle, the length of the reference period for the measurement of the usually active population should preferably be one year, either the calendar year or any other appropriate 12-month period. A period of 12 months also covers other seasonal activities such as construction and tourist-related services. Furthermore, with a year as the reference period, the resulting employment statistics may usefully be analysed in combination with related bodies of data on national income and production, household income and expenditure, migration, etc., which are also generally available on a one-year basis. The one-year reference period is in line with the practice in many national household surveys and population censuses of using a long reference period for the measurement of the economically active population (often in addition to a short reference period for the measurement of current activity). One example is the National Sample Survey of Employment and

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Unemployment of India in which the usual activity status of individuals is measured on the basis of the past 365 days (India, 1981). Another example is the Work Experience Survey supplement of the United States Current Population Survey in which the past calendar year is used as the reference period for measuring the work experience of the population during the preceding year (United States, 1980). In both surveys, data on the current labour force characteristics of the population are also obtained.

Certain surveys use long reference periods other than the year for particular purposes. For example, in recent years the reference period in the Philippines Integrated Survey of Households has been the three calendar months preceding the enumeration date. It was used to obtain quarterly data on labour force characteristics and corresponding data on income from household economic activities (Philippines, 1984). Another example is the new Survey of Income and Program Participation in the United States, which uses a four-month reference period. This survey is designed to obtain interrelated information on labour force activity, income and government programme participation (Ryscavage and Bregger, 1985).

Fixed or moving reference period

A reference period, whatever its length, may be demarcated in terms of fixed calendar dates or in terms of an interval of time preceding the interview date. When it is defined in terms of calendar dates, for example, from 1 January to 31 December of a given year, the reference period will be the same for all respondents. It is then referred to as a fixed reference period. Alternatively, the reference period may be defined in terms of a given length of time preceding the interview date, for example, the 52 weeks or the 12 months preceding the interview date. If respondents are not interviewed in the same week or in the same month, the exact calendar period for which the data are collected may vary from one respondent to another. The reference period in such situations is said to be a moving reference period.

The choice between a fixed or a moving reference period for the measurement of the usually active population should be made on the basis of the underlying survey programme. When data collection is concentrated over a short interval of time, say a week or a month, the use of an appropriate fixed reference period should be preferred. On the other hand, if the data collection is spread over a longer stretch of time, a moving reference period may be the only feasible choice.

In the first case, if the timing of the survey permits it, the reference period should be chosen so as to coincide with an exact calendar year, i.e. from 1 January to 31 December of a given year. The results may then be compared with other related statistics that are available on a calendar year basis. In such situations, in order to limit the recall period and minimise possible errors due to memory lapses, the retrospective survey should be carried out in the early part of the following calendar year. In the United States Work Experience Survey mentioned above, the survey is conducted in March with the preceding calendar year as the reference period. The recall period is thus up to 14 or 15 months. The Canadian Labour Market Activity Survey, a supplement to the regular monthly Labour Force Survey, is carried out in January of each year with the preceding calendar year as the reference period (Canada, 1982). In this survey the recall period is up to 12 or 13 months.

When, for reasons of cost and organisation, data collection must be spread over a broad interval of time, for example, over three months or more, a moving reference period rather than a fixed reference period may be preferred. With a staggered sample and a fixed reference period, the recall period will be further back in time as the survey proceeds: consequently, data obtained from respondents interviewed in the later parts of the survey will most likely be affected by larger recall errors than those obtained from respondents in the earlier parts of the survey. With a moving reference period, however,

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the recall period will be the same for all respondents, and the resulting data should thus be affected in a uniform way.

A related issue is the precise definition of a moving reference period. A moving one-year reference period may be defined, for example, in terms of the 12 months, 52 weeks or 365 days preceding the interview date. It could also be defined in terms of seasons or phases of the agricultural cycle. The choice should be based on practical considerations, to facilitate the response task and the interpretation of the results.

When using a moving reference period it is important to know exactly the time span which the resulting data cover. A fixed reference period provides statistics for a period identical in length and calendar dates for all respondents. A moving reference period, however, produces statistics which in fact cover a length of time which is longer than the length of the reference period itself. For illustration, consider a survey with a sample that is spread over a given year Y . An example is the Indian National Sample Survey mentioned earlier in which the sample was spread over the year from July 1977 to June 1978. But suppose a sample is spread from January to December of a given calendar year and it is decided to use a moving 12-month reference period? Respondents interviewed at the very beginning of the survey report on their activity during the past 12 months, which is from January to December of the preceding year, $Y-1$. Respondents interviewed at the very end of the year also report on their activity during the preceding 12 months, but for these respondents the period is from January to December of the current year Y . Respondents interviewed in other parts of the year report on their activity during a 12-month period between the two extreme dates. The combined survey results thus cover the two-year period from January $Y-1$ to December Y . Note also that in the case of non-continuous surveys the temporal coverage is uneven since there are more observations on the middle of the period than on its two extremes. Such factors may raise difficulties in the interpretation of the results, particularly for analyses combined with other related statistics.

3. Main activity status

Economically active at some time during the year

Before discussing the concept of the “usually active population” it is useful to introduce the broader concept of the “population economically active at some time during the year”, though this concept is not actually mentioned in the international standards. The concept of the “population economically active at some time during the year” refers to all persons above the minimum age specified for the measurement of the economically active population who experienced at least one week (or one day) of employment or unemployment in the course of the reference year. A person economically active at some time during the year will then be classified as “usually active” or “not usually active” depending on the duration of employment and unemployment during the year.

“Duration of employment during the year” refers to the total number of weeks (or days) of employment experienced in the course of the year by a person economically active at some time during the year. Similarly, “duration of unemployment during the year” refers to the total number of weeks (or days) of unemployment during the year. The sum of these two numbers gives the total number of weeks (or days) of economic activity experienced by the person in the course of the reference year.

These concepts provide an appropriate basis for measuring the usually active population. Data on the population economically active at some time during the year, and on the duration of employment and unemployment during the year for each individual, provide the information needed to identify the usually active population.

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Those individuals whose duration of employment and unemployment during the year exceeds in total a specified minimum duration are to be classified as “usually active” and the others as “not usually active”, as shown in Figure 4.

The concept of the “population economically active at some time during the year” can also provide a link between measurements of current activity and usual activity, particularly where both measurements are made in the same survey and where the short reference period used for current activity measurement is part of the long reference period used for usual activity measurement. The link lies in the fact that everyone identified as currently active must also have been economically active at some time during the year, the basis on which the usually active population is identified.

The concept of the “population economically active at some time during the year” has its own analytical value. The usually active population excludes persons who, though not usually active under the definition, may nevertheless have been employed or unemployed at some time during the year. All such persons are included among the population economically active at some time during the year. This broader concept also allows data to be obtained on the work experience and the pattern of economic activity of individuals over the course of the year. In particular, by recording each person’s economic activity during the year, it can be established how many persons among the entire population were employed in the course of the year, how many experienced unemployment, and how many combined employment, unemployment or economic inactivity. Statistics can also be derived on full-year and part-year employment and unemployment, on the annual number of weeks (or days) of employment and unemployment and, with an appropriate questionnaire design, on the number and duration of spells of employment or unemployment of individuals in the course of the year. Moreover, where it is possible to link such data with information on income, valuable insight may be gained into how employment and unemployment affect the economic welfare of individuals and households (see Chapter 8).

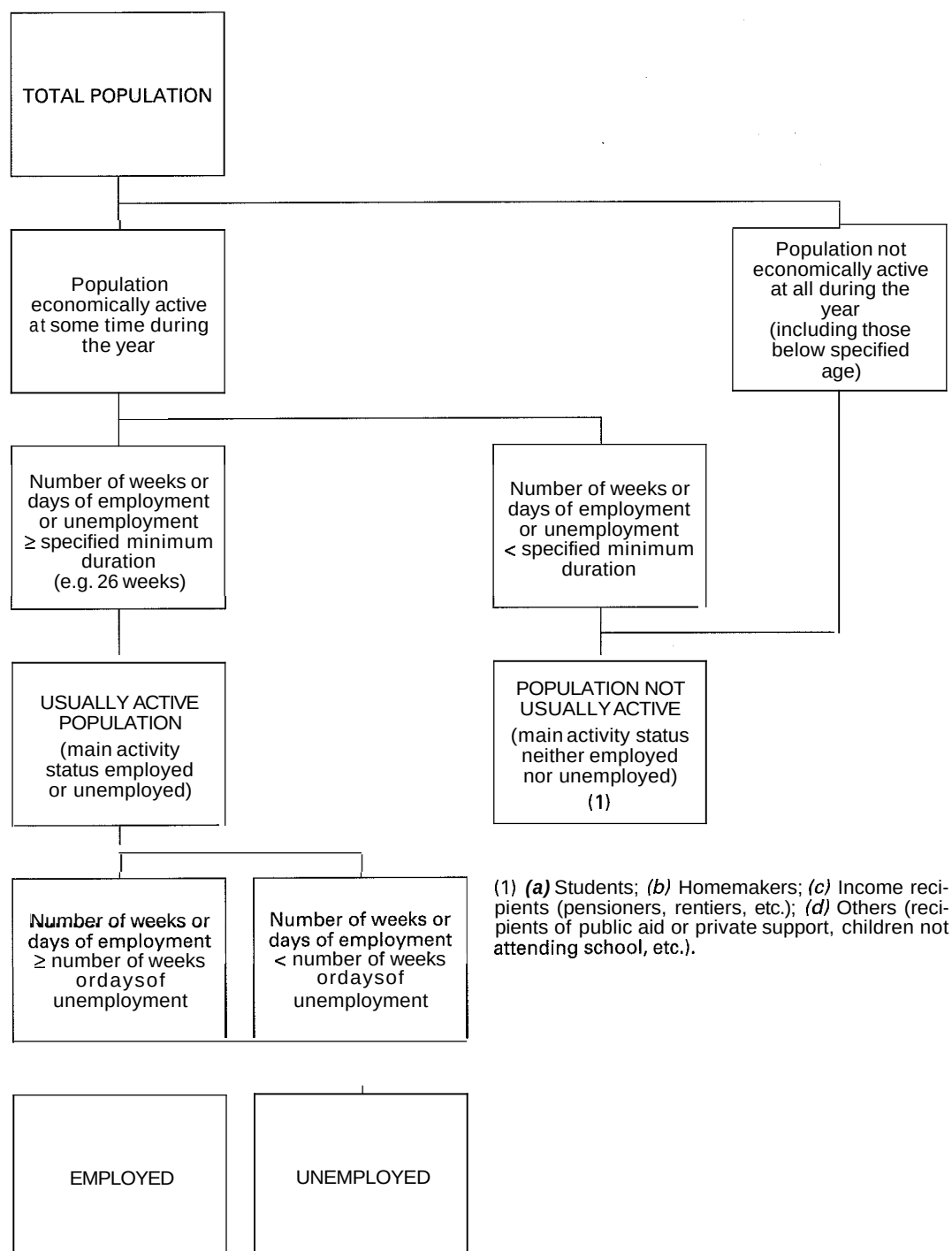
Usually active during the year

According to the international standards, the “usually active population” comprises all persons above a specified age¹ whose main activity status as determined in terms of number of weeks or days during a long specified period (such as the preceding 12 months or the preceding calendar year) was “employed” or “unemployed” as defined in the labour force framework. The usually active population is thus a subset of the population economically active at some time during the year, introduced in the previous subsection.

The definition of the usually active population contains two essential elements. One is that the main activity status of an individual should be determined by the *amount of time* the individual was employed or unemployed during the long reference period. The second element is that the amount of time employed or unemployed should be measured in terms of *weeks (or days) of employment and of unemployment*. The definitions of one week or one day of employment or unemployment should, in theory, be the same as those of employment or unemployment in the current activity

¹ The considerations for determining a minimum age for the measurement of the economically active population are discussed in Chapter 2. The minimum age to be used for the measurement of the usually active population should be the same as that set for the measurement of the currently active population so as to facilitate cross-classifications. For practical reasons the minimum age should apply to the situation at the time of the survey. It should be noted, however, that with a long reference period such as a year, there will be persons who, at the time of the survey, have just passed the specified minimum age and, therefore, have become eligible for inclusion in the usually active population though they were below the specified age during part of the reference period. This point should be taken into consideration when choosing the minimum age for the economically active population, particularly in countries with young populations.

Figure 4. Framework for measurement of the usually active population



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Table 4. The determination of the main activity status during the year: three illustrations based on the majority criterion

Example	Labour force experience during the year		Main activity status during the year
	Weekly activity status	Number of weeks	
1	Employed	45	Usually active, employed
	Unemployed	0	
	Not active	<u>7</u>	
		52	
2	Employed	5	Not usually active
	Unemployed	10	
	Not active	<u>37</u>	
		52	
3	Employed	13	Usually active, unemployed
	Unemployed	18	
	Not active	<u>21</u>	
		52	

framework. This provides a conceptual link between the definitions of the usually active population and the currently active population. In survey applications, however, the exact procedure for measuring a week (or day) of employment and unemployment will be somewhat different from the corresponding procedure of measurement in the current activity framework, as the use of a long reference period imposes practical limitations.

The main activity status is perceived as a summation of the different activity statuses that an individual may have had during the 52 weeks or 365 days constituting the long reference period, i.e. the preceding 12 months or the preceding calendar year. A person is to be classified as usually active if he or she has been economically active (employed or unemployed) for more than a certain number of weeks (or days) during the reference period. The aggregate of such persons constitutes the usually active population.

The main activity status may turn out to be substantially different depending on whether it is determined on the basis of weeks or days of employment or unemployment. For example, on the basis of weeks a person working only one day per week throughout the year and not looking for more work would be classified as usually active. However, this same person would be classified as not usually active if a classification based on days required economic activity during most of the days of the year. In countries where employment is mostly of a regular and continuous nature and where a week of employment means by and large a week of full-time employment or of employment for a major part of the working week, the main activity status may be determined on the basis of weeks of employment or unemployment. However, in countries where employment is largely of an irregular nature and where a week of employment does not generally mean a week of full-time employment or even employment for a major part of the working week, the main activity would be better based on days of employment or unemployment (United Nations, 1986).

It should also be mentioned that the usual activity framework, unless further elaborated, is not geared to the measurement of the volume of employment over the year in terms of hours of work. In extreme cases, a person may be classified as usually active even if he or she worked only one hour per week (or day) during a specified number of weeks (or days) of the year.

To help understand how to determine the main activity status of individuals, three examples are given in Table 4. In these examples, the week is used as the time unit and the main activity status, usually active or not usually active, is determined on

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the basis of the “majority criterion”, i.e. as the activity status which prevailed over most of the weeks during the reference year.

Example 1 depicts the situation of an individual who, in the course of the year, was employed for 45 weeks and not active in the remaining 7 weeks. According to the majority criterion, this person is classified as usually active because for more than half of the 52 weeks of the year the person was employed and thus economically active.

Example 2 shows the situation of a person with 5 weeks of employment and 10 weeks of unemployment over the year. This adds up to 15 weeks of economic activity which is less than half of the year. The person is thus classified as not usually active.

Example 3 is also instructive. In this example the person is classified as usually active despite the fact that according to the three activity statuses, employed, unemployed and not active, the person was mostly not active. This is because the main activity status is initially determined by adding together the number of weeks of employment and of unemployment.

Minimum duration of economic activity

The international standards defining the usually active population do not specify a minimum number of weeks (or days) of employment or unemployment as a criterion for classifying an individual as usually active. National circumstances should determine the appropriate minimum duration of economic activity.

One approach in determining the minimum duration of economic activity is to define the main activity status as that status, usually active or not usually active, which prevailed over most of the weeks (or days) during the reference year. This criterion is adopted in the examples given in Table 4. It is called the “majority criterion”. When the time units are weeks and the reference period is a year, it amounts to classifying as usually active all individuals who were either employed or unemployed for a total of at least 26 weeks during the reference year, priority being given, in accordance with the labour force framework, to economic activity in cases where the number of weeks of economic activity equals the number of weeks of economic inactivity. Individuals whose total duration of employment and unemployment during the year was less than 26 weeks are classified as not usually active.

When the time units are days, the determination of the main activity status as usually active or not usually active can be based on whether or not the total number of days of employment or unemployment during the year adds up to at least 183 days. It should be borne in mind that the bulk of the working population is not, of course, expected to work every day of the year, because of weekly rest periods, annual leave, public holidays, etc. Nevertheless, the minimum duration should be specified in terms of calendar days rather than in terms of working days. This is because temporary absences from work are included within the definition of employment. Periods of such absences are thus counted as days of employment.

Another minimum duration of economic activity to determine main activity status might be, for example, one of 13 weeks, in order to include seasonal workers among the usually active population. However, such a choice might result in the added inclusion of many full-time students working during their summer vacations.

An analysis of the mathematical relationship between the usual activity rate and the current activity rate may give guidelines on how to make an appropriate choice of a minimum duration of economic activity for classification as usually active. Table 5 gives the value of this minimum duration of economic activity in terms of number of weeks for different values of: (1) the average annual current activity rate, and (2) the average correlation of the current activity statuses between two successive weeks during the reference year. The correlation coefficient measures the propensity of week-to-week movements of individuals from one current activity status to another in the course of

Table 5. Minimum number of weeks of economic activity for classification as "usually active" as function of two parameters

Annual average current activity rate (%)	Correlation coefficient between activity statuses in two successive weeks					
	0.75	0.80	0.85	0.90	0.95	1.00
	(Number of weeks)					
10.0	14	15	16	18	22	26
20.0	17	18	19	21	23	26
30.0	21	21	22	23	24	26
40.0	24	24	24	25	26	26
50.0	26	26	26	26	26	26
60.0	30	30	30	29	28	26
70.0	33	33	32	31	30	26
80.0	37	36	35	33	31	26
90.0	40	39	38	36	32	26

The entries are designed to make the resulting usual activity rate equal to the corresponding annual average current activity rate, using a mathematical model described in Mehran, F. (1985) *The "usually active population" and its relationship to the "currently active population"*, Paper prepared for the Expert Group on the 1990 World Population and Housing Census Programme, United Nations, New York, 11-15 Nov. 1985.

the year. In the present context, it may also be interpreted as the average percentage of persons not changing activity status in two consecutive weeks during a year. A correlation close to one means that there is relatively little movement between labour force categories from one week to the next, representing, for example, situations where the bulk of the working population is in regular full-year employment. A lower correlation represents a greater amount of short-term labour force movement, as found, for example, in situations where there are many casual and part-year workers.

The values of Table 5 have been derived in a such a way that the usual activity rate (i.e. the ratio of the usually active population to the working age population) is equal to the annual average current activity rate that would have been obtained had the data collection programme permitted repeated measurement in the course of the year.

The results in Table 5 indicate that the majority criterion (26 weeks) is appropriate where the activity rate is about 50 per cent, irrespective of the value of the correlation coefficient, and also where the correlation coefficient is close to one, irrespective of the prevailing activity rate. This means that for countries or population groups with an activity rate of about 50 per cent, or with a substantial year-round labour force, the 26-week criterion for measuring the usually active population would be appropriate. In other situations, however, the 26-week criterion may not necessarily lead to a usual activity rate which is about equal to the annual average current activity rate.

Table 5 shows that where the annual activity rate is low (less than 50 per cent) and significant short-term movement between labour categories exists, the minimum duration for classification as usually active should be lower than 26 weeks. For example, if the activity rate in a country is 20 per cent and the correlation coefficient between weekly activity statuses is 0.75, the appropriate minimum duration would be about 17 weeks under the assumptions of the model. Thus, all persons who have been economically active (employed or unemployed) for at least 17 weeks during the year should be included among the usually active in this case. On the other hand, where the annual activity rate is high (more than 50 per cent), a higher minimum duration should be used; the lower the correlation coefficient the more restrictive the choice should be.

One implication of these results is that if the usual activity rate is to be equal to the annual average current activity rate (a rate that would have been obtained had repeated measurement been possible during the year) for various groups of the population, then, in principle, different minimum durations should be used for different categories of persons. However, such a procedure would be complicated and

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impracticable for surveys designed to provide statistics for the whole population. In such surveys, a uniform minimum duration, such as 26 weeks or another appropriate duration, should be used for all population groups.

Subclassification into employed or unemployed

The international standards indicate that where the concept of the “usually active population” is considered useful and feasible, the usually active population may be subdivided as employed and unemployed in accordance with the main activity. One way to carry out this subdivision is to use information on the duration of employment and unemployment over the year for each person usually active. However, the international standards do not specify a minimum duration of employment (or of unemployment) to be used in the subdivision of the usually active population.

If the reference period is a year and the majority criterion is used, a person would clearly be classified as employed in the usual activity framework if that person had been employed during most of the weeks (or most of the days) of the year. Similarly, a person would clearly be classified as unemployed if that person had been unemployed during most of the weeks (or most of the days) of the year. However, the usually active population may also include a certain number of persons who have been employed for one period of time during the year and unemployed for another period, each period less than half the total number of weeks (or days) of the year, but the two together accounting for most of the weeks (or days) of the year (example 3 in Table 4). These persons may also be subdivided as employed and unemployed according to their main activity, i.e. depending on whether the person was mainly employed or mainly unemployed during the periods when he or she was active.

Under this definition, the “employed” would comprise all usually active persons who, during the reference year, experienced more weeks (or days) of employment than of unemployment. Similarly, the “unemployed” would comprise all usually active persons who, during the reference year, experience more weeks (or days) of unemployment than of employment. In the unlikely event that there was an equal number of weeks (or days) of employment and unemployment, precedence may be given to employment, in the same way that the priority rules operate in the labour force framework. Thus, just as in the labour force framework the sum of the employed and the unemployed constitutes the “currently active population”, so in the usual activity framework the sum of the employed and the unemployed constitutes the “usually active population”.

Note, however, that although the subdivision into employed and unemployed in the usual activity framework is based on the number of weeks (or days) of employment and unemployment as defined by the labour force framework, the concepts of the “employed” and the “unemployed” are not the same in the two frameworks. In fact, as is evident from the preceding paragraph, persons classified as unemployed in the usual activity framework may have had some employment experience in the course of the reference year. The same applies also to persons classified as not usually active. A certain number of them may experience some employment or some unemployment or both during the year. In the labour force framework, however, because of the priority criterion which gives precedence to employment of any duration over unemployment, the unemployed, by definition, cannot have had any employment experience during the reference week (or day). Similarly, the economically inactive cannot have had any employment or unemployment experience. In the labour force framework, employment and unemployment always take precedence over economic inactivity.

For illustration let us turn again to Table 4. Only examples 1 and 3 need to be considered here, as the subdivision applies only to persons who have already been identified as usually active. In example 1, the main activity status over the year is

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Table 6. Classification scheme for the usual activity framework

Labour force experience during the year:		Usual activity status:
E + U	always E	active, employed
	always U	active, unemployed
	always N	not active
	$E \geq U$	active, employed
	$E < U$	active, unemployed
E + N	$E \geq N$	active, employed
	$E < N$	not active
U + N	$U \geq N$	active, unemployed
	$U < N$	not active
E + U + N	$E + U \geq N$	active, employed
	$E + U < N$	active, unemployed
		not active

Notes: E = employed; U = unemployed; N = not active. The symbol $E + U$ means that the individual experienced both employment and unemployment during the year and had no spell of economic inactivity; corresponding meanings should be attached to $E + N$, $U + N$ and $E + U + N$.

employed because the person was employed for most of the weeks of the year and experienced no unemployment. The main activity status of the person in example 3 is unemployed since the number of weeks of unemployment experienced by this usually active person exceeds his or her number of weeks of employment.

A point worth reiterating is that the main activity criterion works on two levels: first for classification of persons as usually active or not usually active; then for subclassification of the usually active as employed or unemployed. Accordingly, in example 3 of Table 4, the person was first classified as usually active and then subclassified as unemployed, despite the fact that among the three activity statuses, employed, unemployed and not active, the person was not active for the longest period of time. In a generalised form, these relationships are indicated in Table 6 and in Figure 4 presented earlier in this section.

Not usually active during the year

The international standards define the “population not usually active” as comprising all persons, irrespective of age (including those below the age specified for measuring the economically active population), whose main activity status during the long reference period was neither employed nor unemployed. It is further specified that the “population not usually active” comprises the following functional categories: (a) students; (b) homemakers; (c) income recipients (pensioners, rentiers, etc.); and (d) others (recipients of public or private support, children not attending school, etc.) as defined by the United Nations Principles and Recommendations for Population and Housing Censuses (United Nations, 1980). The 1990 draft supplement to these principles and recommendations (United Nations, 1986) provides the following definitions:

- (a) *Students*: persons of either sex, not usually active, who attend any regular educational institution, public or private, for systematic instruction at any level of education;
- (b) *Homemakers*: persons of either sex, not usually active, who are engaged in household duties in their own home, for example, housewives and other relatives responsible for the care of the home and children;
- (c) *Income recipients*: persons of either sex, not usually active, who receive income from property or investments, interests, rents, royalties or pensions from former activities;

as opposed to a week or a day in the current activity framework. The problem is that of recollecting not simply events or statuses over a long period but also their precise nature. For example, a survey respondent should recall not only all weeks (or days) of employment but also the particularities of each week (or day) of employment with respect to hours of work, the voluntary or involuntary nature of short-time work, and whether he or she was seeking or available for additional work during each week (or day) of involuntary short-time work. Because of the conceptual and practical difficulties involved, particular care should be taken when measuring visible underemployment in the context of the usual activity framework.

Cross-classification with current activity status

With reference to surveys where both the usual activity status and the current activity status are measured, the international standards recommend that the economically active population should be cross-classified by usual and current activity status. The difference between usual and current activity status is of particular relevance in analysis and policy-making and may be used to identify those persons who are usually active but are not in the labour force during the current reference period. This category of persons includes:

- (a) those who were economically active for a major part of the year but are no longer active at the time of the survey (e.g. retired persons);
- (b) those who are economically active in the busy season but are not active in the off-season (if the survey is conducted in the off-season);
- (c) those who are in and out of the labour force occasionally depending on the demands of the work, or casual workers who are usually active but for some reason or another not in the current reference week.

The cross-classification of usual and current activity status also identifies those persons who, though not usually active, are currently in the labour force. While in most circumstances the usually active population should be larger than the currently active population, it is not unlikely that some persons not usually active during the year may in fact be economically active at the time of the survey, e.g. new entrants to the labour force, students working during a vacation period.

The cross-classification can be extended to more detailed categories, distinguishing, for example, the categories “employed”, “unemployed” and “not active” for the current activity status, and the categories “usually active”, “students”, “homemakers”, “income recipients (pensioners, rentiers, etc.)” and “others” for the usual activity status. For instance, the combination unemployed/homemakers would give the number of housewives currently trying to re-enter the labour force, while the combination employed/income recipients would give the number of pensioners engaged in some economic activity during the reference week.

4. Retrospective measurement

Accurate measurement of the usually active population is not a simple task. In practice, it is not feasible to study through household surveys or censuses the current status of each individual over each of the 52 weeks (or the 365 days) of the year and then determine the main activity status. Even the conduct of, say, quarterly panel surveys with retrospective questioning on the employment and unemployment experience during the past quarter requires a substantial statistical capacity. In many circumstances, one can only expect to determine the main activity status through retrospective questions on the employment and unemployment experience of each individual during the whole year. Since retrospective measurements over a period as long as a year may be subject

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to substantial recall errors, it is important to adopt measurement procedures that limit the extent of these errors. This section describes four different approaches to retrospective measurement of past-year employment and unemployment, and discusses their advantages and drawbacks.

Direct assessment

The simplest method consists of asking respondents to determine their main activity status during the reference year by themselves. Since individuals' assessments of their status may differ from the specified criteria of the definition, the results may be affected by conceptual biases as well as recall errors. In an experiment conducted as part of the ILO methodological survey in Kerala, India, in 1983, about 20 per cent of the individuals who classified themselves initially as not usually active were found after probing to have been in fact economically active for more than half of the reference year, and hence usually active according to the definition (Mata, 1989). The reverse situation of persons classifying themselves as usually active and found after probing to have been in fact not usually active was much less common.

A variant of the self-classification method is what may be called the interviewer-classification method. In this method the interviewer, on the basis of a dialogue on the economic activity of the respondent and its duration over the reference year, determines and records the main activity status of the respondent. This method is used in the Indian National Sample Survey on Employment and Unemployment (India, 1981). Since only the main activity status, as determined by the interviewer, is recorded on the questionnaire, with no information on the duration of economic activity over the year, the results cannot be compared with other methods, or assessed in terms of the extent of recall errors that they may involve.

Whole-year recall

Another method for assessing past-year employment and unemployment consists of asking each respondent to summarise his or her economic activities by reporting the total number of weeks or days he or she was employed or unemployed during the reference year. The main activity status of each person may then be determined at the processing stage; it need not be established at the interview stage. This method follows in essence the framework shown in Figure 4 earlier. It makes possible identification of persons who were economically active at some time during the year, though not sufficiently to be classified as usually active. The "whole-year recall" method is used in the United States Work Experience Survey and certain other national retrospective surveys on past-year employment and unemployment (e.g. in Australia, Sweden). The relevant question sequence of the United States Work Experience Survey is reproduced below (United States Bureau of the Census, Current Population Survey, Form CPS-670).

434. In 1978 how many weeks did... work either full time or part time not counting work around the house? Include paid vacation and paid sick leave.
... (Mark weeks and skip to item 38)
None (Ask 35)
- Q35. Even though... did not work in 1978, did he spend any time trying to find a job or on layoff?
- Q36. How many different weeks was ... looking for work or on layoff from a job?
437. What was the main reason ... did not work in 1978? Was ... ill or disabled and unable to work; Taking care of home or family; Going to school; Could not find work; In Armed Forces; Retired; Doing something else.

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Q38. *Interviewer Check Item* Number of weeks in item 34 is:

1-49 (Skip to 40)

50-51 (Ask 39)

52 (Skip to 43)

439. Did ... lose any full weeks of work in 1978 because he was on layoff from a job or lost a job?

Yes (Skip to 43)

No (Skip to 43)

Q40. You said ... worked about (entry in item 34) weeks in 1978. How many of the remaining (52 minus entry in item 34) weeks was ... looking for work or on layoff from a job?

Out of these seven items, only three are used for computing weeks of employment and unemployment. The number of weeks of employment is obtained from the answer to 434 while the number of weeks of unemployment is obtained from Q40 or Q36, depending on whether or not the person worked during the year. The number of weeks outside the labour force is derived residually.

The question sequence in the United States Survey is used to obtain, later on in the interview, information on past-year income by sources; the measurement of number of weeks of employment and unemployment is not the main purpose. If the approach were used by other countries for the purpose of classifying individuals as usually active, certain aspects of data quality would have to be examined carefully. In particular, the issue of possible recall biases and rounded answers due to the reporting of aggregate numbers of weeks of employment and of unemployment would have to be clarified. It would be important to find a way clearly to identify the number of weeks of employment and unemployment on the one hand and that of economic inactivity on the other, in an attempt to avoid an underestimation of the latter.

Another problem is that the concepts measured in relation to a long reference period may not fully correspond to the concepts measured in relation to a short reference period. For example, in measuring the number of weeks of unemployment during a reference year, the concept of one week of unemployment may not be the same as the concept of unemployment measured over a reference week. This is because it is not possible to apply the criteria of employment and the associated priority rules to a one-year reference period in the same way as to a one-week reference period. This conceptual difference is particularly important where the notion of unemployment is not well understood by the bulk of the respondents, especially where employment placement services or unemployment benefit schemes are not widespread.

Month-by-month recall

Another approach for measuring past-year employment and unemployment is to divide the one-year reference period into shorter periods such as 12 one-month periods, and obtain information on each of the 12 months separately. This approach may be called "month-by-month recall".

In its most complete form the approach involves asking respondents to report the number of weeks or days of employment, unemployment and economic inactivity for each of the 12 months of the reference period. In practice, however, this procedure might be too complicated to use since with weeks as units of measurement, fractions of weeks in a month would have to be recorded. Furthermore, the precise recollection of weeks or days of activity might prove too difficult.

A simplified version, used in the Canadian Annual Work Patterns Survey cited earlier, consists of measuring labour force activities in terms of all-month or part-month units. The relevant question sequence from this survey is reproduced below.

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Q11. During 1983, did ... do any work at all at a job or business?

Yes

No (Go to 20)

Q13. Did ... work in every month in 1983? Include as work all paid absences.

Yes (Go to 16)

No

Q14. In which month(s) did ... work?

J F M A M J J A S O N D

Q15. In which of these months did ... work for the whole month and in which for part of the month?

Whole month J F M A M J J A S O N D

Part month J F M A M J J A S O N D

Q18. Was ... absent from work for a week or more because of a temporary layoff?

Yes

No (Go to 20)

Q19. In which month(s) was ... on temporary layoff?

J F M A M J J A S O N D

Q20. Did ... look for work at any time in 1983?

Yes

No (Go to 23)

Q21. What did ... do to find work in 1983? (Mark all methods reported)

Enter code(s) _____

Q22. In which month(s) did ... look for work?

J F M A M J J A S O N D

Other questions in this sequence concern full-time and part-time work (Q12), change of employers (Q16) and the month(s) that the change occurred (Q17). The questionnaire also contains additional questions on full-time attendance at school, the month(s) of attendance and the month(s) in which the student was looking for full-time or part-time work. On the basis of the answers to the complete question sequence, the number of months (and weeks) of employment and unemployment is estimated.

On the basis of a complete set of answers a person is classified for each month into one of five possible labour force categories: (a) employed all-month;¹ (b) employed part-month, unemployed part-month; (c) employed part-month, not in the labour force part-month; (d) unemployed all-month; (e) not in the labour force all-month.

The following example shows the kind of results that can be obtained from this method. Part-month activity is represented by a single symbol E, U or N and all-month activity by a double symbol EE, UU or NN. In this example, the individual in question is classified as employed all-month (EE) from January to April; unemployed all-month (UU) in October and November; and inactive all-month (NN) in December. In the other months, unemployment or inactivity are combined with employment; i.e. employed part-month, unemployed part-month (EU) from May to July; and employed part-month and inactive part-month (EN) in August and September.

¹ In the Canadian survey, a person must have been employed for at least 8 hours in a month to be counted as employed in that month. The person is considered employed all-month if he or she was employed for at least 8 hours per week; otherwise the person is considered employed part-month.

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	J	F	M	A	M	J	J	A	S	O	N	D
Employed (E)	EE	EE	EE	EE	E	E	E	E	E			
Unemployed (U)					U	U	U			UU	UU	
Not in labour force (N)								N	N			NN

Note that in the above classification (and in the example) there is no combination “unemployed part-month, not in the labour force part-month” (UN) nor is there a three status combination “employed, unemployed, not in the labour force part-month” (EUN). This is to simplify data collection and to retain broad compatibility with the definition of unemployment in the currently active population framework, which requires an active job search during a recent period such as a month.

Once an individual has been assigned a labour force status for each month, he or she is classified into one of seven possible groups, reflecting the extent of labour force activities during the reference year: (a) employed all year; (b) unemployed all year; (c) not in the labour force all year; (d) employed part-year, unemployed part-year; (e) employed part-year, not in the labour force part-year; (f) unemployed part-year, not in the labour force part-year; (g) employed, unemployed and not in the labour force part-year.

The Canadian survey does not include any direct questions on the number of weeks of employment and unemployment during the reference year. However, these measures are derived from the monthly labour force statuses assigned over the course of the year. The monthly statuses are converted into weeks, by defining the year as consisting of 24 part-months and multiplying the part-months by the conversion factor:

$$\frac{365.25}{7 \times 24}$$

This conversion factor is based on the assumption that, where a combination of activities occurs within the month, the proportion allocated to each will be on average one-half month. If it is desired that the weeks spent in all activities add up to exactly 52, minor adjustments to the conversion factor may be necessary.

The conversion of the measurement unit into weeks gives the required data on the number of weeks of employment and unemployment during the year, which can be used for classification as “usually active” and “not usually active”, and for those classified as “usually active” for subdivision as “employed” or “unemployed”. Using analytical devices, it is also possible to estimate the number and duration of different spells of employment and unemployment.

The month-to-month recall has a number of advantages in comparison with the whole-year method. There is evidence that as far as labour force activities are concerned people generally tend to think in terms of months rather than weeks (or days) of employment and unemployment. Furthermore, dividing the reference year into twelve calendar months provides limited recall periods, thus reducing recall errors. Note that where respondents tend to think in terms of time units other than months (e.g. seasons or phases of the agricultural production cycle), the method can be modified by choosing the appropriate alternative time unit with suitable subdivisions. The modified method requires more time for administering the questionnaire and more elaborate rules for data processing.

Employer-specific approach

In general, the process of recalling events is facilitated when the recall period is anchored by certain memorable events. Recognising this fact, the Canadian Annual Work Patterns Survey was replaced in 1987 by a new survey, called Labour Market

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Activity Survey (Canada, 1988). In this new survey, data collection is centred around the timing and length of jobs held with different employers during the reference year. For illustration, the relevant question sequence is reproduced below.

Q10. In 1986, how many employers did ... work for, including self-employment?

If none, go to 90

Q11. Did ... have more than one job with this/any of these employer(s) during 1986? We count jobs for the same employer as being different if they differ both in their usual duties and in the wage or salary paid.

Yes

No

These questions are followed by questions on industry (412, Q13), occupation (Q14, Q15) and status in employment (Q16) for up to five jobs per respondent. For each job, the question sequence continues as presented in Flow chart 3.

The question sequence is followed by further detailed questions on: periods of work interruptions of one week or more within jobs; hours of work, wage or salary, company size and union membership; activities in the remainder of the year; satisfaction with work pattern during the year; school attendance and participation in employment-related government programmes. Altogether, the questionnaire contains 108 items, some 60 of them to be asked for each of the possible five jobs. Not everyone will, however, be required to answer all questions. Interviews should take 3-20 minutes, depending on the skip pattern of the questionnaire and the particular situation of the respondent.

The primary objectives of the Canadian Labour Market Activity Survey are (a) to provide dynamic measures of the labour market over a 24-month period which are conceptually consistent with the monthly labour force survey; and (b) to provide more detailed information on paid jobs held than is available from the monthly labour force survey. The length of the questionnaire is largely determined by the aim of achieving consistency with the concepts used in the monthly labour force survey. The complexity of the questionnaire results from the number of jobs which may be recorded for each respondent in compliance with the second objective mentioned above. In order to obtain data for a 24-month period the rotation scheme of the survey is designed so as to match individual records from two successive survey rounds.

Where the survey objective is confined to the measurement of the usually active population, the questionnaire can be modified by reducing its length and complexity whilst retaining the characteristic features of the employer-specific approach. There is some evidence that this approach improves the recall of spells of employment, at least for the more recent parts of the reference period, by stimulating the respondent's memory through initial inquiries into the characteristics of specific jobs held during the year. Once the reference year is structured by the spells of employment, then the beginning and end of these spells serve as reminders for information on spells of unemployment.

It should be recognised that in any case the implementation of this approach for measuring the usually active population requires more questions than the approaches described earlier. However, the additional questions will not only reduce recall errors, but will provide much useful information on the dynamics of the labour market, for example, on the starting date for any period of employment, unemployment and economic inactivity during the reference period and, as a corollary, on the complete duration of any period of employment, unemployment and economic inactivity. Data will be gained on the number and characteristics of persons working for more

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Flow chart 3. Labour Market Activity Survey (Statistics Canada)

FOR EACH JOB REPORTED ASK	JOB 1	JOB 2
17. WHEN IN 1986 DID . . . FIRST START WORKING AT THIS JOB? (INCLUDE AS WORK ALL PAID ABSENCES)	 D D M M Y Y	 D D M M Y Y
18. INTERVIEWER CHECK ITEM • If 010186 marked in item 17 • Otherwise	⁵ ☐ Go to 28 ⁶ ☐ Go to 19	⁵ ☐ Go to 28 ⁶ ☐ Go to 19
19. IN 1986 JUST BEFORE . . . STARTED WORKING AT THIS JOB WAS THERE A PERIOD OF A WEEK OR MORE IN WHICH . . . WAS NOT WORKING?	Yes ¹ ☐ Go to 20 No ² ☐ Go to 29	Yes ¹ ☐ Go to 20 No ² ☐ Go to 29
20. WHEN DID THIS PERIOD OF NOT WORKING START?	 D D M M Y Y OR Never worked before³ ☐	 D D M M Y Y
21. DID . . . LOOK FOR WORK AT ANY TIME DURING THIS PERIOD?	Yes ¹ ☐ Go to 22 No ² ☐ Go to 24	Yes ¹ ☐ Go to 22 No ² ☐ Go to 24
22. WHAT DID . . . DO TO FIND WORK DURING THIS PERIOD? (mark all methods reported)	Enter code(s)	Enter code(s)
23. IN HOW MANY CONSECUTIVE WEEKS WAS . . . LOOKING FOR WORK JUST BEFORE THIS JOB?	Enter weeks and go to 25	Enter weeks and go to 25
24. DID . . . WANT A JOB AT ANY TIME DURING THIS PERIOD?	Yes ³ ☐ Go to 27 No ⁴ ☐ Go to 29	Yes ³ ☐ Go to 27 No ⁴ ☐ Go to 29
25. INTERVIEWER CHECK ITEM • If item 23 is greater than 12 • Otherwise	⁵ ☐ Go to 26 ⁶ ☐ Go to 27	⁵ ☐ Go to 26 ⁶ ☐ Go to 27
26. DID ANY OF THE FOLLOWING CAUSE . . . TROUBLE WHEN LOOKING FOR WORK? A. Not having enough information about available jobs B. Not having the right skills for available jobs C. Not having enough education for available jobs D. Not having enough experience for available jobs E. A shortage of jobs in the area	Yes ⁰¹ ☐ ⁰³ ☐ ⁰⁵ ☐ ⁰⁷ ☐ ⁰⁹ ☐ No ⁰² ☐ ⁰⁴ ☐ ⁰⁶ ☐ ⁰⁸ ☐ ¹⁰ ☐	Yes ⁰¹ ☐ ⁰³ ☐ ⁰⁵ ☐ ⁰⁷ ☐ ⁰⁹ ☐ No ⁰² ☐ ⁰⁴ ☐ ⁰⁶ ☐ ⁰⁸ ☐ ¹⁰ ☐
27. DURING THE PERIOD . . . WANTED A JOB OR LOOKED FOR WORK, WAS THERE ANY REASON THAT . . . COULD NOT TAKE A JOB?	Enter code and go to 29	Enter code and go to 29
28. WHEN BEFORE 1986 DID . . . MOST RECENTLY START WORKING AT THIS JOB?	 D D M M Y Y	 D D M M Y Y
29. IS . . . STILL WORKING AT THIS JOB?	Yes ⁷ ☐ Enter today's date in item 30 and go to 32 No ⁸ ☐ Go to 30	Yes ⁷ ☐ Enter today's date in item 30 and go to 32 No ⁸ ☐ Go to 30
30. WHEN DID . . . MOST RECENTLY STOP WORKING AT THIS JOB?	 D D M M Y Y	 D D M M Y Y
31. WHAT WAS THE MAIN REASON . . . LEFT THAT JOB?	Enter code	Enter code

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than one employer or in more than one job at some time during the year, on the extent and nature of recurrent unemployment, on the rehiring of unemployed persons or seasonal workers by the same employer, etc.

Conclusions

The measurement of the usually active population has been recommended particularly for situations where repeated measurement of the currently active population over the year is not possible but where survey data covering a long reference period are needed. Even where repeated measurement of the currently active population over the year is made, retrospective measurement with a one-year reference period may provide valuable information on the population economically active at some time during the year, on the extent of employment and unemployment during the year, on the incidence of recurrent unemployment, and so on.

Nevertheless, retrospective measurement over a long reference period such as a year has limitations: various types of recall errors due to memory lapses may occur, including omission of events and misreporting of their timing or duration. These errors are aggravated when proxy-responses are used. The effects of recall errors on the resulting statistics depend on the work patterns of the population.

There are indications that part-year employment is likely to be underreported in retrospective surveys, while full-year employment is likely to be overreported (Lemaitre, 1987). Similarly, long-term unemployment (i.e. for more than six months) tends to be overreported and shorter-term unemployment underreported. This is because an activity of short duration, whether employment or unemployment, tends to be overlooked and integrated into the activity which surrounds it. For example, a short period of unemployment, sandwiched between two longer periods of employment, is often forgotten and reported as part of a continuous period of employment. There is also a tendency, once an activity is reported, to overestimate its duration. Such tendencies are likely to increase with the length of the recall period.

Recall errors can be reduced to some extent by the careful choice of approach for retrospective measurement. In this respect, of the methods presented in this section, the month-by-month recall and the employer-specific approach, involving more probing questions and providing more memory cues, are likely to be most effective.

Another issue in retrospective measurement concerns its conceptual compatibility with current measurement. The current activity status of individuals is deduced from a sequence of ten or more questions, but it is often impracticable to determine their activity status over the year by using a similarly detailed sequence for each week of the reference year. An attempt in this direction, as in the Canadian Labour Market Activity Survey, necessarily involves a large number of questions. In most circumstances, a simpler procedure is needed, thereby accepting that what one is measuring in terms of the past is not necessarily the same as what one is measuring in terms of the present.

This requirement for simplicity is particularly relevant in the case of population censuses, household income and expenditure surveys and other surveys in which data on employment and unemployment over the year are required but do not constitute the main topic. In these cases, measurement of employment and unemployment is essentially used to classify the population into usually active or not usually active. It is safe to assume that recall errors have less effect on the measurement of usual activity status than on the measurement of employment and unemployment durations, as recall errors will only become effective if they imply misclassifications from one category to the other, and if on average such misclassifications do not cancel each other. For such classification purposes, the whole-year recall method may be sufficient.

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1. Introduction

Employment is one of the three categories of the labour force framework; the others are unemployment and economic inactivity. According to the labour force framework, employment is to be measured with respect to a short reference period (one week or one day) on the basis of the concept of economic activity as derived from the United Nations System of National Accounts (SNA). The concept and boundary of economic activity have been explained in detail in Chapter 2. A separate chapter has been devoted to a discussion of the basic features of the labour force framework (Chapter 3). Building on these foundations, the present chapter focuses on the measurement of employment (or, more precisely, the number of persons currently employed) and the associated concept of hours of work.

Employment, as a term used to measure the number of persons employed, enjoys a broad definition in the labour force framework. It includes persons at work, even if only for one hour during the reference period, and also persons temporarily absent from work. Work refers to any activity falling within the SNA production boundary and covers all market production as well as certain types of non-market production. As the definition of employment is so broad, the measurement of the number of persons employed should, whenever possible and to whatever degree practicable, be supplemented by data on hours of work. As there is a close link between the measurement of employment and the measurement of hours of work, the two subjects are treated together in this chapter. Data on hours of work can be used to identify within the employed population subgroups with different degrees of labour force participation. As shown in Chapter 7, any attempt to measure visible underemployment, which is a subcategory of employment, also requires data on hours of work. Furthermore, statistics on hours of work obtained from labour force surveys are relevant in their own right, independently of their use for measuring visible underemployment.

The international definition of employment provides separate criteria for persons in paid employment and persons in self-employment. These are explained in some detail in Section 2 below. Section 2 also includes a questionnaire flow chart illustrating how labour force survey questionnaires may be designed for measuring employment according to the international standards.¹ The international definition of employment contains specific statements on the treatment of particular groups of workers, such as unpaid family workers, persons engaged in non-market production, apprentices,

¹ The questionnaire flow chart on employment forms the first part of a complete flow chart covering all the essential topics of labour force surveys based on the international standards. The other parts will be presented in turn in the following chapters.

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working students and members of the armed forces, and these are discussed in Section 3. Two aspects of measuring hours of work in labour force surveys are generally distinguished: usual hours of work and actual hours worked. The two concepts are described in Section 4, and the related issues of measurement are discussed. A special subsection is devoted to the distinction between full-time and part-time employment and to various other types of working patterns. Section 4 also includes a questionnaire flow chart for the measurement of hours of work.

2. Measurement of employment

Concept and definition

People are engaged in many kinds of work. They may be paid employees, employers, own-account workers, unpaid family workers, apprentices, etc. Some work full time or part time on a regular basis, others work intermittently, such as seasonal workers or casual daily labourers. Still others, such as students, homemakers or pensioners, who are mainly engaged in non-economic activities, may once in a while do some paid work, such as babysitting, distributing leaflets or giving private tuition. There are also persons, such as conscripts or persons constructing houses for own use, whose activities are to be considered as work although they are not paid.

To encompass the various kinds of work, the concept of work for the measurement of employment is broadly defined. It is linked to the concept of production as defined by the United Nations System of National Accounts (United Nations, 1968). This means that any activity falling within the SNA production boundary is considered as work for the purpose of measuring employment. As described earlier, the SNA production boundary includes all market production and certain types of non-market production, namely: the production of primary products for own consumption; the processing of primary commodities for own consumption by the producers of these items; the production of fixed assets for own use; and the production for own consumption of other commodities by persons who also produce them for the market. The scope of these types of economic activity as well as many examples relevant to the measurement of employment are given in Chapter 2.

According to the 1982 international definition of employment (ILO, 1983b), the “employed” comprise all persons above the age specified for measuring the economically active population (Chapter 2), who during a specified brief period (one week or one day) were in the following categories:

- **paid employment** (1) “at work”: persons who, during the reference period, performed some work for wage or salary, in cash or in kind; (2) “with a job but not at work”: persons who, having already worked in their present job, were temporarily not at work during the reference period but had a formal attachment to their job;
- **self-employment** (1) “at work”: persons who, during the reference period, performed some work for profit or family gain, in cash or in kind; (2) “with an enterprise but not at work”: persons with an enterprise, which may be a business enterprise, a farm or a service undertaking, who were temporarily not at work during the reference period for some specific reason.

The international standards further specify that, for operational purposes, the notion of “some work” may be interpreted as work for at least one hour.

The distinction between paid employment and self-employment is meant to emphasise that employment covers not only work for wage or salary, but also work for profit or family gain, including production for own consumption as mentioned above. The distinction also permits the use of an appropriate terminology for each

of the two types of employment. Note that the distinction is not meant to provide a classification by status in employment.

In line with the labour force framework (Chapter 3), the international definition of employment is based on a short reference period (one week or one day) and on the principle that a person must have been engaged in some economic activity during that reference period to be considered as employed. The use of a short reference period provides a snapshot picture of the employment situation at a given time. Since during any short reference period there are always persons temporarily absent from their work because of vacation, illness, etc., the definition includes an exception to the activity principle in order to include such persons among the employed. The notion of temporary absence from work and the criteria to be used for determining whether or not a given situation should be considered an absence are explained later in this chapter.

Another basic feature of the definition of employment is the stipulation that “some work” may, for operational purposes, be interpreted as work for at least one hour during the reference period. This means that work in an economic activity for as little as one hour is sufficient for a person to be classified as employed. This is in line with the priority rule of the labour force framework which gives precedence to—any employment activity over any other activity (Chapter 3). The rationale for the adoption of the one hour criterion is explained in more detail below.

The one hour criterion

The one hour criterion in the definition of employment is to cover all types of employment that may exist in a given country, including short-time work, casual labour, stand-by work and other types of irregular employment. It is also a necessary criterion if total employment is to correspond to aggregate production. In employment projections, labour force planning and productivity, as well as other analyses, one usually needs to link measured production in a given industry to the total labour input for that production. Total labour input is measured on the basis of data on the number of persons employed and the hours worked. Since all types of production falling within the production boundary are in principle included in their totality in national accounts, it follows that all corresponding labour input, however little it may be in terms of hours worked, should also be accounted for. An increase in the minimum number of hours worked in the definition of employment would distort such analyses.

The one hour criterion in the definition of employment is also fundamental in defining unemployment as a situation of total lack of work. In the labour force framework, the definitions of employment and unemployment are interrelated; thus, increasing the minimum number of hours worked in the definition of employment would result in unemployment no longer only meaning a situation of total lack of work.

It should be recalled that the international standards, while recommending the one hour criterion, specify that the reference period to which this criterion should be applied could be either one week or one day. Thus, the one hour criterion can mean one hour per week or one hour per day. The choice affects the resulting statistics as discussed earlier in Chapter 3.

Alternative minimum hours criteria have been proposed or used in the labour force surveys of certain countries. Examples are: (a) a majority criterion, meaning that a person must have been working most of the time during the reference period to be considered employed (e.g. Syrian Labour Force Sample Survey; see ILO, 1986a, pp. 157-159); (b) a one day criterion, meaning that a person must have been working at least one day during the reference period to be considered employed (Malaysia, 1983); (c) an x-hour criterion, meaning that a person must have been working x hours or more during the reference period to be considered employed (e.g. 13 hours in the Austrian Mikrozensus; see ILO, 1986a, pp. 15-16). The majority criterion and the one day

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criterion call for further specification of what is meant by “most of the time” or “one day of work”. Unless self-assessment by the respondents is intended, the specification will have to be expressed in terms of a fixed minimum number of hours x as in (c) above. The appropriate choice of such an x for application to all categories of workers will be difficult to make. In many countries, an x -hour criterion is applied only to certain categories of workers (e.g. 15 hours for unpaid family workers).

A review of national practices indicates that a vast majority of countries apply the one hour criterion in their labour force surveys, though many still require a higher number of hours for unpaid family workers. The data from surveys which do not make exceptions for unpaid family workers show that the proportion of persons working only a few hours per week is not substantial. Where data are available, it is usually found that the proportion of persons working, say, less than five hours a week does not exceed a few percentage points of the total employment. This means that raising the one hour criterion in the definition of employment by a few hours is in practice not likely to change substantially the resulting number of employed persons even over a period of time. However, the effects on unemployment statistics may be relatively more significant.

Temporary absence from work

The international definition of employment, as well as virtually all existing national definitions, includes among the employed certain persons who were not at work during the reference period. These are persons who were temporarily absent from work, with or without leave, for various reasons, such as illness or injury, holiday or vacation, strike or lock-out, educational or training leave, maternity or parental leave, temporary reduction in economic activity, temporary disorganisation or suspension of work (due to causes such as bad weather, mechanical or electrical breakdown, or shortage of raw materials or fuel).

In general, the notion of temporary absence from work refers to situations in which a period of work is interrupted by a period of absence. This implies that persons are generally to be considered as having been temporarily absent from work, and therefore employed, if they had already worked at their current activity and were expected to return to their work after the period of absence. Persons without work who had made arrangements to take up paid employment or to engage in some self-employment activity at a date subsequent to the reference period, but who had not yet started work, are not to be considered as temporarily absent from work. There could, however, be certain exceptional cases of persons being considered as temporarily absent from a job not yet started, for example because of sickness on the first day of work.

The international definition of employment, specifying certain principles for ascertaining temporary absence from work, differentiates between paid employment and self-employment. In the case of paid employment, these principles are based on the notion of “formal job attachment”, which is to be determined, depending on national circumstances, according to one or more of the following criteria:

- the continued receipt of wage or salary;
- an assurance of a return to work following the end of the contingency, or an agreement as to the date of return;
- the elapsed duration of absence from the job which, wherever relevant, may be that duration for which workers can receive compensation benefits without obligation to accept other jobs.

Some explanations of these criteria are in order. With respect to the first criterion, it is the continuation of receipt of a wage or salary which should be emphasised and not the mere fact of receiving some wage or salary. In particular situations (e.g. parental

leave or educational leave), persons on leave may not receive the full amount of their usual wage or salary for the entire period of their absence. In these cases, it may be necessary to specify at what point a reduction in wage or salary proves incompatible with the idea of continuity. This cut-off point may be determined, for example, in terms of a certain proportion of the usual wage or salary, or in relation to a national minimum wage, or in relation to the share of the employer's direct contribution to the wage or salary, as opposed to the part paid by the government or other institutions.

The second criterion, that of an assurance of a return to work following the end of the contingency, is essential in determining whether or not there is a formal job attachment, since in effect it means a return to normal conditions: a return to the same job, or, more generally, to a job with the same employer.

The third criterion of formal job attachment implies that the duration of absence should be fairly short to be considered temporary. The international definition does not, however, specify what the appropriate limiting duration should be, since in practice the choice may depend on the type of absence. In the case of involuntary absences, one may use the period for which workers can receive compensation benefits without obligation to accept other jobs, according to national provisions. In the case of other absences, the limiting duration of temporary absence may be determined on the basis of usual practices. For convenience, some labour force surveys use a uniform conventional limit of about 30 days.

It should be noted that the wording of the international definition implies that the three criteria of job attachment need not be met simultaneously in every situation; appropriate combinations may vary "in the light of national circumstances".

One important situation, which is on the borderline between absence from work and unemployment, is that of persons laid off. This situation is mostly found in the industrialised countries of North America and Oceania. Persons laid off are persons whose contract of employment or whose activity has been suspended by the employer for a specified or unspecified period. They should be considered as temporarily absent from work and classified as employed (with a job but not at work) only if they maintain a formal job attachment. Persons laid off without formal job attachment should be classified as unemployed or not economically active, depending on their job search activity and (or) their current availability for work. For further details on the statistical treatment of this particular category of workers see Chapter 6.

Casual workers working on a daily or weekly basis for an employer do not have a formal job attachment and, when not at work during the reference day or week, should not be classified as employed. Other non-regular employees, such as seasonal workers, should be classified as employed when not at work, if they have a formal job attachment during the reference period.

The international definition of employment mentions the notion of "formal job attachment" only with respect to temporary absence from paid employment. Regarding temporary absence from self-employment, the international standards specify that "persons with an enterprise, which may be a business enterprise, a farm or a service undertaking, who were temporarily not at work during the reference period for some specific reason" should be considered as employed. Thus, the notion of temporary absence from self-employment is less elaborate than the corresponding notion for paid employment. This is because the working patterns in self-employment are generally more diverse. In some cases the notion of absence itself is not very clear, in particular when the working pattern is determined by the persons themselves. In principle, the decision as to whether or not a self-employed person is to be considered absent from work should be based on the continued existence of the enterprise during the period of absence. The decision as to whether the absence is to be considered temporary or not could be based on its duration.

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For cases where it is doubtful that an enterprise continues to exist when the operator is absent, guidelines are necessary to determine the continued existence of the enterprise. For example, in the 1985/86 Labour Force and Socio-Economic Survey of Sri Lanka (1987) it was stipulated that: "Though the respondent did not work in his enterprise during the last calendar week, if (s)he continued to have the other factors of production involved in the enterprise such as land, building, machinery, equipment or tools available for use and the enterprise has not been formally or informally wound up, disposed of or abandoned, or the activity undertaken through the enterprise is not given up, (s)he is considered as having an enterprise ..."

The wording of the international standards implies that the reason for absence should be specified in the case of self-employed persons, though the nature of the reason does not determine whether or not a self-employed person is to be considered absent from work. The information on the reason for absence may be important for the measurement of visible underemployment (see Chapter 7).

For employers and own-account workers whose enterprises continue to exist during their absence, it is sufficient to verify that an absence for any specific reason is short enough to be considered temporary. The acceptable duration of absence should be determined according to national circumstances. For example, it is 30 days in the Japanese monthly Labour Force Survey (Japan, 1984).

For casual own-account workers, such as side-street shoeshine boys or itinerant newspaper vendors, it may be assumed that their enterprise does not continue to exist when they are away from work. Thus, casual own-account workers when not at work should not be considered as "with an enterprise but not at work" and should not be classified as employed.

Regarding employers and own-account workers engaged in seasonal activities, their classification as employed, when they are not at work, should also be based on the continued existence of their enterprise. During the busy season, should the operator be absent, one may assume that the enterprise itself continues to exist during the absence. In this case the operator should be classified as employed (with an enterprise but not at work) when temporarily absent from work. During the off-season, however, one cannot assume that the enterprise continues to exist. Enterprises like fruit kiosks, ice-cream shops, beach restaurants and so on are generally not in operation during the off-season, and therefore the operators of such enterprises should not be classified as employed when they are not at work during the off-season.¹ If it can be assumed that an enterprise continues to exist during the off-season, a seasonal self-employed worker not at work could be classified as employed (with an enterprise but not at work) provided the duration of absence from work falls within an acceptable limit. This is the case with enterprises such as farms which are operated all year round though the bulk of their activities are carried out seasonally.

Unpaid family workers, though participating in the activities of a household enterprise, are not considered to have an enterprise of their own. Accordingly, they cannot be "with an enterprise but not at work" and therefore unpaid family workers not at work should not be included among the employed. Unpaid family workers not at work should be considered as unemployed or not economically active, depending on whether or not they are searching or available for work during the reference period.

One may argue that, unless the distinction between employers and own-account workers on the one hand and unpaid family workers on the other is properly drawn, the differing statistical treatment in respect of absence from work is sex-biased, as most unpaid family workers are generally female. Indeed, an example is the case of a

¹ Of course, if these persons are engaged in other activities during the off-season, they may be classified as employed on account of their off-season activities.

temporary absence from work of a farming couple where husband and wife both operate the farm, but only the husband is considered to be an own-account worker and therefore employed (with an enterprise but not at work), while the wife, regarded as an unpaid family worker, is not classified as employed when not at work. When a household enterprise is operated jointly by a couple, the appropriate statistical treatment would be to consider both persons as employers or both as own-account workers rather than considering one person as employer or own-account worker and the other as unpaid family worker. The same argument could be advanced in other situations such as polygynous families or fathers and sons jointly operating a household enterprise.

Questionnaire design

More than one question is generally needed in household survey questionnaires to identify properly persons in employment according to the considerations described above. The required number of questions and their sequence may vary according to the employment patterns prevailing in a given country. The following questionnaire Flow chart 4 gives an example of a sequence of four questions designed to identify employed persons by dealing with: any work (Q10); an activity list (Q11); absence from work (Q12); and reason for absence (Q13). The questions are not fully worded, as the appropriate wording depends on the social and cultural characteristics of the country. The chart shows the progression of the interview and how the different answer categories lead to the subsequent parts of the questionnaire on hours of work and unemployment (see pp. 90 and 115).

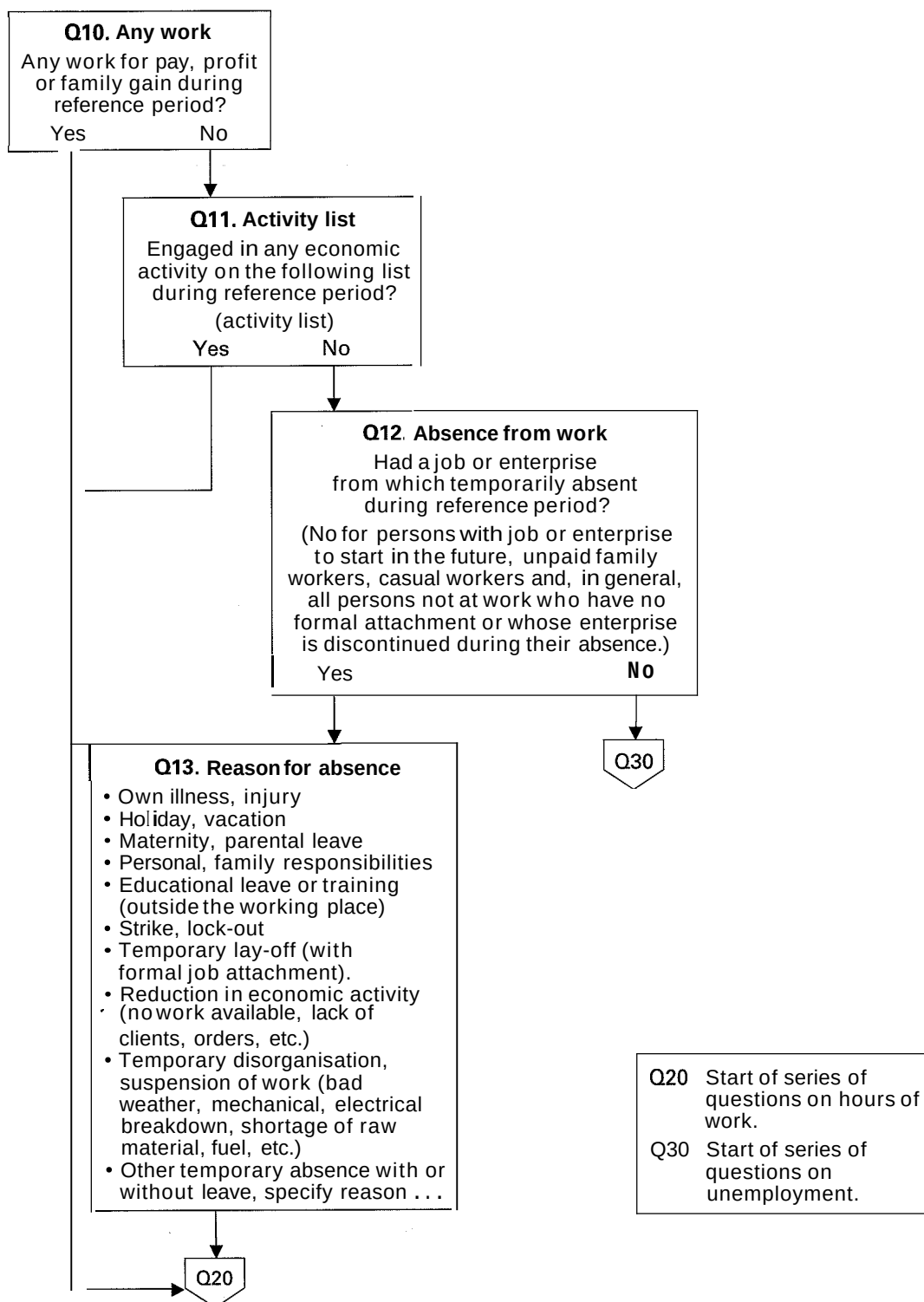
The first question (Q10) asks whether a person did any work for pay, profit or family gain during the brief reference period chosen for the survey. This question alone, when properly worded, may prove sufficient to identify most persons engaged in regular paid or self-employment during the reference period, as these persons should not have difficulty in understanding whether the terms “work for pay, profit or family gain” refer to their situation.

However, measuring the full range of economic activities through household surveys is more difficult. One has to ensure that all categories of workers, including casual workers, unpaid family workers, apprentices, women engaged in non-market production, workers remunerated in kind, etc., respond according to what the concept of economic activity intends to measure. Such persons may not interpret a question like Q10 as referring to their situation (see the section on cognitive aspects in Chapter 2). Where such groups are important and specific instructions on the questionnaire or in the interviewers’ manual are not considered sufficient for probing, it is suggested that the leading question be supplemented with an activity list as discussed in Chapter 2. Flow chart 4 provides for the inclusion of an activity list (Q11) as a follow-up to the leading question (Q10). In practice, the exact content of an activity list will depend on the type of activities likely to go unreported in response to the initial question (Q10). Examples of two activity lists tried out by the ILO Bureau of Statistics, one in Costa Rica and the other in Kerala, India, are given in Chapter 2. In situations where the activities that may go unreported can be grouped into a few well-known categories, the activity list can be replaced by one or more probing questions on these activities.

The activity list may serve not only to improve the count of the number of persons employed but also to measure all economic activities performed during the reference period. In this respect, when complete measurement of economic activities, including secondary and tertiary activities, is one of the objectives of the survey, the activity list should be addressed to all respondents and not only to those who answered negatively to the initial question concerning work for pay, profit or family gain. One way to implement this is to combine Q10 and Q11 into one item, covering all economic activities and addressed to all respondents.

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Flow chart 4. Questionnaire flow chart: Part I, Employment



The other two questions (Q12 and Q13) in the questionnaire flow chart refer to persons with a job or enterprise who were not at work during the reference period. In line with the international standards, the first question (Q12) is meant to be answered positively only if there is a formal job attachment in the case of paid employment or if the enterprise continues to exist in the case of self-employment. No provision is made explicitly in the flow chart for testing the three criteria of job attachment or the continued existence of the enterprise. In line with present national practices, it may be sufficient to include in the interviewers' manual suitable guidelines for probing on this issue (for example, on the basis of the explanations given in the previous section), rather than to expand the questionnaire by adding further questions. Such additional questions may, however, be necessary when the prevailing working patterns or employment relationships call for more precision.

The follow-up question (Q13) on "Reason for absence" enables a positive answer to the preceding question (Q12) to be probed further with a list of types of absences. Some of the reasons listed imply elements of formal job attachment, such as maternity leave or educational leave, while others imply a limited duration, such as temporary reduction in economic activity or temporary disorganisation or suspension of work. As shown in Chapter 7, some of the response categories serve also to identify among persons temporarily absent from work those who are visibly underemployed. Question Q13 has analytical significance on its own in the study of the phenomenon of absence from work (ILO, 1987a).

The reasons listed in Q13 are deliberately numerous in order to cover not only the reasons explicitly referred to in the international standards, but also those which may have particular significance in certain countries or among certain groups of workers. In practice, in designing national labour force survey questionnaires, the reasons to be listed can be limited to those which are the most relevant. Some of the reasons given here (e.g. own illness or injury) apply to all categories of workers, whether employees or self-employed. Similarly, temporary reduction in economic activity, amplified by the explanation "no work available, lack of clients, lack of orders, etc.", is meant to apply to self-employed persons as well as to employees. Other reasons, however, are only relevant to employees, such as strike or lock-out, temporary lay-off with formal job attachment, etc.

It should further be noted that Q12 is supplemented by an instruction concerning persons with a job or enterprise to start in the future, unpaid family workers, casual workers and, in general, all persons not at work who have no formal job attachment, or whose enterprise is discontinued during their absence. The instruction specifies that these persons should not be considered as being temporarily absent from work and, as a result, the flow of the interview should proceed directly to the start of the series of questions on unemployment (Q30). Such an instruction is necessary because no specific questions on these issues are included in the flow chart, and experience has shown that some respondents in these situations mistakenly consider themselves to be with a job or enterprise but not at work, when they should not be regarded as such according to the international definition of employment.

On the basis of the flow chart, a person would be classified as employed if a positive answer to either Q10, Q11 or Q12 is recorded, i.e. if (a) Q10 = Yes; or (b) Q10 = No and Q11 = Yes; or (c) Q10 = No, Q11 = No and Q12 = Yes.

The sequence of questions on employment suggested here corresponds largely to the questionnaires used in many national labour force surveys. Within this basic structure, there are of course some variations in national practices. Some countries start with a question on the main current activity to precede a question like Q10 on any work performed. An example is the Current Population Survey (United States, 1986) in which the series of questions on employment begins with "What was ... doing most of last

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week—working, keeping house, going to school or something else?”. If the respondent does not report that he or she was mostly working during the reference period, the follow-up question asked is “Did ... do any work at all last week, not counting work around the house?”. A similar structure is used in the labour force survey questionnaires of certain other countries, e.g. Colombia (1984), Jamaica (1983) and the Republic of Korea (1983).

A more important difference in national practices concerns the use of an activity list (Q11). Instead of presenting a full activity list to the respondent, national labour force survey questionnaires often confine the probing to a single question concerning unpaid family workers. A typical probing question is “Did ... do any work without pay in a family farm or business?”. Some countries include probes for certain other categories of workers as well. An example is the revised Swedish Labour Force Survey, in which a probing question is included on self-employment and freelance work (Sweden, 1987). In certain other cases, the probing questions are incorporated into the leading question as, for example, in the Argentina/Paraguay survey cited earlier in Chapter 2. Among the national questionnaires examined, very few include so far the kind of activity list suggested here (an exception is the Labour Force Survey questionnaire of Botswana, 1984/85).

Questions Q12 and Q13 on temporary absence from work are very much in line with most national practices. Certain countries include additional questions on this topic (e.g. the Canadian Labour Force Survey includes questions on the duration of absence and the identification of future starts; Canada, 1986). Others do not provide any separate question on absence from work, but include persons temporarily not at work among the employed as part of the leading question on employment. In the latter case, information on the number of persons not at work and the reason for absence from work is either not asked for at all, or is obtained in a different way, for example from the sequence of questions on hours of work (e.g. Germany, Fed. Rep. of, 1986).

3. Treatment of particular groups

The international standards on employment statistics make explicit reference to particular groups of workers: unpaid family workers, persons engaged in non-market production, apprentices, working students, and members of the armed forces. These particular groups are discussed in turn below. These groups of persons have relevance in almost every country, but attention should also be given to other groups which may be important in specific national contexts (outworkers, persons working on exchange labour arrangements, bonded labourers, members of religious orders, etc.). Examples of groups to be considered are listed in Chapter 2. While some groups may be too particular to be specified in certain countries in their national labour force survey questionnaires, they may nevertheless deserve to be considered in the training of interviewers and to be mentioned in the interviewers' manual.

Unpaid family workers

An unpaid family worker is a person who works without pay in an economic enterprise operated by a related person living in the same household. Where it is customary for young persons, in particular, to work without pay in an economic enterprise operated by a related person who does not live in the same household, the requirement of “living in the same household” may be disregarded (United Nations, 1980).

According to the present international standards, unpaid family workers at work should be considered as employed irrespective of the number of hours worked during the reference period. Unpaid family workers not at work, as mentioned earlier, are not

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Table 7. Unpaid family workers working few hours per week as percentage of all unpaid family workers

Survey	Both sexes	Males	Females
<i>Germany, Fed. Rep. of (1-14 hr)</i>			
June 85	11.8	13.9	11.5
<i>Thailand (1-19 hr)</i>			
Feb. 84	2.7	3.1	2.5
May 84	1.7	1.4	1.8
Aug. 84	1.5	1.9	1.4

Source: Germany, Fed. Rep. of, 1987 *Mikrozensus 1985*, Special tabulations Wiesbaden, Statistisches Bundesamt, Thailand, 1986 *Report of the Labour Force Survey*, Whole Kingdom Bangkok, National Statistical Office, Rounds 1-3, Tables 10 and 11

considered as being temporarily absent from work and should not be classified as employed. In the previous international standards, adopted at the 1954 ICLS, unpaid family workers were required to have worked at least one-third of normal working hours to be classified as employed. This special treatment was abandoned at the 1982 ICLS on the basis that in agriculture, where most unpaid family workers are engaged, the agricultural holding is usually run on a household basis. All or almost all of the members of the household normally take part in its operation, and there is no essential reason why some members of the household should be treated differently from others. Stipulating a different minimum duration of work for unpaid family workers might lead to a distortion of the distribution of workers by hours worked. It might also affect the sex-age distribution of the economically active population, since most unpaid family workers are female or young.

Certain countries continue to use the requirement of a higher minimum number of hours worked for classifying unpaid family workers as employed. The monthly United States Current Population Survey, for example, uses a 15-hour criterion for classifying unpaid family workers as employed (ILO, 1986a, pp. 169-173). Referring to countries that, for special reasons, use such a minimum time criterion for the inclusion of unpaid family workers among the employed, the international standards specify that they "should identify and separately classify those who worked less than the prescribed time".

Available data indicate that the number of unpaid family workers working less than a specified number of hours, such as 15 or 20 hours a week, is relatively small. This is because unpaid family workers, when reporting an economic activity, generally report an activity of more than a few hours of work. Data for the Federal Republic of Germany show, for example, that the proportion of unpaid family workers working 1 to 14 hours during the reference week was less than 12 per cent of all unpaid family workers (Table 7). The proportion may be even smaller in developing countries, though unpaid family workers are numerically much more important there. As the data for Thailand in Table 7 show, the proportion of unpaid family workers working 1 to 19 hours during the reference week did not exceed 3 per cent over the year, even if the seasonally inactive are included.

Persons engaged in non-market production

The international standards include a special provision for another category of unpaid workers, conceptually distinct from unpaid family workers. These are persons who are engaged in the production of goods and services for own and household consumption, as opposed to unpaid family workers who participate in the activities of an economic enterprise (operated by a related household member), in principle engaged in some kind of market production. It should be mentioned that in practice the two types of activities may be performed by the same persons.

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In line with the concept and boundary of economic activity (Chapter 2), production for own consumption comprises production and processing of primary products for own consumption and production of fixed assets for own use. The 1982 international standards specify that persons engaged in such activities should be considered as employed “if such production comprises an important contribution to the total consumption of the household” (ILO, 1983b). The qualifier “important contribution” has two purposes: it excludes from the economically active population persons who may, for example, be growing vegetables in their backyards, but whose subsistence does not significantly depend on it; and it conforms to the practice in many countries of excluding negligible non-market economic activities from national accounting statistics (OECD, 1975).

The implementation of the “important contribution” provision in labour force surveys is a complex task. It consists of measuring the total non-market economic activities of individuals and comparing it with the total consumption of the household. In theory, the measurement requires three steps. Firstly, the non-market activities have to be identified separately for each individual, with sufficient information for assessing their “importance”, for example the amount of time spent on these activities or the monetary value of the goods produced. This requires a special module in the questionnaire. Secondly, the non-market production of individuals needs to be related to the total consumption of the household. This requires data on the total consumption of the household and a procedure to relate the household data to the information on the activities of each relevant household member. Finally, it is necessary to establish a threshold for determining whether or not non-market activities constitute an “important” contribution to the total consumption of the household. The formulation of an appropriate operational criterion may thus be difficult in practice.¹

It should be mentioned that, fortunately, there are a number of situations where it may not be necessary to apply the “important contribution” criterion. An example is where non-market production has very little or no significance, or is mainly performed by unpaid family workers or other categories of workers already included in the employment statistics. Another example is where non-market production is known to be so significant that it may be assumed that any person involved in it makes an important contribution to the total consumption of the household.

Apprentices and trainees

Apprenticeship is widespread in many countries, taking various forms in different countries. Apprenticeships may even differ from branch to branch of economic activity within a given country. Apprentices may be directly engaged in producing goods and services or may simply be learning by observation without actually performing any significant productive tasks. They may be paid a wage or salary under a written or oral contract. Others may be given meals or living-quarters or special tuition, in compensation for the work done or as an allowance unrelated to the work performed. Still others may not be paid at all and, in some areas, may actually be paying a fee in return for the acquired skill or knowledge.

¹ In the ILO methodological survey in Costa Rica (Trigueros, 1986) the “important contribution” was assessed on the basis of the amount of time spent on the activities (15 hours or more), but this procedure is not considered to be consistent with the one hour criterion of the labour force framework. In the Kerala methodological survey (Mata, 1989), the criterion used was the relative share of the produce in the total household consumption of the corresponding product group (10 per cent or more). However, this method may be questioned as it is difficult to apply, and the results obtained depend on the detail of information available on the type of activities performed and the structure of household consumption. Moreover, a household may produce certain groups of items completely on own-account, although these groups may have a minor role in the total consumption of the household.

One group of apprentices specifically mentioned in the international standards are “apprentices who receive pay in cash or in kind”. It is stated that they should be considered in paid employment and classified as “at work” or “not at work” on the same basis as other persons in paid employment. Regarding apprentices who are not paid in cash or in kind, such as those who receive only a financial compensation or allowance which is unrelated to the work performed, no specific statement is made, and thus the appropriate statistical treatment should follow from general principles.

Apprentices working without pay in an economic enterprise operated by a related person living in the same household are in fact unpaid family workers and should be classified as employed when at work for at least one hour during the reference period. As already mentioned, the definition of unpaid family workers may be broadened by disregarding the requirement of “living in the same household” (United Nations, 1980). Thus, apprentices working without pay in an economic enterprise operated by a related person not living in the same household would also be assimilated with unpaid family workers.

Apprentices who are not paid or are simply receiving financial compensation or an allowance unrelated to the work performed may be included among the employed on the basis of whether or not they are associated with the productive activities of an enterprise. If such apprentices contribute to the production of goods and services, they should be classified as employed. Otherwise, they should be classified as unemployed or not economically active, depending on their job search activity or availability for work.

In addition to apprenticeships, there are various other types of training schemes, either organised directly by enterprises to train or retrain their staff, or subsidised by the government as a way to encourage the employment of the unemployed and of other particular groups of workers, such as the handicapped, displaced workers and workers in industries experiencing difficulties. Faced with increasing unemployment, many governments have in recent years developed a number of labour market measures to promote employment through job creation schemes, social service community programmes, early retirement schemes, etc. A description of the statistical aspects of some 200 such schemes in 16 industrialised countries is given in EUROSTAT, 1986 and ILO, 1987b.

Training schemes are so varied in nature, modalities of contract, modes of payment, duration of training, and so on, that specific guidelines on the classification of the trainees into labour force categories cannot be formulated; the appropriate statistical treatment should be determined on a scheme-by-scheme basis. Having discussed the issue, the Fourteenth ICLS agreed on the following general guidelines (ILO, 1988).

In principle, trainees can be classified as employed if their activity can be considered as “work”, or if they have a “formal job attachment”. When training takes place within the context of an enterprise, the trainees can be assumed to be associated with that enterprise’s production of goods and services, for at least one hour during the reference period, and they should be considered as “at work” and classified as employed, irrespective of whether or not they receive a wage or salary from the employer.

When training does not take place within the context of an enterprise (e.g. training outside the enterprise, or inside the enterprise but with no association in the production activity of the enterprise), the statistical treatment should depend on whether or not the trainees were employed by the enterprise before the training period (including cases classified as employed as mentioned above):

- (1) If employed by the enterprise before the training period, the trainees should be considered as employed but not at work while on training, as long as they maintain a formal job attachment as described in Section 2 of this chapter. An example might be training schemes in which periods of training in a specialised institution alternate with periods of work in the enterprise. To establish whether or not a formal job

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attachment exists, the criterion of “assurance of return to work” (to be interpreted as an assurance to return to work with the same employer) should be considered the essential one. In situations where such assurance to return to work does not exist, formal job attachment should be assessed on the basis of the criterion of continued receipt of wage or salary. This should be considered as satisfied if the employer pays directly all or a significant part of the wage or salary. The third criterion, elapsed duration of absence, might also be used in particular situations, for example in connection with long-term training schemes.

- (2) If the trainees were not employed by the enterprise before the training period, they cannot be considered as “with a job but not at work” and the notion of formal job attachment does not apply. If the training scheme includes a definite assurance to the trainees of employment at the end of the training, their statistical treatment might follow that of persons who, having made arrangements to take up employment at a date subsequent to the reference period, are classified as unemployed if currently available for work (Chapter 6). Otherwise, the trainees should be classified as unemployed or not economically active, depending upon their job search activity or availability for work.

Working students and employees on study leave

In many countries students combine their studies with part-time or even full-time work, throughout the year or during vacations. A review of current national practices shows that working students are generally classified as employed in labour force surveys, regardless of the amount of time worked.¹ However, in certain surveys and population censuses, full-time students are classified as not economically active, irrespective of any job held. This latter practice is not in line with the labour force framework which gives precedence to employment, even if only for one hour, over unemployment and economic inactivity (see Chapter 3). In fact, the international standards specifically direct that students, as well as homemakers and other persons mainly engaged in non-economic activities, who undertake some work during the reference period, should be considered as employed on the same basis as other categories of employed persons (but identified separately, where possible).

Employees and civil servants on paid study leave should be considered as employed (with a job but not at work) if the duration of leave is short enough to be considered temporary. In the case of paid study leaves of long duration, such as one or more years, the criteria of formal job attachment may not be regarded as satisfied, and the persons involved may be excluded from the count of the employed while on leave.

Members of the armed forces

Another group of persons singled out in the international standards for inclusion among the employed are members of the armed forces. The statistics should include both regular and temporary members of the armed forces as specified in the most recent revision of the International Standard Classification of Occupations (ISCO). ISCO 1968 defines members of the armed forces as:

those personnel who are serving in the armed forces, including women's auxiliary services, whether on a voluntary or involuntary basis, and who are not free to accept civilian employment. Included are regular members of the army, navy, air force and other military services, as well as temporary members enrolled for full-time training or other service for a period of three months or more. Excluded are persons in civilian employment such as administrative staff of government

¹ By contrast, in countries where employment data are also compiled on the basis of administrative records, working students are sometime excluded from the resulting statistics because of special social security legislation applying to students.

establishments concerned with defence questions; police (other than military police); customs inspectors and members of other armed civilian services; members of military reserves not currently on full-time active service; and persons who have been temporarily withdrawn from civilian life for a short period of military training (ILO, 1968).

In certain countries, draft-age persons may engage in alternative civilian services instead of compulsory military services. In principle, these equivalent civilian services should also be considered as employment.

In the labour force surveys of some countries only those temporary members of the armed forces, who are temporarily absent from a job while being drafted, are classified as employed. This practice leads to a bias, as it excludes conscripts who did not work before conscription or who have no attachment to a civilian job. All persons in military service for a period of three months or more should be considered employed, according to the international standards.

It should be mentioned that the coverage of labour force surveys is often restricted to the civilian non-institutional population or to the non-institutional population. Thus, members of the armed forces are not covered or only partially covered. To obtain statistics on total employment, it would be necessary to supplement survey results with data from sources such as administrative records. However, such data is not available for statistical purposes in certain countries which are reluctant to reveal these numbers.

4. Measurement of hours of work

Measurement objectives

The notion of hours of work is directly linked to the concept of employment since the term “some work”, in the international definition of employment, is to be interpreted as “work for at least one hour” during the reference period. The one hour criterion was reviewed by the Fourteenth ICLS in 1987 and, while agreeing to retain it, the Conference emphasised that the resulting employment data should be further classified by hours of work (ILO, 1988).

In general, information on hours of work makes it possible to classify the employed population according to the number of hours of work and, in particular, to identify short-time work and to distinguish between full-time and part-time employment. Data on short-time work provide the basis for measuring the visibly underemployed, i.e. persons involuntarily working less than the normal duration of work and seeking or available for additional work (Chapter 7).

The discussion on hours of work in the present chapter is not confined to those aspects relevant only to the measurement of visible underemployment, but accommodates other measurement objectives as well. Data on hours of work cross-classified by sex, age, family status, occupation, industry, status in employment, and other socio-demographic characteristics enable various kinds of analyses to be made for social and family policies. The aggregate number of hours worked by workers in each industry (or occupational group) provides comparable estimates of total labour input, useful for the analysis of labour costs, productivity and other studies of labour force utilisation, for example labour force time lost, full-time equivalent unemployment rates, and so on. If, as well as on hours of work, the survey obtains information on work schedules, different working patterns of the employed population may be revealed. Such information is important because hours of work and the arrangement of working time are essential elements of the conditions of work.

When analysing data on hours of work, it should be kept in mind that the hours of work variable merely measures the time spent on an activity, and does not reflect the efficiency or intensity with which the work was performed. This sets certain limits

Actual hours worked may differ from usual hours of work if the reference period does not reflect the typical working situation of the person. The difference may be due to illness, vacation, holidays during the reference period, reduction in economic activity, strike, lock-out, flexible working hours, overtime work, a change of job or similar reasons. There are still other factors which may lead to differences in the measurement of hours of work. Rain, for example, may paralyse an activity for a period of time, forcing workers to take an unforeseen break; this forced break is often followed by longer working days in a subsequent period to make up for the time lost. Thus, hours actually worked during the earlier period will differ from the hours worked in the later period, and neither may reflect the typical situation. A similar situation, commonly found in agriculture, is work characterised by a multiplicity of tasks with different physical demands, so that hours worked are influenced by the arduousness of the specific tasks performed during the reference period.

It should also be mentioned that the concept of usual hours of work differs from that of normal hours of work, which refers to contractual arrangements and is defined as “hours of work fixed by or in pursuance of laws or regulations, collective agreements or arbitral awards”¹ (ILO, 1976). The difference between the two concepts is clearly seen in the example of a worker whose normal hours of work are fixed at 40 hours per week but whose usual hours of work are 45 because he or she regularly works overtime, five hours per week. Another illustration of the difference is the case of persons who, over a specific period of time, consistently work fewer hours than normal.

The concept of usual hours of work reveals how many hours a worker usually works per week or per day, as assessed over a longer period than the survey reference period. Usual hours of work should refer to the situation in a typical period. For regular workers in non-seasonal activities this may be any week or day without exceptional circumstances, such as illness, vacation, public holidays, special overtime or short-time work. Where the typical situation differs from one period to another, for example from one season to another, there will be more than one usual hours of work. In the case of seasonal activities, for example, there will be one usual hours of work for the peak season and another for the slack season. In extreme situations of highly irregular working patterns, there may not be a typical situation in any period, and the concept of usual hours of work will have limited relevance.

For jobs that have started during the reference period, the usual hours of work may refer to the number of hours per week or per day the employee is expected to work in that job, determined, for example, by the terms of agreement with the employer or by comparison with other workers in a similar position. As in the case of actual hours worked, usual hours of work for multiple jobholders should equal the hours of work at all jobs and may be identified for each job separately.

Full-time, part-time and other working patterns

Employed persons may be classified as full-time or part-time workers on the basis of their daily or weekly working hours. They can also be classified in terms of other aspects of their working schedules, such as full-year or part-year employment. The full-time and part-time distinction is particularly relevant to persons engaged in regular paid employment.

Part-time employment has been growing rapidly in the last two decades or so, particularly in industrialised countries. It has been used as a means to recruit additional

¹ Where not fixed by or in pursuance of laws or regulations, collective agreements or arbitral awards, normal hours of work should be taken as meaning the number of hours per day or week in excess of which any time worked is remunerated at overtime rates or forms an exception to the rules or custom of the establishment relating to the classes of workers concerned (ILO, 1976).

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workers, particularly women with family responsibilities, into the labour force during periods of labour shortage. Part-time employment is increasingly used in periods of high unemployment as an instrument of distributing work among a growing labour force. There is also an increased interest in part-time work and other types of work schedules in connection with the current debate on flexibility in working time.

A recent study (Neubourg, 1985) has outlined four major reasons why people decide to work part time. Married persons, or persons with family responsibilities, may prefer to work on part-time schedules so that they can more easily combine work and their family responsibilities. Others, such as persons mainly engaged in training, education or unpaid work, may decide that paid work is not important enough for them to work full time. Another reason for working part time is the opportunity for some participation in working life it gives to disabled persons or beneficiaries of phased retirement schemes. Also, if income tax progression constitutes a disincentive to work full time, some persons may prefer to work part time. In addition to these four groups, there are persons who are working less than full time because they cannot obtain full-time employment for economic reasons as opposed to personal reasons.

Employers offer part-time jobs to secure greater flexibility in planning and hiring, to tap a new source of labour in a tight employment market, and, depending on national legislation, to reduce labour costs by paying lower hourly wages for part-timers and lower (or no) social security contributions on their behalf.

A review of definitions of part-time work used in various national labour force surveys (OECD, 1983) indicates that the definitions vary greatly among countries. In some surveys the definition lays down a limit of the number of hours that respondents must have worked to be classified as part-time workers. The definitions vary, however, regarding the number of hours falling within the limit, which concept of hours of work is used, and how freely chosen were the number of working hours. Examples showing these differences are:

- *Japan*: part-time workers are those who actually worked less than 35 hours during the survey week;
- *New Zealand*: part-time workers are those who usually work less than 30 hours a week;
- *Canada*: part-time workers are those who usually work less than 30 hours per week, excluding those who consider themselves to be employed full time irrespective of their number of hours of work;
- *United States*: part-time workers are those who (a) voluntarily worked 1-34 hours during the survey week; (b) worked 1-34 hours for economic reasons, but usually work part time, i.e. persons who could only find part-time work; and (c) were with a job but not at work and usually work part time.

Other surveys classify persons as full-time or part-time workers on the basis of survey responses concerning the nature of the job, as assessed by the respondent himself or herself, irrespective of the reported number of hours worked during the survey week. This approach is used in the Labour Force Sample Survey of the European Community, in which part-time workers are in principle defined as those who declared themselves to be part-time workers at the time of the survey.

The first approach provides an objective measure of part-time employment, as it is based on the number of hours of work reported by respondents, without requiring respondents' knowledge about contractual arrangements regarding their hours of work. It is, however, inflexible in the sense that it does not accommodate variations in hours of work among different industries and occupations, unless special provisions are made. The second approach, based on self-assessment rather than on a proscribed number of working hours, does accommodate the differences that may exist among industries

and occupations, as well as evolving practices, legislation and collective agreements on hours of work. The approach is, however, somewhat subjective and assumes that respondents know whether they work part time or full time in their activity. For a more detailed discussion of different approaches in measuring full-time and part-time work see Neipert Hedges and Gallogly (1977).

At present, there is no international statistical definition of part-time work. In the present context, one may define part-time work as regular, voluntary work carried out during working hours distinctly shorter than normal. While this definition introduces the concept of part-time employment, its implementation for statistical purposes requires specification of what is meant by working distinctly shorter than normal hours and by doing so on a regular and voluntary basis.

The notion of part-time employment is often confused with the notion of visible underemployment, defined by the Thirteenth ICLS as being involuntarily working less than the normal duration of work and seeking or available for additional work during the reference period (ILO, 1983b). While part-time workers and persons visibly underemployed are all working less than normal duration, the two groups otherwise differ in all essential aspects. First, part-time workers work short hours on a voluntary basis, while persons visibly underemployed do so on an involuntary basis, and, accordingly, must be seeking or available for additional work. Second, the notion of part-time employment refers to regular work only, implying that part-time employment is a kind of usual status, based on an agreement between the worker and his or her employer for a longer or even indefinite period of employment. By contrast, visible underemployment refers to all types of work and is a current status, defined in relation to a specified reference period.

Two persons working the same number of hours during a given reference period may nevertheless differ in their work schedules and working conditions. An example would be two full-time workers, one working regular day-time hours, and the other working the same number of hours at night. Other working patterns are full-week daily part-time work, part-week daily full-time work, short-time work, shift work, weekend work, compressed workweeks, flexible working hours, work with deferred rest periods, and so on (ILO, 1977 and Flaim, 1986). There are also situations where working hours are split in the course of the day by long pauses, particularly common in countries with a hot climate and for persons working in social institutions or public transport. Types of employment characterised by irregular working patterns are casual daily work, intermittent work, freelancing, home-based work, on-call labour, etc. Since there is a ceiling for the maximum number of hours available for work during a specified period, one may generally assert that the lower the number of hours of work, the higher the possibilities of variation in work schedules.

Although there are not at present any international standards on statistics dealing with working patterns, supplementary information on this topic obtained from labour force surveys may prove useful for interpreting the conventional data on hours of work and for a better understanding of the variety of work schedules among the employed. It should be noted, however, that some work schedules can only be revealed if measurement is made over a period of more than one week.

Supplementary information on working patterns would also be of use in employment planning and in monitoring the application of legislation on working time, which often regulates not only the total number of hours of work during a given period, but also its scheduling over a day, week, month or year and in some cases even over a lifetime (ILO, 1983a and 1986b). In practice, however, collecting information on working patterns may prove beyond the scope of conventional labour force surveys and require special in-depth surveys. Such special surveys might also explore possibilities of measuring working patterns and hours of work on the basis of time use schedules.

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Measurement issues

The measurement and interpretation of hours of work in labour force surveys are complex tasks. In many countries the working time of the bulk of workers, particularly those who are not engaged in regular paid employment, is not structured in terms of hours. These workers may therefore not have a sense of time in terms of hours and may have difficulties in responding to questions on hours of work in surveys. A similar problem may arise in the case of workers who are hired on a task basis and not required to spend a fixed amount of time on the task. For such workers it may be necessary to formulate the questions in terms of a different time unit, for example the number of days or half-days worked, or to convert the tasks performed into time units of labour input.

While, in principle, the measurement of hours of work should be confined to those hours spent on economic activities, this may be difficult to achieve for certain categories of workers. For example, in family farms agricultural activities are often intermingled with domestic chores, not only because agricultural activities and domestic activities are performed simultaneously but also because the two types of activities are similar in nature. These factors make it difficult to separate the time spent on agricultural activities from that spent on non-economic activities. Similar problems may arise in connection with home-based workers and workers in household enterprises, as well as with apprentices and trainees, whose activities may combine elements of learning with productive work, performed at the same place and during the same reference period. In these and similar situations, it is important to provide clear guidelines to distinguish between economic and non-economic activities, so that interviewers can focus their probing on that part of the respondents' time which was spent on economic activities.

Apart from these general considerations, particular measurement issues depend on whether actual hours worked or usual hours of work are being measured. Regarding actual hours worked, the task is to elicit the exact number of hours worked during the survey reference period, including overtime work but excluding paid or unpaid absences, time spent looking for work by casual workers, etc. This task may prove difficult in the cases of workers with highly variable working hours and workers for whom the hours worked during the reference period were atypical, for example, because they changed jobs, were sick or had a day or two off. In such cases, the number of hours actually worked during the reference period may be recalled more easily if queried on a day-by-day basis.

In measuring usual hours of work, it should be noted that there may be persons whose usual hours of work are not the same all year long. For example, working students may change their jobs from part time to full time during the summer vacation. Or, another example, workers in seasonal activities (agriculture, construction, tourism, etc.) may have substantially different usual hours of work during peak seasons and off-seasons. If the survey is undertaken repeatedly or spread over the year, usual hours of work of respondents should refer to the season in which the interview falls. The same applies to one-time surveys which do not aim at obtaining information for other parts of the year. However, if the survey is undertaken only once during the year and information on usual hours in other parts of the year is desired, a special survey supplement has to be developed to obtain the number of hours usually worked in the various seasons, the length of the seasons for a given activity, etc.

For certain categories of workers such as daily casual workers, hours of work are so variable throughout the year that no consistent evaluation is possible. In such cases, the concept of usual hours of work, which implies a certain regularity of work, is not suitable and one should refrain from measuring it.

The measurement of hours of work in labour force surveys may involve difficult tasks of recall and estimation, particularly when employment is irregular or when more

than one economic activity is performed during the reference period. It may lead to systematic biases with differential impacts on different groups of the economically active population (Niemi, 1983). The difficulties are aggravated when proxy-responses are used or when the respondent is reluctant to report on part or all of his or her employment.

Questionnaire design

In the following questionnaire Flow chart 5 a sequence of four questions is suggested for the measurement of hours of work in labour force surveys: on multiple jobholding (Q20); usual hours of work (421); actual hours worked (Q23); and reconciliation of usual and actual hours of work (Q24). This four-question sequence is meant to be addressed to persons who have reported some work during the reference period (i.e. a positive reply to either Q10 or Q11, see p. 76). For persons reporting temporarily absent from work ("yes" to Q12) the relevant sequence of questions on hours of work is reduced to 420 and 421, because actual hours worked are, by definition, zero for these persons, and Q24 is replaced by Q13 (reason for absence).

The question on multiple jobholding (Q20) is placed at the start of the sequence in order to draw the attention of respondents and interviewers to the fact that during the reference period persons may have had more than one job, enterprise or activity, all of which should be taken into account in reporting the usual and actual hours of work, in line with the measurement objectives described earlier.

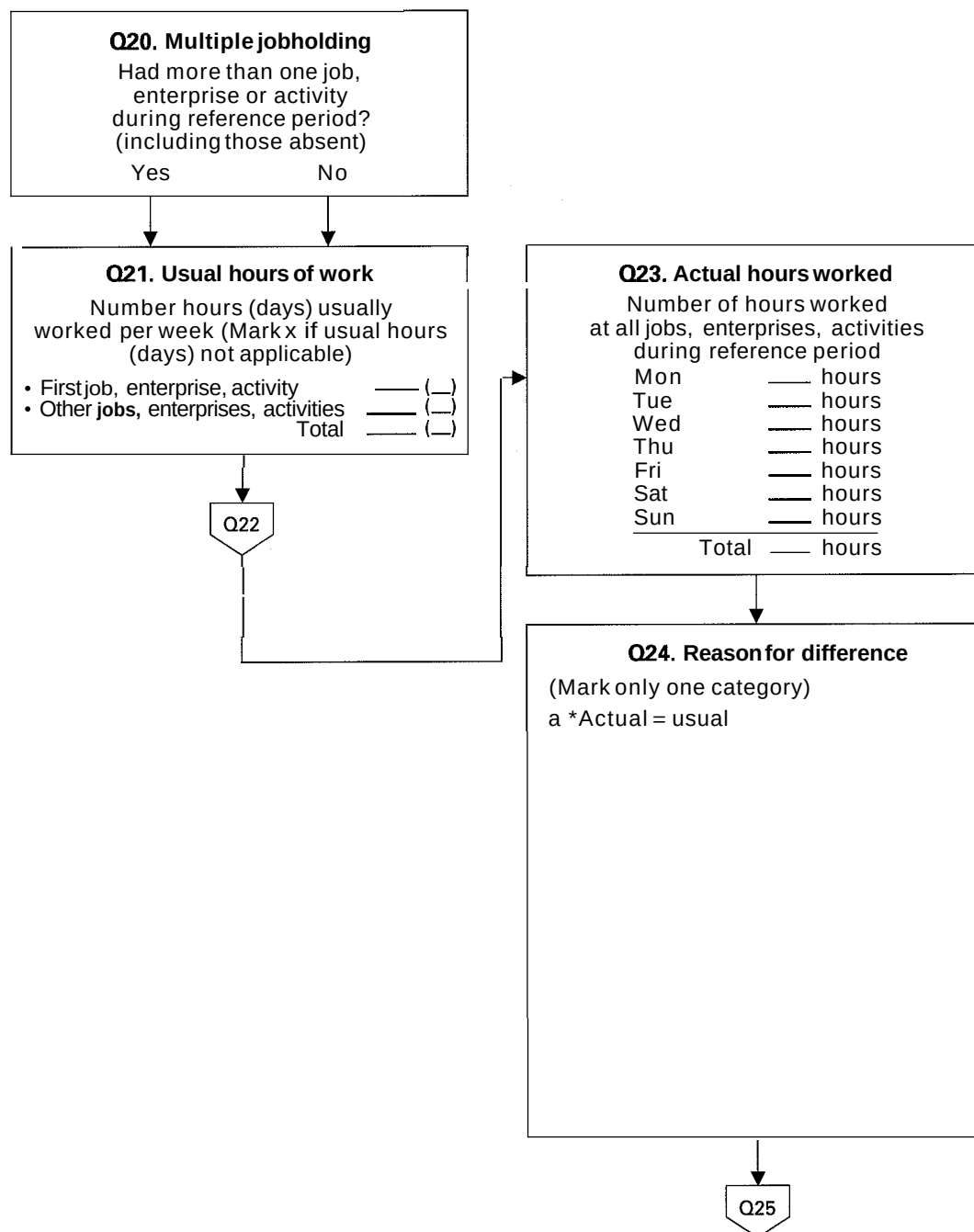
Where the identification of multiple jobholding is a measurement objective by itself, Q20 may also serve for collecting data on the number of multiple jobholders. For this purpose, however, an additional question (not included in the flow chart) is necessary, to determine whether a person held two or more jobs concurrently or changed jobs during the reference period. Q20 may also identify persons engaged in a subsidiary activity (reported in Q11, activity list) while having been absent from their main job or enterprise. Since these persons will not report positively to Q10 (any work for pay, profit or family gain) nor be transferred to Q12 (absence from work), the information on their main activity would be lost without this additional question on multiple jobholding (420). The information may be particularly valuable where persons in regular employment are commonly engaged in another economic activity (e.g. agriculture) during holidays or other leave periods.

Question Q21 concerns the number of hours usually worked. Respondents are asked to report separately the number of usual hours of work in their first job (enterprise, activity) and the number of usual hours of work at all other jobs (enterprises, activities) in which they may have been engaged during the reference period, including those from which they were absent. In situations where the notion of usual hours of work does not meaningfully apply, an **X** should be entered in the corresponding place, in preference to recording an unreliable number for usual hours of work. For data processing purposes, one may treat this information as a blank or impute a value, e.g. a conventional norm for normal duration of work (see Chapter 7).

A supplementary item in Q21 provides for the collection of information on the number of days usually worked per week. This item is useful in revealing differences in daily working patterns, which may exist even when the aggregate usual hours of work are the same. It should be noted, however, that the number of days usually worked in the first job, enterprise or activity and in others may not add up to the total number of days to be reported in 421, if persons were engaged in more than one job, enterprise or activity on the same days of the week. In situations where the number of hours usually worked per day is more easily recalled by respondents than the number of hours usually worked per week, Q21 could be reformulated to ask for the number of days usually worked per week and the number of hours usually worked per day. The number of hours usually worked per week could then be obtained indirectly by

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Flow chart 5. Questionnaire flow chart: Part 2, Hours of work



022 and 025. Follow-up questions on visible underemployment

derivation. This approach might be particularly useful in the case of seasonal activities where the length of the working day itself varies with the seasons.

It should further be noted that in the formulation of Q21 the terms “first” job and “other” jobs are used rather than “main/principal” job and “secondary/subsidiary” jobs. This is to avoid the problem of having to determine which of several jobs is considered to be the main one, as the main job in terms of hours of work may differ from the main job in terms of earnings.

The question on actual hours worked (Q23) refers to the number of hours actually worked during each day of the reference period. The day-by-day approach has been suggested in order to improve the accuracy of the data by helping the recall task and facilitating the account of overtime, weekend work, days off, sick and other leave, and, in general, any deviations from the usual hours of work. The day-by-day approach may also help the reporting of actual hours worked of casual workers, unpaid family workers and other persons with irregular daily working patterns. When daily information is not specifically needed for analytical purposes, the day-by-day approach may still be of use in improving data accuracy; in this case the disaggregated information need not be treated at the processing stage except to check the total. It should also be mentioned that the added burden of response which could arise from the use of the day-by-day approach may, to some extent, be compensated by the fact that in Q23 no provision has been made to assess hours actually worked in the first and other jobs separately. On the other hand, where such disaggregated data are considered useful, further columns may be added to Q23, as has been done, for instance, in the questionnaire of the New Zealand Labour Force Survey (New Zealand, 1986). The measurement of actual hours worked on a day-by-day basis would not only improve the measurement of actual hours worked during the week but would also provide information on different working patterns, particularly useful in countries where working patterns are highly variable. Some surveys have used time units of half-hours or minutes rather than full hours so as to minimise the cumulative effect of rounded answers on the weekly totals.

Since, for certain individuals, actual hours worked during the reference period differ from usual hours of work, a question on the reason for the difference (Q24) is included in the questionnaire flow chart. The question provides for all types of eventualities: (a) actual=usual; (b) actual<usual; (c) actual>usual; and (d) usual hours of work not applicable. The answer categories for (b) and (c) list reasons for the divergence. A question like Q24 is not only useful for reconciling the two measurements of hours of work, it may also form part of the sequence of questions for identifying the visibly underemployed, as will be shown in Chapter 7. For this purpose, only one answer category per respondent should be marked.

The questionnaire flow chart on hours of work presented here is based on a review of a some 40 national labour force survey questionnaires. The measurement of hours of work in these questionnaires varies greatly. For example, there are surveys in which the measurement is generally limited to the main employment. There are also many countries, particularly developing ones, whose surveys measure only actual hours worked. Experience in African surveys has shown, however, that usual hours of work are often reported in place of actual hours worked, particularly in the case of persons temporarily absent from work. The separate collection of data on usual and actual hours, as suggested here, should help to avoid this problem. Moreover, data on usual hours of work permit a distinction between full-time and part-time workers.

National practices also vary as to the order in which the questions are asked. For example, some surveys which cover both actual and usual hours of work use a question sequence which is different from the one described above; in these surveys, the question on actual hours worked precedes the one on usual hours. The reason for suggesting a reverse sequence here is based on results of cognitive studies indicating

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that, where usual hours of work is a meaningful concept, respondents are more likely to report spontaneously their usual hours of work than the actual number of hours worked during the reference period (e.g. Schwarz, 1987). The question on usual hours of work when put first may serve as a cue for reporting the actual hours worked during the reference period and may help to account for any variations from the usual hours of work. However, in situations where irregular working patterns are widespread, it might be preferable to ask actual hours first and usual hours, if meaningful, second.

Other variations in national questionnaires concern the structure of the questions asked. For example, there are only a few surveys at present which ask questions on actual hours worked on a day-to-day basis (e.g. Antilles Guyane, 1986, Mexico, 1985 and New Zealand, 1986). Furthermore, some surveys inquiring into both usual and actual hours include a sequence of questions on the reason for possible differences rather than one single question (e.g. Canada, 1986, United States, 1986). Other surveys ask the reason only when the reported number of hours actually worked is less than the reported usual hours (e.g. New Zealand, 1986). Examples of national labour force surveys with a question on the reason for a reported difference between usual and actual hours of work similar to the one presented here are found in member states of the European Community, like Belgium (1986), the Federal Republic of Germany (1986) and Portugal (1986).

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1. Introduction

Historical background

The international standards for measuring unemployment have been subject to a number of changes. At the turn of the past century, when systematic data collection began, unemployment was a serious social concern throughout most of industrialised Europe. Apart from certain relief funds organised by trade unions, some government-created relief work for the unemployed, and private or public charity, there was essentially no mechanism to cope with the consequences of unemployment. To help search for remedies, the French High Council of Labour requested a major study of the problem, including the examination of statistics on unemployment in order to estimate the cost of operating an official insurance fund against unemployment, should one be established in France. This request led to a detailed examination of the statistics of unemployment in foreign countries. Faced with the problem of the non-comparability of the statistics, the French representative raised the issue at the 1895 session of the International Statistical Institute in Berne and called for the organisation of international statistics of unemployment. This appears to be the first effort to develop international statistical standards on this subject (Mehran, 1985).

This standard-setting activity was later followed by the International Conference of Labour Statisticians, established after the creation of the ILO in 1919. One of the early concerns was the measurement of unemployment with a view to identifying the number of workers insured against unemployment, the number of persons receiving unemployment benefits, and the total amount of benefits paid during the year (Second ICLS, see ILO, 1925). A compulsory unemployment insurance system had been newly established in several European countries (Great Britain, Austria, Ireland, Italy, Poland, etc.), and examining the efficiency of its operation was considered an important aim of unemployment statistics. Similarly, it was considered of great value for countries about to establish their own system of unemployment insurance to be able to use comparable statistical data in evaluating the performance of the unemployment insurance systems operating in other countries.

Later on, emphasis shifted from unemployment as a major social problem to employment creation as a major economic task. In particular, in the United States after the depression of the early thirties, the main concern was to measure the number of people actively and currently seeking work, so as to obtain current data on the minimum number of jobs required. This led to the elaboration of the labour force framework and the joint measurement of employment and unemployment. Meanwhile, the development of household sample survey methods broadened possibilities of applying the labour force framework on a frequent basis, with a wide coverage of the population and at an

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acceptable cost. These experiences led to the measurement of employment and unemployment on the basis of the labour force framework being introduced in the international standards in 1947 (Sixth ICLS, see ILO, 1948). This was the start of the modern era of the international standards on statistics of employment and unemployment. The international standards have since been revised on a number of occasions, the latest being the Thirteenth ICLS in 1982, which adopted the standards presently in force (ILO, 1983).

Present concerns

While the earlier social and economic issues are still of concern, the main aim in measuring unemployment now is to obtain a global indicator of economic performance and of the labour market situation. A high level of unemployment means that employment opportunities are limited and many people are out of work, i.e. the economy as a whole is not functioning as it should. The number of unemployed persons measured in relation to the total labour force (the aggregate number of persons employed and persons unemployed) is called the unemployment rate. Its trend over time is an indicator of the ability of the economy to provide work for the country's labour force under changing conditions.

The level or rate of unemployment calculated for different categories of workers and for different types of unemployment is useful in the study of the composition of the unemployed population and in the identification of subgroups of particular social concern, such as the long-term unemployed, unemployed heads of family, unemployed youth, persons with recurrent spells of unemployment, and workers in threatened industries and occupations.

Although the major measurement objectives have changed somewhat during the last 40 years or so, the basic framework for measuring unemployment, the labour force framework, has remained the same. In this framework, unemployment is regarded as a situation of total lack of work at a given point of time. It complements the measurement of employment. The two concepts together, employment and unemployment, make up the labour force. For more details on the labour force framework see Chapter 3, on employment Chapter 5, and on forms of labour underutilisation other than unemployment Chapter 7.

This chapter is organised as follows. After a brief discussion of various sources of unemployment data, the international standard definition of unemployment adopted by the Thirteenth ICLS is discussed in some detail in Section 2. This is supplemented in Section 3 with a discussion of the provision introduced by the ICLS for relaxing the standard definition of unemployment under certain conditions. Measurement issues are reviewed in Section 4, which ends with an example of a questionnaire flow chart.

Data sources

The present chapter discusses the measurement of unemployment in the context of household surveys. While the international standards on unemployment statistics are, in principle, meant to apply irrespective of the data source (household surveys, unemployment insurance records and employment exchange registers), household surveys are, in fact, better suited than other sources for the measurement of unemployment in accordance with the international standards. The criteria implicit in the standards can be specified more easily in a household survey, in which the questionnaire can be flexibly adapted to the desired definition. Household surveys are the only data source which allows joint measurement of employment and unemployment as required by the labour force framework. Furthermore, with an appropriate survey design, household surveys can cover virtually the entire population of a country and all

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categories of workers. The results can be related to other demographic and socio-economic characteristics of individuals, families and households obtained from the same survey. These possibilities are generally much more limited in the case of other data sources.

Even so, unemployment insurance records and employment exchange registers, readily obtainable as by-products of the administrative process, are used in most industrialised countries and in some developing countries as sources of current statistics on unemployment at low marginal cost. Taking advantage of the large number of observations available from regular administrative records, some countries use them to derive unemployment statistics for small areas and for longitudinal analyses. Registered unemployment data, however, do not have universal relevance as a source of internationally comparable data. In many countries (mostly developing ones) unemployment insurance systems or employment exchange offices do not yet exist, or, where they do exist, their coverage is often incomplete or limited to certain areas and population groups. Moreover, the dependence of any resulting statistics on legal, administrative or regulatory provisions, which vary from one country to another and which are subject to change over time, combined with national differences in definitions, detract from the suitability of administrative sources in the application of the international standards and limit their comparability.

2. The standard definition

Definition

The international standard definition of unemployment (ILO, 1983) is based on three criteria to be satisfied simultaneously: “without work”, “currently available for work” and “seeking work”. Accordingly, the “unemployed” comprise all persons above the age specified for measuring the economically active population who during the reference period were:

- (a) “without work”, i.e. were not in paid employment or self-employment, as specified by the international definition of employment;
- (b) “currently available for work”, i.e. were available for paid employment or self-employment during the reference period; and
- (c) “seeking work”, i.e. had taken specific steps in a specified recent period to seek paid employment or self-employment.

Special provisions are made for persons without work who have made arrangements to start work at a date subsequent to the reference period (future starts) and for persons whose employment contract is temporarily suspended (lay-offs).

It should be noted that the international standards, in formulating these three criteria, do not make any reference to institutional or legal provisions, such as receipt of unemployment insurance benefits or registration at a public employment exchange. The criteria are intended to refer exclusively to the person’s activities during a specified reference period.

The without work criterion draws the distinction between employment and non-employment. “Without work” should be interpreted as total lack of work, or, more precisely, as not having been employed during the reference period. Thus, a person is to be considered as “without work” if he or she did not work at all during the reference period (not even for one hour) nor was temporarily absent from work as determined by the definition of employment (Chapter 5). The purpose of the without work criterion is to ensure that employment and unemployment are mutually exclusive, with precedence given to employment. A person is classifiable as unemployed only if it has already been

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established that she or he is not employed. Thus, persons who were engaged in some casual work while seeking employment should be classified as employed, in spite of the job search activity. This is in accordance with the priority rules of the labour force framework.

The other two criteria of the standard definition of unemployment, “current availability for work” and “seeking work”, serve to distinguish those of the non-employed population who are unemployed from those who are not economically active. These two criteria are discussed in detail in the next two subsections.

The seeking work criterion

The criterion

According to the international standards, persons should be seeking work to be considered as unemployed. Seeking work is defined as having taken specific steps in a specified recent period to seek paid employment or self-employment. The term “work” in the seeking work criterion is to be interpreted in the sense of economic activity as defined in the international standards (Chapter 2). The notion of seeking work is independent from the duration and type of employment sought. Seeking work covers seeking self-employment, part-time employment, temporary, seasonal or casual work, and, in general, any type of work considered as economic activity by the international standards. The notion of seeking work does not depend on whether the work is being sought within or outside the national boundary. Thus, if falling within the scope of the population coverage of the survey (see Section 2, Chapter 2), migrant workers and seamen seeking work abroad should be considered as “unemployed”, assuming the other criteria of unemployment are satisfied.

The formulation of the seeking work criterion in terms of active search for work is in line with the activity principle of the labour force framework which requires that the classification of a person into one of the labour force categories is to be based on the particular activities of the person during the reference period. Thus, a person must have actually done something specific to obtain work before being classified as “seeking work”. A general declaration of being in search of work is not sufficient. This formulation of the criterion is meant to provide an element of objectivity for measurement.

Active steps to seek work

The active steps to seek work listed in the standard definition of unemployment include “registration at a public or private employment exchange; application to employers; checking at worksites, farms, factory gates, market or other assembly places; placing or answering newspaper advertisements; seeking assistance of friends or relatives; looking for land, building, machinery or equipment to establish own enterprise; arranging for financial resources; applying for permits and licenses, etc.”. In general, to justify consideration as a person seeking work, it is sufficient to show that one active step has been taken.

Concerning “registration at a public or private employment exchange”, the Fourteenth ICLS specified that this should be considered an active step to seek work only when it is for the purpose of obtaining a job offer from the employment exchange (ILO, 1988). This precision is particularly important where participation in an employment promotion scheme is linked to registration. Consequently, where registration is simply an administrative requirement for benefiting from the provision of such a scheme and not for the purpose of obtaining a job offer, the act of registration should not be considered an active step to seek work in the sense of the international definition of unemployment.

Note that the list above covers steps referring not only to paid employment but also to self-employment. Application to employers or registration at an employment exchange are examples of steps to find waged or salaried jobs. Applying for permits and licenses and looking for land, machinery or equipment are examples of steps to establish one's own enterprise. Certain other steps, such as contacting friends or relatives and placing or answering newspaper advertisements, could relate to a search for either paid employment or self-employment.

It should also be noted that some of the steps listed refer to rather formal methods of seeking work (e.g. registration at an employment exchange, placing or answering newspaper advertisements), while others are more informal (e.g. contacting friends and relatives, checking at worksites).

Questions on methods of job search in labour force surveys not only test the notion of seeking work but also produce useful material for analyses. With proper data, successful methods of obtaining employment can be analysed (United States, 1975; Wielgosz and Carpenter, 1987). The number of steps taken to seek work by an individual has occasionally been considered as an indicator for the intensity of job search and used to analyse the relationship between search intensity and success in obtaining employment (OECD, 1987a).

Seeking self-employment

The notion of seeking self-employment requires particular attention. The dividing line between seeking work activities and the self-employment activity itself is often difficult to draw in the case of self-employed persons. In many situations, activities such as looking for potential clients or orders, or advertising the goods or services produced, are an essential component of the activity itself. In other cases (e.g. self-employed doctors and lawyers) the notion of seeking work has limited application.

One may also need to clarify, when new enterprises are set up, at what point the process of seeking self-employment becomes a self-employment activity itself. For example, it is not obvious whether activities such as buying initial stock or acquiring necessary equipment should be regarded as still a search activity or already the self-employment activity itself. Recognising the measurement problems involved, the interviewers' manuals of some national labour force surveys (e.g. Canada, 1982) specify that for self-employed persons seeking work activities, such as contacting potential clients, distributing leaflets or business cards, preparing estimates, quotes or tenders, and activities related to the establishing of a new business, firm or professional practice (such as buying or installing equipment and ordering supplies in preparation of the opening) are to be considered as work.

The Fourteenth ICLS 1987, after discussion of the issue, noted that the distinction between seeking self-employment and the self-employment activity itself could be based on the point when the enterprise starts to exist formally, for example when the enterprise is registered. Thus, activities taking place before the registration of the enterprise would be regarded as search activities, while activities after registration would be considered as self-employment in the strict sense. In situations where enterprises are not necessarily required to register formally in order to operate, it was suggested that the dividing line be drawn at the point when the enterprise is ready to receive the first order, or when financial resources have become available, or when the necessary infrastructure is in place (ILO, 1988).

Job search period

According to the international standards the specific steps for seeking work must have taken place within "a specified recent period". This period need not be the same as the basic survey reference period of one week or one day, but may be longer, such

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as one month or the four weeks preceding the basic reference period. The purpose of extending the job search period somewhat backward in time is to take account of the time-lags which often follow initial steps to obtain work, and during which jobseekers may not take any other initiatives to find work. Thus, a person who has already applied for a job by writing to an employer a month ago may not do anything else to find work while awaiting the reply. This may be particularly the case for persons only able to offer their services to one potential employer, such as applicants for jobs which can only be performed in the public service (e.g. judges).

An appropriate length of the search period should be specified in survey questionnaires. It may be determined in the light of national circumstances, taking into account prevailing time-lags in processing demands for employment, either paid employment or self-employment. The periodicity of the survey should also be taken into consideration; for example, one could argue that a job search period of more than four weeks should not be used in a monthly survey. Actually, many countries use a search period of one month or four weeks in their labour force surveys. There are also surveys that use longer periods, such as three or six months.

It should be mentioned that if a long job search period is used it may be necessary to probe for a respondent's present desire for work. It is important to exclude persons who no longer desire to obtain work even if they have sought work earlier at some time during the reference period for job search activities.

The availability criterion

According to the international standards, persons should be available for work during the reference period if they are to be considered as unemployed. In the present context, availability for work means that, given a work opportunity, a person should be able and ready to work.

When used in the context of the standard definition of unemployment, one purpose of the availability criterion is to exclude persons who are seeking work to begin at a later date for example, students who, at the time of the survey, are seeking work to be taken up after completion of the academic year. In this situation the availability criterion serves as a test of the current readiness to start work. The availability criterion also serves to exclude other persons who cannot take up work due to certain impediments, such as family responsibilities, illness, or commitments to volunteer community services.

Table 8 gives some empirical evidence on the effect of the availability criterion in measuring unemployment. The data are based on the results of the labour force surveys of Australia and the Federal Republic of Germany and give the number of persons actively seeking work, but not currently available to start work, as a percentage of all active jobseekers. The percentage is 7.0 per cent for Australia (1983) and 17.3 per cent

Table 8. Persons actively seeking work but not currently available for work as percentage of all active jobseekers

Sex	Australia		Fed. Rep. of Germany	
	Sep. 1983 (1)	Sep. 1983 (2)	June 1985 (3)	Apr. 1986 (3)
Both sexes	7.0	4.1	15.5	17.3
Males	6.1	4.5	14.4	15.5
Females	8.3	3.6	16.4	19.0

(1) Not available to start work in the reference week for reasons other than own temporary illness or injury; (2) Not available to start work in the reference week for reasons other than own temporary illness or injury, or within the four weeks following the interview; (3) Not available to start work in the reference week or the two following weeks for any reason.

Sources: Australian Bureau of Statistics, *Persons not in the labourforce, Australia, September 1983*, Canberra, 1984, p. 7; Mayer, H.-L., "Definition und Struktur der Erwerbslosigkeit", in *Wirtschaft und Statistik*, Wiesbaden, 1987, No. 6, p. 460; "Struktur und Entwicklung der Erwerbslosigkeit 1986", in *Wirtschaft und Statistik*, Wiesbaden, 1988, No. 2, p. 108.

for the Federal Republic of Germany (1986). For both countries, the percentage is slightly higher for women than for men. One conclusion to be drawn is that the application of the availability criterion may reduce significantly the level of measured unemployment.

The difference between the figures for Australia and the Federal Republic of Germany may partly be due to differences in survey applications (e.g. different provisions for temporary illness and future starts) and to the different timing of the surveys: compared with the Australian survey conducted in September 1983 (middle of the school year), the German survey conducted in April 1986 (prior to the end of the school year) is likely to have been faced with more students not currently available for work who had already started to seek employment to begin after the end of the school year. As indicated by the June 1985 figures of the German survey, the percentage of non-available jobseekers seems to decrease when the survey is undertaken at a time when school holidays have already started in parts of the country.

Availability period

The availability criterion is formulated in the international standards as availability during the reference period (reference week or day). In practice, however, many countries prefer to use a slightly longer period, e.g. the following 15 days or two weeks. This is to account for the fact that not everyone who is seeking work can be expected to take up a job immediately one is offered. Persons may be temporarily sick at that moment, or may have to make arrangements concerning child care, transport facilities, etc., before being able to start work. Furthermore, there are forms of employment, such as regular employment paid on a monthly basis, where workers are generally expected to start work on the following first or fifteenth of a month, rather than straight after the offer of the job.

Table 8 provides some evidence on the effect of the length of the availability period. The first two columns, for Australia, show that an extension of the availability period from one week to four weeks decreases the effect of the availability criterion by reducing the number of non-available jobseekers from 7.0 per cent to 4.1 per cent. This confirms that the longer the availability period, the smaller the effect of the availability criterion on the measurement of unemployment.

Time references

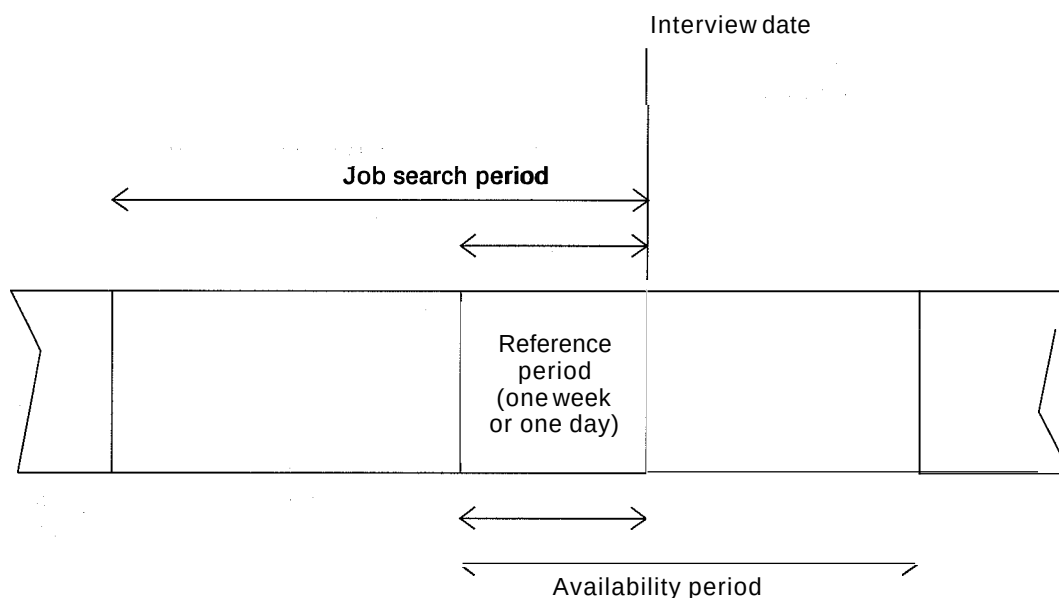
It is clear from the discussion so far in this section that it may be sensible, when measuring unemployment during the reference period, to extend the period's boundaries in order to assess the different criteria of the standard definition of unemployment. The without work criterion would always refer to the basic survey reference period (one week or one day), but the other criteria could involve longer periods. In the case of the seeking work criterion the job search period may be the preceding four weeks, and in the case of the current availability for work criterion the availability period may be extended one week or two weeks beyond the basic survey reference period. It should be emphasised, however, that while each criterion may have its own distinct time-limit, the resulting measure of unemployment would refer to one and the same period, i.e. the basic survey reference period.

The interrelationship between the different time references is illustrated in Figure 5. Note that both the job search period and the availability period cover the basic survey reference period (one week or one day). However, the job search period may be extended backward in time and the availability period forward in time.

It should be noted that the resulting measure of unemployment may be different depending on the time references used. It has already been mentioned in Chapter 3 that, due to the priority rules of the labour force framework, the measured level of

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Figure 5. Survey reference period versus job search and availability periods



unemployment may be smaller when the basic survey reference period is one week as opposed to one day. However, whether the basic survey reference period is one week or one day, extensions of the job search or availability periods are likely to work in the opposite direction, i.e. to increase the level of unemployment by identifying more persons as actively seeking work or being currently available for work.

Future starts

The international standards specify one particular category of workers for whom an exception is made from the general rule that all three criteria (without work, currently available for work, seeking work) have to be satisfied simultaneously to meet the demands of the standard definition of unemployed. The exception concerns persons without work who have made arrangements to take up paid employment or to undertake self-employment activity at a date subsequent to the reference period (“future starts”). According to the international standards, such persons, if currently available for work, are to be considered as unemployed, whether or not they continue to seek work. Thus, the classification of “future starts” as unemployed involves only two criteria, namely “without work” and “current availability for work”.

The reason for providing an exception to the seeking work criterion for this category of workers is that, having already found employment, they may not feel the need to continue to seek work. Between the alternatives of considering these persons as unemployed or as employed (with a job but not at work), the international standards have opted for unemployment. This is because these persons, being currently available for work, would presumably have started work had the job begun earlier. As such, they form part of currently underutilised labour resources. It has also been found in certain countries that in practice many of these persons, while reporting to have a job to start in the future, end up by not obtaining the job after all. Thus, the waiting period may in fact be part of a longer spell of unemployment. Classification of such persons as

temporarily absent from work would not be in line with the requirement that a person temporarily absent from work must already have worked in the job in question.

In line with the international standards, virtually all countries classify this category of workers, if currently available for work, as unemployed. There are, however, certain variations regarding the exact definition of future starts, particularly the specification of the time-span within which the new job is to start in order to call a person a “future start”. Although many countries leave the length of this period unspecified, it would show greater precision to follow the example of countries such as the Republic of Korea, Mexico, Sweden and the USA which have chosen to specify four weeks or 30 days.

Lay-offs

In general, “lay-offs” may be defined as “persons whose contract of employment, or activity, has been suspended by the employer for a specified or unspecified period at the end of which the person concerned has a recognised right or recognised expectation to recover employment with that employer” (OECD, 1983).

Laying off workers is just one means to which firms resort to save labour at times of adverse economic conditions. Other means are various forms of short-time work (reduction of working time to fewer than normal hours for all or certain categories of workers). The choice of measures taken depends on many factors, in particular national labour legislation and social security provisions.

While there is no doubt that short-time work should be considered as employment according to the priority rule of the labour force framework, there could be some ambiguity about the statistical treatment of lay-offs. According to the previous international standards (Eighth ICLS: ILO, 1955), persons on temporary or indefinite lay-off without pay were considered as unemployed, regardless of their job attachment, their job search activities and their current availability for work. The implication of this statistical treatment was that, in essentially the same economic situation, countries such as Canada and the United States with legislation favouring lay-offs would register an increase in unemployment, while countries such as most European countries with legislation favouring short-time work would register changes within the employed category, but not in the level of unemployment. This anomalous statistical treatment causes certain difficulties in comparing statistics of employment, unemployment and underemployment between the countries concerned.

In an attempt to reduce these anomalies between countries, the international standards now allow persons on lay-off to be classified in any one of the categories “employed”, “unemployed” and “not in the labour force”, depending upon the nature of the attachment to their jobs, their job search activity and their current availability for work. In particular, *(a)* lay-offs with formal job attachment are to be classified as employed (with a job but not at work);¹ *(b)* those without formal job attachment but seeking and currently available for work are to be classified as unemployed; and *(c)* others, i.e. lay-offs without formal job attachment who are not currently available for work or not seeking work are to be classified as not in the labour force. Thus, lay-offs with formal job attachment are now to be treated the same way as short-time workers, i.e. as employed. Only lay-offs with no formal job attachment who are seeking and currently available for work are to be considered as unemployed under the standard definition.

The international standards include a separate provision for countries which “depending on national circumstances and policies, prefer to relax the seeking work criterion in the case of persons temporarily laid off (with no formal job attachment and

¹ The concept of “formal job attachment” is described in detail in connection with the definition of employment in Chapter 5.

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currently available for work). In such cases, persons temporarily laid off who were not seeking work but classified as unemployed should be identified as a separate subcategory.”

Other particular groups

Students seeking work

The international standards specify that “students, homemakers and others mainly engaged in non-economic activities during the reference period” (one week or one day) who are seeking work and satisfy the other criteria of unemployment “should be regarded as unemployed on the same basis as other categories of unemployed persons and be identified separately, where possible”. Though classification of such persons as unemployed follows directly from the priority rules of the labour force framework which give precedence to unemployment over economic inactivity, the emphasis was made because the economic activities of students (as well as homemakers and others mainly engaged in non-economic activities) sometimes go unreported in surveys unless proper care is taken in survey design.

A point of issue may, however, be raised concerning the current availability for work of students seeking work. Students seeking work may be part-time students seeking part-time work, part-time students seeking full-time work, full-time students seeking part-time work or full-time students seeking full-time work. There may be no problem in considering part-time students as currently available for part-time or even full-time work. Similarly, full-time students may in principle be currently available for part-time work. They may even be currently available for full-time work during vacations or if they are ready to stop their studies in order to take up employment. But the current availability of other full-time students seeking full-time work may be questionable.¹

Persons seeking apprenticeship

Given the various types of apprenticeships common in many countries, the question may arise as to whether a person seeking an apprenticeship should be considered as unemployed. In certain countries, persons seeking an apprenticeship but no other job are not included in the count of registered unemployment. To address this issue in the light of the international standards, one should determine whether the apprenticeship in question can be regarded as work or, more precisely, as economic activity in the sense described in Chapter 2. If this is the case, a person seeking such an apprenticeship and currently available for it should be considered as unemployed. A more detailed discussion on apprenticeships and other forms of training schemes is given in Chapter 5 in connection with the measurement of employment.

Beneficiaries of employment creation schemes

Employment creation schemes for the benefit of young people seeking work and unemployed adults or workers in industries or occupations threatened by unemployment have been developed on a wide scale in recent years in many countries facing high levels of unemployment. There is a large variety of such schemes including job training

¹ In Sweden (ILO, 1986, p. 154), part-time students actively seeking full-time or part-time work are included among the unemployed, but full-time students seeking work are not, except if they are seeking work during vacations, the only period of the year when it is assumed that full-time students could be currently available for work. In Canada (ILO, 1986, p. 30), full-time students actively seeking part-time work are included among the unemployed, but full-time students reporting seeking full-time work are not, on the ground that full-time students could not be currently available for full-time work. However, no probing is made as to whether such full-time students would have been ready to withdraw from their studies in order to accept a full-time job.

schemes, community work programmes, programmes providing assistance to the unemployed in setting up an enterprise, etc. Since the special status of the beneficiaries may place them on the boundary of employment, unemployment and economic inactivity, the development of these schemes has initiated a discussion regarding the appropriate statistical treatment of the participants.

Owing to the variety of the schemes and their relative recency, the international standards do not make any reference to them. In survey applications, therefore, the appropriate statistical treatment should be examined on a scheme-by-scheme basis. A review of some 200 schemes in 16 industrialised countries may be found in EUROSTAT (1987) and ILO (1987). Some broad guidelines for statistical treatment have already been given in connection with the notion within the definition of employment of formal job attachment, as well as in connection with the statistical treatment of trainees (Chapter 5).

The Fourteenth ICLS agreed that participants in employment training schemes, who are currently available for work, should be classified as unemployed if *(a)* the training does not take place within the context of an enterprise nor is associated with the productive activities of the enterprise (so that the person cannot be considered as being at work), *(b)* no formal job attachment exists (so that the person cannot be considered as with a job but not at work), but *(c)* there is a definite commitment to employment after the end of the training (ILO, 1988). This statistical treatment builds on the particular provision of the international standards concerning future starts.

3. Relaxation of the standard definition

Relaxation of the seeking work criterion

Seeking work is essentially a process of search for information on the labour market. In this sense, it is particularly meaningful as a defining criterion in situations where the bulk of the working population is oriented towards paid employment and where channels for the exchange of labour market information exist and are widely used. While in industrialised countries these conditions are largely satisfied (most workers are employees; public or private labour exchanges, newspaper employment advertisements, etc., are common, and many people refer to them in searching for jobs), this may not be the case in developing countries.

In many developing countries, most workers are self-employed, often in household enterprises. Labour exchanges and similar organisations are not fully developed and are often limited to certain urban sectors or to particular categories of workers. In rural areas and in agriculture, because of the extent of the localities and the nature of the activities, most workers have more or less complete knowledge of the work opportunities in their areas at particular periods of the year, often making it unnecessary to take active steps to seek work. Even in industrialised countries and in the urban labour markets of developing countries, there may be situations in which particular groups of workers do not actively seek work because they believe that no work corresponding to their skill is available in their area or at particular times of the business cycle.

Because it was felt that the standard definition of unemployment, with its emphasis on the seeking work criterion, might be somewhat restrictive and might not fully capture the prevailing employment situations in many countries, the 1982 international standards introduced a provision which allows for the relaxation of the seeking work criterion in certain situations. This provision is confined to situations where “the conventional means of seeking work are of limited relevance, where the labour market is largely unorganised or of limited scope, where labour absorption is at the time inadequate, or where the labour force is largely self-employed”. This provision should

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Table 9. Unemployed persons available for work but not seeking work as percentage of all unemployed persons

Sex	India				Jamaica	
	July Sep. '71	Oct.. Dec. '77	Jan.- Mar. '78	Apr.. June '78	Apr. '80	Nov. '80
Both sexes	32.1	28.4	27.0	28.3	54.6	17.3
Males	27.9	24.4	22.4	22.9	31.1	39.5
Females	42.4	38.8	37.2	37.7	66.3	69.0

Sources, India, "Report on the second quinquennial survey on employment and unemployment, National Sample Survey, 32nd round", in *Sarvekshana*, Vol V, Nos 1 and 2, July-Oct 1981, S-17, Table 12, Jamaica, Department of Statistics, *The Labour Force 1980*, Kingston, Apr 1981, Table 4 10

not be confused with the exception cited earlier concerning future starts, which is embodied in the standard definition of unemployment.

The seeking work criterion has been relaxed in the national labour force surveys of many countries, and in these countries the unemployment figures now include persons without work who are available for work but have not actively sought work. The proportion of such persons may be substantial as shown in Table 9 for India and Jamaica. It can be observed that the proportion is higher among women than men, indicating that the relaxation of the seeking work criterion has relatively more effect on the unemployment classification of women than of men.

Partial versus complete relaxation

The formulation of a definition of unemployment under the relaxation provision does not necessarily mean that the seeking work criterion should be completely relaxed for all categories of workers. The relaxation may be only partial. The standard definition of unemployment provides for no relaxation, except for future starts. In extreme opposition, a definition of unemployment might be envisaged where the seeking work criterion is completely relaxed. In between, there is a number of possibilities, each corresponding to a particular degree of relaxation.

Under partial relaxation, the definition of unemployment would include, in addition to persons satisfying the standard definition, certain groups of persons without work who are currently available for work but who are not seeking work for particular reasons. One example explicitly referred to in the international standards has already been mentioned: persons temporarily laid off by their employer without maintaining a formal job attachment. For such persons, if currently available for work, the international standards contain a provision to relax the seeking work criterion and to include them as a separate subcategory among the unemployed. Other examples, not specifically mentioned in the international standards, are seasonal workers and the so-called "discouraged workers", to be discussed at the end of this section.

Availability under the relaxation provision

Where the labour market situation justifies the relaxation of the seeking work criterion, unemployment would be defined, for the persons concerned, in terms of the remaining two criteria, "without work" and "current availability for work". The availability criterion, in particular, becomes a crucial element for measurement and should be fully tested.

Where the seeking work criterion is relaxed, a person without work is to be considered as unemployed if, given a work opportunity, he or she is able and ready to work. The meaning of "given some work" is more ambiguous when the seeking work criterion is relaxed than when it is not. When the seeking work criterion is applied,

the conditional element (“given some work”) is linked to the type of work sought by the jobseeker, as most active steps in seeking work imply that the jobseeker has some idea of the type of work he or she is looking for. However, when the seeking work criterion is relaxed, this link is cut and the notion of “given some work” is much less clear. The context to which current availability refers should thus be specified by indicating particulars of the potential work opportunities (remuneration, working time, location, occupation, etc.).

The international standards recognise that apart from special circumstances (e.g. school attendance, family responsibilities, infirmity or disablement) availability for work depends essentially on the nature of potential work opportunities. They recommend that in “the application of the criterion of current availability for work, especially in situations where the ‘seeking work’ criterion is relaxed, appropriate tests should be developed to suit national circumstances. Such tests may be based on notions such as present desire for work, previous work experience, willingness to take up work for wage or salary on locally prevailing terms, or readiness to undertake self-employment activity, given the necessary resources and facilities.”

Discouraged workers

One particular group of workers who might possibly be considered as unemployed under a relaxed definition are the so-called “discouraged workers”. While the concept is not very precise and its definition varies from country to country, the term “discouraged workers” generally refers to persons who want a job and are currently available for work but who have given up any active search for work because they believe that they cannot find it. The interest in this group stems from the concern that discouraged workers, like the unemployed, represent unutilised labour resources and that information on them is needed for a comprehensive measure of the labour market situation. Furthermore, discouraged workers in many countries are especially likely to be found among groups of particular social concern, such as the young, women and the elderly.

The reason for persons not continuing to seek work may be related to labour market situations, such as the belief that no suitable job is presently available in the area, or it may be related to personal factors, such as the belief that they lack qualifications or that employers think they are too young or too old. In certain countries, only reasons related to the labour market situation are considered in the definition of “discouraged workers”. In practice, however, it may be difficult to draw a clear distinction, as respondents may not be able to abstract their personal characteristics from the labour market situation. A review of definitions and survey applications in some eight industrialised countries can be found in OECD, 1987b.

Arguments have been advanced both in favour of and against relaxing the seeking work criterion in the case of discouraged workers. The arguments are centred on the characteristics of discouraged workers and the degree of their attachment to the labour market (e.g. United States, 1979, Flaim, 1984, and Malinvaud, 1986). The basic argument for the inclusion of discouraged workers among the unemployed is that these workers are without work, are willing and currently available for work, and as such form part of the deficiency of the economy in providing employment opportunity to those who want it. It is also argued that discouraged workers might be expected to behave similarly to the unemployed during an economic recovery and to be particularly likely to re-enter the core labour force.

The basic argument against inclusion of the discouraged workers among the unemployed concerns measurement problems. Also there is empirical evidence in certain countries (but not in all) that the labour force attachment of discouraged workers is not significantly different from that of other groups of persons outside the labour force,

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and that discouraged workers show no special tendency to re-enter the labour force in a recovery.

Though the term “discouraged workers” is not explicitly mentioned in the international standards, there are implicit references to this category of workers in connection with the provision for relaxing the seeking work criterion in situations of “inadequate labour absorption” and with the suggestion that “countries adopting the standard definition of unemployment may identify persons not classified as unemployed who were available for work but not seeking work during the reference period and classify them separately under the population not currently active”.

This provision implies that under certain conditions (situations where labour absorption is, at the time, inadequate) discouraged workers could be considered as unemployed if a relaxed definition of unemployment were adopted. However, where the standard definition of unemployment is adopted, discouraged workers, as other categories of non-seekers, should not be included among the unemployed: they may be identified separately among the population not currently active.

In practice, the appropriate decision concerning the statistical treatment of discouraged workers may be based on specific studies on the labour force attachment of the discouraged workers as compared to that of groups included among the unemployed on the one hand and of groups outside the labour force on the other hand. Labour force attachment may be measured, for example, by using information on the past and future labour force activity of the workers concerned, obtained through retrospective questions or follow-up surveys. It is particularly important to ascertain, when assessing a person’s classification as a discouraged worker, whether he or she, though not recently seeking work, had undertaken any previous job search activities.

Seasonal workers

Seasonal workers are persons engaged in activities only for specific periods of the year. Seasonal activities are often related to planting, harvesting, construction, tourism, holiday sales, etc.

While the statistical treatment of seasonal workers does not raise any major difficulty during the busy season, there may be some ambiguity regarding their classification into labour force categories during the off-season. Under certain conditions, seasonal workers could be considered as future starts and therefore classified as unemployed if currently available for work. These conditions are that the seasonal worker should have made a definite arrangement to take up employment at the beginning of the season, and the date should fall within the time-limit set for future starts in general.

As for those seasonal workers awaiting the busy season who cannot be considered as future starts, the question then is whether the relaxation provision may be applied to them, i.e. whether seasonal workers currently available for work, but not seeking work because awaiting the busy season, should be considered as unemployed under the relaxed definition. This issue is particularly important where the number of these workers is significant.

The international standards do not make any specific reference to seasonal workers, but the appropriate statistical treatment may be derived by examining whether the conditions which justify the relaxation of the seeking work criterion are applicable to this category of workers. As stated earlier, the conditions for relaxation are (a) limited relevance of conventional means of seeking work, (b) largely unorganised labour market or labour market with limited scope, (c) inadequate labour absorption, and (d) largely self-employed labour force.

One may argue that these conditions could indeed apply to seasonal workers available for work during the off-season, provided it can be assumed that not seeking

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work due to awaiting the busy season is an indication of the lack of any alternative employment prospect during the off-season. In such situations, their current availability for work should be probed by inquiring, for example, on their willingness to move away from home if work in another area were offered, the minimum wage they would accept, their readiness to engage in suitable self-employment activity if resources were made available.

Persons marginally attached to the labour force

Discouraged workers and seasonal workers during the off-season can be said to be marginally attached to the labour force, because they would be considered as unemployed and therefore in the labour force if the seeking work criterion were relaxed. In general, a person not economically active under the standard definitions of employment or unemployment can be said to be marginally attached to the labour force when a change in one of these definitions would result in a re-classification of that person as economically active.

The international standards suggest that countries should develop classifications according to the relative strength of their labour market attachment, in order to subdivide persons who are not considered employed or unemployed under standard definitions. Four national examples of such classifications are given below.

On the basis of the results of the Canadian Labour Force Survey, persons not classified as unemployed, but who wanted work and were available for work during the reference week, were separately identified as “persons on the margins of the labour force” and classified into eight subcategories according to the reason for not actively seeking work (Canada, 1987).

The results of the Australian Labour Force Survey are also used to identify, among persons not in the labour force who want work, a special category called “persons marginally attached to the labour force” (Australia, 1984). This category consists of (a) persons actively looking for work but not available to start work in the survey week, and (b) persons not actively looking for work but available to start work within four weeks. Group (a) is further subdivided according to the availability to start work within four weeks, and group (b) according to the reason for not actively looking for work.

Similarly, in the United Kingdom the main criteria used in assessing from labour force survey data the strength of marginal attachment to the labour force are whether the individual “was available for work within two weeks” and “had sought work in the previous four weeks” (United Kingdom, 1986a).

In the Indian National Sample Survey on Employment and Unemployment attachment to the labour force of persons not usually active (engaged in domestic duties) is measured in terms of “willingness to accept work at home”, “nature and type of work acceptable”, “skill or previous work experience”, and “assistance required to undertake the work” (India, 1981).

4. Measurement

The complexity of the concept of unemployment is reflected in the wide variety of ways it is measured in national labour force surveys. A brief discussion of different approaches used in national practices is given below, focusing on the two essential criteria (“seeking work” and “currently available for work”). Measurement of the without work criterion is not covered in this section, because its definition is implicit in the measurement of employment which has already been discussed in Chapter 5.

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Seeking work

In applying the seeking work criterion in surveys, several measurement issues deserve particular attention: (a) the sequence of questions; (b) the set of answer categories; (c) the way of presenting them to respondents; (d) the number of answer categories to be recorded for each respondent; (e) the choice of the job search period and the recall task involved.

Question sequence. As mentioned earlier, the notion of job search in the international standards covers not only steps to find paid employment, but also steps to look for self-employment; it includes not only formal but informal methods of looking for work. It is thus unlikely that a single question, such as “Have you been seeking work during ...?”, will be sufficient to determine whether the respondent has taken any active steps to seek work, as the respondent’s own notion of what constitutes an active job search may differ from what the concept intends to measure.

At least two questions may be necessary, one for a general assessment of whether or not the respondent is seeking work and the other to probe whether or not any specific active steps to seek work have been undertaken. This dual question approach is used in many national labour force surveys. An example adapted from the Guatemala 1986/87 survey is:

- A. Are you looking for work or trying to establish your own business?
- B. During the past four weeks, have you taken any steps to find work or to establish your own business?

In such a sequence, the first question, in effect, serves to assess the desire for work of the respondent, preparing for the more precise second question. Where both questions are asked from all respondents concerned, question A serves also to identify persons who may have actively sought work at the beginning of the job search period but are no longer looking for work at the time of the interview. This aspect is the more important the longer the job search period specified. Where question B is asked only from respondents giving a positive answer to question A, the first question serves as a filter to avoid asking subsequent questions on unemployment from persons not expressing a desire for work. One difficulty is that persons who have taken some steps to seek work but do not consider these steps as “looking for work” may answer negatively to question A and, thus, be prematurely excluded from the probing of question B (Schwarz, 1987, paras. 14-17). To avoid this problem, question A should preferably be formulated in general terms and assess simply the desire for work of respondents.

Answer categories. The choice of answer categories for question B may be based on the list of examples provided by the international standards. They should, however, be adapted to national circumstances, i.e. to the ways people generally look for work in the country. In situations where these are not obvious, a pilot study may be conducted on how currently employed persons have obtained their present employment.

Depending on national conditions, the set of answer categories to question B may be short, with emphasis on formal methods of job search, such as “registering with an employment office”, “applying to an employer”, “placing or answering a newspaper advertisement” (e.g. Sweden, 1986), or it may be longer, including also less formal methods, such as “contacting friends and relatives”, “checking at worksites”, etc. (e.g. Korea, Rep. of, 1983). It may also be necessary to provide answer categories specifically relevant to self-employment, e.g. “arrangements made with producers or suppliers”, “trying to acquire equipment, funds or licenses to set up own company” (e.g. Portugal, 1986).

Presentation. Once the appropriate set of answer categories has been chosen, a decision is needed as to whether or not the answer categories should be made known to the respondent as part of the questioning. Reading out the answer categories

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(or, alternatively, presenting a list) to the respondent has the advantage of clarifying what constitutes active steps to seek work. The disadvantage, however, is that the procedure may be regarded as suggestive, possibly leading respondents to answer positively where they should not (Schwarz, 1987, paras. 18-20). Where appropriate, an in-between approach may be adopted by incorporating certain examples of job search activities in the question formulation, so as to indicate what methods constitute seeking paid employment or self-employment.

Single versus multiple response. To determine that a person has actively sought work, only one of the answer categories need be reported. Thus, certain surveys provide for reporting just one method of job search for each respondent, usually the main one or the first relevant one or the most recent one listed in the answer categories. Many other surveys, however, do allow for marking more than one method. The provision for multiple responses has analytical usefulness, for example for studying the combination of ways people look for work, and, when a separate question has been about registration at a public employment exchange, for linking or comparing the survey data with data on registered unemployment.

Recall task. The job search period for assessing the seeking work criterion needs to be properly formulated in survey applications. As mentioned earlier, the length of the period should be chosen in the light of national circumstances, by taking account of the time-lags usually experienced in obtaining replies in the process of seeking work and of the periodicity of the survey. Question B in the preceding example follows the most common practice in specifying the job search period as four weeks.

Inquiring on job search activities imposes a recall task on the respondent. The respondent has to recall what activities were undertaken, and when these activities were undertaken. The recall task may be more or less difficult, depending not only on the length of the recall period, but also on the type of activities to be recalled. For example, registering at an employment exchange may be recalled more readily than contacting friends or answering newspaper advertisements, and checking at a factory gate three days ago may be recalled more readily than checking at a factory gate three weeks ago.

Current availability for work

Among the three criteria of the standard definition of unemployment, the availability criterion is probably the most difficult to measure. As mentioned earlier, current availability for work means “current ability and readiness to work given a work opportunity”. The criterion has three features: the first referring to a situation (ability and readiness to work), the second to a condition (given a work opportunity), and the third to a time reference (current).

In surveys applying the standard definition of unemployment, the question on availability is placed after the question sequence on seeking work, and emphasis is given to the first and third features of the availability criterion. Two alternative question formulations used in national labour force surveys are:

- C1. Was there any reason why ... could not take a job last week? (Canada, 1982);
- or,
- C2. If you had found a job, could you have started work last week? (Australia, 1986).

The first formulation is a double-negative where a negative answer means that the person is currently available for work while a positive answer reflects non-availability. The second formulation inquires directly on availability by using a conditional statement. The United States Current Population Survey, which used to have a question of the first type, recently changed the wording and has now a question of the second type (“Could ... have taken a job last week if one had been offered?”; United States, 1987).

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In the examples given above, the availability period is “last week”. In other surveys (EUROSTAT, 1987) a longer period is used. For example, in the Labour Force Survey of the United Kingdom (1986b) the following question is asked: “If a job had been available (last week), would you have been able to start it within two weeks?” There are also examples of surveys that use an open-ended question (“If you could get a job now, how soon would you be able to start work?”) and provide a range of answer categories for it (e.g. Denmark, 1984, and Norway, 1986). This procedure offers the possibility of assessing the availability criterion at the tabulation stage according to the definitions needed for different purposes and thus provides flexibility for data analysis.

When the seeking work criterion is relaxed in the definition of unemployment, all three features of the availability criterion become equally important in survey applications. In this situation, the condition “given a work opportunity” is not in the context of a concrete job search activity and needs therefore to be put into context through appropriate question formulations. The international standards suggest formulations on the lines of “present desire for work and previous work experience, willingness to take up work for wage or salary on locally prevailing terms, or readiness to undertake self-employment activity given the necessary resources and facilities”, to be developed to suit national circumstances.

An example is the Labour Force and Socio-Economic Survey 1985/86 of Sri Lanka, where the following question sequence on availability, preceding the question sequence on seeking work, was used:

- 420. Was (s)he available for work during the last week (i.e. last seven days)?
 - Yes
 - No (skip to Q28)
- 421. Has (s)he ever worked in the past?
 - Yes, less than 12 months ago
 - Yes, more than 12 months ago
 - No, never worked before
- 422. What type of work was (s)he available for?
 - Full-time paid employment
 - Part-time paid employment
 - Self-employment
 - Any type of employment

Reasons for not seeking work

Any definition of unemployment which had relaxed the seeking work criterion would include a certain number of persons, without work and currently available for work, who did not seek work (the “non-seekers”). For this group of the unemployed, the survey questionnaire may contain a question on the reason for not having sought work. Such a question makes it possible to identify different categories of non-seekers. In addition, it provides a convenient means of choosing between different degrees of relaxation of the seeking work criterion (partial relaxation).

Partial relaxation of the seeking work criterion implies that only certain reasons for not having sought work are acceptable when considering a person for categorisation as unemployed. For example, one definition of unemployment may include discouraged workers, another may, in addition, include seasonal workers awaiting the busy season, both groups identified on the basis of the reported reason for not seeking work.

Many national labour force surveys include a question on the reasons for not seeking work. An example where such a question serves to identify certain categories of non-seekers for inclusion among the unemployed is the Venezuelan Labour Force Survey. The question formulation is:

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- D1. For what motive have you not been seeking work recently?
 1. Believe there is no work
 2. Tired of seeking
 3. Do not know how to look for work
 4. Do not find appropriate work
 5. Awaiting appropriate work
 6. Bad weather
 7. Studying
 8. Family responsibilities
 9. Do not need to work
 10. Own illness
 11. Other motive

The first six answer categories are considered as acceptable reasons for not having sought work, and persons reporting such reasons are classified as unemployed under the relaxed definition of unemployment (Venezuela, 1986).

Another example is the Current Population Survey of the United States which, though applying a standard definition of unemployment, includes a question on “reason for not seeking work” to distinguish different categories of non-seekers among the population outside the labour force and, in particular, to identify the discouraged workers as a distinct subgroup. The formulation is:

- D2. What are the reasons you are not looking for work?
 1. Believe no work available in line of work or area
 2. Couldn't find any work
 3. Lack necessary schooling, training, skills or experience
 4. Employers think too young or too old
 5. Other personal handicap in finding job
 6. Can't arrange child care
 7. Family responsibilities
 8. In school or other training
 9. Ill health, physical disability
 10. Other
 11. Don't know

The discouraged workers are persons reporting one or more of the first five answer categories of D2, and not any other (United States, 1978).

Questionnaire design

Questionnaire flow chart 6, which follows, attempts to provide core elements for measuring unemployment, taking into account the various measurement issues discussed in the preceding subsections. It is part of a complete flow chart of which two other parts, on employment and hours of work, have already been presented in Chapter 5. The part introduced here complements the one on employment and is meant for the measurement of unemployment under the standard definition as well as under different degrees of relaxation. The flow chart consists of seven items:

- Q30. Filter question on seeking or availability for work;
- Q31. Question on seeking work activities;
- Q32. Question on reasons for not seeking work;
- Q33. Question on current availability for work;
- Q34. Test of availability for work;
- Q39. Question on reason for non-availability;
- Q40. Question on past work experience.

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The items are primarily designed for the assessment of the current availability for work criterion and the seeking work criterion of the international standards. Their formulations assume that the interview date and the end of the reference period coincide, i.e. the reference period is moving. Appropriate modifications in formulations should be made where a time-lag between these two dates exists (fixed reference period), by specifying for each item the exact calendar period to which it refers.

Item Q30 serves as a filter question to exclude persons who were not seeking or available for work during the reference period from further questioning on this subject. Only questions on reason (439) and on past work experience (Q40) are addressed to these persons. The filter question may probe into a person's desire for work by using the term "wants to work" or other terms, depending on national circumstances and language.

Regarding 431 and Q32 on seeking work and reasons for not seeking work, the sets of answer categories provided are purposely large so as to cover a variety of different situations. However, in practice the answer categories may be reduced to a smaller number, including only those categories which are most relevant to the specific national context.

Item Q31 on seeking work is addressed to persons responding positively to Q30 as desiring work and is meant to check whether these persons have taken any specific steps to seek work during a recent period, here specified as the last four weeks. The set of steps to seek work listed in Q31 is based on the examples given in the international standards. It covers both formal and informal steps to seek work, and includes steps relevant to paid employment as well as to self-employment. More than one step may be marked for each respondent.

If no specific step to seek work is reported in Q31, the reasons for not having sought work are asked in Q32. Item Q32 is meant to serve two purposes. One is to identify "future starts" and, where desired, "lay-offs" who are not seeking work, corresponding respectively to answer categories "already found work (or made arrangements for self-employment activity) to start later" and "awaiting recall to former job". In actual survey applications, these answer categories should be made more specific by indicating time-spans for the start of the new job or the recall to the former job that suit national circumstances.

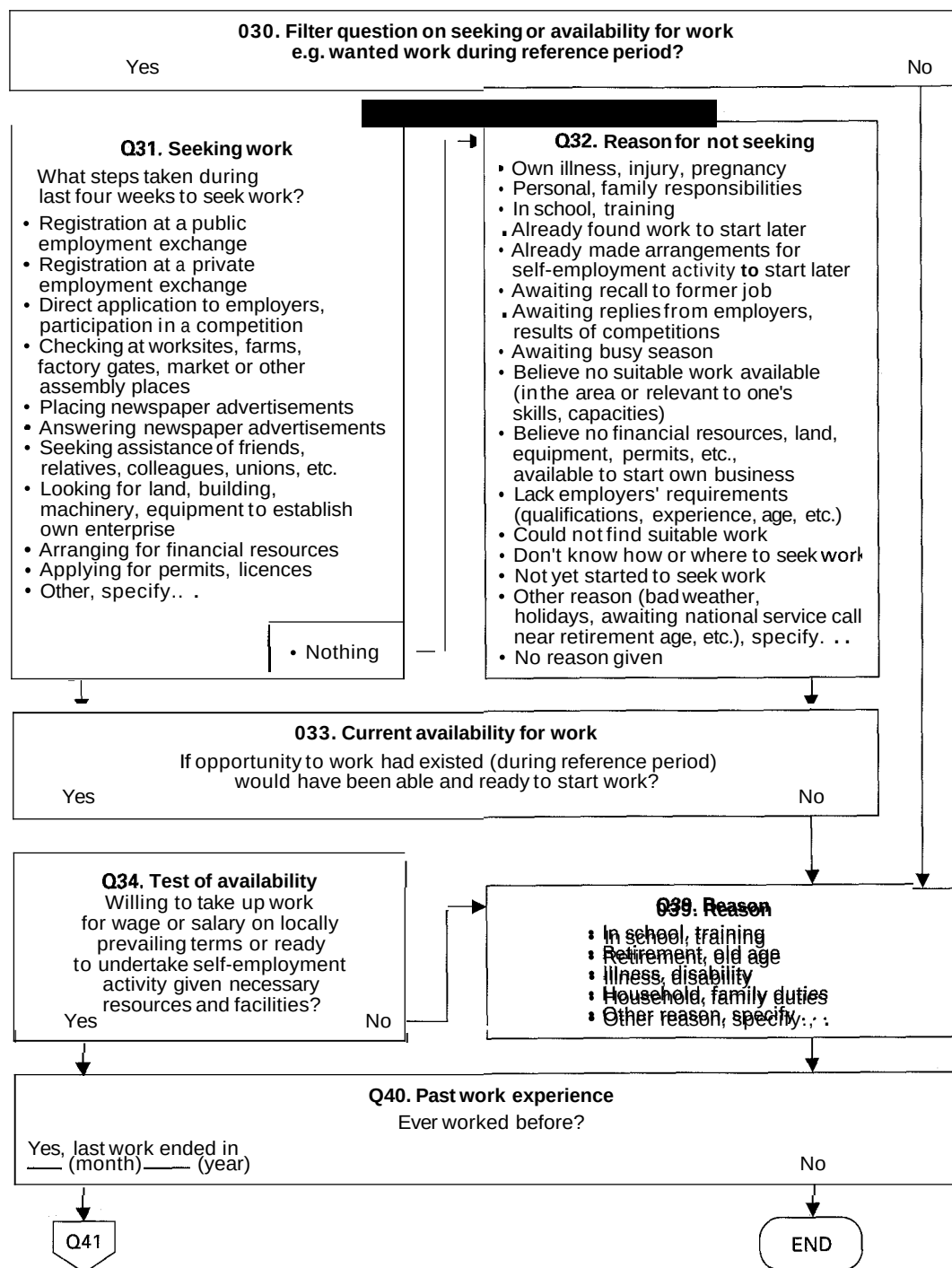
The other purpose of Q32 is to serve as the basis for relaxing the seeking work criterion. Thus, depending on the degree of relaxation adopted, different answer categories of Q32 may, for the purpose of measuring unemployment, be accepted as valid reasons for not having sought work. Under the standard definition of unemployment, no reason other than those applying to "future starts" is accepted as valid. By contrast, a definition of unemployment under complete relaxation of the seeking work criterion would accept any reason as valid. A partial relaxation may be implemented by including among the unemployed only particular groups of workers, identified on the basis of certain answer categories of Q32. If multiple responses are allowed, a priority rule should be established for treatment of cases in which one or more accepted answer categories are reported along with one or more unaccepted categories.

Items 433 and 434 concern the availability criterion. 433 is formulated in conditional terms, asking whether the person would have been able and ready to start work, if an opportunity for work had been offered during the reference period. Where it is thought useful to extend the availability period beyond the survey reference period, 433 should be appropriately amended to refer to ability and readiness to start work "immediately or within 15 days".

434 is meant to serve as an additional test for availability, particularly important when the seeking work criterion is relaxed in the definition of unemployment. Its purpose is to establish whether a person is willing to take up work for wage and salary on locally

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Flow chart 6. Questionnaire flow chart: Part 3, Unemployment



Q41. Start of series of questions on industry, occupation and status in employment.

End

End of questions on current activity.

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prevailing terms or is ready to undertake self-employment activity given the necessary resources and facilities. The phrase in 434 is taken from the text of the international standards concerning the measurement of “current availability for work”, but may need to be modified in question formulations for national surveys.

Further probes on the availability for work of respondents may be made through additional questions following 434. These additional questions may refer to the type of work acceptable (e.g. part time or full time), its location (at home or outside home), the minimum acceptable remuneration, and so on.

The last item of the questionnaire flow chart (Q40) concerns past work experience. Past work experience is often used as an indication of labour force attachment and can serve as a test of availability for work in the sense that recent work experience gives more credibility to the answer of a person who claims to be “available for work”. While past work experience may be used as a test of availability for work, a lack of it may not. The fact that a person has not worked before does not mean that this person cannot be available for work. The question on past work experience also serves to identify those of the unemployed who are seeking or available for their first job. In addition, it leads respondents to the question sequence on the characteristics of their latest employment, namely on industry, occupation and status in employment (see Chapter 9).

The questionnaire flow chart presented here contains only core items for identifying unemployed persons. In specific survey applications, it may be supplemented with other items, such as type of work wanted, duration of unemployment, circumstances which led to unemployment (dismissal, end of study, etc.). Such additional items may be useful for a more detailed analysis of the characteristics of unemployed persons and for further tests of one or another criterion of the definition of unemployment.

Classification scheme

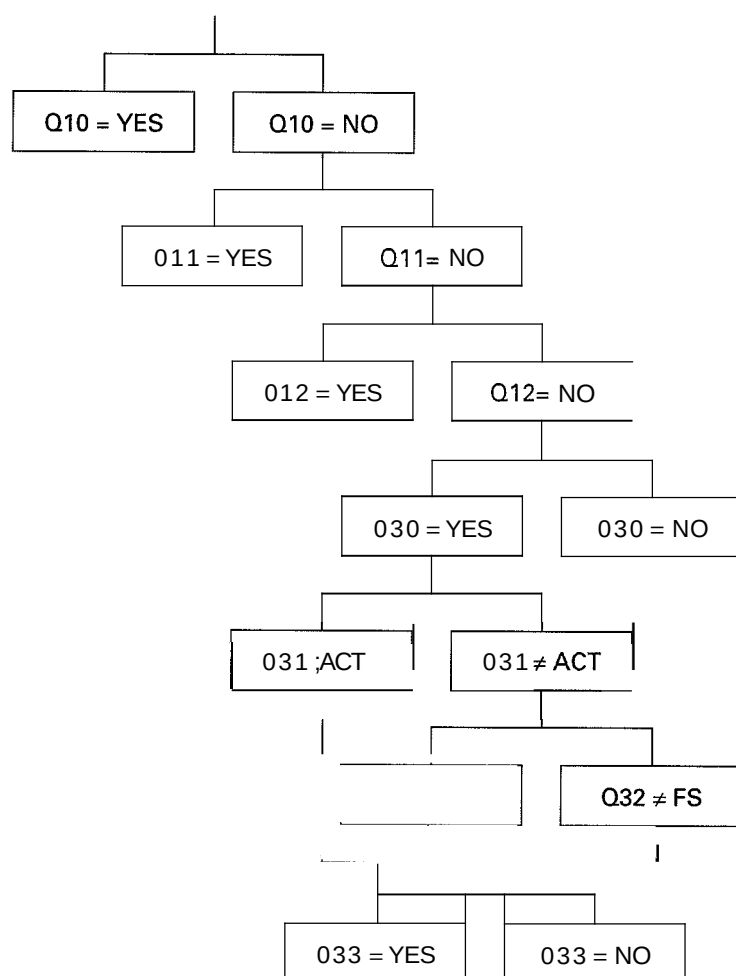
Figures 6 and 7 show how to classify respondents into the three labour force categories (employed, unemployed, not in the labour force). The classification is based on the question and answer categories of the questionnaire flow chart on unemployment and that on employment given in Chapter 5. Figure 6 shows the classification scheme when the standard definition of unemployment is used. The scheme involves seven items (Q10-Q12 and Q30-Q33). The follow-up question on availability (434) is not included on the grounds that this question is generally not regarded as essential when using the standard definition of unemployment.

Figure 7 gives the classification scheme under a relaxed definition of unemployment. The scheme is based on eight items (Q10-Q12 and Q30-Q34). It includes item Q34 because, as mentioned earlier, under a relaxed definition of unemployment a follow-up test of availability should be made.

It should be noted that the classification scheme in Figure 7 provides for both complete and partial relaxation of the seeking work criterion. Under complete relaxation, classification of respondents without work as unemployed would involve only the answers to 430, 433 and 434. Under partial relaxation, the classification would also involve items Q31 and Q32. Accordingly, persons with the following responses would be classified as unemployed: Q30 = Yes, Q31 = Nothing, Q32 = AR, 433 = Yes and 434 = Yes. The symbol “AR” in Q32 means “accepted reasons for not having sought work”. If, for example, lay-offs without formal job attachment, who are currently available for work but did not seek work, are to be included among the unemployed, then the answer category “awaiting recall to former job” in Q32 would be considered as an accepted reason for not seeking work. In actual survey applications, the range of acceptable reasons for not seeking work would depend on national circumstances and the degree of relaxation adopted for the definition of unemployment.

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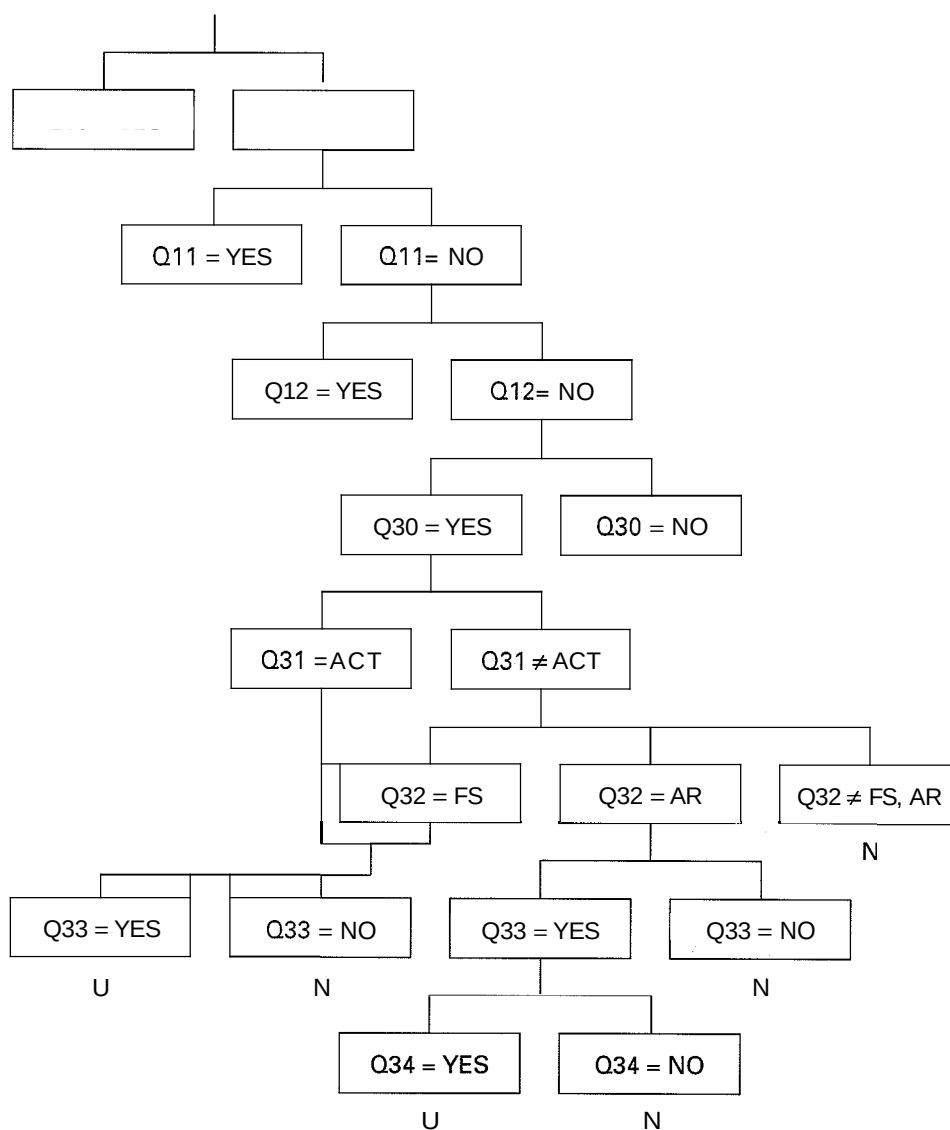
Figure 6. Classification into labour force categories (under the standard definition of unemployment)



Notes: **E** = Employed; **U** = Unemployed; **N** = Not in labour force;
ACT = Active job search; **FS** = Future start.

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Figure 7. Classification into labour force categories (under a relaxed definition of unemployment)



Notes: **E** = Employed; **U** = Unemployed; **N** = Not in labour force; **ACT** = Active job search; **FS** = Future start; **AR** = Accepted reason for not having sought work.

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All persons not identified as employed or unemployed are classified as not in the labour force. These persons may be subclassified further on the basis of item 439, addressed to persons reporting no desire for work or not being available for work. The answer categories of 439 correspond to the subgroups of the population not currently active, as listed in the international standards and discussed in Chapter 3.

It should be mentioned, however, that there might be groups of respondents who, on the basis of the flow chart presented here, are not readily classifiable into the subcategories of the not currently active population. This might happen in the case of certain persons not classified as unemployed to whom 439 was not addressed. An example might be: when Q30 = Yes, Q31 = Nothing, 433 = Yes, 434 = Yes, and all answers to Q32 are unaccepted reasons for not seeking work and the information is not sufficient for classification into one of the subcategories of the population not currently active (e.g. Q32 = Not yet started to seek work). A simple method of avoiding this problem, where necessary, is to make the answer categories fully convertible into the subcategories of the population not currently active.

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1. Introduction

The principle followed in the measurement of the economically active population has always been toward an extensive definition of the concept of employment. Thus, the current international definition of employment stipulates that it is sufficient for a person to be engaged in an economic activity for at least one hour during the reference period to be classified as employed. There are also implicit rules in the labour force framework according to which employment takes precedence over unemployment and unemployment takes precedence over economic inactivity. In this framework, unemployment is considered to be an extreme situation of total lack of work. Less extreme situations of partial lack of work are all embodied within the concept of employment. It is to identify such situations of partial lack of work and to complement the statistics of unemployment that the concept of underemployment has been introduced.

The importance of the concept of underemployment has long been recognised. At the international level, the concept was accepted at the Sixth ICLS (1948), and was discussed further at the Eighth and Ninth ICLS (1954 and 1957, respectively), before a substantial resolution was adopted at the Eleventh ICLS (1966), later on revised at the Thirteenth ICLS (1982).

According to the 1966 ICLS resolution, underemployment “exists when a person’s employment is inadequate, in relation to specified norms or alternative employment, account being taken of his occupational skill (training and working experience)”. Two principal forms of underemployment are distinguished: visible underemployment, reflecting an insufficiency in the volume of employment; and invisible underemployment, characterised by low income, underutilisation of skill, low productivity and other factors. The 1982 ICLS resolution recognised, however, that “for operational reasons the statistical measurement of underemployment may be limited to visible underemployment”. It refined the definition and introduced an approach to combine the measurement of visible underemployment with that of unemployment.

Underemployment has particular relevance in developing countries, notably in connection with agriculture. It has been observed that in many developing countries measured unemployment is consistently low. This is explained by various reasons. One is the high prevalence of self-employment in these countries and the risk that the notion of seeking work, adopted as the basis for defining unemployment, may be understood by survey respondents as referring to search for paid employment only. There are also certain types of self-employment activities to which the very notion of seeking work may not really apply. In the case of other self-employment activities the dividing line between active search for work and the self-employment activity itself is sometimes difficult to draw.

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Another possible reason for the low level of measured unemployment in many developing countries is the limited number of workers covered by unemployment insurance or other public relief schemes. Under these conditions, very few people can afford to be unemployed for any period of time. The bulk of the population must engage at all times in some economic activity, however little or inadequate that may be. Although at the same time they may be seeking other or additional work, they will not be considered as unemployed. In such circumstances, the employment situation cannot be fully described by unemployment data alone and should be supplemented with data on underemployment.

While the measurement of underemployment has mostly been recommended for describing the employment situation in developing countries, it should be noted that underemployment may also have relevance in industrialised countries. With the recent changes in the employment situation in many industrialised countries and the rise of various forms of precarious employment, new situations which can be regarded as underemployment have increasingly emerged. For example, the Fourteenth ICLS in 1987 examined the relevance of the concept of visible underemployment in relation to the employment situation of participants in certain categories of government employment promotion schemes. There was agreement that the concept might indeed be useful in this context, but that it needed to be further elaborated (ILO, 1988).

It has occasionally been shown that there might also be labour market situations where “overemployed” persons form a group of equal or even greater significance than underemployed persons (e.g. Ellingsæter, 1979). The notion of overemployment refers to persons engaged in full-time work who would prefer less or part-time work if it were available. Overemployment represents thus a form of labour market mismatch which, from a conceptual view, is the exact opposite to visible underemployment. However, the present chapter does not deal with the measurement of overemployment because the concept is not referred to in the international standards, and the socio-economic phenomenon and analytical concern which it reflects are very different from underemployment.

The discussion in this chapter is focused on the measurement of underemployment within the currently active population (labour force) framework. In principle, the same concepts may also be used within the usually active population framework. Their application in this framework is, however, more difficult and requires more elaborate methods of measurement (see the section on measurement of underemployment during the year in Chapter 4 of this manual).

Section 2 of the present chapter deals with the international definition of visible underemployment, distinguishing between the number of persons visibly underemployed and the quantum of visible underemployment. It describes the criteria for identifying persons visibly underemployed and ends with a flow chart for survey questionnaires. Section 3 deals with the measurement of the quantum of visible underemployment and discusses methods for measuring the labour-time disposition of the labour force and for deriving combined measures of unemployment and visible underemployment. Finally, Section 4 describes the concepts of invisible underemployment and points out some of the conceptual and practical difficulties involved in the measurement of invisible underemployment.

2. Persons visibly underemployed

Definition

The international standards consider two elements in the measurement of visible underemployment: (a) the number of persons visibly underemployed; (b) the quantum of visible underemployment. While element (a) gives results in terms of numbers of

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persons, element (*b*) is measured in terms of units of working days, half-days, or, more fully, hours.

According to the international definition, “persons visibly underemployed comprise all persons in paid or self-employment, whether at work or not at work, involuntarily working less than the normal duration of work determined for the activity, who were seeking or available for additional work during the reference period”. This means that visible underemployment is defined as a subcategory of employment and that there are three criteria for identifying, among persons in employment, those who are visibly underemployed: (1) working less than normal duration; (2) doing so on an involuntary basis; and (3) seeking or being available for additional work during the reference period. In order to consider a person as visibly underemployed, all three criteria must be satisfied simultaneously.

The criteria refer to all persons who form part of the employed population. Thus, the visibly underemployed may include persons in paid employment as well as persons in self-employment, and not only persons currently at work but also persons temporarily absent from work. As the underemployed are defined as a subgroup of the employed population, the concept applies neither to the unemployed population nor to the population not economically active. According to the conceptual framework adopted in the international standards, an unemployed person or an economically inactive person cannot be underemployed.

Working less than normal duration

In order to classify an employed person as visibly underemployed, the first criterion is that the person must have worked less than normal duration of work in his or her particular activity. In principle, this means that one should (*a*) determine the number of hours workers normally work in that activity, and (*b*) compare this value with the number of hours worked during the reference period by the particular worker in question. The number of hours worked to be determined under (*b*) is an individual characteristic and may differ from one worker to another, whether in the same activity or not. By contrast, normal hours of work to be determined under (*a*) relates to a particular activity and is the same for all workers engaged in that activity. It should, however, be noted that visible underemployment is a characteristic of a person and not of an activity. Thus, in the case of multiple jobholders the total number of hours worked in all activities should be taken into account.

In a household survey there are essentially two approaches for assessing work of less than normal duration. One approach is to ask respondents directly whether or not they worked less than normal duration for their activity. The other approach is to determine the normal duration of work for particular activities, ask respondents to report their individual number of hours worked, and check the two figures against each other. The first approach is followed in the labour force surveys of many European countries where respondents classify themselves as working part time or full time without specific reference to any particular number of hours of work (e.g. Belgium, Federal Republic of Germany, Spain). This self-assessment approach has the advantage of flexibility as it accounts for differences in working hours among industries and occupations and accommodates evolving changes over time. However, self-assessment by respondents may lack objectivity of measurement. Moreover, it may only be suitable where the working hours of the bulk of the population are contractually regulated and survey respondents know about these regulations. In other situations, the second approach should be used. The two steps involved, assessing normal duration of work and individual hours of work, are discussed in more detail below.

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Normal duration of work

The international standards adopted by the Thirteenth ICLS in 1982 specify that, for the purpose of classifying persons as visibly underemployed, normal duration of work for an activity should be determined “in the light of national circumstances as reflected in national legislation to the extent it is applicable, and usual practices in other cases, or in terms of a uniform conventional norm”.

This is in line with the resolution on statistics of hours of work, adopted by the Tenth ICLS in 1962, which states: “Normal hours of work are the hours of work fixed by or in pursuance of laws or regulations, collective agreements or arbitral awards. Where not fixed by or in pursuance of laws or regulations, collective agreements or arbitral awards, normal hours of work should be taken as meaning the number of hours per day or week in excess of which any time worked is remunerated at overtime rates or forms an exception to the rules or custom of the establishment relating to the classes of workers concerned.”

It should be noted that the wording of the 1982 international standards on visible underemployment implies a particular scheme for the determination of normal duration of work. Normal duration of work for an activity should preferably refer to the hours of work as fixed by national legislation. For persons not covered by such legislation, normal duration of work should be determined on the basis of usual practices for the activity. The use of a uniform conventional norm should be regarded as a last resort, only to be applied in the case of activities for which there is neither legislation nor usual practices regarding hours of work.

Some national labour force surveys have tried to follow closely the procedure for the determination of normal duration of work as indicated in the international standards. An example was the Labour Force and Socio-Economic Survey 1985/86 of Sri Lanka, where information was collected on **(a)** the number of hours normally expected to work on the main occupation, and **(b)** the number of hours usually worked on all occupations, for comparison with the number of hours actually worked on the main occupation and on all occupations. Interviewers were instructed to determine the number of hours normally expected to work on the basis of the following scheme: “according to the terms of his or her employment, if any; if none, according to the legal stipulation for similar occupations, if any; if no such stipulation, according to the normal practice for similar occupations; if no such convention, take an arbitrary norm of 35 hours” (Sri Lanka, 1987).

The application of the concept of normal hours of work in labour force surveys may often raise difficulties. The notion of normal hours of work is essentially limited to regular paid employees, whose working time is regulated by national legislation, by collective agreements or at least by a written or verbal employment contract. Corresponding provisions for casual employees, multiple jobholders, self-employed persons and unpaid family workers do not generally exist. In such cases, the normal duration of work has to be determined on the basis of usual practices for the activities concerned. This may, however, also raise difficulties since the hours which casual employees, multiple jobholders, self-employed persons and unpaid family workers (especially those engaged in agricultural and seasonal activities) spend on their activities may be highly variable among workers and over time. It can therefore be difficult to identify usual practices and to determine normal duration of work on that basis.

Even for paid employees with regulated normal hours of work, it may prove difficult in surveys to determine the normal duration of work. This is because normal hours of work may vary from one branch of economic activity to another, and even in a given branch they may vary among different occupations. There may also be special regulations for jobs held by particular categories of workers, such as young persons, disabled persons or shift workers. This means that in practice one may have to determine

normal hours of work for each activity separately. One possibility is to try to obtain the information directly from the respondents, a task which is quite complex. The complexity is compounded in situations where workers are engaged in more than one activity during the reference period, or are not aware of regulations concerning their working hours, or where proxy respondents are asked to provide the information. It may therefore be preferable not to seek the information from the respondents themselves but to determine normal hours of work on the basis of information available from other sources. This may be done by preparing a list of normal hours of work by type of activity, to be given to the interviewers or data editing staff.

Where it is not possible to assess normal duration of work on the basis of legal stipulations or usual practices for an activity, the international standards suggest, as an alternative, using a conventional norm, uniform for all activities and all categories of workers. It should be emphasised that, in principle, this provision is meant as a last resort. It should not be interpreted as a sanction to abandon too readily efforts to obtain more precise information where that is feasible. In this sense, it may even be dangerous to instruct interviewers to use a uniform conventional norm as a last resort, as they may then not feel it necessary to make further probes on the issue. The use of a uniform conventional norm may better be reserved for data editing and correspond to the imputation of missing values.

It seems, however, that in survey practice the full procedure for determining normal duration of work as indicated in the international standards is considered too unattractive or too complicated to be followed exactly. The practice adopted in most, national labour force surveys measuring short-time work, or those distinguishing between part-time and full-time employment, is to use a uniform conventional norm straight away (and not as a last resort only). There is, however, much variation in the number of hours taken as that norm. Although some countries use a fairly high cut-off point of 40 hours per week (e.g. Ecuador, Nigeria, Turkey), most have chosen considerably lower numbers, like 35 hours (e.g. El Salvador, Republic of Korea, USA), 30 hours (e.g. Canada, Jamaica), or even 25 hours per week (e.g. Malaysia). Certain countries use a cut-off point only for particular categories of workers (e.g. Puerto Rico only for employees, Sweden only for self-employed persons and unpaid family workers). Some surveys (e.g. Canada, **USA**), while using a general cut-off point, admit certain exceptions for particular categories of workers who work less than the number of weekly hours taken as the norm. Such persons (e.g. bus-drivers, airline personnel, entertainers) can be considered full-time workers as long as their normal full-time work-week remains constant.

A general method to determine a cut-off point applicable to all workers is to take the modal value of the normal duration of work of full-time workers covered by legislation, collective agreements or arbitral awards, if there is a distinct modal value which can be used for this purpose. Thus, in a country where most regular employees have a normal working time of 40 hours per week, the appropriate cut-off point would be 40. If there is no such distinct modal value, one should consider the whole range of normal durations of work as specified by legislation, collective agreements or arbitral awards, and choose a cut-off point which is sufficiently high to cover the vast majority of persons working less than normal duration for their activity. Another possibility would be to derive the cut-off point empirically by examining the distribution of hours worked of a representative sample of workers and choosing a cut-off point which would reasonably separate the modal values of the distribution. It should be noted that in any case there will be a certain number of workers who, though on a full-time schedule, have a normal duration of work which is below the general cut-off point. These workers may require special statistical treatment.

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Individual hours of work

The second step in determining whether or not a person is working less than normal duration consists of checking the number of his or her individual working hours against the number of hours taken as normal duration of work. The individual working hours should account for all activities that the person performed during the reference period, including any secondary activities. Another important consideration concerns the choice of the appropriate concept for measuring individual working hours, i.e. the choice between hours actually worked and usual hours of work. The international standards do not make recommendations on this particular issue.¹

A review of some 40 national labour force survey questionnaires reveals that national practices differ in this respect. Some countries base the comparison with normal duration of work on hours actually worked (e.g. Barbados, Belize, Botswana, Malaysia, Nigeria), others use usual hours of work for this purpose (e.g. Canada, Israel, Sweden). There are also countries that combine the two measures in making the comparison (e.g. Australia, Ecuador, Jamaica, Republic of Korea, USA).

The international standards define the concept of visible underemployment in the context of the current activity framework. If visible underemployment is to be measured in the context of that framework, it should refer to a short reference period (one week or one day). Thus, it follows logically that hours actually worked during this period are the appropriate measure of individual working hours. This applies not only to persons at work but also to persons temporarily absent from work, whose number of hours actually worked during the reference period is, by definition, zero. This situation represents the most extreme form of work of less than normal duration.

The use of usual hours of work conflicts with the principle of identifying the visibly underemployed during a specified short reference period. On the one hand, it wrongly includes persons usually working less than normal duration who actually worked more than normal duration during the reference period; on the other hand, it excludes persons usually working normal duration who actually worked less during the reference period. Furthermore, there may be certain categories of workers, particularly in developing countries, whose working patterns are so irregular that the notion of usual hours of work does not meaningfully apply to them.

It should be noted, however, that the exclusive use of hours actually worked during the reference period sets certain limits to the interpretation of the resulting statistics. These limits are inherent in the current activity framework which provides a snapshot picture of the employment situation at a given point in time. If no information other than hours actually worked during the reference period is obtained, one cannot distinguish between certain subgroups of the currently underemployed, for example between underemployed full-time and part-time workers (see Chapter 5), or between those persons for whom underemployment is a usual characteristic of their work situation and those who happen to suffer it by chance during the specific short reference period. The identification of these different subgroups of the currently underemployed requires a refined measurement approach combining information on actual and usual hours of work. Since such a refined approach may be useful in many circumstances, it is considered below, in the subsection on questionnaire design, as an alternative to the much simpler approach based solely on hours actually worked.

Whether hours actually worked are used alone or in combination with usual hours of work, special provisions have to be made for certain categories of workers reporting working hours below normal duration, if normal duration of work is defined in terms of a uniform conventional norm. These provisions concern workers who, though

¹ For a discussion of the concepts and measurement of hours actually worked and usual hours of work see Chapter 5 of this manual.

working less than the uniform norm (x hours per week), are nevertheless to be considered fully employed, since full-time work in their particular activity ordinarily involves shorter hours of work. In surveys such workers may be identified by asking respondents who worked less than x hours per week a specific question on whether or not their work is considered full time, or by providing a suitable answer category in a general question on the reason for working less than x hours.

A more fundamental issue, pointing toward the limitations of the concept of visible underemployment, is raised by the opposite situation, i.e. workers who work x hours or more but do not consider themselves as fully employed even when a fairly high cut-off point x is used. This situation is particularly common in developing countries where, for example, own-account workers and unpaid family workers in agriculture, trade and services may not be fully employed even when reporting very long hours of work. There is a tendency for such persons to work less intensively over a period of time rather than to work short time when the demand for their products or services is low. Even in normal circumstances, their working time may tend to be determined to a greater extent by their own preferred pace of work than by the actual demands of the work. This is because the working time of own-account workers and unpaid family workers is not bound by contractual stipulations in terms of hours of work as in the case of regular paid employees. Special care should therefore be taken when interpreting the hours of work of such categories of workers. In general, a meaningful interpretation of time spent on work by these workers requires especially designed in-depth inquiries.

There may also be situations where a large part of the employed population, particularly persons engaged in agricultural activities, workers in rural areas and certain categories of the self-employed, lack awareness of time in terms of hours of work and thus have difficulties in responding to a survey question on hours of work. A similar problem may arise in the case of home-based workers or employees whose working time is not structured in terms of hours because they are remunerated by the task and not by hours worked. For a further discussion of the issues involved in the collection and interpretation of information on hours of work see Chapter 5.

In the present context, several practical solutions to these problems are possible. One is to formulate survey questions on time worked in time-units that are more easily recalled by respondents than hours, like, for example, days or half-days worked, and convert the information obtained into hours for the comparison with normal hours of work; similarly, information on the tasks performed during the reference period may be converted into time-units of labour input. Another solution could be to include certain categories of persons, such as persons engaged in agricultural activities, among the visibly underemployed irrespective of their reported hours of work, provided that they were seeking or available for additional work during the reference period. Still another solution could be to limit the measurement of visible underemployment to employees (or to a shortfall of demand in the labour market) and to exclude own-account workers and unpaid family workers (or a shortfall of demand in the product market).

Involuntary nature

Persons may be working less than normal duration for voluntary or involuntary reasons, but only persons *involuntarily* working less than normal duration are to be considered for inclusion among the visibly underemployed. The involuntary nature may be determined in labour force surveys by examining the reason why a person worked less than normal duration (or not at all in the case of persons temporarily absent from work during the reference period). Such questions already form part of many national labour force survey questionnaires (e.g. Australia, Canada, Honduras, Malaysia, Nigeria, USA).

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The importance of assessing the involuntariness of work below normal duration results from the fact that there are many different reasons why persons may have worked short time or not worked at all during the reference period. In certain situations, persons are forced to work short time because of economic reasons, i.e. they are facing a slack period, the off-season, etc., or they cannot find more work. There are also situations where persons voluntarily decide to work less than normal duration in their activity. This is the case with many married women with children who prefer to devote part of their available working time to family responsibilities. It is also the case with many young persons combining school (or training) with employment, or of elderly workers who voluntarily participate in phased retirement schemes. Yet another situation might involve persons who usually work normal duration and would have worked the same number of hours during the reference period had they not been absent from work for all or part of this period, due to any of various reasons, such as illness, vacation, educational leave, etc., on the one hand, or temporary shortage of materials, mechanical breakdown, lack of clients, etc., on the other.

It should be mentioned, however, that the distinction between voluntary and involuntary reasons for working less than normal duration or being temporarily absent from work may not be clear-cut in practice. It is not always obvious whether a given reason should be considered as voluntary or involuntary for the purpose of measuring visible underemployment. For example, the situation of a person working short time because of illness, disability or another similar reason is, strictly speaking, involuntary but it is not related to the functioning of the economy. This example shows that it may sometimes be necessary to interpret the distinction “voluntary” versus “involuntary” in the sense of “non-economic” versus “economic”, the latter referring to a shortfall of labour demand in the case of employees and/or in product demand in the case of self-employed persons.

It should also be mentioned that sometimes a declared non-economic reason masks one which is really economic. For example persons may plead household duties or school attendance as reasons (normally considered non-economic) for working less than normal duration when in fact it is an economic reason, for example, lack of enough work or failure to obtain the desired amount of work, that led to these activities in the first place.

These considerations have implications for survey design and operations (to be discussed later in this section), in particular the choice of answer categories for the questions on the reason for working less than normal duration or being temporarily absent from work, and the admission of multiple or single response to these questions.

Seeking or available for additional work

To be classified as visibly underemployed a person who is involuntarily working less than normal duration must also be seeking or available for additional work during the reference period. The purpose of this additional criterion is twofold. On the one hand, it serves to maintain consistency with the activity principle embedded in the labour force framework (see Chapter 3). On the other hand, it reinforces the criterion of the involuntary nature of working short time; in this sense the two criteria can be considered as complementary or even somewhat overlapping.

In fact, survey practices show that two different approaches are used to identify persons visibly underemployed. One approach emphasises the assessment of the reason for working less than normal duration or being temporarily absent from work in order to determine involuntariness, and uses a question on search or availability for additional work mainly as a further probe. The other approach emphasises the criterion of search or availability for additional work by more detailed questioning on these issues, assuming that persons who have been properly identified as seeking or available for additional work must all be involuntarily working short time and that additional

information on the reason for working less than normal duration or absence from work is not needed for classification purposes.

In general, the notion of “additional work” should be interpreted in a broad sense. It is meant to refer to all work arrangements and types of work that might increase a person’s total working time. Additional work may thus mean: (a) working more hours (or days) at the present job; (b) obtaining another job of the same or a different type in addition to the present one; (c) replacing the present job by another one of the same or different type, but with more hours (or days) of work; or (d) combinations of these.

It should also be noted that the notion of additional work refers, in principle, to both paid employment and self-employment activity (including unpaid family work). However, if the concept of *visible* underemployment is to be strictly applied, additional work in the case of self-employment should cover an increase in product demand (number of clients, orders, etc.) only if also resulting in an increase in the number of working hours.

According to the international standards, a person must be “seeking *or* available for additional work during the reference period” (emphasis added) to be considered as visibly underemployed. This means that the two elements (seeking and availability) are regarded as alternatives and need not always be satisfied simultaneously. In most circumstances, it may be sufficient that a person is available for additional work, even when he or she is not actively seeking it. This is particularly the case where the criterion is mainly used as a further probe on the involuntary nature of work of less than normal duration. However, one can argue that a person who is seeking additional work but is not available for it during the reference period should not be considered as currently underemployed.

In practice, some countries emphasise the “seeking” element by asking persons involuntarily working short time whether they have been seeking additional work or, more elaborately, what steps they have taken to find additional work (e.g. Australia, Sweden). Other countries confine the probe to questions on ability and readiness to accept additional hours of work (e.g. Malaysia, Panama). The two approaches reflect the different labour market conditions in different countries (organised, regular labour markets versus informal, fragmented ones).

Questionnaire design

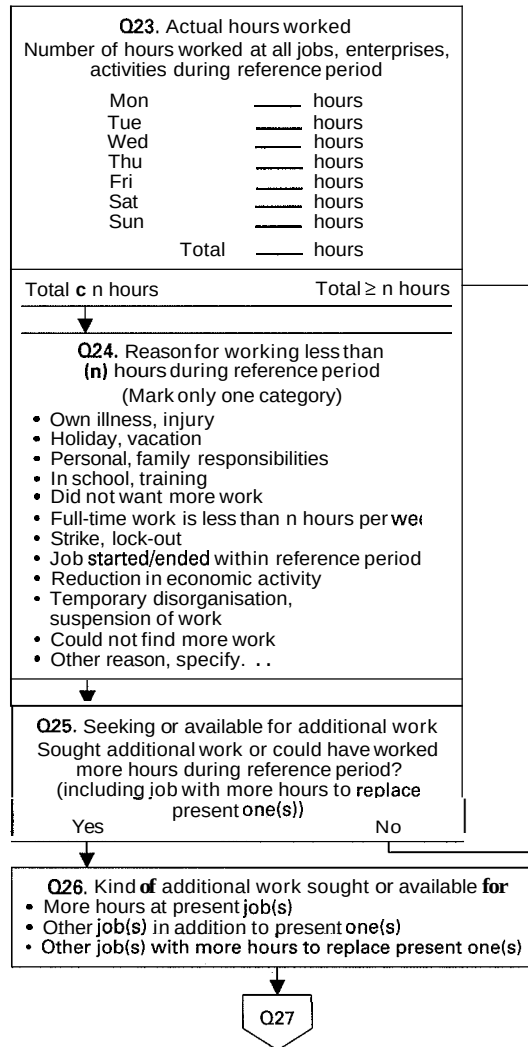
In Flow charts 7 and 8, two different questionnaire flow charts are proposed for identifying persons visibly underemployed. They should be considered as alternative approaches for measurement of the visibly underemployed. They differ in the number of question items involved and, hence, in the detail of information obtained. However, either of the two approaches complies with the international standards as they are both based on the three criteria of visible underemployment as discussed above. The decision as to which of the two approaches is the more appropriate one in a particular survey application depends upon the measurement objectives, data requirements and feasibility of data collection.

Both questionnaire flow charts consist of two parts, one addressed to persons currently at work, and the other to persons temporarily absent from work during the reference period. It should also be noted that, for the sake of simplicity, both flow charts are based on the use of a uniform conventional norm for normal duration of work. This norm is designated in the flow charts by the symbol “n”, representing the number of hours below which work is considered to be of less than normal duration. The appropriate value of “n” may vary from one country to another. It must be determined in the light of specific national circumstances. However, as stated earlier in this section it is conceptually preferable, where practically feasible, to determine normal hours of work for an activity on the basis of national legislation, or of usual

Flow chart 7. Questionnaire flow chart: Part 4, Visibly underemployed (short question sequence)

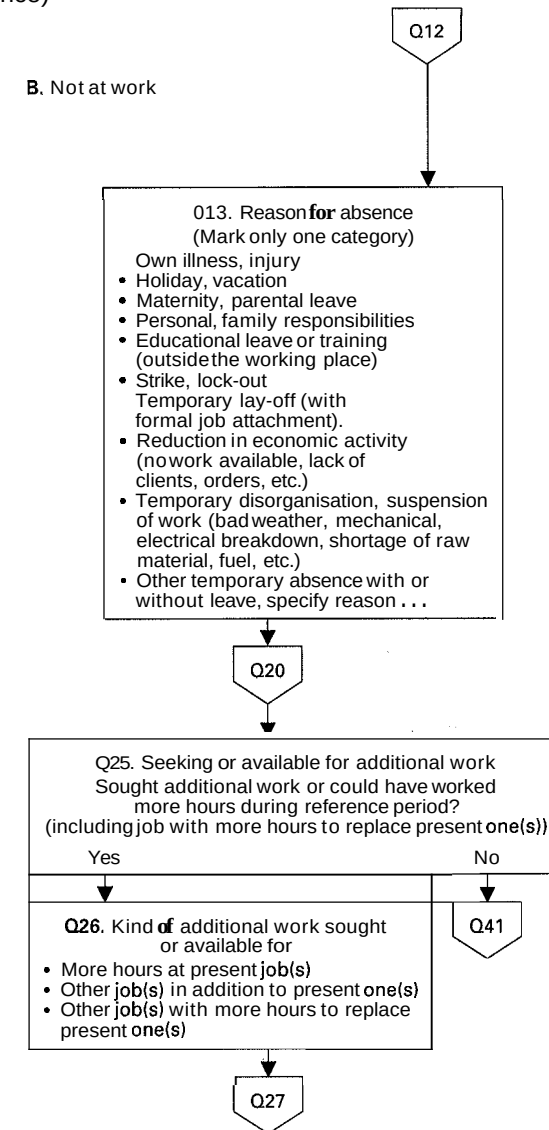
130

A. At work



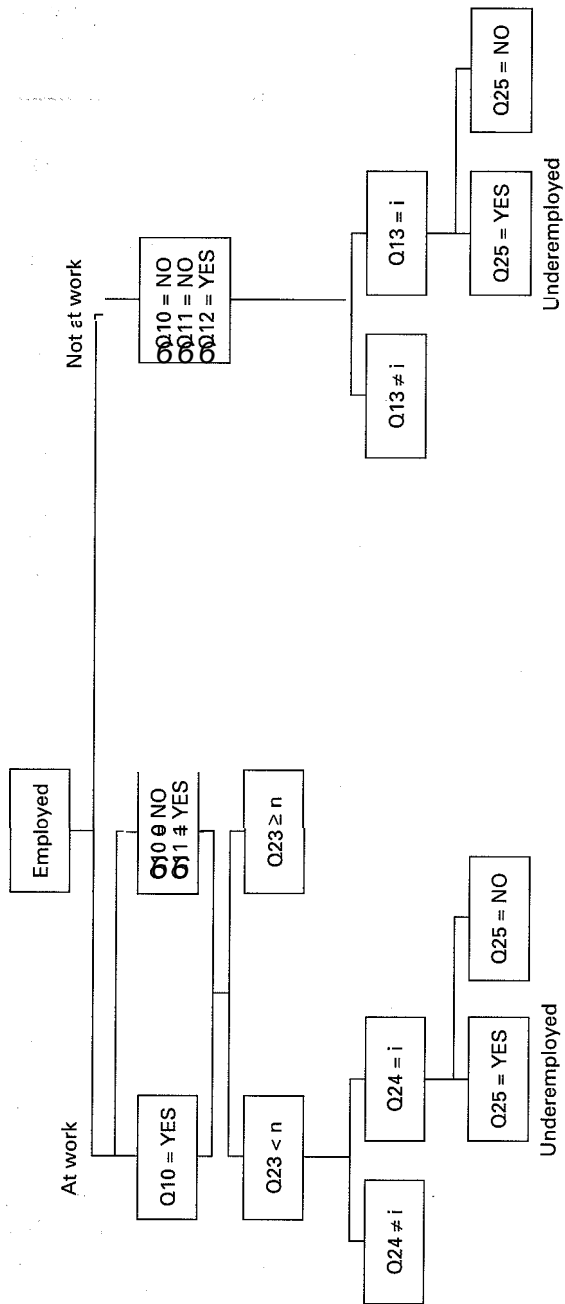
012. Absence from work.
020. Multiple jobholding.
Q27. Duration of additional work/labour-time disposition.
Q41. Start of series of questions on industry, occupation and status in employment.

B. Not at work



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Figure 8. Classification as visibly underemployed (short question sequence)



Notes: n = number of hours set as normal duration of work; i = involuntary (or economic) reason.

practices for persons not covered by such legislation, rather than to use a uniform conventional norm throughout.

The question sequence shown in Flow chart 7 involves only four items for persons at work (part **A**), and three items for persons temporarily absent from work during the reference period (part **B**). In the case of persons at work, these are: hours actually worked during the reference period (Q23); reason for working less than *n* hours (i.e. normal duration) during the reference period (Q24); search or availability for additional work during the reference period (Q25); and kind of additional work sought or available for (Q26). In the case of persons temporarily absent from work, the question items are: reason for absence from work during the reference period (Q13); search or availability for additional work during the reference period (Q25); and kind of additional work sought or available for (Q26).

The question item on hours actually worked during the reference period (Q23) has already been introduced in Chapter 5 on the measurement of employment and hours of work. It is essential for the identification of persons visibly underemployed that this question refers to the respondents' total number of hours worked during the reference period, taking into account the hours worked in all of their jobs, enterprises or economic activities.

Item Q24 is addressed to all persons at work who worked less than *n* hours (i.e. less than normal duration of work) during the reference period. It asks for the reason for working less than *n* hours during the reference period. Involuntary (or economic) reasons are: could not find more work; reduction in economic activity (off-season, slack work, lack of clients, orders, finances, equipment, etc.); temporary disorganisation or suspension of work (bad weather, shortage of raw materials, mechanical breakdown, etc.); and, possibly, job started/ended within the reference period, or specific reasons reported in the open-ended category "other reason, specify". It should also be noted that Q24 provides a particular response category for the identification of persons who are to be considered fully employed though they worked less than *n* hours; these are persons for whom full-time work in their activity is ordinarily shorter than *n* hours.

In the case of persons temporarily absent from work during the reference period, Q23 and Q24 are replaced by item Q13 on the reason for the absence from work. Involuntary (or economic) reasons in Q13 are: temporary lay-off (with formal job attachment); reduction in economic activity; temporary disorganisation or suspension of work; and, possibly, specific reasons given in the open-ended category "other temporary absence, specify reason".

Since the criterion of "seeking or availability for additional work" in the present context is primarily meant for screening persons who were working less than normal duration or temporarily absent from work because of involuntary (or economic) reasons, the questionnaire flow chart does not provide deep probes on this criterion, i.e. there are no tests for active search or current availability for additional work during the reference period. For the sake of simplicity, the item is confined to a single yes-or-no question on seeking or availability for additional work (Q25) which combines these two elements.

For respondents who report that they have been seeking or available for additional work during the reference period, question Q25 is followed by a question on the kind of additional work sought or available for (Q26). The main purpose of this last question is to convey the broad meaning of "additional work", which could be more hours at the present job(s), another job in addition to the present one(s), or another job with more hours to replace the present one(s). The answers obtained may also serve to give some indication of the intensity of the respondents' desire for additional work. Therefore, multiple response should be allowed in answer to this question.

On the basis of the question sequence shown in Flow chart 7, persons at work are classified as visibly underemployed if they actually worked less than *n* hours during the

reference period (Q23), reported an involuntary (or economic) reason for working less than n hours during the reference period (Q24), and gave an affirmative answer to the question on search or availability for additional work (Q25). These relations are shown in the classification scheme of Figure 8. Similarly, persons temporarily absent from work during the reference period are classified as visibly underemployed if they reported an involuntary (or economic) reason for their absence from work (Q13) and gave an affirmative answer to the question on search or availability for additional work (Q25).

Though sufficient for measurement of the number of persons visibly underemployed during the reference period, the question sequence in Flow chart 7 does not provide distinctions between certain subgroups of the currently underemployed, i.e. between persons for whom visible underemployment is a usual characteristic of their work situation and persons to whom visible underemployment occurred by accident during the specific survey reference period, or between visibly underemployed full-time and part-time workers. This is because the sequence of questions in Flow chart 7 is confined to hours actually worked during the reference period for assessment of the respondents' individual working hours, whereas identification of the above-mentioned subgroups requires information on both actual hours worked during the reference period and usual hours of work.

For cases where such distinctions between different subgroups of the currently underemployed are considered useful for analytical purposes, a second questionnaire flow chart is suggested (Flow chart 8) as an alternative measurement approach. Since this second approach involves questions on both actual hours worked during the reference period and usual hours of work, it can easily be integrated into the sequence of questions concerning employment and hours of work as presented in Chapter 5.

Using Flow chart 8, the visibly underemployed *at work* (part A) can be identified on the basis of the responses to the following five question items: usual hours of work (Q21); reason for usually working less than n hours, i.e. less than normal duration of work (Q22); hours actually worked during the reference period (Q23); reason for any difference between actual and usual hours (Q24); and search or availability for additional work during the reference period (Q25). As shown in Figure 9, a combination of these variables gives four categories of persons at work who are to be considered as visibly underemployed during the survey reference period :

- (1) persons usually working less than normal duration for involuntary (or economic) reasons, who also worked less than normal duration during the reference period and were seeking or available for additional work;
- (2) persons usually working less than normal duration for voluntary (or non-economic) reasons, who worked even fewer hours during the reference period for involuntary (or economic) reasons and were seeking or available for additional work;
- (3) persons usually working normal duration who, due to involuntary (or economic) reasons, worked less than normal duration during the reference period and were seeking or available for additional work; and
- (4) persons who did not report usual hours but, during the reference period, worked less than normal duration for involuntary (or economic) reasons and were seeking or available for additional work.

Persons usually working less than normal duration who, during the reference period, actually worked more than normal duration are not considered here as part of the currently underemployed during the reference period, irrespective of the reason for usually working less than normal duration.

The visibly underemployed *temporarily not at work* during the reference period (part B of Flow chart 8) can be identified on the basis of the responses to the following

Flow chart 8. Questionnaire flow chart: Part 4, Visibly underemployed (longer question sequence)

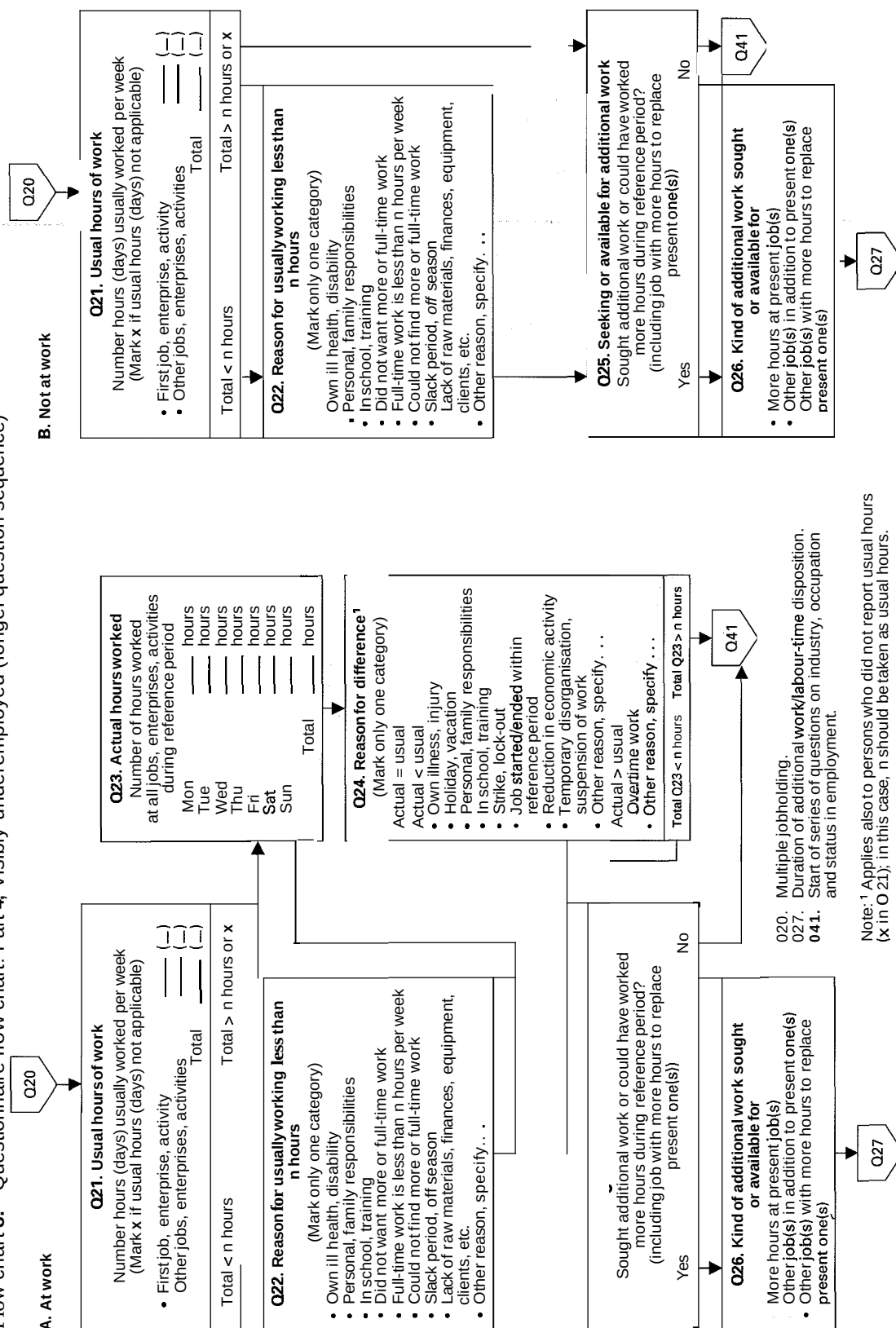
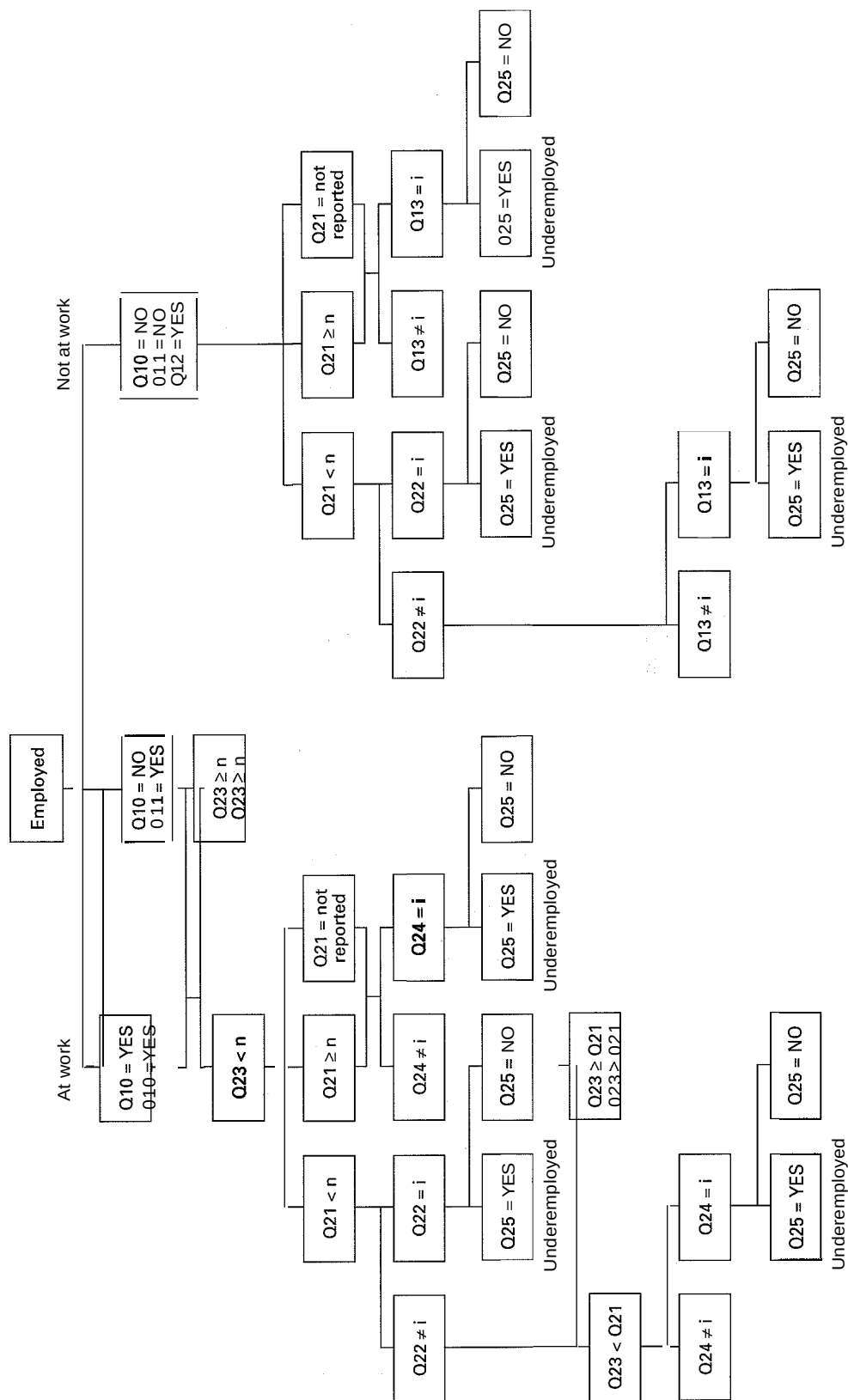


Figure 9. Classification as visibly underemployed (longer question sequence)



Notes: n = number of hours set as normal duration of work; i = involuntary (or economic) reason.

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four question items: usual hours of work (421); reason for usually working less than n hours (422); reason for absence from work (Q13, not reproduced in Flow chart 8); and search or availability for additional work during the reference period (Q25). A combination of these variables leads to the following four categories of persons temporarily absent from work to be included among the visibly underemployed during the reference period (see Figure 9):

- (5) persons usually working less than normal duration for involuntary (or economic) reasons, who were not at work during the reference period but seeking or available for additional work;
- (6) persons usually working less than normal duration for voluntary (or non-economic) reasons, who were not at work during the reference period for involuntary (or economic) reasons and were seeking or available for additional work;
- (7) persons usually working normal duration who were not at work during the reference period for involuntary (or economic) reasons and were seeking or available for additional work; and
- (8) persons who did not report usual hours, were not at work during the reference period for involuntary (or economic) reasons and were seeking or available for additional work.

This classification permits distinctions between different categories of persons currently underemployed during the reference period. Groups 1 and 5 are persons for whom visible underemployment is a usual characteristic of their work situation, as opposed to persons to whom visible underemployment occurred occasionally during the specific survey reference period (groups 2, 3, 6 and 7). Among the latter, one may further distinguish between visibly underemployed part-time workers¹ (groups 2 and 6) and visibly underemployed full-time workers (groups 3 and 7).

Involuntary (or economic) reasons for usually working less than normal duration (item 422) are: could not find more work or full-time work; slack period, off-season; lack of raw materials, finances, equipment, clients, etc., if of a lasting rather than temporary nature; and, possibly, specific reasons reported in the open-ended category “other reason, specify”. In item Q24 of Flow chart 8, the categories relating to involuntary (or economic) reasons for actually working fewer than usual hours are basically the same as in item Q24 of Flow chart 7; however, in the context of the question sequence in Flow chart 8 they are meant to be interpreted as referring to temporary situations only. Items Q25 and Q26 in Flow chart 8 are identical with those in Flow chart 7. The same applies to item Q13 which for reasons of space is not reproduced in Flow chart 8 though it forms an integral part of the question sequence.

Both of the approaches suggested for measuring the number of persons visibly underemployed raise some issues common in questionnaire design. One such issue concerns the admission of multiple versus single responses to the questions 422, 424 and Q13 on the reason for short hours of work or absence from work. In principle, only one answer category should be marked for these questions. If multiple answers are allowed, ambiguities may arise when one of the answers corresponds to an involuntary (or economic) reason and the other to a voluntary (or non-economic) reason. In these situations, a priority rule would have to be adopted to give precedence to one or other category of reasons. Though multiple responses have some analytical advantages, they involve more effort in data processing and data analysis. Single responses ease data processing and analysis, and may also lead to more accurate results insofar as

¹ Part-time workers have been defined in Section 4 of Chapter 5 as persons usually working less than normal duration for voluntary (or non-economic) reasons.

respondents and interviewers are more likely than any automated data processing rule to provide the major reason for working short hours or for absence from work.

Another issue concerns the open-ended answer categories “other” in items 422, Q24 and Q13. These categories, accounting as they do for those reasons which do not fit into any of the precoded answer categories, are used to exhaust the full range of possible reasons for working short hours or for absence from work. However, such responses can be properly allocated into one of the two categories “involuntary (or economic)” versus “voluntary (or non-economic)” only if the particular reason for short hours of work or absence from work is specified with sufficient detail.

It should also be stated that the answer categories listed here for questions 422, Q24 and Q13 on the reason for short hours of work or absence from work are meant to be illustrative. In a specific survey application, it is important that the answer categories be carefully chosen, so as to reflect national circumstances and to apply to all categories of workers, including self-employed persons, unpaid family workers, casual workers, women, young and elderly workers.

The flow of questions has been arranged in both questionnaire flow charts to avoid complicated skip patterns and to account for the open-ended answer categories in items 422, 424 and Q13. For example, question Q25 is put to all persons working short hours or temporarily absent from work, regardless of the voluntary or involuntary nature of the reason reported in one of the preceding questions (422, Q24 or Q13). Therefore, as shown in Figures 8 and 9, identification of the visibly underemployed is to be carried out at the data processing stage, by taking account of the entire set of responses obtained from the relevant part of the questionnaire.

3. Quantum of visible underemployment

Concepts

According to the international standards, the quantum of visible underemployment refers to the aggregate “time available for additional employment during the reference period in respect of each person visibly underemployed . . . computed in units of working days, half-days or hours as may be convenient in national circumstances, depending on the nature of the data collected” (ICLS, 1982).

The international standards mention particularly two methods for measuring “time available for additional employment” without excluding other possibilities.¹ The first method is based on a direct inquiry on the “duration of work sought”. The second method, called “labour-time disposition”, consists of compiling, for each person concerned, a balance sheet of the total labour time potentially available, expressed in terms of time employed, time available for employment and time not available for employment during the reference period. When applied to all persons in the labour force, the labour-time disposition approach also permits the derivation of a composite estimate of the quantum of current unemployment and visible underemployment.

Duration of work sought

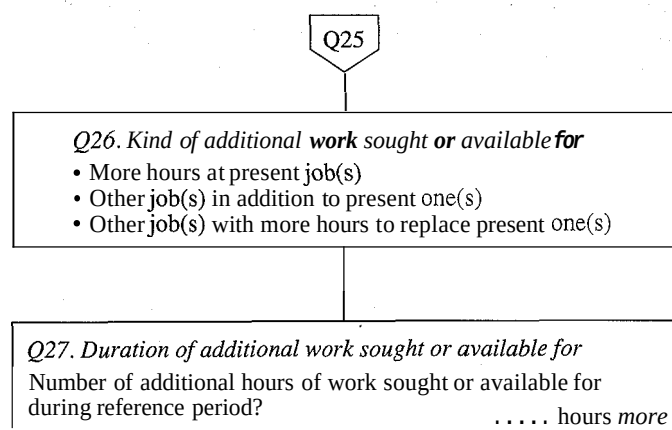
In line with the earlier discussion on the criterion of “seeking or available for additional work” for the identification of persons visibly underemployed, duration of

¹ Besides these two approaches, one may analytically derive an estimate of the quantum of visible underemployment (or a composite estimate of the quantum of unemployment and visible underemployment) under certain assumptions. An example is the “labour force time lost” estimate and its components, “man-hours lost by the unemployed” and “man-hours lost by involuntary part-time workers”, computed by the US Bureau of Labor Statistics (Gilroy, 1975, table 1).

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work sought should be interpreted in a broad sense. For those who want to work more hours at their present job, “duration of work sought” should refer to the number of extra hours of work that the person is seeking or available for, up to the normal duration of work. For those who want to increase their hours of work by taking an additional job, “duration of work sought” should refer to the desired number of hours for this additional job up to the normal duration of work. For those who want to replace their present job by another one with more hours, “duration of work sought” should refer to the difference between the number of hours desired for the replacement job and hours of work in the present job; in cases where the number of hours desired for the replacement job exceeds the normal duration of work, only the difference between normal hours of work and hours of work in the present job should be taken into account.

In designing survey questionnaires, a question on “duration of additional work sought or available for” can be easily added to the sequence of questions for identifying the visibly underemployed. In the context of the questionnaire flow charts presented in the preceding section of this chapter, such a question could follow immediately after the question on the kind of additional work sought or available for (Q26), as indicated below.



Examples of specific formulations of a question like Q27 in national labour force surveys are: “How many more hours would you have preferred to work during the last seven days?” (Zimbabwe); “By how many hours per week would you like to increase your total hours of work?” (Sweden).

The aggregate quantum of visible underemployment can be obtained from individual responses to item Q27 by summing up the amount of additional work sought or available for of all persons visibly underemployed. However, additional work which exceeds the normal duration of work should not be taken into account for the computation of the aggregate quantum of visible underemployment.

Note also that for persons who have reported in item Q26 of this sequence that they want a replacement job with more hours, the number of hours recorded in Q27 should not refer to the total duration of work sought for the replacement job but only to the difference as compared with the present job; this is because Q27 is formulated in terms of *additional* hours of work.

In order to facilitate data editing and processing, the quantum of visible underemployment should, if possible, be measured in terms of uniform time-units for all individuals concerned. Depending on national circumstances, these units may be days, half-days, or hours (as suggested above).

Table 10. Labour-time disposition balance sheet (Q27)

	Mo	Tu	We	Th	Fr	Sa	Su	Total
Time employed at work								
Time employed not at work, voluntary								
Time employed not at work, involuntary								
Time available for employment								
Time not available for employment								
Total								

Note: A slightly modified version of this balance sheet has been used in the ILO Methodological Surveys in Kerala, India (ILO, 1983-84), and Costa Rica (Trigueros, 1986).

In the case of workers not remunerated on a time-rate basis, such as certain self-employed persons, piece-rate workers, home-based workers, or workers remunerated by the task, the concept of “duration of work sought” may need further interpretation. For example, many self-employed persons may not be thinking and reporting in terms of the duration of additional work sought or available for, but rather in terms of the amount of extra orders they can accept, the number of additional clients they can cope with, etc. A conversion of such answers into units of time might have a negative impact on the quality of the resulting data for these categories of workers.

In general, a direct inquiry on the duration of additional work sought or available for may lead to insufficient data accuracy even in the case of workers who are remunerated by time-rates and for whom no conversion is necessary. This is because the direct approach does not involve a proper reconciliation of the reported number of additional hours sought or available for with the respondent’s total labour time potentially available. With the direct approach, information is only obtained on two of the components of total labour time potentially available (time worked during the reference period and time available for additional work) but not on the third component (time not available for work during the reference period). It is thus likely that respondents tend to exaggerate in reporting the number of additional hours of work sought or available for. This may lead to an overestimation of the aggregate quantum of visible underemployment.

Notwithstanding these limitations, the “duration of work sought” approach has the merit of being simple as it requires just one additional question. Therefore, it offers the possibility of obtaining certain information on the quantum of visible underemployment at little extra cost and with little extra effort during the interview and in data processing and tabulation.

Labour-time disposition

The quantum of visible underemployment (i.e. the time available for additional employment) can also be measured on the basis of a balance sheet compiled for each person visibly underemployed on a day-by-day basis. Such a balance sheet is shown in Table 10. It records the disposition of the total time potentially available for employment during the reference period in five categories: time employed and spent at work; time employed but not spent at work for voluntary (or non-economic) reasons; time employed but not spent at work for involuntary (or economic) reasons; time available for employment; and time not available for employment.

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Table 11. Example of a labour-time disposition balance sheet

	Mo	Tu	We	Th	Fr	Sa	Su	Total
Time worked	1	½		½				2
Time available for work		½	1		1	½		3
Time not available for work				½		½	1	2
Total	1	1	1	1	1	1	1	7

Depending on the measurement objectives, the balance sheet may be condensed by combining the categories in various ways. For example, for a measurement of unemployment in terms of labour time, the first three categories may be combined into one single category, resulting in the trichotomy of “time employed”, “time available for employment” and “time not available for employment”.

For measurement of the quantum of visible underemployment, unless the full schedule is used, it is more appropriate to combine the second category with the fifth, and the third with the fourth, resulting in a trichotomy of categories reformulated as “time worked”, “time available for work” and “time not available for work” (see Table 11). This is because in this context time employed but not spent at work should be accounted for as time not available for work if the absence from work was due to voluntary or non-economic reasons (e.g. vacation, illness), and as time available for work if the absence was due to involuntary or economic reasons (e.g. temporary disorganisation of work) and the person was seeking or available for work.

The balance sheet may be compiled in units of working days, half-days or hours. If days are chosen as time-units, only one activity status per day can be recorded for each person. Where this is considered insufficient, the balance sheet could be compiled on the basis of half-days or even smaller time-units, by breaking the working day into two, three or four parts or into single hours. One should note, however, that the smaller the time-units, the heavier the response burden and the more complicated the data processing and analysis are likely to be.

Table 11 gives an actual example of such a balance sheet, showing data recorded by using half-day units. Half-day units, permitting a record of up to two activity statuses per day for each person, have been found to be sufficient for most practical purposes, in particular to distinguish full-time from part-time workers.

The table shows the labour-time disposition of a worker who during the reference week worked for one full day (Monday) and two half-days (Tuesday and Thursday), and was available for work for two full days (Wednesday and Friday) and two half-days (Tuesday and Saturday). For the rest of the week (whole of Sunday and half of Thursday and Saturday) the person was not available for work. In total, as shown in the last column, the person worked the equivalent of two days during the reference week. The rest of the time, the person was partly available for work (the equivalent of three days) and partly unavailable (the equivalent of two days). Note that the totals shown in the last row are fixed and equal to one for each particular day of the reference week, summing up to seven for the whole week. This particular example is typical of the pattern of employment of a casual worker.

When the balance sheet is compiled only for persons visibly underemployed, the second row total (time available for work), summed over all persons concerned, gives the aggregate quantum of visible underemployment. When the balance sheet is compiled

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Table 12. Composition of the labour force by number of days of employment and days available for employment, India, 1977-78 (in millions)

	Number of persons	Total days of employment	Total days available for employment
<i>Labour force</i>	239.2	1464.5	130.6
<i>Employed</i>	228.4	1464.5	57.4
Full-time full-week	181.6	1271.8	—
Less than full-time full-week	46.8	192.7	57.4
Available for additional work	19.5	77.1	57.4
Not available for additional work	27.3	115.7	—
<i>Unemployed</i>	10.7	—	73.1
Full-week	10.1	—	70.7
Part-week	0.6	—	2.4

Source: "Report on the second quinquennial survey on employment and unemployment, National Sample Survey of India, 32nd round (July 1977-June 1978)", in *Sarvekshana* (New Delhi, National Sample Organisation), July-Oct. 1981, Vol. V, Nos. 1 and 2, computed from Tables 39 and 40.

for all persons in the labour force, the corresponding row total will give a composite estimate of the quantum of current unemployment and visible underemployment.

The labour-time disposition approach was originally conceived in connection with the National Sample Survey of India as an alternative to the labour force framework (India, 1981). It was designed to reflect more accurately the employment situation in India, where many workers were deemed to be neither fully employed nor fully unemployed but, in fact, to be combining periods of employment and periods of unemployment even during as short a time as a week.

In the Indian National Sample Survey, the labour-time disposition approach is used to record the activity status of each person in the labour force for each of the seven days of the reference week. For this purpose, a balance sheet similar to the one described earlier is used, with half-day time-units and 22 possible categories for daily activity status. These activity status categories combine the labour force status and other economic characteristics, including status in employment. In this particular survey, an activity is considered "full-day" if it lasted four hours or more during the day; an activity that lasted at least one hour but less than four hours is considered "half-day". Up to four distinct activities are considered per week and per person.

The labour-time disposition approach is in a sense an abridged version of a time-use survey. Its use corresponds thus to the recommendation of the Thirteenth ICLS that "in order to provide improved and more detailed information on employment, unemployment and underemployment and for other purposes, ... attempts should be made to collect periodically statistics on time-use" (ICLS, 1982). One of the particular strengths of the labour-time disposition approach lies in its capacity to elicit plausible and consistent information: time employed, time available for employment and time committed to other activities and thus not available for employment have to be balanced for each respondent so as to add up to the total labour time potentially available during the reference period. In this respect, the labour-time disposition approach is clearly superior to the "duration of work sought" approach discussed earlier.

Moreover, the labour-time disposition approach offers possibilities for data analysis which go far beyond the assessment of the quantum of visible underemployment. For example, on the basis of results from the Indian National Sample Survey (Table 12), it can be observed that out of 239.2 million persons in the labour force, 10.7 million were unemployed (10.1 million for the whole week and 0.6 million for part of the week). Furthermore, the table shows that 181.6 million persons were employed all week and 46.8 million part of the week. Of those employed part week, 27.3 million were not seeking or available for more work, while 19.5 million were seeking or available for additional

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work during that week. This last figure gives an estimate of the number of persons visibly underemployed.

The aggregate quantum of visible underemployment is obtained by summing up the days available for employment as reported by the respondents. In terms of Table 12, the quantum of visible underemployment may be obtained by multiplying the number of persons visibly underemployed (19.5 million) with the average number of days available for employment (2.94), giving 57.4 million man-days of visible underemployment per week. On the basis of Table 12, a series of other useful indicators may also be computed, such as:

— Unemployment rate	—	$\frac{10.7}{239.2}$	* 100 = 4.5%
— Number of visibly underemployed as percentage of persons employed	=	$\frac{19.5}{228.4}$	* 100 = 8.5%
— Composite rate of unemployment and visible underemployment	=	$\frac{130.6}{130.6 + 1464.5}$	* 100 = 8.2%

Many other types of estimate can be derived from the labour-time disposition approach. In particular, when the day-by-day data are analysed, many different work patterns may be revealed, e.g. full-time full-week, full-time part-week, part-time full-week and part-time part-week employment. If carried out through a series of surveys covering a representative sample of reference periods spread over a year, the approach can also be used for the estimation of labour time employed or unemployed over the year. These estimates may be expressed in terms of person-days or person-hours, or converted into standard full-time person-years.

However, the adoption of the labour-time disposition approach may involve certain practical inconveniences. The inclusion of a labour-time disposition balance sheet in a labour force survey questionnaire may increase the cost of the survey, as other additional items would do. It affects the length and complexity of the interview and may thus result in a need for more and better trained interviewers. It may also increase the burden imposed on the respondents, especially when they have already been asked earlier in the course of the interview to report their actual hours worked on a day-by-day basis. Furthermore, an exhaustive use of all information collected in the schedule may prove a very demanding task for data processing and analysis.

Where these practical inconveniences are considered important, they can be reduced in various ways. For example, the balance sheet may be compiled only for a subsample of the survey, or only periodically as a supplement to the survey. In order to reduce the response burden, interviewers may be instructed to complete the balance sheet by using information already obtained from the respondent earlier during the interview. Finally, data processing and analysis may be confined to the row totals of the schedule, leaving aside the day-by-day information.

Notwithstanding these problems, the labour-time disposition approach has demonstrated its usefulness, particularly for surveys conducted in developing countries. If the balance sheet is compiled for all persons in the labour force (and not for the visibly underemployed only), it provides a tool for measuring not only the quantum for visible underemployment but also labour utilisation, which is particularly suited to the employment situations in developing countries.

4. Invisible underemployment

Concepts

Compared to visible underemployment, which is a statistical concept directly measurable by labour force and other surveys, invisible underemployment is “primarily an analytical concept reflecting a misallocation of labour resources or a fundamental imbalance as between labour and other factors of production” (ICLS, 1982). The characteristic symptoms of invisible underemployment, as indicated in the international standards, might be “low income, underutilisation of skill, low productivity”. The comprehensive study of invisible underemployment involves analysis of a wide variety of data.

The international statistical standards on invisible underemployment were set forth in the resolution concerning measurement and analysis of underemployment and underutilisation of manpower, adopted by the Eleventh ICLS in 1966. The Thirteenth ICLS (1982) did not make any further contribution on this topic, leaving the 1966 resolution unchanged. In this resolution, two aspects of invisible underemployment are distinguished: disguised underemployment and potential underemployment. No formal definitions are provided, though certain basic measurement variables are identified, including income, occupational skill, and productivity.

Disguised underemployment is related to the criteria of low income or underutilisation of skill, i.e. to situations where a person’s income from employment is abnormally low or occupational skill is underutilised. Thus, data on income and skill levels are essential for the analysis of disguised underemployment.

Potential underemployment is meant to be analysed on the basis of the criterion of low productivity. It refers to situations where a person is employed in an establishment or economic unit with abnormally low productivity. Data requirements for analysing potential underemployment are very demanding. Not only data on the productivity of establishments or economic units are needed, but also a linkage of these data with data on the characteristics of individual workers.

With respect to certain sectors of the economy, in particular the agricultural sector, the 1966 resolution introduced an additional concept related to that of potential underemployment. This concept is called “labour surplus” or “labour force reserves”. It can be estimated “by comparing labour units available and labour units actually utilised or required under various assumptions regarding productivity” (ICLS, 1966).

Measurement problems

The 1966 resolution did not make any specific suggestions as to the methods for measuring the various aspects of invisible underemployment, apart from mentioning some possible sources of statistics. This is because the measurement of invisible underemployment involves a number of unresolved difficulties. In many countries, appropriate data on income, on skill levels and particularly on productivity do not exist or are available only for certain regions, particular branches of economic activity or specific categories of workers. Where such data are available, their quality is often unsatisfactory or highly uneven among subgroups of the target population. For example, income data obtained from labour force or household budget surveys are usually more accurate for regular paid employees than for self-employed persons or casual workers.

The usefulness of the criterion of low income as a symptom of inadequate employment in the measurement of invisible underemployment (disguised underemployment) may itself be questioned. It has been argued that although under ideal conditions income may be regarded as reflecting productivity, owing to institutional factors, price fluctuations and other non-ideal conditions, income may not

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always be a satisfactory indicator of productivity. For example, the low income received by a full-time domestic employee may be due to the institutional set-up rather than to low productivity. Similarly, the variations in the income received by a self-employed worker may be due to a larger extent to price fluctuations than to productivity. Thus, a low income may not necessarily mean an inadequate utilisation of labour. Moreover, in household enterprises income may be received jointly by several household members, making it difficult to determine each individual's income in the way needed for the measurement of invisible underemployment.

These problems are compounded by the fact that income, unlike time worked, may be hoarded and transferred among reference periods. For example, the income received from self-employment during a specific time-period may not necessarily correspond to the volume of employment during that same period. This may apply particularly to farmers, who generally receive income at the end of a season for work carried out throughout the whole agricultural period. The required concept of income for measuring invisible underemployment does not lend itself to integration into the labour force framework, which is based on a short reference period.

Similar arguments may be advanced against the skill underutilisation criterion. This criterion is meaningful mainly as regards persons who have at the very least received secondary schooling or vocational training, a segment of the population which is relatively small in many developing countries. Even for these workers, the measurement of skill utilisation may be extremely difficult, as it should involve an evaluation of the quality of the jobs against the skills of the incumbents. Furthermore, special provisions in questionnaire design would have to be made for persons with higher education who have voluntarily chosen lower occupations than those corresponding to their skills.

The measurement of potential underemployment poses the most serious difficulties. It involves the complex task of linking data on individual workers with data on the productivity of individual establishments or economic units. This task may be prohibitively complex in a household survey on the economically active population. It would be better served by a combination of data from different sources. Reliable data on productivity can only be obtained through establishment surveys, while appropriate data on individuals are best collected by labour force and other household surveys.

Finally, whether one is measuring invisible underemployment in respect of income, levels of skill or productivity, it is necessary to establish thresholds below which the income is considered abnormally low, the skill underutilised, or the productivity insufficient. The determination of such thresholds may be difficult and subject to disagreement. The procedure may become quite complex as different thresholds may need to be applied to different population groups or types of economic unit. For example, it may be necessary to establish different income thresholds for different regions of a country. Similarly, it may be necessary to agree on different skill thresholds for different occupational groups, or on different productivity thresholds for different branches of economic activity.

Despite these conceptual and practical problems, some countries have attempted to measure various aspects of invisible underemployment by using a framework called "labour utilisation". The labour utilisation framework was developed in the early 1970s (Hauser, 1974) and applied mainly in South-East Asian countries and territories (Hong Kong, Indonesia, Malaysia, the Philippines, Singapore and Thailand). It is an attempt to measure the inadequacy of employment in a broad sense, covering not only invisible underemployment in terms of level of income and use of skill, but also visible underemployment and unemployment.

Because of serious limitations inherent in the labour utilisation framework, many countries have not adopted it in their regular surveys and others stopped using it after several years of experimentation. Therefore, the framework was not endorsed by the

International Conference of Labour Statisticians. Recognising the problems involved in the measurement of invisible underemployment, the Thirteenth ICLS specified that “for operational reasons, the statistical measurement of underemployment may be limited to visible underemployment” (ICLS, 1982).

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1. Introduction

As discussed in the previous chapter, employment inadequacy may result from a number of different factors, among which insufficient volume of employment (in terms of hours worked) and low rate of remuneration are the two most obvious ones. The statistics of unemployment and visible underemployment only disclose insufficient volume of employment; they do not provide any information on the adequacy of the incomes obtained from employment and on related social aspects of employment. The limitation of the concepts of unemployment and visible underemployment as social indicators becomes evident, for example in the situation of persons who, though fully employed in terms of hours, have low earnings and seek extra work, or in the situation of self-employed persons, where a lack of demand may result in low intensity of work and low income rather than in a reduction of time worked. These situations are as important for employment policies as are unemployment and visible underemployment.

So as to indicate the need to supplement statistics of unemployment and visible underemployment with statistics that would provide insights into the income aspect of employment inadequacy, the 1982 ICLS introduced certain guidelines for analysing the relationships between employment and income. These should be contrasted with the concept of invisible underemployment introduced by the 1966 ICLS and discussed at the end of the preceding chapter. This latter concept is also meant to measure inadequacy of employment in terms of income, but with a different measurement objective, in which income is examined from the production and productivity aspects rather than from the social and welfare aspects mentioned above.

The 1982 Conference distinguished two objectives for analysing the relationships between employment and income. The first objective is to analyse “the income-generating capacity of different economic activities” (ICLS, 1982). It aims to identify those activities which are, for given inputs of labour, more remunerative than others. Such information is important for the formulation and evaluation of employment promotion policies. The focus of such policies, particularly in developing countries, is the creation and expansion of productive employment in order to meet the basic needs of the poor and to solve the problems of poverty. In this context, planners need detailed data on the income-generating capacity of different economic activities, and data on income from self-employment as opposed to paid employment for the choice of appropriate development strategies.

The second objective is to identify “the number and characteristics of persons who are unable to maintain their economic well-being on the basis of the employment opportunities available to them” (ICLS, 1982). This objective is meant to provide data

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for the formulation and evaluation of social welfare policies. It aims to identify vulnerable groups experiencing employment-related economic hardships, i.e. to relate the failure of persons to achieve a certain level of well-being to their employment status.

The problem in achieving these objectives is that there is no simple relationship between employment status and economic hardship, but a number of complex relations. An illustration of this might be provided by persons with low earnings, such as many secondary workers, who are in fact living in families or households whose overall income is not low, because there are other earning members in the family or household, because they are receiving income from other sources, etc. There may also be situations where the earnings of a family or household head are not low as such, but nevertheless insufficient to meet the needs of the family or household, because the size of the family is large, other income sources are lacking, etc. Thus, the assessment of employment-related economic hardship involves not just measurement of the employment and income situation of individuals on their own but also measurement in the context of their family or household circumstances.

The remainder of this chapter is organised as follows. The next section (Section 2) deals with the first measurement objective, i.e. measurement of employment and income relationships for identifying the income-generating capacity of different economic activities. Section 3 takes up the other measurement objective, namely the relationships between employment and economic well-being for identifying persons in employment-related economic hardship. In each section, first the particular measurement issues are discussed, then the relevant concepts of employment and income are introduced, and finally certain broad strategies for data collection are suggested.

As relatively little national or international experience exists up to now on these topics, no attempt can yet be made to give detailed suggestions on question formulation and questionnaire design. Here we are concerned with using data about employment and income together, rather than, as in other chapters, with obtaining data. Hence the chapter ends with suggestions concerning tabulations, not with proposals for questionnaire design.

2. Income-generating capacity of activities

Measurement issues

A fundamental requirement for the measurement of the income-generating capacity of different economic activities is strict consistency between the two bodies of statistics involved, i.e. between the data on employment and the data on income from employment. There are three other main requirements. First, in contrast with labour force data, the required data here do not concern *attributes* (such as whether the person worked last week or not, or whether the person was available for work or not) but *quantities* (such as hours worked, income received, etc.). Second, the required data do not concern isolated *numbers* (such as how many persons were unemployed) but *relationships* (such as how much employment yields how much income). Third, the unit of analysis is not the *individual* household member, but the *economic activity* in which individuals are engaged. Thus, the primary concern here is not to find out how much an individual earns from employment, but to find out which economic activity yields which income.

Unit of analysis

In theory, economic activity is to be defined for the present purpose as the smallest set of tasks for which the income received is discernible. In practice, in most cases an activity should be adequately characterised by occupation and industry, coded at the most detailed level meaningfully possible, given the sample size of the survey.

Measurement of employment and income relationships

An economic activity could be, for example, tailoring in the clothing industry, truck driving in the construction industry or truck driving in agriculture. In cases where an activity is performed jointly by several individuals and involves several jobs (occupations) and where the income received cannot be allocated to each individual job separately, all the jobs involved should be considered together as part of one activity. Such situations may arise in household enterprises, in particular in farming.

Reference periods

For each activity so defined, the income generated by the activity must be related to the volume of employment which has gone into the activity. Therefore, one fundamental requirement is that the income and employment data refer to the *same* reference period. The appropriate reference period may be different for different economic activities, depending on the survey design. For each activity, it can be chosen on the basis of the income-generating cycle of the activity. For example, in the case of government employment the appropriate reference period may be a month, corresponding to the frequency of salary payments. In the case of casual employment, where wages are received daily or weekly, the appropriate reference period may be a week. For agricultural self-employment activities, the appropriate reference period may be defined in terms of the crop production or marketing cycle, e.g. four months for cotton, one year for grapes.

It should be mentioned that, while for measurement purposes different activities may require different reference periods, for analytical purposes the results may need to be converted to a single standard unit of time, such as days or hours.

Volume of employment

For each economic activity considered in the survey, the required employment data are hours (or days) worked and type of activity. Hours or days worked should refer to the total labour input which has gone into the activity during the reference period. Given the definition of economic activity used here, hours or days worked in a given activity may refer to time worked by more than one person. This may be the case of many household enterprises, where several household members spend time on the same activity, for which income is jointly received and cannot be allocated to each person separately.

Type of activity is characterised by occupation, branch of industry and the institutional context in which the activity is performed (self-employment versus paid employment, household enterprise versus non-household enterprise, etc.).

Income from employment

The measurement objective requires data on income from employment, in its strictest sense. When the income generated from an activity includes a return to the capital input as well as to the labour input, it should in principle be only the component corresponding to labour input which is of concern.

Income from paid employment

In the case of paid employment, income from employment includes wages, salaries and other earnings in cash and kind. Earnings (or, equivalently, wages and salaries) cover all payments which employees receive in respect of their work, whether in cash or in kind, remuneration for time not worked paid by the employer (excluding severance and termination pay), bonuses and gratuities, and housing and family allowances paid by the employer directly to his employee. The full definition of “earnings”, as formulated by the Twelfth ICLS (1973), is reproduced in Appendix 4.

In measuring income from paid employment, it may be more appropriate, where possible, to include not only earnings, but also net current benefits from social security

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and insurance schemes for employees, such as maternity benefits, health and sickness benefits, casualty benefits, family allowances regarded as social security benefits, severance and termination pay. This broader concept is called “employee income” and covers all receipts or benefits in cash or kind received by the employee by virtue of his or her current status as an employee (ILO, 1979). In the informal sector where employees are not benefiting from pension and social security schemes, the concepts of earnings and employee income are the same.

Income from self-employment

Income from self-employment should refer to net entrepreneurial income, i.e. return to the labour input of the self-employed. While the measurement of income from paid employment should not raise major conceptual difficulties in survey applications, such problems may occur in the case of income from self-employment. In practice for many self-employment activities the return to labour cannot be distinguished from the return to capital. In general, only the aggregate is measurable, called “gross entrepreneurial income” and obtained by subtracting operating expenses from gross output.

For each economic activity, gross output may be defined as the value of all goods and services produced, including any part which has been retained for own consumption or given free of charge or at reduced prices to hired labour (United Nations, 1977). For example, the gross output of a tailor’s shop would be the total sales value of any clothing sold plus the total amount received for repairs, alterations and other services. Similarly, the gross output of a farm would be the total sales value of the produce sold plus the estimated value of any produce retained for own consumption and any produce given as part of the wages to hired labour. Estimated values should be based, where possible, on farm-gate or factory-gate prices (United Nations, 1977, para. 4.18).

Operating expenses include payments to hired labour in cash and/or in kind, and other current expenses of the economic activity, such as the purchase of raw materials, fuel, tools and equipment, rent and interest payments, transport costs, and marketing. In the case of a farm, operating expenses include payments in kind to hired labour, such as food grains, meals, drinks and housing. Further operating expenses include: the cost of seeds, whether home-produced or purchased, feeds, manures, fertilisers; charges for hired bullocks, for irrigation, for machinery and equipment, for fuel; running costs of repairs and maintenance of farm equipment, of storage and transport, of marketing; and other expenses such as agricultural income taxes, interests, etc.

For a given economic activity, the difference between gross output and operating expenses gives “gross entrepreneurial income”. As mentioned earlier, this concept represents both the return to labour and the return to other owned factors of production. In order to isolate the return to labour, it is necessary to deduct from gross entrepreneurial income the value of the productive assets consumed for generating that income, and arrive at the “net entrepreneurial income”. For this purpose, data on the depreciation at replacement cost of productive assets should, in principle, be collected. In practice, however, the required data may prove to be extremely difficult to obtain. “Net entrepreneurial income” may therefore need to be derived by means of analytical methods (Chiswick, 1981).

It should be mentioned that for certain self-employment activities, particularly those involving little or no productive assets, gross entrepreneurial income may be a sufficiently close estimate of net entrepreneurial income, so that recourse to analytical means may not be necessary. Examples of such activities are most likely to be found in the crafts, the services and the informal sector, engaged in by such as self-employed masons and shoeshine boys. The self-employed workers in these types of activities are generally remunerated according to time rates or piece rates, and their use of capital is nil or negligible. Although these categories of workers are to be considered as

Measurement of employment and income relationships

self-employed according to the present status-in-employment classification, they are, for the purpose of measuring the relationships between income and employment, similar to paid employees. Collection of data on income from employment for these categories of workers should not pose special difficulties and the measured income can be considered to represent return to labour input only.

In household enterprises, or, more generally, in self-employment activities jointly performed by several members of the household, the income from self-employment is also jointly earned and can only be recorded as such. As the objective is to measure the income-generating capacities of different economic activities, it is not necessary to attempt to apportion the income among the household members who contributed labour to the activity. When compiling the corresponding employment data which are usually obtained for each individual separately, it is necessary to ensure that all labour input is recorded.

Relating volume of employment and income from employment

Table 13 is given as an example of the basic tabulation to be made for identifying the income-generating capacity of economic activities. As can be seen from the table,

Table 13. Income-generating capacity of different economic activities

Economic activity	Length of reference period	Duration of work (in hours or days)	Income from employment	Income from employment per hour or day worked
		during reference period		
	(1)	(2)	(3)	(3):(2)
<i>Paid employment</i>				
<i>Self-employment providing services similar to paid employees</i>				
<i>Other self-employment</i>				

Computation sheet for a given economic activity

	Paid employment	Self-employment providing services similar to paid employees	Other self-employment
Volume of employment	1. Length of reference period (column 1 above) 2. Number of persons employed 3. Number of weeks worked 4. Number of hours/days worked per week 5. Volume of employment (2 × 3 × 4; column 2 above)		
Income from employment	6. Direct wages and salaries 7. Other earnings in cash or in kind 8. Net current benefits from social security and insurance schemes for employees 9. Employee income (6 + 7 + 8; column 3 above)	6. Gross output 7. Operating expenses 8. Gross entrepreneurial income (6-7) 9. Net entrepreneurial income (9 = 8; column 3 above)	6. Gross output 7. Operating expenses 8. Gross entrepreneurial income (6-7) 9. Consumption of fixed capital 10. Net entrepreneurial income (8-9; column 3 above)

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economic activities are distinguished according to the status of employment of the individuals performing them. Certain activities may thus be recorded under both paid and self-employment. This distinction enables one to compare the income-generating capacity of a paid employment activity with that of the same activity performed on a self-employment basis.

It should be noted that it may not be possible to obtain the data on volume of employment and income from employment by direct questions. In general, they have to be derived on the basis of more detailed information, as shown in the sheet computation.

Table 13 provides a column (column 1) on length of reference period, as different economic activities might require different reference periods. Two other columns (columns 2 and 3) provide for recording the total volume of employment and income generated during the reference period for each economic activity, averaged over all economic units in that activity. The income-generating capacity of the activities may then be computed per unit of labour input (last column of the table). Unless such a standardisation is made, comparisons between different activities would be affected by differences in the length of reference periods.

Data collection

The measurement objectives and concepts introduced above have substantial implications for data collection. As the measurement of the income-generating capacity of different economic activities does not yet form part of the regular statistical programme of countries and experience of alternative approaches is lacking, it is not possible to formulate tested international guidelines on this topic.

For paid employment activities, and possibly for self-employment activities providing services similar to those provided by paid employees, however, measurement should not present special difficulties. In most cases, it will be sufficient to supplement an existing labour force survey by an inquiry on the volume of employment and the corresponding income from employment, measured over an appropriate reference period for each economic activity, and distinguished between the main and any secondary activity.

If the objective is to cover all self-employment activities, it is unlikely that the required information can be obtained in sufficient detail and with sufficient accuracy simply by an extension of a conventional labour force survey. Variable reference periods, detailed probing on the total labour input, the gross output and the operating expenses, and an inquiry into fixed capital consumption are difficult to incorporate in such surveys. It may be more convenient to obtain the required data directly from the economic units or the establishments. An exception may sometimes be made for the activities of household enterprises, where such enterprises are important, and especially designed household surveys may need to be carried out.

3. Employment and economic, well-being

Measurement issues

As mentioned earlier, the measurement of the relationships between employment and economic well-being aims at identifying “the number and characteristics of persons who are unable to maintain their economic well-being on the basis of the employment opportunities available to them” (ICLS, 1982). This requires linking the employment status of individuals with their economic status.

One difficulty in linking employment status and economic status concerns the units of measurement. The unit for assessing employment status is the individual, while economic status is related to the family or household circumstances. Another difficulty concerns the time frame for measurement. The reference period for measuring employment status on the basis of the labour force framework is generally one week, whereas the appropriate reference period for measuring economic status is one year.

There is also a conceptual difficulty in linking the two sets of statistics because of the different nature of the variables involved. Economic status as measured by income can be ordered in an unambiguous scale: the higher the income, the better the economic status, or vice versa, the lower the income, the worse the economic status. Such an ordinal scale cannot, however, be established for the employment status variable, since its basic elements (employment, unemployment and economic inactivity) cannot be ordered unambiguously. While, typically, employment may be considered to be preferable to unemployment, a similar relationship cannot be established between other pairs, as economic inactivity may be preferred to unemployment or even to employment.

In addition to these difficulties, other measurement problems have to be tackled in linking employment status to economic status, including an operational classification of employment status with respect to a long reference period, an appropriate definition of income as a measure of economic status, and an “income standard” against which economic well-being of individuals or families (households) can be assessed.

This chapter continues by discussing each of these issues in turn. Basic tables and data requirements follow which show how to analyse the relationships between employment status and economic status, and to identify individuals experiencing employment-related economic hardship.

Unit of analysis

As the measurement objective is to identify the number and characteristics of persons experiencing employment-related economic hardship, it follows that the basic unit of analysis should be the individual person. However, the economic well-being of a person depends not only on his or her individual characteristics, but also on the characteristics of his or her family (household). This means that in assessing economic status, the individual has to be analysed in the context of his or her family (household). In this context, the family (household) should be considered as a complementary unit of analysis in the sense that its characteristics are included among the characteristics of the individual. Thus, one of the characteristics of an individual is family or household income. This procedure solves the issue of relating two concepts with different units.

Reference period

Analysis of the relationships between employment status and economic status must be based on a single reference period. Since economic status measured in terms of income cannot meaningfully be assessed on the basis of a short reference period (because of seasonal and other irregularities in the receipt of certain types of income), it is necessary to measure both variables—economic status and employment status—using a long reference period, such as a year. Moreover, the use of a long reference period permits

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analysis of the relationship between part-year and intermittent employment and low income. Where the measurement of short-term economic hardship is also of interest, economic status and employment status may be assessed on the basis of both a long reference period and a shorter one, such as a quarter or a month.

The use of a long reference period is in line with the international standard, which states that “in order to obtain comprehensive measures of the relationships between employment and income, the measurements of employment, income from employment and household income should refer to the work experience of the population over a long reference period, preferably one year” (ICLS, 1982). Such a long reference period should allow the inclusion of “not only the principal occupation but also any secondary occupations and other sources of income”.

The considerations involved in the timing of the long reference period (e.g. the preceding calendar year or the 12 months prior to the date of the interview) are similar to those discussed in connection with the measurement of the usually active population.

Employment status

Employment status refers to the employment experience of a person over a long reference period (a year). During a one-year reference period, individuals may combine spells of employment, unemployment and economic inactivity in many different ways and for many different reasons. As it would be neither practical nor desirable to enumerate all possible combinations, it is necessary to summarise the main situations into broad categories relevant to the measurement of employment-related economic hardship. At the most aggregate level, the following classification may be proposed :

- Full-year employment
- Part-year employment with no unemployment
 - for involuntary reasons
 - for voluntary reasons only
- Unemployment at some time during the year
 - with some employment
 - without employment

In classifying a person into one of these categories of employment status, account should be taken of all activities performed during the reference year, including simultaneous activities (multiple-job holding).

The classification applies to all persons with some labour force activity during the reference year. It does not cover persons outside the labour force throughout the year, among whom might be some discouraged workers with neither employment nor unemployment during the year. While such persons may have experienced economic hardship during the year, they have been excluded because their economic hardship is not regarded as employment related. It should, however, be noted that annual movements into and out of this group may have to be considered for comparisons from one year to another.

The above-mentioned employment status categories have been chosen with the idea of relating them to economic status, so as to identify the main types of employment-related economic hardships, for example low earnings despite full-year employment, low earnings due to unemployment or involuntary part-year employment. The suggested categories might be further subdivided so as to reflect the severity or the accumulation of employment problems as well as the degree of labour force attachment of persons experiencing economic hardship. This could be done by introducing further variables, such as length of employment during the year, duration and number of spells of unemployment during the year, etc.

Measurement of employment and income relationships

Economic status

The variable “economic status” is meant to measure the level of economic well-being of individuals. For the present purpose, income is used as an approximation. Two measures of income are relevant in this context: income from employment and family or household income.

individual employment income

Income from employment measures the contribution to family or household economic well-being that the individual can derive from his or her employment exclusively. This income originates directly from the involvement of the individual in the process of production as either employee or self-employed. The definition of income from employment, for the present purpose, should be the same as the United Nations System of National Accounts (SNA) definition of primary income, which is the sum of compensation of employees and gross entrepreneurial income (United Nations, 1977, p. 45).

Compensation of employees includes wages and salaries, in cash and in kind. Gross entrepreneurial income is derived by deducting operating expenses from the gross output of the enterprise operated by the self-employed. To whatever extent possible, gross output should include goods and services not marketed but retained for own consumption, in line with the production boundary of the United Nations System of National Accounts (Dupré et al., 1987).

In the case of household enterprises, the gross entrepreneurial income received corresponds to the labour and capital input of all household members engaged in the activities of the household enterprise. In order to obtain the income from employment of each individual, gross entrepreneurial income would have to be allocated among the working members of the household. One method would be an allocation in proportion to the number of hours or days worked.

Family or household income

Family or household income, a more comprehensive measure of economic well-being, is the sum of primary income (as defined above), property income, and current transfers and other benefits received by all the members of the family or household. Property income consists of imputed rents of owner-occupied dwellings, interest received and paid, dividends received, and net rents and royalties received for the use of buildings, land, copyrights and patents. Current transfers consist of social security benefits, pensions and life insurance annuity benefits, and other current transfers received, such as fellowships, migrants' remittances, alimonies. More detailed definitions as well as methods of evaluation may be found in United Nations, 1977, pp. 41-49.

For the purpose of measuring the relationships between employment status and economic status, a choice between the concepts of household income as opposed to family income has to be made with respect to units consisting of more than one person. A multi-person household is defined as “a group of two or more persons who occupy the whole or part of one housing unit and make joint provisions for food or other essentials of living. The degree to which the persons in the group pool their incomes and outlays may vary. They may be related or unrelated persons. Boarders, but not lodgers, and domestic servants living in are included in a multi-person household” (United Nations, 1977, para. 3.9). By contrast, the family concept is narrower as it limits the multi-person household to individuals related by blood, marriage or adoption who satisfy the other conditions of a household, i.e. sharing the same housing unit and making common provisions for food and other essentials of living.

The choice between the two concepts is a practical one. It should depend on the prevailing situations in a given country. Where it is common that unrelated household

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members do not fully share the economic well-being and social protection of the family to which they are attached, the family concept should be preferred. Otherwise, the household concept seems more appropriate.

In measuring family or household income, it should be noted that the composition of the family or the household may change during the reference year. It is practically impossible to account for all such changes, unless the survey is specifically designed to do so. In most cases, it is only possible to obtain data on family or household composition at the time of the survey interview, which may not at times correspond to the composition prevailing during the income accounting period.

A basic decision to be made in respect of both income from employment and family (household) income is the choice between total income (before taxes and payments of social security and pension fund contributions) or available income, derived by deducting direct taxes and compulsory social security and pension fund contributions from total income. Where possible, available income should be preferred, as it represents the amount available for final consumption expenditure and saving (and certain other outlays), and thus can be considered a closer approximation of economic well-being than total income.

Income standards

Having defined income from employment and family or household income, the next step is to establish standards against which the income levels may be compared, so as to classify individuals according to different levels of economic well-being, namely, individuals with income above standard and individuals with income below standard (suffering economic hardship).

Different income standards are required for income from employment and family or household income. In the case of income from employment, the income standard may be defined in terms of minimum wage, guaranteed income, income required by an individual to live alone (apart from his or her family), or an appropriate combination of these. The standard may also be based on other criteria, such as the income corresponding to the lowest deciles of the income distribution of the working population. In the case of family or household income, the income standard may be defined on the basis of poverty lines, standard budgets, or other criteria, such as the lowest deciles of the family (household) income distribution, or a specified fraction of the average family or household income. Unless these standards are already available for families (households) of different sizes and composition, proper adjustment should be made to account for the different needs of different types of families (households) (e.g. OECD, 1981, pp. 11-14).

Relating employment status and economic status

An example of how to relate employment status and economic status is given in Table 14. It involves two steps: the first consists of analysing employment status and income from employment of individuals, distinguishing between persons with low income from employment (column 2) and others (column 5); in the second step, the economic status of the family (household) is taken into consideration so as to ascertain the number of individuals who not only earn low income but also live in low-income families (households). This number of low earners experiencing economic hardship is recorded in column 3 of the table.

The same tabulation for persons with income above the standard set for low income (column 5) permits the analysis of another facet of economic hardship, due to factors such as large family size, lack of other income sources or of other earners in the family, rather than to the employment status of the individual as such. The number of persons

Measurement of employment and income relationships

Employment status	Total	Persons with employment income less than x	of which		Persons with employment income x or more	of which	
			with total family/ household income below standard	with family/ household employment income below standard		with total family/ household income below standard	with family/ household employment income below standard
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total							
Employed full year . .							
Employed part year without unemployment experience							
for involuntary reasons							
for voluntary reasons only							
Unemployed at some time during the year. .							
with some employment experience							
without employment experience					n.a.	n.a.	n.a.
n a = not applicable							

experiencing economic hardship in this sense can be identified from column 6 of the table.

The additional columns 4 and 7 of the table serve to identify the number of persons who would experience economic hardship if they had to rely only on the income from employment of themselves and that of other members of the family (household), everything else remaining equal.

The analysis of the table by rows permits an examination of economic hardship in the context of the employment status of individuals. The first row after the total gives the number of persons who experienced economic hardship despite full-year employment. This number can be compared with the corresponding numbers in other rows, referring to persons in part-year employment for involuntary or voluntary reasons, and to persons who, employed at other times or not, experienced unemployment at some time during the year.

The analysis should be refined by further subclassifications of employment status. For example, full-year workers could be subdivided according to their usual hours of work, and, if working any part of the year on a part-time basis, the reason for and the duration of part-time employment. Part-time employment is taken here to be employment of less than normal duration in terms of weekly hours of work, as opposed to part-year employment, defined as employment of less than full-year duration.

Such a refined analysis may be important, as economic hardship among full-year workers may result from insufficient employment in terms of hours of work, low remuneration, or a combination of both. A classification of these workers by hours of work would also permit identification of those whose income is above the standard, but who are working exceedingly long hours. These workers are in fact avoiding economic hardship by working long hours. Such situations could well be considered as another form of employment-related economic hardship.

In the case of part-year workers and unemployed persons, the analysis of Table 14 might be refined by being broken down into the amount of labour force participation during the year, the reason for non-participation and the duration of stay in various labour force categories. The following subclassifications would be particularly useful:

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- (1) for part-year workers without unemployment experience: overall duration of employment, full-time versus part-time employment, reason for part-time employment, duration of involuntary part-year or part-time employment;
- (2) for unemployed workers with some employment during the year: full-year versus part-year labour force participation, duration of unemployment, number of unemployment spells, full-time versus part-time work during employment spells, reason for and duration of part-time employment;
- (3) for unemployed workers with no employment during the year: duration of unemployment, number of unemployment spells.

Such subclassifications of employment status would permit analysis of (a) the labour force attachment of individuals experiencing economic hardship, and (b) the type and severity of employment-related economic hardship, including the study of multiple employment problems.

Other useful variables for further subclassifications are sex, age, marital status, family (household) size and composition, number of earners in the family (household), etc. These would permit in-depth analyses of the socio-demographic characteristics of individuals experiencing economic hardship and of their families (households). A classification by age (or year of birth) is particularly relevant when the relationship between employment status and economic status is analysed over time, so as to reveal possible cohort effects. A classification by family (household) size and composition would be needed in particular for the analysis of the situation of individuals experiencing economic hardship because of large family size and similar factors. A classification by sex would give insights into inequalities between men and women, and so on.

Amount and sources of income

As a supplement to Table 14, another basic table (Table 15) is suggested showing the average income from employment and the average family (household) income of individuals by their economic status. Total family (household) income is split into its three main components, namely employment income, property income and transfer income from public or private sources. Table 15 should enable one to answer questions such as: How different are the earnings of persons in different economic status categories? What are the impacts on family (household) income? To what extent does family (household) income depend on total employment income? How important are transfer payments or property income for low income families (households) as opposed to others?

The table might be computed separately for various employment status categories, making possible many other types of analysis, including the analysis of the effects of a specific employment situation on an individual's earnings (and on family or household income), the variations in income and its components among different employment status categories, and so on.

The tables presented here (Tables 14 and 15) are examples, meant to illustrate the type of information needed for the analysis of the relationships between employment status and economic status. They take account of recent experience in the United States and Canada in linking employment problems to economic hardship (United States, 1983; Canada, 1983). Many variations and additional tabulations are possible. In particular, the unit for tabulation could be the family (household) instead of the individual. Such tabulations, though more difficult to compute, would give insights into the prevalence of economic hardship among families (households), the accumulation of employment-related hardships in certain types of families (households), and so on.

Measurement of employment and income relationships

Table 15. Average family/household income of persons economically active at some time during the reference year by income sources and economic status

Economic status	Number of persons ('000)	Individual employment income	Family/household income	Percentage composition of family/household income		
				Employment income	Property income	Transfer income
Total						
Personal employment income less than x						
x or more						
Living in low-income families/households						
Personal employment income less than x						
x or more						
Living in other families/households						
Personal employment income less than x						
x or more						

Data collection

The data required for measuring the relationships between employment status and economic status go beyond the type of information normally collected in labour force surveys. They include employment measures based on a long reference period (as opposed to labour force data referring to a short reference period) and comprehensive measures of income from employment and of family or household income (generally not collected in labour force surveys).

Three possibilities for obtaining the needed data may be considered: (a) supplementing an ongoing labour force survey with appropriate questions on past-year employment experience and income, addressed to a subsample or asked in a convenient round of the survey; (b) expanding a household or family income and expenditure survey with additional questions on annual employment experience and detailed probing on income from employment; and (c) launching a separate survey specially designed for the purpose.

The choice of the appropriate source of data should be based on the results of a cost-benefit analysis, taking into account factors such as the desired accuracy and details of the results, the existence of a labour force survey or an income and expenditure survey, the design of these surveys, the feasibility of adding new topics to these surveys as opposed to launching a separate survey.

Irrespective of the type of source chosen, obtaining accurate data on annual employment experience and income is a complex task. Before adopting a particular set of measurement tools, all possibilities should be carefully examined, in particular the use of diaries as opposed to personal interviews, the use of retrospective questions with long recall periods as opposed to repeated visits asking questions involving shorter recall periods.

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Major economic classifications

9

1. Introduction

Three major employment characteristics on which data are collected in surveys of the economically active population are: branch of economic activity (industry), occupation, and status in employment. These data serve a number of purposes. They provide information for the study of the economic and social structure of the economically active population and its changes over time. They can also be used as background variables for the analysis of workers' behaviour and conditions of work and living. Furthermore, all three variables serve as components in the definition of socio-economic groups, used to establish the relationship between the socio-economic position of individuals (or households or families) and many demographic, social, economic and cultural phenomena.

Employment data by branch of economic activity form an essential part in the analysis of national production and national income. Studies of the proportion of the economically active population in each branch of the economy give information on the level and trend of industrialisation and on the relative movements from one branch of economic activity to another. Similarly, studies on the proportion of the economically active population in different occupations give information on the occupational structure of the economy, essential for human resource development.

Data on the distribution by status of the workforce in a particular industry may be a useful indicator of the degree of development of that sector, i.e. the extent to which it employs wage and salary earners as compared with own-account workers and unpaid family workers. Data on the number of wage and salary earners in different industries or occupations may also serve as benchmark data for statistics obtained from establishment surveys. They can also provide information for the planning of social welfare schemes, health insurance programmes, etc., which often pertain only to the employee group. Similarly, data on the number of employers and own-account workers can be useful for the monitoring of programmes aimed at the promotion of self-employment activities.

In this chapter, the three employment characteristics, industry, occupation and status in employment, are discussed in separate sections. Under each heading, the basic concepts are first introduced, followed by a brief description of the corresponding international classification. Each section ends with a discussion on appropriate questionnaire design for obtaining accurate data on the employment characteristics. The problem of coding industry and occupation data is dealt with in the final section of the chapter.

There is reason to believe that the order in which the questions on economic characteristics are asked may influence the resulting answers. However, little concrete

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evidence is available as to the nature and size of any effect. The most common sequence is: industry, occupation and status in employment, and this sequence has been respected in the presentation of this chapter. In national survey applications, it is recommended that this sequence be followed, unless there are strong arguments against it.

2. Branch of economic activity (industry)

One of the fundamental characteristics of the economically active population is the type of industry or branch of economic activity in which a person works or has worked. This characteristic is defined in terms of the economic activity of the establishment, the enterprise or other similar unit in which the person works. In household surveys and censuses, this information is ascertained through one or more questions in the questionnaire. The responses are then numerically coded to the industry into which the individual should be classified, based on the industrial classification used for the survey. In this way, it is possible to distribute the employed population (and in some cases the unemployed population with past work experience) according to industry.

This section begins with a discussion of the concept of “industry” and the various units to which it applies. Subsequently, the International Standard Industrial Classification of All Economic Activities (ISIC) and its structure is explained, while in the final subsection suggestions are made concerning questionnaire design for obtaining information on industry.

Basic concepts

Industry refers to the activity of the establishment in which an employed person worked during the survey reference period, or last worked if unemployed. This activity is defined in terms of the kind of goods produced or services supplied by the unit in which the person works. Therefore, if a person reports working in a factory producing suitcases and handbags, the activity would be considered as “Manufacturing”, or more precisely, in terms of the international industrial classification “Manufacture of luggage, handbags and the like, saddlery and harness” (ISIC 1912, Rev. 3).

It is important to note that the branch of economic activity of a person does not depend on the specific duties or functions of the person’s job, but on the characteristics of the economic unit in which he or she works. Thus, two persons working in the same economic unit have the same branch of economic activity, no matter what their jobs in that establishment consist of. For example, a driver of the delivery truck in a dairy farm has the same branch of economic activity as the farmer (ISIC 012, Rev. 3, Farming of livestock).

In the case of an individual holding two different jobs, one must be careful to distinguish between the different jobs when determining the branch of economic activity. In the case of a person having two jobs in economic units of a similar nature, no particular issue arises and the branch of economic activity of the person is the same with respect to both jobs. Thus, if the driver mentioned in the earlier example has a second job as a farm-hand on another dairy farm, with respect to both jobs the branch of economic activity will be the same, namely Farming of livestock (ISIC 012, Rev. 3).

The situation is, however, different if the two jobs are in economic units with activities of a different nature. For example, if the driver’s second job is night shift in a tyre factory, the branch of economic activity will be “Farming of livestock” (ISIC 012, Rev. 3) with respect to the day job and “Manufacture of rubber products” (ISIC 251, Rev. 3) with respect to the night job.

If industry classification is to be determined with respect to one job only, it is important that the questionnaire specifies on which job the information is to be collected, the main job, the secondary job, the evening job, the week-end job, etc. Typically,

surveys collect information on industry with respect to the main job. Main job is often defined as the job in which the person spends more time working.

The question of whether the main job was performed in more than one industry is another issue and criteria for determining which is the main industry have to be established, in the same way as for determining the main job.

The points made above concerning industry classification in the case of multiple job-holding apply also to occupation and status in employment classifications. It is essential that the information collected on all these three variables refer to the same job.

Establishment as the statistical unit

To determine the economic activity of an employed person, we must refer to the activity of the unit in which the person works. In the framework of ISIC, various kinds of unit are defined, with the establishment as the basic unit. The establishment, according to ISIC, constitutes an autonomous part of an enterprise which exclusively or principally carries out a single type of economic activity at a single physical location. This may be a farm, mine, factory, workshop, store, office or other type of unit.

Persons indicating that they work at an oilwell, for example, would also be considered as working at an establishment, even though our idea of an establishment may not easily correspond to their work location. The fact that it has a single physical location and engages in one type of activity is what allows us to report that they work at an establishment whose activity corresponds to the “Crude oil and natural gas extraction” industry (ISIC 1110, Rev. 3).

Because the industry classification is based on homogeneity of activities carried out by the economic unit, it is important to distinguish enterprises from establishments. The enterprise, according to ISIC, is the smallest legal entity (or group of legal entities) which encompasses and directly or indirectly manages all of the functions necessary to carry out the economic activities of the establishments. The enterprise therefore does not represent unity of physical location nor necessarily of kind of activity.

To illustrate the implication of this distinction consider the example of a person working in a large beverage company with different establishments, one producing glass for bottles, another manufacturing and bottling the drink itself, still another packing and crating the bottles for shipment. If classification is made according to the “enterprise” as statistical unit, the branch of economic activity of the person would be “Manufacture of beverages” (ISIC 155, Rev. 3). On the other hand, if the “establishment” is the basis of the classification, then the branch of economic activity of the person would depend on which part of the beverage company he or she works, “Manufacture of glass and glass products” (ISIC 261, Rev. 3), “Manufacture of beverages” (ISIC 155, Rev. 3), or “Packaging activities” (ISIC 7495, Rev. 3).

Certain activities cannot be performed in an establishment with a specific locality. Complications regarding how to determine the establishment arise when people are employed in units which are hard to locate physically due to the nature of their activities. Construction workers and taxi drivers are typical of this kind of situation. Crane operators, carpenters, masons, etc., may all carry out daily activities at different worksites which are far away from each other. Self-employed taxi drivers have unlimited worksites, i.e. the streets of a small town or large metropolis. These examples illustrate situations of workers who carry out the same activities, not in one recognisable physical location but in different locations. Their work-units are thus characterised by the homogeneity of the activity (driving for example) and the diversity of the workplace. The statistical unit defined by ISIC to respond to such situations is referred to as the “kind-of-activity” unit. The kind-of-activity unit is an autonomous part of an enterprise exclusively or predominantly performing a single type of activity without restriction in respect of the geographic area in which these activities are carried out.

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ISIC-88 and its structure

Each country will generally have its own national industrial classification which best corresponds to the individual conditions and degree of industrial development of their economy. As the needs for industrial classification data differ, be it for national analysis or for international comparison purposes, the International Standard Industrial Classification of All Economic Activities serves to allow countries to produce data according to internationally comparable categories.

ISIC-88, Revision 3, is the third, most recent version of the original text dating from 1948. Although the structure described in the following paragraphs is the latest version of this classification, many countries today still use the 1968 version (United Nations, 1968). A conversion table and the relevant descriptions covering all three revisions is published with the classification by the United Nations Statistical Office (United Nations, 1988). In the general structure of this revision, care was taken to ensure that comparability with the earlier versions would be maintained, while at the same time meeting the changing needs of producers and users and allowing for a greater level of detail to be attained in describing the evolving structure of economies (e.g. the growth of the Services sector).

This classification is constructed at four levels. Apart from the tabulation categories which are coded alphabetically, all other categories have two-, three- and four-digit codes respectively. Table 16 shows the ISIC-88 tabulation categories, number of divisions, groups and classes.

The level of detail of the classification varies from one section to another depending on the structure of the activity or industry in question.

Table 16. ISIC-88 categories and subcategories

Tabulation category	Divisions	Groups	Classes
A Agriculture, hunting and forestry	2	6	9
B Fishing	1	1	1
C Mining and quarrying	5	10	12
D Manufacturing	23	61	127
E Electricity, gas and water supply	2	4	4
F Construction	1	5	5
G Wholesale and retail trade repair of motor vehicles, motorcycles and personal and household goods	3	17	29
H Hotels and restaurants	1	2	2
I Transport, storage and communication	5	10	17
J Financial intermediation	3	5	12
K Real estate, renting and business activities	5	17	31
L Public administration and defence, compulsory social security	1	3	8
M Education	1	4	5
N Health and social work	1	3	6
O Other community, social and personal service activities	4	9	22
P Private households with employed persons	1	1	1
Q Extra-territorial organisations and bodies	1	1	1
Total	60	159	292

Questionnaire design

Household survey questionnaires usually contain very few questions concerning economic activity. Two complementary questions can be sufficient to obtain the necessary information. The first question serves to find out what the actual economic activity of the establishment is in which the interviewed person works. The second

question should relate to what kind of products or services are supplied by that establishment. This more detailed information is useful to ascertain specifically the industry in which the establishment falls. An example of two such questions follows:

Industry

- (a) What kind of industry, business, service or activity is carried out at the place where the person worked during the reference period?
- (b) What are the main products or services produced at the place of work, or what are its main functions?

Experience has shown that using only one question such as the first one above can result in a lack of sufficient detail to enable a person to be classified into the proper branch of economic activity. For example, say a person reports working in a factory without further elaboration. This would be coded to tabulation category D but subsequent coding at the division or lower digit level would not be possible. However, if the person is requested to specify what products are made in the factory and the answer is “cars”, the industry will be classified to the lowest digit level as ISIC 3410 “Manufacture of motor vehicles”.

It is therefore important not only that the questionnaire contain two parts concerning branch of economic activity, but that interviewers be instructed to obtain further, necessary details. These details should be descriptors of the general function of the employer establishment, i.e. the specific function of the establishment.

3. Occupation

Basic concepts

Occupation refers to the kind of work done during the reference period by the person employed (or the kind of work done previously if unemployed), irrespective of the industry or the status in employment of the person. Information on occupation provides a description of a person's *job*. In the present context a job is defined as a set of tasks and duties which are carried out by, or can be assigned to, one person. Persons are classified by occupations through their relationship to a job. This may be a past job, for persons who are unemployed, a present job, for employed persons, or a future job, for jobseekers.

The number of occupations in any one country may be in the tens of thousands. Some familiar examples are: butcher, carpenter, judge, plumber, shopkeeper, and taxi driver. Examples of occupations which are less common include: beautician, cartographer, magician, neurologist, surveyor, and wigmaker.

Unless the numerous occupations in a country are organised in a suitable manner, it proves very difficult to interpret the survey results on individual occupations. Such a systematic organisation of all occupations in a country is what constitutes an occupational classification. An occupational classification groups together occupations of a similar kind in a hierarchic order. An occupational classification can thus be compared to a system of maps for a country: the top level of the hierarchy corresponds to a small-scale map showing the various provinces and the main cities; the next level corresponds to a set of larger-scale maps for, say, each of the provinces, showing smaller towns and villages; and at the most detailed level will be the very large-scale technical maps showing sidewalks, traffic lights, road extensions, etc. These very detailed technical maps can be compared to the detailed job descriptions which are used by enterprises for their wage systems.

The content and roles of occupational classifications may depend upon the intended uses of the classification, but it is generally seen as an advantage to have one standard national classification of occupations, to be used as reference. Consequently, a

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standard national occupational classification is usually designed to serve several purposes. Although the detailed occupational descriptions and the classification structure must be seen as an integrated whole, its different elements do not have the same degree of interest for all users. In the following subsection a brief description is given of the recent International Standard Classification of Occupations, ISCO-88 (ILO, 1990), which replaces ISCO-68 (ILO, 1968). ISCO-68 is the basis of many of the existing national standard classification of occupations.

ISCO-88 and its structure

ISCO-88 groups occupation in four levels of aggregation: 10 major groups subdivided into sub-major groups, minor groups and unit groups in a hierarchical order shown in Table 17. The lowest subdivision, the unit group, consists in most cases of a number of detailed occupations.

Table 17. ISCO-88 major groups, number of subgroups and skill level

Major groups	Sub-major groups	Minor groups	Unit groups	ISCO skill level
1 Legislators, senior officials and managers	3	8	33	—
2 Professionals	4	18	55	4th
3 Technicians and associate professionals	4	21	73	3rd
4 Clerks	2	7	23	2nd
5 Service workers and shop and market sales workers	2	9	23	2nd
6 Skilled agricultural and fishery workers	2	6	17	2nd
7 Craft and related trades workers	4	16	70	2nd
8 Plant and machine operators and assemblers	3	20	70	2nd
9 Elementary occupations	3	10	25	1st
0 Armed forces	1	1	1	—
Totals	28	116	390	

In ISCO-88 (as well as in many national occupational classifications developed or revised since 1980) occupations are grouped together mainly on the basis of the *similarity of skills* required to fulfil the tasks and duties of the jobs. Two dimensions of the skill concept are used: *skill level*, which is a function of the range and complexity of the tasks involved, where the complexity of tasks has priority over the range; and *skill specialisation*, which reflects type of knowledge applied, tools and equipment used, materials worked on, or with, and the nature of the goods and services produced. While a national occupational classification may use references to the national educational system to define an appropriate number of skill level categories, ISCO-88 has used the International Standard Classification of Education, ISCED (UNESCO, 1976) to define four broad categories of “skill level”.

As shown in Table 17, in ISCO-88 jobs in the armed forces are classified in a separate major group 0 “Armed forces”, even if the jobs involve tasks and duties similar to those of civilian counterparts. “Working proprietors” are classified according to whether their tasks and duties are mainly similar to those of managers or to those of other workers in the same area of work.

The problem of classifying jobs which have a broad range of tasks and duties should be handled by the application of priority rules, i.e. rules specifying that some tasks and duties are given priority in determining the occupational category to which a job should be classified, such as:

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- (1) in cases where the tasks and duties performed require skills usually obtained through different levels of training and experience, jobs should be classified in accordance with those tasks and duties which require the highest level of skill; and
- (2) in cases where the tasks and duties are associated with different stages of the process of producing and distributing goods and services, the tasks and duties related to the production stages should take priority over associated tasks and duties, such as those related to the sale and marketing of the same goods, their transportation or the management of the production process (unless either of these tasks and duties dominates).

Questionnaire design

The largest source of error in occupational statistics lies in shortcomings of the verbatim raw material as elicited and recorded in the field. In order to obtain valid occupational information which can be readily and reliably coded, it is necessary to ask for several separate items of information. The goal to be aimed at is: simple questions using familiar, widely understood terms and concepts, which do not require special explanation.

Before asking for information about a person's job or occupation, decisions must be made with respect to whom to ask and about which job(s) to ask. If we want to know about current jobs, we can only question persons who currently have a job. If we want to know about past jobs, we may question everyone who had a job in the relevant period. If we want to know about wishes for possible future jobs, we may want to question people who are currently looking for work. We may also want to know about the type of job for which persons have been trained for or from which they have gained their experience, if the purpose of the survey is to describe the stock of qualifications in the population. In this instance we should question everyone who has received job-relevant training or who has had work experience.

The following are three examples of "jobs" on which occupational information is often asked for in censuses and surveys: (a) the person's main job last week; (b) the most recent full-time job; (c) the person's usual occupation.

Example (a) is the job concept most commonly used for those persons who are defined as being "employed" according to the international definitions of "current employment". The "job last week" is not applicable for persons who were not employed last week, for example those who were unemployed. Example (b) is the job concept most commonly used for those persons who are defined as unemployed or as jobseekers.

Some users of occupational statistics find it inappropriate for their needs to use concepts (a) and (b) as a basis for determining a person's occupation, because they do not provide a complete picture of the person's occupational skills or experience. These users typically would like to use "occupation" as an explanatory variable in the analysis of differences in lifestyle, i.e. consumption and time-use, work experience and social mobility, differential morbidity and mortality. For such studies the most appropriate job concept would be (c), taken to mean the type of job for which the person was trained and had most work experience.

The purpose of the occupational questions is to stimulate the respondent into giving to the interviewer (and therefore also to the coder) the type of information needed to determine the best occupational code for the job described by the respondent. The questions should have accompanying instructions in the interviewers' manual, so as to enable the interviewer to probe for more adequate information if the initial response does not provide the basis for unambiguous coding.

Experiments with different question formulations seem to indicate that the intended meaning of the term "occupation" may not be easily understood by all respondents, that reference should be made to the job of the respondent when the occupation

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questions follow those on the industry or the workplace and that reference should be made to the usual or main tasks and duties. The following questions are suggested as a starting point for experiments to find the most effective questions given the national circumstances:

- Q(*a*) What type of work do you (he/she) do in your (his/her) job?
- Q(*b*) What are the main tasks and duties in this job?

The ideal occupational response consists of both a clear occupational title and a few specific words on main tasks and duties. Examples are: farm labourer, picking peaches; street vendor, selling trinkets and jewellery; cleaner, washing dishes; fork-lift driver, shifting, loading and unloading goods; machine operator, controlling wine bottling plant; nursing assistant, making beds, serving food.

The following examples demonstrate the importance of providing information on main tasks and duties in order to distinguish occupations with identical or similar titles: labourer, digging ditches/labourer, carrying and tidying on site; baker, making bread and pastries/baker, operating bread producing plant; TV-mechanic, repairing TV sets/TV-technician, controlling broadcasting of TV signals; teacher, teaching maths and physics/teacher, giving driving lessons.

It is also important to instruct interviewers on how to probe for more specific information when they receive vague responses. Examples of vague responses are: clerk, clerical work; civil servant, office work; public servant, government; farm worker, farm work; salesman, selling goods; labourer, manual work.

When the occupational description given in the questionnaire is vague, or insufficient for coding purposes, it is often necessary to use information about the activity of the workplace of the respondent to resolve ambiguities. For this reason it is important to ask the questions concerning the activities of the workplace as effectively as possible, as discussed in Section 2 on industry.

4. Status in employment

Basic concepts

Although data on the economically active population classified by status in employment are collected in almost all national labour force surveys and population censuses, there is little international agreement as to what this variable really measures, i.e. as to a definition of “status in employment” which could be used as a basis for the classification.

The draft resolution concerning the International Classification According to Status, presented to (but not adopted by) the Ninth ICLS in 1957, included the suggestion that “the basis of any classification according to status should be the position of each individual in relation to his employment, and his mode of remuneration” (ILO, 1957a, p. 49). However, this understanding of status in employment did not receive the support of the Conference. Although “a definition of status in terms of the type of payment received for work performed” was supported in the discussion, it was also said that “the status criterion is based on the relationship of a person in his job to the enterprise or establishment within which the job is performed, and from this point of view the method of payment is not the basic criterion” (ILO, 1957b, p. 30). Another suggestion was that the classification should be based on the ownership of means of production. A further suggestion was that it should be based on the relations between persons in industry and in the national economy.

Given the lack of an internationally agreed definition, the United Nations Principles and Recommendations for Population and Housing Censuses simply state that “status in employment refers to the status of an economically active person with respect to his

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or her employment, that is, whether he or she is employed (or was, if unemployed) as an employer, own-account worker, employee, unpaid family worker or a member of a producer's co-operative, etc., during the time-reference period established for data on economic characteristics" (United Nations, 1986, para. 65).

ICSE and its structure

The Resolution concerning statistics of the economically active population, employment, unemployment and underemployment adopted by the Thirteenth ICLS in 1982 recommends that, for the purpose of international comparisons, the classification of the economically active population by status in employment should adhere to or be convertible into the most recent version of the international classification according to status (as employer, employee, etc.). The categories constituting the international classification according to status and the definitions of these categories were adopted in 1966 by the Statistical Commission of the United Nations. Afterwards, the definitions (but not the categories as such) were occasionally modified in the United Nations Principles and Recommendations for Population and Housing Censuses.

The latest supplement to the Principles and Recommendations refers to the classification as International Classification of Status in Employment (ICSE) and defines its categories as follows (United Nations, 1986):

- (a) *Employer*: a person who operates his or her own economic enterprise or engages independently in a profession or trade, and hires one or more employees. Some countries may wish to distinguish among employers according to the number of persons they employ.
- (b) *Own-account worker*: a person who operates his or her own economic enterprise or engages independently in a profession or trade, and hires no employees.
- (c) *Employee*: a person who works for a public or private employer and receives remuneration in wages, salary, commission, tips, piece-rates or pay in kind.
- (d) *Unpaid family worker*: usually a person who works without pay in an economic enterprise operated by a related person living in the same household. Where it is customary for young persons, in particular, to work without pay in an economic enterprise operated by a related person who does not live in the same household, the requirement of "living in the same household" may be eliminated. If there are a significant number of unpaid family workers in enterprises of which the operators are members of a producers' co-operative who are classified in category (e), these unpaid family workers should be classified in a separate subgroup.
- (e) *Member of producers' co-operative*: a person who is an active member of a producers' co-operative, regardless of the industry in which it is established. Where this group is not numerically important, it may be excluded from the classification and members of producers' co-operatives should be classified under other headings, as appropriate.
- (f) *Persons not classifiable by status*: experienced workers whose status is unknown or inadequately described and unemployed persons not previously employed (i.e. new entrants). A separate group for new entrants may be included if information for this group is not already available elsewhere.

It is further indicated that countries may want to subdivide one or more of the above ICSE categories in the light of their specific needs and circumstances. Particular reference is made to the category of employees which may be subdivided into private sector employees and public sector employees. It is also specified that countries requiring data on apprentices may include apprentices (if to be considered as economically active) as a subcategory under the major category of employees.¹ Finally, attention is drawn to the fact that members of the armed forces, if included in the statistics, should be classified among the category of employees.

¹ In the case of unpaid apprentices, it was mentioned in Chapter 5 of this manual that they could be regarded as unpaid family workers if they work in an economic enterprise operated by a related person (living in the same household).

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The International Labour Office has recently started to revise the International Classification of Status in Employment (ICSE). The proposals for a revised ICSE will be presented to the International Conference of Labour Statisticians and to the Statistical Commission of the United Nations for discussion and possible adoption in the mid-1990s. A revision of ICSE was deemed necessary because growing concern was expressed about the validity and relevance of the classification in its present form, including the fear that it is of little use to developing countries and increasingly irrelevant to developed countries. The main points raised in this debate are (1) that the classification has no clear conceptual basis, (2) that the borderlines between some of the categories are unclear, and (3) that the classification is incomplete as long as distinctions between important subgroups are not made (Hoffmann, 1987). The first point has already been mentioned above; the other two points will be discussed briefly in the rest of the subsection.

A number of jobs, both in industrialised and developing countries, have characteristics which place them on the borderline between ICSE categories as presently defined and described. Some examples of such borderline situations are given below.

Managers and directors

The common defining characteristic of employers and own-account workers in the present ICSE is that they operate their own economic enterprise or engage independently in a profession or trade. The difference between the two groups is that employers have one or more hired employees working for them, whereas own-account workers work alone or with the help of unpaid family workers only. Managers, directors and other salaried officials who do not own the enterprises in which they work are to be classified as employees, even though they may perform the same functions as employers. Consequently, many countries restrict their definitions of employers or own-account workers to those who operate unincorporated enterprises. This means that the observed number of self-employed workers on the one side and the number of employees on the other are affected by the legal situation concerning the incorporation of enterprises. However, particularly in small incorporated enterprises, the manager and his or her family often own all or a controlling part of the enterprise. The question arises whether such managers should be regarded as self-employed, and also whether persons who have the authority to hire and fire workers on behalf of an enterprise should not be distinguished from other employees.

Outworkers

Outworkers are another group of persons which may be on the borderline between employers/own-account workers and employees. Typically, outwork involves work at home (i.e. not under the direct supervision of the employer) to deliver a certain amount of goods or services to one or more employers. Often, outworkers provide their own raw materials and machinery, in addition to lighting, heating and premises. Sometimes, outworkers use other persons, such as family members or subcontractors, to do part of the work. The actual work situations of outworkers vary with respect to the type and degree of control over the work, the type and degree of economic risk associated with the jobs, the ownership of raw materials and capital equipment used, and the protection given by labour legislation. The present ICSE classifies all persons, who do piece-work at home for one or more employers rather than for their own clients, as employees; persons who work for profit or fees in their own home are, however, included among own-account workers. Thus, the distinction between "employee" and "non-employee" outworkers in the present ICSE is based only on the form of remuneration and the dependence on the sale of the product, i.e. whether the outworker sells essentially labour (a factor service) or a product (a good or a service).

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In the course of the present revision of the United Nations System of National Accounts, the suggestion was made to base the distinction between employee and non-employee outworkers on a larger number of criteria:

“An outworker should be considered an employee if (a) there exists an explicit or implicit contract or agreement of employment, (b) the remuneration received depends basically on the time worked or amount produced. An outworker should be considered an own-account worker, (c) if there is no contract or agreement of this type and the decision on markets, scale of operation and finance is in the hands of the outworker. (d) He should be classified the same way in case there is no contract and he owns or rents the capital equipment used in the production process. (e) The same classification applies to outworkers whose remuneration is a function of receipts or profits on the value of their sales” (Urdaneta de Ferran, 1989).

Unpaid workers in household enterprises

In the case of household enterprises where several members of the household participate in the activity of the enterprise, the present ICSE tends to classify one member of the household enterprise as own-account worker, and other household members who work without pay in the same unit as unpaid family workers. It has been argued that this treatment is misleading and discriminatory against women and younger workers who generally represent the majority of unpaid family workers. The disparity in statistical treatment is particularly obvious in the case of household enterprises which are operated jointly by couples of husband and wife, groups of father and sons, etc. In this case, the operators should rather be considered as business partners and all classified as own-account workers. On the other hand, it has to be recognised that customs and laws in many countries place different household members in very different positions in respect of ownership of business assets, rights to enter into business contracts or to receive and dispose of business incomes, and responsibilities for business liabilities. Such differences may warrant the retention of some distinction among different members of the same household production unit.

Business partners

According to the present ICSE, business partners are to be classified either among employers or own-account workers, depending on whether the enterprise employs hired labour or not. However, a partner's relationship to his or her partners has strong similarities to those existing in producers' co-operatives. Therefore, business partners can be considered to be on the borderline between employers/own-account workers and members of producers' co-operatives.

A review of national practices shows that the first four categories of ICSE are widely used in population censuses and labour force surveys. Many countries collect, classify and present data separately for employers, own-account workers, employees and unpaid family workers. Some industrialised countries, however, combine the first two groups into one called “self-employed”.

In addition, different analytical and descriptive purposes may require the identification of various subgroups within each of the ICSE groups. In certain countries, own-account workers in agriculture have been classified into owner-holders, tenant-holders and share-croppers. A number of countries have subdivided other groups into several subgroups. This applies particularly to the group of employees, which has been subdivided by many countries into salaried employees and wage earners, into public employees and private employees, or into regular employees, temporary employees and casual employees. Other groups for which data have been collected separately include civil servants, members of the armed forces, apprentices, domestic servants, homeworkers, subsistence farmers, directors of companies or corporations, owners of incorporated enterprises and unincorporated enterprises, etc.

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Questionnaire design

Designing an item on status in employment for a labour force survey questionnaire involves three considerations: (a) for whom the information is to be collected; (b) how it should be collected; and (c) which detail of information is required.

The wording of the international standards implies that information on status in employment should be obtained for all economically active persons, i.e. for the employed as well as the unemployed. In addition, some countries consider it useful to obtain such information for persons above the age specified for measuring the economically active population, who were not economically active during the reference period. In the case of employed persons, status in employment refers to the status with respect to the employment during the survey reference period. In the case of unemployed or economically inactive persons, it refers to the former status with respect to the persons' last employment. In order to facilitate data collection and processing, many countries do not ask for the information in the case of persons whose last employment ended before a certain period of time ago (e.g. three years or longer). This is the procedure indicated in Flow chart 6 (Chapter 6).

A worker may have more than one job during the reference period and, as a consequence, work as an employee in one job and be self-employed in others. This means that, just as with occupation and industry, persons must be classified to a specific category of status in employment on the basis of their relationship to a job. Multiple jobholders may therefore have several statuses in employment, and it may be useful for analytical purposes to collect information on status in employment for more than one job. However, it is necessary for a classification of *persons* (as opposed to jobs) to have rules for selecting the "main status" of persons. For persons who had more than one status in employment during the reference period, the status in employment should be determined with reference to the same job as was used to determine the main occupation. In addition, there may be a need for establishing rules to define multiple-status groups.

In labour force survey questionnaires, the information on status in employment is usually obtained by one simple question, such as: "Did you work as ...?"; "Are/were you a ...?"; or "What is your employment status in your present job?" This question is then followed by a list of precoded answer categories.

The number and types of the precoded answer categories to the question on status in employment vary among countries. They have to be determined depending upon specific national circumstances and data requirements. In addition to the broad ICSE categories, it may be necessary to include other groups, either as separate groups or as subgroups. Examples of such additional groups were given in the previous subsection.

In general, a classification by status in employment which distinguishes among a small number of categories is much easier to handle, from a data collection point of view, than one which makes distinctions among a large number of different groups. However, this applies only if the groups defined correspond closely to existing and easily recognisable work situations. This seems to be the case in most industrialised countries, whether with a market economy or a centrally planned economy, where the core situations of employees, employers/own-account workers or members of producers' co-operatives dominate and it suffices to list a small number of precoded response categories on the questionnaires. However, borderline situations are becoming increasingly important in some of these countries, undermining the validity of a simple classification. The situation for a large proportion of workers in developing countries does not and never did correspond to the core situations, making it difficult to classify them into the present ICSE categories and calling for more detail.

5. Coding of industry and occupation

Coding of industry and occupation is the process of transforming textual descriptions of the industry and occupation of respondents into code numbers of the industry and occupation classifications. Industry and occupation are generally the only two items in a survey of the economically active population which are not precoded and for which the information recorded on the questionnaire is in the form of written descriptions requiring a special coding operation.

The operation of coding industry and occupation constitutes a major task of data processing. It is time-consuming and costly, error-prone and difficult to control. Efforts should therefore be deployed to organise the coding operation in an efficient manner. In the remainder of this section the coding operation, the magnitude of the coding errors and the procedures for verifying and controlling the coding operation are briefly discussed. Further details, particularly on coding of occupation, may be obtained in Part E of Hoffmann (1990).

The topic is discussed below in the context of an environment in which the coding operation is performed manually. It should be noted, however, that with the rapid advances in computer technology in recent years, certain countries are increasingly using computers to assist the coding operation in their statistical inquiries. This is especially so in the case of population censuses and large-scale labour force surveys, where obtaining detailed information on industry and occupation is a major objective. For a discussion of computer-assisted coding and automated coding, reference is made to Lyberg (1982) and Part E, Section 5, of Hoffmann (1990).

The coding operation

Typically, the coding operation involves a group of specially trained coders who, on the basis of the survey responses (textual descriptions on industry and occupation and other ancillary information given on the questionnaire), assign for each item (industry and occupation) a numeric code from the corresponding coding index and record the assigned code in a designated place on the questionnaire. The coding operation also involves query resolution by supervisors. It may in addition involve a formal verification procedure by expert coders and on an occasional basis an in-depth evaluation using quality control procedures.

The coder uses two documents for the coding operation. The first is the questionnaire containing the information to be coded. The second is the coding index from which the code is to be extracted. Normally, there is a separate coding index for the industry classification and for the occupation classification. On the basis of these documents the coding operation is carried out as follows:

- (1) identify the *key word* from the response on the questionnaire;
- (2) find the *key word* in the coding index;
- (3) if there is more than one entry with the given *key word*, use other information (*qualifier*) from the response to find the appropriate entry;
- (4) write the code corresponding to this entry on the designated place on the questionnaire.

For coding of occupation, the key word refers to that word in the response which can stand on its own as a job title. For example, in the response “machine operator”, the term “operator” is the key word. In some cases, the key word may not be present in the response and should be constructed from the available information. The qualifier mentioned in (3) refers to a word in the response which provides a more specific idea on the occupation by qualifying the key word. In the above example, “machine” is a qualifier describing the type of operator. In some cases, it may be necessary to have more than one qualifier.

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A similar procedure applies for coding of industry. In this case, the key word refers to that word in the response which can stand on its own as a title of an industry and a qualifier refers to a word in the response which provides a more specific idea of the industry in question. For example, in the response “repair shop”, shop is the key word and repair is a qualifier.

The coding operation can best be illustrated by a complete example. Consider a questionnaire in which the interviewer has recorded the following information on the industry and occupation of the respondent:

QUESTIONNAIRE	
<i>Query on industry</i>	<i>Response</i>
(a) Kind of industry:	Fast food restaurant
(b) Main products or services:	Hamburgers
<i>Query on occupation</i>	<i>Response</i>
(a) Kind of work:	Kitchen washer
(b) Main tasks and duties:	Wash and shelve dishes

An application of the four-step coding procedure gives the following results:

Coding of industry:

(1) Key word in response:	Restaurant
(2) Key word in coding index:	5150 Restaurant, equipment dealing 9214 Restaurant, entertainment 5150 Restaurant, furniture dealing 36 10 Restaurant, furniture manufacturing 5520 Restaurant, operated as leased department in other business 5510 Restaurant, operated in connection with lodging 5520 Restaurant, operated not in connection with lodging
(3) Qualifiers in response:	Fast food/Hamburgers
Entry in coding index:	5520 Restaurant, operated not in connection with lodging
(4) Industry code:	5520

In step 1 of the above example, “restaurant” is chosen as the key word because the term can stand alone as a title of an industry. The same cannot be said of the other terms in the response. In step 2, seven entries are found for this key word in the coding index. To select the appropriate entry among the seven, the coder should use the qualifiers given in the response. This is step 3 of the coding operation. In this example, there are two qualifiers, namely “fast food” and “hamburgers”. From these qualifiers, it can be inferred that the restaurant industry in question is not an industry catering to restaurants, supplying or manufacturing furniture for restaurants, but a proper restaurant serving food. This narrows the choice to the last three entries in the list. Because the qualifier indicates that the restaurant is a fast food operation with a single product (hamburgers), it follows that, in principle, it cannot be a restaurant attached

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to another business (e.g. a canteen or a dining car in a train), nor a restaurant connected to a lodging like a hotel. The outfit must therefore be a regular fast food restaurant, and the appropriate entry “Restaurant, operated not in connection with lodging”. The code corresponding to this entry is 5520, as indicated in step 4 of the coding operation.

The four-step procedure is now applied for the coding of occupation.

Coding of occupation :

- (1) Key word in response: Washer
- (2) Coding index:
- | | |
|------|------------------------------------|
| 9322 | Washer, hand/carcass |
| 9322 | Washer, hand/cloth |
| 9132 | Washer, hand/dishes |
| 9322 | Washer, hand/fibre |
| 9322 | Washer, hand/hide |
| 9133 | Washer, hand/laundry |
| 9322 | Washer, hand/manufacturing process |
| 9120 | Washer, hand/street (car windows) |
| 9142 | Washer, hand/vehicles |
| 9322 | Washer, hand/yarn |
- (3) Qualifiers in response: Kitchen/dishes
- Entry in coding index: 9132 Washer, hand/dishes
- (4) Occupation code: 9132

A similar set of operations has been applied for the coding of occupation. Having chosen “washer” as the key word, 10 corresponding entries are found in the coding index. It should be noted that the first qualifier “kitchen” chosen from the response is not present in the index and is too general to identify the appropriate entry; the occupation may be a lettuce washer, a cloth washer (table cloth, napkins, etc.) or a dish washer in the kitchen. It is necessary, therefore, to use the second qualifier “dishes” to select the correct entry: “Washer, hand/dishes”. The code corresponding to this entry is 9132 and is chosen as the occupation code.

The example given above refers to a relatively straightforward situation where the key words can be identified directly from the response and the appropriate entry in the coding index can be singled out on the basis of the qualifiers without much ambiguity, either by inference (the case of coding of the industry) or by use of the second qualifier (the case of coding of the occupation).

In many other situations the appropriate key word may not be present in the response and may need to be constructed. For example, if in part (a) of the occupation question the written response were “kitchen worker” instead of “kitchen washer”, the term “worker” could not be used as the key word, since it would not correspond to a proper job title. In this situation the appropriate key word “washer” would have to be constructed on the basis of both parts of the response, (a) (Kind of work) and (b) (Main tasks and duties).

There could also be situations where the available information in both parts of the response, whether on industry or occupation, is not sufficient for the coder to construct the proper key word or to identify the appropriate entry from the coding index. In other

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instances the available information may lead to more than one entry in the coding index, all equally appropriate. In all such cases, the coder must refer the problem to the supervisor who would examine it and eventually use ancillary information available on the questionnaire to resolve the query (e.g. type and level of education, status in employment of the respondent or occupation and industry of other members of the household). This process is called query resolution and its terms of application should be clearly spelled out from the outset as part of the design of the coding operation.

Coding errors

It is clear from the discussion and the example given in the preceding subsection that the coding operation is a complex task requiring special skills and training. It is subject to errors, both bias and variability, as the given code may differ from the “correct” code and identical responses may be coded differently by different coders.

A coding error occurs if a response is assigned to a code number other than the correct one. The notion of a coding error thus presupposes that a “correct code” exists and that it is unique. In practice there are a number of difficulties in determining a unique “correct code”. There are many situations where expert coders differ in the codes they assign to a response depending on interpretation. To settle differences certain countries use a majority rule according to a specific scheme, e.g. the same response is coded independently by several expert coders and the code number assigned by the majority is considered as the “correct code”. The scheme often incorporates a supplementary rule to cope with the eventuality that no majority is obtained.

Another issue concerns the proper interpretation of a coding error, as it can be confounded with a response error. Consider a situation where the response to a question on occupation for a railway driver (occupation code 8311) is mistakenly written down as “truck driver”. If the occupation code for “truck driver” is 8324 and the coder assigns 8324, no coding error has occurred. What has occurred is a response error.

A coding error should be interpreted in terms of the corresponding level of coding. Suppose, for example, that a coder has assigned the code 369 where the correct code is 367. This is a coding error at the three-digit level, but not one at the two-digit or one-digit level. Note, however, that an error at a lower-digit level automatically entails an error at all higher-digit levels. Thus, the assignment of code 456 where the correct code is 556 is a coding error at the one-digit level, as well as at the two-digit and three-digit levels.

In national surveys and censuses where the coding errors of industry and occupation have been studied, the results have shown that the error rates are not negligible. Table 18 shows the error rates in the 1970 population censuses of Sweden and the United States. The error rate is the number of incorrectly coded responses divided by the total number of responses coded.

Table 18. Error rates in percentages in occupation and industry coding (Population census, 1970)

	Sweden	USA
Occupation (3-digit)	13.5	13.3
Industry (4-digit)	9.9	9.1

The table shows that the census error rates in both occupation and industry coding are substantial. The Swedish figures are very similar to the US figures and the occupation error rate is always larger than the industry rate. The disparity would be even higher had the error rate for industry been calculated at the three-digit level, as for occupation.

Major economic classifications

It should be mentioned that, given the same level of attention in industry and occupation coding, the error rate in tabulated data will be somewhat lower in sample surveys than in censuses. One reason is that due to sample size considerations, data are generally tabulated at the one-digit level in sample surveys and one-digit level data have necessarily smaller error rates than the corresponding data at higher-digit levels. Another reason is that in tabulated data errors compensate each other to some extent and the net error rate is thus lower than the gross error rate.

Although error rates increase with an increase in the digit level, it is good practice to carry out the industry and occupation coding at the highest digit supported by the responses. This is because most of the errors are actually made at the first digit and new errors introduced at subsequent digits are substantially smaller. This is illustrated in Table 19 where the error distribution of the occupation coding of the 1970 Swedish Population Census is shown.

Table 19. Error distribution of occupation coding at different digit levels (Population census, Sweden 1970)

Digit level	Frequency of errors	Percentage of errors
1-digit	219	48.7
2-digit	88	19.5
3-digit	143	31.8
	450	100.0

It can be observed that almost half of the occupation coding errors in the Swedish census occurred at the first digit. The frequency of error is lowest at the second digit and somewhat higher at the last digit. This pattern resembles an inverted J-curve and characterises the distribution of errors in occupation and industry coding. To illustrate, suppose that the response "Accounts officer" is given to a query on occupation. Depending on the interpretation of the occupation as that of a clerk or an accountant, the coder may designate the response to the major group 4 "Clerks" or to the major group 2 "Professionals", respectively. This example shows that a difference in interpretation results in a divergence in coding right from the first digit.

Once the distinction has been made at the first digit or major group level, there is much less scope for error at lower digits. In the preceding example, once the occupation is decided as that of a clerk, it is then fairly straightforward to designate it to the unit group 4121 "Accounting and bookkeeping clerks". Similarly once the occupation is interpreted as that of an accountant, it is equally simple to designate it to the unit group 2411 "Accountants".

If there is room for error at lower digits, it is more likely to occur at the last digit or the unit group level, in line with the inverted J-curve phenomenon mentioned above. The increased likelihood of error at the last digit is due to the increased detail, or ambiguity, which may arise at that level. For example, consider the response "Power station engineer". Depending on interpretation and availability of ancillary information, the response could be coded under the unit group 2143 "Electrical engineers", or 2144 "Electronic and telecommunications engineers", or 2145 "Mechanical engineers", the codes differing only at the last digit. It must be stressed that errors of this sort are much less frequent than errors at the first digit, and depend on the detail incorporated into the coding index; the more detail, the less likelihood of errors at the unit group level.

Control of coding errors

In order to minimise coding errors, the coding operation should be controlled to whatever extent is feasible. Control may take different forms. To start with, all materials for coding should be systematically examined for clarity and ease of application. When

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designing the questionnaire, the items on occupation and industry must be reviewed to ensure the inclusion of all elements essential to subsequent coding. In field applications, strict guidelines should be given to the interviewers about the importance of providing the required information in its complete form. To facilitate the tasks of coders, the coding index should be well organised, and provide enough entries to cover the range of occupations prevalent nationally. It is also essential that coders and supervisors be given specialised training and provided with a comprehensive manual on coding.

In addition to these general safeguards, it is necessary to institute a suitable verification procedure. Two types of verification procedure may be distinguished: dependent and independent. Dependent verification involves a direct check of the code assigned by the coder against the textual response given in the questionnaire. Independent verification is more elaborate and involves two steps: *(a)* separate coding of the textual response by the verifier; and *(b)* comparison of the resulting code with that assigned by the coder. In dependent verification the verifier has access to the code assigned by the coder but in independent verification the verifier has no such access. Experience has shown that with dependent verification, it is easier for the verifier to overlook errors, with the result that many errors tend to remain undetected. While the process of dependent verification is simpler than that of independent verification, the latter is recommended when feasible, particularly in large-scale surveys where obtaining detailed occupation and industry data is a major measurement objective.

In a continuous survey, it may be necessary to carry out, on an occasional basis, an in-depth quality control of the industry and occupation coding to ensure a desired level of accuracy of the outgoing codes. This involves a number of steps, including a sample selection of incoming codes, verification of the correctness of the codes using a dependent or independent verification procedure, and a warning mechanism to detect error rates above a predetermined threshold. Such quality control procedures will also enable computation of separate error rates for coders. Appropriate action can then be taken, regarding coders whose error rates are unsatisfactory over a period of time; this may include, for example, retraining or reassignment.

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PART TWO

METHODS

1. introduction

Part Two of this manual discusses various methodological issues in the design and execution of surveys of the economically active population, with a special focus on the conditions and requirements of survey work in statistically less developed countries. This chapter provides a review of aspects of the planning and design of labour force surveys or, more generally, surveys of the economically active population. A fuller and more technical discussion of issues relating to survey design and operations is provided in subsequent chapters.

In many countries, and particularly in statistically less developed countries, sample surveys of households constitute the primary source of information on the economic activities of the population. This is a major reason for the present manual's main concern with this type of survey. However, sample surveys of households are not the only source of such information. Other sources, such as population censuses, and administrative records, and their advantages or limitations are discussed in Section 2 of this chapter. The different sources can be combined and used to complement each other in providing the required information. The choice of the most appropriate combination of data sources is the first step in statistical planning.

A variety of designs and arrangements are possible in household surveys aimed at obtaining information on employment, unemployment, underemployment and other aspects of economic activity. The primary determinant of the survey structure is *the type of data required*. Surveys may be carried out on a continuing basis to obtain a time-series of current data, or on a less frequent basis to obtain information of a more structural nature and on longer-term changes. A requirement to link up with other surveys can be an important factor, as household surveys are increasingly used as a source of data on a wide variety of other topics in addition to the labour force. These and other factors determining the general survey structure are discussed in Section 3 of this chapter.

Section 4 is concerned with basic issues in the planning and design of surveys of the economically active population. These include the determination of survey structure and scale, planning and organisation of survey activity and other arrangements, taking into account three sets of factors: the survey objectives and data requirements; the practical constraints and conditions of survey implementation; and the requirements of linkages with other statistical operations, in particular with other types of household survey.

Many countries already have established labour force surveys, and the requirement is to redesign periodically and improve the existing survey system. Although the general principles of survey design apply to redesign, many additional factors need to be taken into account for the revision of an existing system. This chapter ends therefore with a separate section (Section 5) to discuss objectives and strategies for survey redesign.

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2. Sources of data on the economically active population

Population censuses and sample surveys of households or individuals generally constitute a comprehensive means of collection of data on the economically active population which can be linked with data on other related topics. Establishment surveys and administrative records may also serve as sources for obtaining in some cases more precise, more frequent and more detailed statistics on particular components of the economically active population. The different sources of information should be regarded as complementary and may be used in combination for deriving where necessary integrated sets of statistics . . .

Thirteenth International Conference of Labour Statisticians (*ICLS*), Resolution I, para. 3 (ILO, 1983).

Household sample surveys

Household surveys allow for the joint measurement of the employed, unemployed and economically inactive. They can be designed to cover virtually the entire population of a country, all branches of economic activity, all sectors of the economy and all categories of workers, including own-account workers, unpaid family workers, and persons engaged in casual work or marginal economic activity. This gives such surveys a unique advantage for obtaining information on the total labour force and its structure. As concepts, definitions and subject details can easily be adapted to particular data requirements, different degrees of labour force attachment among various groups of the population can be measured. There is also considerable flexibility as regards the data items that can be covered. Since in household surveys households or individuals are reached directly, relevant supplementary information on demographic and socio-economic characteristics of individuals and households can be obtained at relatively low additional cost along with information on labour force characteristics (United Nations, 1984, paras. 11.10-11.11). This offers many possibilities for data analysis. With appropriate design and rules of association, household surveys can also provide a means to collect information on household-based and other small-scale establishments.

While household surveys constitute a primary source of information on the economically active population, some of the data can also be obtained from other sources. A basic decision in statistical planning concerns the choice of an appropriate combination of methods so as best to meet the various data needs in a given situation. In addition to household surveys, main sources of labour force data include: (1) population censuses; (2) censuses and sample surveys of establishments; and (3) administrative records of different types. The various sources differ in coverage, scope, units of measurement and methods of data collection. Each source has advantages and limitations in terms of the cost, quality and type of information yielded. Generally, one approach tends to be stronger where another is weaker, and vice versa. The various sources tend, therefore, to be complementary rather than competitive or mutually exclusive. Their results can be combined, provided that concepts, definitions, coverage, reference periods, classifications, etc., agree as far as possible. In the remainder of this section the main alternative sources of data on the economically active population are discussed in relation to household sample surveys.

Population censuses

Population censuses and household surveys cover in principle the same areas of population and employ the same type of measurement units (households and individuals). Differences between the uses to which population censuses and household surveys may be put arise primarily from the differences in the scale of the operations involved (complete enumeration versus sampling), which lead to differences in methodology, practical conditions of implementation, timing and complexity of the data

collected. The primary objective of a census is to obtain relatively brief but complete information on the size and basic characteristics of the population, and to provide the maximum possible detail for local areas and small domains or for particular groups of the population. Usually, only selected topics on economic characteristics are investigated in a population census. The following are the topics to be included according to the Recommendations of the United Nations, with the first set identified as priority items (United Nations, 1980, paras 2.180-2.219):

- activity status; occupation; industry; status in employment; and
- time worked; income; sector of employment.

Usually, the number of questions used in a census to investigate any of these items has to be limited, typically to a single question per item. In contrast, a household sample survey, by virtue of its smaller size, can be designed to obtain a wide variety of data for different kinds of analyses. It can be tailored more flexibly to fit a variety of users' needs and methods of data collection. Household surveys, though by no means inexpensive, are obviously less costly than complete censuses. They can be repeated more frequently and thus provide information on current changes over a period of time. Because of their smaller size, sample surveys also permit better control of response and other "non-sampling" errors, and the resulting data can be processed more speedily.

Due to the limited size of the samples, the major limitation of household surveys is their inability to provide sufficient detail for small areas or subgroups in the population. In addition, samples of moderate size, while often capable of providing good estimates of proportions, rates, ratios, etc., tend to be less satisfactory for estimating population aggregates (such as the total number of unemployed persons in a particular group) and changes in aggregates, items which may be of particular interest to the user. To obtain reliable estimates of population aggregates, it is usually necessary to supplement or adjust data from samples by using information from other sources, often from the population census or population registers, where available.

Mutually supportive roles and combined uses of population censuses and sample surveys have been described in many sources (e.g. United Nations, 1984, paras. 1.7-1.11; Kish and Verma, 1986). The sampling method can profitably be used to facilitate the planning, testing, controlling, evaluating, processing and supplementing of census data collection. In return, the census experience provides the infrastructure, sampling frame, benchmark data, etc., that are needed to conduct household sample surveys, together with a general impetus to the development of statistical capability. These contributions are particularly important for large-scale sample surveys with wide coverage, such as national labour force surveys.

Combinations of the two approaches also exist. The population census is designed in many countries to have two components: **(a)** an enumeration of the population and its basic demographic and related characteristics on a 100 per cent basis, supplemented by **(b)** a large sample, attached to the census, covering a broader range of items. Such a design can considerably enhance the role of the census as a source of data on the economically active population and related topics.

It should further be noted that data from population censuses and labour force surveys are increasingly being used in conjunction with suitable statistical techniques to yield post-census and current estimates for local areas and small domains.

Censuses and sample surveys of establishments

Depending on specific requirements, data on employment and related topics may also be obtained from censuses and sample surveys of establishments, as distinct from population censuses and household sample surveys. The differences between these two systems concern the population covered, the units of measurement and the scope of the information collected.

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Compared with household surveys, censuses and surveys which use establishments as measurement units can be more specifically focused, hence more precise and economical, but at the same time they can be more limited in coverage and content. In relation to coverage, one may distinguish between two types of establishments: large establishments belonging to the more organised sector of the economy, possibly registered in some formal way and employing more than a certain number of persons; and small establishments in the relatively unorganised sector, which may be non-household establishments or purely household-based operations run by households on a proprietary or partnership basis. Reasons of cost, logistical difficulties or specific objectives confine many establishment surveys to larger establishments only. The employment data obtained from such surveys tend therefore to be restricted to paid employees in the more organised sector of the economy. Often, such surveys cover only particular branches of economic activity, such as mining and quarrying, manufacturing and construction. They are normally based on existing list frames, and tend to suffer from the more or less serious deficiencies of coverage common to such frames.

Furthermore, rules of association between different types of survey units can be rather complex. The sampling units used for selection, the responding units which provide the information, and the units of enumeration and analysis on which information is sought in the survey may be difficult to identify and associate with one another consistently. The practical difficulties of distinguishing consistently between establishments and enterprises are well known. An illustration of another kind of difficulty would show how an establishment survey system enumerating occupied jobs on the basis of persons listed in the payrolls would exclude persons with a job but temporarily away without pay, but would count multiple jobholders more than once. Such problems do not arise in household surveys.

The strength of establishment surveys lies in their greater *specificity*, both in terms of coverage and content. When the interest is in specific industries, establishment surveys, given an adequate sampling frame, can achieve more efficient sample designs and procedures than household surveys covering the whole population. More reliable and more detailed information on certain topics can be obtained in establishment surveys, especially where they can draw upon payrolls and other available records. This type of survey can provide an opportunity to collect information on many other economic variables such as output, costs, investment, technological and organisational factors, which can then be directly related to information on employment, wages and productivity and can form a much more comprehensive basis for the analysis of economic activity. Also, data on employment can be related more accurately to data on earnings, skills, occupation and industry.

Establishment surveys may also be more economical and timely than household surveys. This is because respondents in the former tend to be congregated together and easier to contact. Even in developing countries, cheaper methods of enumeration such as mailed questionnaires or telephone interviews can sometimes be used in place of the more expensive face-to-face interviewing. Another cost-reducing factor is that the required information on all the persons employed in a large establishment can be provided by a single or a few respondents.

Turning to small establishments, the distinction between establishment and household surveys is less clear-cut. List frames are generally not available for small establishments, which are characterised by high fluctuation and often lack recognisable features, and therefore the only feasible approach is the usual household survey one of multi-stage sampling of areas with special listings of units at the last stage. However, unlike households, even small establishments tend to be rather unevenly distributed in the population, often in pockets of considerable concentration by type of economic activity. Information on the pattern of distribution from censuses or other sources is

often necessary to improve economy and efficiency of survey design and implementation (see, e.g., Murthy and Roy, 1970).

Administrative sources

Statistics based on administrative records are usually by-products of administrative processes. Administrative records can thus be a very economical source of statistical information. They are often based on continuous operations, and can therefore be a useful source of flow statistics and other longitudinal data. However, they can also suffer from various shortcomings such as limited coverage and content, inflexible concepts and definitions, incompleteness, inconsistencies, and restricted access due to legal or administrative constraints. As noted in the *Handbook of household surveys* (United Nations, 1984, paras. 1.13, 1.14), in developing countries with unorganised labour markets, administrative sources such as unemployment insurance and employment exchange records often do not exist at all or are limited to certain narrowly defined categories of workers. Of course, where these sources are available and tabulated at frequent and regular intervals, they can be used to good account in particular analyses. Other administrative records such as the payrolls and files of civil service organisations, government enterprises and other public institutions, may also be usefully exploited to obtain information on employment in the public sector. Wide use of such sources is, however, found mostly in developed countries.

Administrative sources can be used in compiling and updating sampling frames for employment and related surveys based on samples of establishments, at least in respect of the larger establishments in the more organised sectors of the economy.

3. Survey structure and arrangements

According to the resolution adopted by the Thirteenth ICLS, the programme of statistics of the economically active population should cover all branches of economic activity, all sectors of the economy and all categories of workers, and should be developed to the fullest extent possible in harmony with other economic and social statistics. It follows from the discussion in the previous section of this chapter that household surveys are particularly suited to meet these objectives. The Thirteenth ICLS specified further:

The programme [of statistics of the economically active population] should specifically provide for both short-term and long-term needs, i.e. statistics for current purposes compiled frequently on a recurrent basis and statistics compiled at longer intervals for structural in-depth analysis and as benchmark data.

- (a) The current statistics programme should encompass statistics of the currently active population and its components in such a way that trends and seasonal variations can be adequately monitored. . . .
- (b) The non-current statistics programme which may include censuses and surveys should provide: (i) comprehensive data on the economically active population; (ii) in-depth statistics on the activity pattern of the economically active population over the year and the relationships between employment, income and other social and economic characteristics; and (iii) data on other particular topics (e.g. children and youth, women households) as determined by the long-term continuing needs.

Thirteenth ICLS, 1982, Resolution I, para. 2 (ILO, 1983).

Minimum requirements concerning the frequency, item coverage and classifications of the statistics are set forth in the Labour Statistics Recommendation (No. 170), adopted by the International Labour Conference in 1985 to supplement the Labour Statistics Convention (No. 160):

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1. (1) Current statistics of the economically active population, employment, where relevant unemployment, and where possible visible underemployment should be compiled at least once a year.

(2) These statistics should be classified according to sex and, where possible, age group and branch of economic activity.

2. (1) With a view to meeting long-term needs for detailed analysis and for benchmark purposes, statistics of the structure and distribution of the economically active population should be compiled at least once every ten years.

(2) These statistics should be classified at least according to sex, age group, occupational group or level of qualifications, branch of economic activity, geographical area and status in employment (such as employer, own-account worker, employee, unpaid family worker, member of producers' co-operative).

Labour Statistics Recommendation (ILO, 1988).

Among household surveys of the economically active population a variety of designs and arrangements are possible. The primary determining factors are the *substantive objectives* of the survey, i.e. the content, complexity and periodicity of the information sought. The survey may be designed to obtain regular time-series of data on current levels and trends; alternatively or in addition, it may focus on less frequent information of a more structural nature and longer-term interest. The survey content may be detailed and specialised to give information, for example, on the dynamics of the labour force or gross flows between different labour force categories; in contrast, the survey may be confined to a few basic characteristics of the labour force, such as the levels of employment and unemployment. These substantive considerations will also determine the appropriate timing, frequency, reference period, sampling arrangements and other aspects of the survey structure. The requirement of appropriate linkages with other surveys, both in terms of subject-matter and field operations, can be another important factor determining the survey structure and arrangements.

Continuing versus occasional surveys

Continuing surveys for current data. Continuing surveys are primarily conducted to generate a time-series of data on current levels and trends; with appropriate design and data of sufficiently high quality, the survey may also provide estimates of gross changes and flows of individuals between different activity statuses and types of economic activity. Typically, such a survey consists of an ongoing series of survey "rounds", each round being designed to produce separate estimates covering a specified time period.

Continuing surveys are used to monitor the performance of the economy; to obtain indicators of changes in current rates of labour force participation, employment, unemployment and underemployment; and to measure trend, cyclic and seasonal variations in these rates. Though in principle the survey, with an appropriate design, can also provide information on gross (individual level) changes and flows, it is not always possible to do so with sufficient reliability.

Among continuing surveys, two types of arrangement are commonly found. The first arrangement is to conduct the survey on a *continuous* basis, i.e. the field-work is carried out uninterrupted. Typically, the information is obtained by using a moving reference period, i.e. a reference period relating to a specified duration immediately prior to the interview, which varies among respondents depending on when the interview is held. If the survey round is of a sufficiently long duration, it may be divided into "subrounds", each covering a representative sample during a part of the whole period for the survey round. Division into subrounds permits better, in the sense of more representative, coverage of the sample over shorter time segments during the round (such as over months or quarters during the year). Results from the subrounds can therefore be used to study seasonal and other variations during the round. The system also permits

more frequent and timely release of the results. The distinction between rounds and subrounds is mainly one of sample size. In the case of each round, with a larger sample size obtained by the accumulation of subrounds, it may be possible to tabulate and analyse the data in fuller detail; whereas in the case of individual subrounds the sample size may only be large enough to provide main estimates with adequate precision, with less geographical and other disaggregation. With the field-work divided into representative subsamples for each time segment (subround), the aggregated results for the whole round are themselves improved, since seasonal and other temporal variations during the round are covered or averaged-out in a more balanced way. Division into subrounds can also have important operational advantages: the field-work can be better controlled and distributed more evenly over a period of time. The cost of the system is of course increased travel in order to cover well-dispersed samples separately during each subround.

The second arrangement is that of *periodic* surveys with intermittent field-work concentrated over relatively short intervals. There can be certain advantages in concentrating field-work. Firstly, it can make it easier to control and implement field operations. Secondly, it becomes easier to obtain information with a “fixed” reference period, i.e. with the same reference period for all respondents in terms of fixed calendar dates. As indicated in the next subsection, it is necessary and/or preferable, for certain purposes, to use such a fixed reference period.

However, there can be some disadvantages in concentrating field-work. Firstly, the average conditions over a period such as a year may not be as well represented in periodic surveys as in continuous surveys with field-work evenly distributed throughout. Secondly, periodic surveys do not provide field enumerators with a continuous and evenly distributed workload. A choice has thus to be made between (a) employing permanent field-workers and letting them remain idle for part of the time; (b) resorting to the use of temporary staff during the periods of field-work; and (c) having a permanent field staff and using it for other survey operations during the slack period, such as sample updating, editing, coding, or for other statistical work. The first option, (a), is obviously wasteful, though apparently it has been seriously considered in some situations where the use of permanent, well-trained enumerators is considered essential to ensure data quality, while personnel field costs are relatively low because of low wages. Of relevance to a consideration of option (b), i.e. the use of temporary staff, is a review of a number of national labour force surveys (ILO, 1986) which showed that nearly one half of the countries conducting their surveys on a periodic (as opposed to continuous) basis engaged at least some temporary staff, to reduce the problem of uneven workloads inherent in the survey structure. By contrast, according to the same review, practically no countries with a continuous field-work model used such staff. Of course the organisations’ staffing policies are influenced by numerous factors, but variations in workload is probably an important consideration.

Option (c) is in common use, particularly in countries with relatively well-established statistical infrastructures, where permanent field staff stationed in different parts of the country can handle a variety of data collection tasks, including household survey interviewing. In the intervals between periods of field-work for the labour force survey, the field staff can continue with data collection for other statistics. A distinct alternative would be to use the staff between rounds of the survey not for other field-work and data collection, but for editing, coding, summarising, and evaluating the labour force survey data collected during the preceding round of field-work. With rapid developments in micro-computer technology, it is becoming feasible to decentralise more data-processing functions such as data entry and verification. Involvement of the field staff in data preparation and processing tasks can speed up the whole operation. This can be an important consideration, since often data processing is a major bottle-neck

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holding up the completion of surveys. Involvement in processing can also improve the quality of the data collected in subsequent rounds as it enhances the interviewers' understanding of the questionnaire.

Given that the main purpose of continuing surveys, whether through continuous or periodic field-work, is to generate a regular sequence of data, it is imperative that in such surveys the results are released regularly and opportunely, and that the volume and complexity of the information collected do not overwhelm the organisation's data processing and reporting capacity. Otherwise, unprocessed data will pile up in increasing quantities, and the whole objective of providing current statistics will be defeated.

Many examples of continuing labour force surveys may be found in both developing and developed countries; a review of current national practices is provided in ILO (1986).

Occasional surveys for more structural information. Comprehensive surveys of the economically active population may be conducted less frequently to obtain benchmark data and detailed structural information. This may include, for example, detailed information on the economically active population by industry, occupation, status in employment, on activity patterns over the year, work experience, multiple job-holding, education and training, hours worked, income from employment and so on. Similarly, the population not economically active may be classified by type and various socio-economic and demographic characteristics. In development planning such surveys are needed for analyses of the employment conditions at the beginning of the plan period, and for fixing targets and goals. While surveys of this type are not designed to yield a continuous flow of current statistics or information on changes over short periods, they are well suited to provide less frequently needed information on essential structural characteristics and on longer-term changes. As these characteristics do not change rapidly, it is not necessary to undertake such surveys more than once every few years. For example, they may be conducted every five years as post-censal or intercensal surveys in countries with decennial population censuses. In any case, it is often simply not feasible to take such detailed surveys more frequently because of resource constraints.

The timing of the survey has to be determined carefully. The results should be available when structural and benchmark data are most needed, as for example at the stage of formulation of development plans. To be of long-term value, the survey timing should not coincide with periods of abnormal or transient employment conditions (unless the measurement of such abnormality itself constitutes the main objective of undertaking a special survey). The survey period should also take into account seasonal and other short-term variations. For these reasons, it may be useful to spread out field-work over a whole year covering all seasons; this may be done on a continuous basis with uninterrupted field-work throughout the year (as for example is done in the labour force rounds of the Indian National Sample Survey), or in the form of more concentrated periods of field-work spaced out over the year.

Occasionally, more specialised surveys may be undertaken to investigate in depth certain relationships, special phenomena, problems and issues, or population groups of special interest. Possible examples are relationships between labour input, training and experience on the one hand, and income from employment, family income, welfare, etc., on the other. However, such surveys tend to be quite complex in content and involve special arrangements, specialised staff, and relatively heavy cost and effort. Consequently, they are usually undertaken on a one-time or infrequent basis, often with less than national coverage and with smaller and less well-dispersed samples. In so far as a specialised survey is "research oriented", (i.e. aims at providing information of longer-term interest to enhance the general understanding of issues and problems, rather than at meeting some more immediate data needs), there may be considerable flexibility

in its timing. For the same reason, comprehensiveness of content and high quality of data may be more important considerations than extensive coverage and quick release of data.

Finally, it may be noted that sometimes survey objectives require the collection of additional information on particular population groups of special interest such as the handicapped, migrants, female household heads, unemployed young persons or underemployed workers. Where such groups are small, special arrangements such as multi-phase sampling with screening may be required to include sufficient numbers of respondents. In continuing surveys, there is also the possibility of accumulating such cases from several rounds. If the additional information required on groups of special interest is too detailed or complex, it may be necessary to organise its collection as an operation separate from the main labour force survey (employing for instance special questionnaires and/or special interviewers), though co-ordinated with it in an appropriate manner.

Reference period

Another basic aspect of survey structure is the type of reference period or periods used for the collection of the information. Various substantive considerations involved in the choice of reference periods have been discussed already in Part One of the manual. Here the objective is to summarise some main points in the context of the different types of labour force surveys as described above.

It may be recalled that for the measurement of current activity status, a short reference period of one week or one day is required. For the measurement of usual activity status, a long reference period covering a whole year is used. The short reference period will normally be appropriate for the continuing type of survey aimed primarily at generating current indicators. In less frequent surveys aimed at structural characteristics of longer-term interest, the use of both a long and a short reference period in combination may be considered. The long reference period and usual status approach may be particularly appropriate for in-depth surveys where the objective is to investigate complex underlying relationships between economic activity and other variables.

The reference period may be fixed, i.e. defined in terms of specified calendar dates; or it may be a moving reference period, defined as a specified duration measured backwards from the time of interview. Each system has its own advantages. The use of a *fixed reference* period provides information related to a definite time which is the same for all units interviewed. This system can avoid differential “period effects” (e.g. the influence of the weekend, or of the end of the month) on the results for different respondents. It may sometimes also be more suitable for linkages with data from other sources; or necessary in view of some legal or conventional requirements to produce estimates for definite (calendar) periods. On the other hand, the use of a fixed reference period tends to make the recall period (i.e. the duration over which the respondent has to recall the information to be reported) not only longer, but also different for different respondents, depending on when a particular household in the sample is enumerated. This can be a serious problem if the field-work is spread out over a relatively long period. To avoid this problem, the field-work itself may have to be concentrated, that is, carried out in a periodic rather than a continuous fashion, though this in turn causes uneven or irregular workloads for the field staff. Consequently, continuing surveys carried out in the form of periodic rounds tend to use the fixed reference period, as do occasional surveys with field-work carried out during a short period of time. The disadvantages of a fixed reference period, for example, the lengthening and unevenness of the recall period, are reduced when field-work is concentrated over a limited duration. Problems of uneven workloads tend to become less disruptive with the increasing frequency of surveys. Indeed, monthly labour force surveys are often periodic in nature (with

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field-work concentrated in one or two weeks during the month), and use the last calendar week or month as the fixed reference period (ILO, 1986). Less frequent periodic surveys have tended to use moving reference periods more often.

With continuous field-work of course, a *moving reference period* is generally more appropriate. This applies whether the survey itself is an ongoing (continuing) one, or whether it is an occasional “structural” survey: in both cases the disadvantages of prolonged and unequal recall periods arising from the use of a fixed reference period become more serious with field-work extended over a long period such as a year. The advantages of a moving reference period are shorter recall and the evening out of seasonal and other period effects over the sample as a whole. However, the resulting data relate to a less well defined point or period in time, and for *individual* respondents the results may be influenced by differing period effects.

Linkages with other surveys

There is an increasing use in many countries of household surveys as a source of a wide variety of statistical information. As a consequence, it is often necessary to undertake surveys, whether on the economically active population or on other topics, as part of a common survey system or programme, or at least to ensure that individual surveys are closely co-ordinated. These requirements can be particularly important in the case of surveys on the economically active population, which often tend to be comprehensive in coverage, national in scope, and relatively large in size. The need for linkages becomes even greater when a survey involves regular operations repeated periodically or continuously, for these can greatly affect and be affected by other operations in which the statistical organisation is simultaneously involved.

Linkages between surveys involve two broad aspects:

- (a) co-ordination at the design and operational level, where common procedures, arrangements and facilities are used to increase the economy and flexibility of the operations; and
- (b) integration at the substantive or subject-matter level, where a number of topics are covered in conjunction with each other, to permit the production of inter-related statistics which can be analysed jointly.

Co-ordination implies that individual surveys are designed and undertaken in proper operational relationships to one another, utilising common procedures and infrastructures, including organisational arrangements, sampling frames and other materials, technical and supervisory staff, field and office personnel, as well as transport, data processing, printing and other facilities. The degree of co-ordination and sharing of facilities may vary, depending on the type of organisation involved, the nature of its operations, special requirements, funding and other arrangements for the surveys, and so on. While smaller one-time surveys can often be carried out on the basis of more or less special or ad hoc arrangements, this is much less likely to be the case for major undertakings such as national labour force surveys. Often, labour force surveys are carried out as part of the regular operations of a national statistical agency, and their planning requires careful consideration of operational links with other undertakings, an evaluation of the possible constraints and problems (such as increased pressure on available data-processing facilities and technical staff), as well as of the opportunities and flexibility which these linkages can offer.

Integration at the substantive level implies the use of a common study population; common concepts and definitions; a common system of classification, and possibly standard survey questions for frequently used classifiers such as age, sex, ethnic group, education and activity status; and common or overlapping samples of respondents (United Nations, 1986, p. 6; 1983, para. 1364). Sometimes the term “complete

integration” is used to indicate coverage of multiple topics in a single survey, over a common sample, and possibly during a single interview with the respondent. By contrast, the term “partial integration” implies a situation where the various topics are covered using the same sample of areas but with different samples of households within each area. Only complete integration permits data linkages at the micro-level.¹

In practice, various patterns can be found in the manner and degree of linkages of labour force surveys with surveys on other topics. (1) A labour force survey may be organised as an operation more or less separate from other surveys; (2) a labour force survey with limited content may be incorporated into some other ongoing survey as a “module”; or conversely, (3) a more comprehensive labour force survey may serve as a vehicle for covering other related topics as well; (4) a labour force survey may form part of a multipurpose survey covering a range of topics; or (5) it may be conducted as one round of an ongoing survey system which focuses on different topics in different rounds. These various possible arrangements are discussed below.

Separate labour force surveys

A number of developing and developed countries (e.g. Denmark, Egypt, Finland, Spain, Thailand) carry out surveys which are primarily or exclusively concerned with labour force topics. In the present context, these may best be described as “separate” labour force surveys. Their single-subject focus does not, of course, preclude operational co-ordination and the use of common facilities and arrangements with other surveys, or the use of common coverage, concepts, definitions and classifications. What is implied by “separate” is their single-subject focus and a considerable degree of separation in design and execution. Such separation can sometimes be helpful in providing better control and supervision and greater flexibility in the design and operation of the survey.

Labour force “module” attached to other surveys

Population censuses, demographic surveys, household income and expenditure surveys and other surveys often collect basic information on the economic characteristics and activities of the population. Such items may be included in other surveys for two reasons. Firstly, the objective may be to provide “explanatory” variables which are useful for cross-classification and analysis of those characteristics which are the primary focus of the survey. Although in this case the survey is not aimed at providing estimates for labour force variables *per se*, it can be useful in enhancing the understanding of relationships between labour force and other characteristics such as fertility, child care, health, income, consumption behaviour, and so on. Indeed, some topics are so closely related to labour force characteristics that any survey on the former may require a fairly comprehensive coverage of the latter as well. For example, a survey on migration may need to include items such as activity and employment status, occupation, industry, sector of employment and income, both before and after the time of migration, in order to help understand the causes and consequences of migration.

Secondly, and more directly relevant in the present context, the objective of attaching a labour force “module” to surveys focused on other topics may be an intrinsic interest in and need for the actual labour force data. Inclusion of basic items in other ongoing surveys can be an extremely economical way of obtaining some essential information on the labour force and its characteristics. This can be particularly useful when a full-fledged labour force survey cannot be undertaken because of limited

¹ The term “integration” has sometimes been used to refer to linkages in both substantive aspects and design and operational aspects; the term “co-ordination” would then refer to a less intensive form of integration. However, the distinction between the two terms as used above is preferable: both co-ordination and integration may vary in intensity or degree.

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resources or competing priorities. A module on labour force items may be included in other surveys on an occasional basis, as for example was done in the 1979-81 National Family Income and Expenditure Survey of Guatemala. Or it may be possible to do so on a more sustained basis, as for instance has been the case in Indonesian National Socio-Economic Surveys (SUSENAS). Indeed, a number of countries have established survey systems which provide a fairly comprehensive and regular coverage of basic labour force topics.

However, it is also necessary to recognise some limitations of the approach. Firstly, there are limits to the number and detail of labour force items which can reasonably be inserted into operations concerned primarily with other topics. In a population census, for example, each of the few labour force items which may be included has to be confined generally to a single simple question. Care must be taken to ensure that such additions do not adversely affect the overall quality of the information obtained in a census or survey due to excessive respondent burden, delays in data processing, or other consequences of the increased size and complexity of the operation.

Secondly, to ensure data quality and usefulness of the results, it is necessary that the various topics included in the same survey are compatible in terms of concepts, definitions, survey methods, reference periods, coverage and other design requirements. It is not always possible or easy to achieve such compatibility (see for instance the discussion on relating volume of employment to economic well-being in Chapter 8). At the same time, the requirement of compatibility with other topics covered in the same survey may itself limit the usefulness of the resulting labour force data. Furthermore, the surveys may be confined to specific groups in the population, so that the labour force data can only be used as explanatory variables for other topics. A well-known illustration of this latter situation is provided by the data on couples' work histories obtained in the World Fertility Survey (1975), which, whatever their value as explanatory variables, proved to be of little value in yielding direct information on labour force characteristics of the total population.

Labour force survey as vehicle for other data

The establishment of a continuing labour force survey can be a major and relatively expensive undertaking. Once in place, the survey can be usefully exploited as a vehicle for covering additional topics and for supporting various household surveys in other areas. An example is provided by the Canadian Labour Force Survey (Canada, 1976). The survey was originally established in 1945 to provide quarterly estimates of labour force characteristics at the national level. In 1952 it became a monthly survey and began producing some estimates at the subnational level as well. Gradually, most of the household surveys conducted by Statistics Canada began to use the labour force survey capacity and became integrated with it in design and operations to varying degrees. This includes surveys conducted as supplements to the Labour Force Survey, such as recurring surveys on household equipment and facilities, consumer finance, and rents; and surveys providing more detailed data on the population and the labour force such as inquiries on work patterns, job opportunities, volunteer work, absence from work, student finance, education, travel, smoking habits and leisure time activities. In addition, more independent surveys have used the same sample areas as the Labour Force Survey, but different sets of households and different survey periods. Examples include surveys on consumer finances and on family expenditure. Other surveys such as the health survey in urban areas saved on sample design and implementation costs by using the same frame as the Labour Force Survey, but used independent samples of areas and households. Other well-known examples are provided by the Current Population Survey of the United States of America which regularly covers a wide variety of topics in addition to

the labour force (United States, 1978), and the Australian Labour Force Survey (Australia, 1985).

Omnibus multi-purpose surveys

Integration can also take a more extreme form in which a large number of detailed topics are combined in a single omnibus undertaking. In principle, the main advantages of comprehensive multi-purpose surveys are the possible economies of scale, and the potential for cross-checking and for combined analysis of detailed data on various topics. Multi-purpose surveys can thus yield a wealth of information on labour force variables in conjunction with other topics, provided that the samples are sufficiently large. Examples include the Socio-Economic Survey (SUSENAS) in Indonesia and the Brazilian ENDEF (Estudo Nacional de Despesa Familiar) conducted in 1974. In the latter, information was collected on a sample of 55,000 households (which was a subsample of the then quarterly labour force survey) relating to a wide range of socio-economic characteristics, labour force participation, family budget, expenditure, nutrition, etc. (Brazil, 1980). As another example, multi-purpose multi-round surveys covering income, consumption, employment and a variety of other topics in great detail are recently being promoted in several sub-Saharan African countries in connection with the Social Dimensions of Adjustment Project of the World Bank.

It should be noted, however, that complex multi-subject surveys can, and often do, suffer from serious disadvantages, especially in the more difficult circumstances of developing countries. As noted in the *Handbook of household surveys* (United Nations, 1984, paras. 1.20-1.28), such disadvantages include the increased length and complexity of the interview, increased respondent burden, possible increase in non-sampling errors, reduced efficiency of design for any particular topic due to compromises needed to accommodate diverse requirements, and the danger of delays and failures at the data-processing stage because of the increased volume and complexity of the data collected. Some of these problems may be reduced in scope, for example, by using different subsamples for different sets of topics in addition to certain core topics obtained from the overall sample (in which case, of course, not all the topics can be linked at the micro-level), or by organising data processing separately for different sets of topics. Nevertheless, caution is needed to avoid making any survey system too complex or over-burdened.

Survey system with varying focus

Another pattern of integration, which may be particularly suited to conditions and requirements in some developing countries, is to establish an ongoing survey system with a varying substantive focus from round to round. Each round may cover a specified period such as a year and a separate, representative sample. The survey system can use common organisation, personnel and other facilities, but the subject-matter changes from round to round, with the possible exception of some core items common to all rounds. Such a system can include periodically comprehensive surveys of the economically active population as the main focus of the rounds. The comprehensive survey can provide structural or in-depth information of longer-term interest. Such an arrangement has many potential advantages for survey work in developing countries.

The Indian National Sample Survey provides an example of such a survey system. The continuing survey is divided into annual rounds, each round focusing on a set of distinct but related topics. Employment, unemployment, rural labour and related topics may for example be covered in annual rounds about every five years. While this arrangement does not yield a continuous flow of current statistics or information on changes over short periods, it can work well in providing periodic information on essential structural characteristics as well as on longer-term changes. The important

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advantages of such a system are that (a) it can cover a variety of relevant topics in a balanced way, rather than devoting the limited resources available to a single topic to the exclusion of others; and (b) it can focus on structural characteristics and longer-term changes which may be adequate to meet national data requirements. Both features make the arrangement attractive to many developing countries. Examples of a similar approach include the Continuous Household Integrated Programme of Surveys of Botswana, the National Sample Survey and Evaluation Programme of Kenya, and other survey programmes in Africa, Asia and Latin America established in co-operation with the United Nations' National Household Survey Capability Programme.

Common characteristics of surveys on the economically active population

National practices in conducting labour force surveys or, more generally, surveys of the economically active population vary greatly, depending on specific data requirements and survey conditions and facilities. However, a number of commonly encountered features can be identified on the basis of available empirical information.¹

1. Labour force surveys tend to be relatively large-scale surveys of the whole population; they are often national in scope and have some sort of official status. Especially in developing countries, such major operations can generally be undertaken only by the national statistical office or some other major public agency engaged in statistical work. In many instances, the primary users of the information are also major public agencies. For example, among 44 countries on which relevant information is available in the ILO study (1986), national statistical offices were reported to be fully or partially responsible for the survey in 39 of the cases; and in practically all of the remaining countries the survey was undertaken by statistical units or departments in the Ministry of Labour. Similarly, 38 of the surveys were reported to be national in coverage apart from minor exclusions; the remaining ones covered the urban sector only.²

(2) Many developed as well as developing countries undertake labour force surveys on a continuing basis with the objective of measuring current levels and changes. The ILO study mentioned above aimed at covering all countries with labour force surveys conducted annually or more frequently. Monthly or quarterly surveys constituted the predominant pattern in developed countries. The vast majority of the developing countries included in the study reported conducting quarterly or less frequent labour force surveys. Countries that have undertaken comprehensive surveys of the economically active population on an occasional but not on a continuing basis were not covered by this study. A number of countries have undertaken surveys which aim at providing more detailed structural information of longer-term interest, because of the value of such surveys in providing essential information for planning and policy formulation, especially in developing countries. Perhaps this value has not always been fully appreciated and there has been, in some instances, too much emphasis on the production of current statistics, as distinct from structural information of longer-term interest.

(3) In most countries, information pertaining to households and individuals in labour force surveys is collected through face-to-face interviewing by field staff visiting survey respondents in private households. Other methods of data collection, such as mail or telephone interviewing, are largely unfeasible in developing countries. Even in

¹ In addition to a survey of national practices by the ILO (1986), a review of regional experiences in conducting labour force surveys is provided in United Nations (1980, Part III); a more detailed description for countries of Asia and the Pacific is provided by Rao (1985).

² As in any inquiry based on partial response, there is a possibility of bias in the results from the ILO study. It is possible that non-responding countries include more cases with smaller surveys of narrower scope and coverage.

developed countries, labour force surveys by mail have encountered serious difficulties of non-response and poor data quality, but telephone interviewing is increasingly used.

The common characteristics of labour force surveys sketched above have a number of consequences for survey design and execution. Firstly, because of their official status and national scope, labour force surveys are likely to be subject to rather stringent requirements of timing, data accuracy and internal consistency, especially consistency of the time-series generated by the continuing type of survey. These requirements can only be met by probability samples of fairly large size, drawn from a good frame covering the whole population and representative of it not only geographically but also over a period of time because of seasonal and other variations. The survey estimates have to be as consistent as possible with external data from other official sources. Many users require estimates of aggregates or population totals (as distinct from, and in addition to, estimates of means, proportions and rates), and estimates of changes in such aggregates. These generally require the use of ratio estimates inflated appropriately on the basis of control totals obtained from outside the survey.

Secondly, in many situations, the executing agency of a labour force survey is also involved in various other surveys and statistical operations. This increases the importance of co-ordination and integration in survey planning, design and execution.

Thirdly, because of the need for personal interviewing, the time and cost of travel for field-work are often a major component of the total survey cost. The sample has therefore to be clustered through multi-stage area-based designs. Many operations have to be decentralised, resulting in an increased need for thorough interviewer training, supervision and other quality control measures.

At the same time, however, there can be a tendency towards routinism and avoidance of experimentation and innovation because of the size, regularity and repetitive nature of the operations. Proper attention therefore needs to be paid to the continuous evaluation and periodic redesign of survey methods and procedures. This is by no means an easy task. The problem can be serious when, as is often the case, the available resources are limited and there is pressure to increase the quantity (variety, volume) of statistics routinely generated, at the expense of evaluating and improving the quality of the statistics. Rigid timetables for data collection can further accentuate the quality control problem.

4. Basic issues in survey planning and design

Choice of survey structure and scale

The measurement of economic activity is a complex task. This is particularly so when, as in many developing countries, economic activity by its very nature is irregular, unorganised, marginal and not easily distinguished from non-economic activity. In practice, therefore, any particular survey on the economically active population must be designed to address very specific objectives and to meet clearly defined and delineated data needs. This obvious point is worth emphasising because sometimes less developed countries have rather uncritically imported and adopted survey designs and practices from statistically more advanced countries, where they were developed in different circumstances and often with the objective of meeting different data needs.

Survey structure

As discussed in the previous section, the basic choice concerning the type of survey is between (a) a continuing operation aimed at generating a time-series of information on current levels of employment, unemployment and underemployment, and on short-term changes; or (b) occasional or less frequent, but possibly more detailed,

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investigations to obtain information which is more structural in nature and indicative of longer-term changes. To meet the data requirements spelled out in the international standards (quoted at the beginning of the previous section), both types of surveys may be necessary. However, a country with limited resources may at some time have to choose between the two, or at least pay more attention to one system than the other, depending upon its specific situation and data requirements.

A related issue concerns the choice of the measure(s) of the “economically active population”: this can be in terms of the “currently active population” measured in relation to a short reference period of one week or one day (see Chapter 3); or in terms of the “usually active population” measured in relation to a long reference period such as a year (see Chapter 4); or both measures in combination. For instance, if a time-series of information on current levels and short-term changes is required, the continuing type of survey model with a short reference period would be the more appropriate arrangement. However, if it is more useful (as may be the case in many developing countries, especially in rural areas) to obtain more detailed information on characteristics of usual economic activity and on longer-term changes therein, then less frequent but more detailed surveys employing a long reference period would be the more appropriate choice. Of course, where possible, the various models may be used in combination to obtain richer data which can meet diverse information needs more satisfactorily. In particular, whether a continuing or an occasional survey model is chosen, it may be useful to combine the measurement of the usually active population with that of the currently active population so as to obtain cross-classifications between usual and current activity status.

Whatever the type of survey structure, it is important to take timing requirements properly into account. In the continuing type of survey, the important questions include the frequency with which data need to be collected; the frequency with which estimates are to be published (which may or may not be the same as the frequency of the collection); and the relative importance of various types of estimates (such as estimates of current levels, of trends or net changes from one period to another, of gross changes at the individual level, etc.). Similarly the less frequent, more structural and detailed type of survey may have to be spread out over time to measure, or at least to take properly into account, seasonal and other temporal variations. Furthermore, specific requirements or conditions, such as the preparation of a development plan or the conduct of a population census, may determine appropriate timing for the whole operation.

Scale of the survey operation

Determining the scale of the survey operation is a fundamental decision in survey planning. It depends upon and in turn affects almost everything else, including the mode of data collection, organisation of operations, arrangements for data processing, staffing and skill requirements, the relevance, timeliness and accuracy of the resulting data, and above all, survey costs. It should be noted that the “scale” of a survey is not just its sample size; rather, it is a measure of the total effort required in its execution. It depends on factors such as:

- the number of units to be enumerated (sample size);
- the accessibility of the units, depending on such factors as the distribution and characteristics of the population, means of communication, mode of data collection, and sampling and other aspects of survey design;
- the complexity and volume of the information to be collected, and often even more critically, of the information to be processed;
- the frequency of data collection and of release of survey estimates; and

- the time available for completion of the task, which determines the rate at which the work must be performed.

In survey planning and design, full account must be taken of the implications of the scale of the operation. Clearly, in any survey, sample size and the volume and frequency of the information to be collected have to be determined in relation to the substantive objectives of the survey. The sample size has to be large enough to keep sampling errors within limits which will allow the survey to provide useful information for research and decision-making. However, sampling precision is only one component of the overall quality of the survey. The results are subject not only to sampling errors but to errors of coverage, content and implementation, arising from a variety of sources. These “non-sampling” errors depend on how well the survey operations are executed, which, under given conditions, depends in turn on the scale of the operation involved. It is important to ensure that the sample size is kept within manageable limits. Attempts to cover excessively large samples have been a common problem in many surveys.

The amount and complexity of the information to be collected should be determined, in the first instance, by users’ requirements. These may demand complex multi-subject surveys. Important economies of scale can be achieved by using an existing survey to collect additional information on other related topics. Similarly, information on complex topics such as economic activity, and in the complex and varied situations found in developing countries, can be collected with consistency and quality only on the basis of carefully conducted interviews and well-formulated questionnaires. However, after a certain point, an excessive burden on collectors or providers of the information will adversely affect the quality of what is obtained.

While the relationship between sample size and survey cost is well appreciated, the relationship between sample size and timeliness is not always realised. Timeliness is important for any survey, but it can be a particularly critical requirement if the survey involves continuing operations and where public aspects of the undertaking impose a strict time schedule on the release of the results. The survey size, complexity and frequency must be limited to ensure that data are collected only at a rate at which they can be processed. Otherwise, a continuing operation will result in an ever-expanding backlog, defeating the very objective of collecting current statistics. An equally important consideration in launching a continuing survey operation is to determine its scale in a manner which ensures that it can be *sustained* without disruptions in the time-series of data it is designed to provide. This requires that some spare capacity be planned for, so as to be able to meet unforeseen demands or adverse circumstances.

Planning and organisation of survey activity

While surveys of the economically active population have their own special characteristics and requirements, the basic principles of large-scale household survey design and operations apply to them as well. Part I of the *Handbook of household surveys* (United Nations, 1984) provides a detailed description of general survey planning and organisation. That description is from the broader perspective of a system or programme of related surveys, rather than of a single survey considered in isolation. This makes the document even more relevant to surveys on the economically active population, which, as noted previously, usually need to be designed and implemented in close relationship with other surveys. Planning and design of integrated household survey programmes is considered more specifically in United Nations (1986). Drawing on these sources, some important points in the planning and organisation of survey activity are summarised below.

Household surveys are an essential part of national statistical systems, but they do not represent the entire statistical system. Therefore, planning of household surveys must be done within the context of overall statistical planning and priorities. The relationship

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of household surveys to other data sources should be assessed at an early stage of the planning process, once general data requirements have been determined. Various possible sources have to be assessed in terms of their capacity to meet data needs, costs involved, and requirements of technical and human skills in relation to what is available. Generally, it is more effective to seek a combination of complementary sources, exploiting the strength of each, than to concentrate exclusively on one type of source.

Of particular importance is the link between household surveys and censuses of population and housing. Any survey plan has to be developed with due regard to the training needs, special requirements, and workload of the census. While survey activity may have to be reduced during the period of the census (especially if the same agency is responsible for both), the completion of the census can provide a great impetus to surveys. The period immediately following the census is the most appropriate opportunity for thorough evaluation and major redesign of an existing survey system or for starting to establish a survey system.

Specific planning for survey activity includes steps such as:

- identification of topics to be covered and their relative priority and timing requirements;
- identification of special design requirements in each case;
- grouping of topics on the basis of substantive, design and operational considerations into different surveys or survey rounds;
- determining the timing, frequency, appropriate size, population coverage and general structure of each survey; and
- developing a plan of operation taking fully into account the operating environment and constraints concerning such factors as characteristics of the target population, access to sample units and availability of various facilities including sampling materials, staff at various levels, data-processing capacity (United Nations, 1986, pp. 20-38).

Concerning organisation of survey activity, the *Handbook of household surveys* (United Nations, 1984, paras. 2.2-2.14) notes that regardless of how the national statistical service is organised, certain minimum administrative and technical functional capabilities are essential for the conduct of any survey activity. Each survey requires access to at least a nuclear staff of professional personnel who are able to master or draw upon a range of skills, which should include:

- planning and management functions, including establishment of priorities, setting of timetables for implementation, allocation of resources and personnel, etc.;
- specific subject-matter design, including determination of detailed content, concepts and definitions, development of questionnaires, and design of tabulation and analysis plans;
- sample design and estimation and related aspects of survey design;
- field-work operations including pilot testing, staff recruitment, training, supervision, interviewing, quality control and evaluation;
- data processing, including systems development, programming, editing, coding, tabulation, and data documentation and archiving;
- support services skills, such as computer operations, typing, document editing and the like.

Technical design

Technical survey design is a process requiring simultaneous consideration of and compromises between a variety of theoretical and practical requirements. It begins with the specification of substantive objectives including the type of information required, the

frequency with which it is to be provided, the population to be studied, the population domains for which separate estimates will be produced, the timing and precision requirements, and the priorities among objectives. This should suggest possible modes of data collection, the general structure and scale of the operation required, and the likely costs involved. These latter have to be assessed in the light of practical requirements of survey implementation under prevailing survey conditions: available budget technical facilities, skills and staff; time constraints; and, especially in the case of a large undertaking, possible linkages with other operations, in both operational and substantive terms. Adjustments may be required throughout the process to reconcile the theoretically desirable with the practically feasible.

Various aspects of survey design are discussed in detail in the following chapters. These include specification of the survey structure and sample design (Chapter 11); questionnaire development (Chapter 12); establishment of procedures and arrangements for pre-testing, data collection and data processing (Chapter 13); and assessment and control of data quality (Chapter 14). The revision and redesign of survey instruments and procedures, undertaken periodically on the basis of past experience and new information and requirements, is an essential part of the process and is discussed next.

5. Survey redesign

Many countries already have established labour force surveys, and it is a requirement to redesign periodically and improve such surveys. Issues of redesign relate more clearly to the continuing type of survey, but many of the points discussed are in fact relevant to less frequently conducted occasional surveys, since their design also needs to be improved over time. The general principles of survey design apply to redesign as well. However, some additional factors need to be considered while undertaking the redesign of an existing system. This is because periodic redesign, while essential in improving, or even in maintaining, efficiency of survey design and procedures over a period of time, can also be disruptive. For instance, the introduction of new concepts and procedures may affect the continuity and comparability of established time-series. Similarly, redesign may require major new investment for the preparation of survey materials, staff training, programming for data processing and so on. A compromise is therefore required between the need to constantly improve technical design and procedures on the one hand and the need to preserve comparability and the value of existing investments on the other hand.

Objectives of redesign

The existing survey design and procedures may need modification for a number of reasons.

Firstly, there may be changes in the substantive objectives of the survey. These may include changes in: scope and coverage; definitions and concepts used; topics to be covered; type, frequency and precision of the estimates required; the target population to be studied; and the geographic and other subclassifications desired.

Secondly, survey redesign may become necessary because of changes in the amount of resources available, operational circumstances or other external factors. Where such factors can be predicted, it may be possible to plan the adjustment of survey procedures. However, this is not always the case. It is not uncommon, for instance, for a statistical agency to be faced with substantial reductions in the operational budget, perhaps in a sudden and unpredictable manner. Sometimes additional resources become available because of unexpected savings elsewhere. Droughts or other climatic factors, security considerations, etc., may force major adjustments to the conduct of a survey. Often, in the promotion and launching of continuing survey operations in developing countries,

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insufficient consideration has been given to the possible disruptive effect of such factors. Disruption can be limited by adopting flexible designs and procedures to facilitate rapid adjustment to changed circumstances and requirements.

In a major ongoing operation such as a continuing labour force survey, a very important consideration is the possibility of using the survey as a vehicle for collecting data on other topics and for other surveys. In a number of cases, through a series of redesigns, labour force surveys have gradually evolved from more or less single-subject undertakings to become general purpose surveys.

Fourthly, and most commonly, the objective of survey redesign is improved data quality and reduced costs, to be achieved through more efficient design and procedure, based on more up-to-date information on the size and characteristics of the study population, on the quality of the sampling frame, on sampling and non-sampling errors, and on the costs and operational characteristics of the survey. The most appropriate opportunity for a major redesign of this type is provided by the availability of results from a new population census. New census results can enable the sample to be updated to reflect population growth, changes in population characteristics, and changes in boundaries of census and other statistical and administrative areas. Sample size and allocation can be adjusted to reflect changes in reporting domains. At the same time, improved data collection, processing and estimation procedures can be introduced on the basis of the accumulated experience and improvements in technology and facilities available.

It is worth mentioning as a separate point that on occasion the development (or discovery) of major imbalances in the existing design can result in the need for a drastic redesign of the scope, content, size, structure and procedures of the survey, or even the whole mode of data collection. Such changes may amount to establishing a more or less new survey, rather than to redesigning and refining an existing one.

Strategies for redesign

As noted earlier, survey redesign requires a compromise between the need for improvement and the need to ensure continuity and to minimise the effects of disruption of established procedures. Continuity may be necessary to maintain consistency and comparability of time-series data, to avoid administrative or operational inconvenience (the effects of which may be aggravated when the time or technical skills available for redesign are limited), and to preserve the value of investments already made.

These constraints do not imply that change should be generally avoided or always minimised. Certainly, a more or less major redesign is periodically essential in any ongoing survey operation; it is not possible to continue with an existing design and the same practices indefinitely. The point being made is that, at the same time, it is necessary to proceed with caution, minimise the disruptive effect of changes, and avoid constant change and disruption. In most circumstances, the appropriate strategy is to accumulate the needed changes and introduce them as major revisions only periodically, covering simultaneously as many aspects as possible. Also, changes should be introduced only on the basis of clear evidence and clear need.

While it is often desirable to preserve as much as possible of the existing design and procedures, there are nevertheless occasions when a radical departure rather than a piecemeal approach is the most effective strategy.

Sometimes the disruptive effect of changes can be reduced by conducting parallel surveys using the old and the new designs simultaneously, and providing alternative estimates and breakdowns during the transitional period. However, such a double system may increase costs and workload in excess of the resulting benefits, and may therefore not be a feasible option. Furthermore, some users do not see the value of being confronted with two sets of estimates.

Survey planning, design and redesign

It is useful to distinguish between two types of redesign, though there will be many intermediate or mixed situations:

- (a) **A redesign** primarily aimed at improving survey efficiency in terms of representativeness, sampling precision, costs, field and office procedures, data quality, etc., but without involving major changes in concepts, definitions, survey content, reference period or essential conditions and mode of data collection. Examples are: a gradual expansion of the sample size or even of the target population; reallocation of the sample among various domains; more efficient sample design and estimation procedures based on a more up-to-date frame and auxiliary information; more efficient field logistics and organisation; better supervision and control; and improved procedures for more timely data processing.
- (b) **A redesign** undertaken mainly in response to significant changes in survey objectives or in the operational circumstances under which the survey has to be conducted. These may involve changes in concepts, definitions, reference period, periodicity, types of estimates required, domains for which survey estimates are to be provided, the scale of the operation, data collection methods, and so on.

The first type of redesign may not be very disruptive of continuity and data comparability over time, and, indeed, is routinely undertaken in many countries following each population census. Perhaps the best documented examples of periodic redesign following each population census are provided by the United States Current Population Survey and the Canadian Labour Force Survey. In these surveys, each redesign is preceded by a major research programme to evaluate the existing design and procedures. Apart from sample modification or redesign to reflect population changes, many major and minor aspects of the survey are examined in detail to identify areas where modifications should be made. For example, following the 1980 census, the Current Population Survey was redesigned to provide more precise state-level estimates in addition to national-level estimates. Similarly, following the 1981 census of Canada, its Labour Force Survey was redesigned not only to improve sampling efficiency (without changes in basic features such as mode of data collection and periodicity) but also with the explicit objective of achieving greater flexibility for use of the Labour Force Survey as a vehicle for conducting other household surveys. Most of the household surveys conducted by Statistics Canada already used the Labour Force Survey capacity to various degrees. The objective of the redesign research was to explore possibilities of enhancing these linkages. (For a detailed description of the methodology of the two surveys, see United States, 1978, and Canada, 1976.)

The second type of redesign will usually affect data comparability much more fundamentally. This is particularly the case in labour force surveys, where the resulting estimates, such as rates of labour force participation, employment and unemployment, can be very sensitive to the reference period and exact concepts and definitions used. Changes in these areas of survey design and procedures therefore need to be introduced more cautiously and their effect interpreted more carefully.

The example of the Finnish Labour Force Survey provides illustration of a fundamental redesign of the whole mode of data collection. Prior to 1983, the survey was conducted on the basis of inquiry by mail. This resulted in data of insufficient quality and in large non-response rates (over 30 per cent). The new design replaced the mail inquiry by interviews, about 90 per cent by telephone and the remainder face to face. These changes led to improvements in survey content, response rates and data quality (Salmi and Kiiski, 1984).

The Labour Force Survey of Thailand provides an example of redesign involving fundamental conceptual and definitional changes, which naturally also affected data comparability over the years. The survey was established in 1963, and from 1971 two

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rounds per year were introduced to cover the main agricultural and non-agricultural seasons separately. From 1977 to 1982 the survey used the “labour utilisation” framework, which was subsequently abandoned for various reasons. Other major changes of definition introduced in the redesign concerned the treatment of unpaid family workers, persons available for work, and persons without work but waiting for the agricultural season. Previously, unpaid family workers who worked less than 20 hours during the reference week and did not want to work more were treated as outside the labour force; after the revision (and following the new international standards), unpaid family workers were included among the labour force if they worked for at least one hour. Persons who had not worked but claimed to be available for work were included as “unemployed”. A major revision, resulting in the reclassification of more than 5 million persons, concerned those who stated that they were not available for work during the reference week, but usually worked and were waiting for the agricultural season. In the revised survey, they were included in the total labour force as a separately identified subcategory of the “seasonally inactive” (Thailand, 1985).

It should be noted that not all formal changes in concepts or definitions necessarily affect comparability of the time-series. Firstly, some changes may merely give a formal recognition to certain field practices which are already in vogue. This can happen if, for example, the earlier instructions and procedures were unrealistic, and hence were ignored or not followed uniformly by interviewers in practice. For instance, if the reference period to identify active jobseekers was previously specified in a survey as an unrealistically short period (such as one week), it is quite possible that the information actually obtained referred to a more realistic and longer period, even if somewhat ill-defined (such as several weeks before the interview). If such a fact is established, it is indeed desirable to adopt formally a longer reference period so as to reduce discrepancies between instructions and practices and also among practices of different interviewers.

Secondly, it is often possible to regain comparability through classification of the changed category into separate subcategories, some of which may not have been affected by the change. For instance, if the definition of the “unemployed” has been expanded to include not only those “seeking and available for work” but also those “available but not seeking work”, then the first-mentioned subcategory can still be tabulated separately and compared with the results based on the older definition. A similar example was given above for Thailand concerning the subcategory “seasonally inactive”.

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1. Introduction

This chapter discusses technical and practical issues concerning sample design and estimation which are of particular relevance to labour force surveys.

The choice of the sample design for any survey depends on its specific data requirements and the conditions under which it is to be conducted. In Chapter 10, general characteristics and common types of arrangements for labour force surveys were described. These common features, which apply to many surveys despite wide variation in national practices and circumstances, should be kept in view in the following discussion on sample design and procedures.

It should be emphasised that the scope of the present chapter is limited to discussion of selected issues of sampling in relation to labour force surveys, with special relevance to the conditions and requirements of developing countries. The discussion is not concerned with general principles of sampling, which are well covered in many technical manuals and textbooks on the subject. A good selection of standard reference materials includes books by Yates (1949), Hansen, Hurwitz and Madow (1953), Cochran (1953), Sukhatme (1954), Deming (1960), Kish (1965), and Murthy (1967). In addition, reference should be made to the United Nations publications: *A short manual on sampling* (1960), *Handbook of household surveys* (1984), and *Samplingframes and sample designs for integrated household survey programmes* (1986).

The material in this chapter is organised as follows:

In Section 2, the issues concerning the identification of the target population for sample design are discussed. Section 3 considers requirements of the sampling frame to represent the target population. It also discusses the related concept of a master sample which can be used economically to relate samples for different surveys and survey rounds. Some practical aspects of sample design are briefly sketched in Section 4. It is not intended to provide any substantial discussion of the complex theory and practice of sample design for large-scale household surveys. Section 5 considers sampling in the time dimension which is a basic requirement of many labour force surveys. Estimation procedures are described in Section 6. Any continuing survey operation requires periodic assessment and reassessment of survey objectives and methods and, on that basis, periodic ratification and redesign of the procedures. Redesign of the sample is one of the most important aspects of this process, and is commented upon in the final Section 7.

2. Specification of the study population

The definition of the population to which the sample results are to be generalised is a fundamental aspect of survey planning and design. The scope of population to be

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covered was introduced in Chapter 2 of the manual. It was noted there that surveys of the economically active population should, in principle, cover the entire population irrespective of activity status, sex, marital status, ethnic group, etc., but that, in practice, certain restrictions may be necessary. For instance, the scope of many surveys has to be confined to the civilian non-institutional population, excluding members of the armed forces and other persons residing in institutions of various types. For practical reasons, the survey may further exclude certain other population groups such as aliens, nomads, seasonal migrants, homeless people, or people living in remote and inaccessible areas. Within the households covered, children below a certain minimum age, for whom the inquiry on economic activity is not meaningful, will also normally be excluded.

This section discusses the various issues involved in defining the scope of population to be covered more specifically in relation to sampling procedures. While basic decisions about the nature and scope of the population to be covered are often taken early in the survey planning process, the content and extent of the population has to be specified more precisely at the stage of technical design. This specification is in terms of:

- population content, i.e. the type and characteristics of the elements comprising it;
- its extent in space, i.e. boundaries of its geographic coverage, and its extent in time, i.e. the time period to which it refers.

Population content

In labour force surveys covering the general population, the population elements of interest are generally individual persons with some specified characteristics, and the households and other social groupings in which they live. To define the population to be covered, it is necessary therefore to specify (a) the type of households and social groupings to be included; (b) the rules for associating individual persons with those units (e.g. defining what constitutes a “household”); and (c) the characteristics determining inclusion or exclusion of individuals in the target population for the survey.

Households and other social groupings of individuals

By far the most important group of interest are persons living in *private households*. Internationally recommended definitions of households are given in *Principles and Recommendations for population and housing censuses* (United Nations, 1980). The household is defined as “a person or persons who have made arrangements, individually or in groups, for providing themselves with food or other essentials of living”. A distinction is made in the Recommendations between one-person and multi-person households, and the latter is further classified into: nuclear households each consisting of a single family unit; extended households which include some person(s) in addition to the nuclear family; and composite households made up of unrelated persons. However, the Recommendations also note that countries may find it appropriate to modify the definition and classification according to national circumstances. For instance, in some countries in Africa there are rural areas in which people characteristically live in compounds in large groups of 30 or 40 persons, and in such a situation a practical solution has been to define a household as a group of persons who “live and eat together” (United Nations, 1984, para. 20.12). Similarly, in certain Arab countries the household concept may need modification to take into account polygamous situations where wives of the same husband may be living in separate quarters (ibid., para. 21.18). In many other situations, the association of certain categories of individuals (such as lodgers, boarders, domestic servants) with particular households may not be clear-cut and may require special attention (ibid., para. 10.64).

It is useful to make a distinction between a situation where the household itself is a unit for data collection, tabulation and analysis, and where it is merely a statistical unit used for identifying and selecting persons to be enumerated in the survey. In the first

case, the choice of the particular definition to be used can have important substantive implications. In the second case, the primary requirement is merely that operationally the definition covers all individuals of interest exhaustively without duplication, and that it is possible to apply the definition consistently, in the same way, in different related operations such as different rounds of the survey, and during listing, interviewing and reinterviewing within each round.

In addition to persons living in private households, it is also necessary to specify the treatment of persons living in various special situations. National practices vary in this regard, and it is not possible to make general recommendations, except to stress the need to (a) consider carefully the justification for excluding any special group in each case; (b) specify clearly the groups excluded along with their size and relevant characteristics; (c) try and assess the impact of these exclusions on the relevance and accuracy of the survey results; and (d) to the maximum extent possible, ensure consistency in coverage over time and over different surveys, especially when the labour force survey forms part of an integrated programme of surveys. Where possible, information on the groups excluded, such as the armed forces, may be obtained from other sources to supplement the household survey results.

Rules of association

Next, the definition of population content requires the specification of the rules for associating individuals with households or with other relevant groupings for sample selection and data analysis. The basic choice is between *de facto* and *de jure* coverage definitions. The *de jure* approach defines the association according to the person's usual place of residence. Usual residents are included even if they were temporarily away at the time of enumeration; visitors are excluded. The *de facto* approach includes persons according to the place they were staying at the time of the survey, irrespective of their usual place of residence. This approach tends to give lower non-response and non-contact, and is most suitable when the survey period is short, or when highly mobile populations (such as nomads, or the homeless) are to be surveyed. By contrast, the *de jure* approach provides a clearer and more stable association between household and individual characteristics. It is also more convenient for a continuing survey, especially when repeated enumeration spread over a considerable period of time is involved. For these reasons it is the more commonly used approach in labour force surveys. The difficulty with the *de jure* approach lies in the complexities which can arise in defining and identifying "usual residents".

Little empirical information is available on the extent to which the approach chosen affects coverage, non-response and other aspects of sample implementation. A study of results from over ten developing countries indicated that 5 to 10 per cent of sample households contained one or more visitors at the time of the survey; at the same time it was found that generally twice that percentage of households reported one or more usual residents as temporarily away. Around these average values, there was considerable variability between countries (Verma, 1980). These results have some interesting implications. Firstly, while residents temporarily away can be identified ("covered") using the *de jure* approach, they cannot usually be directly contacted nor interviewed, due to absence at the time of interview, and may therefore constitute non-response. The figures mentioned above indicate that the numbers of such persons may be quite substantial. It may be possible to enumerate them if the information provided by others (proxy interviewing) can be accepted. Secondly, the *de facto* approach is usually introduced to reduce non-contact. It is particularly useful when the survey information has to be obtained directly from the persons concerned, and not by proxy. In principle, the *de facto* approach reduces non-response by replacing residents temporarily away (who cannot be contacted) by visitors found in sample households. The above-mentioned study indicates that such "compensation" is very partial, the

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second group being on the average only half as large as the first. The difference between the two groups may in part be accounted for by persons “in transit”, i.e. outside the population of households at the time of the survey; it may also reflect erroneous inclusion of family members actually residing elsewhere. Persons in transit are not identified in the *de facto* approach not even as “non-respondents”; rather, they represent undercoverage of the target population. Such undercoverage may be quite substantial and selective, though often unsuspected, in surveys using the *de facto* approach.

Rules of inclusion

The inclusion of individuals in the survey population is usually conditional on demographic and other individual characteristics. The most important characteristic is the person's age, implying the exclusion of children below a certain minimum age (and possibly of old persons above a certain maximum age) from the detailed inquiry on economic activity. Various considerations involved in the choice of these age limits have been discussed in Chapter 2, Section 2. It was noted there that whatever minimum age limit is adopted, there may still be in certain countries a substantial number of children below that age who are engaged in economic activity of some sort. In such situations, there may be a need to obtain supplementary data, at least on an occasional basis, on the number, characteristics and working conditions of such children with a view, for example, to study the transition phase from learning to earning activities, or to reveal the relationship between school attendance and participation in economic activity.

Sometimes a labour force survey is designed to focus on special groups in the population, such as migrant workers, foreign workers, students, and the handicapped. Special screening operations may be necessary to identify concentrations of such groups for efficient sample selection.

Population extent

This has two aspects: (a) limits of the geographic coverage of the population, and (b) the time period to which it refers.

Geographic coverage

Many labour force surveys are designed to be of national scope, i.e. to cover all geographic regions, and urban as well as rural areas of the country. There are of course many situations in which less than national coverage is sought. Firstly, this may be because of the limited objectives of the survey. For instance, some countries confine labour force surveys to metropolitan areas only, others cover all main cities, and still others cover urban areas in general including smaller cities and towns. The practice of excluding rural areas has been more common in Latin America and the Caribbean than in other regions; examples are the surveys in Argentina, Brazil, Colombia, Jamaica, Mexico and Uruguay (ILO, 1986). Similarly, certain rounds of the Indian National Sample Survey included labour force surveys in urban but not in rural areas. The reasons for this pattern may be limited resources, but more often it is the belief that data requirements and conditions (and hence cost structure and appropriate methodologies) in urban and rural areas are different due to different patterns of economic activity. Sometimes countries conduct separate surveys in the two sectors, with different survey periods, reference periods and other aspects of survey methodology. Indeed, it can be argued that in launching labour force surveys, many developing countries *have paid insufficient attention to different data requirements and survey conditions in urban and rural areas*.

Secondly, considerations of cost and practicality may also require exclusion of some areas or subpopulations. It is important to reassess periodically whether the assumptions on the basis of which certain areas or groups were excluded remain valid, and to seek clear justification for exclusion in each case. Sometimes it may be possible to adopt

special arrangements or take disproportionately small samples from the more difficult and expensive parts of the target population, rather than to exclude them altogether. It is also important to document in each instance the extent of exclusions, since they define the limits within which general inferences can be scientifically drawn from the survey results; and, to whatever extent possible, one should assess the impact of the exclusions on the national representativeness of the survey results. Sometimes, relatively small exclusions may not greatly affect the rates and ratios estimated from the surveys, but may affect estimates of population aggregates more seriously.

The time dimension

The units and their characteristics change with time in any population. In addition to selecting units from the population of units, a survey also involves selection of a particular segment of time from the entire interval to which the results of the sample are to be applied. It is true that often representativeness in terms of space can take precedence over representativeness in terms of time because correlations are greater for a given unit over time than for units neighbouring in space (Kish, 1965, section 12.5). For the same reason, greater ambiguity can often be tolerated in the definition of limits of time as opposed to the more clearly identifiable limits of space.

However, proper representativeness in the time dimension can be very important, especially where pronounced seasonal, cyclic or other variations of time prevail. Only a representative selection of time periods (individual months, quarters, seasons, etc.) from an entire period under survey (e.g. a year) can permit statistical inferences to be made from the sample observations on the average conditions over the survey period. Often this requirement is unjustifiably ignored in practice. Sample design considerations in the light of this requirement will be considered in detail in Section 5.

3. Sampling frames and the use of master samples

Once the population to be surveyed has been defined, it has to be represented in a physical form from which samples of the required type can be selected. A *sampling frame* is such a representation. A sampling frame should permit the selection of a “probability” sample of elementary units comprising the population, i.e. a selection which, with the application of suitable randomised procedures, would ensure that every unit had a known, non-zero, probability of being selected.

The topic of sampling frames and sample designs for household survey programmes has been dealt with extensively in United Nations (1986). The present section highlights important points of particular relevance to labour force surveys, and offers certain clarifications.

For household surveys, the sample is usually selected in a number of stages. The first stage involves the selection of *primary sampling units* which are, typically, area units of relatively large size. These units should have clear, non-overlapping boundaries, and between them should cover the study population exhaustively. A frame of such units would consist of their explicit listing along with maps, descriptions and other information pertinent to their identification and selection. Good frames will also include information on size and other characteristics of the units, which will improve efficiency of sample selection and estimation. A frame of primary sampling units covering the entire survey population is called the *primary sampling frame*.

With a multi-stage design, sampling at any one stage is confined to the higher-stage units selected at previous stages. This means that once a sample of primary sampling units has been selected from the primary sampling frame, frames for the next stage of selection are required only for the selected primary sampling units. The same applies to sampling within units selected at the second stage, and so on. The hierarchy of frames below the primary sampling frame are called *secondary sampling frames*.

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Primary sampling frame

There is a fundamental difference between the primary sampling frame and secondary sampling frames. Since the secondary sampling frames are confined to a sample of units selected at the previous stage(s), it may often be possible to create and maintain them specially for a single survey, or for use over a limited period of time. The primary sampling frame, however, is required to cover the entire population. The establishment and maintenance of a complete and efficient primary sampling frame, comprising units of appropriate type and size along with necessary auxiliary information, is a critical requirement in undertaking labour force and other surveys of broad coverage and scope. The primary sampling frame represents a major investment which can usually be undertaken only in the expectation of repeated use of the frame for various surveys and survey rounds over a period of time. These conditions are usually met in the context of national labour force surveys because of their typically large size, broad scope, stringent coverage requirements and continuing nature of operations. Furthermore, as noted previously, labour force surveys are well suited for design and operational linkages with other population-based surveys, so that costs of developing and maintaining good primary sampling frames can usually be shared between the labour force and other surveys.

The desirable properties of a good sampling frame may be classified into three types (United Nations, 1986, pp. 63-79): (1) quality-related properties which help to minimise non-sampling errors, including the availability of well-defined, up-to-date and stable units with adequate identifiers and complete coverage of the population; (2) efficiency-related properties which permit statistically efficient design and estimation, including units with good maps and up-to-date supplementary information on size and other characteristics for stratification and sample selection; and (3) cost-related properties, including low cost and ease of compilation, use and maintenance of the frame.

Key steps in the development and maintenance of primary sampling frames are discussed below. These include: determination of the objectives and strategy to maximise utility of the frame for diverse purposes; choice of appropriate primary sampling units to make up the frame; physical representation of these units for easy access, use and manipulation; and maintenance and updating of the frame to permit its repeated use over a period of time.

Determination of objectives and strategy

The investment which can justifiably be made for the development and maintenance of a primary sampling frame will depend upon how extensive and prolonged its use is going to be. The frame may serve as a framework for selecting related or unrelated (independent) samples for diverse household surveys. It may be developed in conjunction with a hierarchical listing of the country's administrative subdivisions, and may be linked with statistical data bases at different levels of aggregation from a variety of sources. In particular, it is a good strategy to link development of the primary sampling frame closely with work on the population census, and to take into account the frame's requirements in the planning of the census, including choice of census enumeration areas, numbering system, tabulation plans for enumeration area data, census cartographic work and so on.

Of course no primary sampling frame can be expected to serve the needs of all possible surveys. Separate frames may have to be prepared for surveys requiring different types of units, e.g. surveys of economic establishments, area-based agricultural surveys, or surveys requiring efficient access to very specialised sectors of the population. Even in such diverse situations, however, the availability of a good, general population-based frame can sometimes be usefully exploited, and in a number of ways. Firstly, by

rearranging and restratifying different measures of size and other relevant characteristics of frame units, it may be possible to use the same frame for efficient sample selection for surveys with different requirements. The Indian National Sample Survey, for instance, employs some degree of restratification of the same census-based primary sampling frame of enumeration areas in each annual round depending upon the substantive focus of the round (Murthy and Roy, 1975, pp. 15-16). Secondly, the usefulness of a general purpose frame can sometimes be extended to more specialised purposes by including some relevant auxiliary information. For example, Murthy and Roy (1970) describe a survey of small-scale manufacturing establishments conducted on the basis of a census-based frame which included supplementary information on concentrations of the establishments of interest to the survey. (Indonesia implemented a scheme with similar objectives in its 1990 population census.) This case-study also provides a good example from a developing country on how the quality of a frame may be improved by matching information from more than one source. Thirdly, the general frame can also be used to supplement lists or other types of special purpose frames. Special purpose frames or lists often represent quite well pockets of concentration of special interest units (particularly units of large size), which permits efficient sample selection, but does not provide full coverage of the particular units of interest within the whole population. A general purpose frame, though by itself not an efficient source for sample selection in such situations, may provide the necessary supplement to ensure fuller coverage.

Choice of the type of primary sampling units

A most important decision in the development and compilation of the sampling frame is the choice of primary sampling units. This choice will depend on various considerations: (a) the potential uses to which the primary sampling frame is to be put; (b) available sources and materials from which the frame can be constructed, including the cost and work involved; and (c) problems of field logistics and sample design and implementation, including costs, and feasibility and quality control requirements. The aims should be to ensure completeness of coverage, flexibility in case of unforeseen uses of the frame, stability of units for repeated long-term use, the possibility of linkages between related surveys and survey rounds using the frame, ease of maintenance and updating, and, of course, statistical efficiency of sample design and estimation.

The choice of primary sampling units can have a great influence on the quality and cost of a survey. The units need to be well-defined, with clear boundaries, good maps and descriptions for identification and demarcation, and up-to-date information on size and other characteristics. The units should be relatively stable over time, especially if the survey involves repeated enumeration or extends over a prolonged period, or if there is a big time-lag between compilation of the frame and sample selection and conduct of field-work. Low costs and a manageable workload in compiling, maintaining, using and updating the units are further desirable frame characteristics. The primary sampling units should be of an "appropriate" size in line with the arrangement and cost structure of the survey data collection operation; they should also be fairly uniform in size within each sampling domain. If the units are too large, it may not be possible to select and operate a sufficient number of them to obtain a good spread of the sample; furthermore, the cost of creating and maintaining secondary sampling frames as well as the cost of field-work in large primary sampling units may be excessively high in some circumstances. On the other hand, if units are too small, they may not have clear boundaries or sufficient stability over time. It may be difficult to obtain a sufficient spread of the sample *within* the primary units, or to accommodate the needs of different surveys/survey rounds requiring separate samples to be drawn from the same units.

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What constitutes the “appropriate” size of units in a given situation is too complicated a question to consider in general. However, on the basis of national practices in conducting labour force and other household surveys, at least four patterns may be discerned fairly clearly.

Firstly, at one extreme, some countries use very large primary sampling units. The total number of units in the population is often not large and only a small number of those are selected for the sample. Such units need to be relatively heterogeneous and carefully constructed and stratified. Each unit represents a substantial investment in mapping, listing and preparing secondary sampling frames, and even more importantly perhaps, in recruiting, training and stationing field enumerators in sample areas. While little or no enumerator travel may be involved between primary sampling units, travel and mobility within (these large) units may be quite extensive, and require cheap and convenient transport facilities at the local level. Another aspect of this system is that, to preserve the substantial investments made in establishing sample units, it is expedient to retain the same set of units for many different surveys and survey rounds over a period of time. Sample “rotation” and renewal may have to take place largely within the fixed set of primary sampling units; and even at the stage of complete redesign of the sample it may be considered desirable to retain as many of the old units as statistically permitted in the new sample. If properly devised, the main advantages of such a system can include: stability of boundaries and other characteristics of the large units; the economy and convenience of prolonged use of the same set of sample areas; and the reduced need for inter-unit travel by field enumerators. Despite the small number of units selected, the sample may still be reasonably efficient due to the large size and heterogeneity of the units.

Perhaps the best known and documented example of this type of use of primary sampling units is the United States Current Population Survey, which is a large-scale monthly survey designed “to provide estimates of employment, unemployment and other characteristics of the general labour force, of the population as a whole, and of various subgroups of the population” (United States, 1978). In this survey, the largest units which are subject to the sampling process (the so-called “non-self-representing primary sampling units”) may be as extensive as 4,000-5,000 square kilometres or with a population of up to a quarter of a million. The system permits local recruitment of part-time interviewers. These are often housewives who, with suitable qualifications and experience, are generally capable of turning in work of high quality, despite relatively low rates of remuneration. The interviewers can usually work from home and cover substantial distances within their units in their own cars.

Secondly, at the other extreme, samples consist of numerous very small primary sampling units. Such a system may be suitable in densely populated urban areas where lists of housing units and/or very detailed maps of small area segments are available, and where, because of well-developed transport facilities and the short distances involved, travel between units presents no particular problems. Again the United States Current Population Survey provides an illustration of this pattern. In the urban strata in that survey (the so-called “self-representing” primary sampling units), small areas called segments are directly selected (thus constituting the effective primary sampling units). The number of such units selected is quite large, since at any one time, each selected unit contributes only a few (four or so) housing units to the total sample.

Neither of these two extreme variants are common in the surveys of developing countries because on the whole the basic conditions for their efficient operation cannot be met. However, as noted later, some developing countries do use very large primary sampling units in their surveys, but usually for quite different reasons. As regards the use in large units of locally recruited interviewers who are highly mobile within a sample area, it should be noted that in many developing countries it is difficult to recruit suitably

qualified and experienced enumerators at the local level. Supervision and control is usually more easily ensured with full-time permanent staff than with part-time casual recruits. Above all, travel conditions can be quite different in developing countries: often there is a sufficiently developed network of major trunk roads to facilitate travel *between* areas, but local travel can be much more difficult and time-consuming, even if the physical distances involved are small (Verma, 1977).

The use of numerous small primary sampling units is also less common in developing countries because of the lack of maps and other materials to define suitable small area units. Irregularity of construction and lack of adequate address systems are also contributory factors. However, there have been surveys in developing countries, especially in urban areas, based on many and small primary sampling units. Some examples are provided by fertility surveys in Colombia, Panama, Peru, Philippines, Sri Lanka and Venezuela (Verma, 1980).

Thirdly, the prevailing pattern in most developing countries is to have primary sampling frames for labour force and other household surveys based on enumeration areas of the most recent population census. Typically, census enumeration areas contain an average of several tens to a few hundred households. In many situations, census enumeration areas are reasonably uniform in size and possess reasonably adequate maps, descriptions and information on population size and other relevant characteristics. Usually, enumeration areas are defined as subdivisions of administrative or other significant areas, and can be arranged hierarchically and geographically to define sampling strata and reporting domains, or combined to create larger units for the frame. Sometimes the primary sampling frame can also be improved by segmenting some of the larger enumeration areas and combining the smaller ones into units of a more appropriate size.

The fourth variant worth mentioning is the practice in some developing countries of using few and very large units as primary sampling units. There may be several reasons for this practice, but generally quite different from those discussed under the first variant above. In some countries, usable primary sample frames with smaller (and generally more suitable) units are simply not available, at least for a part of the population. Usually this represents inadequate cartographic work during the census. For instance, many surveys in the United Republic of Cameroon have used, as primary sampling units, *arrondissements* of which there are only 144 in the country. For surveys in some Arab countries, e.g. Jordan, Syria and Egypt, whole towns have been taken as primary sampling units. This may partly be due to the lack of a suitable frame for smaller areas, and in part due to the cost and practical difficulty of spreading the samples to many different towns. The second major reason for using very large primary sampling units in some developing countries is the actual or perceived administrative convenience. Often sampling frames for much smaller areas are in fact available or can be compiled, but such information is used only to construct secondary sampling frames within selected primary sampling units. For example, the labour force and other surveys in Thailand used till recently *changwat* (provinces) as primary sampling units, of which there are only 71 in the country. Similarly in China, recent surveys have used multi-stage samples with counties (an average population size of half a million) as primary sampling units. In both these cases the reasons for the choice have been primarily administrative or logistic, rather than based on the availability of frames of smaller units or a careful consideration of field costs.

Physical representation of the frame

Physical representation of the frame units has to be chosen with the general objective of ensuring easy access, use and manipulation. An added objective is the production of summaries and control totals which can help in sample design and estimation and also

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provide a means to check representativeness and completeness of the frame. The primary sampling frame should be an ordered listing of units according to administrative divisions, main reporting domains, primary strata and other meaningful groupings, and within these the units may be ordered by location, size or other relevant criteria. The important thing is to ensure that each unit has a *unique identifier* and information which can be used for its classification and ordering, which may need to be different for different uses of the frame. Computerisation of the primary sampling frame can be particularly convenient in this respect. Other information included in the frame may be a record of the use of each unit in earlier samples, summaries of unit characteristics, and maps and descriptions for definition and identification of units.

Procedures for maintenance and updating of the frame

The first requirement is to ensure that plans and procedures are developed for maintaining and periodically updating the frame, and that these procedures are properly documented; United Nations (1986, p. 102) contains negative examples from countries where no such descriptions appeared to exist.

Secondly, it is a good principle to centralise the frame-updating operation and to standardise the procedures as far as possible. This is particularly important in a large statistical organisation where the same frame has multiple users and multiple uses. At the same time, it is important for statistical organisations to co-operate with, and draw on the work of, other national agencies specialising in the production of maps for various purposes.

It is usually most convenient to undertake major updates of the frame in conjunction with a population census. More limited updating may be carried out periodically between censuses. Such updates require the identification of appropriate sources of information for frame improvement, the determination of suitable frequency of updates, the definition of criteria for creating new units and for deleting non-existing units, and the establishment of procedures for recording changes in unit boundaries and characteristics. An important point to be considered is whether or not the old units and information need to be related to the new. Often the updating of a frame may involve neither addition nor deletion of units but merely modification of definition, boundaries or characteristics of existing listings (units).

Finally, it may be noted that it is not essential that *all* units in the frame be updated in the same way or at the same time. Often updating is useful even if it is possible to cover only a part of the frame.

Secondary sampling frames

With a multi-stage sample design, the frame for further sample selection at any stage is required only for units selected at the previous stage. For this reason it is sometimes feasible to develop and maintain secondary sampling frames especially for a particular survey or for use over a more limited period of time than primary sampling frames. At the same time, secondary sampling frames tend to be less durable since, on the whole, units and unit characteristics become less stable as we move from larger, higher-stage units to smaller, lower-stage units.

Despite this qualification, the development and maintenance of secondary sampling frames can represent a very substantial investment, requiring their repeated and prolonged use to the extent stability of units and unit characteristics permits. In survey designs where primary sampling units are rather large and extensive, the sample of units often also covers a large part of the total population for which a frame of second stage units needs to be developed and maintained. The secondary sampling frame within each sample primary sampling unit may represent such a major investment that it becomes highly desirable to keep a fixed sample of units for repeated use over a number of years

and to maximise the retention of old units even at the time of a major redesign of the sample, say after a new population census. The example of the United States Current Population Survey has already been given in this context. The same is true of some other surveys such as the Canadian Labour Force Survey.

In survey designs using smaller and more compact primary sampling units, the investment involved in developing and maintaining secondary sampling frames per unit may be smaller. However, in such designs the number of sample primary sampling units is typically much larger, so that the total cost of secondary sampling frames may also represent major investment.

The secondary sampling frame units at the last two sampling stages are of particular relevance and are discussed below more fully. Brief comments are also made on rules of association between different types of units in labour force surveys.

Ultimate area units

The ultimate area units refer to *area* units at the lowest stage of sampling. These are often relatively small and compact units, beyond which the sampling process moves from area sampling to sampling from lists of persons, households, housing units or small clusters of these. This is because with decreasing area size, boundaries become increasingly less stable and more difficult to define and identify. Beyond a certain point, further segmentation into smaller areas becomes more costly and less efficient than directly listing and sampling the ultimate unit. Another reason for introducing listing and sampling after a certain point is to permit spreading of the sample of ultimate units within clusters. In many developing countries, particularly in rural areas, the lack of good maps and adequate address systems and the generally irregular pattern of residential construction means that usable ultimate area units have to be fairly large in size, often whole villages. In such situations the ultimate area units may also constitute the basic units for the organisation of listing and field-work and the maintenance of records of sample selection and implementation. In practice, in many surveys the ultimate area units are so large that the whole design may involve only two stages: the ultimate area units themselves as the primary sampling units, along with listing and sampling of individual households or similar units within selected ultimate area units (see, for example, Verma, 1977). Individuals residing in the same area or neighbourhood may have similar characteristics and economic activity. Therefore in labour force surveys it is generally necessary to spread the sample over many ultimate area units, to avoid the use of very small and compact ultimate area units, and to spread the sample, selecting only a small number of individuals within each sample ultimate area unit.

Ultimate sampling units

Ultimate sampling units are the final units selected at the end of the sampling process, which are either identical to or directly associated with the population elements which serve as the units of observation and analysis. In labour force as in other household surveys, the ultimate sampling units may be (a) individual persons, (b) households, (c) addresses or housing units, (d) small groups of neighbouring housing units defined from lists and sketch maps, or (e) the ultimate area units themselves, within which every element is enumerated. The above list is ordered according to an increasing degree of permanence or stability of the units involved.

The last-mentioned option, (e), is referred to as “take all” or “compact cluster” sampling. No subsampling and possibly no separate listing of households or dwelling units within ultimate area units is involved. The advantage of this scheme is greater stability of units and lower coverage errors. However, this approach is not particularly suitable for labour force surveys, especially in developing countries. A common problem in the survey work of these countries, due to the lack of small area maps and other

cartographic material, is how to avoid creating area units which are too large for economical listing and enumeration. Furthermore, area units which are available or can be created are often not sufficiently uniform in size, so that efficient sampling requires their selection with “probability proportional to size” or some similar scheme requiring subsequent subsampling. As already noted, persons residing in the same area may have similar labour force characteristics, so that it is more efficient to select a small number of individuals from each of many areas than to select many individuals from a small number of areas. However, in surveys aimed at enumerating rare elements in the population, “take all” or “compact cluster” sampling can indeed be an appropriate scheme (Kish, 1965, section 11.4).

Selecting small groups of neighbouring units from lists (option *(d)*) avoids the excessive clustering of ultimate sampling units involved in *(e)*, while retaining some advantages of greater stability of units and lower coverage errors. (For a discussion of the possible contribution of this scheme, in contrast to the selection of dwellings or households individually, to a reduction in coverage errors, see Kish and Hess, 1958.) However, this arrangement is not often reported as having been used in surveys in developing countries; perhaps it would be useful to try it more often where feasible.

Option *(a)*, namely listing and direct sampling of individuals, may be necessary in certain special situations. For instance, in Senegal and some other countries, many people live in large compounds where households or dwellings do not constitute very meaningful or convenient units for sampling, so that the only practical course is to list and select individuals directly within the compound. The scheme may also be used when it is desirable to minimise the incidence of selecting more than one individual from the same household. Generally, however, listing and sampling of individual persons as ultimate sampling units is unnecessary and expensive, and should be used with minimum time-lag because of rapid changes.

Hence in many surveys, the common choice of ultimate sampling unit lies between options *(b)* and *(c)*, i.e. between households and housing units. The latter are structural units defined by their address or location, while households are social units defined by the individuals which comprise them. Listing housing units does not usually require contacting individuals or households and can therefore be much quicker and cheaper than listing households. Households not readily identifiable from external features will generally require inquiries to establish their identity. Even more important is the fact that when lists are required for use over an extended period or repeatedly, as may be the case in a continuing labour force survey, housing units have the advantage of being more stable than households (United Nations, 1986, pp. 113-114).

However, there are circumstances when it is either preferable or unavoidable to use households rather than housing units as the ultimate sampling units. Information on household characteristics can, for instance, permit more elaborate stratification, which is useful for increasing the efficiency of the sample (though some simple but useful stratification may also be possible with dwelling lists; for an illustration, see Kish and Hess, 1958). In any case, in rural areas in many developing countries, the prevailing living arrangements and the absence of a normal address system often means that households rather than building or housing units are the units which can be meaningfully defined and identified.

The use of housing units as ultimate sampling units has been reported more often in surveys in Latin America, and that of households in surveys in Asia and Africa. It appears possible that on the whole there are some advantages in using the more stable housing units (or even small clusters of those) in labour force survey operations, and more frequent use of this type of unit should be tried where circumstances permit.

Rules of association

A survey may involve units of various types. Firstly, there are *elementary units* (such as individuals) comprising and defining the study population. The units for which information is *collected* and the units for which it is *analysed* may differ from the elementary units, and sometimes from each other. A household survey may be designed to collect and analyse information on more than one of these types of unit. For instance, while a labour force survey collects information primarily on individual persons, information on income, housing and other socio-economic characteristics pertaining to families, households, earning or spending units, communities or other social groupings may also be collected. Furthermore, data collected at lower levels may be aggregated and analysed for units at a higher level or, alternatively, data collected for higher units may be ascribed to each lower stage unit and analysed at that level. (See Kish, 1965a, for an interesting discussion of some issues on multiple levels of collection and analysis; a more comprehensive discussion in the context of community level data is provided in various articles in Casterline (ed.), 1985.)

Secondly, in a multi-stage design, *sampling units* of various types are involved. As already noted, typically they constitute a hierarchy of area units, with housing units or households at the last stage. The sampling units may or may not be the same as the elementary units of collection and analysis.

Thirdly, there is often also a distinction between the above-mentioned types of unit and units which actually provide the information. For instance, information on households may be provided by any adult resident or by some specifically designated person; similarly, information on an individual may be provided by the individual concerned, or by the proxy response of some other person or persons. The units providing the information may be determined in accordance with respondent rules established for the survey.

Because of the various types of units involved in a survey, it is necessary to establish appropriate *rules of association* between units. The objective of these rules is to ensure a *probability sample*, i.e. to ensure that every elementary unit and hence every analysis unit in the population has a known, non-zero probability of appearing in the survey. Rules of association are required (a) between different levels of sampling units; (b) between ultimate sampling units and elementary units; (c) between elementary units and units of collection and analysis; and finally (d) between collection units (in respect of which information is collected) and the survey respondents (who provide the information).

Use of a master sample

In any survey with a multi-stage sampling design, each stage of the sampling process involves the tasks of frame preparation and sample selection, till finally a sample of ultimate sampling units is obtained. For economy and convenience, one or more stages of this task may be combined or shared among a number of surveys. The sample resulting from the shared stages is called a *master sample*. Its objective is to provide a common sample of units up to a certain stage, from which further sampling can be done to serve the needs of individual surveys.

For example, following the preparation of a primary sampling frame, a master sample of primary units may be selected for use for several surveys or survey rounds. For any particular survey, some or all of the primary sampling units in the master sample may be taken to continue the sampling process as required for the survey. In this example, the task of constructing and stratifying the primary frame and selecting an initial sample of primary units is common to all surveys using the master sample. The primary units initially selected *may* be subject to further subsampling for individual surveys. The subsamples of primary sampling units drawn for different surveys, while

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confined to the master sample, may be independent or related; the subsamples may be identical, partly overlapping or entirely distinct.

The initial selection of a sample of primary sampling units for multiple use is the *minimum* requirement implied in the concept of a master sample. Of course it is often useful to carry on the shared sampling process to one or more lower sampling stages as well, to obtain a master sample of second stage units, or ultimate area units, or even of ultimate sampling units. Sampling for individual surveys will then be confined to the lowest stage of units obtained in the master sample.

The objectives of using the master sample approach include the following:

- (a) to economise, by sharing between different surveys, on costs of developing sampling frames and materials, and costs of sample design and selection;
- (b) to facilitate substantive as well as operational linkages between different surveys and survey rounds;
- (c) to facilitate, as well as restrict and control when necessary, the drawing of multiple samples for various surveys from the same frame.

The last-mentioned point can be particularly important when a number of different organisations are involved in conducting surveys on the same population.

All these are often good reasons for using the master sample approach in labour force surveys. Firstly, as will be discussed in detail in Section 5 below, a labour force survey is often conducted in the form of rounds and subrounds, each of which involves the enumeration of a spatially representative sample over a specified time interval. These samples cannot all be selected independently but must be related in some specified way, depending on substantive and operational requirements of the survey. Their selection from a common master sample facilitates these linkages.

The second reason is that labour force surveys, involving large-scale continuing operations, are often linked in various ways with surveys on other topics (see Chapter 10, Section 3). In particular, once a major labour force survey is in place, it can usefully serve as a vehicle for supporting household surveys on other topics. These possibilities need to be facilitated, but at the same time controlled to ensure that subsidiary operations do not affect the work of the main labour force survey adversely, for example through conflicts in the timing of field operations or excessive respondent burden resulting from repeated use of the same sample. A master sample is an instrument for developing and at the same time controlling these linkages.

4. Some practical aspects of sample design

The design of samples for complex socio-economic surveys is a highly technical task on which an extensive theoretical and practical literature exists. It is neither necessary nor possible to cover the topic fully in this manual. The aim of the following paragraphs is merely to provide a few hints which may be useful in the practical work of sample design for labour force surveys.

Need for practical orientation

Typically, labour force surveys represent a large-scale effort, have several objectives and depend on complex selection methods. It is desirable to depend on methods and procedures that are reliable and practical in order to ensure that the actual performance in the field and office do not deviate too far from the requirements of the design. There is a long chain of operations from design to office selection, to observation, then back to coding, computing and statistical analysis. To complete that circuit in reasonable safety, sampling procedures should be reasonably “robust” (Kish, 1977). It is preferable to adopt design and procedures which, even if not the most precise and refined under

optimum conditions, can nevertheless withstand the unexpected and unknown situations invariably encountered in practical survey work, and in particular human errors. Practical sampling must be rooted in the nature and inter-relationship of the field operations involved, not only in the implementation of a particular sample design, but also in the data collection stage of the survey as a whole. The sampler must constantly remain aware of what can and cannot be expected of field and office workers actually involved in the implementation of the sample. While sampling theory provides the basis for practical sampling and often also a means of evaluation once a sample has been selected, it is not, in most cases, able to provide unique or definitive optimum solutions. It is almost a truism to say that sampling is partly a science, partly an art. Art finds a place in science, sometimes to the dismay of the theoretician, when decisions have to be based on the “feel” of the situation in response to constraints limiting options. In the last analysis the decisive factor is, once again, the nature and inter-relationship of the field operations involved (Verma, 1977).

Use of probability sampling

In Section 3 of Chapter 10, certain common characteristics of labour force surveys were identified on the basis of current practices in developing and developed countries. It was noted that because of their often official status and national scope, labour force surveys are likely to be subject to rather stringent requirements of timing, measurable accuracy, internal consistency, and consistency over time. The survey estimates have to be consistent with data from other sources. Furthermore, labour force surveys can themselves become a vehicle for collecting diverse data on other variables, as well as serve as a basis (e.g. in terms of providing the sample) for other population-based surveys. These requirements can only be met by *probability samples* of fairly large size, drawn from a good frame covering the general population. Probability sampling requires that each unit in the population has a known, non-zero chance of being selected for the sample, and it is only on this basis that results from the sample can be objectively and scientifically generalised to the population. With non-probability sampling, estimates for the population of interest from the sample can only be made on the basis of some additional and essentially arbitrary assumptions. For some relatively small-scale, intensive surveys aimed at investigating certain relationships in depth, it may be considered acceptable to resort to non-probability sampling. However, in large-scale surveys, especially those aimed at producing estimates of population aggregates, there is practically never any justification in resorting to quota, judgement or other forms of non-probability sampling.

There are situations, however, where *small* departures from this general principle may be justified in labour force surveys for reasons of cost and practicality. Sometimes, because of the lack of an adequate sampling frame or other reasons, it may be impossible or prohibitively expensive to obtain a strict probability sample for a small part of the study population, and approximate procedures will have to be taken. Any such departures should be reduced to the minimum possible.

Some sampling procedures (such as selection of predetermined numbers from lists, the total number of which is not known) can yield samples where the *relative* probabilities of selection of units are known, but the absolute values of selection probabilities are not known. These could provide acceptable estimates of means or other ratios from the sample (since they depend only on relative probabilities and numbers of cases in the numerator and the denominator), but not fully inflated estimates of population aggregates or totals. Totals can only be estimated with the help of external information, if available. For this reason, such selection procedures should be avoided as far as possible.

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Substitutions for those units selected for the sample which turn out to be outside its scope or do not contain any element of interest (e.g. unoccupied buildings) not only distort sampling probabilities but can also make them invalid. For this reason alone, substitution is generally a bad practice in surveys.

Moderation in choice of sample size

The sample size has of course to be large enough to meet substantive and specific requirements of the survey. However, in many cases, the quality of surveys has suffered because of the choice of inappropriately large sample sizes. Inappropriate choices can result from: (1) over-emphasis on sampling precision and neglect of the needs to control non-sampling errors and to ensure relevance and timeliness of the results; (2) acceptance of unreasonable, and in view of policy objectives, unnecessary standards of precision; (3) the desire to produce too many breakdowns in too much detail; (4) failure to appreciate the difference between substantive and statistical significance of results; (5) failure to appreciate that often results can be satisfactorily accumulated over time to generate any greater detail which may be needed; (6) failure to invest sufficient time and resources to document and analyse information useful for improving design and estimation procedures; and, above all, (7) underestimation of the cost and effort required in data collection and processing.

Despite these practical considerations, the sample must of course be large enough to yield information with sufficient sampling precision to be useful to the analyses required. Clearly, the minimum sample size depends on the type of analysis and use envisaged for the data. The major determinants in this context are (1) the number of reporting domains (such as geographic regions or other population subgroups) for which separate tabulations and estimates are to be produced; (2) the degree of substantive detail (e.g. of industry or occupational classification) required for the employed population; (3) the type and frequency of estimates required (e.g. annual levels versus month-to-month changes); and of course (4) the degree of sampling precision required.

The total sample size required will increase with the number of reporting domains. However, for several reasons, this increase is usually less than proportionate. Individual domains are often more homogeneous than the national population as a whole, so that for the same sampling precision the sample size for a domain can be smaller than that required for the whole population. Secondly, when population subgroups of interest are well dispersed over sample areas, the same sample design can be, relatively speaking, more efficient for obtaining estimates for such subgroups than for the population as a whole. (The so-called “design effects” for dispersed subgroups are smaller than those for the total sample (see Chapter 14).) Thirdly, sampling precision requirements are in practice often less stringent for individual domains than for the country as a whole, reflecting the greater substantive importance of overall national level estimates.

Regarding the type and frequency of estimates, it may be noted that in practice any survey is required to produce a range of estimates of different types, so that no single estimate can be taken to be the sole determinant of sample size. However, different types of estimates can be expected to differ in their relative importance and hence in precision requirements depending on the specific survey objective, and it is often possible to identify a subset of estimates which can be considered critical in determining the minimum sample size required. For instance, the sample size required may be substantially smaller when the primary interest is to identify **major** categories of the employed population (say by major industry, occupation or status-in-employment categories), than in a situation where the interest is to monitor changes in a small category such as the unemployed. Measuring changes (especially small trends) usually requires larger samples than measuring current levels with the same precision. Similarly,

sample surveys can estimate rates and ratios more precisely than population totals or absolute numbers.

It follows from the above considerations that it is not meaningful to try to specify sample size requirements for labour force surveys in general. To indicate roughly the order of magnitude which may be involved, the following simplified illustration is given. Suppose that the critical requirement in a survey is to estimate a proportion (e.g. unemployment rate) which constitutes approximately 10 per cent of a particular reporting domain (or population subgroup) of interest, and that this quantity has to be estimated within an error margin of ± 1 per cent with a high level of confidence. Depending on the efficiency of the design, this may require a sample size of the order of 5,000 individuals; or, if there are, on average, two eligible individuals in a household, a sample of 2,000-3,000 households. To estimate changes or differences with this level of precision, the sample size required may have to be twice as large.

In practice the process of determining the sample size may be on the following lines. Given the major domains for which separate results are to be reported and the type of estimates required, the minimum sample size may be determined to meet the most critical precision requirements. However, it is important that the sample size so determined does not exceed the maximum which, under given practical constraints, is considered feasible and practicable. If the initial choice exceeds this maximum, then it is best to reconsider and adjust the objectives and reporting requirements of the survey, rather than to try and impose an unrealistically large sample size. In a continuing type of survey, the initial choice may be improved subsequently on the basis of an assessment of sampling and non-sampling errors, of revised policy and analysis requirements, and possibly also of changing practical constraints.

Stratification

Stratification means dividing the units to be selected into relatively homogeneous groups and sampling each group independently. Some general conclusions concerning stratification may be noted. (1) Often stratification can reduce sampling variances at little additional cost. (2) The gains of stratification for simple random samples may often be quite modest, but can be much more substantial in multi-stage clustered samples of the type almost always used in large-scale household surveys. Therefore it is usually worthwhile to devote considerable care to obtain good stratification, particularly for the selection of units at the higher stages. (3) It is more effective to use a multiplicity of stratification variables, each with a few categories, than to use many fine categories of a single variable. This is because the marginal gain falls as the number of strata formed by using a single variable is increased. (4) Strata should cover or be contained within (i.e. not cut across) geographic domains for which survey estimates are required. (5) In many situations, simple geographical stratification, along with stratification by type of place, provides a most effective means of improving efficiency and distribution of the sample. Such stratification is simple and requires little auxiliary information. It also tends to be multi-purpose and relatively stable over time. (6) Systematic sampling from ordered lists is a cheap and efficient means of achieving the effects of stratification. (7) It is often worth taking stratification to the furthest detail possible, even to the point where only one unit per stratum is to be selected, or beyond, using special "controlled selection" procedures. Though estimation of sampling errors usually requires that at least two units be selected from each stratum, it is often better to have a sample which is more precise in itself, than to have a less precise sample whose precision can, however, be estimated more precisely. (8) A major use of stratification is to provide flexibility in the choice of sample design and procedures. There is no reason for design and procedures to be uniform across strata.

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Typically, labour force surveys are required to cover the general population broadly, rather than to focus on particular areas or concentrations of persons with particular characteristics. Therefore, the most suitable (and the simplest) variables for stratification for the selection of sample areas are often (a) type of place, such as urban, rural or, more usefully, a finer classification distinguishing localities in different size groups, for example: metropolitan areas, other cities, towns, and large, medium and small villages; (b) administrative and/or statistical regions of the country, preferably in considerable detail at different levels of hierarchical classification; and (c) within each stratum, geographical ordering of areas for systematic selection of the sample. Information on economic activity, if available, may be used to improve efficiency of the sampling scheme. For instance, on the basis of an economic census (or information on household economic activity if obtained in a recent population census), it may be possible to stratify areas according to the broad sector or type of activity which provides the most employment in the area.

Within sample areas, households may be stratified for sample selection depending on the type of information collected at the household (or housing unit) listing stage. Household size is a useful and commonly used variable. In urban areas in particular, the listers may be asked to provide some rough and subjective indication of the socio-economic status of the unit (for example, classification of units as high, average, and low based on observation of housing conditions), which can be used to stratify the lists. If necessary, information can also be collected during the household listing operation to identify and over-sample households with particular characteristics (such as female heads of household) which may be of special interest in the survey.

Self-weighting samples

As in other population-based surveys, there are strong reasons for preferring self-weighting samples in labour force surveys. A “self-weighting” sample means that each elementary unit in the population has the same, non-zero, chance of coming into the sample. This implies that, with unified rules of association between elementary units (e.g. persons) and ultimate sampling units (e.g. households, housing units, or groups of these), the ultimate sampling units are selected with the same constant probability. Higher stage sampling units may of course be selected with differing probabilities, but such that differences in selection probabilities at various stages cancel out. With self-weighting samples, sample estimates can be prepared from unweighted data, and the results then inflated, if necessary, by a constant factor throughout.

Sometimes it is necessary to use different sampling rates in different sampling and/or reporting domains, but even here the sample may be made self-weighting within each domain. By *sampling domain* is meant parts of the population which require different sampling design and procedures. In so far as these domains significantly differ in unit survey costs or variances, “optimal” allocation may require sampling them at different rates. For instance, remote or sparsely populated areas may have appreciably above-average per unit survey costs, and may therefore be sampled at a below-average rate; similarly, domains such as large cities, where a greater diversity of conditions of employment and economic activity are encountered, may be sampled at higher rates. By *reporting domains* is meant parts of populations for which separate estimates are required from the survey, normally with specified precision in each case. These requirements may dictate different sampling rates for different reporting domains (usually involving over-sampling of smaller domains). Three broad types of reporting domains may be distinguished: geographical domains such as urban and rural areas or regions of the country (typically, the sampling domains will coincide with or form parts of this type of reporting domain); “cross” domains such as particular subgroups of the population which are well dispersed over geographical areas; and “mixed” domains, which are

relatively concentrated but not completely segregated population subgroups. Geographical, and to a lesser extent mixed, domains may be sampled at different rates more readily; it can be much more difficult to do so for cross domains, i.e. population subgroups well dispersed over geographical areas.

There are a number of reasons favouring self-weighting designs (throughout or at least within each sampling or reporting domain). (1) Weighting increases the complexity of the survey operations: weights have to be computed, retained for a period, then used in programming and tabulation; their presence must be communicated to the data tape users; and both weighted and unweighted sample sizes need to be shown in the published tables if they differ appreciably. (2) Haphazard weights which are not related to population variances increase variance of the results. The greater the range of the weights, the greater is the increase in variances. This increased variance and complexity must be compensated for at each stage of the analysis. Hence the longer, the more complex the analysis, the greater is the relative loss due to departure from self-weighting. (3) Weighting may reduce the flexibility and ease with which the same sample may be used for diverse purposes and different surveys. To meet requirements of different topics and different surveys, the compromise multi-purpose allocation may often turn out to be near self-weighting. (4) Repeated sampling from the same list is straightforward with self-weighting, but the selection probabilities become much more complex if previous selections from the frame were not with equal probabilities. (5) Self-weighting samples are more readily understood and accepted by the non-statistical user and the general public. (6) It should be noted that moderate departures from self-weighting have small effect on variances. This means that over-sampling for optimal allocation or weighting to compensate for non-response or, at the estimation stage, to improve precision, etc., is worthwhile only if it involves relatively large departures from self-weighting.

The above considerations favouring self-weighting designs (throughout or within each domain) apply in particular to broadly-based surveys of the general population, such as household surveys of the labour force. In surveys of economic establishments, by contrast, it is often more efficient to select larger establishments with higher probabilities.

Sampling stages and sample selection

The introduction of unnecessary stages in the sample design should be avoided. Additional stages should be introduced only when there are clear advantages of reduced costs, lower variances or operational convenience.

In multi-stage designs, area units are often selected with probabilities proportional to size. At the last stage, ultimate units can be selected with probabilities inversely proportional to size. Such a scheme has the dual advantage of (a) giving a self-weighting sample of ultimate units, and (b) giving a nearly constant workload within areas. Workload will vary to the extent that measures of size used for sample selection were approximate. Sometimes to keep the workload absolutely constant, the number of ultimate sampling units to be selected is fixed, rather than the sampling rates to be applied to obtain an overall self-weighting sample. Such a procedure can result in a number of complexities and problems, and its use is practically never justifiable in labour force surveys.

In labour force surveys, the appropriate measures of size are usually the most current estimates of population size. The number of households, or population over a certain age, may also be used if available.

We may also note that in practice it is desirable to *centralise* the process of sample selection as far as possible. Sampling by field staff “as they go” can often result in serious biases.

5. Sampling over time

The importance of ensuring representativeness of the labour force survey sample not only in space but also in time was emphasised in Section 2. This section discusses sample design in the light of this requirement. It is useful to distinguish between the two basic types of labour force survey (see Section 3, Chapter 10): (a) one-time or occasional surveys aimed at obtaining information of longer-term interest, pertaining to average conditions or patterns prevailing over a period of time; and (b) continuing surveys aimed primarily at obtaining current estimates of levels and trends.

The basic consideration in the first case is that if data collected for specific periods during the survey are to be applied more generally to a longer period of interest, then the specific periods should in some sense be representative of the longer period. By the same token, the survey period should be long enough to capture seasonal and other variations in time: it is preferable to spread out the survey period than to conduct a large survey confined to a single arbitrarily chosen segment of time. Furthermore, to estimate, as well as properly average out, seasonal and other variations, the survey period should be divided into smaller time segments (subrounds), over each of which a spatially representative sample is enumerated.

In a continuing survey, the objective is to produce current estimates (as well as estimates of change) with a specified frequency, such as every month, quarter or year. Therefore, the survey is typically organised in the form of an ongoing series of rounds, each round being designed to produce separate estimates covering a period defined by the frequency of reporting. In the same way as above, a survey round may be further divided into subrounds. In a sense, a one-time or occasional survey is like an isolated round of a continuing survey. Another basic issue to be considered in a continuing survey is the degree to which samples for different rounds should be independent and the extent to which they should be correlated or overlapping. This is determined by the “rotation pattern” adopted for the survey.

Sampling for one-time or occasional surveys

Overall timing and duration of the survey

Obviously, timing of the survey as a whole should be determined in accordance with its objectives. For instance, if the survey is required to provide statistical inputs for the preparation of a national development plan, it will have to be completed (including data processing and reporting phases) before that preparation begins; but not too soon, so as to ensure that the resulting data are as up to date as possible for the purpose. More generally, such surveys are undertaken to provide information on structural and other underlying characteristics of longer-term interest; their results are supposed to apply to average conditions over a relatively long period of time, the boundaries of which may be defined only vaguely. Therefore, the survey timing should be determined so as to avoid untypical situations.

Furthermore, the survey period should be spread out over time to take properly into account, and average out, seasonal, cyclic and haphazard changes of transient interest. For these reasons, the survey period typically extends over a whole year or at least covers all main seasons in the year. There are no known cases of a survey period extending over more than one year. However, it can indeed be argued that to represent the average conditions of the entire period of time over which the survey results are of interest and to be used, the survey period should itself be made as long as possible, covering a spatially representative subsample over each time segment. Such a scheme has been called a “rolling sample”, the basic idea of which is to accumulate data collected over an extended period to capture average conditions over that period. For efficient cumulation, the subsamples should be non-overlapping.

Division of the survey period into subrounds

In most cases it is useful to divide the total survey period into time segments which may be called “subrounds”. The idea was introduced in Section 3, Chapter 10. Within each subround, a spatially representative sample is enumerated on the basis of which separate estimates for the subround can be produced. Each subround may cover a time segment of the same duration, such as a month or a quarter; or, alternatively, subrounds may be defined to coincide with the main seasons of interest such as agricultural seasons and slack periods. Data from various subrounds can be aggregated to produce average results for the whole survey period; results of different subrounds can be compared to estimate seasonal variations and other trends. Some illustrations from national practices will be useful.

The main focus of the Thirty-second Round (1977-78) of the Indian National Sample Survey was on employment, unemployment and consumer expenditure. The survey period of one year was divided into quarterly subrounds. Sample primary sampling units (villages and blocks) were distributed over the four subrounds equally. Field-work for each subround was so arranged that an approximately equal number of primary sampling units was surveyed in each month of the quarter. Field-work was conducted continuously over the year.

The labour force survey in Sri Lanka was carried out over the year May 1980-April 1981. It involved a sample of around 1,000 census blocks (primary sampling units) from each of which ten dwelling units were selected for enumeration during the year. The survey was conducted in four subrounds spread over the year. Unlike the Indian survey, each subround enumerated dwelling units in all the 1,000 or so primary sampling units. Within each sample area, each subround covered a different set of dwelling units: two dwellings per block each in the first and third subrounds, and three each in the second and fourth subrounds, giving a total of ten per primary sampling unit over the year.

Similarly, in Pakistan a labour force survey conducted during the year September 1978-August 1979 was carried out over four subrounds. The samples were selected in the form of four “interpenetrating” subsamples of equal size and one subsample was surveyed each quarter.

There are a number of advantages of dividing the survey period into subrounds. Since each component enumerates a (spatially) representative sample, the total survey is representative both in space and over time during the survey year. A second important advantage is that comparison between subrounds provides additional information on seasonal changes and trends over the year, apart from separate estimates at least for the main variables for each subround. Thirdly, there are operational advantages. For instance, the rate of field-work can be made more uniform and be better controlled and regulated; and data processing and reporting can be arranged sequentially for one subround at a time. The main disadvantage of the system is the higher cost involved in enumerating representative and dispersed samples in each subround. The additional cost will be smaller if each subround enumerates only a subset of primary or other higher-stage sample units, as in the case of the Indian survey referred to above. The additional cost will be higher if the full sample of primary sampling units (and other higher-stage units) is to be covered in each subround, as in the case of the Sri Lankan survey. The per unit cost for producing overall (say, annual) estimates will be greatly increased if the same set of ultimate units is repeatedly enumerated, such as once during each subround. Some labour force surveys, for example, in the Philippines and the Republic of Korea, have followed this pattern (see below).

Sample overlaps between subrounds

Within a given survey, samples for the subrounds may be related in various ways:

1. One option is to have an independent sample for each subround. In practice this usually means a design which is common to all subrounds but ensures that samples for

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the various subrounds are entirely distinct and non-overlapping at all stages. Each subround enumerates a different set of primary sampling units, and hence different units at all other stages, including the ultimate sampling units such as households or housing units.

2. Each subround may enumerate a different set of ultimate sampling units, but some or all of the primary sampling and other higher stage units may be common between subrounds. Such samples are non-overlapping in terms of the ultimate units, but not independent.

3. As a modification of the above, a subset of ultimate sampling units may be retained from one round to the next, and those remaining replaced by new units. This is a rotational design, and provides higher correlations than the previous case between samples for different subrounds depending on the extent and pattern of rotation/overlap.

4. Finally, one may enumerate the same sample of ultimate sampling units from one subround to the next.

The choice of the pattern will depend upon objectives of the survey and considerations of sampling efficiency and costs. Four types of estimates may be required from the survey:

- estimates of levels for each individual round separately, such as monthly or quarterly estimates;
- overall estimates for the survey aggregated over various subrounds;
- estimates of net differences or changes between subrounds, e.g. month-to-month, quarterly or seasonal changes;
- estimates of gross differences or changes at the level of individual persons or households.

Apart from precision gains resulting from composite or other special estimation techniques (see Section 6), the precision of estimates of levels for individual subrounds is not affected by sample overlaps between subrounds. The situation is different for other types of estimates. Estimates for the whole survey period (aggregated over subrounds) are produced most efficiently if the samples for the constituent subrounds are independent or non-overlapping. This is because the positive covariance between related or overlapping samples inflates the variance of the pooled results. Consequently pattern (1) is the most appropriate one for producing overall estimates aggregated over various subrounds. With arrangements (2) and (3), i.e. partly overlapping samples, the positive covariance resulting from the use of related samples increases the precision with which seasonal patterns and changes can be measured. This gain is maximised with arrangement (4) when the same sample is enumerated repeatedly during each subround. The loss is the precision with which results can be aggregated over subrounds for a *given total number of interviews* during the survey. With arrangement (4), and to a lesser extent with (3), respondent burden is also increased due to repeated enumeration.

It is important to note that to measure seasonal and other changes at the aggregate level (i.e. to compare aggregate estimates for different subrounds), it is *not* essential to have overlapping or correlated samples. Entirely independent samples drawn from the same population will also provide estimates of change, though generally with less precision. However, to measure gross change at the *individual* level, such as the seasonal pattern of economic activity of particular individuals, it is necessary to follow up the same individuals in different subrounds. Similarly, if certain variables are to be estimated at the individual level for a period extending over the whole survey period (such as usual status of economic activity or income over the year, obtained by pooling together data obtained in four quarterly subrounds), then it is necessary either (a) to use a longer survey reference period extending over the whole period (year) of interest, or (b) to

enumerate repeatedly the same individuals if a shorter reference period is used. The first option has the advantage of economy, but the disadvantage of poorer quality of the information obtained because of the possibility of more serious recall problems with long reference periods.

The choice of the rotation pattern will depend upon particular objectives and the relative importance of the different types of estimate. In many situations the critical requirement is to have a sample large enough so that the necessary geographical detail can be obtained for results *aggregated over various subrounds*. In such a situation, clearly the best choice is arrangement (1), i.e. completely independent or non-overlapping samples between subrounds (as in the example given above from India). Arrangement (2) can be seen as an attempt to spread the sample of ultimate sampling units more widely, among more or all higher stage units so as to obtain more precise estimates for *individual subrounds* (as in the example given above from Sri Lanka). Arrangement (3) is more clearly a compromise solution to meet different objectives. The cost due to reduction in effective overall sample size with arrangement (4) can be very serious, and the arrangement should be used only when the measurement of gross changes at the individual level is clearly the primary objective. Examples of this last-mentioned pattern are the 1976/77 labour force survey in the Philippines, and the 1977 and subsequent surveys of economically active population in the Republic of Korea. In the first of these surveys at least, problems have been reported in following up the same sample due to changes and movements of the units (Rao, 1985, p. 120).

Survey period and reference period

The survey period refers to the time during which the information is collected; the reference period is the time to which the information relates. It should be appreciated that what is said above in relation to “representativeness in time” applies, strictly speaking, to the *reference periods* covered, rather than to the corresponding survey periods. For this reason, it is important to understand clearly the manner in which the reference period is covered in a survey.

Consider a survey in which field-work is carried out in a continuous manner and uniformly distributed over a year, with a *moving reference period* of length “ x ” (fraction in years). Clearly, the information obtained from the units enumerated at the very beginning of the survey relates to interval x immediately prior to the survey period. Consequently, the total period to which the survey data relate is x plus the survey period of one year. The number of units for which the information is obtained is not uniform throughout the $(x + 1)$ years. It increases from zero to a maximum during the first x , stays at that maximum for the next $(1 - x)$, and finally declines to zero over the last x years. This will not make much difference if x is a short reference period such as one week. However, the situation is quite different when x is a long reference period such as a year. Here the information relates to two years: the year before the survey and the survey year. The number of units providing retrospective information relating to any point during these two years has a triangular distribution, with peak at the beginning of the survey year. The survey therefore does not directly provide estimates for a single specified year: that would require inefficient weighting of the information inversely according to the number of units covered at each time during the year, and discarding the information which relates to time outside the year. On the other hand, the unweighted results *can* be used directly to study monthly or seasonal variation if it does not matter from which particular year in the two years the data came from.

The above difficulties do not arise if a fixed reference period is used, i.e. a reference period defined by the same, fixed calendar dates for all respondents. The difficulty with a fixed reference period is that it lengthens the recall period for some respondents, as noted in Section 3, Chapter 10.

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Replicated or interpenetrating sampling

One sample design option that has proved useful for many purposes is the use of interpenetrating or replicated sampling. When two or more samples are taken from the same population by the same process of selection, the samples are called interpenetrating samples. The samples may or may not be drawn independently, and there may be different levels of interpenetration corresponding to different stages in a multi-stage sampling scheme (Kendall and Buckland, 1980, p. 98). For instance, if sets of primary sampling units are drawn from the same strata, the resulting samples interpenetrate at the first stage; similarly, when sets of second stage units are drawn from the same primary sampling unit, there is interpenetration at the second stage as well. Interpenetrating designs are useful in many different ways, for example for variance estimation, assessment and control of non-sampling errors, and administering and comparing alternative procedures, etc. For a good discussion of applications, see Lahiri (1957). Samples for different subrounds in a survey may be designed to be interpenetrating, as was noted in the example given above from Pakistan.

Usually, the terms “replicated” and “interpenetrated” are used interchangeably. More precisely, however, the former is a more limited case of the latter: replications have the added requirement that the samples be enumerated *concurrently*, in the course of the same sample survey under comparable conditions (Kendall and Buckland, 1980, pp. 61 and 167). The total samples may be divided into replicated subsamples, each spatially representative, and all enumerated concurrently during the same period. Results from various replications can be compared and contrasted to obtain indication of reliability of the data and, with appropriate design, to estimate sampling and non-sampling components of the error.

Additional considerations in sampling for continuing surveys

Continuing surveys are designed to produce estimates for a sequence of time intervals. The concept of the “round” is therefore central to the design of such surveys. Depending on the type of estimates required and their relative importance, the sample may be “rotated” from round to round. Various rotation patterns are possible and will be described more fully below.

Each round may of course be divided into subrounds as discussed in the previous subsection. Various considerations noted there in relation to sample overlaps between subrounds, as well as replicated or interpenetrating sampling, etc., apply in the case of continuing survey rounds also. A point worth noting is that in the present case, the objective of division into subrounds is often more clearly to increase operational control and ensure a uniform distribution of the sample over time, rather than to produce separate estimates for subrounds. In practice, therefore, results for subrounds are generally aggregated to produce estimates for the whole round. As noted earlier, this is achieved most efficiently with *non-overlapping* samples for the subrounds, i.e. by enumerating a different set of sample units in each subround. Indeed, it is often economical to divide the primary sampling units to be covered in a round into non-overlapping spatially representative subsets, and confine each subround to one subset.

Sample rotation patterns

Sample rotation means that from one round to the next, some or all the sample units are replaced by new units. In social surveys, the pattern of rotation is usually “symmetrical”. This means that new sets of units are introduced into the sample at regular intervals, and once introduced, each set is retained or dropped from the sample following the same pattern. Once such a system is established, it provides a fixed degree

of overlap from any one round to the next, and between any two rounds separated by a given time interval. Some examples will make the point clear.

1. With effect from 1977, the sample for the bi-annual labour force survey in Hong Kong was based on a 10 per cent “master sample” drawn from the 1976 by-census. This was divided into 15 equivalent subsamples. Each bi-annual round enumerated two subsamples: one being the same as that enumerated in the previous round, and the other newly introduced. This means that between consecutive rounds, there was a 50 per cent overlap in the sample (the actual overlap being somewhat smaller due to non-response, movement of units and other changes); between two rounds separated by six months or more, there was no overlap (Hong Kong, 1980).

2. The quarterly labour force survey of Spain uses a two-stage design, with “sections” as the first stage and dwellings as the second stage units. Apart from any major redesign, sections in the sample generally remain fixed from one quarterly round to the next. In each round, five-sixths of the dwellings from the previous round are retained, and one-sixth new dwelling units (from the same section) are introduced. There is, therefore, virtually complete overlap at the primary sampling unit level. At the ultimate sampling unit level, samples in consecutive rounds overlap by five-sixths of the total; there is a four-sixths overlap between rounds separated by a quarter; three-sixths (50 per cent) between rounds separated by two quarters, and so on, with no overlap at the ultimate sampling unit level between rounds separated by 15 months or more (Spain, 1978). To cover the period of the round more uniformly, its sample is divided into three independent monthly subsamples, each subsample being spatially representative of the whole study population, and covering one-third of the sections in the quarterly sample. Furthermore, for operational control, the sample is further divided into weekly workloads, designating the sections to be covered during each week.

3. Other members of the European Community also conduct continuing labour force surveys: quarterly rounds in the Netherlands and United Kingdom as in Spain; and annual surveys (during the spring quarter) in the other countries. Fairly straightforward rotation patterns are used in most of the surveys, though with considerable differences in the degree of overlap among the surveys. For instance the year-to-year sample overlap is 75 per cent in the Federal Republic of Germany and in Greece; two-thirds in Denmark and France; 50 per cent in Portugal; one-third in Italy as in Spain; and 25 per cent in Ireland and Luxembourg (EUROSTAT, 1988). The overlap declines linearly as the interval between rounds increases, except in Belgium where the overlap (30 per cent) is only between consecutive years and none thereafter. The design in the United Kingdom survey is interesting. In the main, the sample consists of two parts:

- (a) A quarterly component in which the interview takes place throughout and which gives indication of *trends* within that period. An address remains in the sample for five consecutive quarterly rounds, giving a high degree (80 per cent) of sample overlap from one quarter to the next, permitting more accurate measurement of trends. The overlap declines linearly to 20 per cent between two rounds one year apart and to zero thereafter.
- (b) A “boost” component enumerated during the spring quarter each year, with a size large enough (around three times the size of a regular quarterly component) for good benchmark estimates of *levels* in the spring each year. There is a one-third year-to-year overlap in this part of the sample.

4. The rotation of the Canadian labour force survey also involves partial replacement of the sample units carried out in such a way that the sample for each monthly round is a probability sample of the study population. Rotation of the sample

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units occurs at each stage of the multi-stage design adopted for the survey. The ultimate unit of selection, the household, is replaced every six months, while successively higher-stage units remain in the sample for longer periods of time (Canada, 1976). This means that one-sixth of the sample households are dropped from one monthly round to the next and replaced by new units, while the remaining five-sixths are retained from the previous round. A much lower proportion of the next stage units is changed from month to month, the proportion changed declining successively as one moves to higher-stage units.

5. An example from a developing country is provided by the quarterly labour force survey in Indonesia (SAKERNAS), which was reinstated as a separate survey from 1986. The rotation scheme used is particularly simple: each quarter two subsamples are enumerated; next quarter, one of the subsamples is dropped and a new one introduced. In other words, a subsample remains in the survey for two consecutive quarters; there is a 50 per cent overlap in sample areas between consecutive quarters and no overlap thereafter. The system is better suited to measure quarterly changes than year-to-year changes.

The above examples illustrate a relatively straightforward pattern of rotation of ultimate sampling units. The sample consists of “*n*” subsamples; at the beginning of each survey period, one new subsample is introduced; and each subsample remains in the survey for *n* periods (rounds). The overlap between rounds decreases linearly as the interval separating them increases. For two samples introduced “*i*” periods apart, the overlap at the ultimate sampling unit level is $(n - i)/n$, up to $i = n - 1$. After this the overlap becomes zero. Due to non-response, movement and other changes, and especially when the *de facto* coverage definition is used, the overlap in practice will be smaller than the above. Generally, the overlap is much greater for units at higher stages of the sample, and decreases as we move lower down the sample structure. Many surveys retain a fixed sample of primary sampling units over a relatively prolonged period of time. Often survey rounds are divided into subrounds to ensure more uniform distribution of the sample over time and to enhance operational control. For this purpose, the sample for the round is usually divided into equivalent and non-overlapping subsamples, each of which is spatially representative.

More complicated rotation patterns can be used to vary the degree of sample overlap and how it changes with increasing intervals separating the rounds. Here are three further examples:

6. The monthly United States Current Population Survey (United States, 1978) uses the so-called “4-8-4” pattern. This means that at the beginning of each month, a new subsample (called a “rotation group”) is introduced into the survey; it is enumerated for four months, dropped from the sample for eight months, and then enumerated for another four months before being finally dropped. A particular unit is therefore interviewed for eight months (over a 16-month period); and it can be seen that during any particular month, eight such subsamples are enumerated, one of these for the first time, one for the second time, and so on, up to the one for the eighth time. From one month to the next, two of the eight subsamples are changed, one dropped temporarily to be reintroduced eight months later, and the other dropped for the last time. This gives a month-to-month overlap of 75 per cent. The overlap reduces to 50 per cent after an interval of two months, to 25 per cent after three months, becoming zero thereafter, till it increases again when old units are reintroduced.

The basic objective of introducing this complicated pattern is to obtain a large year-to-year overlap between samples so as to estimate annual changes more precisely. With this pattern the overlap again becomes non-zero after nine months and remains so up to the 16th month, peaking at 50 per cent for surveys exactly 12 months apart.

The above applies to ultimate sampling units (dwellings or small clusters of dwellings). There is basically no rotation of the “non-self-representing” primary sampling units.

7. The labour force survey in Finland is conducted in quarterly rounds, each round being divided into monthly subrounds. Each month a new subsample is introduced and is enumerated five times over a 16-month period: during the first, fourth, seventh, 13th and 16th months after introduction (Salmi and Kiiski, 1984). It can be seen that in any particular month, five such subsamples are enumerated (which is the same as the total number of times any subsample is enumerated). Unlike the previous example, there is no overlap between subrounds from month to month: this implies the measurement of month-to-month (as distinct from quarterly) change was not a primary objective of the Finnish survey. However, from one quarter to the next the sample overlaps by 80 per cent. This is much bigger than the 25 per cent quarterly overlap in the previous example, and can estimate quarterly variations more accurately. The year-to-year overlap is 40 per cent, slightly lower than the previous example.

8. The final illustration is from the labour force survey of Japan. The present sample is based on the 1980 population census and uses the enumeration districts as the first stage and dwellings as the second (last) stage units. The enumeration districts are rotated using the same “4-8-4” pattern as described above for the United States Current Population Survey. In each sample enumeration district, two sets of dwelling units are selected and one set is surveyed for two consecutive months and replaced by the other set for the subsequent two months when the enumeration district remains in the sample. The pattern is repeated when the enumeration district returns to the sample for another four months in the subsequent year (Rao, 1985, p. 83).

The pattern, though similar to the United States Current Population Survey, differs from it in two respects. Firstly, the “4-8-4” pattern applies to the rotation of primary sampling units, while in the Current Population Survey those units remain fixed and rotation is applied to ultimate sampling units. This reflects the fact that while the US survey sample is based on a small number of large primary sampling units, each of which represents a major investment, the sample for the Japanese labour force survey uses a large number (3,000) of relatively small primary sampling units. The second difference is that in the Japanese sample, any household or individual is enumerated only four times during the course of 16 months, as opposed to eight times in the Current Population Survey. This feature is introduced to reduce respondent burden.

Some factors influencing the choice of the rotation pattern

The primary consideration is that of statistical requirements determined by the type of estimates required and their relative importance. When the primary concern is to aggregate data over a period of time, non-overlapping samples are the most appropriate. (This is why rounds are usually divided into non-overlapping subrounds as in the examples from Spain and Finland given above.) By using special “composite” types of estimators (see next section), precision of current estimates can be improved with overlapping samples. This improvement in precision results from positive correlations between data from two periods with overlapping samples. These gains can sometimes be quite substantial for overlapping panels of ultimate units (Woodruff, 1963), but generally the gains may be modest. However, the gains in estimates of *change* between periods can be very substantial with overlapping samples. Of course, gross changes can be measured only if the same elementary units are followed from one period to the next, as in panel designs.

The degree of overlap, and hence the rotation pattern, will also depend on the length of the period(s) over which changes are to be measured. The simpler designs of samples

(1) to (5) above emphasise the measurement of change over consecutive periods or survey rounds, since the overlap is maximum for consecutive periods and gradually declines thereafter. The more complicated patterns of samples (6) to (8) were introduced to increase overlaps between periods further apart, e.g. year-to-year changes in the United States Current Population Survey and Japanese labour force survey, and quarterly changes in the case from Finland.

The choice of the rotation pattern must of course also take into account cost and operational factors. Replacing the sample increases costs. These include costs of preparation of sampling materials, sample selection, moving or changing field-workers, and locating and making contact with the new respondents. These costs tend to get larger when primary sampling units and other higher-stage units are to be replaced. In fact, for reasons of statistical efficiency and respondent burden, it is more useful and necessary to replace lower-stage units than to replace higher-stage units. For both these reasons samples are typically rotated most rapidly at the ultimate sampling unit level, and least rapidly, or sometimes not at all, at the primary sampling unit level.

Retaining the same ultimate units in the sample also has problems. It increases the burden on the respondent which may result in non-response and loss of data quality. The responses may be conditioned in unknown ways. An example of conditioning which has been noted in many labour force surveys with rotating designs is provided by the so-called "rotation-group bias"; notwithstanding other factors, the results obtained appear to depend upon how many times a subsample has been interviewed previously. Differences due to conditioning are found to be most marked between subsamples interviewed for the first time and subsamples which have been interviewed previously one or more times (e.g. see United States, 1978, pp. 83-85.) The extent to which respondents can be repeatedly interviewed depends upon the socio-cultural conditions under which the survey is conducted, nature and content of the survey, nature of the organisation undertaking the survey and quality of the interviewers involved. In many developing countries, especially in rural areas, the population is often very co-operative in statistical inquiries conducted by official or public agencies. But such co-operation cannot be taken for granted. Co-operation is often less forthcoming in more developed and urban areas. There can also be problems due to response variability among survey rounds, even when information pertaining to the same individuals is obtained. This is particularly the case when proxy response is allowed.

Another problem to be faced in retaining the same sample is the difficulty in keeping track of the location and identity of the respondents. In certain circumstances the problem may be somewhat reduced by following the *de facto* coverage approach and choosing more stable structural units (dwellings, segments, etc.) as the sampling units rather than more mobile families or persons. This of course will reduce the actual overlap between rounds in terms of persons or households.

Replacing exhausted units. Consider a survey in which dwelling units are rotated (replaced) from round to round within a fixed set of sample clusters. After some time, all dwellings in smaller clusters may be "used up". To continue the process in this situation, one can either (a) re-use dwellings which have already been in the sample, or (b) replace the exhausted clusters with others which have not been used before. The first option is simpler and cheaper, but is sometimes not considered desirable due to additional respondent burden and the possible "conditioning" bias which reinterviewing the same respondents may involve. The second option can increase the bias of the sample through gradual elimination of smaller units unless special procedures are taken to avoid that bias.

These special procedures can become very complex. This is because, in many practical designs, sample clusters or areas are selected by "sampling with varying

probabilities without replacement”, a method which is theoretically complex if applied repeatedly to the same population. Simpler, practical methods are required. One possibility, perhaps the simplest one, is to group smaller clusters into sufficiently large units before selection, and use these large units as the effective units for sample selection and rotation. This method has been used in the United States Current Population Survey (United States, 1978, p. 25). The procedure can be modified to reduce the number of sample clusters which need to be dealt with during the lifetime of the master sample.

Keeping control over sample size. Another special issue which should be mentioned in connection with sampling for continuing operations is the need to ensure that the sample size is maintained over time as required. If the same sampling design and fixed sampling rates are used over an extended period of time, there will be a tendency for the sample size automatically to become inflated due to natural increase in the size of the study population in so far as that is reflected in the frame. To keep the sample size constant, it will therefore be necessary to adjust periodically the sampling rates. The simplest approach would be to reduce the overall sampling rates (usually at the last stage of selection) by an appropriate constant factor as the new sample for each round or group of rounds is selected.

Panel and split-panel designs

A panel design means the use of a fixed sample of elementary units. This design permits the measurement of gross change such as movement of individuals between different categories of economic activity, different occupations, or different branches or sectors of the economy. Furthermore, by observing the same set of individuals over a prolonged period, a truly longitudinal study of dynamic aspects of change and causal relationships becomes possible. The disadvantages of panel operations are: high costs; difficulties in keeping track of individuals over time; attrition of the original sample due to movement, death and change; the possibility of the panel becoming “aged” and unrepresentative; increased respondent burden; and the possibility of increased response errors due to conditioning as a result of repeated interviewing. Despite these problems, in certain situations and for certain objectives there is no substitute for longitudinal observation.

A combination of the rotating and panel designs may be called a “split-panel design” (a term introduced by Leslie Kish). The idea is to add a panel of fixed units to a “classical” symmetrical rotating design. The rotating part of the design itself may or may not have any overlaps. Such a split-panel design has a number of potential advantages. The relative sample sizes for the panel and rotating parts can be chosen and adjusted more independently and flexibly. The same level of overlap in the total sample can be maintained uniformly and continuously over an extended period. The constant panel provides a means to study dynamic and gross changes. At the same time, by comparison with the rotating part, one can get cumulative evidence to check effects of panel mortality and panel deterioration. Thus, split-panel designs have the potential to take specific advantage of the rotating and purely panel designs, whilst avoiding some of the problems.

It should be remembered that elaborate designs with short rounds and subrounds require that strict control be exercised over the timing of the operation and the rate at which field-work is carried out. In practice, there are numerous factors which can result in slippages and loss of control of these aspects. In the absence of good communication and transport facilities, it takes time to discover where and when problems arise. And even when discovered, problems are not always easy to deal with, as, for instance, when field staff cannot be moved from one place to another easily because of linguistic or ethnic reasons and/or costs and distances involved. Such problems often cause serious

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difficulties in the survey work of developing countries. One should therefore always aim at practicality and simplicity in choosing the survey structure.

6. Estimation procedures

A comprehensive continuing labour force survey may be used to produce a wide range of estimates for different subpopulations and at different levels of aggregation.

Firstly, several types of *variables* may be involved, such as rates of labour force participation, unemployment, employment by status, occupation or industry, etc. The frequency and precision with which different estimates *need* to be produced given the survey objectives, and *can* be produced given the survey size and structure, may differ from one variable to another.

Secondly, estimates are usually required not only for the total study population but also for separate geographical or administrative areas such as urban and rural sectors and national regions, for different subpopulations such as particular age, sex or ethnic groups, and at different levels of aggregation within each category. Such categories and levels are called *reporting domains*. These domains may or may not have formed explicit *sampling domains* in the design and selection of the sample (see Section 4).

Thirdly, estimates may be required for different types of *units of analysis*, such as individuals, households, families and communities.

Fourthly, it is important in sample surveys to make a distinction between estimates of proportions, means, rates and other types of *ratios* where the numerator and the denominator are obtained under essentially the same conditions from the same survey; and estimates of population *aggregates* such as total numbers of persons unemployed, where the survey results have to be inflated using internal or external information. Often sample surveys of moderate size by themselves are able to provide estimates of population totals with much less precision (in terms both of variance and bias) than estimates of proportions, means, rates and other types of ratios.

Finally, various types of estimates can be distinguished in terms of the time dimension. As noted earlier these include:

- estimates of current levels, required for each reporting period or survey round such as a month or quarter;
- estimates averaged or aggregated over longer periods, such as a whole year;
- estimates of trends or net change from one period to another, such as month-to-month changes, seasonal variations, or year-to-year changes;
- estimates of gross change at the individual level, such as flows among categories of activity status.

Mention should also be made of longitudinal study of dynamic change and causal relationships through observation of a fixed set of individual units over a period of time.

The various types or forms of estimates listed above may appear in any combination, giving an enormous range of possibilities. The estimation procedures adopted in any survey have to take into account special requirements in each case. The following subsections describe basic principles and some important aspects of estimation procedures in continuing labour force surveys. The description also subsumes the somewhat more limited requirements of one-time or occasional surveys.

Simple unbiased estimates

It is very important to be able to prepare simple unbiased estimates from the survey data, even though these may be refined or modified subsequently in the production of the final estimates. In practical survey work, the term “simple unbiased estimates” is used in an approximate sense. What is implied basically is that: (a) the estimates are

produced directly from the survey results without recourse to data external to the survey, by weighting each observation in inverse proportion to its probability of selection into the sample; and (b) the estimates so produced are approximately unbiased in the statistical sense, at least with moderate to large sample size. This does not necessarily mean that the actual estimates produced are free from bias resulting from sample implementation and response errors. What is meant is that, if the same procedure is applied under the same conditions to repetitions of the survey then, in the absence of such errors, the expected or average value of results will be approximately equal to the population value of interest.

Such estimates can be prepared only with probability sampling, i.e. samples selected in such a way that each element in the population has a known, non-zero probability of being selected. It is also necessary that problems of sample implementation, such as non-response and undercoverage, do not distort these probabilities and that their effect on these probabilities can be quantitatively estimated with a high level of assurance. Good simple estimates would also imply that any adjustments, which may have to be made subsequently to further improve their precision, will not turn out to be large.

Being able to produce good “simple and unbiased estimates” indicates that the survey has been designed and implemented in a proper, scientific manner – hence the importance of such estimates.

Design weights

The estimation procedure at this stage is relatively straightforward: each observation is weighted according to the inverse of its probability of being selected into the sample. These weights are called “design weights”. The resulting weighted data can then be aggregated in any fashion. As noted in Section 4, often labour force surveys are designed to be “self-weighting”. In this case, sample estimates can be prepared from unweighted data, and the results then inflated by a constant factor which is inversely proportional to the overall sampling rate. Alternatively, the sampling rate may differ from one sampling or reporting domain to another, but with a self-weighting sample within each domain. Here, unweighted estimates can be prepared for each domain separately, and an appropriately weighted sum (with weighting factors inversely proportional to the domain sampling rates) taken to produce estimates for the whole population. In the general case, it is usually most convenient to attach an appropriate weight to the computerised data record of each *individual unit* of analysis, even if uniform weights apply within certain groups of units. This can make computer processing and tabulation of the data easier and more flexible.

Adjustment for non-response

In certain situations it is necessary to modify the design weights to compensate for special problems which arise at the implementation stage. The most common and important of these is the adjustment for non-response. Non-response affects the survey results in several ways:

1. In so far as non-responding units differ systematically from responding units, the distribution observed in the sample is distorted and results become biased.
2. The overall population totals directly estimated from the achieved sample will be biased downwards if no account is taken of the missed units.
3. Non-response reduces effective sample size and hence increases sampling variance.
4. In addition to “total non-response” where no information at all is obtained on some units in the sample, there is also “item” or “partial” non-response where incomplete information is obtained on some units. This problem weakens and complicates analysis of the survey data.

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No adjustments can fully remove the effect of non-response. The objective of various adjustments is to reduce the distorting effect as far as possible. Three types of adjustments are commonly made: substitution of non-responding units by new units with some sort of matching on the basis of selected characteristics; imputation of missing values on the basis of the partial information available on the same or other units; and the adjustment of design weights in order to correct, as far as possible, for sample distribution and overall size.

Substitution is a common practice in many surveys, but it often does little good and can easily result in loss of control over field operations. Therefore our general recommendation is against it in most circumstances. Imputation for missing values is often necessary and useful in complex surveys, but again its indiscriminate and large-scale use is to be avoided. (For a general description of imputation procedures for household surveys, see United Nations, 1982, pp. 99-102.) We are concerned here with the last-mentioned adjustment, namely estimation-based methods of adjustment for non-response involving modification of the design weights.

The basic procedure for adjusting sample weights for non-response is as follows. The sample is divided into "cells" which are relatively homogeneous according to some important criteria, available for both responding and non-responding units. For each cell an appropriate "response rate" is computed. (Computation of response rates for weighted and unweighted samples is discussed in Chapter 14.) The estimate for the cell or the weight for each individual unit in it is inflated by the inverse of the response rate for the cell.

Appropriate choice of the cells or categories used for adjustment is important. It is essential of course that it should be possible to classify responding as well as non-responding units into those categories. Substantively important categories should be represented so as to ensure that their distribution in the population is correctly reflected in the (weighted) sample. The categories used for adjustment should be internally homogeneous to whatever extent possible. It is useful to include categories which are likely to have different response rates and different values of key variables among them. They should be sufficiently large in size so that the weighting adjustments to be applied do not become too variable or too large. This is because weighting tends to inflate variances, even though it can help in reducing bias. Finally, the procedure should be simple.

Often, the categories used for applying the non-response adjustment are geographical strata, large areas or groups of area units. This ensures that geographic distribution of the achieved sample, at least at a suitably high level of aggregation, corresponds with the distribution of the selected sample. Sometimes, adjustment has been made at the level of small ultimate area units (see, for example, World Fertility Survey, 1977, Appendix V, which also discusses several other aspects of weighting procedures); this practice of using very small areas to adjust sample weights, however, is not generally recommended because of the large and variable weights it may involve. Weighting can also be done by non-area1 subclasses or groups, according to characteristics of households or individuals, in so far as the necessary information for classification is available for both responding and non-responding units.

The next issue concerns the definition of response rates. For a self-weighting sample, response rate is simply the count of units successfully enumerated, divided by the total number selected (the sum of those enumerated and those not enumerated). In practice, there can be practical difficulties in accurately establishing these counts. For instance, in a clustered sample the number of elementary units selected is not fixed and may not be known; similarly sample lists often contain "blanks" which may not be easily distinguishable from genuine cases of non-response. (These problems are discussed more fully in Section 3, Chapter 14 and in Marckwardt, 1984.) For non-self-weighting

samples, the counts used in the definition of the response rate should be weighted by the inverse of the probabilities of selection of the responding and non-responding units involved. All weights for the responding units in the group are then inflated by the inverse of this weighted response rate.

Use of external weights

Estimating totals

The simple “expansion” (i.e. inflating all sample data by the inverse of unit selection probabilities) described above can, of course, be applied to estimate ratios as well as to population aggregates from the survey. However, while this procedure may be a reasonable one to use for estimating proportions, means, rates, and other types of ratios in sample surveys, it is often quite unsatisfactory for estimating population aggregates, especially with small or moderate sample sizes. This is because with multi-stage sampling design, the sample size is a random variable and aggregates directly estimated from the survey can have large sampling errors. The problem can be even more serious when estimates are to be made for totals of population subclasses which are distributed across sample clusters so that their sample size cannot be properly controlled in the design of the sample. In addition, estimates of aggregates are directly biased by coverage and related errors.

The appropriate procedure in many situations is, therefore, to estimate ratios directly from the sample (with possible adjustments to be described in the next subsection), but to inflate those to estimate population aggregates by using auxiliary information from some more reliable source external to the survey proper. The following simple example should help clarify the idea.

Suppose that the requirement is to estimate the total size of the economically active population (say **Y**). Suppose that in the *sample* the number of economically active persons is *y* and the number of persons in the relevant base population is *x*. (Assume the sample is self-weighting with overall inflation factor = *F*, i.e. sampling rate = $1/F$.) Finally, suppose that the total base population is reliably known from an external source to be **X**. The aggregate **Y** can then be estimated in two ways:

- simple unbiased estimate = $F \cdot y$
- ratio-type estimate = $\frac{y}{x} \cdot X$

The second form, though technically biased, can have a much smaller variance and total mean square error. The value and applicability of this procedure, however, depends on several factors. Firstly, the correlation coefficient between *y* and *x* must be positive and preferably large, say greater than 0.6 or 0.7 at least. Secondly, **X** should be available with much higher precision than ($F \cdot y$); in other words, the external source should be reliable. Thirdly, the **X** in the population and *x* in the sample should be based on essentially identical coverage and measurement. A considerable difference between the two could introduce a large bias into the expanded estimate. This often requires that *x* values are taken from the external source rather than directly from measurements in the survey, though of course that must be for the exact units included in the sample (Kish, 1965, section 6.5D).

Population data controls

These refer to externally obtained up-to-date estimates of population totals which can be used to inflate the various rates and ratios estimated from the survey in order to obtain estimates of aggregates for the corresponding variables. For application to labour force survey data, such controls are required not only for the total population, but also

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for important subgroups of the population, categorised, for example, by sex, broad age group, ethnic or other relevant social characteristics, urban-rural division, or geographic region. These controls are essentially short-range population projections usually derived from the most recent population census, supplemented by information from administrative sources and surveys on components of population change. Standard methods of estimation and projection of the population have been described in detail in various sources, and need not be repeated here. In particular, reference may be made to the United Nations series of *Manuals on methods of estimating population* (Manual I on the total population; Manual III on projection by sex and age; and Manual VIII on projection by urban and rural sectors). A useful discussion of population data controls at a more basic level is available in United States (1966).

Estimating ratios with external weights

The use of external population totals to convert sample ratios to population aggregates is a special case of the general procedures employing external weights to adjust the sample results. The aim in using external weights is to improve precision of the simple unbiased estimates, and possibly also to correct for biases resulting from coverage and other errors in sample implementation.

The basic procedure is as follows. The sample is divided into a number of parts on the basis of certain important characteristics. The distribution of the sample by these characteristics is compared with the distribution by the same characteristics in the whole population. On the basis of ratios of these distributions, correction factors or weights are derived which, when applied to the sample cases, make the sample distribution conform to the external standards. Such correctional weighting may be applied as a single operation, or in a sequential manner for various characteristics or groups of characteristics, or even iteratively to obtain the best overall agreement.

Essentially, the same procedure applies to estimates of ratios and of aggregates. The only difference is that in the first case the relevant external data are in the form of relative *distributions*, while the second case involves absolute population numbers. In many instances, the former are available with greater precision than the latter. In either case the *relative* weights of individual sample cases are modified in the same way.

Some examples may be useful. In the Labour Force Survey of Thailand, rates and ratios estimated from the sample are weighted according to population totals by five-year age groups (21 groups), separately by type of area (three groups: municipal areas, "sanitary districts", and rural areas), and five regions. The procedure therefore involves a large number (over 300) control cells and is applied in a single operation (Thailand, 1985, pp. 13-15).

The United States Current Population Survey makes a series of adjustments. First, within broad cells defined by race and residence, the *census* population in the selected primary sampling units in each cell is compared with the total census population in the cell. This gives the factors to be applied to correct for the fact that only a sample of primary sampling units appears in the survey. The objective is to reduce the contribution of the first stage of selection to sampling variances. The second step adjusts country-wide sample estimates of population in a number of age-sex-race groups to independently derived current estimates of population in each of these groups. The third step involves a further adjustment of weights by separate factors computed by sex, race and five-year age groups and separately by each of the eight "rotation groups" (i.e. subsamples according to the month in which they were first introduced), giving a total of more than 500 estimation cells (United States, 1978, pp. 58-61).

In principle, external adjustment weights can be applied to any sample, irrespective of the probability nature and representativeness of the sample itself. They can correct for gross errors or distortions in the sample. However, they provide no insurance against

biases if the sample is basically of poor quality or if the external data are of doubtful accuracy. The correct procedure is to design and implement the sample properly, using strict probability procedures, and introduce correctional weights only if the external source is known to be clearly superior to the sample in providing information on population size and distribution in the various estimation cells. Correction factors departing substantially from 1.0 imply poor sample design and procedures.

Often in statistically less developed countries, good and up-to-date external data are not available, and in particular their classification into many detailed estimation cells lacks reliability. For this reason, it is necessary to be cautious in applying external weights to “correct” the sample results, and certainly to avoid application of the correction at too detailed a level of classification. If precision of the external data is doubtful, they are not likely to be useful for refining basically sound survey estimates: indeed they can introduce more biases than they remove. The primary use of external weighting in such a situation is likely to be that of correcting for gross shortcomings in the sample at a fairly high level of aggregation.

Indiscriminate and elaborate adjustment of sample results on the basis of external data of insufficient quality has, unfortunately, been the practice in labour force surveys in some countries. This should be strongly discouraged.

Composite estimates with overlapping samples

Results from different periods (rounds) with overlapping samples are positively correlated. The magnitude of the correlation will depend on the nature of the variable and of the population being studied, the degree of overlap, the sampling stage at which the overlap occurs, and of course the time interval between the periods being considered. For many variables of interest in labour force surveys, fairly high levels of correlations can be expected, at least in the short term. The objective of composite estimation procedures is to make use of these positive correlations in time between the same or related units to improve precision of estimates of current levels, and especially of estimates of change. When the data are to be aggregated over different periods (rounds), the presence of positive correlations in related samples tends to reduce the precision of the aggregated results. Composite estimates can sometimes be used to reduce the magnitude of this loss.

The essential idea of composite estimates is to replace a single estimate by a *weighted sum* of estimates of the same quantity obtained by different procedures or from different sources.

Consider for instance a simple rotating sample, where a certain random proportion of the sample is retained from one round to the next, and the remaining part is replaced. Each of the two parts will estimate the *current level* with equal precision (apart from the usual effect of sample size), and the two parts will be pooled in the normal way to produce that estimate, which is not affected by the degree of the overlap. However, in estimating *change* from one round to the next, the overlapping part gives, relatively, more precise results due to positive correlations than the non-overlapping part. Consequently the estimate of change can be improved by giving more weight to the former and less to the latter. Kish (1965, section 12.4) shows that the minimum variance of the differences is obtained by decreasing the relative weight of the non-overlapping part by the factor $(1 - R)$, where R is the period-to-period correlation coefficient for the same panel of observations. The reverse applies in the estimation of aggregates or sums over the two periods. Here, precision can be improved by increasing the relative weight of the non-overlapping part (by the factor $(1 + R)$).

Estimates of current levels can also be improved with overlapping samples by making use of the information obtained in previous rounds and the positive period-to-period correlations. The theory of the procedure as applied in monthly surveys

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in the United States has been described by Woodruff (1963). Essentially, the procedure involves obtaining an improved current estimate as a weighted sum of two components: *(a)* the estimate as directly obtained from the current round; and *(b)* the estimate for the previous round adjusted for observed change between the previous round and the current round for the common panel of units enumerated in both rounds. The observed change may be expressed as a difference between the values for the two rounds (e.g. United States, 1978, p. 64), or as their ratio (Woodruff, 1963). Procedures are available to optimise choice of the weights to minimise variance of the composite estimator. The weights will depend on the magnitude of the period-to-period correlations involved. The higher the correlation coefficient, the higher will be the relative weight given to component *(b)* of the estimator.

In labour force surveys certain variables (such as unemployment) tend to have lower period-to-period correlations than other variables (such as employment status among the employed). Ideally, this may require different sets of weights to be used in composite estimators for different variables. However, in most cases such complexity will be unwarranted (due to relative insensitivity of the results to the precise weights used), and in any case will be too difficult to handle. A single set of compromise weights may therefore be used for all variables of interest.

Some special issues

Synthetic estimators

Given the importance of information on economic activity of the population, there is an increasing demand for estimates which are current and up to date as well as detailed, i.e. available for small areas and domains. There are considerable pressures in many countries to constantly increase the sample sizes of their surveys. However, there are limits within which sample sizes can, and indeed *should*, be kept because of the adverse effects of large sample size on cost, quality and timeliness of the data generated. Many sample surveys can therefore provide current estimates with only limited geographic and other detail; alternatively, data can be accumulated over time to provide more detail but at the expense of becoming less current and up to date.

The objective of “synthetic estimation” techniques is to produce estimates which can be current and detailed at the same time, on the basis of combined use of information from different sources, including censuses, administrative sources and sample surveys. The theory and application of these procedures have advanced rapidly in recent years, given the increased demand for information, establishment of more comprehensive data bases and improved computer facilities. (For a recent review, see Platek et al., 1987; for an earlier but detailed example of an application to unemployment and housing estimates in the United States, see Gonzalez and Hoza, 1978; evaluations of the procedures, especially in connection with the Canadian labour force survey, have been published by Statistics Canada.)

It should be mentioned that development of good synthetic estimation procedures depends on the quality and quantity of available data. Making choices among various methods has to be based on empirical research and assessment of the results obtained against outside standards. Nevertheless, these techniques are becoming increasingly necessary and useful, and their development should be encouraged in developing countries as well.

Seasonal adjustments to time-series data

Labour force and many other statistics reflect a regularly occurring seasonal movement which can be estimated on the basis of past experience. By eliminating that part of the change that can be ascribed to usual seasonal variation, it is possible to

observe the cyclic and other non-seasonal movements in the series. Reasons commonly advanced for making seasonal adjustments include the following: (a) to aid short-term forecasting; (b) to relate the time-series to other series, external events or policy variables; (c) to achieve comparability in the series' values over time; and (d) to simplify the data so that they can be more easily understood and interpreted by statistically less sophisticated users.

Various methods and models have been developed for seasonal adjustment. A better-known method used in a number of countries is the "X-11" method of the United States Bureau of the Census (Shiskin, Young and Musgrave, 1965).

Consistency of estimates

Finally, we briefly mention an important issue which applies not only to labour force data but also to estimation and publication of statistical results in any field, particularly if the data are produced by a national statistical agency. This is the issue of *consistency*: statistics published from one source must be consistent with those published from another source, at least where there is a clear case for the expectation of such consistency. Consistency of results of course requires consistency in concepts, definitions, classification and coverage of various sources. It can be further improved by consistency in design and methodology, and by ensuring that certain standards of acceptable and measurable precision are followed everywhere. However, beyond a certain point it may become necessary to *impose* consistency, especially if the results from different sources are being compiled and published by the same official agency. Imposing consistency means that results are made to conform to certain control totals (at least at a sufficiently high level of aggregation), even if sometimes the method may involve some arbitrariness. This is another example of using external weights at the estimation stage. It should be remembered that statistical data are useful only when used, and the user can often get confused or even annoyed if presented with inexplicably different figures for the same thing by the same producer agency.

A special aspect of consistency is *additivity* of estimates produced at different levels of aggregation. This means that statistics for mutually exclusive domains must add up to the estimates given for their sum. In this sense, ratio estimates, though more precise than simple unbiased estimates, may not be additive; and it may be desirable to introduce some slight modification to the weights used at the estimation stage to ensure additivity, at least at and above a certain level of aggregation. A specific and useful suggestion is provided by Sunter (1975).

It is not possible to discuss here in detail the various issues concerning consistency of published official statistics alluded to in the paragraphs above. A couple of points in relation to purely mechanical aspects of consistency in tabulations may, however, be elaborated. They are hardly ever of any substantive significance, but can become important in the context of publishing and presenting data for non-statistical users.

Firstly, labour force survey reports frequently involve tabulations with, among others, three types of units: (a) households; (b) household heads; and (c) individual persons. Usually, the projected numbers of households from some external source provide the control totals for (a), and the projected numbers of persons classified according to various characteristics such as age group, sex, etc. provide the control totals for (b) and (c). In so far as each household must have one and only one head, the estimates for (a) and (b) must be identical. We can expect this to be the case in a consistent external source such as projections from the census. However, for the sample, with estimates inflated separately on the basis of external households and population control totals as noted above, (a) and (b) may not be exactly identical. This follows from the fact that the average household size as obtained in the survey may not be exactly the same as that in the external source. This difficulty can be resolved by *further*

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classifying the projected numbers of persons from the external source according to whether the person is or is not a household head, before applying them to inflate the ratio estimates from the survey.

Secondly, estimating from the survey frequently requires the use of fractional (as opposed to integer or whole number) weights. Because of rounding errors, this can introduce small, but irritating, differences between totals for the same quantities in different tables. A number of countries avoid this problem as follows. Consider a group of units with the same fractional weight. The group is divided at random into two parts, with sizes determined in such a way that when one part is assigned an integral weight just below the fractional weight and the other part is assigned a weight just above it, the average of the two groups equals the actual (fractional) weight. (Clearly this procedure requires that the fractional weight is scaled numerically to exceed 1.0, so that no units in the sample are given a zero weight.)

7. Sample redesign

The general aspects of survey redesign, along with several illustrations, were described in Section 5, Chapter 10. In this section some specific issues in sample redesign are considered.

Use of new sampling frame

The most appropriate opportunity for a major redesign of the sample is provided by the availability of results from a new population census. Census results can be used to update the sample to reflect population growth, changes in population distribution and characteristics, changes in size, boundaries and nature of units, changes in the definition of reporting domains, and so on. At the same time, the coverage and scope of the survey can be re-examined. Using the new frame and related materials, the sample can be renewed wholly or in part.

Modification of sample size and structure

Apart from using a new sampling frame, sample redesign involves reconsideration of the appropriateness of sample size, allocation, stratification, frequency of data collection, rotation pattern and other aspects of sample structure, depending on information on survey costs and variances, and operational and substantive requirements. It is a good strategy to try and identify and redress any *major imbalances* which may exist in the design. Often even rough information on variances, costs and time-lags in production of the result can indicate whether major adjustments in sample size, allocation and frequency of collection are required. Refining the rotation pattern would usually require more detailed information and analysis.

Another issue which frequently arises in sample redesign is the adjustments needed to provide improved estimates for smaller and/or redefined reporting domains. For instance, once established, many surveys gradually move from providing national estimates to providing estimates at the regional or provincial level. Apart from changes in sample size and allocation, this may require redefinition of sampling strata and units to ensure that they lie within or coincide with the new design and reporting domains. Similar considerations arise when classification of localities according to type of place is changed, for example due to urbanisation and expansion of city boundaries.

Improved estimation procedures

Improvement in estimation procedures depends basically on the availability of improved auxiliary information which may be used in estimation, and on information on variances and biases of the procedures previously used. Unlike other aspects of

sample redesign, estimation procedures do not affect operational aspects of the survey and can therefore be more readily introduced at any stage. The only limiting factors are the need to ensure continuity and comparability and the fact that, in general, estimation procedures can be improved only on the basis of a considerable amount of research and analysis. Several factors may be involved in improving estimation procedures, for example: development and use of improved population data controls; improved weighting factors for composite estimators on the basis of better information on correlations over time; development of procedures for different types of units, for example, family or household-based as distinct from individual-based estimates; and development or improvement of synthetic estimates for local areas and other small domains.

Continuity and sample redesign

Redesign does not necessarily mean that any existing sample is to be entirely replaced and reselected. In situations where substantial investments have been made in establishing sampling materials and data collection infrastructure in selected areas, it can be highly desirable to retain as much as possible of these investments despite the redesign. Several techniques have been developed to ensure that, without losing its objective probability nature, the new sample retains the maximum possible number of units from the old sample (see for example Kish and Scott, 1971). For similar reasons, it is sometimes considered preferable to add new supplements to an existing sample to accommodate changed reporting requirements, even though a complete redesign would be more efficient if one could start afresh. An example is provided by the expansion of the United States Current Population Survey to produce more reliable state-level estimates, where the existing sample was supplemented by new samples selected by using complex “dependent” procedures, i.e. in which the new units selected depended on the units which already happened to be in the old national sample.

Another aspect of continuity is the gradual phasing in of a new rotation pattern and new sample units to avoid sudden changes in the time-series generated by the survey. This requires a time schedule to be worked out, on the basis of which old areas as they leave the sample according to the rotation pattern are replaced in some balanced manner by new areas.

Broader aspects of sample redesign

Of course, sample redesign may also involve or be affected by other broader aspects of survey redesign. A few may be mentioned in particular.

Sample design may require drastic revision if the fundamental mode of data collection is changed. This may involve changes in the method of collection (e.g. mail inquiry versus telephone or personal interviewing), type of field staff involved, or nature and organisation of field operations (e.g. stationary enumerators working singly versus mobile interviewers working in teams).

In large-scale labour force surveys an important question can be their expansion to serve as a vehicle for undertaking other related surveys. This may necessitate the adoption of an appropriate compromise sampling design to accommodate more diverse requirements.

Finally, it should be mentioned that major redesign of the sample may also be an appropriate opportunity to establish a new master sample which, as discussed in Section 3, can serve the needs of different rounds of the labour force survey as well as of other types of surveys.

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1. Introduction

Importance of the questionnaire development task

One of the most important aspects of survey design is the precise definition of the data to be collected, and the translation of the data requirements and related concepts into specific questions which the survey respondent can comprehend and answer correctly. Questionnaire design affects all aspects of data quality, including relevance, timeliness and accuracy of the results; it can also have an important effect on survey costs.

One of the basic principles of improving survey design is to reallocate or concentrate resources where they will be most effective in improving data quality. This principle makes improvement to a survey questionnaire a high priority in the allocation of efforts and resources, because, in many situations, a substantial reduction in errors can be achieved from fairly modest investments towards improving questionnaire content and design. Yet, the failure to devote sufficient care, attention and resources to the development and design of good survey questionnaires is surprisingly common in survey practice. There are numerous examples of surveys where deficient questionnaire design resulted in the collection of unusable data, or at least in data of poor quality and delays in processing. Many survey organisations and practitioners do not fully appreciate the complexity of the task of developing good questionnaires. To put difficult concepts and definitions into a series of relatively straightforward questions is far from simple. There are several reasons for this. In a survey with wide coverage, the same set of questions have to cater for a great variety of situations and respondent characteristics. The task of actually communicating the questions and collecting the required information is a decentralised operation. It has to be entrusted to field interviewers at diverse locations far from the watchful eye of the control office, a fact for which no amount of supervision and control can completely compensate. Interviewers vary in their motivation, and in their comprehension of survey content and procedures. Differences and variations of language make the task even more complicated. Furthermore, the questionnaire must meet not only the requirement of accurate data collection, but also that of efficient processing and analysis of the results.

Questionnaire development therefore requires a variety of skills: knowledge of the subject-matter of the survey; thorough familiarity with the practical conditions under which the information has to be collected; knowledge of the working principles, tools and techniques of questionnaire design, including a draftsman's skill for good layout and form; and above all, a capacity to pay attention to seemingly small details. These skills are not easily found in survey organisations and anyway can be used effectively only if

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proper organisational and procedural arrangements are made for questionnaire development work.

Despite the complexity of the task, there seems to be a widespread belief that questionnaires can be “put together” simply and quickly, and that anyone with some “common sense” and general familiarity with survey work can undertake or at least make significant contributions to the operation. This optimism may result from the fact that questionnaire development, as a broad discipline, does not appear to require the same high levels of specialisation as, for example, do sampling design, data processing and statistical analysis. However, this is not the case; a general belief in the basic simplicity of the questionnaire design task is fundamentally mistaken, and can affect the quality of the whole survey very adversely.

Of course, the size and complexity of the task involved in questionnaire development will differ from one survey to another depending on the nature of the information to be collected, the mode of data collection, the type of respondents and interviewers involved, and prior experience and knowledge. For example, in countries with an established system of labour force surveys, the task may primarily involve periodic improvements to and redesign of a questionnaire which has already been in use. In this situation an important concern will be to introduce changes in such a way that maximum comparability with previous rounds is preserved, and disruption of the time-series is minimised as far as possible. This would usually require that only important changes, based on clearly established needs, are introduced into the existing questionnaire. The task will be more substantial when a country is launching a new labour force survey, but even there it may be possible to draw upon more or less well-tried and established methods and approaches. This is because, most commonly, large-scale national survey operations are undertaken only on the basis of well-tested procedures, when one can draw extensively on international Recommendations, prototype materials available from various sources, and foreign as well as national experience in undertaking similar inquiries. In this situation, the questionnaire development task would consist primarily of a review and analysis of existing experience; of defining as precisely as possible the survey objectives and needed outputs; of drawing up a questionnaire to meet the specific requirements; and of testing and evaluating the draft questionnaire over relatively small but reasonably representative sample(s) of respondents, typically using more or less well-established data collection methodologies. Sometimes of course, in new surveys with special data requirements and insufficient prior experience to draw upon, it may be necessary to collect additional information from potential respondents and undertake a more thorough assessment of what is feasible in the conditions under which the survey is to be conducted. Special “qualitative” interview methods may have to be used, such as informal conversational interviews, topic-focused interviews involving in-depth probing, and semi-structured open-ended interviews with key or specially selected respondents. Various organised group interviews or intensive study through participant observation may also be useful. The use of such special techniques in survey research is still quite limited, though it is generally increasing. These special techniques will not be discussed here any further, but reference may be made to a recent study by Casley and Kumar (1988, Chapters 2-4).

Organisational prerequisites

The development of survey questionnaires is a step-by-step process. Starting from an initial definition of the broad survey objectives, the survey content has to be refined and made more specific, operationalised in the form of actual questions, arranged and structured into one or more questionnaires, and then implemented in the field, processed, evaluated and analysed. This step-by-step task becomes increasingly technical, and appropriate organisational and consultative arrangements have to be evolved to reflect

changing requirements. While the details of actual arrangements will vary, there are three basic organisational prerequisites for good questionnaire development work. It is particularly important to pay attention to these prerequisites in major statistical operations such as national labour force surveys.

The first requirement is to establish appropriate arrangements for *user-producer consultation*. The determination of what information is to be collected and when is basically a prerogative of the users; the producers of statistics must take these requirements as the starting point. However, the user-producer interaction should be seen as two-directional. The technical knowledge of survey designers and subject-matter specialists can assist the users in identifying their requirements with greater clarity and detail. In this process, the survey objectives are made more specific, and may even undergo significant revision as they and their feasibility are examined. It is important to demarcate correctly the respective roles of users and producers. The users should be concerned with specifying *what* information is needed, i.e. the expected outputs. *How* the required information is to be collected (as regards survey methodology and design, question wording, etc.) should be left to the technically better qualified producers. Of course, necessary consultation between users and producers must continue at all stages, but should be concerned primarily with the substantive outputs to be obtained from the survey and the corresponding cost and resource requirements. Designing survey questionnaires through “committees of users and producers” may result in a poor product, as such an arrangement does not facilitate careful consideration of all the practical and technical issues involved.

Once the overall content and expected outputs of the survey have been determined, the task of questionnaire development becomes increasingly specific and technical. This requires multi-disciplinary inputs of different specialities, including knowledge of the subject-matter of the survey, field conditions and operations, data processing and, above all, principles of questionnaire design. To meet these requirements it is necessary to establish a *questionnaire design team*, which possesses or is able to draw upon the required specialised skills.

The third basic requirement is to establish appropriate arrangements for *review, evaluation and revision* of the questionnaires. The review should be broadly based, involving not only those directly responsible for the production of the drafts, but also users at appropriate levels, outside professionals, survey managers and field supervisory staff. The review process should be structured and systematic. It should be noted, however, that a broadly based review group is in general not the appropriate body to make final changes or additions in specific form to the draft questionnaire. This is because revising questionnaires can be a very complex task requiring careful consideration of numerous details. Such a task is best delegated to a technically qualified small group, such as the questionnaire design team referred to above, who may then report back to the larger body of reviewers as required.

Scope of the chapter

The material in this chapter is organised as follows. Sections 2 and 3 deal with substantive aspects of questionnaire development for labour force surveys. As elsewhere in this manual, it is assumed that the survey involves face-to-face interviewing of households and individuals. Section 2 provides a broad description of questionnaire design, as a step-by-step process from the identification and delimitation of information needs or expected outputs, to the specification of survey variables, and finally their translation into actual survey questions. Section 3 provides some examples of questionnaire flow charts from national labour force surveys, in order to demonstrate the varied issues involved in determining their questionnaire content.

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Sections 4 and 5 deal with technical considerations in questionnaire design and implementation. These principles and techniques are less dependent on the specific content of the survey. The underlying principle in the choice of questionnaire design is the attempted degree of structuring or standardisation of the interview process. In this connection issues such as question wording and translation and structuring of response categories are discussed in Section 4. Section 5 deals with aspects of questionnaire implementation in large-scale surveys.

A comprehensive and detailed discussion of the principles of questionnaire development and design with numerous illustrations is available in United Nations (1985), which is one of the technical studies developed under the auspices of the United Nations National Household Survey Capability Programme. This chapter draws fairly extensively on the material presented there. The work done in connection with the World Fertility Survey also provides very useful illustrative material, especially on the design and layout of verbatim questionnaires (World Fertility Survey, 1975) and on accompanying manuals of instructions on interviewing, supervision, training, editing, coding and data processing; these are published in the World Fertility Survey Basic Documentation series by the International Statistical Institute. A useful discussion of basic principles is further given by Jabine (1983).

2. Specification of survey content and outputs

Basic considerations

Questionnaire design begins with a detailed and careful specification of the information to be collected. In determining the content of a survey, it is always desirable to start from the *endproduct* expected, and work backwards to the actual instruments and procedures required to achieve it. It is also necessary to give precise answers to many broader issues of survey design and methodology which influence the conditions of data collection and processing. These have been discussed in Chapter 10 and include decisions concerning, for example, the target population to be covered, the type and frequency of the information to be collected, possible relationships (both substantive and operational) of the labour force survey with other surveys, the mode of data collection, and arrangements and procedures for data processing. The content, form and style of the questionnaire used is dependent on how, from whom and by whom the information is to be collected. Quite different considerations may be involved, for instance, in designing a questionnaire to be used for face-to-face interviewing, in contrast to questionnaires designed for self-enumeration or telephone interviewing. Similarly, differences will exist between surveys where the information must be provided by the respondents concerned themselves, and surveys where others may provide the necessary information by proxy; or between surveys using highly trained, specialised interviewers, against those dependent on lay, unspecialised enumerators.

Before detailed specification of survey variables and questions can be made, it is necessary to specify the underlying concepts and definitions clearly and in detail, indicating exactly what is included and what is excluded, and how the definitions will be applied in practice. A common shortcoming in many surveys is that while survey documents and reports define and categorise complex and broad concepts in great detail, neither the questionnaire itself nor the interviewers' instructions and training procedures elaborate in adequate detail the questions and probes needed for accurate measurement of these concepts. The theoretical exercise of defining concepts with clarity and detail elsewhere is then of little use.

Another basic issue is the possible use of more than one questionnaire in the survey. Within a given labour force survey, information may be collected for different types and

levels of units such as individuals, households and in some cases communities as well. Furthermore, information on some topics may be collected for the full sample, while for other topics it may be sufficient to collect the information from a subsample only. The frequency with which information is required may not be the same for all topics. The type of respondent providing the information may also differ between different groups of topics. For these and similar reasons, it is often necessary (and convenient) to use more than one type of questionnaire in a given survey.

While the preparation of a detailed tabulation plan with complete instructions on how each table will be constructed may have to wait till finalisation of the questionnaire and the coding scheme, the basic content and outline of the tabulation and analysis plans should be determined as early as possible: ideally simultaneously with the specification of the survey content, and certainly before the actual design of the detailed questionnaire (United Nations, 1985, p. 35).

As a minimum, the tabulation outline should specify the table titles, identifying the substantive variables to be tabulated, the background variables to be used for classifications, and the population groups to which the various tables apply. It is also desirable to show the categories of classification in as much detail as possible, though these may need adjustment at a later stage when the sample distribution over response categories is better known. At some stage in the questionnaire development work, it becomes possible to prepare “dummy tables” showing all the details including headings, columns, rows, stubs, layout, etc. Such dummy tables are useful in pointing out gaps in the information to be collected. They can also be useful in revealing unnecessary information or detail which may have been included in the draft questionnaire.

The above remarks apply despite the fact that, due to improved data-processing facilities, the importance of pre-established tabulation plans is decreasing somewhat, at least in developed countries. Increasingly, surveys are now conducted to allow for flexibility in data analysis, in addition to producing a certain number of predetermined tables.

Specification of survey variables and questionnaire **flow** charts

Survey variables

After determining the scope of the information to be collected and the related concepts, definitions and classifications to be used, the next step is the preparation of a detailed list and description of the survey variables. This work may proceed simultaneously with the elaboration of the outputs expected from the survey in the form of cross-tabulations and analyses. Generally, it is good practice in questionnaire development to identify the survey variables *before* attempting to formulate actual sequences of questions.

The distinction between survey variables and questionnaire items is a useful one. The survey variables are meant to specify the content of the micro-level information to be obtained from the survey, while the questionnaire items specify the exact form in which the information is to be collected. A survey variable may not be equivalent to a single item in the questionnaire. For instance, in the interest of obtaining more accurate information, the questionnaire may call for more detailed itemisation than is actually needed for final analysis. There can also be situations where, for practical reasons concerning the complexity and length of the questionnaire, a more detailed list of survey variables may have to be condensed into an abbreviated (and possibly less precise) series of questions, suppressing some of the detail or transferring it to the interviewers' instruction manual and training programme. Indeed, depending on the complexity and diversity of the employment situation to be studied, most labour force survey questionnaires require some such simplification.

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It should be mentioned that the survey variables themselves may be defined in greater or lesser detail, and in the former case the distinction between survey variables and actual questions may become merely that of form or wording. For example, the survey variable “unemployment” may be disaggregated into separate variables such as “seeking work”, “available for work”, etc.

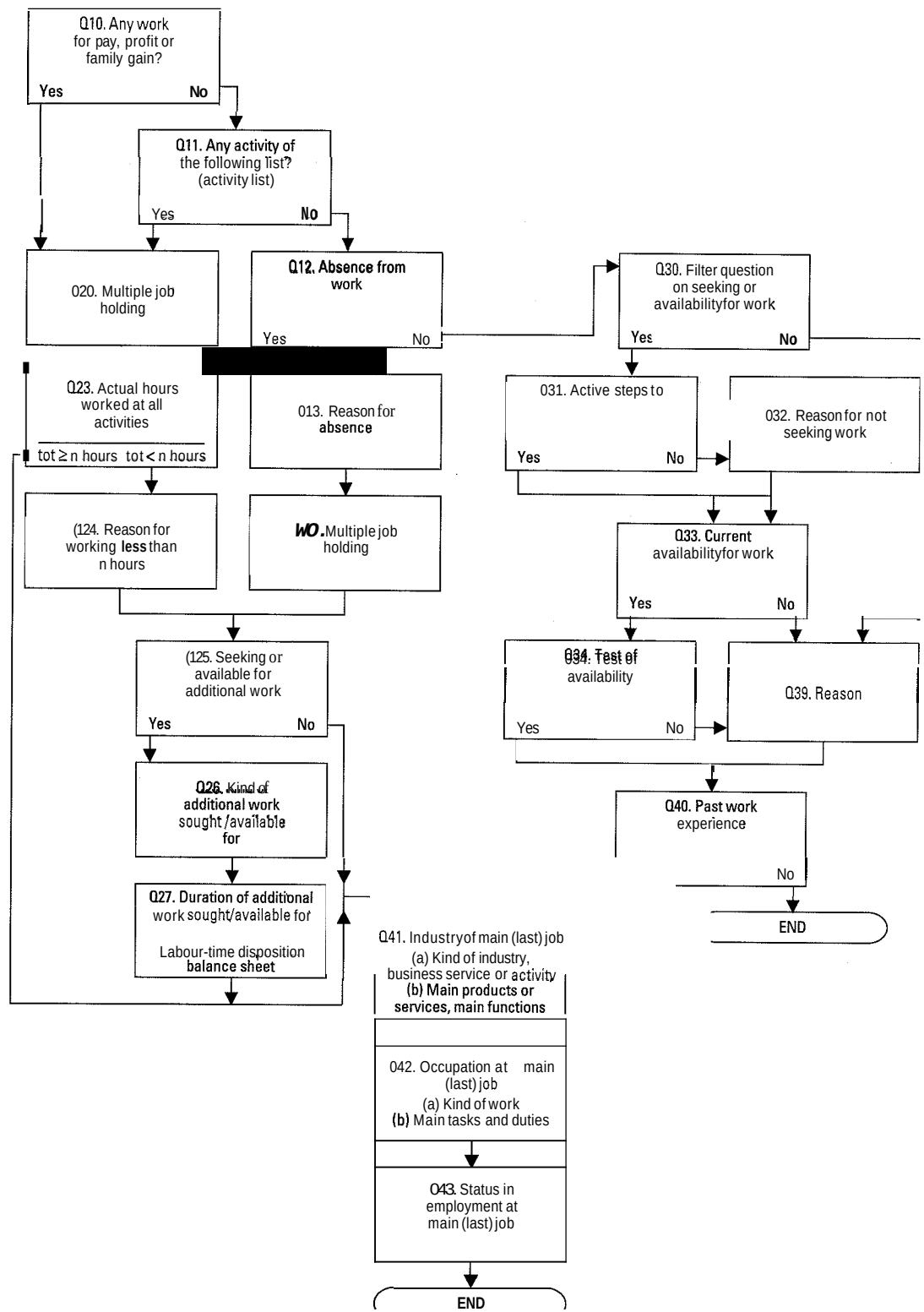
Nevertheless, it is useful to retain the distinction between survey variables of actual interest and specific questions required to enumerate them. It is desirable first to develop a fully detailed list of survey variables, and to turn it into the form of an actual questionnaire only at a later stage after the list has been discussed, reviewed and finalised. As distinct from a list of survey variables, the detailed questionnaire must pay attention to a host of other factors such as wording, arrangement, order, layout and other aspects of form, in addition to the basic content of the information being sought. For the sake of clarity and convenience, it may for instance require a parallel series of questions for different categories of respondents even though the information obtained through various sequences is identical in content. All this detail may obscure the essential issues and make it difficult for the users and reviewers to check and evaluate the basic content of the survey. By contrast, an explicit list of survey variables, giving the definition of the variables, specifying what is included and what is excluded, identifying the population to which they apply, listing the response categories, etc., can describe and communicate the content of the survey more clearly and concisely. Such a list will also facilitate the development of tabulation plans and of other outputs to be obtained from the survey.

Questionnaire flow charts

The various parts of questionnaire flow charts given in Part One of the manual basically provide fairly detailed lists of survey variables or items of information to be obtained, taking account of the international standards on statistics of the economically active population, employment, unemployment and underemployment (ILO, 1983). They are not meant to provide specific survey questions, as the appropriate number of such questions and their exact form and wording are to be determined in respect of each actual survey questionnaire, depending on the particular circumstances which may vary from one country to another. For instance, in Flow chart 4 on employment (Chapter 5), the item “any work” may actually require more than one question for obtaining the required information (e.g. separate probes for unpaid family workers or for work done for only a short time during the reference period). Similarly, as illustrated in Chapter 2, the item “activity list” will typically involve a series of questions, asking for each activity specified in the list whether or not it was performed during the reference period. Depending on the situation, the questions on “absence from work” and “reason for absence” may need to be formulated in different forms for different categories of status in employment, such as employees and own-account workers. Or it may be necessary to introduce specific questions to identify particular groups, such as persons with a job or enterprise to start in the future, lay-offs, seasonal or casual workers, etc. One purpose of these flow charts is to illustrate the content of the information to be collected on each topic, without the elaboration and detail typically involved in the design of an actual questionnaire and without the need to specify the exact number, form and wording of the questions at this stage of questionnaire development.

When put together as in Flow chart 9 below, the flow charts also serve the purpose of illustrating another useful tool in questionnaire development: a graphical representation (network or flow diagram) of the information to be collected, showing the flow of the interview and the relationship between the items and between the subgroup(s) in the survey population to which they apply. In this way, a flow chart goes beyond a list of survey variables, and provides a link between the latter and the fully developed questionnaire. Such graphical representations can also be useful in clarifying

Flow chart 9. Employment, unemployment, visible underemployment and major economic characteristics (Current activity framework)



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the structure of the complete questionnaire, including the question sequences and “skip patterns” to be followed. They can further assist in interviewer training and in developing computer programmes for data editing, data reformatting (recoding) and tabulation. Several other examples of questionnaire flow charts will be provided in Section 3 of this chapter. For some further illustrations, see United Nations (1985, pp. 174-178), and in particular World Fertility Survey (1976).

Translation of survey variables into survey questions

To construct an actual survey questionnaire, the given concepts, information requirements and survey variables have to be broken down into specific, comprehensible and answerable series of questions. The basic issue is the appropriate level of detail for this breakdown.

In this context, it may be stated as a general principle that the only guarantee against serious omission, underreporting or misunderstanding is to itemise the information to be obtained in as much detail as necessary, and seek information on each item or component, even though some of the detail may be amalgamated later at the processing and analysis stages. Often the concepts and definitions used in labour force surveys are complex, and it may be necessary to break down a single item of the information required into a series of questions, not necessarily because more detailed information is required, but because detailed breakdown is the only way to ensure that the respondent has a reasonable chance of reporting what is being asked for.

For example, consider the complex concept of “economic activity” discussed in Chapter 2. In many situations, especially in developing countries, the demarcation of economic activity from other kinds of activities like training, voluntary service and domestic chores is not clear-cut. Furthermore, large numbers of persons may be engaged in more than one kind of activity. The conventional approach of using a single question or a short series of questions to identify economic activity and persons engaged in it may not suffice in measuring the labour force. An approach involving a listing and explicit enumeration of each main type of activity and of whether or not the persons concerned were engaged in it may provide the complex information more accurately.

The International Labour Office experimental studies described in Chapter 2 provide another example (ILO, 1983-84; ILO, 1986). In the test carried out in Kerala, India, two types of questionnaires were used. The first sought to elicit information on unemployment by a direct question on the respondents’ activity status. The second version obtained the same information by asking a more detailed series of questions on respondents’ activities. The results showed some interesting differences between the two approaches. In relation to *current activity*, the average participation rate obtained by the second, more detailed approach was found to be more than five percentage points higher than that obtained by the first, abbreviated approach. Absolute differences of similar magnitude (i.e. much larger differences in relative terms) were also found in current unemployment rates, and the differences persisted across sex and age groups. However, the two approaches did not yield significantly different results on participation and unemployment rates in terms of *usual activity*, based on a long reference period. The implication of the results is that more detailed questioning is able to capture more fully the more fluid current activity status, but, in this particular study, made little difference concerning the more stable usual activity status. In the latter case, this may be partly due to the recall problems associated with the long reference period used to measure usual activity status.

Nevertheless, there are practical limits to the details which can be explicitly included in any questionnaire. There are many situations in which practical conditions dictate the adoption of simplified procedures or short cuts, even if it is understood that more rigorous and detailed procedures, if feasible, would meet the survey objectives more

adequately. The feasible' detail may, for instance, be limited by the inability or unwillingness of the respondents to provide the information, by constraints in the overall length and complexity of the questionnaire, by the time available for field work, and by limitations in the data entry and processing facilities.

The primary factors determining the detail in which the survey content is spelled out in the questionnaire must be the survey objectives, its subject-matter, and the conditions under which it is to be conducted. A balance is needed between the requirements of accuracy and data quality on the one hand, and considerations of cost and feasibility on the other. This does not, however, imply that elaborate, detailed questioning always results in data of higher quality (though often it does), or that short, abbreviated forms of questioning are always more cost-effective. Asking for too much detail can actually damage the quality of the information obtained, apart from the practical problems of implementation involved. On the other hand, apparent brevity of the questionnaire can sometimes be very deceptive. By failing to itemise adequately and to break down complex concepts into easily answerable sequences of questions, the seemingly "brief" questionnaire may not only result in data of poor quality but also be no quicker or easier to administer. In good questionnaires, detailed itemisation is introduced not so much to obtain more information, but to obtain the required information more accurately, more easily, and sometimes even more quickly.

These considerations are particularly important in questionnaire design for labour force surveys. Labour force surveys involve complex concepts, and their results can be very sensitive not only to the concepts and definitions used but also to the manner and form in which they are actually put into operation in the questionnaire. In the following section these issues will be illustrated with examples taken from national labour force surveys.

3. Some illustrations from national labour force surveys

This section provides a few examples of questionnaire flow charts from national labour force surveys, with the objective of illustrating various issues involved in determining the survey content and putting it into operation in the questionnaire. In conjunction with this are highlighted some pertinent substantive issues discussed more fully in Part One of this manual.

It should be emphasised that the examples of questionnaire flow charts given below are not meant to represent "models" to be followed. They reflect the specific survey objectives, data requirements and conditions of survey work in particular countries, which may be different for other countries. It should also be noted that the degree of conformity with the international standards varies among the examples. The examples given are further not meant to be a representative sample of national practices. However, they do come from certain well-established national labour force surveys in both developing and developed countries, and represent a wide range from a brief questionnaire (Flow chart 10) to a fairly elaborate one (Flow chart 13). Such differences may reflect actual or perceived differences in the scope of the information needed by the countries concerned, and in cost and other constraints. Sometimes certain items of information, even if desirable, may have to be eliminated from the survey to keep its content simple. For the same purpose, survey questionnaires sometimes take short cuts, even if that means obtaining less accurate information than could be obtained with more complete and detailed sequences of questions.

Comments will be made on four groups of core variables: (1) current activity and employment; (2) unemployment; (3) underemployment; and (4) usual activity. National labour force surveys may (and often do) cover other variables as well, such as characteristics of households (or families), demographic and social characteristics,

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educational characteristics, income, migration and other characteristics closely related to employment and work.

Current activity and employment

Economic activity

As noted in Chapter 2, translation of the concept of economic activity into appropriate questions is a fundamental requirement for accurate measurement of employment and unemployment in labour force surveys. However, the concept is complex and interviewers' or respondents' own subjective understanding of terms like "economic activity" or "work for pay or profit" may differ from what the concept intends to include. Problems of underreporting of economic activity may particularly arise in situations where a substantial part of the population is engaged in activities other than regular paid or self-employment, such as casual work or work of short duration, work remunerated in kind, home-based work, unpaid family work and production for own consumption. They may in particular affect the measurement of women's economic activities. The practice in most labour force surveys has been to try and capture this complexity with only one or a few questions (usually a leading question formulated around the key word "work", along with one or two probing questions concerning the main type of activity, which the leading question is prone to miss), supplemented to varying degrees by explanations of the concept and borderline cases in interviewer manuals and training. While this may be sufficient for surveys conducted in developed countries, surveys in developing countries, where regular paid employment is less widespread and the forms of employment are more varied, may require more detailed probing. An alternative approach using an activity list is therefore shown in Chapter 2.

All the flow charts presented in this section follow the conventional approach, but differ in the specific probes which follow the leading question: a probe on work for only a short duration (at least one hour during the reference week) in Flow chart 10; no specific probe in Flow chart 11; a probe on work for own/family farm or livestock in Flow chart 12; and a probe on unpaid work in a family business in Flow chart 13. Each of these probes may be useful in identifying some forms of economic activity other than regular paid employment. Depending upon the employment situation of a particular country, it may, however, be worthwhile to consider the inclusion of several such probes into the questionnaire, in particular when a full activity cannot be incorporated.

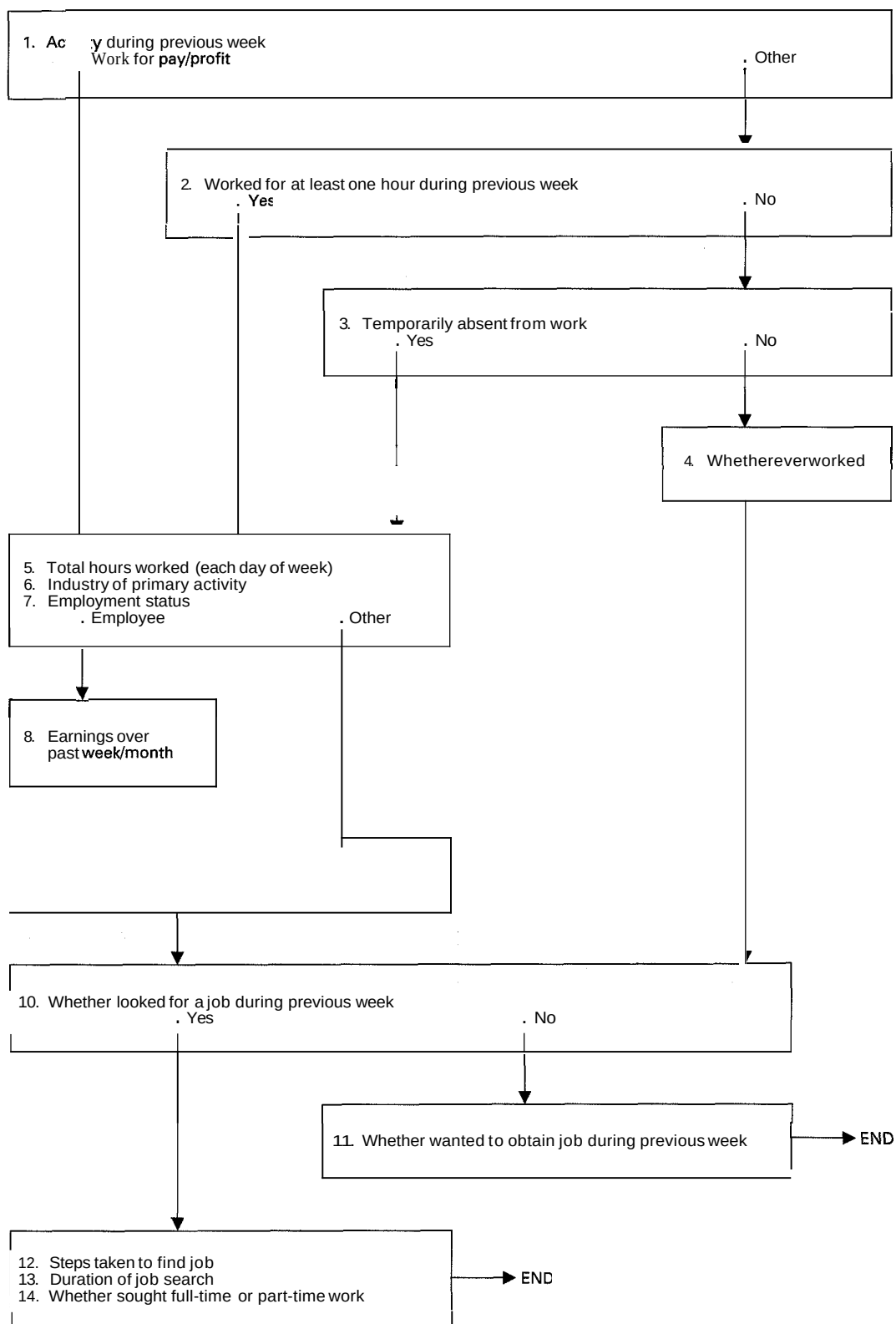
Comparing Flow chart 10 with Flow chart 12, an important difference is that only the latter contains an *explicit* question on work for own/family farm or livestock. This is despite the fact that both flow charts are taken from developing countries with a large proportion of the population engaged in agricultural self-employment. In view of the country's circumstances, the questionnaire in Flow chart 10 seems to be rather "urban-oriented", a practice which appears still to be fairly common in national labour force surveys. Note also that the question on work for own/family farm or livestock in Flow chart 12 is used for two subgroups for different purposes: (a) for employed persons, it is used to determine the flow of the interview, i.e. to skip several questions (on occupation, training, income, etc.) considered not to be relevant (or important or answerable) for the group engaged on own/family farm or livestock; (b) for persons who have not been identified as employed in earlier questions it is used as an explicit extra probe which can be essential in reducing underenumeration of unpaid family workers and of persons engaged in production for own consumption.

Temporary absence from work

As discussed in Chapter 5, the employed comprise not only persons at work but also persons with a job or enterprise who were temporarily not at work during the reference

Questionnaire development and design

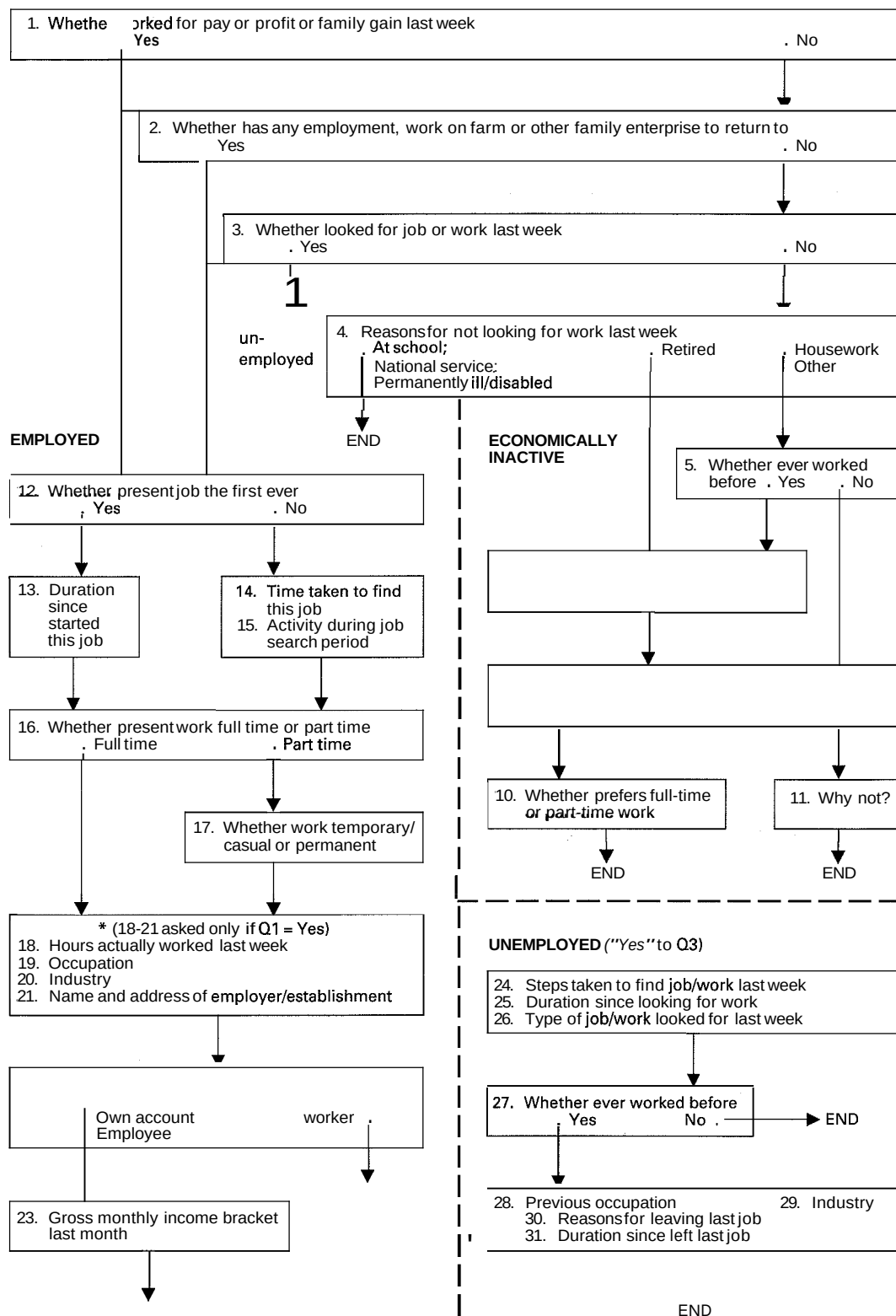
Flow chart 10. National labour force survey questionnaire: Example 1



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Flow chart 11. National labour force survey questionnaire: Example 2

ECONOMIC ACTIVITY



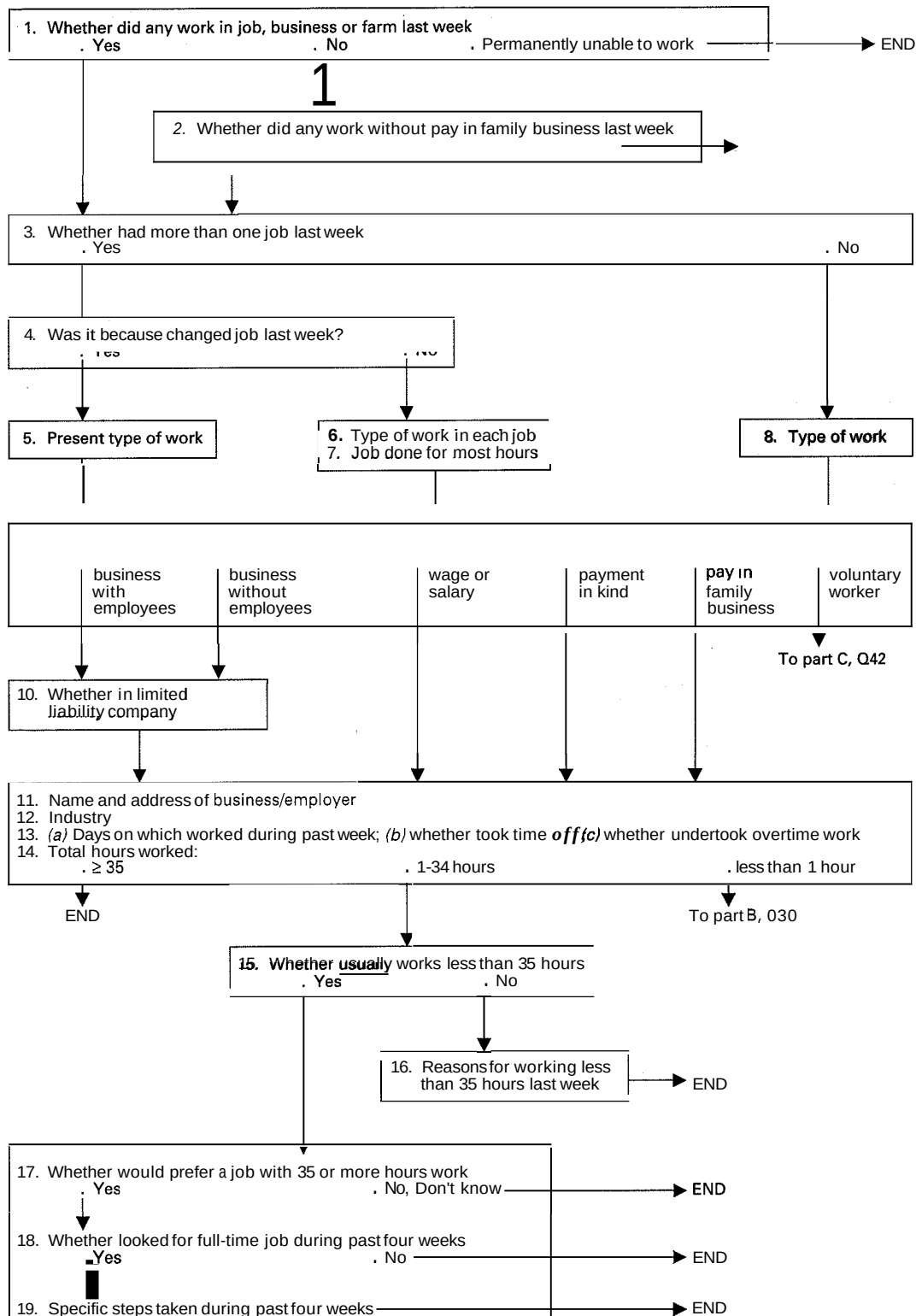
```

graph TD
    Q1[1. Activity during most of last 12 months  
· Work  
· Schooling  
· Home duties  
· Other  
· Permanently disabled] --> Q2[2. Whether available for work during most of last 12 months]
    Q1 --> END1[END]
    Q2 --> Q4[4. Whether had job or business to return to  
· Yes  
· No]
    Q2 --> Q6[6. Whether the work is for family farm/livestock  
· No  
· Yes]
    Q4 --> Q5[5. Whether had farm/livestock on which works  
· Yes  
· No]
    Q4 --> Q6
    Q5 --> Q25[25. Whether wanted to work last week:  
· Yes  
· No]
    Q5 --> Q6
    Q25 --> Q26[26. Whether looked for work last week  
· Yes  
· No]
    Q25 --> END2[END]
    Q26 --> Q27[27. Steps taken to look for work last week]
    Q26 --> Q28[28. Why not?  
· Not available for work  
· No work available  
· Other reasons]
    Q27 --> Q29[29. Duration since available and wanting to work]
    Q28 --> Q29
    Q28 --> END3[END]
    Q29 --> Q30[30. Whether ever worked before  
· Never  
· Only for family farm/livestock  
· Did other work work]
    Q30 --> END4[END]
    Q30 --> Q31[31. Employment status in last work/job  
32. Occupation  
33. Total duration of that type of work  
34. Whether received formal training  
· Yes  
· No  
35. Type of training  
36. Name, nature, size (employment) and location of establishment]
    Q30 --> END5[END]
    Q6 --> Q11[11. Duration of training  
12. Main subject of training]
    Q6 --> Q16[16. Gross income (range) from work last week]
    Q6 --> Q17[17. Hours worked each day during past week  
18. Total hours last week  
· <35  
· ≥ 35]
    Q11 --> Q16
    Q11 --> Q17
    Q16 --> Q17
    Q17 --> Q21[21. Whether prefers to work more hours:  
· Yes  
· No → END]
    Q17 --> Q19[19. Whether also looking for other work  
· Yes  
· No]
    Q21 --> Q22[22. No. of additional hours preferred  
23. Reasons for not working longer  
· No work  
· Other reasons  
· Not avail. for work]
    Q21 --> Q24[24. Duration since wanting to work]
    Q22 --> Q24
    Q22 --> END6[END]
    Q19 --> Q20[20. Steps taken to find work]
    Q20 --> END7[END]
    Q24 --> END8[END]
    
```

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Flow chart 13. National labour force survey questionnaire: Example 4

Part A: Persons actually working during survey week



Part B: Persons with job but not at work

20. Whether had job/business or farm from which away during past week due to holiday, sickness or other reasons

Yes ☐ No ☐ → To Part C, Q42

21. Whether had more than one job during past week

Yes ☐ No ☐

24. Kind of work done

or salary	in kind	business with employees	business without employees	pay in family work	voluntary worker

28. Whether limited liability company

Yes ☐ No ☐ → To Part C, Q42

29. Reason for being away from work (all reasons)

Illness/injury	Stood down	Insufficient work	All other reasons (leave, flexi-time, personal, holidays, bad weather, break-down, etc.)	Strike, lock-out	Special reasons (began/lost job, works < 1 hour)

31. Whether on workers' compensation

Yes ☐ No ☐

32. Whether will be returning to work

Yes ☐ No, Don't know ☐ → Part C, Q42

33. Reason?

Bad weather/break-down ☐ Other ☐

34. Whether paid last week

Yes ☐ No ☐

35. Duration

without pay:

1/2/3 weeks ☐ 4+ weeks ☐ → Part C, Q42

37. Whether paid for any part of last 4 weeks

Yes ☐ No ☐ → Part C,

38. Hours per week usually worked:

35+ → END 1-34 → None → Part C, Q42

39. Whether prefers job with more hours per week

Yes ☐ No, Don't know ☐ → END

40. Whether looked for full-time work during past 4 weeks:

Yes ☐ No ☐ → END

41. Specific actions taken for this during past 4 weeks → END

period, The international standards specify certain criteria for ascertaining temporary absence from work, distinguishing between paid employment and self-employment. In the case of paid employment these criteria are based on the notion of formal job attachment, defined in terms of the continued receipt of wage or salary, an assurance of return to work (or an agreement as to the date of return), or the elapsed duration of absence from the job. The criteria are less elaborate in the case of self-employment. In practice, for employers and own-account workers, temporary absence from work may be ascertained on the basis of the continued existence of the enterprise and the length of the absence.

How much attention should be paid in a particular questionnaire on accurately enumerating the category “temporarily absent from work” depends on the size and significance of the category, judged against the cost and complexity its precise enumeration in the questionnaire would involve. Flow chart 4 presented in Chapter 5 proposes explicit inclusion essentially of two items of information: whether the person had a job or enterprise from which he/she was temporarily absent, and the reason for absence enumerated from a specified list. No explicit provision is included for examining various criteria of “formal job attachment” or “continued existence of the enterprise”, on the assumption that in many countries it would be sufficient to provide suitable guidelines in the interviewers’ manual for probing this issue. Among other things, these guidelines should clarify that the category excludes persons with a job or enterprise to start in the future, unpaid family workers, casual workers and in general all persons not at work who have no formal job attachment or whose enterprise is discontinued during their absence. However, it was noted in Chapter 5 that additional questions may be necessary when the prevailing working patterns call for more precise identification of the category.

The question sequences in Flow charts 10-12 are briefer and less precise than that presented in Flow chart 4. Only a single question on the lines of “whether the person had a job or enterprise to return to” is included, without enumerating reasons for temporary absence. It follows from the discussion in Chapter 5 that the addition of a question on reasons for absence may be useful in several respects, including the possibility of further probing on the preceding question and thus the clearer identification of those circumstances that make temporary absence from work an acceptable classification, and count as one element for the measurement of underemployment. Unless equivalent information is obtained from other parts of the questionnaire, the omission of this question introduces an approximation into the results, which may or may not be important depending on the significance of the category in particular national circumstances.

In contrast, Flow chart 13 includes a much more elaborate sequence of questions on the topic than Flow chart 4. Firstly, the wording of the leading question (whether had job/business or farm from which away) itself suggests some possible reasons (holiday, sickness, other) which may help clarify the concept to the respondent. Secondly, the reasons for temporary absence are linked to status in employment (as indeed implied in the international standards), making use of separate lists of reasons for (a) paid employees and employers/own-account workers with a limited liability company and (b) for other employers/own-account workers and unpaid family workers, and explicitly excluding unpaid voluntary workers. Thirdly, for subgroup (a) specific questions are asked, depending on the reason(s) for absence, on the criteria defining formal job attachment, namely receipt of compensation/pay during the absence, duration of absence, and expectation of return to a job with the employer. Clearly such an approach involves a fairly elaborate sequence of questions with a complex “skip pattern”, the cost of which has to be judged in relation to the usefulness of the information obtained in specific circumstances.

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Unemployment

According to the international standard definition of unemployment (see Chapter 6), the unemployed are persons above a certain specified age who were (a) without work during the reference period, (b) currently available for work, and (c) seeking work, i.e. had taken specific steps during a specified recent period (such as the last four weeks) to seek paid employment or self-employment. The availability criterion refers to the ability and readiness to work, given a work opportunity. Concerning the seeking-work criterion, it is important to cover not only those seeking a paid job but also those seeking to establish an own enterprise. The standard definition of unemployment also includes persons without work and currently available for work who have already made arrangements to take up paid employment or self-employment at a date subsequent to the reference period, whether or not they continue to seek work (future starts). Furthermore, persons temporarily laid off by their employer (without maintaining a formal job attachment) and currently available for work may be included among the unemployed even when not actively seeking work. Obviously the extent to which a labour force survey questionnaire (and/or interviewers' instruction manual) should explicitly deal with the complex criteria and varied situations in the identification of the unemployed depends on specific circumstances and data requirements.

A related aspect, particularly relevant to developing countries, concerns the possible use of a modified definition of unemployment in which the seeking-work criterion is relaxed. Such a provision has been made in the international standards for situations where the conventional means of seeking work are of limited relevance, where the labour market is largely unorganised or is of limited scope, where labour absorption is at the time inadequate, or where the labour force is largely self-employed. In practice the degree of relaxation of the seeking-work criterion may vary, applying to all or only certain categories of persons (e.g. seasonal workers awaiting the busy season, discouraged workers, etc.). As noted in Chapter 6, with the relaxation of the seeking-work criterion, the availability criterion becomes a crucial element for the measurement of unemployment and should be tested more fully in terms of present desire for work, previous work experience, type of work acceptable, etc.

Flow chart 6 presented in Chapter 6 tends to accommodate these various requirements. It includes questions on the desire for work, seeking-work activities, reasons for not seeking work and current availability for work, supplemented by a further test of availability and questions on the reason for non-availability and past work experience. The question on the reasons for not seeking work serves to identify not only future starts and persons on lay-off, but also other categories of non-seekers as a basis for a relaxation of the seeking-work criterion. The flow chart allows thus for varying degrees of relaxation in between full or no relaxation.

The corresponding sequences in Flow charts 10-13 differ to a greater or lesser extent from Flow chart 6 in Chapter 6. For instance, in Flow charts 10 and 11 information on current availability for work is only obtained from persons not seeking work, assuming that persons actively seeking work during the reference period (past week) must be available for work. This may, however, not be the case for persons who seek work which they can only start at a later date. In Flow chart 10, the question is formulated rather vaguely in terms of present desire for work, whereas in Flow chart 11 the type of work acceptable is specified in the formulation of the question, and an additional question on the preference of full-time/part-time work is added as a further test of availability.

In Flow charts 10 and 11 reasons for not seeking work are either not enumerated at all or not in a form that permits identification either of persons in special situations (future starts, lay-offs) or of relaxation of the seeking-work criterion as may be appropriate. Furthermore, neither the lead question nor the prespecified response categories (not shown in the illustration) to the question on "steps taken to seek work"

clearly cover the situation where the work sought is a self-employment activity rather than wage employment. The consequence of these short cuts in the questionnaire can be serious underenumeration of certain groups such as those seeking self-employment, or those not seeking work for some acceptable reason. Both these groups can be large and important in developing countries.

In Flow chart 12 the sequence is more similar to but a little simpler than that presented in Flow chart 6. The major difference is that no explicit questions are included on **current** availability for work though there is a question on the “duration since available and wanting to work”; rather the information on availability (actually on non-availability) for work appears as one response category to the question on reasons for not seeking work. This is another example of a short cut in the questionnaire which may have been considered acceptable in view of the particular national circumstances and data needs.

A common feature of Flow charts 10-12 is that for variables such as actively seeking, being available for and wanting to work, the reference period used is the same (past one week). This choice may have resulted in some simplification of the interview, but as explained in Part One of this manual, different reference periods may often be more appropriate for those different types of variables. This is attempted in Flow chart 13 in considerable detail. The periods used are: past four weeks for seeking/looking for work; past one week for availability for work; and next four weeks for future starts. Those who have been too ill or injured to start work for less than four weeks are also identified separately. This results in a fairly elaborate sequence of questions. Another feature of Flow chart 13 is that, unlike Flow chart 6, there is no question on the reasons for not seeking work and no further test of availability. This assumes that these questions are not strictly necessary when the seeking-work criterion is rigidly applied, with no relaxation for “discouraged workers” and other such groups.

Underemployment

It was noted in Chapter 7 that two principal forms of underemployment are to be distinguished: visible underemployment reflecting an insufficiency in the volume of employment; and invisible underemployment characterised by factors such as low income, low productivity and underutilisation of skills. In labour force survey questionnaire design a decision has to be made as to how much, and in what form, information on underemployment needs to be (and can be in practice) obtained in specific national circumstances. The measurement of invisible underemployment in national labour force surveys can be particularly difficult. Recognising these difficulties, the international standards state that for operational reasons the statistical measurement of underemployment may be limited to visible underemployment. However, the measurement of visible underemployment, though more feasible, also requires a number of questions, as discussed in detail in Chapter 7.

The international standards consider two elements in the measurement of visible underemployment: the number of persons visibly underemployed and the quantum of visible underemployment. Persons visibly underemployed are identified on the basis of three criteria: (a) working less than normal duration; (b) doing so on an involuntary basis; and (c) seeking or being available for additional work during the reference period. The criteria apply to the employed population as a whole, i.e. to persons in paid employment and persons in self-employment, and to persons at work and persons temporarily absent from work. To measure (a), a simple approach would be to ask respondents directly whether they worked full time or part time or whether they worked less than the normal duration. However, a more elaborate approach may be required to obtain data of acceptable quality, especially in developing countries where the working hours of much of the population are not contractually regulated. Hours worked

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during the reference period and normal hours need then to be obtained separately and compared. What is meant by “normal hours” is a complex issue, and their individual assessment in surveys may prove difficult. It may therefore be necessary in practice to resort to a highly simplified approach, such as using a uniform norm for all activities and all categories of workers. In adopting such an approach, care has to be taken to exclude from the underemployed those persons who report working hours below the uniform norm but are nevertheless to be considered fully employed, as full-time work in their activity does not involve more hours (e.g. teachers, judges). Furthermore, in determining the total hours worked during the reference period, account has to be taken of multiple jobholding, and also of the possible need to enumerate hours worked separately for each day when the reference period is a whole week. The more variable or irregular the situation, the more elaborate will have to be the sequence of questions to solicit reliable information. Application of criterion (b), the involuntary nature of working less than normal duration, normally requires an assessment of the reason for working less (or not at all, in the case of persons temporarily absent from work). These reasons may be enumerated on the basis of spontaneous reporting by respondents; or each main reason may be explicitly enumerated from a list. Additional probing may be necessary in certain cases to determine whether a reason is voluntary or involuntary. Criterion (c), seeking or availability for additional work, in the context of measuring underemployment is primarily meant for screening persons who are involuntarily working short hours. Consequently, the questioning may be simpler than that on the same topic in the context of measuring unemployment. The quantum of visible underemployment refers to the aggregate time available for additional employment during the reference period in respect of each person visibly underemployed. Thus, in addition to the number of persons visibly underemployed, assessment of the quantum of visible underemployment requires information on the duration of additional work sought or for which the person is available, up to the normal duration of work.

It is clear from the above that accurate measurement of underemployment would require a fairly elaborate battery of questions, and in practical applications simplification may sometimes be unavoidable. The four flow charts given earlier in this section differ more or less significantly from each other and from the sequence presented in Chapter 7. No questions on visible underemployment are included in Flow chart 11, which is from a country where the issue is probably not of great significance. In Flow chart 10, which is from a developing country where the problem of underemployment is more important, the questions included on the topic concern the actual hours worked (obtained separately for each day during the reference week to ensure greater accuracy), whether the person sought or wanted to do additional or different work, whether this work was full time or part time, and the specific steps taken to find such work. There are no questions on the reason for working short hours or not at all during the reference week, assuming that all persons seeking or wanting additional or different work worked less for involuntary reasons. The information obtained on the duration of additional work sought is limited to a rather broad question on whether the person sought full-time or part-time work. The sequence is formulated in terms of those seeking/wanting a paid job, and does not cater adequately for the self-employed. Flow chart 12, which is also from a country where the issue of underemployment is important, includes a sequence of questions which is more similar to the sequence shown in Chapter 7. Taking 35 hours per week as the full-time norm, it asks specifically those who worked less than that during the reference week whether they would have preferred to work more, the number of additional hours of work wanted, and the reasons for not working more. In this manner the sequence identifies whether working short hours is involuntary, and a measure of the quantum of visible underemployment is obtained. The same sequence is also applied to those temporarily absent from work. Those who worked full time (35 hours or more)

during the reference week are asked whether they are looking for other work and about steps taken to find such work, presumably to obtain a rough indicator of invisible underemployment. Finally, Flow chart 13 asks for the reasons for working less than normal hours (taken as 35 hours per week) during the reference week only in the case of persons who usually work 35 hours or more, assuming involuntariness of short-time work for persons who both actually and usually worked less than 35 hours and prefer/sought a job with more hours. On the other hand, the criterion of preferring/seeking additional work is not assessed for those who actually worked less than 35 hours but usually work more; the same applies to persons temporarily absent from work who usually work 35 hours or more. Unlike Flow chart 12, the sequence does not allow for (and is presumably not geared to) an exact measurement of the quantum of visible underemployment.

Usual activity

The above discussion is largely in terms of current activity measured in relation to a short reference period. However, as discussed in Chapter 4, in countries with significant seasonal and other regular or irregular variations in economic activity, it is important to obtain information on the dominant pattern of activities over a longer reference period such as a year. The measurement of usual activity status on the basis of a long reference period generally presents more serious problems than the snapshot measurement of current activity using a short reference period. The basic choice is between two types of approach: (a) repeating the current activity measurements over time so as to cover adequately the desired longer period; or (b) using the longer period itself as the reference period in a retrospective survey. Often, option (a) is not feasible because of the high workload and costs involved. The need for repeated measurement and eventually for linking the information on the same individuals over various survey rounds can also complicate the design and implementation of the survey. On the other hand, option (b) can suffer from serious response errors because of the longer recall periods involved, and also because of the complexity of individual activity patterns over a long period such as a year. This is one of the reasons why the two approaches may give different results. The sequence of questions required for accurate retrospective measurement of usual activity can be quite complex, requiring in turn very careful design and thorough testing and evaluation of the questionnaire. In practice, many labour force surveys and population censuses may have to rely on simplified and abbreviated sequences of questions to measure usual activity, due to the practical limitations involved in using a long reference period.

In retrospective questioning, the accuracy and usefulness of the information can be improved by dividing the total reference period into appropriate time segments or periods, and questioning and probing separately for each period. There are several good reasons for this approach, despite the added length of questioning it involves. Firstly, questioning separately for each period can assist in the process of recall. For instance, as discussed in Chapter 4, month-by-month recall (in comparison with whole-year recall) can help in reducing omission and duration errors. Similarly, in relation to agricultural activities, data quality may be improved by questioning separately for each season during the agricultural year and each period of seasonal inactivity. Secondly, dividing the long reference period into shorter segments for questioning can also help in the correct assessment of main activity status.

It will be recalled that in the usual activity framework, individuals are to be classified first as not usually active or usually active, depending on whether a person was "employed or unemployed" for most (or more than a certain specified proportion) of the long reference period; only then, and where appropriate, are the usually active further subdivided into employed and unemployed according to the main activity.

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Clearly the results can differ more or less seriously according to the particular choice of the time units used in determining the usual status (e.g. days, weeks, half-months, or months), depending on how varied the pattern of activity is for individual persons. In most circumstances, it is unlikely that a single general question on the main activity status will suffice for proper and uniform application of the concept.

The concept of “usually active” includes both the status of employment (including temporary absences from work) and that of unemployment. It is the combined duration in these two statuses that determines whether or not a person is to be classified as usually active during the long reference period. This means that asking separately (as in Flow chart 12) whether the person was (a) employed during most of the reference period or (b) unemployed during most of the reference period, does not fully identify the usually active population, which is defined in terms of the total duration in the statuses of employment or unemployment.

A solution to these problems is to obtain actual durations and periods of employment, unemployment and economic inactivity in a form which ensures that they are not overlapping and that they add up to the total duration of the long reference period. One example of this approach, using part-month recall periods during the year, was given in Chapter 4.

4. Principles and techniques of questionnaire design

Structuring the interview

A fundamental issue in questionnaire design is the extent to which the interviewing is to be “structured”. Maximum structuring implies the use of pre-specified and uniform procedures in the conduct of the interview, with no leeway to the interviewer in the choice of the sequence or wording of questions, or in the form and categories for recording and coding responses. It would require the interviewers to follow the exact wording as specified for each question in the questionnaire, provide them with detailed instructions on how and with whom to conduct the interview, and specify both to the interviewer and the respondent the exact categories for recording answers to each question.

A high degree of structuring of the interview process may be desirable in many circumstances, for example, when the survey poses difficult questions of attitude or opinion, responses to which may depend critically on exactly how the question is formulated. It may be especially desirable in large-scale surveys for several reasons. Firstly, such surveys may involve a large number of operative staff whose capabilities and skills cannot be uniform or uniformly high, and it thus becomes important to impose standardised procedures. Secondly, structured interviewing helps to produce data which are easier to code and tabulate, a consideration which can be of vital importance in large-scale surveys generating huge volumes of data. Thirdly, structuring and control help to achieve comparability over time in continuing surveys. All these are usually important considerations in national or other large-scale labour force surveys.

On the other hand, maximum structuring and standardisation is not the best approach in all circumstances. There are situations where it is desirable to give the interviewer flexibility in choosing the manner of asking questions and the form of recording answers. For instance, the interviewing conditions, language or other respondents’ characteristics may be so variable that no satisfactory standardised procedures can be specified in detail; or, if specified, they would probably not be adhered to due to the practical problems of conducting the interview. Similarly, with complex survey subject-matter, detailed probing may be necessary during the interview, requiring considerable flexibility and initiative on the interviewer’s part. In general, the more

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skilled, experienced and motivated the interviewers are, the stronger the case for flexibility in choosing the manner and form of asking the questions during the interview.

Practical questionnaire design requires an appropriate choice, depending on circumstances and requirements, between highly structured interviewing procedures, and a largely unstructured, exploratory approach. Several general but important points should be noted in this connection. Firstly, in most circumstances, neither of the two extreme solutions is desirable or practicable. Secondly, the choice must take into account the survey objectives and conditions; it is wrong to be dogmatic about the general superiority of one approach over the other, as has sometimes been the case in discussions of “questionnaire versus schedule approach” (see below). Thirdly, structuring of the questionnaire involves a number of factors; some may be more standardised than others. These factors include the following:

- (1) provisions for cross-checking and summarising the information within the questionnaire, with the objective of achieving internal consistency of the data collected;
- (2) explanations and instructions to the interviewer;
- (3) wording of questions, and the manner in which the questions are communicated to the respondent;
- (4) structuring of response categories, i.e. the form in which the information obtained is recorded;
- (5) division of the questionnaire into sections;
- (6) question ordering and skip instructions.

These issues are discussed in turn in the following subsections.

Provisions for checking consistency and procedures

Provisions may be made in the questionnaire for cross-checking internal consistency and/or plausibility of the information obtained by the interviewer, both during the interview and subsequent editing in the office. Deliberate introduction of redundant items can permit cross-checking at various places in the questionnaire. The questionnaire may also include additional items of information on the identification of the respondent, conditions of the interview, presence of third parties during the interview, and interviewers' assessment of the reliability of the information obtained.

Most surveys include some specification of the interviewing procedures, choice of the respondent, call-back rules and so on. Requiring that such details be recorded explicitly in each questionnaire helps to ensure and check that the specified procedures are being followed.

Interviewers' instructions

The survey questionnaire is an instrument of communication of the survey content to both the interviewer and the respondent. It is important to distinguish clearly between these two objects of communication. There are a number of examples of poor questionnaire design in which this distinction is not kept clearly in mind. Sometimes, the questionnaire designer provides detailed instructions and guidelines for the interviewer, but without clarifying whether, and if so in what form, these instructions are to be communicated to the respondent. This can easily result in loss of control over interviewing procedures and in uneven quality of work.

In fact, it is possible to formulate the questionnaire in two forms. The first form is addressed primarily to the *interviewer*, for whom more or less detailed instructions are provided to ensure that the interviewer fully understands the meaning of the questions and the corresponding interviewing procedures. How the necessary information is to be communicated to the respondent during the interview is not standardised or structured,

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but is left for the interviewer to decide. The second option is to address the questionnaire primarily to the *respondent*, usually in a fully verbatim form (see below) in which the interviewer is expected to adhere to the questions as formulated. Either form imposes structure on the interview process in its own way.

Here is an example from a questionnaire addressed primarily to the interviewer, who must decide what further information is required and in which form it is to be obtained.

Q. Nature of the person's principal activity

Industry (see code list).

Where industry code is not clear, obtain name and address of the employer. If self-employed, describe the nature of the work.

The following, taken from a recent survey, is an example of a question addressed to the respondent. It is a negative example, since it does not make clear whether the phrase in parentheses is to be read out to the respondent, in which case it is meaningless to enclose it in parentheses; or whether it is meant as an explanation for the interviewer. In the latter case, it is not clear how this extra information, which is essential to clarify the concept of "gainful work", will be communicated to the respondent.

Q. Have you done any gainful work (for pay, profit or family gain) during the last 12 months?

Irrespective of the style of formulating questions, almost every questionnaire contains at least some instructions or explanations to the interviewer. Provision of interviewers' instructions in the questionnaire plays an important role in structuring the interview and ensuring uniform standards. Important instructions are more likely to be ignored if they appear only in the interviewers' instruction manual or elsewhere, but not on the questionnaire itself. A basic point to be considered is the appropriate amount of detail to be included in the questionnaire in the form of instructions for the interviewer. On the one hand, it is important to include clear and plentiful instructions on all essential and critical points; for example, interviewers should know who the respondent should be, how to skip and follow the flow of the interview, in what units to record the answers, and where relevant, how to probe and seek clarification or additional information. The core questionnaire of the World Fertility Survey provides a good illustration of clear and plentiful interviewer instructions (World Fertility Survey, 1975). On the other hand, it is equally important to avoid unnecessary cluttering of the questionnaire with elaborate instructions. After some training and field experience, most interviewers soon learn how to handle most questions, and it often becomes neither necessary nor desirable for them to read through detailed instructions during each and every interview.

Question wording and translation

In the formulation of questions, an important consideration is how fully the questions should be worded and to what extent the interviewer should follow the wording precisely during the interview. This issue may have to be decided quite early in the process of questionnaire development because it determines the physical size (and hence the production cost and required printing facilities) of the questionnaire, translation requirements in multilingual situations, the appropriate form of training and mode of interviewing, and the quality of the data obtained.

There can be a number of reasons for using *verbatim questions*, i.e. fully worded questions. Providing interviewers with exact wordings can help to ensure a uniform application of interviewing procedures. Clearly, some questions are so sensitive to the manner in which they are worded that it is necessary to insist that they be put exactly in a specified way, even when the interviewers are highly skilled and experienced. Attitudinal and sensitive questions are not the only types of questions where this might be necessary. Even for the so-called factual questions, precise wording can be important

in communicating to the respondent the context, the reference period, the exact information being sought, and what is to be excluded and included in the response. Verbatim questions can also help in smooth transition from one set of questions to another, and to define the context of the new set properly.

Notwithstanding these advantages, there are situations in which it is neither possible, necessary nor even desirable, to specify the exact and detailed wording of each question. Examples are relatively straightforward: simple questions where little is gained by writing out in full the exact wording; complex situations, where it is impossible for the interviewer to follow exact wordings due to the diversity of survey conditions, language and other respondents' characteristics; bulkiness and high cost of production of verbatim questionnaires, which may be prohibitive; and increased complexity of the flow of the interview in the questionnaire, where different wordings have to be provided for the same questions for different categories of respondents. The last-mentioned requirement can result in a complex and long questionnaire form, with difficulties for the interviewer in following the flow of the interview, in seeing the relationship between various items of information and in checking the data for completeness and internal consistency during the interview.

Where questions are specified not in the form of exact wording to be used but rather in the form of a list of items to be enumerated, this is usually referred to as the *schedule approach*. It is important to note that the schedule approach does not necessarily mean that the items to be enumerated are broken down and specified in less detail than in the verbatim questionnaire approach. The schedule is not an abbreviated questionnaire in that sense. Only the form or wording in which the questions are specified is abbreviated. This also often means that questions do not have to be repeated in the schedule in cases where different categories of respondents require slightly different wordings, as is necessary in a strictly verbatim questionnaire. For both these reasons, the physical size of schedules can be much smaller than an equivalent verbatim questionnaire.

The schedule approach is convenient where the complexity and variability of interviewing conditions require flexibility in the manner in which information is obtained; where the complexity of the subject-matter and the respondent's limited ability to provide the information require frequent recourse to in-depth probing and asking questions in alternative forms to extract the information; and where the interviewing staff are experienced and well-trained and can be relied upon to word the questions appropriately in different situations. The use of the schedule approach is particularly suited to situations where the type of information sought is largely quantitative and not sensitive to the exact words and phrases used; and where no complicated "skip patterns" are involved and the questions can be conveniently fitted into the more compact form of the schedule.

In choosing appropriate question formulation, one has to compare the advantages of greater control, standardisation and clarity of the verbatim questionnaire approach against the advantages of brevity and greater flexibility provided by the schedule approach. Essentially, the issue is how much guidance should be given to the interviewer and to the respondent through the survey instrument during the course of the interview. As discussed above, the solution depends upon the questions and the circumstances of the survey. Examples of both types of approaches, taken from national labour force surveys, are given in Appendices 5 to 13.

Writing questions in an abbreviated form does not preclude detailed questioning; it is only meant to provide greater latitude. Often, the schedule approach is adopted more for convenience and economy than for encouraging flexibility and variability in interviewers' work. Similarly, the objective of spelling out questions in standardised verbatim questionnaires may be primarily to instruct the interviewer on how the questions may be worded appropriately in *most* circumstances, rather than to take a rigid

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stand on how they must be worded in *all* circumstances. In fact, a danger in using the simplified schedule approach is that the survey designers may never work out how questions might actually be put since they do not have to spell that out in designing the survey instrument.

It may be appropriate in many situations to have a mixture of verbatim questions, the wording of which is fully specified in the questionnaire, and the more concise schedule or tabular form, in which only the information to be obtained is specified. For instance, key questions such as whether the person was engaged in any economic activity during the reference period may need to be worded very carefully and precisely, and it may be best to be as specific as possible in the questionnaire. Similarly, questions on jobsearch activities should ensure that they are understood to cover wage employment as well as self-employment. By contrast, little may be lost by expressing certain other questions (e.g. “duration of absence from work”) rather briefly.

Concerning question wording, experience shows that usually it is of no use to put long questions with elaborate descriptions and reservations into the questionnaire. In most cases, interviewers find such questions too cumbersome: they simply ignore the elaborate reservations when the question is actually put. If the details are important, it is better to break such questions into series of simpler questions; if they are not particularly important, it may be best simply to leave some of them out.

When verbatim questions are used in a multilingual context, it is important that they are translated into the most commonly used languages of the interview. Many countries are multilingual or at least have several major dialects. The formal official languages may differ significantly from the languages and versions in common use, and it is the latter which matter in conducting a survey covering the whole population. The situation is particularly complex in many African countries. Clearly the issue of translation cannot be ignored because of major implications on survey costs and quality of the data obtained. While the problem of language in labour force surveys is not well researched, reference may be made to some valuable research and experience of the World Fertility Survey (see for instance, Scott et al., 1988).

Structuring response categories

Open-ended versus closed questions

An equally important aspect of questionnaire design is the specification to the interviewer of the type and range of responses expected, and the communication of the response categories to the respondent. The two extremes are fully “open-ended” questions and fully “closed” questions.

In a fully open-ended question, both the respondent and the interviewer are allowed maximum scope for individual variation in the specification and recording of responses. The interviewer is expected to put the question without influencing the form or type of the response generated. The respondent is free to choose his or her own frame of reference and response terminology, which the interviewer records verbatim, again without guidance as to the type of response. At the other extreme are fully closed questions, which explicitly specify the relevant dimensions, units of response and categories from which responses must be selected. Those may or may not have to be communicated to both the interviewer and the respondent.

The relative advantages of the two forms may be briefly noted. Open-ended questions tend to avoid biases which may result from suggestions implied in the closed form. They preserve salience of explanations given and spontaneity of response. They are more suited for in-depth probing. In a quite different sense, the open-ended form can permit short cuts (but usually at the expense of the quality of the information obtained): a single more general open-ended question may be used to replace a long

series of closed questions. Practical reasons for using open-ended questions include (a) the lack of information available to develop precodes which cover all possible and relevant responses, and (b) the fact that often there are too many response categories to permit precoding (e.g. for questions on occupation and industry). However, open-ended questions usually raise more difficulties in recording, coding and processing than closed questions.

Often the substantive and analytic objectives of the survey require the identification of specific responses, and thus may be better served by using the closed form of questions. Possible advantages of closed questions include: a clearer specification of the context and content of the question; a more convenient form for obtaining and recording responses; generally a greater control over and standardisation of the interview process; reduction in interviewer and response variability; and above all, a simplification of the coding and data-processing tasks. A major requirement for the use of closed questions is that the questionnaire designer should be able to identify the most common responses, and group them into a manageable number of categories without distracting or biasing the responses actually given by the respondent. The type and number of response categories have to be chosen in relation to the expected distribution of responses, the objective of the question and the type of analysis envisaged.

It is important to note that in practice there is a whole continuum or gradation in the degree of structure imposed between the two extremes of the fully open-ended and the fully closed questions. Firstly, many questions are *partly* open-ended. This means that most of the responses are prespecified and precoded, while an open-ended category (e.g. “other, specify ...”) is also included to provide for responses not covered by the precodes.

Some examples will be useful at this stage. In most labour force surveys most questions are fully closed; the simplest and most common example of this are questions to which the only possible responses are obviously “yes” and “no” (e.g. question 21 in Figure 10). A common example of open-ended questions in labour force surveys is provided by questions on occupation and industry (e.g. question 22 in Figure 10). Questions on the reasons for temporary absence from work, for not seeking work, etc., are usually partially closed: the most important categories are prespecified, leaving an open (“other, specify”) category for cases not covered by the prespecified categories (e.g. question 53 in Figure 10). Prespecification of categories serves several purposes. It reduces the work involved in recording and coding the responses; it can ensure that relevant information on categories of direct interest is obtained; it can help in correctly directing the flow of the interview which may depend on the response obtained (e.g. question 51 in Figure 10); and it can help in obtaining information which is more consistent, for example from one survey round to another.

Secondly, it is possible to formulate questions which are fully or partially closed for the interviewer (i.e. for the purpose of recording responses), but remain essentially open-ended so far as the respondent is concerned (i.e. for the purpose of giving responses). The respondent is asked a seemingly open-ended question (i.e. without specifying the response categories), while the interviewer is provided with a precoded list of response categories into which he or she fits most or all of the responses obtained. The primary objective of this form is to facilitate the task of recording and coding responses, rather than to provide guidance to the respondent as such. A related aspect to the above is that questions can differ in the degree to which the range of “permissible” responses is communicated, explicitly or implicitly, to the respondent. At one end, response categories may be obvious from the question (e.g. simple yes-no responses) or fully specified in the wording of the question. Alternatively, only some of the more common or important response categories may be mentioned in the question, possibly as examples, without precluding other possible responses. In other questions, by

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Figure 10. Examples of specification of response categories

21. DID... HAVE MORE THAN ONE JOB LAST WEEK?	
Yes (Go to Q24)	☐ 1
No	☐ 2
22. WHAT KIND OF WORK DID... DO?	
.....	
.....	
.....	
51. DOES... WORK -	
FOR AN EMPLOYER FOR WAGES OR	
SALARY? (Go to Q.55)	4'
IN... OWN BUSINESS	
WITH EMPLOYEES?	☐ 2
WITH NO EMPLOYEES?	☐ 3
WITHOUT PAY IN A FAMILY	
BUSINESS? (Go to Q.53)	☐ 4
WHAT ARE... WORKING	
ARRANGEMENTS?	
Payment in kind	
(Go to Q.55)	☐ 5
Unpaid voluntary work	
(Go to Q.68)	☐ 6
53. WHY WAS... AWAY FROM WORK LAST WEEK?	
Own illness or injury	☐ 1
Holiday/personal reasons	☐ 2
No work available	☐ 3
Bad weather/breakdown	☐ 4
On strike/locked out	☐ 5
Other.....	☐ 6
.....	

Source: Australian Bureau of Statistics: Labour Force Survey, Australia. Canberra, 1985, Catalogue No. 6203.0.

contrast, the possible response categories may not be obvious at all from the question itself. These variations control the response process to different degrees, and may produce different patterns of response to the same question.

The convention followed in Figure 10 is that capital letters are used for questions and response categories that need to be fully read out by the interviewer; lower case is reserved for coding of answers given by respondents, while italics are used for interviewers' instructions. It is worth noting the difference between question 51 and question 53 in the figure. Both questions are verbatim (as capital letters are used for the question wording). In question 53 the interviewer does not read out (communicate) the response categories to the respondent, but records the responses into the prespecified (closed) categories as far as possible. The question is therefore closed (apart from the residual "other" category) for the interviewer, but essentially open-ended for the respondent. By contrast, in question 51 the interviewer is required to read out the response categories one by one from the top as a part of the question.¹ In this way question 51 is basically closed for both the interviewer and the respondent. However, it also shows that more varied patterns are possible: the last category concerning "working arrangements" is itself a probing question, the responses to which are closed for the interviewer but not for the respondent.

In most large-scale surveys fully or partially closed questions are clearly preferable to open-ended questions for most items. Open-ended questions should be introduced only when clear reasons exist to justify them, such as the demonstrated unsuitability of the closed form for the particular question, lack of information to precode the responses, or, sometimes, a significant convenience and brevity which may result from using the less specific open-ended form. Open-ended questions may be more frequently used in preliminary, exploratory or small-scale studies, and in developing and testing survey questionnaires. Verbatim responses can be useful in improving the wording and form of questions and identifying response categories to facilitate "closing" of the questions for subsequent use in the main survey.

Single versus multi-response questions

Another important aspect concerns the distinction between single and multi-response questions. In labour force surveys, as in surveys of many other types, most questions allow for only a single response. However, there are questions in which allowing for multiple responses can yield richer and analytically more useful information. Furthermore, in certain types of question, insisting on a single response can be rather arbitrary and difficult to implement. Examples in which it may be useful to allow for multiple responses include questions on topics such as steps taken to find work, reasons for not being available for work or not wanting work, etc.

Allowing multiple responses can, however, have its own problems. Multiple responses are generally more difficult to handle at the interviewing, coding and processing stages. The results are usually more difficult to analyse and present. It is generally not possible to establish a priority among the responses, except through extra questioning or on the basis of arbitrary assumptions. Therefore it is advisable as a general rule to avoid multi-response questions in large-scale surveys, unless there are clear analytical advantages. Sometimes it is sufficient to restrict a potentially multi-response question to a single response. Apart from simply insisting on a single response, this may be done for instance by asking for the "main" reason or the "last" activity. Another approach would be to list the response categories according to some

¹ Incidentally, the instruction in this case is actually to stop as soon as a positive response has been obtained. This instruction is not specified on the questionnaire but presumably covered in the interviewers' manual and training. Alternatively, especially with less experienced interviewers, such an instruction could be usefully incorporated into the questionnaire itself.

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meaningful system of priority and to accept the first positive response given as the answer (as is done in question 51 in Figure 10). The problem is also avoided by turning each response category into a separate “yes-no” question. This of course would lengthen the interview but can improve the quality of the information obtained. The activity list referred to in Chapter 2 provides an example of this solution.

Division of the questionnaire into sections

Most questionnaires of any size are conveniently divided into sections depending upon who will provide the information, units for which it is collected, the subject-matter, and, if relevant, the method of data collection. In most labour force surveys, the primary division will be between the information collected at the household level (the household questionnaire or schedule) and that collected from individual household members (the individual questionnaire). A separate questionnaire may be used for each person. Within each questionnaire, the major topics (background characteristics, current activity, usual activity, etc.) may form separate sections for the convenience of training, data collection and processing operations.

Of particular importance is the introductory section of the questionnaire. In any survey, information is required to identify such items as the organisation undertaking the survey; the particular survey or survey round being conducted; the address and geographic location of the responding unit; sampling information; identification numbers to control the document flow, data processing and linkage between surveys or survey rounds, including the linkage of individual data to characteristics of the household or the family; and operational characteristics of the interview such as date, outcome, details of call backs, interviewer, supervisory and other operative staff involved, and quality control information, as relevant. All such information is conveniently placed in the introductory section of the questionnaire, generally on the cover sheet. The introductory section may also contain appropriate interviewer instructions and a set of questions suitable for initiating the interview smoothly. Finally, key indicators or summaries of the information collected during the interview may also be recorded to facilitate quick tabulation of important results in a preliminary form.

In ordering the sections of a questionnaire, a number of factors should be taken into account. Administrative information for identification and control of the interview should come first. Generally, the interview should begin with relatively easy and descriptive questions. Sensitive or difficult items should not appear too early. However, bearing in mind the above, questions more crucial to the primary objectives of the survey should preferably be dealt with early on. Care should be taken to avoid an order of sections that might condition respondents by implanting an incorrect frame of reference, such as a particular meaning of a term or a phrase, that is then carried over unintentionally, and in error, to a later section. The need to ask some questions or sets of questions before others may also be dictated by the logic of the situation. For instance, some questions are required to identify respondents for subsequent questions, or to route a respondent to different sets of questions.

Question ordering and skip instructions

Within each section, questions have to be arranged in a convenient and logical order. The general objective should be to provide a good flow, without awkward or illogical jumps. The basic requirement is that the questionnaire be designed to serve the logic of the **respondent**, rather than the logic of the analyst, in determining the sequencing of questions. It is important to maintain a consistent frame of reference for the respondent and assist him or her in the recall task. Care should be taken to ensure that the respondent recognises where the context, topic under investigation, reference period or units of reporting, etc., have changed during the interview. In any case questions should

be so arranged as to minimise the need for such changes. Once a topic has been raised, all questions on that topic should come together before a second topic is started. Questions should usually follow a chronological flow. Good question sequences can often allow the respondent to anticipate subsequent questions, thus facilitating the interviewing task.

The questionnaire has to contain unambiguous instructions on the flow of the interview, indicating which particular questions apply to a particular respondent: these are called “skip instructions”. Their purpose is to avoid asking irrelevant questions of the respondent; to facilitate the work of the interviewer in ensuring that all relevant and only relevant questions are asked; and to facilitate data processing by ensuring that the flow of the interview follows predetermined rules on the basis of responses already obtained. In complex questionnaires addressed to many different categories of respondents, the skip pattern can become rather complicated. This may be particularly so in the case of the verbatim questionnaire, where sets of questions, even if equal or similar in content, may have to be worded differently to suit the exact circumstances of different categories of respondents. All efforts should be made to ensure that the skip pattern does not become too complicated for the interviewer to handle without errors. The interview should never jump back to an earlier part of the questionnaire, though occasionally reference may have to be made to earlier parts of the questionnaire. This should be done only for comparison, checking or transferring information to a later part. Sometimes skip patterns can be simplified by using what is called “filters”; these refer to places in the questionnaire where information from one or more previous questions is summarised and copied to provide a more convenient reference for subsequent skip instructions. Repeating some sequences of questions, even if avoidable with a different arrangement in the questionnaire, can sometimes help in keeping the skip patterns simpler. Generally, experience shows that in many situations it is possible, with proper design and layout, to avoid skip instructions which are difficult to handle or are prone to interviewer error, provided the designer is willing and able to be liberal with space and spread out the questionnaire, clearly separating out sequences of questions for different categories of respondents. Skip patterns which are often difficult to handle result when there is too much concern to save space, or simply because of poor design and ordering of questions. A diagrammatic representation of the questionnaire (a network or flow diagram as discussed earlier in this chapter) can be a very useful tool to develop and clarify the structure of a complex questionnaire and to determine the appropriate sequencing and skip patterns.

5. Questionnaire implementation

Drafting and testing

Design of good questionnaires is a technical task requiring considerable skill, common sense and familiarity with the subject matter and survey conditions. Some technical principles and good practices in questionnaire design have been discussed in the previous section.

Once the questionnaire is drawn up following these principles, it is still necessary to *test* it in practice. More than one test may be required before the version which can be used routinely in a large-scale survey becomes available.

The importance of careful reviewing and testing cannot be over-emphasised. There are many examples in survey practice where apparently very minor or purely accidental slips in the questionnaire went unnoticed, resulting in serious inconvenience to the interviewers or data processors, and in unnecessary damage to the value of the survey.

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The testing of a questionnaire is usually an iterative process during which an improved version from previous examinations is subjected to further testing and evaluation till a satisfactory product is obtained. One may distinguish the following steps in the process of reviewing and testing draft questionnaires (United Nations, 1985, pp. 232-244).

(1) *Technical reviews* by the survey team, including reviews of expected outputs in consultation with the users. The careful, word-by-word review of questionnaire drafts is an indispensable step: the need for testing in the field should not be allowed to obscure the importance of a review in the office. It is desirable that the reviewing process involves a wide range of specialists, field supervisory staff and users at various levels. The review should cover the general relevance and appropriateness of the survey, in addition to the technical design of the questionnaire. Often, an effective way is to organise the review process in the form of formal meetings. The reviewers may be provided with a check-list of points which will assist them in organising and making their comments, and written records should be kept of the comments made and decisions taken. As noted in Section 1, the actual task of reconciling and incorporating these comments into the draft questionnaire should be carefully controlled and entrusted to a small technically qualified “questionnaire design team”.

(2) *Pre-testing in the field*. The objective of the pre-test is to evaluate the receptivity of the questionnaire and identify specific problems of communication with the respondent. Typical questions which a pre-test may be required to answer include the following. Are various categories of respondents willing and able to answer the type of questions being asked? Does the interview flow smoothly, and are the interviewers able to handle and use the questionnaire easily? Are the spaces for recording answers adequate, and the skip and other instructions in the questionnaire clear? How long does the interview take on average? Are there any specific questions emerging as being particularly difficult or prone to error?

A pre-test may be relatively small in size, say 100-200 interviews, based on a purposively selected sample which captures all major categories of respondents, e.g. in urban as well as rural areas. For special purposes such as developing response categories and codes, and especially when alternative approaches have to be compared, the required sample may have to be substantially larger. Generally, however, the emphasis in a pre-test should be on: operational convenience and practicality; close supervision, control and observation; rapid feed-back and quick utilisation of results; and on resolving clearly delimited, specific issues and problems.

Depending on the complexity of the survey and prior experience, it may be necessary to carry out more than one pre-test. If a pre-test results in significant changes in the questionnaire, it is desirable to retest the changes made.

(3) *Pilot testing of the survey*. While pre-testing of the questionnaire is primarily concerned with identifying and resolving specific issues, a pilot is the final “dress rehearsal” of the overall survey procedures before the full-scale operations are implemented. A pilot should, therefore, replicate the actual survey conditions as far as possible. It should cover a larger and more dispersed and representative sample. The type of staff, field organisation, supervision and quality control procedures, etc., should be similar to what are to be used for the main survey. Ideally, all phases, including data collection, coding, processing and tabulation should be covered.

(4) *Testing of alternative approaches*. In some situations the available experience and knowledge are not sufficient for a choice to be made between alternative approaches and it may be necessary to embark on formal tests for scientific comparison. The design and execution of experiments which can yield information to aid unambiguous decisions and choices is a highly technical task requiring specialised knowledge of statistical

methodology. They can also be expensive and time-consuming. The various alternatives to be tested have to be implemented in realistic conditions and the sample sizes have to be large enough to estimate with sufficient precision the differences in cost and performance. To be successful, the hypotheses need to be clearly formulated and unambiguous criteria established for choosing between alternatives; also, controls and conditions essential to the experiment need to be identified, and precautions taken to ensure that these requirements are met in practice. Many tests fail to yield useful information because their objectives are not clear or are too ambitious, and the conditions of implementation are insufficiently controlled. For a discussion of experimental activities and pilot surveys, see Jabine (1982).

Layout and printing

For large-scale production of questionnaires for the full-sized survey, it is important to pay attention to the more formal aspects of questionnaire design, such as its physical size, shape, typographic style, coding and other data-processing requirements, and printing and reproduction in sufficient numbers. It is also necessary to develop various interview aids and supporting documents before the questionnaire can be administered in the field. To a certain extent, these aspects of questionnaire design are less specific to the particular subject-matter of the survey. They require skills in draftsmanship and layout and design of forms, a knowledge of survey data-processing procedures, and familiarity with techniques and available facilities for printing and reproduction of documents.

A discussion of questionnaire reproduction and related aspects is available in United Nations (1985, pp. 190-224), along with illustrations from a number of countries. Further examples of different layouts of survey questionnaires are provided in Appendices 5 to 13. Some of the more important points concerning physical design are summarised below.

Once the questionnaire has been tested and finalised in content, its physical form and layout need to be carefully worked out before it is sent for printing and large-scale reproduction. Poor layout is a common source of accidental errors in the collection, recording, coding and processing of survey data. A variety of points need to be attended to in the final layout, such as the following:

- (1) Questionnaire identification. All questionnaires must have a place for unique identification numbers, along with the address and other descriptive information as required. It is particularly important in continuing large-scale surveys to develop a good numbering system which can permit linkage or association between different survey rounds, different subsamples, and questionnaires of different types within the same survey.
- (2) Numbering of questions. The system must ensure that each question is uniquely identified, and that the system is clear and convenient to use at the data collection and processing stages.
- (3) Spaces for recording responses. Answer spaces must clearly specify the form and units in which the information is to be recorded. Answer spaces should be sufficiently large and be placed so that there is no possibility of confusion as to which particular question each answer space relates to.
- (4) Interviewers' instructions. It is highly desirable that, at least on the most important points, the questionnaire should offer clear instructions to the interviewer on who the respondent is and to whom the information applies for each part of the questionnaire; on skips and filters at various points in the questionnaire to direct the flow of the interview; on the form and units of recording the answers for each question; and, selectively, on probing and recording procedures for particular

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questions or difficult sections as necessary. For instance, multiple-response questions should be clearly distinguished from the more common single-response questions. In general, interviewers' instructions should be included wherever some special action is required during the interview.

- (5) **Typographic differentiation.** Where printing facilities permit, the clarity and appearance of the questionnaire may be considerably improved by underlining, printing in bold letters, using different letter sizes and type-faces, colours, etc., to distinguish between different parts of the questionnaire and different types of information being conveyed to the interviewer or respondent. See for instance Figure 10 discussed earlier.
- (6) **Data-processing requirements.** The final questionnaire must incorporate details on how the information collected will be organised for further processing. This should include the record layout, i.e. units in which the information is organised for each case enumerated; the choice of the coding system and codes to be entered in the questionnaire; and instructions for data entry as required (see also United Nations, 1982).
- (7) **Physical size and form of the questionnaire.** Attention has to be paid to these aspects both for reasons of cost and of convenience for the interviewing and data-processing staff. In complex surveys, physical bulkiness of the questionnaire can be a problem. Sometimes it is economical and/or convenient to divide the questionnaire into physically separate parts, especially if different parts apply to different respondents or samples. However, care should be taken to ensure that different parts can subsequently be put together or linked as required.

Concerning the printing of questionnaires, two important points may be noted. Firstly, attention needs to be paid to the number of copies to be printed. Printing too many is wasteful, but printing too few can be disastrous, or at least very inconvenient and expensive. In addition to the numbers required to cover the planned sample size, extra copies should be printed to cater for the needs of interviewer training, a certain degree of spoilage and waste, mismatches between distribution and actual requirements in different parts of the samples, uncertainties in the achieved sample size, and for general distribution among interested individuals and organisations.

Secondly, the copy sent to the printer and the galley proofs received from the printer should be reviewed with great care to detect typographical errors, and a sufficient sample of each batch printed should be examined for quality. In many instances, errors or deficiencies introduced at the printing stage have done unnecessary damage to all the careful questionnaire design work of earlier stages.

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8

1. Introduction

This chapter discusses selected practical issues in the execution of operations involved in carrying out a labour force survey. Following survey planning and technical design as discussed in Chapters 10-12, the major survey operations include: (1) recruitment and training of survey staff; (2) testing of survey instruments and procedures; (3) preparation of the sampling frame, and sample selection; (4) field-work for data collection; (5) data preparation and processing; (6) data evaluation; (7) tabulation, reporting and dissemination.

Each of these operations may involve a number of more or less distinct steps. In practice the various operations may overlap and be linked in various ways. These operations are discussed below in turn, except for data evaluation which is considered in detail in Chapter 14.

In discussing the various survey operations, it should be emphasised that no single model exists of the manner in which a national labour force survey may be organised. Countries differ greatly in their conditions, resources and organisation of statistical work; and the surveys differ in their objectives, complexity, structure and size. Nevertheless, it is possible and useful to identify some major options and factors determining choices, and to recommend some good general practices. Guidelines on practical aspects of survey work are available in many manuals and articles which may be consulted for further information. A particularly useful reference is the United Nations *Handbook of household surveys* (1984), wherein can also be found an extensive bibliography relevant to the subject. The Basic Documentation Series of the World Fertility Survey is also highly recommended.

It is important to identify various stages in the survey operation because each must receive its appropriate share of effort and resources in survey planning and implementation. Unfortunately, this basic requirement has not always been observed in practice. For instance, data of considerable complexity are often collected on a large scale, while insufficient care and resources are allocated to making sure they are processed and analysed quickly and punctually. Similarly there are examples of survey organisations becoming concerned exclusively with routine data collection and tabulation, but neglecting other essential aspects of the survey such as training, pre-testing, quality control, evaluation and data dissemination. Many surveys fail to meet their objectives not because the total resources are insufficient, but primarily because this total is not allocated in a balanced way. This balance will of course depend on the type of survey involved. For example, an ad hoc survey involving special arrangements or new procedures, will require greater effort on staff recruitment and training and in survey design and testing, in comparison with a well-established labour

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force survey. However, even in the latter it would be a mistake to neglect these aspects, especially when changes in design and procedures are introduced.

While the survey operations listed above form a more or less chronological sequence, in practice they may overlap and be linked in various ways, and this is necessarily so in the case of a continuing labour force survey where several activities must proceed simultaneously. Furthermore, much closer integration between various tasks is becoming possible with recent developments in computer-assisted survey systems. The traditional approach to data collection and processing in large-scale surveys involves a considerable number of separate steps: questionnaires are designed and formatted manually, then type-set and printed; sample selection, work assignment and records of sample outcome are usually also separate manual operations; the questionnaires completed during the interview are transported to field editors for checking, and then to some central location for further manual editing and coding, with detailed records of document flow being kept at each stage; documents containing errors may be referred back to the field, and are finally sent to the computer section for data entry and machine editing, and so on. The machine editing itself involves a sequence of steps to check data structure and consistency, make changes in data form, impute missing values, etc. Editing programmes produce lots of errors, the correction of which usually requires looking up individual questionnaires. Often the editing cycle has to be repeated several times before the data can be considered “clean” for tabulation. The essence of the traditional (and still common) approach is to carry out one process at a time, case by case on the whole sample, before moving to the next stage.

With recent developments in computer technology, several of these steps may be combined or telescoped. A major development is interactive data entry, also referred to as “computer-assisted data input” (CADI). It involves using the computer to guide data entry and check the data as they are entered. This permits integration of data preparation, entry and various stages of editing into a single operation. An even wider range of integration becomes possible when interviewers use computers for recording responses during the interview itself (computer-assisted personnel interviewing, CAPI). More general computer-assisted survey systems are being developed to provide further integration, from formatting and sequencing the questionnaire and keeping records of sample selection and outcome, to data entry, editing, linking, documenting and producing final data files and tabulations. Interactive data entry is rapidly becoming a feasible approach, including in many developing countries. Computer-assisted data collection and more general survey systems are less common, but have been introduced in labour force surveys in some more developed countries such as the Netherlands and more recently the United Kingdom.

2. Staff recruitment and training

Survey organisation and personnel

Any survey requires access to a range of personnel or functional skills. Three broad categories of staff may be identified:

- professional staff, such as specialists in the subject-matter, management, sampling, questionnaire design and data processing; also the general survey statisticians familiar with diverse aspects of survey-taking;
- intermediate-level staff, whose task is to supervise detailed implementation of the survey; and
- operative staff such as interviewers, coders and other field and office staff.

The development of professional skills is a slow process. The number of staff of a professional level actually present within the survey organisation does not have to be

large; what is important is that the organisation has access to necessary skills, which may sometimes be drawn from outside for specialised tasks. Perhaps the most important of the professional categories, and one which should ideally be represented within the organisation on a full-time basis, is that of “general survey statisticians”. These are staff who know enough about all aspects of the survey from planning, training and collection to processing and reporting, without necessarily being highly specialised in any; they should be in a position to draw upon and evaluate specialised advice and make intelligent decisions.

Critically perhaps, many statistical organisations suffer, at the intermediate levels, from a dearth of staff who are experienced in practical aspects of survey-taking and can be entrusted with supervision and detailed implementation of the survey operations. Such staff are required to assist, for example, in training of operative staff, conducting pre-tests, selecting and documenting the sample, and supervising field-work, coding and editing. There is really no substitute for having such staff on a full-time, permanent basis within an organisation undertaking major surveys on a regular basis. High priority should be given to thorough training and retraining of these staff in their special functions and responsibilities.

Operative staff are generally required in much larger numbers. Various staffing arrangements are possible depending on circumstances. (For a general discussion of these options, see United Nations, 1984, paras. 5.3-5.17.) A major choice is between permanent versus specially recruited or ad hoc staff. There can also be degrees of permanence in staffing through the use of employment contracts of various durations. Each system has its advantages and disadvantages, though for continuing labour force surveys there are often strong reasons favouring the use of permanent or at least regular field and office staff. Permanent staffing has the advantage of accumulated skills and experience and lower recurrent training costs. However, it can be an inefficient arrangement in situations where flexibility is required in the scale and nature of the operations to be undertaken at different times. There have been cases where organisations were unable to utilise permanent staff full time, once recruited.

Another aspect of staffing is whether to use full-time or part-time staff. The choice depends on staff availability and the nature of the work involved. Generally in large-scale regular surveys in developing countries, full-time staff are preferred, although often such staff are given several responsibilities, and work on the labour force survey only intermittently or on a part-time basis.

In the recruitment and deployment of field staff it is also necessary in many countries to take into account linguistic or ethnic diversity in the population to be surveyed. In certain situations it is necessary (or desirable or cheaper) to recruit staff locally from within or near the sample areas. Such a requirement can of course reduce flexibility in survey design and in the changes which can be introduced at the stage of redesign.

The number of staff required depends on factors such as the sample size, the time available for its completion, and the rate of work per person-day. Good estimates of the rate of work (from past experience, pre-tests etc.) are particularly important for labour force surveys which are subject to stringent timing requirements, especially when the survey is divided into short rounds or subrounds, each of which must be completed within a specified period. In determining staffing requirements, allowance must also be made for drop-outs and staff attrition for other reasons, which can have a cumulative effect in continuing surveys. Greater allowances generally need to be made where temporary rather than permanent staff are used; where the survey is complex and requires special effort, or the physical conditions of work are arduous; where the interviewers work singly rather than in teams (in so far as the work can be reallocated within teams in the case of difficulty); and in situations where there are greater linguistic, ethnic or geographic constraints in staff deployment. These same factors also favour

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higher supervisor to interviewer ratios. As a general rule, this ratio should not fall below one supervisor per five to seven interviewers (or coders); and may have to be as high as one supervisor per two to three interviewers in more difficult areas.

Training

Training is the key to data of quality. The amount of training required depends on the background and experience of the staff and the complexity of the survey. Specially recruited or ad hoc staff will require more thorough training than staff who have participated in previous surveys. However, even in a continuing survey with regular staff, there is a need for periodic retraining to test and update staff skills. Labour force surveys involve complex concepts which need to be applied in various situations. No survey can be a simple repetition from one round to the next. Routinism itself can result in staff becoming poorly motivated or picking up poor practices which must be identified and corrected.

The training of *intermediate-level staff* needs to be given emphasis. Such training requires a sustained and long-term effort. Often it is necessary to carry out the training function for a survey before all the details of the design and procedures have been fixed. It is generally desirable to centralise the training programmes so as to ensure uniform standards; this may of course increase the cost. Another common problem is the lack of senior staff to conduct the training. To act subsequently as trainers and supervisors of operative staff, the intermediate cadre must develop a good understanding of the underlying principles as well as of specific details of the survey. The training must combine theory with practice, and formal instruction with more informal on-the-job training. Participation in the survey pre-test, in listing and sample selection, and subsequently as helpers during the training of interviewers and coders, etc., are the major sources of on-the-job training for the intermediate-level staff. In addition, the staff should be given more formal training (say of one to three weeks' duration depending on requirements) aimed specifically at improving their supervisory and quality control responsibilities.

Operative staff need to be trained in the specific details of the survey. Separate training courses are required for functions such as listing, interviewing, coding and editing. Typically, this may take the form of two to four weeks of formal training for each task. The interviewers' training course, for example, may cover topics such as: general background information on the survey, including relevant organisational and design aspects; detailed explanation of the survey concepts and questions; instructions for dealing with difficult or marginal cases; techniques of interviewing; and procedures for checking and correcting the information collected. Because the number of trainees involved is usually large, special attention has to be paid to training facilities and organisational aspects. To be effective, the training course must combine classroom instruction with ample practical work. Interviewer trainees may, for example, combine classroom instruction with self-study, observe demonstration interviews, participate in "role-playing interviews" (in which the trainees interview each other under observation), and conduct some field interviews under realistic conditions. (A good discussion of training methods is provided in World Fertility Survey, 1976.) Evaluation of the trainees' work during the course is extremely important. Tape-recording practice interviews can be most effective for this purpose.

In large or multilingual countries the training of operative staff may have to be decentralised, in which case special care and procedures are needed to maintain uniform standards, such as thorough training of trainers at a central location and documentation of the recommended survey procedures in the fullest detail possible.

The number of persons trained for any function should exceed the number required to allow for drop-outs and other losses. Experience shows that in many situations at least

20 per cent more candidates need to be recruited for training than the number finally required; higher margins would probably be necessary if specially recruited or temporary staff are being used.

In continuing labour force surveys using regular staff, periodic *refresher* courses of relatively short duration may be considered sufficient for certain purposes. However, such courses should not be too brief, and must not be seen as simple routine operations. To be effective, they require careful evaluation of past experience, identification of specific problems, and uniform decisions on how these problems are to be resolved. Any changes made in the survey design or procedures must be thoroughly covered. The refresher courses should also provide the operative staff with an opportunity of informing the trainers of the problems encountered in the survey. Refresher courses can have an important role in improving the morale and motivation of the staff.

3. Testing of survey instruments and procedures

Before implementing a full-scale survey, it is necessary to test and evaluate the procedures. The aspects to be tested and the scope and scale of the test(s) will vary depending on specific requirements and prior experience. The testing will need to be relatively wide-ranging if a new survey is being launched or an existing survey is being significantly modified. More representative and larger samples are generally required if the objective is to evaluate and choose between alternative designs and procedures. On the other hand, in a well-established labour force survey, careful maintenance and analysis of records from previous rounds can obviate the need for a separate pre-test operation, except when changes are made in the existing design and procedures.

Testing before full-scale implementation can have a number of objectives. As already noted in Section 5, Chapter 12, most pre-tests are undertaken with the specific aim of field-testing the survey questionnaire. In order to identify problems in the implementation of questions, it is often sufficient to confine the pre-test to a relatively small size (say 100-300 interviews), based on a purposively selected sample. The sample should nevertheless include all important categories of respondents in the population. A pre-test on this scale is usually, however, too small to yield useful quantitative information on variances, costs and other parameters required for improving survey design, and far too small to yield information that would help in making a choice between alternative designs and procedures. For these purposes, tests using larger and more representative samples will generally be required. It was also noted in Section 5, Chapter 12, that in contrast to a pre-test with limited and specific objectives, a *pilot* refers to a more general “dress rehearsal” of all operational aspects of the survey prior to its full-scale implementation. Pilots need to be conducted under more realistic and representative conditions than pre-tests with more limited objectives.

In undertaking any test, it is important (a) to define and limit the objectives; (b) to establish clear criteria for evaluation and drawing conclusions; (c) to elaborate the procedures for collecting and documenting the information required; and (d) to undertake thorough analysis of the information collected. These basic principles are not always observed in practice. Too often survey pre-tests are allowed to become a mere formality, too small and limited in coverage, yet too broad and unspecific in objectives, and they plan inadequately for analysis and utilisation of the information collected.

Field testing of questionnaires and procedures should be undertaken well (say three or more months) before the main field-work so as to ensure that sufficient time is available to analyse the results and implement any changes required. It should also be noted that when the survey involves relatively new or difficult aspects, a series of tests may be needed.

Another important consideration in the organisation of pre-tests is their potential role in training, particularly of supervisory and other intermediate-level staff, as noted in the previous section. Many organisations have found that using future supervisors as pre-test interviewers as far as possible is an efficient arrangement. Combining training and pre-testing can obviously be cost-effective. Furthermore, staff already familiar with the work of the statistical organisation are often more reliable, both in implementing correctly the procedures being tested and in reporting the outcome of their experience in sufficient detail.

4. Sampling frame and sample selection

Frame updating

In most situations, sampling frames or master samples of *area* units are available or can be derived from some source external to the survey, such as the most recent population census. Usually such frames are constructed and maintained to serve a range of surveys. Considerations involved in the design of a sampling frame (or master sample) have been discussed in detail in Section 3, Chapter 11. Here we are concerned with the *additional* work which may be required in obtaining the final sample from the frame for a particular application such as one round of a continuing labour force survey. It may involve one or more of the following steps:

- (1) Mapping, grouping, segmentation or other modification to some of the area units in the frame.
- (2) Selection of a sample of the resulting area units as required for the survey.
- (3) Possibly further stages of area sampling (each involving (1) and/or (2)), in order to obtain a sample of the lowest stage or ultimate area units.
- (4) Listing of structures or households in each selected ultimate area unit.
- (5) Selecting a sample of these units from the lists.
- (6) Documenting each of the above steps, in as much detail as possible to ensure that the sample structure and procedures are fully known and the required population estimates and their variances can be computed from the survey. In a continuing labour force survey, information on overlaps between units in samples for different rounds is also important.
- (7) Preparing lists of sample households for each ultimate area unit, along with all information required for assignment and control of field-work.

Little additional field-work may be involved for steps (1)-(3) in situations where good frames of area units are available. Furthermore, where required, these operations can be undertaken well before the main data collection stage for the particular survey. This is because areas are relatively stable units.

By contrast (4), i.e. listing of dwellings or households, can constitute a major field operation prior to each round of the survey. As noted in Section 3, Chapter 11, the ultimate sampling units in most labour force surveys are households or dwellings (addresses, housing units), rather than compact area units or individuals. Careful attention needs to be paid to the listing of the ultimate units to ensure good coverage and to ensure that the units selected can be identified later at the interview stage. It is desirable to organise listing and sample selection as operations separate from the main interviewing. Serious biases can result if listing and sample selection are assigned to the same persons who do the main interviewing, and especially if they are operationally combined with the interviewing. At the same time, it is important that the time interval between listing and interviewing is controlled and minimised. Durability of the lists depends on the situation and on the type of units involved; social units like households

for example tend to be less stable than structural units like dwellings. Whatever the type of unit used, there is a likelihood that some listing operation will be required prior to field-work in any round of the survey. The timing and scale of the listing operation in relation to the main interview will depend on several factors. Firstly, it depends on the sampling rate at the last stage (i.e. for selection within ultimate area units) as determined by the sample design. Typically three to six times as many units may need to be listed as the final number interviewed. (If the ratio is much larger than this, it would generally be desirable to segment the available area units into clusters of more appropriate size.) Secondly, samples for different rounds of the labour force survey may overlap to varying degrees, again depending on the design; for any one round, only a subset of the sample areas may then need to be listed. However, if the same areas are used for an extended time, periodic updating of the lists in these areas will be desirable, depending on the durability of the lists. Conditions vary but, as a rough guide, household lists may remain viable for up to 6-12 months and lists of structural units for a maximum of 12-24 months. Durability of lists also determines appropriate scheduling of the listing operation in relation to the main interviewing.

Finally, the listing workload also depends on the type of information to be collected during listing. Listing of structures which does not require contact with residents can be relatively quick (say 15-25 units per person/day). Household listing, which does generally require contact with residents, would be slower, to a degree determined by the type of information to be collected. Considerably more time will be required if the operation also involves listing of individual members and their characteristics. (For a good discussion of these issues, see World Fertility Survey, 1975a.)

In many circumstances it is convenient and desirable to use different groups of staff for listing and for subsequent interviewing. This may be unavoidable in any case if the timing of the two operations overlaps, as in a continuing labour force survey.

Sample selection and documentation

Sample selection should be centralised away from the field as far as possible.

Sample selection can be a major clerical operation, and there can be significant advantages in computerising this process, especially in large-scale continuing surveys.

The importance of fully documenting the sample should be emphasised. It is all the more important for major labour force surveys, which may serve as a frame for other surveys, and where the sample has to be linked and controlled over time. It is desirable to maintain the following three types of documentation on sample design and implementation: (1) A general description of the sample design, selection and outcome. (2) A list of sample ultimate area units, specifying for each unit its identification number, structure, higher-stage units, selection probability, the number of households listed, selected and interviewed in the area, and so on. Such information can be very useful for supervision and control during field-work and data processing. It can also help in ensuring completeness of the sample selection. Sampling errors can be calculated only on the basis of full description of the sample structure. (3) For each area in the sample, a list of the ultimate units (households, dwellings) selected, with necessary information for their identification in the field. Such lists are needed for assignment and control of the interviewers' work.

5. Data collection

Timing constraints

In labour force surveys field-work for data collection is subject to particularly stringent constraints of timing and duration. This is because it is important to ensure

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that the sample covered is representative not only geographically but also over time, so as to capture seasonal and other variations which affect economic activity (see Section 5, Chapter 11). Furthermore, in a continuing survey there is little possibility of postponing or extending the data collection phase of any round. These stringent timing requirements have several consequences. Firstly, it becomes extremely important to obtain good estimates of the rates at which interviewers can work. These rates may differ from one part of the population to another, and it is important to know something about these differences. Secondly, strict control and supervision and a good system of communication are required to ensure correspondence between the actual and planned rates of work. Prompt remedial actions are required where this is not the case. Thirdly, the system should be flexible to allow redeployment of staff and resources as necessary. It is also important to have a degree of spare capacity in the system.

Organisation, supervision and control

The common principles of organisation, supervision and control of survey field-work are discussed in general terms in United Nations (1984; paras. 5.34-5.86). Only salient points will be noted here. To control flow of materials and information, it is essential to establish some central administrative unit for the survey. This may be supported by subnational units in larger countries. Records need to be maintained of the outcome of the interview for each and every unit in the sample. Clear and efficient distribution of materials must be established. Workloads need to be carefully assigned to interviewers, taking into account variations in conditions; overall productivity estimates can only provide general guidance. The scale and mode of payment for work can greatly affect the interviewers' morale, motivation and quality of work.

Close supervision of the work requires high supervisor-interviewer ratios. Supervisory activities should include the following. (1) Questionnaires completed by the interviewers should be examined with as little delay as possible. This is important especially during the initial weeks of interviewing. (2) A sample of each interviewer's work should be spot-checked to verify that the interview has been performed only with the units in the sample. (3) Where possible, the supervisor may sit in on a few interviews to observe the interviewer's performance and also learn directly about interviewing conditions. (4) A small sample of interviews can be repeated to obtain an indication of response reliability and to assess the work of particular interviewers. (5) The interviewers can be asked to tape-record a sample of their work. Tape-recordings provide invaluable information on the way in which the interview was conducted. They can also be a valuable tool for the training and retraining of interviewers (World Fertility Survey, 1975, section 6.7).

Deployment of field staff

The organisation of field-work is another important issue which can affect the quality and cost of the survey. There are two related aspects: the interviewers may work singly or in teams; and they may be recruited locally to work in fixed areas, or may be mobile, moving between sample areas. Of course there can be various degrees of mobility. Two modes of organisation may be contrasted in the extreme form: (a) the use of highly mobile teams, in which interviewers work together and move along with their supervisor from one area to the next as field-work proceeds; and (b) the use of fixed enumerators, often recruited locally, each working singly in a fixed sample area (or a set of areas) for an extended period. With fixed enumerators, the supervisor may live elsewhere and visit each interviewer periodically. Various arrangements between these two extremes are also possible.

The use of mobile teams generally permits better supervision and control of field-work. It can also permit a more efficient sample design since, with mobility, a given

number of interviewers can cover a larger number of sample areas: in labour force surveys, it is usually desirable to ensure good dispersion of the sample. Also, the typical survey does not involve closely spaced repeated interviews with the same households, unlike the case of many food consumption and household budget surveys. Both these factors limit the amount of work per sample area and favour interviewer mobility. The sample rotation pattern and other aspects of the design can be determined more flexibly whereas they work against very localised recruitment and deployment. The stringent requirements of timing noted above tend to favour the team approach as well, which allows redeployment of staff more easily in the face of drop-outs or other problems. The major difficulties of the mobile team approach include: the greater need to provide transport facilities for the use of each team; higher travel costs and costs of temporary accommodation in sample areas; and possibly lower rates of work due to the time lost in movement between areas, which can be substantial if team members have to wait in an area till the last one has finished his work there. Serious difficulties can also arise with the mobile team approach in situations with sharp differences in local culture and languages.

The advantages have to be balanced against the shortcomings. Sometimes using small teams (only two to three interviewers in each, say) with limited mobility can provide an effective compromise. Essentially, different modes of organisation may be followed in the same survey in different areas.

6. Data preparation and processing

The data **processing** task

Data processing has often been called the "bottleneck" of a survey. This is because many surveys have suffered from serious cost excesses, major delays, or even complete failures at the data processing stage. Lack of data processing skills, hardware and software facilities, and inadequate management and control are the usual contributory factors.

It is useful to distinguish between two phases of the operation, namely data preparation and data processing proper, though, as noted earlier, the various steps in the process are becoming increasingly integrated. Data preparation refers to the manual editing of the data in the field and the office, the assignment of numeric codes to the information obtained, documentation and description of the data collected, checks on completeness of the sample enumerated, and finally, data entry into the computer. Many data preparation tasks involve large-scale and repetitive clerical operations, involving large numbers of operative staff. Verification and other quality control measures of their work are an essential requirement.

The subsequent data processing phase refers to computer editing and correction of the data, imputation of missing values, transformation and restructure of the data format, creation of new variables, tabulation and other analysis, and finally, data archiving and dissemination. This phase is characterised by a more exclusive dependence on sophisticated computer facilities, and on relatively small numbers of systems analysts, programmers and other specialised staff.

A comprehensive discussion of survey data processing is available in United Nations (1982), though some points in the study need updating in view of rapid developments in the field. In the following subsections we will consider only the two main aspects of the task: coding; and data entry and machine editing (which are being increasingly integrated).

To begin with, it is useful to note some special characteristics and requirements of data processing for labour force surveys. (I) When the data are collected over an extended period or continuously, it is particularly important to ensure that no backlogs

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build up, and that the data can be processed at the same rate at which they are collected. (2) Many labour force surveys are aimed at producing current statistics with strict reporting schedules: their value can be seriously damaged by delays in processing and reporting. (3) Continuing surveys can also have the added requirement of linkage of data across survey rounds. Frequently data have also to be linked across different types of units such as households and individual persons. (4) Often tabulation and analysis are complicated by the need to weight the survey data with external population control totals (as discussed in Chapter 11). (5) Compared to the data of more intensive inquiries such as household budget surveys, labour force survey data are usually simpler in structure and briefer in content per sample unit (household or individual), but often the sample sizes are much larger. (6) At the same time, many labour force surveys have the advantage that most questions can be precoded; occupation and industry are often the only questions requiring special coding operations.

Coding

Coding refers to the process by which numeric values are assigned to questionnaire entries. The process involves (a) the development of a coding frame or set of mutually disjoint categories which among them cover all acceptable responses to the questions under consideration; and (b) the assignment of each response to a particular category or code. The complexity of the task depends on the nature of the coding frame, the range of responses to be coded, and the relationship between the two. For some items the code consists of only a few easily distinguishable categories; for others the code may involve a large number of categories with subtle differences. Similarly, for some items, the responses may already be in the numeric form which at most needs only to be transcribed to the coding scheme; in contrast, the process can be much more difficult, prone to error and time-consuming when verbal descriptions with varying degrees of clarity and completeness need to be coded and the code involves numerous categories. Clearly, it is desirable in any large-scale survey to maximise the extent to which the questions are closed and precoded. (For a discussion of structuring of response categories and relative advantages of closed and open-ended questions, see Section 4, Chapter 12.)

In a typical labour force survey, the most important and difficult items to code involve the description of employment, namely industry, occupation and, to a lesser extent, status in employment. Generally these require coding into numerous categories on the basis of verbal descriptions recorded during the interview. In addition, the survey may contain items based on semi-open-ended questions in which a vast majority of the responses are precoded, but allowance has also to be made for other possible responses which are either unknown or too varied, yet individually too uncommon, to permit complete listing and precoding in advance. Examples are various questions seeking reasons for working less than full time, for temporary absence from work, for not seeking a job, etc. The bulk of the questions are generally precoded.

Precoded questions

In precoded questions, the assignment of codes to responses should follow consistent procedures throughout, for example always coding “yes” as “1” (say), “no” as “2”, other unspecified answers as “8”, not stated as “9”, etc. All responses to a question should be assigned codes to the same number of digits. It is usually preferable to code each and every question separately and not condense the information at the coding stage (United Nations, 1982, pp. 12-13).

An important question is whether or not precoded responses need to be *transcribed* to another location (whether to a special page in the questionnaire or to a separate coding sheet), with the aim of facilitating data entry. An examination of national labour force and other survey questionnaires indicates that many survey designers do prefer to

have transcription before data entry. Transcription can certainly facilitate the data entry task and possibly reduce errors at that stage. This can be an important advantage when data entry (which requires special equipment) is a more critical constraint than transcription (which only requires clerical resources). However, it can be argued that transcription is unnecessary because it is time-consuming and can introduce new errors into the data (United Nations, 1982, p. 12). This argument in favour of dispensing with transcription is strengthened with the developments of interactive data entry procedures with built-in edit checks (see below).

Coding of occupation and industry

Occupation and industry are too complex and varied to be precoded. The codes involve numerous categories, which are not always easily distinguishable on the basis of verbal descriptions recorded during the interview. Coding of occupation and industry is a complex and error-prone task. Thorough training and operational and quality control are essential. (For good empirical illustrations, see Jabine and Tepping, 1973, and Lyberg, 1982.)

It may be possible to take some measures at the design stage to simplify the task. It is sometimes possible to divide a complete open-ended item into a series of questions, each of which may be coded more easily, or even precoded at least in part. Dividing a complete item into a series of questions can also improve accuracy of the information obtained. Occupation or industry may for example be enumerated first by obtaining the major category (possibly in a precoded form) and then obtaining verbal description for classification within the major category.

In some situations the coding of industry may be made easier by performing the task in two stages: (a) on the basis of a list of establishments by industry, coding as many cases as possible from the names and addresses thereby provided; (b) coding the remaining cases in the usual way from descriptions of industry. The scheme is useful only if there is sufficient concentration in employment to enable a significant proportion of the sample cases to be covered through (a). Large sample overlaps between rounds also increase the possibility of developing lists of establishments by industry over time for this purpose.

It is desirable that in a labour force survey occupation and industry are coded using the same scheme as used in other major sources such as the national population census. Of course the degree of breakdown may be different in different sources depending on the sample size.

The data preparation tasks may be organised in different ways. At one extreme is a completely “floating” system, in which office workers are rotated between different tasks such as editing, transcription, production coding, checking and verification. This system requires that the staff are trained to do a variety of jobs. If the quality of the staff is adequate for the needs, the floating system can have the advantage of making the work less repetitive, and possibly of improving overall consistency of the data preparation task. At the other end of the scale is a “fixed” system, which means that each person is trained for and assigned to a specific job throughout. The advantage of this system is that each person can concentrate on a smaller section of the work and develop expertise to perform the task more efficiently. Such an advantage is more important in the coding of difficult items such as occupation and industry. Hence it is common in labour force surveys to use specialised staff for the coding of these items, while a more or less floating system may be used for other data preparation tasks.

Operational and quality control

Verification of the work done by production coders is essential to quality and operational control. Verification means repetition of the task and comparison of the

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results from the two operations to identify incidence and sources of error. Usually it is sufficient to verify on a sample basis, the sampling rate depending on the error rate found. However, the sampling rate should be higher (even 100 per cent in some cases) at the initial stages of the operation, for the more difficult items, and for operators who are found to make more errors. (Assessment and control of coding and other processing errors is discussed more fully in Chapter 14.)

Verification may be dependent or independent. Dependent verification means that the verifier has access to the result of the earlier exercise. The verifier inspects the original code and decides whether or not it is correct and, if required, corrects it according to his or her judgement. Dependent verification can be quicker and cheaper, but tends to underestimate the number of errors requiring correction. The verifier also needs to have a higher level of skill than the original production coder. Independent verification means that the process is repeated independently by more than one coder and, in the case of discrepancy, further action is taken to identify and correct the error. This may consist of further repetitions of the process followed by decision on the basis of some majority rule; alternatively, an expert may decide which code is correct. Independent coding is more likely to catch errors, and is convenient since ordinary production coders can be used as verifiers. However, it is time consuming, and ensuring independence between coding and verification can be difficult. Provision may also be made for *evaluation* as distinct from verification. Evaluation assumes the existence and identification of “true” code numbers with which the original codes can be compared to identify gross error rates. Evaluation needs expert coders, and requires the assumption that they can determine the “true” value.

Automatic (computer assisted) coding is possible in some situations. However, this option is generally not feasible in labour force surveys in developing countries.

Data entry and editing

Conventional data entry in itself is a straightforward mechanical operation requiring little specialised knowledge of the survey or its subject-matter. Nevertheless, this phase many times proves to be a major source of delay in large-scale surveys because insufficient facilities (data entry stations and/or operators), or insufficient access to facilities, exist to accomplish the task.

The situation concerning data entry is changing rapidly as a result of developments in computer technology. On the one hand are developments in the area of optical mark or character readers. Data input through optical scanning can eliminate the need for operator-controlled data entry, saving time and reducing data entry errors. However, the use of such techniques requires expensive equipment including maintenance and servicing provisions, precision in the design and printing of questionnaires, and careful handling of the documents in the field and the office, all of which are problematic for survey work in developing countries (United Nations, 1982, p. 20).

More fundamental changes are coming from the development of interactive data entry. This means that during data entry, structure and format is automatically controlled and a range of edit checks are made. Many survey organisations in developing countries have already gained considerable experience in introducing interactive data entry, and the experience is spreading with the increasing availability of personal computers and suitable software. Perhaps the most important aspect of this development is its potential to reduce the time taken for computer editing. By facilitating early correction, it can also reduce the need for manual editing.

Organisation of data entry and editing

In many situations, data entry and editing have to be organised as relatively centralised operations, at a single location at the survey headquarters, or possibly, in a

large country, at regional or provincial offices: (However, in a few well-funded surveys in developing countries, a much more decentralised system of interactive data entry has been tried recently.) It is essential to establish a proper system of receipt and control of questionnaires and other materials. Usually it is convenient to use sample ultimate area units as the basic organisational units for this purpose: all questionnaires from each area may be returned to the processing office at one time, checked for completeness against the sample household (or dwelling unit) lists for the area, and subsequently kept together for coding, data entry and editing. Typically in a labour force survey, each sample household will have one household questionnaire and possibly a number of individual questionnaires, one for each eligible person in the household. It is important to check that for each sample household all relevant questionnaires have been received. It is recommended that two types of registers be maintained: a detailed register recording items such as the number of households in each sample dwelling, the number of household questionnaires received, the number of eligible individuals in each household and the number of individual questionnaires received, etc.; and an area register summarising this information for each ultimate area unit. Subsequently, during editing, it is also useful to maintain tallies of errors found by type, and corrections and imputations made for missing data.

Manual versus machine editing

It is a common practice in surveys to carry out data editing in several stages: checking by interviewers and supervisors in the field; manual editing in the office prior to coding; and machine editing following data entry. At each stage basically the same types of checks are made, though the checks may differ in the degree of detail. Checks in the field are indispensable because generally only they provide an opportunity to recontact the respondent for correction of the data originally collected. An important issue is the appropriate amount of resources to be devoted to manual (office) editing, in contrast to machine editing. Because of limited facilities for computer editing but better availability of clerical staff for manual editing, the role of the latter has been conventionally emphasised in many surveys. Such an emphasis takes the view that the purpose of computer editing is not to play a major part in error detection and correction, but rather to discover the (hopefully few) errors that remain undetected at the manual stage and the errors subsequently introduced during coding and data entry. This situation is generally changing as a result of improving computer facilities and particularly with the development of interactive data entry. However, while some survey practitioners have argued that the office editing phase can be dispensed with entirely, there is general agreement that this phase retains an essential, though possibly reduced, role, at least in ensuring that the questionnaires are properly prepared for coding and that gross errors have been removed before data entry and machine editing. These considerations are likely to be even more important in surveys where the questionnaire is relatively complex and the sample size is small to moderate.

Computer editing

Conventional computer editing requires a number of steps: *format edit* in which case-identification, data layout and presence of non-numeric characters, etc., are checked; *structure edit*, in which completeness of the data is checked, e.g. whether all households in the sample are present, whether all data records for each unit are present, etc.; *range checks* to verify that all data values in a field are within the permissible range; *skip checks* to verify that the flow of the interview has been correctly followed and that all relevant and only relevant information is present; and a variety of other *consistency checks* between various data items. Missing data may also be identified and imputed at this stage. Conventionally, all these steps need to be executed in a sequence, each

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generally requiring reference back to the original survey document and manual corrections, the whole process being repeated in a number of cycles. Difficulties at the machine editing stage have proved to be the major source of delays in many surveys. A common problem has been the failure to assign sufficient numbers of staff to refer back to the original questionnaires and locate and correct data on the basis of error lists generated by the computer edits, and to update the data files. Often this task has to be performed repeatedly for each cycle of the edit process (see, for example, Otto and Rattenbury, 1987). Interactive data entry has the potential to integrate these various steps and substantially facilitate and shorten the data processing task.

Edit checks of the type mentioned above need to be specified, programmed and applied to the survey data in detail at the micro-level. Though a small number of errors or missing values in the data may not make much difference to the *statistical* value of the aggregated results derived from the survey, the removal of all inconsistencies is still desirable for several reasons. The presence of errors usually makes data handling, computer programming and analysis significantly more cumbersome. This can be particularly problematic if the data are to be linked with other data sets, if the analysis envisaged is extensive, and especially if many different users and analysts are involved. These considerations are becoming more important with the increasing emphasis on data dissemination in the micro form, as distinct from simply aggregated tabulations. Of course editing and correction can be very time-consuming, and a balance is required between the cost of achieving perfection and its practical usefulness.

Specification of edit checks: Some illustrations

In the rest of the subsection some examples and further descriptions are given of the various types of check on items typically encountered in labour force surveys. Of course, specific checks will need to be developed for each questionnaire depending upon its details. Nevertheless, the illustrations may be helpful in developing edits for specific applications.

(1) *Format edit*. Survey data are usually organised according to a hierarchy of components and by sample case, various records within each sample case, various “card types” within each record, etc., with each component assigned a unique identification number. Format edit involves matching each component against a valid type and checking that it has a valid identification number. At the same time, overall checks can be made for the presence of non-numeric, irrelevant or other illegitimate values. Usually the data file is sorted by sample case only after the case identifications have been checked and corrected.

(2) *Structure edit*. The main objective is to examine that the data for each sample case are present, and that within each case the data are overall structurally correct and complete. For example in a labour force survey, checks may be made to ensure the presence of:

- (a) some information for each sample household, at least indicating whether or not the case was successfully interviewed;
- (b) for each interviewed household, all relevant data components (records, card types, etc.) on the household and each member, and on whether the member is eligible for the more detailed inquiry on his/her economic activity;
- (c) some information for each eligible person, at least indicating whether or not the person was successfully interviewed; and
- (d) for each interviewed person, all relevant data components pertaining to the interview.

(3) *Range checks*. A few practical points may be noted in relation to the specification of range checks. For all questions, the ranges of permitted values should already have

been clearly specified in the questionnaire and/or the coding manual. In the specification of range checks, it is helpful first to produce marginal distributions of the data so that the incidence and frequency of out-of-range values can be assessed for each data field.

Questions which do not apply to all respondents must include “not applicable” (NA) as a valid code, but not the questions which do apply to all respondents. Missing or not stated (NS) values can be identified during the range check by not including them in the valid range, and their frequency and distribution studied. In some questions (such as income, duration of employment or unemployment, hours worked, etc.) it can be useful to specify a narrower range than that theoretically possible so that unusual (hence implausible though not necessarily impossible) values can be identified, values which have a high chance of being in error.

(4) *Skip checks.* The objective is to check that the flow of the interview has been followed correctly: every applicable question should have a response (even if it is “NS”), and all inapplicable (NA) questions should be blank or identified in some similar way. The specification of skip checks can be greatly facilitated by a questionnaire flow chart which, as explained in Section 2, Chapter 12, clarifies the relationship between questions and between subgroups in the survey population to which each applies. Skip checks are simply logical conditions which specify when a particular question is applicable. The inset below gives an example for Flow chart 11 of Section 3, Chapter 12. Note that a decision has to be made in each question regarding the appropriate skip if the answer is “NS”; all valid responses (including the “NS”) should be accounted for in each case.

Example of skip checks for Flow chart 11

Question(s)	Applicable if and only if:
Q1	(always)
Q2	Q1 = no, NS
Q3	Q2 = no, NS
Q4	Q3 = no, NS
Q5	Q4 = housework, other, NS
46-8	Q4 = retired or Q5 = yes
Q9	Q4 = retired or Q5 = no, NS
Q10	Q9 = yes
Q11	Q1 = no
Q12, 16, 18-22	Q1 = yes or Q2 = yes
Q13	Q12 = yes
Q14, 15	Q12 = no, NS
Q17	Q16 = part-time, NS
Q23	Q22 = employer, employee, own account, NS
Q24-27	Q3 = yes
Q28	Q27 = yes

(5) *Related checks.* Checks on flow and completeness of the interview may also appear in other forms. Sometimes the value in a question is recorded (or summarised) from one or more previous questions, against which it can be checked for consistency. Another common form is the appearance of tables in the questionnaire (e.g. recording details of various past jobs or jobs held presently), with the number of entries which should have been completed in the table determined by the value in some previous questions. (The above two types of checks are usually referred to as “filter” and “table” checks, respectively.)

(6) *Consistency checks.* These refer to the consistency between the values recorded in different but related questions. The type of check that can be, and needs to be, made would vary depending on the content and design of the questionnaire. More checks are

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possible when there is a degree of redundancy in the information obtained or when the various questions are closely related or overlap (as for example in a typical household budget survey). Many simpler questionnaires are in fact designed, through the use of appropriate skip instructions, largely to eliminate the possibility of internally inconsistent responses. Nevertheless, some consistency checks are possible and useful as the example which follows illustrates.

*Example of some consistency checks, based on **Flow** chart 11*

Question(s)	Check plausibility in relation to:
Q4, 6, 13, 28	person's age
Q7, 19, 26, 28	person's educational level
Q23	person's occupation (Q19)

Note that these supplement the range and other checks made on all questions individually.

(7) *Correction, imputation and missing values.* Once an error is found, the offending data item may be modified in one of the following ways:

- (a) the data are eliminated if the question is not applicable in the particular case;
- (b) the erroneous (or missing) value cannot be corrected and is changed to "NS";
- (c) the value is corrected (or imputed) by reference to other information available in the questionnaire;
- (d) the incorrect or missing value is imputed on the basis of information external to the questionnaire, e.g. from a previous round based on the same unit or from other "similar" unit(s) in the sample.

Of course, the item can be left uncorrected, although, at least if the proportion of offending cases is not large, it is usually more convenient to adopt option (b) if nothing better can be done. This option is also useful in terminating the editing process when its marginal utility is no longer judged to be worth the cost of further editing.

Note that often no sharp distinction can be drawn between incorrect (unusable) and missing data, or between correction (which is often judgemental) and imputation. Operationally, imputation usually refers to correction on the basis of information external to the particular questionnaire. Generally it is preferable to make alterations or corrections to the survey data manually, on the basis of careful examination case by case and with reference back to the original questionnaires. Imputation is perhaps more amenable to automation, especially for data sets which are large but not too complex in context. In any case, the process of correction/imputation must always be carefully controlled and monitored, and records kept of the nature and extent of changes made.

7. Tabulation, reporting and dissemination

Reporting strategy

As regards analysis and reporting of survey results, a common and convenient strategy is to divide the task into two major stages. The first stage may consist of the production of basic cross-tabulations, and a commentary on the main findings. A series of other reports not requiring prolonged or sophisticated statistical analysis may also be produced at this stage. Each should be aimed at a specific category of users. The series may include: a preliminary and brief report to ensure early release of the principal findings, even before fully "clean" data files or tabulations in full detail become available; an executive summary, highlighting specific topics or issues, and targeted at specific categories of users; and a technical report describing the survey methodology and procedures.

The second stage may consist of a more open-ended programme of analysis and research, utilising more sophisticated and elaborate approaches. This will usually require collaboration with individuals and organisations outside the statistical agency. The production, archiving and distribution of well-documented micro-level data files will greatly facilitate this task. The analyses should aim to link the survey results with related information from other sources, and especially with previous rounds of the labour force survey. More detailed analyses of data quality, sources of errors, methodological lessons learned, etc., may also be undertaken. Of particular importance is the computation of sampling errors.

The two stages of analysis and reporting differ in their timing and objectives. The first stage is concerned with releasing information on the survey and its main findings as soon as possible. The second stage is concerned with fuller exploitation of the results under less stringent timing requirements and wider collaboration. This can also help in building analytical capability within the statistical organisation.

Tabulation

The first stage of reporting may be based on relatively straightforward multi-way cross-tabulations. The tabulations should exploit the survey data as fully as possible within this mode of presentation. As an illustration, a minimum set of tabulations from a labour force survey is listed at the end of this section. These tabulations may of course be modified and expanded in particular surveys depending upon the scope of the information collected. Also given below is a list of core sets of variables corresponding to these tabulations. Before the production of tabulations, it is often convenient to combine or reformat the “raw” data items to construct *recoded variables* which are directly used in the tabulations. As an example, Figures 6 and 7 in Section 4, Chapter 6, illustrate how a variable “current labour force status” may be constructed from the sequence of questions on current activity, reasons for absence, steps taken to seek work or reasons for not seeking, current availability for work and past work experience, etc. Constructing such a variable once and for all for each individual in the sample can greatly facilitate the subsequent tabulation and analysis tasks.

Data archiving and dissemination

To improve data utilisation, it is important that the survey data are made available at the micro-level in the form of fully documented computer files. With improving computer facilities, this form of data dissemination is replacing the conventional cross-tabulations as the “final” product of the survey. National statistical agencies should try to establish user-oriented computer data banks or archives. The basic requirements for this purpose are that:

- the data files are edited and documented to high standards and are structured to facilitate analysis;
- the micro-level data files are supported by full description of the data (providing code books, marginal distributions, summaries, aggregates, etc., ideally in a machine-readable form);
- a data base is established linking (or at least compiling) data from different rounds of the survey and related sources;
- a system is established for data management, control and distribution; and
- technical and computer support is provided where possible to data users.

An excellent example is provided by the “Dynamic Data Base” at the International Statistical Institute which archives and disseminates data files from a large number of demographic surveys. For a good technical description of a particular application, see Rowe and Croft (1987).

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Illustrative list of core variables and tables
from a labour force survey

The illustrative list of core variables and tables presented below has been prepared on the basis of two main considerations: **(a)** recommendations made in the international standards on statistics of the economically active population (ICLS, 1982); and **(b)** consistency with the list of tabulations on economic characteristics recommended for population censuses (United Nations, 1986). The illustrative list contains 47 tables, cross-classifying different population groups and households with respect to 25 core variables.

Eight core variables represent demographic and educational characteristics of individuals or households. These are: sex, age group, marital status, school attendance, educational attainment, relationship to head or other reference member of the household, size of household and number of children.

The 17 other core variables describe the employment characteristics of individuals or households. These are: current activity status, usual activity status, number of weeks or days worked in all occupations during the last year, main (last) occupation, main (last) industry, main (last) status of employment, primary reason for inactivity of persons not currently active, functional categories of persons not usually active, strength of attachment to the labour market of persons not economically active, number of days or hours worked in all occupations during the last week, reason for absence from work, number of days or hours available for additional work per week, steps taken to seek work, reason for not seeking work, number of economically active persons, number of persons employed and number of persons unemployed in the household.

For the purpose of international comparisons, the relevant categories for each variable should, where applicable, adhere to or be convertible into the standard international classifications most recently adopted such as:

- (a)** International Standard Classification of Occupations (ISCO) – International Labour Office;
- (b)** International Standard Industrial Classification of All Economic Activities (ISIC) – United Nations;
- (c)** International classification according to status (as employer, employee, etc.) – definitions of status by the United Nations – except that for the classification of unpaid family workers the minimum time criterion (at least one-third of the normal working hours) no longer need be applied;
- (d)** Provisional guidelines on Standard International Age Classifications – United Nations.

In the following illustrative list of tables, a variable shown within brackets indicates that cross-classification with respect to that variable is optional and its use depends on the accuracy of the resulting data in the corresponding cells given the reduced sample size on which the cell data are based. This general consideration should be applied to all cross-classifications so as to avoid the publication of tables containing cells for which the data have high sampling variability.

For certain tables, a variable or population group is shown in parentheses. This is to indicate that the corresponding tables can be compiled according to the usual activity status as an alternative or in addition to the current activity status: tables 1, 4-6 and 43-47 can be compiled according to the current activity status or the usual activity status or both. Table 2 is to be compiled if both the current activity status and the usual activity status are measured in the survey. Table 3 applies only if the usual activity status is measured. Finally, tables 15-42 on employment, visible underemployment and unemployment are meant to be compiled according to the current activity status only.

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A set of basic tables on statistics of the economically active population employment, unemployment and underemployment

Population of working age (Population . . . years of age and over)

1. by current activity status (usual activity status), by sex and age group
2. by current activity status and usual activity status, by sex and age group
3. by usual activity status and number of weeks or days worked in all occupations during the last year, by sex

Youth population of working age

4. by current activity status (usual activity status) and school attendance, by sex and age group

Currently active population (usually active population)

5. by marital status, by sex and age group
6. by main occupation, by sex and age group
7. by main industry, by sex and age group
8. by main status in employment, by sex and age group
9. by main industry, main occupation, by sex
10. by main occupation, educational attainment, by sex [and age group]
11. by main industry, educational attainment, by sex [and age group]
12. by main occupation, main status in employment, by sex
13. by main industry, main status in employment, by sex

Currently active female population (usually active female population)

14. by marital status and main status in employment

Persons not currently active (persons not usually active)

15. by primary reason for inactivity (functional categories), by sex and age group
16. by strength of attachment to the labour market

Employed

17. by main occupation, by sex and age group
18. by main industry, by sex and age group
19. by main status in employment, by sex and age group
20. by main industry, main occupation, by sex
21. by main occupation, main status in employment, by sex
22. by main industry, main status in employment, by sex

Employed persons at work

23. by main occupation and number of days or hours worked in all occupations during the last week, by sex
24. by main industry and number of days or hours worked in all occupations during the last week, by sex
25. by main status in employment and number of days or hours worked in all occupations during the last week, by sex

Employed persons not at work

26. by reason of absence from work, by sex

Underemployed (visible)

27. by number of days or hours available for additional work per week, by sex and age group
 28. by main occupation, by sex [and age group]
 29. by main industry, by sex [and age group]
 30. by main status in employment, by sex [and age group]
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Multiple jobholders

- 31. by sex and age group
- 32. by main occupation, by sex
- 33. by main industry, by sex
- 34. by main status in employment, by sex

Unemployed

- 35. by relation to head or other reference member of the household, by sex

Unemployed with prior work experience

- 36. by last occupation, by sex
- 37. by last industry, by sex
- 38. by last status in employment, by sex

Unemployed without prior work experience

- 39. by sex and age group
- 40. by sex and educational attainment

Unemployed persons actively seeking work

- 41. by steps taken to seek work, by sex

Unemployed persons not actively seeking work

- 42. by reason for not seeking work, by sex

Head or other reference member of household

- 43. by current activity status (usual activity status), by sex and age group

Households and population in households

- 44. by size of household and number of economically active members (according to current activity status and/or usual activity status)

Households with at least one unemployed person

- 45. by number of children and number of persons employed (according to current activity status and/or usual activity status)
- 46. by number of persons unemployed (according to current activity status and/or usual activity status), by sex and main industry of head or other reference member of the household

Households and population in households whose heads or other reference members of households are currently active (usually active)

- 47. by main industry, main status in employment, by sex of head or other reference member of household

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Like any other set of data, statistics of the economically active population, employment, unemployment, underemployment and related topics are subject to errors. While the data collection programme should be carefully designed to minimise possible errors, some are bound to occur. A careful interpretation of the results, therefore, requires some knowledge about the quality of the data. An evaluation of data quality is also necessary to improve upon data collection, processing and estimation procedures . . . The evaluation procedure should, as far as possible, form part of the data collection programme itself.

[In] every release of statistics . . . descriptions should be given of . . . measures of data quality, including sampling and non-sampling errors . . .

Resolution I, Thirteenth ICLS, 1982, paras. 37 and 39 (ILO, 1983).

1. Framework for evaluation

All statistical data, from whatever source and whatever the method of their collection, are potentially subject to errors of various types. It is important that the results of censuses and surveys are accompanied by descriptions of their quality and limitations.

Firstly, knowledge about data quality is required for their *proper use and interpretation*. This knowledge is essential in determining whether and with what degree of confidence the patterns observed in the results are real, and not merely products of the variability and deficiencies inherent in the data. Information on the nature and magnitude of errors can also be useful for making appropriate corrections of the data or adjustments in their interpretation.

Secondly, measures of data quality are important for the *evaluation and improvement of survey design and procedures*. A detailed investigation of the sources, magnitude and impact of errors is necessary to identify how survey design and procedures may be improved and resources allocated more efficiently among various aspects of the survey operation.

Continued monitoring of and improvement in the quality of the data generated is particularly important in the case of a major undertaking such as a national labour force survey. The results of such a survey often form the basis of important policy decisions; they can also provide a benchmark or reference for a wide range of information arising from various other sources. As discussed in previous chapters, the results can be highly sensitive to the concepts and definitions used, exactly how they are incorporated in the operations, and the conditions under which the data are collected and processed.

Types of error

In this chapter, techniques for measuring different components of errors in survey data are described. It is useful, therefore, to begin by providing a brief description of

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the various types and sources of error. In discussing the variety of possible errors, the objective is not to convey a negative impression of the general usefulness of sample survey results. Rather, the objective is to stress the importance of ensuring that measures are taken to control and reduce these errors, and that proper account is taken of the errors that inevitably remain in the interpretation and utilisation of the survey results.

The objective of a sample survey is to make estimates or inferences of general applicability for a study population, derived from observations made on a limited number (a sample) of units in the population. We may distinguish between two groups of errors affecting this process:

- (a) Errors arising in the process of extrapolation of results from the observed units to the entire study population. These include errors of coverage, sample selection and implementation, non-response, as well as sampling variability and estimation bias. This group of errors centres on the process of sample design, implementation and estimation.
- (b) Errors arising from the fact that what is observed or measured departs from what is intended to be measured on the units included in the survey. These errors of measurement centre on the substantive content of the survey: definition of survey objectives, their transformation into coherent and consistent sets of questions, communication of these to the respondents, the respondents' ability and willingness to provide the information sought, and the recording, coding, editing and processing of the responses.

The above categorisation is based on operational considerations, and in a sense is more fundamental than the distinction usually made between sampling and non-sampling errors. Group (a), which concerns generalisability from the units observed to the target population, includes sampling variability, as well as various biases associated with sample selection and implementation such as coverage and non-response errors. All of these are of direct relevance in the choice of the sample design. Often, several surveys or survey rounds share a common sampling frame, master sample, sample design and sometimes even a common sample of units. In such a situation, errors relating to the sampling process tend to be common to these surveys, more or less independently of the subject-matter details, and common procedures of assessment and control of errors apply across surveys. This certainly applies to different rounds of an ongoing labour force survey.

Group (b) concerns the accuracy of measurement at the level of individual units enumerated in the survey: how the value as reported by the respondent, recorded by the interviewer, coded and edited by the office clerk, corrected, imputed and ultimately tabulated by the computer, may depart from the actual value for the individual concerned. This group of errors can be studied in relation to various stages of the survey operations: data collection (obtaining responses), coding, editing, imputation and computer processing.

The above broad classification must be supplemented by identification of *specific* sources and types of error in as much detail as possible, so as to facilitate control of the errors and assessment of their impact. For example, among errors of sample implementation, it is not only useful to distinguish between undercoverage and non-response, but also to distinguish further between, say, undercoverage of households and that of persons within households; or between non-response due to refusal, and that due to failure to identify, locate or contact respondents.

In general, the effect of any particular source of error on survey estimates can be broken down into two components: *variable error* and *bias*. Some of the conditions under which the survey is taken are "essential" to the situation, such as general social conditions, quality of the sampling frame available, data collection methodology adopted, nature of the information sought, questionnaire design, qualifications and

training of the survey staff, their working conditions including tenure and rate and mode of payment, the type of respondents involved, etc. In addition, survey results are also influenced by transient or chance factors, such as the particular units selected into the sample, the particular interviewers and coders engaged, the conditions under which a particular interview happens to be conducted, and so on. One can see how the survey can be repeated under the given essential conditions; however, different repetitions would give different results due to transient or chance factors (Hansen et al., 1961). *Variable error* measures the variability between different estimates from hypothetical repetitions of the survey. The average of all possible repetitions is the expected value under the given essential survey conditions. The difference between this expected or average value and the true value for the target population is the *bias*.

Coverage and related errors of sample selection and execution, non-response and systematic errors in the responses obtained are, by and large, biases resulting from the essential conditions under which the operation is conducted. Errors of similar magnitude can be expected if the surveys are repeated under the same conditions. The measurement of bias depends on comparison with information external to the survey proper, obtained with different, more accurate, methods.

Table 20 lists the main, broad components of survey errors. The first group, “errors of observation”, refers to differences between the observed and the actual or true values for individual units in the survey. It has been divided into three categories depending on the stage at which the error arises: (1) conceptual errors at the design stage; (2) response errors at the stage of data collection; and (3) processing errors, which may be further divided into errors of editing, coding, data entry, etc. Response errors in particular arise from a wide variety of sources and in diverse forms. Some of these are systematic biases, others are more random variable errors (such as “interviewer variance”). The second group, “errors of extrapolation”, concerns the generalisation of the results from the survey units actually observed to the whole study or target population. Its subcategories include: (4) coverage errors, and related errors such as in sample selection; (5) errors of non-observation or non-response; and (6) sampling errors. Errors of coverage most commonly appear in the form of systematic biases due to undercoverage. It is useful to distinguish non-response errors by cause of non-response, such as refusals, not-at-home, etc. The entire set (1)-(5) are termed non-sampling errors, as distinct from sampling error (6). The latter may be divided into sampling or estimation bias (which are usually small in properly designed samples of reasonable size), and sampling variance.

Table 20. Types of error in sample survey data

Errors of observation	{	(1) Conceptual errors			
		(2) Response or data collection errors	response bias		
			response variance		
		(3) Processing errors	editing errors		
			coding errors		
			data entry errors		
Errors of extrapolation	{	(4) Coverage errors	undercoverage		
			overcoverage		
			sample selection errors		
		(5) Non-observation (non-response) errors	refusals		
			not-at-home		
			other reasons		
		(6) Sampling error	sampling or estimation bias		
			sampling variance		

Non-sampling errors

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Sampling error and random errors introduced at the data collection and processing stages are in the main variable errors. These errors introduce uncertainty into the survey estimates, the expected magnitude of which can usually be measured from within the survey itself: by comparing what may be called independent internal *replications* (i.e. different subsamples, each yielding a valid estimate), or by comparing independent *repetitions* of the survey under the same conditions.

Methods of assessment

Indicators or measures of quality of survey data may be obtained by a variety of methods. Some procedures can yield quantitative information on the magnitude and impact of specific types of error, while others are capable of providing merely qualitative indicators. Some methods are suited to provide information on the variability inherent in the results based on a sample survey (such as sampling or response variance), while others aim at assessing the magnitude of biases, i.e. of differences between the expected sample values and the true population values of interest. Though the appropriateness of a method will depend on the specific source and type of error involved, it should be recognised that various phases of the survey are very closely related. Therefore, errors cannot always be attributed to a particular type or source. The same or similar methods of assessment/control may indeed be suitable for measuring more than one type of error, but some of the indicators obtained may provide no more than general or overall measures of data accuracy without being able to identify separate effects of specific sources and types of error. As a guide to data use and interpretation, what is required is a measure of the overall error and its net impact. For the improvement of survey design and procedures, it is necessary to identify individual sources and components of error. These two objectives are not always completely compatible. This is for two basic reasons. Firstly, it is often possible in practice to measure only some but not all components of error. Secondly, the components so measured are neither completely separable nor additive in a way that would yield overall magnitude of the total error. For instance, as will be discussed later in this chapter, the impacts of undercoverage and non-response are usually confused, as are sampling and response variances. Even if greater separation is sometimes theoretically possible, in practice it may be beyond the resources available.

Depending on the sources of information and the nature of the operations involved, three broad categories of methods of assessment of the quality of survey data may be distinguished:

- (1) methods based on analysis of the information obtained in the course of the survey proper, as a part of normal survey operations;
- (2) methods depending on reinterviews or other supplementary operations, added to the basic survey operations; and
- (3) methods based on comparison with external data from independent sources.

Analysis of information on survey operations. It is important to note that evaluation procedures are by no means confined to conducting separate, sophisticated or nationally representative special studies. On the contrary, a great deal of qualitative and even quantitative information useful in designing better surveys can be collected through proper administration and documentation of ongoing survey operations, such as pre-testing of the survey, debriefing of interviewers, spot-checking of their work with feedback to individual workers on their performance, timely scrutiny of completed questionnaires and analysis for consistency of tabulated aggregates. Furthermore, through routine administrative procedures of survey implementation, valuable quantitative information on many design parameters (such as time and cost of travel between and within sample areas, of call-backs to non-respondents, of supervision and scrutiny, of coding of particular items, editing and correction, etc.) can be collected at

little additional cost. Survey records can be used to develop useful indicators for monitoring data quality, such as rates of non-response and prevalence of proxy responses. A continuing survey provides an opportunity to monitor such indicators.

Substantive analysis of internal consistency and relationships in survey data. A careful review of survey findings against the background of previous knowledge and relationships observed in similar circumstances, as well as plausibility checks on internal consistency of answers to different questions provided by the same respondent, can often provide a most valuable indication of the plausibility of survey results, in particular of the presence of serious response and other biases. For example, unexpected seasonal patterns observed in the survey results may indicate that seasonal activity was not properly handled. Similarly, lower than expected rates of labour force participation among women may point to a failure of the survey methods used in identifying the amount of unpaid family work and other economic activities carried out by women. Such analysis may not be sufficiently precise to pinpoint specific shortcomings and errors in the data, but it can at least be useful in cautioning the user against uncritical acceptance of the results.

Comparison among internal “replications” of the survey. A well-designed sample can usually be divided into more or less independent replications or interpenetrating subsamples which provide equivalent estimates. The observed variability between these subsamples can be used to construct measures of sampling, response and other variable errors. The concept of interpenetrating and replicated design was explained in Section 5, Chapter 11, where reference was made to Lahiri (1957).

Reinterviews and other supplementary operations. The basic idea is a repetition of some survey operation, usually on a subsample basis, either with special procedures aimed at obtaining more accurate data or as a repetition under essentially the same conditions.

In so far as improved procedures succeed in obtaining error-free responses, comparison with them gives an indication of specific errors at the individual level and of biases in aggregate estimates from the original data. Examples are: relisting of a subset of sample areas under intensive supervision to identify coverage errors; reinterviewing with intensive probing to identify response errors; and recoding by specially trained expert staff to identify coding errors. These and other examples will be discussed further in the following sections.

Repetition under essentially the same conditions provides estimates of components of variance, i.e. of variability or unreliability inherent in the survey results.

Comparison with external data. In principle, results of the labour force survey may be compared with data from external sources (a) at the micro-level through matching of records for individual respondents, or (b) at the macro- or aggregate level, where net differences in the overall pattern or distribution of results can be identified.

Micro-level matchings tend to be relatively difficult, expensive and uncommon but, where possible, can yield detailed information on the nature and sources of error. Macro-level comparisons can identify only net effects of errors but, where possible, they can be applied simply and cheaply. A most basic comparison with aggregate data is the checking of sample coverage and estimated population distributions against distributions derived from the population census and more recent population estimates.

General strategy for data evaluation

The quality of survey data depends on three characteristics of the data: their relevance to the need of users, their timeliness, and their accuracy.

Relevance is the most fundamental and complex aspect of data quality. The content and methods of the survey should be designed to measure what is intended and required

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by the users. Because of the diversity of users and possible uses of survey data, it is not often possible to identify a single criterion by which to evaluate relevance of the survey. Nevertheless, it is often possible to identify the situation where the survey has *failed*, wholly or in part,,to yield information relevant to the objectives for which it was undertaken. Here is an example. **As** described earlier (Section 3, Chapter 3), there are various “models” of labour force surveys which differ greatly in objectives and hence in content and design. **A** most basic requirement in undertaking a labour force survey is to ensure that the survey model chosen is the one best suited to national conditions and data requirements. **A** review of national practices indicates that this basic requirement is by no means being met uniformly, perhaps as a result of insufficient user-producer interaction and lack of experience and good advice.

Timeliness refers both to speed and punctuality: speed determines the time taken to complete various stages of the survey operation; punctuality concerns the delivery of the survey results according to a predetermined schedule. In continuing surveys, and also in some other surveys undertaken for very specific purposes, punctuality may be the overriding consideration. For instance, by law or convention, many labour force surveys are required to publish results by a specified date after each round. In some more complex, occasional or one-time surveys, the major requirement is to minimise the time taken to complete the survey and make its results available. The usefulness (relevance) of survey results decreases with time. In many developed and some developing countries as well, monthly labour force surveys are designed to provide short-term economic indicators, and the results are needed very quickly as their relevance tends to diminish rapidly. Where the results of the labour force survey are to be used for intermediate and long-term planning (and the surveys have been designed accordingly), their value is likely to last much longer.

The remainder of this chapter is concerned with the third dimension of data quality, namely *accuracy*. The accuracy of a survey estimate is generally taken to mean its closeness to a “true” population value, which it is designed to estimate. **As** described earlier, survey estimates suffer from random or variable errors, as well as from more systematic biases. The term *reliability* is used to indicate how small the variable error is; high reliability means that estimates obtained from different replications or repetitions of the survey are generally close to each other, irrespective of the size of the biases which may be common to all of them. High accuracy requires that both variable error as well as net bias are small.

A balance is also required between speed (timeliness) and accuracy (and, of course, also between accuracy of different types of statistics, such as measures of current levels versus measures of change). Users of survey data often press for timeliness at the expense of accuracy: delay in the availability of results is very obvious, whereas lack of accuracy is often much harder for users to detect. By contrast, other users, perhaps because of their methodological orientation and close involvement in survey operations, pay disproportionate attention to accuracy at the expense of timeliness. It is necessary to strike a reasonable balance between these two requirements.

Some basic principles in choosing appropriate data evaluation strategy

On the basis of extensive experience, the following basic principles should govern the choice of data evaluation strategy for labour force and other large-scale household surveys.

(1) **As** noted in Resolution I of the Thirteenth ICLS (ILO, 1983), a very important principle is that the evaluation of methodology and results must always, from the outset, be regarded as an integral part of the planning, design and execution of the survey. It would be mistaken to consider the mere collection of more data as the primary task, and

relegate evaluation to a secondary position. The importance of this principle increases in direct proportion to the size, scope and coverage of the survey: it is particularly crucial for survey programmes covering many subjects, for continuing surveys with repeated rounds, for large-scale surveys with national coverage, for surveys which aim to provide base-line data and other information for diverse purposes. Indeed, these are characteristics basic to many national labour force surveys.

(2) The evaluation and assessment programme should pay attention to all aspects of data quality: relevance of its content to the specified objectives and uses; timeliness (speed and punctuality); and, of course, accuracy. The complementary as well as conflicting requirements of these three aspects should be explicitly recognised. An appropriate balance is required between these, particularly between the requirements of timeliness and accuracy.

(3) For improving survey design and procedures, the information on data quality (particularly accuracy) needs to be accompanied by some information on costs, at least on *relative* costs of alternative methodologies and procedures. Ideally, such information should be available for each separate step in the data collection and processing procedures. Apart from direct material expenditures, “costs” must take into account the burden on the survey-taking organisation (in terms of time and skill requirements and conflicting priorities), as well as on survey respondents who provide the information.

(4) Proper evaluation of data quality can tax available material and human resources and often requires considerable technical skill. It is important to adopt a strategy which is economical and to set goals which are feasible and sustainable. Therefore:

- (a) It is generally desirable to identify the most important issues and problems and *concentrate resources* on them, rather than to scatter the effort too widely and thinly. In many circumstances, an analysis of past experience can point to the most critical areas needing improvement: it may be deficiencies in coverage and quality of the sampling frame; or high and increasing non-response rates; or sample size and allocation too inadequate to permit meaningful analysis; or large and unpredictable response errors; or poor quality control and timeliness of data processing operations, and so on. It is hardly likely that in any particular circumstance, all these areas will present equally important or critical problems. (For a good discussion of the issue from the Canadian Labour Force Survey, see Fellegi and Sunter, 1974.)
- (b) Another aspect of concentration is to choose *as few separate operations as possible* for assessment and control of diverse types of error. For instance, a unified, intensive “observation programme” by field supervisors may be used to identify and control errors of coverage, sample selection, response and field-editing – rather than different programmes for each type of error.
- (c) At the same time, if any special operations, such as a reinterview or post-enumeration survey are undertaken, their *objectives should be clearly defined*. One of the most common reasons for the failure of such operations to yield useful information is that they tend to be overambitious, with objectives which are too diverse and diffused.
- (d) Often similar patterns of errors prevail among related surveys and rounds of ongoing surveys or survey programmes. This means that, at the very least, information on errors can be accumulated over surveys and over time. Even more important from the point of view of economy of effort is the fact that indicators of data quality are often *portable*, i.e. reusable from one situation to another. This applies most clearly to information on sampling errors, as discussed in Section 4.

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(5) It is also important to pay attention to the presentation and reporting of information on survey errors. A distinction is required between different categories of users of the information:

- (a) Firstly we have the general user, perhaps with no special interest or expertise in survey methodology or substantive research, who is interested in using the survey results for drawing conclusions and taking decisions. For this type of user, the information on errors should indicate the overall quality of the results, their limitation and their place within the wider body of related statistical information. More specifically, it should indicate how significant conclusions to be drawn from the survey may be affected by the uncertainties due to various sources of variability and bias. Users should not only be informed about data quality but also be given guidance on how to use the survey results taking due account of the errors present.
- (b) The second category is the substantive analyst engaged in primary or secondary analysis and reporting of results. This type of user requires access to more detailed information on the impact of errors on the widest range of statistics which have been or can potentially be derived from the survey. For instance, this user would expect to find not only direct estimates of sampling error for all major statistics, but also a general indication of the magnitude of sampling error to be expected for *any* statistics which may be derived from the survey, such as estimates in cells of any tabulation of survey results.
- (c) The third category is the survey statistician concerned with evaluating the statistical and cost efficiency of the design and procedures adopted in the survey, or with designing and redesigning future survey rounds. This type of user requires detailed information on sources and components of error, and on how they relate to various features of the survey design, procedures and costs.

For the general user, information on errors should be presented (a) selectively where it matters, avoiding unnecessary detail especially on evaluation methodology, and (b) together and in conjunction with substantive survey results, rather than separately in isolation. The information on errors must not clutter the presentation of substantive results; the objective of providing this information is to elucidate limits to the reliability of substantive results and not to obscure them.

A number of organisations issue special reports on the methodology and data quality of their labour force surveys. For instance, Statistics Canada issues quarterly reviews of quality measures associated with their labour force survey estimates (Canada, 1982); see also a comprehensive “error profile” of employment as measured by the United States Current Population Survey (United States, 1978). Such reports are perhaps addressed primarily to the second category of users described above.

For the survey designers, much detailed information may remain in the form of unpublished records of survey operations and of assessments at the level of individual interviews and survey workers.

Useful references

Given the diversity of sources and types of error in labour force and other household surveys, a vast literature has developed on the subject. A recent comprehensive discussion of sources, assessment and control of non-sampling errors in household surveys is provided in United Nations (1982). Apart from a detailed description of various types and sources of error, the reference provides an extensive bibliography and many illustrations of errors in sample surveys and censuses, from both developed and developing countries. An extensive bibliography is also given by Dalenius (1977). The “classic” paper on measurement of survey errors is by Hansen et al. (1961). A concise and clear description of methods of error evaluation in censuses and surveys is provided

in Canada (1978). A descriptive summary of various types of error and review of basic issues in their assessment in household surveys in developing countries is given in Verma (1981).

2. Coverage and related errors

To draw inferences from a sample survey to the population under study, it is necessary to select the sample in such a way that each element in the population has a known non-zero probability of being selected (this is called “probability sampling”, see Section 4, Chapter 11). This condition is violated if: (a) the survey population is not fully represented in the sampling frame; (b) the selection of units from the frame into the sample is not according to procedures specified in the sample design; and (c) not all the units selected into the sample are successfully enumerated. In this section, coverage errors (a), and related errors of sample selection (b), are discussed; errors due to non-response (c) are considered in section 3.

Description of coverage errors

Operationally, a sample is selected from a frame which explicitly or implicitly provides a list, other auxiliary information required and specific sets of rules and procedures for association among units of different types. Errors of coverage arise when:

- (1) Some units in the target population are missing from the frame. This is “undercoverage”: the missed units have no chance of being selected into any sample from the frame.
- (2) Some units in the sampling frame are not in the target population. This results in “overcoverage” unless such units, if selected, can be identified and eliminated at the sample implementation stage.
- (3) Some units in the target population appear in the frame more than once (“duplication”), increasing their chance of selection into any sample.

These problems can arise explicitly from the use of defective lists, or implicitly due to confusion in boundaries of units and in rules of association between units of different types. In household surveys, undercoverage rather than overcoverage is usually the main problem.

In many labour force surveys, as in other large-scale household surveys, the sample is selected in a number of stages, typically involving:

- selection of area units in one or more sampling stages;
- listing and selection of buildings, dwelling units or households within the selected lowest stage area units;
- listing of individual persons within selected households and selection of individuals with specified characteristics for the survey.

Errors of coverage can arise at any of these stages.

Area units

In most situations, one can expect lists of area units to be complete. However, serious coverage problems can arise in a delineation of the *boundaries* of area units which is unambiguous, exhaustive and non-overlapping. Here are some examples:

- (a) In many situations, the available area frame is really a list of localities such as villages, rather than of proper area units which exhaustively cover the entire survey population. Usually, this situation arises from inadequacies of the census cartographic work which provides the basic sampling frame for household surveys. Scattered households and individuals, not clearly belonging to any particular locality, can be easily missed in such a frame.

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- (b) Often, newly settled areas are not represented in out-of-date frames.
- (c) A related problem is that of changes in definition and boundaries of administratively based units; in the presence of such changes, the operational sampling units and the units as listed in the frame may not be the same.
- (d) A common problem is that inadequate maps and descriptions prevent survey workers from being able to identify and delineate selected areas unambiguously. Such errors of identification are often found to be systematic rather than random.
- (e) In many developing countries, the smallest area units available for sampling purposes are still too large to serve as efficient lowest stage area units. Special operations are then required to segment the available units. Systematic biases can be introduced in this process, especially if the segmentation task is entrusted to survey interviewers themselves, without sufficient supervision and control. It has been found, for example in some surveys in India, that enumerators tend to choose small segments, perhaps to reduce their subsequent interviewing workload. This can result in serious undercoverage. Systematic biases have also been found where field-workers are instructed to create segments of a prespecified uniform size.

Dwellings and households

Lists of dwelling (or housing) units are less durable than frames of area units, and lists of households are generally less durable than those of dwellings and other structural units. The major problem at the stage of sampling dwellings or households is *undercoverage* which may arise: (a) because of incompleteness and poor quality of listing within sample areas; and (b) because of the time-lag between listing and interviewing, which may mean that dwellings and households newly created during that time-lag are not reflected in the sampling frame. Coverage can sometimes be improved by listing and selecting these units in small contiguous groups rather than singly. It may also be possible to develop a supplementary sample for newly constructed dwellings if such information exists from housing permits or similar sources. *Overcoverage* can also occur (though in practice less commonly than undercoverage) if (a) some units appear in the list more than once; or (b) units out of the scope of the survey are included and not identified and removed at the data collection stage; or (c) households or dwellings from areas not selected into the sample have been included in lists for the selected areas. Sufficient attention and resources must be devoted to the production and maintenance of up-to-date lists to control such errors of under- and overcoverage.

Selection of individual persons

In labour force surveys, much of the information collected pertains to individual persons, who are identified and listed within households. Individuals become eligible for the survey on the basis of specified personal characteristics such as age. Non-coverage can occur at this stage because of (a) a failure to identify some eligible persons in the sample household, or (b) incorrect information on personal characteristics necessary for selection to the survey. Common examples of missed persons are young male members, lodgers, servants and other non-family members of the household, persons engaged in illegal activity or in activity carried out by illegal means. When the *de facto* coverage definition is used (see Section 2, Chapter 11), persons “in transit” (but who usually reside in private households) are not covered.

Sample selection and implementation errors

Similar errors can also occur due to incorrect application of the sampling procedure. These differ from coverage errors proper in that coverage errors concern shortcomings of the frame and what remains outside the frame, while sample selection errors concern

losses and distortions within the sampling frame. Consequently, the methods of assessment and control are generally different for the two types of error. However, their impact is basically similar: some units are entirely excluded (i.e. have zero probability of selection) while some are selected with probabilities which depart from design probabilities, usually in an undocumented way. Such errors distort the sample structure, which can result in known or unknown biases in statistical estimates obtained from the survey.

Some sample selection errors, if identified, may be corrected in part at the estimation stage with proper weighting of the sample units. However, this is not always possible, especially if adequate records are not kept of the sample selection procedures.

At the implementation stage, systematic coverage biases can result from substitution: if, for example, field-workers substitute more easily covered units for the more inaccessible units actually selected into the sample.

Effect of coverage and related errors

Apart from the size and nature of the coverage error involved, its effect will depend on the type of statistics being considered. In estimating *population total counts*, such as the total number of unemployed, the effect of coverage error is direct and of similar relative magnitude. That is, the percentage error in estimating the total number in a population is similar in magnitude to the percentage under- (or, rarely, over-) coverage of sampling units (unless, of course, this is corrected at the estimation stage on the basis of more reliable counts obtained from some external source). In estimating *total values* (such as total hours worked), the effect will depend not only on the numbers missed, but also on the relative values of the units missed: it will be proportionately smaller if units with below-average values tend to be missed more often; it will be larger if units with above-average values tend to be missed. The first situation applies in some agricultural and economic establishment surveys, where unit values are highly slanted and a relatively small number of well-covered units account for a large share of the total value. However, in labour force surveys with households and individuals as the units, the unit values for many variables are rather uniform and the impact of undercoverage is roughly proportionate to the magnitude of undercoverage itself. Nevertheless, this may not be strictly true: small or single-person households, especially those comprising economically active persons away at work, are often subject to higher rates of undercoverage.

Concerning estimates of *proportions, means, rates and other ratios* (as distinct from estimates of population totals), the biases resulting from undercoverage are in a sense less direct, and depend on the difference in average characteristics between the units covered and units not covered. For these effects to be significant, the difference in characteristics and the degree of undercoverage would both need to be significant.

Concerning estimates of *differences* between various subgroups of the population or between different time periods (such as urban-rural differentials or seasonal variations in unemployment), the biases associated with coverage errors would depend on the net (algebraic) difference between biases for the subgroups or periods being compared. Common biases would tend to cancel out, while biases in opposite directions would be additive; the former is fortunately the more common situation, but not invariably. Note also that a bias which may be small in comparison with the mean for one group (or time period), may not be small in comparison with the difference between group (or period) means.

Assessment

Neither the magnitude nor the impact of coverage errors is easy to estimate because they require information not only external to the sample but also, by definition, external to the sampling frame used.

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Macro-level comparison with external data

It is a basic requirement in any sample survey to check that the achieved sample, except for the variability resulting from the sampling error, corresponds in distribution and characteristics to the target population it is meant to reflect. Current population estimates based on the population census, vital registration and other sources usually provide the most relevant standard for checking the results of the labour force survey sample. It is important to ensure that the sources being compared are compatible in coverage and scope, as regards both space and time. It is common, for instance, that people living outside the private household sector, people living according to other special arrangements, or in remote areas, some mobile populations, etc., are covered for the census but explicitly excluded from the survey. Naturally, adjustments for any such differences will need to be made in the comparison.

The ideal is to compare estimates of population totals from the sample with those from the external source, both classified according to the same criteria such as geographic location, type of place, sex, age and other characteristics of the population. An indicator of completeness and representativeness of the sample is obtained by computing the following ratio for various subgroups:

$$c = \frac{\text{inflated sample estimate of the subpopulation total}}{\text{the same estimate from a reliable and comparable external source}}$$

Usually, the problem is undercoverage and c is less than 1.0. Its complement, $s = (1 - c)$, is called the *slippage rate*.

This comparison provides only a broad indication of net coverage, i.e. the net effect of errors of undercoverage and overcoverage. It does not measure gross coverage error (i.e. the total number of coverage errors, whether of undercoverage or overcoverage), and in general cannot pinpoint the source of error. However, possible sources of the discrepancy can sometimes be hypothesised and then investigated further where practicable by using more precise methods. Actually, such comparison provides an indication of the overall representativeness of the achieved sample (rather than of net coverage as such) which, apart from completeness of the frame, reflects the effect of other sources of error such as errors in sample selection and implementation, non-response, response errors and the inevitable sampling variability. Nevertheless, the predominant effect involved in many situations is that of net coverage (and sample selection and implementation) errors.

Abstracting the effect of overall net coverage error, distortions in the sample distribution are indicated by comparing the *weighted sample distribution* with the *population distribution* according to the same criteria of classification:

$$d = \frac{\text{proportion of the weighted sample belonging to a subpopulation group}}{\text{proportion belonging to that subgroup from the external source}}$$

The ratio c is relevant in estimating population totals from the sample, while d , which imposes a less stringent requirement, is relevant in estimating means, proportions and other ratios from the sample.

As explained in Section 6, Chapter 11, the inverse of the index (c or d) provides the basic adjustment weights which can be applied to sample data (already weighted by inverse sampling fractions) to ensure that control totals and distributions agree with the external standards. It was also noted that in applying this adjustment, it is important to ensure that the external standard is in fact more accurate than the estimates and distributions directly obtained from the sample; otherwise, large and unknown biases may be introduced. The fulfilment of this requirement cannot be taken for granted, especially, as in many developing countries, where the external population data available may not lend itself to comparison nor be sufficiently reliable. In particular, the danger of introducing bias is increased if these adjustment weights are applied separately for

many subgroups at too fine a level of classification, for example by small regions or by detailed characteristics of the population.

Micro-level comparisons

A more precise indication of gross coverage errors along with some information on possible sources of error can be obtained when it is possible to compare the survey lists case by case with lists available from other sources. The latter may be obtained from: (a) an external, independent source such as population registers or voters' lists; or (b) a special operation such as the relisting of household sample areas and/or members within households using some superior method, followed by micro-level matching.

Option (a) is of limited applicability in developing countries because of the general non-availability of reliable lists of households and individuals. Where applicable, the method should provide good estimates of undercoverage in so far as the independent source of information is complete, comparable in space and time, and contains sufficient information for micro-level matching with units in the survey frame. Since the method aims at identifying individual units not covered in the survey frame, it can potentially throw light on the causes of undercoverage and characteristics of units undercovered. Its limitations are: difficulties in obtaining reliable, comparable and independent external data; and the difficulties, errors and high cost of case-by-case matching.

Option (b) requires the separate operation of relisting of households and/or persons within households, say as a part of a post-enumeration survey or reinterview programme. In comparison with (a), it may potentially yield more comparable information, which is also usually easier to match with the survey lists. The major disadvantage is the high cost of mounting a separate and special operation. Consequently, the task can normally be undertaken only on a limited scale, perhaps confined to a limited number of sample areas. These sample areas should be selected in a way that permits generalisation of the results to the population of interest with reasonable confidence. It would be efficient to overrepresent areas with above-average expected error rates. At the same time, the sample should be sufficiently small and concentrated so as to permit close supervision and control. The main strength of option (b) is that, in the absence of external sources in many situations, this is the only practical method available for investigating gross coverage errors.

3. Non-response

Non-response refers to the failure to obtain the required information (a) from the units selected into the sample, and (b) on some or all the relevant items for each of these units. The first type of response failure, where no information is obtained from some units, is termed "complete non-response". This distinction need not be rigid in all circumstances. For instance, in a continuing labour force survey, some units may remain in the sample over a number of rounds, and it is often possible to impute some information (such as age, sex, etc.) from an earlier round to a later round where non-response has occurred. Apart from errors in imputation, this procedure will have the effect of changing some cases of complete non-response to those of partial non-response. In contrast, the information missed in some cases with partial response may be so essential to the survey objectives that there is little use in retaining the partial information attained, and cases of partial non-response are thus converted into those of complete non-response.

Nevertheless, the distinction between complete and partial non-response is useful. The former reflects the overall characteristics of the survey: its general receptivity, complexity, organisation and control of field-work. The latter reflects the complexity and clarity of particular items of information in the questionnaire, and the level of

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comprehension and diligence shown by particular interviewers. In its sources, impact and methods of assessment and control, partial non-response is rather akin to response errors, to be discussed in Section 5. This section deals mainly with complete non-response (which is henceforth referred to simply as “non-response”); this non-response is normally measured at the level of the individual *unit of enumeration*, which may or may not be the same as the lowest stage units used for sample selection. When non-response is measured at the level of individual items of information, of course it reflects the total effect of complete and partial non-response for that item.

Sources

A variety of factors can give rise to non-response, their relative contribution varying from country to country and survey to survey. In many developed countries as in urban, especially large metropolitan, areas in some developing countries, the problem appears increasingly to be that of determined refusals and of not finding respondents at home at the time of the interviewer’s visit. However, in general, especially in rural areas in many developing countries, outright refusals are still relatively rare. A more common problem is non-contact due to difficulties in approach to or correct identification of sample units, in turn resulting from deficiencies in the information provided in the sampling frame or from other adverse circumstances, such as physical inaccessibility. In some countries, legislation requires compulsory participation in official censuses and surveys. Whilst legislation, where enforceable (which is not always the case), may result in higher response rates, it can also lead to serious response errors, in so far as some respondents are not willing to co-operate voluntarily.

Impact

The impact of non-response on survey results is in principle similar to that of undercoverage. Unless appropriate corrections can be made at the estimation stage, non-response has a direct effect on the estimation of population totals: the percentage error in estimating the total number of units in the population tends to be similar to the percentage non-response. In estimating total *values* the effect will also depend on the relative value of units missed. In estimating means, proportions and other ratios, biases occur only to the extent that non-responding units differ in characteristics from the responding units; such systematic differences between responding and non-responding units are, of course, commonly encountered.

Apart from imputing missing values where reasonable and possible, the correction for non-response is usually made by inflating the survey estimates by the inverse of the *response rate* (as defined below). For this purpose, the sample is usually divided into a number of parts or strata expected to be internally more homogeneous than the population at large. Examples are divisions by small geographical areas and type of place; ethnic and socio-demographic characteristics of individuals can also be used where they are available for both respondents and non-respondents. Then the above-mentioned correction for non-response is applied separately for each part. In this way, biases remain in the estimates to the extent that respondents and non-respondents differ from each other *within* these separate parts or strata.

To summarise, assessment of the impact of non-response on survey results depends upon (a) the incidence or rate of non-response, and (b) characteristics of non-respondents relative to those responding, within categories into which both of these groups have been classified. In principle, the computation of (a) is straightforward, but there can be ambiguities and practical difficulties as discussed below. It is generally much more difficult, and often impossible, to obtain information concerning (b). Sometimes, information on some basic characteristics of non-respondents may be obtained from neighbours, other households members, etc., during the survey. In continuing surveys,

it is also possible sometimes to impute the information from previous rounds. Occasionally, intensive follow-up studies have been undertaken to contact non-respondents. This option is recommended in situations where non-response rate is high and potentially threatening to the value of the survey.

The impact of non-response is often found to be related to the cause of non-response. For example, persons not found at home are often economically active persons and/or persons residing alone or in small households. Such persons often differ more markedly from responding persons than do some other categories of non-respondents. Consequently, their impact on survey results will also tend to be more marked (see, for example, Hong Kong, 1980; Sweden, 1980a and 1980b). The implication is that in surveys it is important to record the causes of individual cases of non-response.

Just as coverage errors are indicative of the quality of the sampling frame, including that of mapping and listing, *the extent of non-response can be a most telling indicator of the quality and success of survey implementation*. Irrespective of its impact on survey results and the extent to which the resulting biases may be removed or reduced through correction measures at the processing or analysis stage, *a high rate of non-response implies that the survey as a whole was poorly received and/or poorly implemented*.

Measurement: Computing non-response rates

Unlike undercoverage, non-response can usually be measured from records internal to the survey. In principle, non-response rate is simple to define: it is the number of eligible sample units not responding, divided by the total number of eligible sampled units. To apply this definition, it is necessary to be clear as to what constitutes an “eligible” unit and what amounts to “responding”. This section aims to provide precise formulae for computing non-response rates.

To begin with, consider a simple case in which a self-weighting sample of a known number n of households is selected, all eligible for the survey. Out of those, n' households are successfully interviewed. A successful interview may be defined as one in which information, at least on a certain specified set of critical variables, is obtained. We define the response rate (R) as:

$$R = n'/n \text{ (usually expressed as a percentage),} \quad (1)$$

and the corresponding non-response rate (NR) as:

$$NR = (1 - R) = \frac{(n - n')}{n}$$

In practice, a situation is usually more complex than the above simple case. A basic difficulty arises from the fact that the size of the selected sample (n) is not known if the ultimate sampling units listed for the final stage of sampling differ in type from the units enumerated. This difficulty is increased in many surveys by the absence of a precise definition of units of listing.

Units of sampling and enumeration

It is important to note that the numbers in equation (1) refer to units of enumeration, and not necessarily to sampling units. Often the latter are variably sized clusters of the units of enumeration. Consider a survey in which a sample of m dwellings has been selected, out of which m' dwellings were successfully contacted during the survey. Suppose that in these m' dwellings there were found n' households to exist, out of which n'' were successfully interviewed in the survey.

To compute the response rate for households, we know the number successfully interviewed (n'') in the above example, but not the exact number “selected”. The number selected can only be estimated on the basis of some assumptions. A practical way to compute the response rate is as follows.

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The data collection process consists of two stages: contacting of dwellings from the sample and interviewing households within contacted dwellings. The response rate at the first stage is:

$$R = \frac{\text{number of dwellings successfully contacted}}{\text{number of dwellings selected}} = \frac{m'}{m}$$

And at the second stage it is:

$$R = \frac{\text{number of households successfully interviewed}}{\text{total number of households in contacted dwellings}} = \frac{n''}{n'}$$

The overall response rate for the household interview is the product of the two stages:

$$R = \frac{m'}{m} \cdot \frac{n''}{n'}$$

Note that in the *contacted* dwellings the average number of households per dwelling is (n'/m'). If this same average is *assumed* also to apply to non-contacted dwellings, then the *estimated* number of households in all the dwellings in the sample is:

$$\begin{aligned} n &= (\text{number of dwellings in sample} \times \text{average households per dwelling}) \\ &= m \cdot \frac{n'}{m'} \end{aligned}$$

It can be seen that with the value of n , equation (2) becomes:

$$R = \frac{n''}{n'} \text{ i.e. } \frac{\text{number of households interviewed}}{\text{estimated number of households selected}} \quad (3)$$

It is clear that the assumption made in computing response rate in (2) is the one already stated: the average number of households per dwelling is the same in both contacted and non-contacted dwellings.

The same ideas can be extended to the next stage: listing of persons in interviewed households, and interviewing those persons. The response rate at the third stage is:

$$R = \frac{\text{no. of eligible persons successfully interviewed}}{\text{no. of eligible persons listed in interviewed households}} = \frac{p'''}{p''}$$

The overall response rate considering all the three stages (dwellings, households, persons) becomes:

$$R = \frac{m'}{m} \cdot \frac{n''}{n'} \cdot \frac{p'''}{p''} = \frac{p'''}{p}, \text{ where } p = m \cdot \frac{n'}{m'} \cdot \frac{p'''}{n''} \quad (3)$$

As before, the numerator (p''') is the number of persons interviewed, and the denominator (p) is the *estimated* number of eligible persons selected into the sample. The additional assumption is that the average number of eligible persons per household is the same in households interviewed and households not interviewed. This assumption may not always be reasonable: it has been observed for example that single persons or small households are more difficult to contact. Equation (3) may, however, be applied separately for households of different sizes. But, that would require that information on household size is available for responding and non-responding households, or that some assumption can be made regarding distribution of households by size in the selected sample. Such information may be available more easily in continuing surveys where samples enumerated from one round to another overlap or are related in some other way.

Blanks in sample lists

Difficulties in computing non-response rates can arise from the presence of blanks in sample lists. "Blanks" are listings which represent non-existing or out-of-scope units. The blanks are to be disregarded since only units that belong to the study population

can contribute to non-response. This will present no problem in terms of non-response if blanks can be correctly identified and eliminated from the sample lists. (Of course, if blanks are identified only after sample selection, their presence can introduce variation in sample size and increase sampling variance.) However, the problem in practice is that field-work may confuse some of these blanks with genuine cases of non-response. Indeed, inadequate supervision and documentation and the use of out-of-date lists for sampling not only increase the incidence of actual non-contact, but can also increase problems of identification between blanks and non-respondents. For instance, when a separate operation for listing dwellings precedes household interviewing, a significant component of non-response may consist of units which were listed and which still exist, but which the interviewer fails to find for reasons such as inadequate documentation or poor communication. At the same time, lists may contain addresses which are non-existent (demolitions, mistakes in lists, etc.). Of the two groups, the former constitutes non-response, while the latter are merely blanks in the frame. In practice, it is often difficult to distinguish between the two. Similarly, interviewers are often unable to distinguish between vacant dwellings (which amount to blanks in the list), and occupied dwellings with inhabitants temporarily away (which, depending on the coverage definition, may constitute non-response). The critical requirement is to ensure that, with the use of a few clearly defined categories, the interviewers are able to record the outcome of each unit in the sample in such a way that cases of genuine non-response can be distinguished from mere blanks or ineligible units in the list. The blanks will then be entirely disregarded in computing response rates. Where this requirement is not met, there will be an ambiguous category and one can estimate only a range within which the response rate falls: the upper estimate of response rate would be given by assuming that the entire ambiguous category consists of blanks (and hence ignorable in both the numerator and denominator for computing response rates); the lower estimate is obtained by assuming that it consists entirely of non-respondents. For a discussion of these issues with a number of illustrations from developing countries, see Verma (1980).

Weighted samples

In non-self-weighting samples, the question is whether the response rates should be computed with weighted or with unweighted data.

For operational control and related purposes, it often suffices to have response rates computed with unweighted data: the response rates will then reflect the actual number of interviews completed and the number not completed. Such rates are easier to compute and can be monitored over time, classified by survey area, interviewer involved, etc.

To obtain a more precise indication of the *impact* of non-response on survey results, it is better to compute weighted response rates, in which the appropriate sample weights have been applied to eligible sample units in the numerator and the denominator in equations like (1) to (3) above. In any case, if sample results are to be adjusted, i.e. inflated by the inverse of the response rate, it is essential that the rates are computed with weighted data.

Some examples of non-response rates in labour force surveys

The figures on the following page, taken from ILO (1986), provide an indication of the level of non-response as reported in recent labour force surveys. It appears that around one-half of the reporting countries are able to keep non-response rates in their labour force surveys within 5 per cent. This includes a number of developing countries, but also developed countries such as Australia, Canada, Italy, Japan, United States and West Germany. However, non-response rates of 5-12 per cent are also common (around one-third of reporting countries, including among others, Malaysia, Philippines, Peru, Spain and Norway). A few countries report very high non-response rates, the highest

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Total number of countries covered in the ILO study	44
Number of countries:	
— providing no information on non-response rates	14
— total reporting non-response rates	30
— of which, reporting non-response rates of	
< 2%	5
2-5%	11
5-8%	5
8-12%	6
over 12%	3

reported being for Denmark (24 per cent). It is not encouraging that in the study a large proportion of the countries provide no information on non-response rates.

Related measures

Apart from overall response and non-response rates, it is often useful also to compute and monitor certain related measures. Some of these are listed below:

- (1) *Non-response rates by cause.* The number of interviews not completed may be classified according to main cause of non-response. Each of these divided by the (actual or estimated) number of units selected gives cause-specific non-response rates, such as refusal rate, non-contact rate, etc. These add up to the overall non-response rate.
- (2) *Response rates by stage.* Often, survey implementation proceeds from ultimate sampling units (e.g. dwellings) to units of enumeration (e.g. persons) in stages. It is useful to compute response rates for each stage, the product of which over all stages gives the overall response rate. These rates by stages may be usefully classified according to cause of non-response.
- (3) *Non-response rate by field-worker.* As noted earlier, monitoring of non-response rates by individual field-worker is a basic instrument of supervision and control, particularly in continuing survey operations.
- (4) *Blanks in sample lists.* When sample lists contain many blanks, it can also be useful to compute prevalence rates for blanks, possibly after classification by type of blank (e.g. demolished, unoccupied, out-of-scope units). The denominator will be the total number of sampling units selected, including blanks in the list; the numerator will be the number of blanks according to type as applicable.
- (5) *Item non-response.* At the analysis stage, it can be important to take into account missing data for particular items in the tabulation and interpretation of the results. It is important therefore that any imputed values for item non-response are marked as such on the data files so that they can be identified afterwards. Relevant items do not necessarily correspond to individual questions in the questionnaire, but may be derived variables each constructed from a number of questions. Usually, the computation is confined to cases which have been successfully completed on the whole (with the possible exception of some items, including the item of interest) and for which the item of interest is applicable. The denominator for computing item non-response rate will be all such cases; the numerator will be cases from among these for which the item of interest has not been obtained:

$$\text{Item non-response rate} = \frac{\text{"Completed" cases for which the item of interest is applicable but has not been obtained}}{\text{All "completed" cases for which the item of interest is applicable}}$$

The above expression for item non-response rate does not take into account the effect of cases excluded because of complete non-response. Normally, this is all that is required. If the effect of complete non-response is to be taken into account (to assess the total impact of item non-response), a particular (same) quantity should be added to both the numerator and the denominator above. This quantity is the estimated number of cases among the complete non-response cases to which the item of interest applies. This number is not usually available, but may be imputed from the observed distribution among the responding cases.

4. Sampling error

It is widely recognised as good practice for survey results to be accompanied by detailed information on the sampling variability of survey estimates, and for interpretation of the results to take this variability into account. This is particularly important in the case of large-scale continuing surveys.

Sampling errors are inherent in the process of statistical estimation of population parameters from results obtained on a probability sample of the population. A sample design specifies rules by which units from the population are to be selected for enumeration and rules for the estimation of population parameters; even in the absence of measurement and implementation errors, repeated application of the same design would result in different estimates depending on the actual units which happened to be selected. The sampling error of an estimator is a measure of its variability under the theoretically possible repetitions of the survey in the absence of non-sampling errors.

Significance of sampling errors

In interpreting information on sampling errors, it should be remembered that they represent only one component of the total survey error: sampling errors represent the lower limit of the total error. Information on sampling errors, therefore, has an “orientational value”. What this means is that if the sampling error is allowed to become too large, the whole survey results may be useless for practical purposes. It is necessary (but not by any means sufficient) that sampling errors be kept within certain limits if significant conclusions are to be drawn from survey results.

In addition, information on the magnitude of sampling errors is essential in deciding the degree of detail into which the survey data may meaningfully be classified. In labour force surveys, proper interpretation of survey results usually requires very detailed classification of the results by sex, age, other personal and household characteristics, place of residence, geographical location, and so on. Even for a sample of several thousand respondents, the cells of tabulation can rapidly become very small in size. Roughly speaking, while the magnitude of non-sampling bias in a category does not depend on its sample size, the sampling (along with certain components of non-sampling) variance involved tends to increase proportionately with decreasing sample size. Consequently, the latter can easily become the major component of the total error for many small categories and comparisons of substantive interests.

Information on sampling error is also essential to sample design, evaluation and redesign. The magnitude of a given survey estimate’s sampling error depends, among other factors, on the sample size and on sample design, in particular on the extent to which units in the sample are clustered together and are homogeneous within clusters. To reduce sampling error, it is necessary to increase sample size and/or to reduce the degree of clustering by scattering the sample over more and wider areas. At the same time, these very factors would increase survey costs, and may also increase the non-sampling biases involved due to the greater difficulties in quality control and

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supervision resulting from the increased size of the operation. A balance is therefore required to minimise the total error with given resources.

In continuing labour force surveys, considerations of sample overlaps and rotation, simultaneous representativeness in both space and time, the need for periodic sample revision and redesign and many other factors (as discussed in Chapters 10 and 11), can make the sample design and estimation procedures particularly complex. Clearly, many of these decisions cannot be taken scientifically without detailed information on sampling errors as determined by sample size and design.

Estimation

The number of estimates produced in a typical labour force survey can be very large. In a continuing survey, certain measures of sampling error may in fact be quite stable from one round to another, so that the entire set of sampling error computations need not be repeated in each round. Nevertheless, practical methods of computing sampling errors need to be simple enough to provide easy computational formulae, which in turn will permit the detailed computations required for the numerous estimates involved to be made economically. At the same time, practical methods of computation need to be general enough to cover the complexities and variations which frequently occur in sample design for large-scale surveys.

A review of practical methods of computing sampling errors has been provided by Kalton (1977). One of the most widely used methods is based on the following principle. Under certain assumptions, usually not too restrictive in practical situations, sampling errors for a variety of statistics, such as proportions, means, ratios and their differences, over the total sample as well as over diverse subclasses, can be obtained on the basis of values totalled at the level of primary sampling units, i.e. on the basis of primary sampling unit totals. The sample design and selection within individual primary sampling units may be complex, and differ from one to another, without affecting the form of the variance estimation involved. This approach *does* take into account the components of variance from all, including second and subsequent stages in a multi-stage design, even though no explicit reference appears in the computational formulae to any stage beyond the first. Essentially, this is because the variance contributed by the later stages is reflected in the observed variation among the sample results from first-stage units. The basic assumptions required are (a) that two or more primary sampling units are drawn from each stratum, and (b) that these selections are drawn independently of one another, with random choice and with replacement. These conditions are seldom satisfied exactly in practical designs; however, they are reasonably well approximated in many situations. Given these assumptions, variance estimates for linear functions of characteristics such as totals estimated from the survey can be computed using analytical formulae. For non-linear functions (such as the ratio estimates involved in many surveys) use is commonly made of the class of methods called “Taylor expansion methods”. Numerical procedures and computer programs using this approach have been developed and are fairly widely available (see, for example, Woodruff and Causey, 1976; Verma, 1982; Verma and Pearce, 1987; Schnell et al., 1988). Other methods such as “balanced repeated replications” and “jack-knife repeated replications” for computing sampling errors for complex statistics from complex samples are also available; for numerical illustrations and review of the methods, see Kish and Frankel (1974). A general discussion of variance estimation is provided by Wolter (1985).

Patterns of variation

For a number of reasons, it is useful to investigate the pattern of variation of sampling error results across survey variables, across sample subclasses, and across surveys and survey rounds, and to relate these patterns to the structure of the sample.

- (1) *Extrapolation of computed results.* Generally, the estimates of interest from a large-scale multi-purpose, multi-round survey are too numerous for sampling errors to be computed for all of them. It is necessary to have some means of extrapolation of errors from computations for selected variables and sample categories, to other variables and categories for which actual computation was not performed. This requires a study of the patterns of variation of sampling errors across variables and subclasses. This is particularly useful in continuing surveys where certain measures of the sampling error may be relatively stable from one round to the next, so that once the variance pattern is established in the beginning it can be utilised to predict sampling errors for subsequent rounds.
- (2) *Summarisation for presentation.* Even if the sampling errors for all published estimates were computed, they would be too numerous to publish. On the basis of observed patterns, the information usually needs to be summarised for presentation.
- (3) *Smoothing of computed results.* Sampling errors computed from sample data are themselves subject to considerable variability, particularly for samples based on a small number of primary units. In fact, it is often preferable and more meaningful to use results appropriately averaged over a number of computations, rather than to rely on the precision of individual computations.
- (4) *Sample design and redesign.* Apart from indicating the precision of existing survey estimates, the objective of sampling error computation is to evaluate how a particular design has fared and to provide data for designing future samples. For this, it is necessary to explore patterns of variation of sampling errors as related to important features of the sample structure, such as clustering, stratification and weighting. In fact, the relationship between sampling error and sample structure is also useful in the above-mentioned objectives of extrapolation, summarisation and smoothing of computed results.

Portability

To meet the above requirements, it is necessary to search for “portable” measures of sampling variability, i.e. measures which permit carrying over the results from one subclass to another, from one variable to another, and from one survey or survey round to another.

Based on the pattern of sampling errors calculated for various estimates for different sample sizes either from the survey itself, or from past rounds in a continuing survey, or from similar surveys, it is possible to build approximate models or to draw diagrams or charts, etc., that allow one to calculate or read off approximate values of sampling error for other estimates. (For detailed illustrations, see Gonzalez et al., 1975; Verma, 1982.)

The actual value of sampling error for a given estimator depends on a variety of factors such as: the nature of the variable, its units of measurement and the type of estimation involved; sample size and design; the nature and distribution of subclasses of interest across sample clusters; and, for multi-round surveys, sample overlaps and the rotation pattern. Various derived measures of standard errors are introduced to control or reduce the effect of some of these factors, and hence to make the measures more portable. The following are some of the commonly used measures derived from standard error (which is the square root of the variance):

- (1) *Coefficient of variation.* This is defined as the standard error divided by the mean, and can be a stable (portable) measure across repetitive surveys or surveys with similar design, size and content. By taking the ratio of standard error to the mean, the measure removes the effect of the units of measurement, and scale and size of the estimate. In so far as coefficients of variation computed for one set of statistics

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can be used for another set, the need for fresh computations is reduced. (For some detailed and practical illustrations, see Zarkovich, 1979.)

- (2) *Design factor*. This is one of the most useful measures in the present connection, and indicates the overall effect of sample structure on the magnitude of the sampling error. Design factor (deft) is defined as the ratio of the estimated standard error for the actual design (se) to the estimated standard error for a simple random sample of the same size (sr):

$$\text{deft} = \text{se}/\text{sr}$$

(An equivalent measure often used is the “design effect” or deff, which is simply the square of deft, i.e. the ratio of actual and simple random variances.) Deft is a more portable measure than se, since it does not depend upon factors which affect both se and sr in the same way, factors such as units of measurement, magnitude and scale of the estimate, its variability in the population and, above all, sample size. Deft depends upon other factors such as the nature of the estimator, sample design, and type and size of sampling units. Deft is a summary measure of the effects of departure of the actual sample design from a simple random sample of units of enumeration. It is a comprehensive factor which attempts to summarise the effect of various complexities in the design, especially those of clustering, stratification and weighting. It may even include the effect of ratio or regression estimation, of double sampling, varied sampling fractions, sample rotation and sample overlaps between rounds, etc. For these reasons, many samplers include the ratio se/sr as a routine item in the output of variance computations.

Another way of looking at deft is as an indicator of how clustering and other features of the design (which save costs and permit enhanced control of non-sampling errors) result in reducing the effective sample size. If n is the sample size in the actual design, then with simple random sampling a smaller size (n') will give the same sampling error, where:

$$n' = n/\text{deft}^2$$

For several empirical illustrations and further discussion, see Kalton and Blunden (1973); Kish et al. (1976) and Verma et al. (1980).

- (3) *Rate of homogeneity (roh)*. For a given variable and a given number and type of cluster and subsampling procedure used, the value of deft tends to increase with increasing cluster size. To control this effect, Kish (1965) introduced a synthetic measure roh (rate of homogeneity) defined as:

$$\text{deft}^2 = 1 + (b - 1)\text{roh}$$

where b is the “average cluster size” (i.e. the number of units of enumeration selected per primary sampling unit in the sample). The model is based on the concept of intra-class correlation which measures the degree of correlation between members of a cluster. The above equation has been developed for self-weighting samples in the absence of extreme variations in cluster size, though it can be adapted to take more general conditions into account. The rate of homogeneity (roh) is a synthetic measure introduced with the aim of measuring the average degree to which values of a particular variable are homogeneous within primary sampling units, relative to the variables’ overall variability. In principle, roh is more portable than deft since it removes the effect of differences in sample size per cluster. Empirically, the computed values of roh tend, however, to be quite unstable and variable.

- (4) *Round-to-round correlations*. In continuing surveys, it can also be very useful to accumulate information on round-to-round correlations between fixed panels of units (or units from otherwise related samples), and on other aspects of sampling error of estimates of change between survey rounds. Such information is essential

to improve estimation procedures, rotation patterns and various other aspects of sample design for continuing surveys. (See, for example, the discussion on composite estimates with overlapping samples in Section 6, Chapter 11.)

An example

The following example from Australian Labour Force Survey is a simple and concise method of presenting information on sampling errors, presumably drawing on the pattern of results observed in a continuing survey operation (ILO, 1986). Table 21 gives appropriate values of standard error as a percentage of the size of the estimate (number of persons involved in the category), as a function of the latter.

Table 21. Relative standard error as a function of size of estimate

Size of estimate (persons in the category)	Relative standard error (% of the estimate)
4 500	21.6
5 000	20.0
6 000	18.0
10 000	14.0
20 000	10.0
50 000	5.8
100 000	3.9
200 000	2.6
300 000	2.0
500 000	1.4
1 000 000	0.9
2 000 000	0.6
5 000 000	0.3

The above can be used to determine confidence intervals in the estimation of the size of (number of persons in) different categories such as the employed, unemployed, self-employed, etc. For substantive variables, approximate values of the relative standard error are obtained by multiplying the above figures by a factor depending on the variable concerned. In the case of the Australian Labour Force Survey, these factors were determined as follows:

Variable	Factor (with which above relative standard errors are to be multiplied)
Aggregate hours worked	1.2
Average hours worked	0.5
Average duration of unemployment	1.5
Medium duration of unemployment	2.0

5. Response errors

The nature and sources of response errors

Response errors are errors originating at the data collection stage: from inadequate conceptualisation and formulation of questions, and later in the asking of questions and the obtaining and recording of responses. Errors arising at the subsequent stages of processing the responses are discussed in the next section. In practice, since responses can be studied and analysed only after being subject to a certain degree of processing

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(coding, data entry, etc.), some processing errors arising at these later stages tend to get confused with the observed response errors. By the same token, some components of response error are confused with usual estimates of the sampling error, because the latter are based on values which can only be obtained after the process of observation. These are illustrations of the point made in Section 1, namely that components of errors measured by various methods are neither completely separable nor additive to yield overall magnitude of the total error. This point should be kept in mind during the following discussion.

The subject of response errors covers a wide field, since the sources, nature and form of errors involved are varied and differ from one context and survey situation to another.

In a most fundamental sense, response errors arise from shortcomings in the *substantive design* of the survey: the concepts and characteristics to be measured in the survey have to be transformed into sets of questions and categories which must cater for the wide variety of conditions encountered, including many marginal cases which do not fall neatly into one conceptual category or another. Different conceptual issues in relation to the quality of response in labour force surveys have already been discussed in Part One of this manual. For instance, Chapter 2 noted that the respondents' and interviewers' subjective understanding of the notion of "work" and "economic activity" is unlikely to be as encompassing as that envisaged by survey definitions. It showed how probing during the interview with a detailed list of activities can influence the completeness with which economic activities may be identified. Chapter 2 also discussed difficulties in defining the activity status of borderline cases, i.e. cases where a slight alteration in one or more of the features of the labour force framework would entail a change in the labour force status of the respondent. Similarly, Chapters 3 and 4 discussed, respectively, how accuracy in reporting current activity may be improved through day-by-day reporting, and that of usual activity through month-by-month reporting, and so on.

Response errors will also arise in *application of the design*, through errors on the part of the respondent, the interviewer, or both. One obvious source is the inability of respondents to provide the required information: the respondents may simply never have known certain facts; and even when theoretically known, the respondents may be unable to recall or report that at the time of the interview, especially if the facts are not particularly important or salient in their mind. Respondents may also be unwilling to divulge certain information (e.g. activities which are not entirely legal or are carried out by illegal means), or to report it truthfully for various reasons. An additional source of uncertainty arises from the fact that in many labour force surveys, for reasons of economy, a certain degree of response by proxy has to be tolerated. Even if proxy responses may not much affect the net univariate distributions obtained, it has been found that for certain variables they may result in much more significant gross differences and seriously distort multi-way tabulation and analysis of the data (see, for example, Martin and Butcher, 1982). Similarly, interviewers may also introduce errors through their misunderstanding or misapplication of concepts and procedures, preconceptions and subjective biases, misrecording of responses, and sometimes even dishonesty.

Given the diversity and complexity of response errors, an appropriate strategy for their assessment and control requires concentration and economy of effort. The practical objective should be to try (a) to identify the most important and common types of errors encountered in a particular situation and (b) pinpoint as far as possible specific sources and causes from which they arise, so that effort and resources can be concentrated where they are likely to be most effective in improving response quality. It follows that response errors should be assessed and analysed at the level of individual respondents and individual field-workers, as well as at the aggregate level in their impact on survey

estimates. Investigation at the individual level can help in identifying specific sources and circumstances giving rise to error; investigation at the more aggregated levels can help in identifying the significance of the error and of its impact on survey results.

Analysis of errors at the individual level: response error for an individual respondent refers to the deviation between the response obtained and the actual or true value for the individual. This can take various forms: item non-response, i.e. the failure to obtain information on certain relevant variables; incorrect reporting of values; omission of certain items or events; temporal misallocation of reported items and events, etc.

An effective strategy in obtaining useful information on the type, source and frequency of response (and processing) errors that affect the quality of the final survey estimates is to identify and *examine individual records* where errors may have occurred. Such cases may be identified on the basis of certain prespecified conditions such as edit failures or the presence of unusual or implausible codes and combinations of characteristics. The corresponding survey questionnaires or source documents can then be examined in order to identify whether the possible error resulted from a processing error (coding, data capture, etc.), or whether it arose at the data collection stage. Whatever the reason, the objective is to study the individual case in an attempt to identify where and how the error may have originated. Generally, it is not the primary objective of such an investigation to obtain quantitative measures of aggregate data quality, such as variance or bias.

Response bias

It is useful to distinguish, in their impact on survey estimates at the aggregate level, between bias and variable components of response errors. This is because of some fundamental differences in the methods of assessment and control in the two cases. As described in Section 1, biases are systematic errors which arise as a consequence of the general conditions under which the survey is conducted. Generally, bias can be assessed only on the basis of comparisons with information and relationships from sources and procedures extraneous to the survey proper. In a continuing labour force survey, for example, where more or less standardised design and procedures are followed from one round to the next, essentially similar response biases may affect the results from all the rounds. Consequently, such biases may go undetected unless the results are validated through external comparison.

The first step in identifying bias is through logical and substantive analysis of consistency and relationships in the data, against external standards and prior knowledge of the subject. Beyond that, magnitude of the biases requires comparison of survey results with some more accurate information. The latter may be available from some independent, reliable external source, or may be obtained through special data collection operations. There are several possibilities in connection with the latter, as discussed below.

Reinterviews using similar but improved procedures

The idea is to collect essentially the same information as the original survey by using similar but improved procedures. By “similar” procedures is meant that the source of information is of the same type as in the original survey: either exactly the same respondent or, where proxy interviewing is allowed, some other member of the original respondent’s household. Also, the interviews are based on the same questionnaire used in the original survey, though it may be supplemented by additional questions or further probing on certain items. Procedures may be improved, for example, by using more experienced and better trained interviewers, by closer supervision and control, by supplementation with additional questions and probing, and by in-depth follow-up of items where errors are suspected or detected.

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The basic model (method (1)) is to carry out two interviews following the original interview on a subsample. These consist of (a) a *reinterview* which is an independent replication of the original interview, followed by (b) a third *reconciliation interview* which identifies and follows up discrepancies between the first two interviews, with the objective of establishing correct responses and the source and circumstances of the error(s) made earlier. The reconciliation interview is required only in cases where the first two interviews do not agree and, clearly, must use improved and more intensive methods. The objective of the reinterview is to provide information on response variance (as discussed in the next subsection); they also help to identify discrepant cases for the follow-up, and hence reduce the size of the more expensive reconciliation operation. The objective of reconciliation is to establish true values against which response bias can be measured, and to investigate reasons for the discrepancies observed at the individual (micro-) level.

The potential advantage of the model is its ability to investigate sources of response error at the individual level, and to provide measures of response variance as well as of bias. Possible problems include the relatively high cost of mounting the two additional operations of independent reinterviewing and more intensive reconciliation interviewing; difficulties in finding skilled reconciliation interviewers; and practical difficulties in ensuring that the reinterview is in fact independent of the original interview but is still carried out under essentially the same conditions. Also, the method cannot take into account cases where both the original and the reinterview suffer from the same error, since in such cases no discrepancy to be further investigated and reconciled will show up.

Some variants of this basic model can be outlined. One possibility (method (2)) is to retain the same basic model (independent reinterviewing), but to combine the reinterview and reconciliation interviews into a single operation to save costs (and time). This procedure is followed in, for instance, the reinterview programme of the United States Current Population Survey (see United States, 1978). The danger in this approach is that the knowledge that a reconciliation will follow may bias the reinterview itself; also, interviewers may have a tendency to “correct” the reinterview on the basis of subsequent reconciliation. To reduce these problems, two steps can be taken (*ibid.*, p. 31): (a) reinterviewers refrain from looking at the records containing the original responses until the reinterview is completed and are instructed not to make any changes on the reinterview questionnaire as a result of information obtained during reconciliation; and (b) a certain proportion of the reinterviews are not reconciled. By design, the reinterviewer is not supposed to know whether or not reconciliation is required for a particular unit until reinterview is completed for that unit. Actually, over a period of time, the proportion reconciled in the Current Population Survey has been increased to 80 per cent because of the valuable information it yields on bias and sources of error. In the Canadian Labour Force Survey, a similar design is followed, where a random half of the reinterview sample is reconciled (by the same interviewer), while the other half is not reconciled (Canada, 1976, p. 84). The accumulation of data from the two parts of the sample permits the study of general aspects of response error. Simple response variance may be estimated from the unreconciled part under the assumption that the survey has been repeated under the same conditions, and response bias may be estimated from the reconciled part under the assumption that after reconciliation “true” answers have been obtained. Also, it is possible to study general aspects of interviewers’ performance by analysing results according to interviewer characteristics.

In another variant (method (3)), the attempt to obtain independent reinterviews is abandoned. Only two interviews are conducted. During the second interview, the interviewer has before him or her the interviewee’s answers given in the original interview. If the responses in the two interviews do not agree, the interviewer

immediately proceeds to try, as tactfully as possible, to find out the reason for the disagreement and then register the correct answer. Often, improved procedures are used (e.g. extra probes and questions) during the second interview to increase its efficiency in identifying errors. The disadvantages of this approach are: (a) its inability to measure response variance; and (b) the fact that specially skilled reinterviewers, able to reconcile differences and find true answers, are required for the entire reinterview sample rather than for only the part of it where reconciliation is required, as in the previous variants. Advantages of this variant are: (a) economy, since only two rather than three interviews are involved; (b) clearer focus on investigating bias and specific sources of error; and (c) smaller likelihood that the original and the reinterviews suffer from exactly the same error, which remains undetected and unaccounted. An illustration of this design is provided by the reinterview survey conducted following a round of the Swedish Labour Force Survey (Sweden, 1980b).

Another option is to retain independent reinterviews but abandon the reconciliation part (method (4)). The independent reinterviews may be either: (a) conducted under the same essential conditions as the original interviews, so as to constitute acceptable repetitions of those; or (b) conducted independently, but using improved methods. In the first case, the design will measure only simple response variance but not biases; also, discrepancies between the original and the reinterviews will not identify where the error lies and hence its possible source. As noted earlier, this alternative is followed in a *part* (unreconciled) of the reinterview sample in, for example, the United States Current Population Survey and the Canadian Labour Force Survey. The second alternative aims at measuring bias in so far as the reinterview gets at true values. Independence of the interview is by no means a theoretical necessity for this purpose, but is considered desirable on the assumption that dependent reinterviewing is likely to suffer from systematic biases in identifying cases with response errors.

Indeed, the various options described above differ in their assumptions regarding the nature of the interview-reinterviewing process. In contrast to method (3), methods (2) and (4) assume that errors are more effectively identified through independent reinterviewing. However, as concerns reconciliation and establishing true values, method (2), along with (3), assumes that this is done most effectively by following up known cases of discrepancy; while method (4) assumes that true values can be established through independent reinterviewing with improved methods and, furthermore, that this procedure is less prone to interviewer bias than dependent reconciliation. Insufficient evidence is available to recommend definitely any one of these points of view. It is interesting to note that in the Swedish Labour Force Survey, both methods (3) and (4) were used, with very similar results (Sweden, 1980b).

Comparisons between investigations using different methodologies

Sometimes it is possible to collect the same information using different approaches; different questions and reference periods, different types of respondents and sources of information, different modes of data collection, etc. If the results with two different approaches differ greatly, that would cast a doubt on the validity of one or other approach, or of both. If one of the approaches is known *a priori* to be superior, then such a comparison can at least provide an indication of the bias in the inferior (but usually less expensive) approach. Similarly, it is very useful if the *direction* of the expected bias is known. For example, if it is expected that survey results for a certain variable suffer from underestimation due to errors of omission, then a procedure (say, using day-to-day recall over the reference week) giving higher values of the estimate can be regarded as being less biased than another procedure (say, using a single recall for the whole week) which gives a lower value. For example, Niemi (1983) examines biases in reported data on hours worked in the Finnish Labour Force Survey, by comparing these

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with the results of an intensive follow-up on a subsample using the time-use approach, using detailed diaries maintained by respondents. The latter, though not free from errors, can be considered more accurate. Hence, a comparison between the two provides an indication of the bias involved in the regular labour force survey. Similarly, Mellow and Sider (1983) examine responses to questions on industry, occupation, union status, hours worked and wages on the basis of comparison of information provided by the workers themselves with that provided on the same workers by their employers in a special supplement to the United States Current Population Survey.

Response variance

Response variance results from transient or random factors which affect individual responses (as distinct from biases which more or less systematically affect all respondents). If it were possible to repeat a survey under the same procedures and other essential survey conditions, the results from one repetition to another would differ even with the same sample. Response variance is a measure of this variability.

Two components of variable error may be distinguished: simple response variance and correlated response variance. This distinction is useful and important because the two components differ in nature and methods of assessment. In somewhat simplified terms, these concepts may be described as follows.

Each interviewer (and similarly supervisor, coder or other survey worker) may have his or her own bias which affects all the respondents who make up his or her workload. It is immaterial whether the bias arises from errors or from ignorance on the part of interviewers or respondents. Some of the biases may be common to the work of all interviewers, given the general survey conditions and types of interviewer involved. This corresponds to response bias as discussed earlier. However, in so far as individual survey workers have *different* average effects on their respective workloads, they introduce errors which are correlated within their workloads. Correlated response variance is a measure of the variability introduced by this effect. In addition to the correlated errors resulting from differential average effects of individual survey workers, there are also chance factors which introduce random errors in the responses obtained, independent of the particular interviewers involved. The simple response variance is a measure of this random variability (see Hansen et al., 1961; Kish, 1962).

Simple response variance

Simple response variance is an indicator of inherent instability (unrepeatability) of the responses obtained. It can be useful in evaluating the performance of particular items in the questionnaire. If the simple response variance of a particular item is large, it would imply that the item yields rather unreliable information, perhaps because of some problems in its content, conceptualisation or specification in the questionnaire.

The measurement of simple response variance requires independent *repetitions* of the survey data collection under the same general conditions. There is no way, in a single survey, to distinguish between variation among true values of individuals in the population (which gives rise to sampling error), and their additional variability, arising from random factors affecting individual responses (which gives rise to simple response variance). In fact, the usual procedures for estimating the sampling error automatically include the full effect of simple response variance. Both these components of variance diminish with increasing sample size in the same manner.

Separate estimation of simple response variance requires a reinterview survey. The reinterviews should be carried out independently of the original survey, but under the same conditions and using the same methods. In practice, it is difficult to satisfy these conditions exactly.

Various summary measures of simple response variance may be constructed. One such measure is the “index of inconsistency”, defined as the ratio of simple response variance to the total simple response and sampling element variance; it measures the proportionate increase in element variance due to random instability in the responses obtained. The measure is most useful for a 2 x 2 interview-reinterview tabulation of a dichotomous variable. Table 22 illustrates how the index of inconsistency and some other simple measures are computed in such a tabulation.

Table 22. Computation of the index of inconsistency from a reinterview survey

Labour force status in original survey	Status in reinterview survey		Total
	In labour force	Not in labour force	
In labour force	a	b	a + b
Not in labour force	c	d	c + d
Total	a + c	b + d	n = (a + b + c + d)
Net difference rate, $e = \frac{a+c}{n} - \frac{a+b}{n} - \frac{c-b}{n}$			
Gross difference rate, $g = \frac{c+b}{n}$			
Average proportion in the survey having the specified characteristic, $p = (a + \frac{c+b}{2}) / n$			
Index of inconsistency, $I = \frac{g}{2p(1-p)}$			

Note: a to d are observed cell frequency in 2 x 2 interview-reinterview cross tabulation

Summary measures such as index of inconsistency are not so useful or illuminating when multi-category variables are involved. There, it is more useful to examine the full cross-tabulation of interview-reinterview responses to identify categories which might be particularly susceptible to response variability. Examples of such cross-tabulations from labour force survey data are interview-reinterview cross-tabulations by labour force status, main activity during reference period, industry, occupation, and groupings according to hours worked.

Correlated response variance

As noted earlier, correlated response variance (or interviewer variance) arises from differential effects of interviewers on their workloads. It indicates the lack of uniformity and standardisation in interviewers' work. High values of correlated response variation may indicate the need for better training and supervision of field-work. Its magnitude also depends inversely on the number of interviewers engaged in the survey, just as the magnitude of the sampling error depends on the number of sample clusters.

It is important, therefore, to be aware that just as sampling errors may be quite large for estimates based on a small number of primary sampling units, the effect of interviewer variance can be large for estimates based on the work of a few interviewers. This is a major consideration in deciding whether a survey is adequately designed to produce subnational estimates, say for regions or provinces. If interviewers are not uniformly well-trained and supervised, interviewer variance can overwhelm the effect of other sources of error in subnational estimates, each based on a small number of interviewers, even though this problem may not exist at the national level (United Nations, 1982, pp. 156-157). Hence, in theory, the interviewing load should be spread over as many interviewers as possible. In practice, the costs of interviewer recruitment,

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training, supervision and travel have to be balanced against increased precision. Furthermore, an organisation's capacity to provide good training and ensure adequate supervision may be limited. Too large a number of field staff may result in work of poor quality, hence in larger interviewer biases, cancelling or even reversing any increase in efficiency due to the reduced workload. However, the extreme situation of using very few interviewers in large-scale surveys should be avoided. Note that these considerations are very similar to those involved in determining sample clustering in a multi-stage design.

The measurement of correlated response variance requires comparisons between appropriately designed *replications* or interpenetrating samples, i.e. between different parts of the sample, each reflecting an interviewer assignment and yielding a valid estimate in its own right. The basic requirement is a degree of *randomisation* in the allocation of sample units to individual interviewers. In a sense, interviewers impose their own clustering on the sample of observations because of their individual biases. In so far as this clustering coincides with the geographic clustering of the sample itself (as, for example, will be the case if fixed enumerators are used, one for each sample cluster), the usual estimate of the sampling error will automatically include the contribution of the correlated response errors. On the other hand, if the allocation of interviews within and between sample clusters is randomised, the correlated response effect is not included in the usual computation of sampling error, but can be separately estimated by a similar procedure, taking individual interviewers' workloads as the "primary selections".

The same approach in fact applies to correlated effects of supervisors, editors, coders, etc. In assessing a particular component of correlated error, an overestimation would result, in so far as other sources of correlated error are not randomised and hence get confused with the component being measured. A very complete design might call for simple random selection of an equal number of interviews assigned to each interviewer, and the work assignment of supervisors, editors and coders arranged in an orthogonal design so as to permit separate estimation of these effects. However, random allocations of workloads increase costs of the survey, and often are not feasible beyond a certain degree. Fortunately, useful results on correlated errors can usually be obtained even when randomisation in allocation of workloads is not complete (Kish, 1962).

6. Processing errors

Errors also arise at various stages of the data processing operation: coding, data entry, editing, imputation, tabulation, etc. This section discusses assessment of some measures of error, with primary focus on coding errors.

Assessment of coding errors

Coding is the operation where data on the questionnaires are transformed into a format which is suitable for input to the data-capture operation for computer processing. The coding task may vary greatly in complexity, from conversion of complex verbal descriptions into numerical codes requiring considerable experience and judgement, to straightforward transcription of existing numerical values into coding boxes provided for them.

Coding errors may be classified in the same way as response errors discussed in the previous section. Systematic errors which affect the average work of all coders are *biases*. These may be caused, for example, by some fault in design of the coding system or in coding procedures. Each particular coder also exerts his or her own influence on the results. This differential effect of individual coders gives rise to *correlated coding variance* (or simply "coder variance"). There are also random errors in coding of responses, uncorrelated to the particular coder workloads: these give rise to *simple coding variance*.

A variety of factors may influence the extent of coding errors. Apart from the nature of the item to be coded, a major determinant is the questionnaire design, for example, the use of open-ended versus closed questions, and the format of coding provisions in the questionnaire. Another important factor is how the coding operation is organised and controlled, whether it is centralised in the office or decentralised to the field. A centralised, more tightly controlled office-coding operation can have a number of advantages: lower variability; the possibility of developing a more appropriate coding frame on the basis of a more complete set of responses; and better conditions for repeating, verifying and checking the work. On the other hand, decentralised field coding has the advantage of economy and speed. Similarly, the pattern and extent of errors may vary between coding by trained coders, coding by interviewers, self-coding by respondents themselves and coding by proxy respondents. It may also vary by type of variable and category involved, order in which categories are presented, social and demographic characteristics of the respondents, etc. There is extensive literature on the investigation of coding errors, though usually in specific contexts based on experiences in statistically developed countries. Among these, two studies should be recommended in particular: Jabine and Tepping (1973), and Lyberg (1982). Both focus on the coding of occupation and industry data, which represent perhaps the most important and difficult (and often the only) items to be coded in labour force surveys.

The quality of coding may be assessed on the basis of: (a) quality control information collected as a part of the normal coding operations; (b) analysis of results of randomised allocation of workloads to coders; and (c) comparison with recoding undertaken as a special operation, usually on a sample basis.

The objective of randomised allocation (b) is to measure correlated variance. The procedure is similar to that discussed earlier for the study of interviewer variance. The major difference is that allocation of randomised workloads to coders is much easier and usually without major operational constraints or increases in cost, than is the case with randomisation of interviewers' workload.

The objective of the recoding exercise (c) is to identify errors (and their causes) at the individual level, and to assess biases as well as variable errors. As in the study of response errors, the recoding may be independent or dependent, and may be carried out under essentially the same conditions as the original coding, or with improved procedures. The various alternatives discussed in the previous section apply here as well.

As concerns quality control operations (a), detailed records can be kept of measures such as incoming error rates, outgoing error rates, overall verification rate, proportion of batches rejected, etc. These can be classified by the individual coder and compared over time in ongoing surveys. Special attention should be paid to items known to be difficult such as occupation and industry. The measures referred to above are described below.

A simple way to organise the coding and quality control operation is as follows. The documents to be coded are divided into batches. Depending on quality control requirements, a certain number of records in each batch is verified. If the number of errors found in a batch does not exceed a prespecified limit, then the batch is accepted. Otherwise, it is "rejected", i.e. verified on a 100 per cent basis.

- (1) The incoming error rate is the estimated proportion of cases which contained errors after the initial coding operation in the absence of the quality control measures (verification). In each batch verified on a sample basis, the number of total errors can be estimated as:

$$\frac{\text{the number of errors found in the verified sample}}{\text{sampling rate applied to the batch for verification}}$$

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To this can be added the number of cases with error found in batches verified on a 100 per cent basis, to obtain an estimate of the total number of cases with error. This, divided by the total number of records (or items) being coded, gives the incoming error rate.

- (2) The outgoing error rate is the estimated proportion of cases which contained errors after the errors identified during quality control verification have been corrected. It is assumed that no errors remain in the verified samples or in batches verified on a 100 per cent basis. The number of errors in the *unverified* part of any batch is obtained by multiplying the total number of cases in that part by the ratio:

$$\frac{\text{number of errors found in the verified part of the batch}}{\text{total number of cases in the verified sample from the batch}}$$

The above summed up over all (sample verified) batches gives an estimate of the total number of codes still remaining in error; divided by the total number of cases being processed gives the outgoing quality rate. Comparison of incoming and outgoing rates provides an indication of the direct impact of quality control measures in reducing error rates. Monitoring the outgoing error rate provides an indication of the degree to which the resultant errors are being controlled. These may be monitored against an "average outgoing error rate limit"; the idea being that if the overall error rate exceeds this limit, a need to improve coders' training, supervision, and coding methods and quality control procedures is indicated.

- (3) Two indicators of operational interest are the overall verification rate and batch rejection rate. The overall verification rate is the total number of cases verified (from both the sample verification and 100 per cent verification parts together), as a proportion of the total number of cases being processed. Clearly, this indicator affects the cost of verification and outgoing quality. The batch rejection rate is simply the proportion of batches rejected and subject to 100 per cent verification. High rates would indicate poor quality of the initial coding operation, and/or quality control criteria which are too stringent.

In conclusion, it is worth re-emphasising that in labour force surveys one should precode as many of the questions as possible in order to reduce the costs and errors of coding.

Data capture

This refers to the operation of conversion of the data recorded or coded on forms to a machine-readable format. In some more advanced countries, survey and census forms are read directly by optical mark or character recognition. With this method, the primary source of data entry errors is reading failures determined by quality of the incoming documents and of the equipment. For a description of the procedure and its quality control, see, for example, United States, 1978, pp. 37-52.

Operator-assisted data entry is still by far the most common method used. The procedures for assessing quality of operator-assisted data entry are very similar to those described above in relation to manual coding.

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Resolution concerning statistics of the economically active population, employment, unemployment and underemployment, adopted by the Thirteenth International Conference of Labour Statisticians (October 1982)

The Thirteenth International Conference of Labour Statisticians, .

Recalling the existing international standards concerning statistics of the labour force employment and unemployment contained in Resolution I adopted by the Eighth Conference (1954) and concerning measurement and analysis of underemployment and underutilisation of manpower contained in Resolution III adopted by the Eleventh Conference (1966),

Recognising the need to revise and broaden the existing standards in order to enhance their usefulness in the provision of technical guidelines to all countries and particularly those with less developed statistics and recognising the usefulness of such standards in enhancing the international comparability of the statistics,

Adopts this twenty-ninth day of October 1982 the following resolution in substitution for Resolution I of the Eighth Conference and paragraphs 4 to 9 and 13 of Resolution III of the Eleventh Conference:

Objectives and scope

1. Each country should aim at developing a comprehensive system of statistics on the economic activity of the population in order to provide an adequate statistical base for the various users of the statistics taking account of the specific national needs and circumstances. In particular the system should provide for needs in connection with the measurement of the extent of available and unused labour time and human resources for purposes of macro-economic monitoring and human resources development planning and the measurement of the relationships between employment income and other social and economic characteristics for purposes of formulating and monitoring employment policies and programmes, income-generating and maintenance schemes, vocational training and other similar programmes.

2. In order to fulfil the above objectives the programme of statistics of the economically active population should in principle cover all branches of economic activity, all sectors of the economy and all status groups (employees, own-account workers, etc.) and should be developed to the fullest extent possible in harmony with other economic and social statistics. The programme should specifically provide for both short-term and longer-term needs, i.e. statistics for current purposes compiled frequently on a recurrent basis and statistics compiled at longer intervals for structural in-depth analysis and as bench-mark data:

- (a) the current statistics programme should encompass statistics of the currently active population and its components in such a way that trends and seasonal variations can be adequately monitored. As a minimum programme, countries should collect and compile statistics on the currently active population twice a year, if possible coinciding with the agricultural peak and slack seasons wherever considered appropriate;
- (b) the non-current statistics programme which may include censuses and surveys should provide (i) comprehensive data on the economically active population, (ii) in-depth statistics on the activity pattern of the economically active population over the year and the relationships between employment, income and other social and economic characteristics, and (iii) data on other particular topics (e.g. children and youth, women households) as determined by the long-term and continuing needs.

3. Population censuses and sample surveys of households or individuals generally constitute a comprehensive means of collection of data on the economically active population which can be linked with data on other related topics. Establishment surveys and administrative records may also serve as sources for obtaining in some cases more precise, more frequent and more detailed statistics on particular components of the economically active population. The different sources of information should be regarded as complementary and may be used in combination for deriving

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where necessary integrated sets of statistics. In designing population censuses, surveys of households or individuals or other means of data collection on the economically active population, efforts should be made in so far as possible to incorporate the international standards.

4. In order to promote comparability of the statistics among countries where national concepts and definitions do not conform closely to the international standards, explanations should be given and the main aggregates should if possible be computed on the basis of both the national and the international standards. Alternatively, the necessary components should be identified and provided separately in order to permit conversion from the national to the international standards.

Concepts and definitions

The economically active population

5. The economically active population comprises all persons of either sex who furnish the supply of labour for the production of economic goods and services as defined by the United Nations systems of national accounts and balances during a specified time-reference period. According to these systems the production of economic goods and services includes all production and processing of primary products whether for the market, for barter or for own consumption, the production of all other goods and services for the market and, in the case of households which produce such goods and services for the market, the corresponding production for own consumption.

6. Two useful measures of the economically active population are the usually active population measured in relation to a long reference period such as a year and the currently active population or equivalently the "labour force" measured in relation to a short reference period such as one week or one day.

The usually active population

7. (1) The usually active population comprises all persons above a specified age whose main activity status as determined in terms of number of weeks or days during a long specified period (such as the preceding 12 months or the preceding calendar year) was employed or unemployed as defined in paragraphs 9 and 10.

(2) Where this concept is considered useful and feasible the usually active population may be subdivided as employed and unemployed in accordance with the main activity.

The labour force (the currently active population)

8. The labour force or "currently active population" comprises all persons who fulfil the requirements for inclusion among the employed or the unemployed as defined in paragraphs 9 and 10 below.

Employment

9. (1) The "employed" comprise all persons above a specified age who during a specified brief period, either one week or one day, were in the following categories:

(a) "paid employment":

(a1) "at work": persons who during the reference period performed some work for wage or salary, in cash or in kind;

(a2) "with a job but not at work": persons who, having already worked in their present job, were temporarily not at work during the reference period and had a formal attachment to their job.

This formal job attachment should be determined in the light of national circumstances, according to one or more of the following criteria:

- (i) the continued receipt of wage or salary;
- (ii) an assurance of return to work following the end of the contingency, or an agreement as to the date of return;
- (iii) the elapsed duration of absence from the job which, wherever relevant, may be that duration for which workers can receive compensation benefits without obligations to accept other jobs;

(b) "self-employment":

(b1) "at work": persons who during the reference period performed some work for profit or family gain, in cash or in kind;

(b2) “with an enterprise but not at work”: persons with an enterprise, which may be a business enterprise, a farm or a service undertaking, who were temporarily not at work during the reference period for any specific reason.

(2) For operational purposes, the notion of “some work” may be interpreted as work for at least one hour.

(3) Persons temporarily not at work because of illness or injury, holiday or vacation, strike or lock-out, educational or training leave, maternity or parental leave, reduction in economic activity, temporary disorganisation or suspension of work due to such reasons as bad weather, mechanical or electrical breakdown, or shortage of raw materials or fuels, or other temporary absence with or without leave should be considered as in paid employment provided they had a formal job attachment.

(4) Employers, own-account workers and members of producers’ co-operatives should be considered as in self-employment and classified as “at work” or “not at work”, as the case may be.

(5) Unpaid family workers at work should be considered as in self-employment irrespective of the number of hours worked during the reference period. Countries which prefer for special reasons to set a minimum time criterion for the inclusion of unpaid family workers among the employed should identify and separately classify those who worked less than the prescribed time.

(6) Persons engaged in the production of economic goods and services for own and household consumption should be considered as in self-employment if such production comprises an important contribution to the total consumption of the household.

(7) Apprentices who received pay in cash or in kind should be considered in paid employment and classified as “at work” or “not at work” on the same basis as other persons in paid employment.

(8) Students, homemakers and others mainly engaged in non-economic activities during the reference period, who at the same time were in paid employment or self-employment as defined in subparagraph (1) above should be considered as employed on the same basis as other categories of employed persons and be identified separately, where possible.

(9) Members of the armed forces should be included among persons in paid employment. The armed forces should include both the regular and the temporary members as specified in the most recent revision of the International Standard Classification of Occupations (ISCO).

Unemployment

10. (1) The “unemployed” comprise all persons above a specified age who during the reference period were:

- (a) “without work”, i.e. were not in paid employment or self-employment as defined in paragraph 9;
- (b) “currently available for work”, i.e. were available for paid employment or self-employment during the reference period; and
- (c) “seeking work”, i.e. had taken specific steps in a specified recent period to seek paid employment or self-employment. The specific steps may include registration at a public or private employment exchange; application to employers; checking at worksites, farms, factory gates, market or other assembly places; placing or answering newspaper advertisements; seeking assistance of friends or relatives; looking for land, building, machinery or equipment to establish own enterprise; arranging for financial resources; applying for permits and licences, etc.

(2) In situations where the conventional means of seeking work are of limited relevance, where the labour market is largely unorganised or of limited scope, where labour absorption is, at the time, inadequate or where the labour force is largely self-employed, the standard definition of unemployment given in subparagraph (1) above may be applied by relaxing the criterion of seeking work.

(3) In the application of the criterion of current availability for work, especially in situations covered by subparagraph (2) above, appropriate tests should be developed to suit national circumstances. Such tests may be based on notions such as present desire for work and previous work experience, willingness to take up work for wage or salary on locally prevailing terms, or readiness to undertake self-employment activity given the necessary resources and facilities.

(4) Notwithstanding the criterion of seeking work embodied in the standard definition of unemployment, persons without work and currently available for work who had made arrangements to take up paid employment or undertake self-employment activity at a date subsequent to the reference period should be considered as unemployed.

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(5) Persons temporarily absent from their jobs with no formal job attachment who were currently available for work and seeking work should be regarded as unemployed in accordance with the standard definition of unemployment. Countries may, however, depending on national circumstances and policies, prefer to relax the seeking work criterion in the case of persons temporarily laid off. In such cases, persons temporarily laid off who were not seeking work but classified as unemployed should be identified as a separate subcategory.

(6) Students, homemakers and others mainly engaged in non-economic activities during the reference period who satisfy the criteria laid down in subparagraphs (1) and (2) above should be regarded as unemployed on the same basis as other categories of unemployed persons and be identified separately, where possible.

Population not economically active

11. The “population not economically active” comprises all persons, irrespective of age, including those below the age specified for measuring the economically active population who were not “economically active”, as defined in paragraph 5.

The population not currently active

12. (1) The “population not currently active”, or, equivalently, persons not in the labour force, comprises all persons who were not employed or unemployed during the brief reference period and hence not currently active because of (a) attendance at educational institutions, (b) engagement in household duties, (c) retirement or old age, or (d) other reasons such as infirmity or disablement, which may be specified.

(2) Countries adopting the standard definition of unemployment may identify persons not classified as unemployed who were available for work but not seeking work during the reference period and classify them separately under the population not currently active.

The population not usually active

13. (1) The “population not usually active” comprises all persons whose main activity status during the longer specified period was neither employed nor unemployed. It comprises the following functional categories: (a) students; (b) homemakers; (c) income recipients (pensioners, rentiers, etc.); and (d) others (recipients of public aid or private support, children not attending school, etc.) as defined by the United Nations *Principles and recommendations for population and housing censuses* (1980).

(2) Where necessary, separate functional subcategories may be introduced to identify (i) persons engaged in unpaid community and volunteer services and (ii) other persons engaged in marginal activities which fall outside the boundary of economic activities.

Underemployment

14. Underemployment exists when a person’s employment is inadequate in relation to specified norms or alternative employment, account being taken of his or her occupational skill (training and working experience). Two principal forms of underemployment may be distinguished: visible and invisible.

15. (1) Visible underemployment is primarily a statistical concept directly measurable by labour force and other surveys, reflecting an insufficiency in the volume of employment.

(2) Invisible underemployment is primarily an analytical concept reflecting a misallocation of labour resources or a fundamental imbalance as between labour and other factors of production. Characteristic symptoms might be low income, underutilisation of skill, low productivity. Analytical studies of invisible underemployment should be directed to the examination and analysis of a wide variety of data, including income and skill levels (disguised underemployment) and productivity measures (potential underemployment).

16. For operational reasons, the statistical measurement of underemployment may be limited to visible underemployment.

Visible underemployment

17. Two elements of the measurement of visible underemployment should be distinguished:

- (a) the number of persons visibly underemployed;
- (b) the quantum of visible underemployment.

Persons visibly underemployed

18. (1) Persons visibly underemployed comprise all persons in paid or self-employment, whether at work or not at work, involuntarily working less than the normal duration of work determined for the activity, who were seeking or available for additional work during the reference period.

(2) For the purpose of classifying persons as visibly underemployed, normal duration of work for an activity should be determined in the light of national circumstances as reflected in national legislation to the extent it is applicable, and usual practices in other cases, or in terms of a uniform conventional norm.

Quantum of visible underemployment

19. (1) The quantum of visible underemployment may be measured by aggregating the time available for additional employment during the reference period in respect of each person visibly underemployed. The time available for additional employment may be computed in units of working days, half-days or hours as may be convenient in national circumstances, depending on the nature of data collected. It may be useful to measure separately the part of the quantum of visible underemployment that corresponds to "time lost" defined as the difference between hours usually employed and hours actually employed.

(2) Countries who wish to apply the criterion of seeking work for the measurement of the quantum of visible underemployment may do so by taking into account the duration of work sought.

20. A composite estimate of the quantum of current unemployment and visible underemployment may be compiled on the basis of the labour-time disposition of all persons in the labour force, by accounting for the total labour time potentially available for each person in the labour force in terms of time employed, time available for employment and time not available for employment during the reference period. It can be measured for simplicity either in units of working days or half-days, or, more fully, in hours where feasible.

Analytical concepts

21. Based on the concepts and definitions given in paragraphs 5 to 20 above, a variety of analytical concepts and measures can be derived. For instance:

(1) The economically active population may be divided into two broad segments: the armed forces and the economically active civilian population.

(2) The economically active population may be related to the total population for the derivation of a crude participation rate, or, more appropriately, to the population above the age prescribed for the measurement of the economically active population.

(3) The employed population may be related to the population above the specified age for the derivation of an employment-population ratio.

(4) The unemployed population may be related to the economically active population for the derivation of a general unemployment rate. Unemployment rates, relevant to paid employment on the one hand and self-employment on the other, may be derived, wherever considered useful and feasible.

(5) The number of persons visibly underemployed may be related to persons employed and the proportion may be studied separately for each branch of economic activity and each occupational group.

(6) A composite rate of unemployment and visible underemployment compiled as the ratio of unemployed labour time available for employment to the total labour time employed or available for employment.

The rates, ratios and proportions suggested above may be compiled separately by sex in respect of specified age groups.

22. The technique of labour time disposition suggested in paragraph 20, if carried out through a series of current surveys covering a representative sample of reference periods spread over a year, can be used for the estimation of labour-time employed or unemployed over the year. The estimates may be expressed in terms of person-days or person-hours or, if so desired, converted into standard full-time person-years.

Employment and income relationships

23. In order to realise the objectives of analysis of the relationships between employment and income mentioned in paragraph 1, countries should develop programmes of data collection on

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employment and income that reveal related economic and social aspects. In particular, data should be compiled on employment, income from employment and household income for the purpose of (a) analysing the income-generating capacity of different economic activities and (b) identifying the number and characteristics of persons who are unable to maintain their economic well-being on the basis of the employment opportunities available to them.

24. (1) In order to obtain comprehensive measures of the relationships between employment and income, the measurements of employment, income from employment and household income should refer to the work experience of the population over a long reference period, preferably a year, taking into account not only the principal occupation but also any secondary occupations and other sources of income.

(2) Income from employment includes wages, salaries and other earnings in cash and kind of persons in paid employment and net entrepreneurial income of persons in self-employment.

(3) The concepts and definitions of income and its components are given in the resolutions concerning an integrated system of wages statistics and concerning household income and expenditure surveys adopted by the Twelfth Conference (1973) and in the United Nations *Provisional guidelines on statistics of the distribution of income, consumption and accumulation of households* (1977).

(4) The statistics on employment and income should be analysed to the extent possible, in conjunction with duration of work, household size, number of earners, assets and other demographic, social and economic characteristics of the individual and the household.

(5) The statistics on employment and income should be consistent with and, in so far as possible, be integrated into the framework of the statistics of the economically active population set forth in paragraphs 5 to 22 above.

Data collection, analysis and classifications

25. The International Labour Office should prepare a manual on statistics of the economically active population, employment, unemployment and underemployment detailing such aspects as methodology of data collection, tabulations and analysis.

26. (1) The analysis of the economically active population and the population not economically active should include classifications by significant demographic, social and economic characteristics as well as appropriate cross-classifications by two or more related characteristics.

(2) In particular, the population above the age specified for the measurement of the economically active population should be cross-classified by usual activity status (employed, unemployed, students, homemakers, etc.) and current activity status (employed, unemployed and not currently active).

27. For the purpose of international comparisons, the classifications of the statistics of the economically active population should adhere to or be convertible into the standard international classifications most recently adopted such as:

- (a) International Standard Classification of Occupations (ISCO) – ILO;
- (b) International Standard Industrial Classification of All Economic Activities (ISIC) – United Nations;
- (c) international classification according to status (as employer, employee, etc.) – definitions of status by the United Nations – except that for the classification of unpaid family workers the minimum time criterion (at least one-third of the normal working hours) no longer need be applied;
- (d) Provisional Guidelines on Standard International Age Classifications – United Nations.

28. For classifications according to other characteristics such as duration of work, duration of unemployment, the International Labour Office should develop appropriate international standard classifications taking into account the current national practices and needs.

Data on particular topics

29. In order to adequately study the transition phases from learning to earning activities and to develop appropriate policy measures where necessary, specific statistics should be obtained periodically on children and youth in relation to school attendance and their participation in economic activity. For this purpose, it may be necessary to collect additional data on children and youth below the specified minimum age limit adopted for measuring the economically active population.

30. (1) For the purpose of developing and monitoring programmes concerned with the participation of women in development and the promotion of equality between the sexes, an adequate statistical base on women's participation in economic activities is essential. In this respect, therefore, the statistics of the economically active population, employment, unemployment, underemployment and related topics should be compiled separately for males and for females.

(2) Further, in order to obtain more accurate statistics on women's participation in economic activities, measurement methods should be carefully reviewed to ensure unbiased coverage of men and women. Sex biases in the form of underestimation of women's participation in economic activity may result, for example, from incomplete coverage of unpaid economic activities, failure of respondents and enumerators to take account of women's multiple activities and use of proxy respondents. Where necessary, research should be carried out in order to identify the extent, nature and sources of the possible biases, if any, and to develop appropriate methods of reducing them.

31. Since the participation in economic activity of individuals often depends on the circumstances of other members of the family or household and in many countries, particularly in rural areas of developing countries, economic activity is largely organised on a family or household basis, statistics on economically active population, employment, unemployment, underemployment and related topics should be supplemented periodically by statistics on families and households: for example, identifying the unemployed in terms of their relationship to other members of the household or family, presence of other working members of the household or family, number of children in the household or family, as well as identifying households and families in terms of number of members unemployed, sex and other characteristics of the primary earner in the household or family, etc.

32. In order to provide improved and more detailed information on employment, unemployment and underemployment and for other purposes such as identifying multiple activities and marginal activities, attempts should be made to collect periodically statistics on time-use.

33. In order to account for the informal sector activities both in developed and developing countries and the rural non-agricultural activities generally carried out by households in conjunction with agricultural activities in developing countries, and given the scarcity of statistics on these topics, it is desirable that countries develop appropriate methodologies and data collection programmes on the urban informal sector and the rural non-agricultural activities. In particular, suitable definitions and classifications should be developed in order to identify and classify the economically active population in the urban informal sector and those engaged in the rural non-agricultural activities.

34. In order to provide adequate employment opportunities and means of livelihood for the disabled and other handicapped persons, statistics should be collected and compiled using appropriate methodologies on the size of this population and its distribution according to relevant social and economic characteristics distinguishing in particular those employed, those unemployed and those inactive.

35. (1) It is recommended that in countries with a planned economy, extensive use should be made of the balance sheet of labour resources so as to identify the size and structure of the labour force and its geographical distribution by type of employment and sector of the national economy.

(2) The population of working age, with the exception of the disabled who do not work, and also the population not of working age, are included as labour resources. The balance sheet of labour resources may be broken down separately according to sex, identifying persons employed in subsidiary farming and in housework, disabled persons of working age but who do not work and persons not of working age.

(3) The data in the balance sheets make it possible to identify the proportion of labour resources which may be utilised in the future to work in national production.

36. It is suggested that countries consider collecting information on the population not economically active, taking account of national needs and circumstances, to assist governments in designing their human resources and development policies. Countries should develop classifications designed to permit cross-tabulations reflecting the relative strength of attachment to the labour market of the groups identified in paragraphs 12(1) and 13(1) above.

Evaluation and dissemination

37. Like any other set of data, statistics of the economically active population, employment, unemployment, underemployment and related topics are subject to errors. While the data collection programme should be carefully designed to minimise possible errors, some are bound

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to occur. A careful interpretation of the results, therefore, requires some knowledge about the quality of the data. An evaluation of data quality is also necessary to improve upon data collection, processing and estimation procedures in subsequent rounds of the programme. The evaluation procedure should as far as possible form part of the data collection programme itself.

38. Statistics of the economically active population, employment, unemployment, underemployment and related topics should be issued promptly and made widely available. The statistics may be issued in stages by means of preliminary reports as soon as the main aggregates are available, followed by one or more final reports giving the revised and detailed statistics, in tabular form and, to the extent possible and permissible, in machine readable form.

39. Every release of statistics of the economically active population, employment, unemployment, underemployment and related topics, whether recurring or single-time, should clearly indicate the nature of the data and make reference to any detailed technical descriptions. In particular, descriptions should be given of the scope and coverage, the concepts and definitions, the method of data collection, the sample size and design where sampling is used, the methods of estimation and adjustments, including seasonal adjustments where applied, measures of data quality, including sampling and non-sampling errors where possible, as well as descriptions of changes in historical series, deviations from international standards and relationships with other sources of similar data and related bodies of statistics.

Resolution concerning measurement and analysis of underemployment and underutilisation of manpower, adopted by the Eleventh International Conference of Labour Statisticians (October 1966) [Extract]

The Eleventh International Conference of Labour Statisticians, . . .

Believing that revised guidelines for the further development of underemployment measurement and analysis would be useful, especially in developing countries,

Adopts, this twenty-sixth day of October 1966, the following resolution in substitution of Resolution III of the Ninth International Conference of Labour Statisticians:

General objectives

1. The primary object of measurement and analysis of underemployment and other aspects of the underutilisation of manpower is to contribute towards making and appraising short-term and long-term policies and measures, and in particular manpower planning and projections, designed to promote "full, productive and freely chosen" employment as specified in the Convention and Recommendation (No. 122) concerning employment policy adopted by the International Labour Conference in 1964.

2. Special attention might be paid to underemployment in economic sectors, in regions and for worker categories particularly affected by underemployment and which constitute acute problems in national conditions. Pertinent examples are peasant farming, especially in developing countries, other smaller establishments, economically lagging regions, declining industries, e.g. coalmining in industrialised countries, seasonal work, such as in agriculture or construction, and worker categories particularly vulnerable to discrimination in employment on grounds of sex, age, nationality, race, etc.

3. In developing countries, preliminary information on underemployment could be obtained as a part of household surveys. Resurveys or detailed surveys of underemployment would be necessary when it is desired to make or appraise short-term or long-term programmes for remedying structural underemployment.

Elements and methods of measurement and analysis of invisible underemployment

Disguised underemployment

10. (1) For the purposes of analysing disguised underemployment, information on income is essential. In developing countries satisfactory estimates of data on income can generally be obtained by labour force sample surveys only in regard to paid employees; for other worker categories elaborate family budget surveys may supply usable data on broad income groups. In developed countries and, in some cases, in developing countries as well, satisfactory data on earnings may be available from labour force sample surveys and from other sources such as tax returns.

(2) Methodology for the analysis of disguised underemployment according to the skill underutilisation criterion still remains to be developed. Experimental surveys and studies, particularly in regard to limited sectors or specific worker categories concerned, should be undertaken for the purpose.

Potential underemployment

11. (1) Potential underemployment, an aspect of underemployment which may be studied by the criterion of low labour productivity, may be considered to exist when a person is employed in an establishment or economic unit whose productivity is abnormally low,

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(2) The primary focus of interest in the productivity approach to underemployment is in the dynamic assessment of the relationship between labour availability and needs over time as productivity rises in the process of economic development and in sectoral and regional productivity comparisons.

(3) The potentially underemployed cannot be directly identified but where detailed data on the labour force and production are available analysis based on these data may provide broad indicators of the number and characteristics of persons potentially underemployed and the amount of such underemployment.

(4) In various sectors of the economy, in particular in agriculture, estimation of "labour surplus" or "labour force reserves" can be obtained by comparing labour units available and labour units actually utilised or required under various assumptions regarding productivity.

Further action

12. Countries undertaking inquiries and analyses of different forms of invisible underemployment, especially in relation to agriculture in developing countries, are urged to report their experience to the International Labour Office in order that these methods of study may be considered by a future International Conference of Labour Statisticians.

Statistical and analytical development

14. Consideration should be given to initiating or strengthening a system of labour force sample surveys in developing countries where appropriate. Such a system may be needed as an integral part of a comprehensive framework of labour force data required, among other things, for analysing underemployment. At the same time it can provide direct measurement of major elements of underemployment and especially visible underemployment.

15. General-purpose surveys of wide scope, such as labour force sample surveys, should be supplemented by an adequate programme of limited but intensive special surveys aimed at studying underemployment in depth or providing regional or local data. In addition, it is recommended that countries pursue methodological studies with the aim of reducing the uncertainties inherent in sample surveys and develop research on appropriate analytical methods leading to results as significant as possible.

16. For measuring and analysing varied aspects of underemployment, existing statistical and technical data should be fully drawn upon. Major pertinent statistical sources include, besides labour force sample surveys, family budget surveys, population censuses, agricultural and industrial censuses, periodic establishment reports, records of placement services and national accounts. Sources of technical data include special surveys and records primarily of a non-statistical nature, such as farm management and time utilisation surveys and records of agricultural extension programmes.

17. Where appropriate, countries should endeavour to develop adequate programmes of statistical and analytical studies of underemployment focused on current and urgent problems, especially the requirements of development planning bodies.

Underutilisation of manpower

18. In addition to those persons who are in the current labour force but whose contribution to the incomes of their families and to the national product is limited by unemployment or underemployment, there are in many countries persons who are not in the labour force but who would enter it under certain circumstances. Such persons may not be actively seeking work, for example, because no suitable work is available for them; or they may be discouraged because they are victims of prejudice or are refugees; or they may suffer from physical or mental handicaps which could be overcome by means of training or other remedial action. Although it is important for every country to know the extent to which its manpower resources are underutilised, satisfactory methods of measurement have not yet been developed and tested. Countries undertaking studies of underutilisation of manpower are urged to report their experience to the International Labour Office in order that effective methods of study may be considered by a future International Conference of Labour Statisticians.

Appendix 3

Resolution concerning statistics of hours of work adopted by the Tenth International Conference of Labour Statisticians (October 1962) [Extract]

Definitions

4. (1) Normal hours of work are the hours fixed by or in pursuance of laws or regulations, collective agreements or arbitral awards.

(2) Where not fixed by or in pursuance of laws or regulations, collective agreements or arbitral awards, normal hours of work should be taken as meaning the number of hours per day or week in excess of which any time worked is remunerated at overtime rates or forms an exception to the rules or custom of the establishment relating to the classes of workers concerned.

5. (1) Statistics of hours actually worked should include –

- (a) hours actually worked during normal periods of work;
- (b) time worked in addition to hours worked during normal periods of work, and generally paid at higher rates than normal rates (overtime);
- (c) time spent at the place of work on work such as the preparation of the workplace, repairs and maintenance, preparation and cleaning of tools, and the preparation of receipts, time sheets and reports;
- (d) time spent at the place of work waiting or standing by for such reasons as lack of supply of work, breakdown of machinery, or accidents, or time spent at the place of work during which no work is done but for which payment is made under a guaranteed employment contract;
- (e) time corresponding to short rest periods at the workplace, including tea and coffee breaks.

(2) Statistics of hours actually worked should exclude –

- (a) hours paid for but not worked, such as paid annual leave, paid public holidays, paid sick leave;
- (b) meal breaks;
- (c) time spent on travel from home to work and vice versa.

6. Because of the wide differences among countries with respect to wage payments for holidays and other periods when no work is performed, it does not seem feasible at this time to adopt international definitions of hours paid for. Many countries will find, however, that statistics of hours paid for, while not suitable as a substitute for hours actually worked, can be useful for internal purposes and that they will commonly be readily available from payrolls and other records.

Appendix 4

Resolution concerning an integrated system of wages statistics, adopted by the Twelfth International Conference of Labour Statisticians (October 1973) [Extract]

Earnings

8. The concept of earnings, as applied in wages statistics, relates to remuneration in cash and in kind paid to employees, as a rule at regular intervals, for time worked or work done together with remuneration for time not worked, such as for annual vacation, other paid leave or holidays. Earnings exclude employers' contributions in respect of their employees paid to social security and pension schemes and also the benefits received by employees under these schemes. Earnings also exclude severance and termination pay.

9. Statistics of earnings should relate to employees' gross remuneration, i.e. the total before any deductions are made by the employer in respect of taxes, contributions of employees to social security and pension schemes, life insurance premiums, union dues and other obligations of employees.

10. (1) Earnings should include: direct wages and salaries, remuneration for time not worked (excluding severance and termination pay), bonuses and gratuities and housing and family allowances paid by the employer directly to his employee.

- (a) Direct wages and salaries for time worked, or work done, cover: (i) straight time pay of time-rated workers; (ii) incentive pay of time-rated workers; (iii) earnings of piece workers (excluding overtime premiums); (iv) premium pay for overtime, shift, night and holiday work; (v) commissions paid to sales and other personnel. Included are: premiums for seniority and special skills, geographical zone differentials, responsibility premiums, dirt, danger and discomfort allowances, payments under guaranteed wage systems, cost-of-living allowances and other regular allowances.
 - (b) Remuneration for time not worked comprises direct payments to employees in respect of public holidays, annual vacations and other time off with pay granted by the employer.
 - (c) Bonuses and gratuities cover seasonal and end-of-year bonuses, additional payments in respect of vacation period (supplementary to normal pay) and profit-sharing bonuses.
- (2) Statistics of earnings should distinguish cash earnings from payments in kind.

Appendices 5 to 13

Extracts from national labour force survey questionnaires

Appendix 5 (pp. 356-357)

Canada: Labour Force Survey, January 1989 (monthly)

Appendix 6 (pp. 358-361)

United States: Current Population Survey, January 1989 (monthly)

Appendix 7 (pp. 362-366)

Ireland: Labour Force Survey, 1989 (annual)

Appendix 8 (pp. 367-368)

Costa Rica: Encuesta de Hogares de Propósitos Múltiples, Módulo de Empleo, 1987 (annual)

Appendix 9 (pp. 369-370)

Ecuador: Encuesta Periódica sobre Empleo, Desempleo y Subempleo en el área urbana del Ecuador, 1988 (annual)

Appendix 10 (pp. 371-380)

Rwanda: Enquête Nationale sur l'Emploi, 1988 (quinquennial)

Appendix 11 (pp. 381-382)

Zimbabwe: Labour Force Survey, 1986

Appendix 12 (pp. 383-387)

Pakistan: Labour Force Survey, 1988 (annual)

Appendix 13 (pp. 388-395)

Sri Lanka: Labour Force and Socio-Economic Survey, 1985/86 (quinquennial)

NB: The quality of reproduction of the following appendices varies according to the quality of the original document.

Appendix 5

Statistics Canada Statistique Canada

LABOUR FORCE SURVEY QUESTIONNAIRE

CONFIDENTIAL when completed

Docket No. 2 Survey date 3 Assignment No. 4 1 FORM NO. 05

HRD page - line No. 5 Given name 6 Surname 7

10 LAST WEEK, DID ... WORK AT A JOB OR BUSINESS? (Regardless of the number of hours.)
Yes ☐ No ☐ Go to 30
PERMANENTLY unable to work ☐ Go to 50

11 DID ... HAVE MORE THAN ONE JOB OR BUSINESS LAST WEEK?
Yes ☐ No ☐ Go to 13

12 WAS THIS A RESULT OF CHANGING EMPLOYERS LAST WEEK?
Yes ☐ No ☐

13 HOW MANY HOURS PER WEEK DOES ... USUALLY WORK AT HIS/HER:
(Main) JOB? If total 30 or more go to 15
Other jobs?

14 WHAT IS THE REASON ... USUALLY WORKS LESS THAN 30 HOURS PER WEEK?
 Enter code

15 LAST WEEK, HOW MANY HOURS OF OVERTIME OR EXTRA HOURS DID ... WORK?
(Include paid and unpaid time at all jobs) If none enter 00

16 LAST WEEK, HOW MANY HOURS WAS ... AWAY FROM WORK FOR ANY REASON? (Holiday, vacation, illness, labour dispute, etc.)
(From all jobs) If none enter 00 and go to 18

17 WHAT WAS THE MAIN REASON FOR BEING AWAY FROM WORK?
 Enter code

18 HOW MANY HOURS DID ... ACTUALLY WORK LAST WEEK AT HIS/HER:
(Main) JOB? Other jobs?

19 IN THE PAST 4 WEEKS, HAS ... LOOKED FOR ANOTHER JOB?
Yes ☐ No ☐ Go to 72

20 DESCRIPTION OF MAIN JOB OR BUSINESS
72 FOR WHOM DID ... WORK? (Name of business, government dept. or agency, or person)
No ☐ change ☐

73 WHEN DID ... START WORKING FOR THIS EMPLOYER -
Mo. Yr. or Mo. Yr. If month unknown enter -- in month

74 WHAT KIND OF BUSINESS, INDUSTRY OR SERVICE WAS THIS? (Give full description e.g. federal government, canning industry, forestry services.)
No ☐ change ☐

75A WHAT KIND OF WORK WAS ... DOING? (Give full description: e.g., office clerk, factory worker, forestry technician.)
No ☐ change ☐

75B IN THIS WORK, WHAT WERE ... MOST IMPORTANT ACTIVITIES OR DUTIES? (Give full description: e.g., filing documents, drying vegetables, forest examiner.)
No ☐ change ☐

76 Class of worker:
Main job ☐ No ☐ change ☐ Enter code

77 Other job ☐ No ☐ change ☐ Enter code go to 80

NOTES
From no.
90
90
90

7-5030-475: 4-6-86

FRANÇAIS AU VERSO

30 LAST WEEK, DID ... HAVE A JOB OR BUSINESS AT WHICH HE/SHE DID NOT WORK?
Yes ☐ Go to 33 No ☐ Go to 50

31 WEEK, DID ... A JOB START AT A DEFINITE DATE IN THE FUTURE?
Yes ☐ No ☐ Go to 50

32 COUNTING FROM THE END OF LAST WEEK, IN HOW MANY WEEKS WILL ... START TO WORK AT HIS/HER NEW JOB?
 Go to 50

33 WHY WAS ... ABSENT FROM WORK LAST WEEK?
 Enter code and if code 6 go to 32

34 DID ... HAVE MORE THAN ONE JOB OR BUSINESS LAST WEEK?
Yes ☐ No ☐

35 HOW MANY HOURS PER WEEK DOES ... USUALLY WORK AT HIS/HER:
(Main) JOB? If total 30 or more go to 37
Other jobs?

36 WHAT IS THE REASON ... WORKS LESS THAN 30 HOURS PER WEEK?
 Enter code

37 UP TO THE END OF LAST WEEK, HOW MANY WEEKS HAS ... BEEN CONTINUOUSLY ABSENT FROM WORK?

38 IS ... GETTING ANY WAGES OR SALARY FROM HIS/HER EMPLOYER FOR ANY TIME OFF LAST WEEK?
Yes ☐ No ☐

39 INTERVIEWER CHECK ITEM:
* If code 5 (layoff) in 33 ☐ go to 56
* Otherwise ☐ go to 40

40 IN THE PAST 4 WEEKS, HAS ... LOOKED FOR ANOTHER JOB?
Yes ☐ No ☐ Go to 72

50 HAS ... EVER WORKED AT A JOB OR BUSINESS?
Yes ☐ No ☐ Go to 55

51 WHEN DID ... LAST WORK AT A JOB OR BUSINESS?
No ☐ change ☐ 1 Mo. Yr. If month unknown, enter -- in month

52 INTERVIEWER CHECK ITEM:
(1) If 51 is before ☐ go to 55
(2) If 51 is equal to ☐ go to 53
at later than Mo. Yr.

53 DID ... USUALLY WORK 30 OR MORE HOURS PER WEEK?
Full-time (30 or more hours per week) ☐ Part-time (Less than 30 hours per week) ☐

54 WHAT WAS THE MAIN REASON WHY ... LEFT THAT JOB?
 Enter code

55 INTERVIEWER CHECK ITEM:
* If "perm. unable to work" in 10 ☐ go to 80
* Otherwise ☐ go to 56

56 IN THE PAST 6 MONTHS, HAS ... LOOKED FOR WORK?
Yes ☐ No ☐ Go to 64

57 IN THE PAST 4 WEEKS, WHAT HAS ... DONE TO FIND WORK? Mark all methods reported.
Nothing ☐ Go to 62
* IN THE PAST 4 WEEKS, HAS ... DONE ANYTHING ELSE TO FIND WORK? Mark all other methods reported.
For each method given, ask:
* WHEN DID ... LAST ... ?
(Repeat method) Method used No. of weeks ago (excl. svy. week)

Checked with:
PUBLIC employment AGENCY ☐ 2 ☐
PRIVATE employment AGENCY ☐ 3 ☐
UNION ☐ 4 ☐
EMPLOYERS directly ☐ 5 ☐
FRIENDS or relatives ☐ 6 ☐
Placed or answered ADS ☐ 7 ☐
LOOKED at job ADS ☐ 8 ☐
OTHER Specify in NOTES ☐ 9

58 THE END OF LAST WEEK, HOW MANY WEEKS BEEN LOOKING FOR WORK?
(Not counting weeks worked.)

59 WHAT WAS ...'S MAIN ACTIVITY BEFORE HE/SHE STARTED TO LOOK FOR WORK?
 Enter code

60 IS ... LOOKING FOR A JOB TO LAST MORE THAN 6 MONTHS?
Yes ☐ No ☐ (More than 6 months) (6 months or less)

61 IS ... LOOKING FOR A FULL-TIME OR PART-TIME JOB?
Full-time (30 or more hours per week) ☐ Part-time (Less than 30 hours per week) ☐

62 WHAT WAS THE MAIN REASON WHY ... DID NOT LOOK FOR WORK LAST WEEK?
 Enter code

63 WAS THERE ANY REASON WHY ... COULD NOT TAKE A JOB LAST WEEK?
 Enter code

64 INTERVIEWER CHECK ITEM:
* If "No" (never worked) in 50 ☐ go to 80
* If upper circle in 52 is marked ☐ go to 80
* Otherwise ☐ go to 72

EDUCATIONAL ACTIVITIES (if age 65 or over, go to 90)

80 LAST WEEK, WAS ... ATTENDING A SCHOOL, COLLEGE OR UNIVERSITY?
Yes ☐ No ☐ Go to 90

81 WAS ... ENROLLED AS A FULL-TIME OR A PART-TIME STUDENT?
Full time ☐ Part time ☐

82 WHAT KIND OF SCHOOL WAS THIS?
 Enter code

INFORMATION SOURCE

90 HRD page-line No. of person providing the above information.
Last interview This interview
* Authority - Statistics Act, Chapter 15, Statutes of Canada 1970-71-72



CODE SHEET

Exemplaire français
disponible sur
demande

Labour Force Survey Questionnaire (Form 05)

14

36

- 1 Own illness or disability
- 2 Personal or family responsibilities
- 3 Going to school
- 4 Could only find part-time work
- 5 Did not want full-time work
- 6 Full-time work under 30 hours per week
- 0 Other – *Specify in NOTES*

59

- 1 Working
- 2 Keeping house
- 3 Going to school
- 0 Other – *DO NOT specify in NOTES*

17

- 1 Own illness or disability
- 2 Personal or family responsibilities
- 3 Weather
- 4 Labour dispute (strike or lockout)
- 5 Layoff, expects to return (Paid Workers **Only**)
- 6 New job started during week, or job terminated (does not expect to return)
- 7 Vacation
- 8 Holiday (legal or religious)
- 9 Working short-time (because of material shortages, plant maintenance or repair, etc.)
- 0 Other – *Specify in NOTES*

62

- 1 Own illness or disability
- 2 Personal or family responsibilities
- 3 Going to school
- 4 No longer interested in finding work
- 5 Waiting for recall (to former job)
- 6 Has found new job
- 7 Waiting for replies from employers
- 8 Believes no work available (in area, or suited to skills)
- 9 No reason given
- 0 Other – *Specify in NOTES*

33

- 1 Own illness or disability
- 2 Personal or family responsibilities (Include maternity leave)
- 3 Weather
- 4 Labour dispute (strike or lockout)
- 5 Temporary layoff, expects to return (Paid Workers **Only**)
- 6 New job to start in the future
- 7 Vacation
- 8 Seasonal Business (**Excl.** Paid Workers)
- 0 Other – *Specify in NOTES*

63

- Yes, because of:
- 1 Own illness or disability
 - 2 Personal or family responsibilities
 - 3 Going to school
 - 4 Already has a job
 - 0 Other – *Specify in NOTES*
- 5 **No** (Was available for work)

54

- 1 Own illness or disability
- 2 Personal or family responsibilities
Include: Marriage, pregnancy, trip, vacation, family illness, etc.
- 3 Going to school
- 4 Quit job for no specific reason
- 5 Lost job or laid off job (Paid Workers **Only**)
Include: Seasonal job, on-call arrangement, temporary job, dismissal (fired), company moved or went out of business, economic conditions, etc.
- 6 Changed residence
- 7 Dissatisfied with job
Include: Low pay, poor hours, transportation problems, working conditions, conflict with employer or co-workers, no opportunity for advancement, etc.
- 8 Retired
- 0 Other – *Specify in NOTES*

Worked for Others

- 1 Paid worker
- 2 Unpaid family worker

Self-Employed

- 3 Incorporated business - With paid help
- 4 Incorporated business – **No** paid help
- 5 Not incorporated business – With paid help
- 6 Not incorporated business (*Include self-employed without a business*) – **No** paid help

82

- 1 Primary or secondary school
- 2 Community college, junior college, or CEGEP
- 3 University
- 0 Other – *Specify in NOTES*

Appendix 6

8. LINE NUMBER	20. Did ... do any work at all LAST WEEK, not counting work around the house? <i>(Note: If farm or business operator in hh., ask about unpaid work.)</i> Yes ☐ No ☐ (Go to 21)	21. (If / in 19, skip to 21A.) Did ... have a job or business from which he/she was temporarily absent or on layoff LAST WEEK? Yes ☐ No ☐ (Go to 22)											
9. What was... doing most of LAST WEEK - Working ☒ Keeping house ☐ Going to school or something else? ☐ Working (Skip to 20A)....WK ☐ With a job but not at work... J ☐ Looking for work LK ☐ Keeping house..... H ☐ Going to school..... S ☐ Unable to work (Skip to 24)...U ☐ Retired..... R ☐ Other (Specify).....OT ☐	20A. How many hours did ... work LAST WEEK at all jobs? 1-34 ☐ (Go to 20C) 35-48 ☐ (Go to 20D) 20B. INTERVIEWER CHECK ITEM 49+ ☐ (Skip to item 23) 1-34 ☐ (Go to 20C) 35-48 ☐ (Go to 20D) 20D. Did... lose any time or take any time off LAST such as illness, holiday or slack work? Yes ☐ How many hours did... take off?	21A. Why was... absent from work LAST WEEK? Own illness..... ☐ On vacation..... ☐ Bad weather..... ☐ Labor dispute.... ☐ New job to begin within 30 days ☐ (Skip to 22B and 22C2) Temporary layoff (Under 30 days) ☐ Indefinite layoff (30 days or more or no def. recall date)..... ☐ (Skip to 22C3) Other (Specify) ..											
OC. Does... USUALLY work 35 hours or more a week at this job? Yes ☐ What is the reason ... worked less than 35 hours LAST WEEK? No ☐ What is the reason ... USUALLY works less than 35 hours a week? <i>(Mark the appropriate reason)</i> Slack work ☐ Material shortage..... ☐ Plant or machine repair... ☐ New job started during week... ☐ Job terminated during week... ☐ Could find only part-time work ☐ Holiday (Legal or religious) ... ☐ Labor dispute..... ☐ Bad weather..... ☐ Own illness..... ☐ On vacation..... ☐ Too busy with housework, school, personal bus., etc. ... ☐ Did not want full-time work. ... ☐	20E. Did... work any overtime or at more than one job LAST WEEK? Yes ☐ How many extra hours did... work? <i>(Correct 20A and 20B as necessary if extra hours not already included and skip to 23.)</i> No ☐ (Skip to 23)	21B. Is ... receiving wages or salary from his/her employer for any of the time off LAST WEEK? Yes ☐ No ☐ 21C. Does... usually work 35 hours or more a week at this job? Yes ☐ No ☐ <i>(Skip to 23 and enter job held last week)</i>											
(Skip to 23 and enter job worked at last week)	<table border="1"> <thead> <tr> <th></th><th>INDUSTRY</th><th>OCCUPATION</th></tr> </thead> <tbody> <tr> <td>OFFICE</td><td>1 1 1 2 2 2 3 3</td><td>1 1 2 2 3 3 3 4 4 4 5 5 5 6 6 6</td></tr> <tr> <td>ONLINE</td><td>7 7 8 8 9 9</td><td>7 7 7 8 8 8 9 9 9</td></tr> <tr> <td></td><td>Ref. ☐ Unc. ☐</td><td>Ref. ☐ Unc. ☐</td></tr> </tbody> </table>		INDUSTRY	OCCUPATION	OFFICE	1 1 1 2 2 2 3 3	1 1 2 2 3 3 3 4 4 4 5 5 5 6 6 6	ONLINE	7 7 8 8 9 9	7 7 7 8 8 8 9 9 9		Ref. ☐ Unc. ☐	Ref. ☐ Unc. ☐
	INDUSTRY	OCCUPATION											
OFFICE	1 1 1 2 2 2 3 3	1 1 2 2 3 3 3 4 4 4 5 5 5 6 6 6											
ONLINE	7 7 8 8 9 9	7 7 7 8 8 8 9 9 9											
	Ref. ☐ Unc. ☐	Ref. ☐ Unc. ☐											
3B. What kind of business or industry is this? (For example: TV and radio mfg., retail shoe store, State Labor Dept., farm)													
3C. What kind of work was... doing? (For example: electrical engineer, stock clerk, typist, farmer.)													
3D. What were ...'s most important activities or duties at this job? (For example: types, keeps account books, files, sells cars, operates printing press, finishes concrete.)													

Appendix 6

22. (If LK in 19, Skip to 22A.) Has... been looking for work during the past 4 weeks? Yes ☐ No ☐ (Go to 24)	4. INTERVIEWER CHECK ITEM (Rotation number) First digit of SEGMENT number is: ☐ 1, 2, 4, 5, 6 or 8 (Skip to 25) ☐ 3 or 7 (Go to 24A)	25. INTERVIEWER CHECK ITEM (Rotation number) First digit of SEGMENT number is: ☐ 1, 2, 4, 5, 6 or 8 (Skip to 26) ☐ 3 or 7 (Go to 25A)
22A. What has... been doing in the last 4 weeks to find work? (Mark all methods used; do not read list.) Checked pub. employ. agency with... pvt. employ. agency employer directly... friends or relatives... Placed or answered ads... Nothing (Skip to 24)... Other (Specify in notes, e.g., JTPA, union or prof register, etc.)...	4A. When did... last work for pay at a regular job or business, either full- or part-time? Within past 12 months... 1 up to 2 years ago... 2 up to 3 years ago... 3 up to 4 years ago... 4 up to 5 years ago... 5 or more years ago... Never worked...	25A. How many hours per week does... USUALLY work at this job? per week does... USUALLY work at this job?
22B. At the time... started looking for work, was it because he/she lost or quit a job or was there some other reason? Lost job... Quit job... Left school... Wanted temporary work... Change in home or family responsibilities... Left military service... Other (Specify in notes)...	4B. Why did... leave that job? Personal, family (Incl. pregnancy) or school... Health... Retirement or old age... Seasonal job completed... Slack work or business conditions... Temporary nonseasonal job completed... Unsatisfactory work arrangements (Hours, pay, etc.)... Other...	25B. Is... paid by the hour on this job? Yes ☐ (Go to 25C) No ☐ (Skip to 25D)
22C. 1) How many weeks has... been looking for work? 2) How many weeks ago did... start looking for work? 3) How many weeks ago was... laid off?	4C. Does... want a regular job now, either full- or part-time? Yes... Maybe - it depends... No... Don't know...	25C. How much does... earn per hour? Dollars Cents does... earn... per hour?
22D. Has... been looking for full-time or part-time work? Full ☐ Part ☐	24D. What are the reasons... is not looking for work? (Mark each reason mentioned) Believes no work available in line of work or area... Couldn't find any work... Lacks nec. schooling, training, skills or experience... Employers think too young or too old... Other pers. handicap in finding job... Can't arrange child care... Family responsibilities... In school or other training... Ill health, physical disability... Other (Specify in notes)... Don't know...	25D. How much does... USUALLY earn per week at this job BEFORE deductions? Include any overtime pay, commissions, or tips usually received. \$ REF
22E. Could... have taken a job LAST WEEK if one had been offered? Yes ☐ No ☐ Why not? Already has a job... Temporary illness... Going to school... Other (Specify in notes)...	24E. Does... intend to look for work of any kind in the next 12 months? Yes... It depends (Specify in notes)... No... Don't know... (If entry in 24B, describe job in 23, otherwise, skip to 26)	25E. On this job, is... a member of a labor union or of an employee association similar to a union? Yes ☐ (Skip to 26) No ☐ (Ask 25F)
22F. When did... last work at a full-time job or business lasting 2 consecutive weeks or more? Within last 12 months (Specify)... (Month) ... One to five years ago... More than 5 years ago... Never worked full-time 2 wks or more... Never worked at all... (SKIP to 23. If layoff entered in 21A, enter job, either full or part time, from which laid off. Else enter last full time job lasting 2 weeks or more, or "never worked.")	23E. Was this person An employee of a PRIVATE Co, bus., or individual for wages, Salary or comm. ... P ☐ A FEDERAL government employee ... F ☐ A STATE government employee ... S ☐ A LOCAL government employee ... L ☐ Self-empl. in OWN bus., prof. practice, or farm ... I ☐ Is the business incorporated? ... Working WITHOUT PAY in fam. bus. or farm., WP ☐ NEVER WORKED... NEV ☐	25F. On this job, is... covered by a union or employee association contract? Yes ☐ (Go to 26) No ☐
23F. Was this person An employee of a PRIVATE Co, bus., or individual for wages, Salary or comm. ... P ☐ A FEDERAL government employee ... F ☐ A STATE government employee ... S ☐ A LOCAL government employee ... L ☐ Self-empl. in OWN bus., prof. practice, or farm ... I ☐ Is the business incorporated? ... Working WITHOUT PAY in fam. bus. or farm., WP ☐ NEVER WORKED... NEV ☐	3F. INTERVIEWER CHECK ITEM Entry (or NA) in item 20A ☐ Entry (or NA) in item 21B ☐ All other cases ☐ (Skip to 26)	

Appendix 6

18A. LINE NO.	18B. RELATIONSHIP TO REFERENCE PERSON	18C. PAR'S LINE NO.	18D. AGE	18E. MARITAL STATUS	18F. SPOUSE? LINE NUMBER
	Ref. Person WITH rel. in H'hld. 01 O			Married—	
	Ref. person with NO rel. in H'hld. 02 O			spouse present	1
0 0	Husband 03 O	0 0	0		0 0
1 1	Wife 04 O	1 1	1 1	Married—	1 1
2 2	Natural/Adopted Child.. . . . 05 O	2 2	2 2	spouse absent	2 2
3 3	Step Child.. . . . 06 O	3 3	3 3	(Exclude separated)	3 3
4 4	Grandchild 07 O	4 4	4 4		4 4
5 5	Parent 08 O	5 5	5 5	Widowed	5 5
6 6	Brother/Sister 09 O	6 6	6 6	Divorced	6 6
7 7	Other Rel. of Ref. Person.. . . . 10 O	7 7	7 7	Separated	7 7
8 8	Foster Child.. . . . 11 O	8 8	8 8	Never married	8 8
9 9	Non-rel. of Ref. Person WITH OWN rel. in H'hld 12 O	9 9	9 9		9 9
	Partner/Roommate 13 O	lone			one
	Non-rel. of Ref. Person (other than partner/ roommate) with NO OWN rel. in H'hld. 14 O	O			O

26. INTERVIEWER CHECK ITEM
(Transcribe from control card item 78)
This person is
16–24 years of age O *(Ask 26A)*
All others O *(Skip to 26C)*

26A. *(If 'School' in 19, Verify) LAST WEEK was . . .*
attending or enrolled in a high school, college, or
university? *(Mark "Yes" if currently on holiday or
seasonal vacation. Mark "No" for summer vacation)*
Yes O *(Verify)* No O *(Skip to 26C)*

High School . . . O *(Ask 26B)*
College or Univ. O

26B. Is . . . enrolled in school as a full-time
or part-time student?
Full time O *(Fill 26C)*
Part time O

26C. INTERVIEWER CHECK ITEM
Who responded to the labor force items
for this person?
Self O
Other O
Self/Other O

18G1. SEX		18H. HIGHEST GRADE ATTENDED		18I. GRADE COMPLETED	18J. RACE	18K. ORIGINAL GRADE
Male	I			Yes	White.. . . . I	0
Female	E			No	Black.. . . . E	1
18G2. VETERAN STATUS					Amer. Indian, Aleut. Eskimo	3
Veteran	7	0	0		Asian or Pacific Isl. . . 4	0
Vietnam Era	I	1	1		Other.. . . . S	1
Korean War	2	2	2			
World War II	3		3			
World War I	4		6			
Other Service	5		?			
Nonveteran	G		3			

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Appendix 6

Appendix 7

For persons born in or before 1975:-

Line Number	For all persons	For persons coded 3 at Q. 17	For persons coded 1 at Q. 17 or coded 2 - 9 at Q. 18	For persons coded 2 or 4 at Q. 19	For persons coded 1 at Q. 17 or		
	What was person's employment situation last week? (Show card)	Why was person not working last week? (Show card) code 1: skip to Q.32 all others: ask Q. 19	Would person describe this job as his/her Principal, regular job, and as full-time or part-time? (insert appropriate code - see below)	Why does person have a part-time job? (insert appropriate code - see below)	Did person have more than one Job last week (not due to a change in employment)? Yes 1 No 2	For persons coded 1 at Q. 17 or	
						Whit is person's occupation? (Give the name of the job and a full description of the work done) (Use block capitals)	Employment Status
Question	17	18	19	20	21	22	23
	(85)	(86)	(87)	(88)	(89)	(90-92)	(93)
01							
02							
03							
04							
05							
06							
07							

Working for at least 1 hour for payment or profit, including work on the family farm or business 1 (skip to Q. 19)	New job to start in the future 1 Bad weather 2 Slack work, short-time 3 Labour dispute 4 Education or training outside the place of work 5 Own illness or injury 6 Maternity leave 7 Holidays 8 Other (specify) 9	Principal, regular job:- full-time 1 (skip to Q. 21) part-time 2 (ask Q. 20) Occasional or seasonal job: full time 3 (skip to Q. 21) part-time 4 (ask Q. 20)	Education, Training 1 Own illness or disability 2 Did not want a full-time job 3 Could not find a full-time job 4 Family responsibilities 5 Other (specify) 6	Employer (i.e. self-employed with paid employees) 1 Self-employed (i.e. without paid employees) 2 Employee 3 Assisting relative [not receiving fixed wage or salary] 4

Appendix 7

coded 2 - 9 at Q. 18

in the reference week answer for the principal one here

Name of employer and address of place of work Nature of business carried on by employer - or by self if self-employed. (Give the process tried and the firm if any) If a farmer or farm worker, give the area of the farm on which working - including land rented or taken in contract. (Use block capitals)	How many hours per week does person usually work at this job, including overtime? (if hours worked vary considerably from week to week, enter "00")	How many hours did person actually work at this job last week? If person worked usual hours last week enter the no. of hours and skip to Q. 28	Which of the following best describes why person did not work usual hours last week? (Show card)	(for persons coded 3 at Q. 23 only) Would person describe this as a permanent or a temporary job? Permanent 1 (skip to Q. 30) Temporary 2 (ask Q. 29)	Why does person have a temporary job?	Is person looking for another job? Yes 1 (ask Q. 31) No 2 (skip to Q. 50)	Why is person looking for another job? (Show card) (skip to Q. 39)	
24	25	26	27	28	29	30	31	
(94-97)	(98-99)	(100-101)	(102-103)	(104)	(105)	(106)	(107)	
								01
								02
								03
								04
								05
								06
								07

Person worked <u>more</u> than usual hours due to:-			
Overtime	00		
Variable hours (e.g. flexi-time)	01		
Other (specify)	02		
Person worked <u>less</u> than usual hours due to:-			
Bad weather	03	Personal/family responsibilities	10
Slack work, short-time	04	Public holiday	11
Labour dispute	05	On holidays	12
Education, training	06	Start/change of job last week	13
Variable hours (e.g. flexi-time)	07	End of job last week	14
Own illness, injury	08	Other (specify)	15
Maternity leave	09		
		In training	1
		Does not want permanent job	2
		Could not find permanent job	3
		Risk of loss of present job	1
		Underemployed in present job	2
		Present job considered as transitional job	3
		Looking for a second job	4
		Want better conditions (pay, hours, etc.)	5
		Other (specify)	6

Appendix 7

For persons born in or before 1975:-

For persons coded 2 at Q.4 or coded 1 at Q.18							
Line number	Has person ever had a job, either as employee, self-employed or assisting relative, other than work? Yes 1 (ask Q.33) No 2 (skip to Q.38)	Why did person leave this job? (Show card)	How long is it since person last worked in the job? (answer in months) If 95 months or less ask Q.35 otherwise skip to Q.38	What was person's occupation in this job? (Give the name of the job and a full description of the work done) (Use block capitals)	Employment status in this job	Nature of business carried on by employer - or by self, if self-employed, in this job (Give the process carried on and the end-product of the firm - if any) (Use block capitals)	Is person looking for work? - either full-time or part-time (Show card)
Question	32	33	34	35	36	37	38
	(108)	(109)	(110-111)	(112-114)	(115)	(116-119)	(120)
01							
02							
03							
04							
05							
06							
07							

Made redundant 0 Temporary job 1 Resigned from job 2 Retired for economic reasons 3 Retired for health reasons 4 Personal reasons (studies, family responsibilities, etc.) 5 Reached retiring age or retired for other reasons 6 Other (specify) 7	Self-employed (i.e. without paid employees) 2 Employee 3 Assisting relative (not receiving fixed wage or salary) 4	Yes 1 (ask Q. 39) Not looking, as new full-time job has been found 2 Not looking, as new part-time job has been found 3 Not looking, as awaiting recall from lay-off 4 (codes 2, 3, 4 skip to Q.50) Not looking for work 5 (skip to Q.48)

Appendix 7

For persons who are looking for work (code 1 at Q. 30 or Q. 38)

Is person looking for work as self-employed or employee? Self-employed 2 Employee 3	Is person looking for full-time or part-time work? full-time 1 (ask Q. 41) part-time 2 (skip to Q. 42)	Would person accept a part-time job if full-time work could not be found? Yes 1 No 2 Skip to Q. 43	Would person accept a full-time job if part-time work could not be found? Yes 1 No 2	How long has person been looking for work? State number of months. If less than one month write "00" (If not yet started write "xx" and ask Q. 45)	What is the main way person has looked for work in the last four weeks? (Show card)	Is person available for work immediately (i.e. within two weeks)? Yes 1 (skip to Q. 47) No 2 (ask Q. 46)	Why is person not available immediately? Must complete education 1 Cannot leave present job immediately 2 Personal responsibilities 3 Illness, incapacity 4 Other (specify) 5	What was person's situation immediately before starting to look for work?	
39	40	41	42	43	44	45	46	47	
(121)	(122)	(123)	(124)	(125-126)	(127)	(128)	(129)	(130)	
									01
									02
									03
									04
									05
									06
									07

Inserting advertisements in newspapers/journals	1
Answering advertisements in newspapers/journals	2
Applying directly to employers	3
Personal contacts'	4
Studying advertisements in newspapers/journals	5
Registration with F&S	6
Registration with private agency	1
Other methods (specify)	8
No method Used	9

Working (including apprentices, trainees)	1
Attending full-time education	2
On home duties	3
Retired	4
Other (specify)	5

Appendix 7

For persons born in or before 1975:-

Line Number	For persons coded 5 at Q. 38		For all persons					
	Does person want a job? Yes 1 (Ask 4.49) No 2 (Skip to Q.50) (Show card)	Which of the following reasons best describes why person is not seeking (Show card)	Is person on the Unemployment Live Register? No 1 Yes - Unemployment Benefit 2 Unemployment Assistance 3 Signing for Credits 4	What is the highest level of education person has completed? (Show card)	Has person received any education or training, including on-the-job training, during the last four weeks? Yes 1 (Ask Q. 53) No 2 (Skip to Q.55) (Show card)	Which of the following best describes this education or training? (Show card)	What was the purpose of this training? (Show card) First vocational training or preparation for first job 1 Further training for present job 2 Training for different job 3 Other (specify) 4	Was information obtained directly from person concerned? Yes 1 No 2
Question	48	49	50	51	52	53	54	55
	(131)	(132)	(133)	(134)	(135)	(136)	(137)	(138)
01								
02								
03								
04								
05								
06								
07								

In school or other training 1	No formal education 0	A. Education not related to the job
Child care or other family responsibilities 2	Primary education 1	Attending:
Awaiting results of Public Sector competition 3	Intermediate Certificate1	Primary School 1
Ill health, physical disablement 4	'O' levels/Group Cert 2	Secondary, Community or Comprehensive School .. 2
Lacks the necessary education, skills and experience ...5	Leaving Certificate 3	Vocational, Technical or Commercial School 3
Employers think person is too young or too old 6	Third level:	University or other third level college 4
Looked but couldn't find any work 7	Non-university 4	Adult education courses 5
Believes no work is available 8	University 5	B. Education/training related to the job and taking place:
Other reasons (specify) 9	Higher university degree level 6	At the workplace only 6
		At school or college only 7
		Partly within the workplace and partly within a school or college:
		(a) In the frame work of an apprenticeship 8
		(b) Other (non-apprenticeship) forms of training 9
		Other types of job-related training 0

C. CARACTERÍSTICAS DE LA ACTIVIDAD ECONOMICA					
SOLO PARA PERSONAS DE 12 AÑOS O MAS					
Nombre: _____		Reg 3 Nº de línea _____	Parentesco _____	Edad _____	Autoinformante ☐ 1 Otro informante ☐ 2 Número de línea del informante _____
1. ¿Trabajó la semana pasada (excepto en quehaceres domésticos)? Sí..... ☐ 1 No..... ☐ 2 (pase a 15)	9. ¿Desea trabajar y está disponible para hacerlo? Sí.. { Ahora mismo ☐ 1 En otra época del año ☐ 2 Otro ☐ 3 → (pase a 35)		18. En esa ocupación, ¿usted es o era patrono o socio activo?..... ☐ 1 ... trabajador por cuenta propia?..... ☐ 2 ... empleado u obrero del Estado?..... ☐ 3 ... empleado u obrero de la empresa privada?..... ☐ 4 ... servidor doméstico?..... ☐ 5 ... trabajador familiar no remunerado?..... ☐ 6 ... otro trabajador no remunerado?..... ☐ 7 (pase a 20)		
2. ¿La semana pasada realizó algún trabajo por un salario?..... ... por su cuenta?..... ... en su empresa?..... ... para un familiar sin recibir pago?..... ... por pago en especie?..... Sí..... ☐ 1 No trabajó..... ☐ 2 (pase a 15)	10. ¿Por qué no ha buscado trabajo? Enfermedad o accidente..... ☐ 1 Asiste a la escuela o centro de enseñanza..... ☐ 2 Tiene obligaciones personales o familiares..... ☐ 3 No cree poder encontrar trabajo..... ☐ 4 Espera período de mayor actividad agrícola o económica..... ☐ 5 Ha encontrado un nuevo trabajo..... ☐ 6 Otras razones..... ☐ 7		19. ¿Dónde se ubica ese establecimiento? (Si es cuenta propia, lugar donde realiza o realizaba principalmente su actividad) Dentro de la vivienda..... ☐ 1 Taller o local junto a la vivienda..... ☐ 2 Finca, taller, o local independiente..... ☐ 3 A domicilio..... ☐ 4 En la vía pública..... ☐ 5 Otro..... ☐ 6 (Especifique) _____		
3. Aunque no trabajó la semana pasada, ¿tenía algún empleo, negocio o empresa propia, del cual estuvo ausente por motivo de enfermedad, huelga o paro, mal tiempo, vacaciones, falta de materiales o clientes? Sí..... ☐ 1 No..... ☐ 2 (pase a 15)	11. ¿Cuántas horas por semana está dispuesto a trabajar? Horas por semana..... _____		20. ¿Cuántas personas trabajan o trabajaban regularmente en ese establecimiento? (Si contestó NO en pregunta 3 pase a pregunta 35) Menos de 10 (indique el número)..... _____ 10 o más..... ☐ 10		
4. ¿Buscó trabajo la semana pasada o estuvo tratando de establecer su propia empresa o negocio? Sí..... ☐ 1 No..... ☐ 2 (pase a 6)	12. ¿Está dispuesto a trabajar por menos de \$ 5 000 al mes?..... ☐ 1 ... \$ 5 000 a menos de \$ 10 000?..... ☐ 2 ... \$ 10 000 a menos de \$ 15 000?..... ☐ 3 ... \$ 15 000 a menos de \$ 20 000?..... ☐ 4 ... \$ 20 000 o más?..... ☐ 5		SOLO OCUPADOS (Si contestó NO en preguntas 1, 2, o 3)		
5. Aunque no buscó, ¿había buscado trabajo o trató de establecer su propia empresa o negocio en las cuatro semanas anteriores a dicha semana? Sí..... ☐ 1 No..... ☐ 2 (pase a 8)	13. ¿Ha trabajado antes? Sí..... ☐ 1 No..... ☐ 2 (pase a 35)		21. Además de esa ocupación, ¿tiene usted otro trabajo? Sí..... ☐ 1 No..... ☐ 2		
6. ¿Qué hizo para buscar trabajo o establecer su propio negocio o empresa? Consultó oficina o bolsa de empleo..... ☐ 1 ☐ 2 Puso o contestó anuncios..... ☐ 3 ☐ 4 Visitó fincas, fábricas, oficinas públicas, etc..... ☐ 5 ☐ 6 Consultó amigos o parientes..... ☐ 7 ☐ 8 Otro..... ☐ 9 ☐ 10 (Especifique) _____ (Si la respuesta es "NADA" revise preguntas 4 y 5 y determine la alternativa correcta.)	14. ¿Cuánto tiempo que no trabaja? Menos de 2 meses..... ☐ 1 2 meses a menos de 4 meses..... ☐ 2 4 meses a menos de 1 año..... ☐ 3 1 año a menos de 2 años..... ☐ 4 2 años a menos de 5 años..... ☐ 5 5 o más años..... ☐ 6		22. ¿Cuántas horas trabaja habitualmente por semana? Ocupación principal..... Nº de horas _____ Otras ocupaciones..... Nº de horas _____ Total..... Nº de horas _____		
7. ¿Cuánto tiempo hace que busca trabajo? Menos de 1 mes..... ☐ 1 1 mes a menos de 2 meses..... ☐ 2 2 meses a menos de 4 meses..... ☐ 3 4 meses a menos de 1 año..... ☐ 4 1 año o más..... ☐ 5 (pase a 11)	15. ¿Cuál es el oficio u ocupación principal que realiza o realizó en su último trabajo? _____		23. ¿Desea trabajar más horas por semana y está dispuesto a hacerlo? Sí..... ☐ 1 No..... ☐ 2 (pase a 25)		
8. ¿Es usted pensionado o jubilado?..... ☐ 1 ... rentista?..... ☐ 2 ... estudiante?..... ☐ 3 ... o realizó oficios domésticos?..... ☐ 4 ... otro?..... ☐ 5	16. ¿Cuál es el nombre del establecimiento, negocio o finca donde trabaja o trabajó? _____		24. ¿Por qué no trabaja más horas por semana? Por razones de salud..... ☐ 1 Por razones de estudio..... ☐ 2 Por razones personales o familiares..... ☐ 3 No consigue más trabajo asalariado..... ☐ 4 No consigue más trabajo independiente..... ☐ 5 Otras razones..... ☐ 6		
9. ¿Qué produce o a qué se dedica principalmente el establecimiento, negocio o finca donde usted trabaja o trabajó? _____		25. El trabajo que realizó la semana pasada en su ocupación principal ¿lo realizó todo el año?..... ☐ 1 ... ¿es ocasional?..... ☐ 2 ... ¿es estacional?..... ☐ 3 ... otro..... ☐ 4 (Especifique) _____			

Appendix 8

Reg 4 OCUPACION SECUNDARIA	
Sólo ocupados que respondieron SÍ a pregunta 21 de lo contrario pase a INGRESOS	
26. ¿Cuál es el oficio u ocupación secundaria que realiza? _____ _____ _____	29. En esa ocupación secundaria, ¿usted er...? ... patrono o socio activo? ☐ 1 ... trabajador por cuenta propia? ☐ 2 ... empleado u obrero del Estado? ☐ 3 ... empleado u obrero de empresa privada? ☐ 4 ... servidor doméstico? ☐ 5 ... trabajador familiar no remunerado? ☐ 6 ... otro trabajador no remunerado? ☐ 7 (pase a 31)
27. ¿Cuál es el nombre de la empresa, negocio o finca donde trabaja en esa ocupación secundaria? _____ _____	30. ¿Dónde se ubica ese establecimiento? (Si es cuenta propia, lugar donde realiza o realizaba principalmente su actividad?) Dentro de la vivienda ☐ 1 Taller o local junto a la vivienda ☐ 2 Finca, taller, o local independiente ☐ 3 A domicilio ☐ 4 En la vía pública ☐ 5 Otro ☐ 6 (Especifique)
28. ¿Qué produce o a qué se dedica principalmente ese establecimiento, negocio o finca? _____ _____	31. ¿Cuántas personas trabajan regularmente en ese establecimiento? Menos de 10 (indique el número) _____ 10 o más ☐ 10

INGRESOS	
ASALARIADOS 32. En su ocupación principal ¿cuál fue el ingreso efectivamente percibido por concepto de sueldo, salario, jornal, propinas, horas extras, en el último período de pago (semana, quincena o mes)? a. Salario _____ por _____ b. ¿Le rebajaron en dicho período por concepto de CCSS y Bco. Popular? Sí ☐ 1 No ☐ 2 c. ¿Tuvo otras deducciones? Sí ☐ 1 No ☐ 2 d. ¿Recibió por su trabajo pagos en ...? ... alimentos? Sí ☐ 1 No ☐ 2 ... ropa y calzado? Sí ☐ 3 No ☐ 4 ... vivienda? Sí ☐ 5 No ☐ 6 ... transporte? Sí ☐ 7 No ☐ 8 ... otro? Sí ☐ 1 No ☐ 2	INGRESOS EN OTRAS OCUPACIONES 34. ¿Cuál es su ingreso en su(s) ocupación(es) secundaria(s)? _____ por _____ Reg 5 TODOS 35. En el último período de pago, ¿recibió dinero por concepto de ...? ... jubilaciones? _____ por _____ ... pensiones? _____ por _____ ... subsidios? _____ por _____ ... becas? _____ por _____ ... otras transferencias en dinero? _____ por _____ ... No recibió ☐ 0 36. ¿Es usted miembro de alguna cooperativa de ...? ... producción? ☐ 1 ... transporte? ☐ 2 ... servicios múltiples? ☐ 3 ... ahorro y crédito? ☐ 4 ... otra? ☐ 5 No es miembro ☐ 6 37. ¿Dónde residía usted en julio de 1984? Aquí ☐ 0 Distrito _____ Cantón _____ Provincia _____ Otro país centroamericano ☐ 3 Otro país ☐ 9

Reg 4 PATRONOS Y CUENTA PROPIA	
33. ¿Cuánto obtuvo como utilidad o ganancia en su ocupación principal (excluidos los gastos de operación) en el último período de pago (semana, quincena o mes)? En efectivo _____ por _____ Valor de los productos retirados o servicios utilizados para su propio consumo en el último período: _____	38. ¿La semana pasada cultivó o cosechó frijol, maíz, yuca u otros productos agrícolas, cuidó ganado, gallinas, cerdos, ordeñó o participó en otras actividades agrícolas, mineras, pesqueras, exclusivamente para el consumo de su hogar? Sí ☐ 1 No ☐ 2 (pase a 39 b) 39. ¿Realizó alguna de las siguientes actividades la semana pasada? a. ¿Cultivó o cosechó productos agrícolas, ordeñó o cuidó ganado, aves u otros animales, participó en actividades mineras, pesqueras, etc.? Exclusivamente para la venta ☐ 1 Para la venta y consumo del hogar ☐ 2 No ☐ 3 b. ¿Hizo tortillas, pan, dulces, u otras comidas para vender? Dentro de la casa ☐ 4 Fuera de la casa ☐ 5 No ☐ 6 c. ¿Elaboró tejidos, costuras, cerámica u otros productos o artesanías para vender? Dentro de la casa ☐ 1 Fuera de la casa ☐ 2 No ☐ 3 d. ¿Trabajó en la construcción, reparación, mantenimiento (para terceras personas) de casa, granja, finca u otras actividades relativas a la construcción? Sí ☐ 5 No ☐ 4 e. ¿Ayudó en lugares de venta, distribución de comidas, bebidas, venta de productos agrícolas u otros productos? Sí ☐ 1 No ☐ 7 f. ¿Trabajó en el transporte de carga para mercado, almacenamiento u otras actividades relativas al transporte de productos destinados a la venta? Sí ☐ 1 No ☐ 2 g. ¿Reparó herramientas, aparatos; lavó o planchó ajeno, por lo cual recibió pago? Sí ☐ 3 No ☐ 4

NOMBRE _____	PERSONA [] [] []	PARENTESCO [] [] []	EDAD [] [] []	Auto informante [] 1 Otro informante [] 2	Nº de línea del [] []

MODULO 2: POBLACION DE 12 AÑOS Y MAS

13. Trabajó la semana pasada al menos 1 hora?

SI ☐ 1 → 21 NO ☐ 2

14. La semana pasada realizó alguna actividad dentro o fuera de su casa para ayudar al mantenimiento de su hogar tal como:

- Negocio propio _____ [] 11
- Fabricar algún producto _____ [] 12
- Haciendo algo en casa por un ingreso _____ [] 13
- Brindando algún servicio _____ [] 14
- Ayudando en algún negocio familiar _____ [] 15 → 21
- Como aprendiz remunerado _____ [] 16
- Estudiante que realiza algún trabajo _____ [] 17
- Trabajó para otra familia _____ [] 18
- Alguna otra actividad por un ingreso _____ [] 19
- Especifique _____ [] 20
- Ninguna actividad similar _____ [] 21

15. Aunque no trabajó, tenía trabajo?

SI ☐ 1 NO ☐ 2 → 30

OCUPADOS

16. a) Por qué no trabajó la semana pasada?

- Vacaciones o días feriados _____ [] 3
- Enfermedad o accidente _____ [] 4
- Huelga o paro _____ [] 5
- Licencia con sueldo _____ [] 6
- Suspensión temporal del trabajo _____ [] 7
- Licencia sin sueldo _____ [] 8
- Otros _____ [] 9
- (especifique) _____

20. b) Cuántas horas trabaja habitualmente por semana? (en todos sus trabajos) Nº HORAS [] [] []

menos de 40 horas ☐ 23a 40 horas o más ☐ 25b

21. Cuántas horas trabajó la semana anterior? (en todos sus trabajos) Nº HORAS [] [] []

Si el total es de 40 horas 6 más ☐ 1 → 24
Si el total es menos de 40 horas ☐ 2

22. Cuántas horas trabaja habitualmente por semana? (en todos sus trabajos) Nº HORAS [] [] []

menos de 40 horas ☐ 3 40 horas o más ☐ 4

23. a) Por qué razón trabaja habitualmente menos de 40 horas por semana?

23. b) Por qué razón trabajó menos de 40 horas la semana anterior?

- Horario normal _____ [] 20
- No desea trabajar mas horas _____ [] 21
- Motivos personales o familiares _____ [] 22
- Enfermedad o accidente _____ [] 23
- Vacaciones o días feriados _____ [] 24
- Reducción de actividad económica _____ [] 25
- Falta de materias primas, financiamiento, clientes o maquinaria _____ [] 26
- No ha podido conseguir otro trabajo _____ [] 27
- No ha podido conseguir más trabajo _____ [] 28
- Otros _____ [] 29
- (especifique) _____

ATENCION: pase a pregunta 26

menos de 40 horas ☐ 5 40 horas o más ☐ 6

25. a) Por qué razón trabajó la semana anterior 40 horas o más

25. b) Por qué razón trabaja habitualmente 40 horas o más

- Horario normal _____ [] 1
- Horas extras _____ [] 2
- Exceso de trabajo o clientes _____ [] 3
- Horas de trabajo necesarias para obtener un ingreso suficiente _____ [] 4
- Otros (especifique) _____ [] 5

26. Cuántos trabajos tiene?

Nº TRABAJOS [] []

ATENCION: pase a pregunta 60

DESOCUPADOS

30. Buscó trabajo la semana pasada?

SI ☐ 6 → 32 NO ☐ 7

31. Buscó trabajo las 4 semanas anteriores?

SI ☐ 8 NO ☐ 9 → 34

32. a) Qué medios utilizó para buscar trabajo?

- Amigos o parientes _____ SI [] 1 NO [] 2
- Directo ante empleadores _____ SI [] 3 NO [] 4
- Prensa, radio _____ SI [] 5 NO [] 6
- Agencia Pública de empleo _____ SI [] 7 NO [] 8
- Agencia Privada de empleo _____ SI [] 9 NO [] 1
- Hizo gestiones para establecer su propio negocio o empresa _____ SI [] 2 NO [] 3
- Otros _____ SI [] 4 NO [] 5
- (especifique) _____

32. b)Cuál es el medio principal? USO INEM [] []

33. Cuánto tiempo hace que busca trabajo?

EN SEMANAS [] [] []

ATENCION: pase a pregunta 50

34. Cuáles son los motivos por los que no buscó trabajo o no desea trabajar?

- Piensa que no le darán trabajo _____ [] 1
- No cree poder encontrar _____ [] 2
- Espera respuesta a una gestión para empresa o negocio propio _____ [] 3 → 50
- Espera respuesta de un empleador u otras gestiones para conseguir empleo _____ [] 4
- No tiene necesidad o deseos de trabajar _____ [] 5
- No tiene tiempo _____ [] 6
- Esta enfermo _____ [] 7 → 40
- No esta en edad de trabajar _____ [] 8
- Otros _____ [] 9
- (especifique) _____

INACTIVOS

40. Ustedes. . ?

• Estudiante _____	4	→ 90
• Ama de casa _____	5	
• Jubilado o Pensionado _____	6	
• Rentista _____	7	
• Incapacitado _____	8	
• Otros (especif.) _____	9	

DESOCUPADOS E INACTIVOS QUE DESEAN TRABAJAR

50. Cuántas horas está dispuesto a trabajar a la semana?

Nº HORAS

51. En qué puesto de trabajo u ocupación desea o está

esperando trabajar? _____

trabajar?_____

		USO INEM					

54. Usted trabajó anteriormente? SI ☐ NO ☒ → 90

EE. Cuánto tiempo hace que usted no trabaja?

33. Cuanto tiempo hace que usted no trabaja?

60. Rama de Actividad

Describe la actividad de la empresa o negocio donde la persona trabaja (ba) (trabajo principal)

USO INEM

61. Grupo Ocupacional
 Describa el puesto de trabajo u ocupación donde la

Describa el puesto de trabajo u ocupación donde la persona trabaja (ba) (trabajo principal) _____

ATENCION pase a pregunta 62

62. Categoría de Ocupacion
Encuél de estas alternativas desempeña (ba) su

En cuál de estas alternativas desempeña (ba) su trabajo? (trabajo principal)

• Patrono o Socio Activo	01	70
• Trabajador por cuenta propia	02	
• Asalariado permanente de Gobierno	13	71
• Asalariado temporal de Gobierno	14	
• Asalariado permanente empresa privada	21	
• Asalariado temporal empresa privada	22	
• Aprendiz con remuneración	23	
• Aprendiz sin remuneración	24	
• Trabajador familiar no remunerado	31	
• Otros (especificar)	41	

70. Dónde se ubica (ba) ese establecimiento?

• Dentro de la vivienda _____	1
• Taller o local junto a la vivienda _____	2
• Taller o local independiente _____	3
• Establecimiento en la calle _____	4
• Otro _____ (especificar)	5

71. ¿Cuántas personas trabajan (ban) usualmente en el negocio o empresa?

- menos de 10 ☐ 1  CUANTAS?
- de 10 a 19 ☐ 2 

- 20 o más ☐ 20 Nº PERSONAS

80. Control para el encuestador

Si hay respuesta en pregunta 26 1 si no → 90

81. Indique el ingreso efectivamente percibido en su (s)

| trabajo (s) por concepto de sueldos, salarios, jornada, propinas, horas extras, en el último período de pago (semana, quincena, mes) | |

a) Ingreso _____ por _____ ☐

b) ¿Recibió por su(s) trabajo(s) pagosen...
SI ☐ 1 NO ☐ 2

• ¿Alquilas?	<u>SI</u>	☐ 3	NO	☐ 4
• ¿Propietario?	<u>SI</u>	☐ 5	NO	☐ 6
• Vivienda?	<u>SI</u>	☐ 7	NO	☐ 8
• Transporte?	<u>SI</u>	☐ 9	NO	☐ 1
• Otro?	<u>SI</u>			☐ 1
- (especifique)

ATENCION: pase a pregunta 90

90. Durante los doce meses anteriores, **cuál** fue su condición de actividad habitual?

- [illegible]

OBSERVACIONES: _____

SECTION D : Compléter pour chaque personne âgée de 14 ans ou plus

		INSCRIRE DANS LES COLONNES LE NOM ET LE N° POUR CHAQUE PERSONNE AGE DE 14ANS OU PLUS			
D1. ENQUETEUR : recopier l'âge et le sexe de chaque personne (âgée de 14 ans ou plus) enregistrés à la page 1	AGE SEXE				
D2. <u>Etat matrimonial</u> : Célibataire 1 Marié 2 Veuf (ve) 3 Divorcé/Séparé 4					
D3. <u>Nationalité</u> : Rwandais 1 <i>Résidant des pays voisins</i> 2 Autre 3					
D4. <u>Education</u> : a) Avez-vous été à l'école ? b) Si OUI, quel est le niveau le plus élevé que vous avez atteint (donner la dernière classe réussie ou le diplôme reçu)	OUI .. 1 NON .. 2				

ACTIVITE ECONOMIQUE HABITUELLE

D5. a) Avez-vous accompli un travail pour un salaire, un profit ou pour l'intérêt familial au cours des 12 derniers mois ? ENQUETEUR : Vérifier la réponse avec attention en utilisant le guide d'interview. b) Combien de semaines au total avez-vous travaillé pendant les 12 derniers mois ? (inclure tous les travaux, même exercés dans l'exploitation, momentané ou permanents)	OUI .. 1 NON .. 2				
D6. a) Avez-vous été à la recherche d'un travail rémunéré au cours des 12 derniers mois à un certain moment où vous n'avez aucun autre travail ? b) Combien de semaines au total étiez-vous disponible pour chercher du travail au cours de 12 derniers mois ?	OUI .. 1 NON .. 2				

SECTION D : (suite)

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D7. Inscrivez le total de 5 (b) et de 6 (b)								
D8. <u>Enquêteur</u> : Est-ce que le total dans D7 est supérieur à 26 semaines ?	OUI ... 1 NON ... 2							
D9. <u>Enquêteur</u> : Est-ce que la période « occupée » dans 5 (b) est supérieure à la période « chômeur » dans 6 (b) ?	OUI ... 1 NON ... 2							
D10. Occupation principale habituelle : Quel est le type de travail que vous avez occupé le plus au cours des 12 derniers mois ?								
D11. L'entreprise habituelle : Quelle est le type d'activité exercée par l'entreprise où vous avez travaillé au cours des 12 derniers mois ?								
D12. Statut d'occupation : Quel est le statut dans votre principale occupation ?	Exploitant agricole Artisan indépendant Autre indépendant Salarié Employé (avec salaire) Aide familial Autre	1 2 3 4 5 6 7						
D13. a) L'activité exercée au cours des 12 derniers mois a-t-elle été permanente ou sporadique ?	Permanente ... 1 Sporadique ... 2							
b) Si elle a été sporadique combien de mois avez-vous eu du travail ?								
D14. a) En plus de cette occupation principale avez-vous accompli un autre type de travail au cours des douze derniers mois ?	OUI ... 1 NON ... 2							
b) Si OUI, quel type de travail avez-vous effectué ?								

D15. Personne habituellement économiquement inactive Quelle était l'activité principale au cours des 12 derniers mois ?	1 Etudiant, ouvrier, élève 2 Ménager 3 Retraité, pensionné, retiré d'affaire 4 Incapacité permanente de travail 5 Autre (à préciser)	1 → (16) 2 → (16) 3 → (16) 4 → (49) 5 → (16)	1 → (16) 2 → (16) 3 → (16) 4 → (49) 5 → (16)	1 → (16) 2 → (16) 3 → (16) 4 → (49) 5 → (16)	1 → (16) 2 → (16) 3 → (16) 4 → (49) 5 → (16)
ACTIVITE ECONOMIQUE DU MOMENT					
D16. Au cours de la semaine passée, avez-vous effectué un travail quelconque pour un salaire, un profit ou pour un intérêt familial ? Enquêteur : Vérifier la réponse avec attention en utilisant le guide d'interview.	OUI ... 1 NON ... 2	1 → (19) 2 → (17)	1 → (19) 2 → (17)	1 → (19) 2 → (17)	1 → (19) 2 → (17)
D17. Si vous n'avez pas travaillé la semaine passée, avez-vous un travail, une affaire ou une exploitation agricole où vous n'avez pas travaillé pour des raisons quelconques ?	OUI ... 1 NON ... 2	1 → (18) 2 → (35)	1 → (18) 2 → (35)	1 → (18) 2 → (35)	1 → (18) 2 → (35)
D18. Quel est le lien formel avec vous envers votre travail ou votre entreprise ?	Propriétaire de l'entreprise Entreprise appartenant à un membre de la famille Payé et absent au travail Promesse de retourner au travail Autres formes de lien (spécifier) Pas de lien formel	1 → (19) 2 → (19) 3 → (19) 4 → (19) 5 → (19) 6 → (35)	1 → (19) 2 → (19) 3 → (19) 4 → (19) 5 → (19) 6 → (35)	1 → (19) 2 → (19) 3 → (19) 4 → (19) 5 → (19) 6 → (35)	1 → (19) 2 → (19) 3 → (19) 4 → (19) 5 → (19) 6 → (35)
D19. Occupation (principale) du moment Quel est le type de travail effectué dans cette activité ? Exploitation agricole d'autoconsommation. (Inscrire code 610 et poser D29) Autres occupations (préciser, à ne pas coder)					

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D20. Depuis combien de temps faites-vous ce travail ?									
Moins de 6 mois	1								
De 6 mois à moins d'1 an									
D'1 an à moins de 5 ans	3								
De 5 ans à moins de 10 ans									
10 ans et plus	5								
D21. Où avez-vous principalement appris votre métier, votre travail ?									
Ecole professionnelle, technique	1								
Université ou autre institution académique	2								
RELA, CFI	3								
Autre lieu de formation	4								
Par apprentissage	5								
D22. Combien de temps cette formation a-t-elle pris ?									
Moins de 3 mois	1								
De 3 mois à moins d'1 an	2								
1 an ou plus	3								
D23. Quel était le principal sujet abordé dans la formation ?									
D24. Description de l'emploi, lieu de travail									
(a) Nom de l'entreprise ou propriétaire									
(b) Quel est le type d'activité exercée par l'entreprise ?									
(c) Est-il dans le secteur :									
Public	1								
Parastatal	3								
Privé									
(d) Y a-t-il plus de 5 personnes travaillant dans cette entreprise (y compris tous les établissements affiliés au Rwanda ?)									
OUI ... 1									
NON ... 2									
(e) Cette entreprise exerce-t-elle ses activités ?									
Chez le propriétaire	1								
Dans une autre pben fixe	3								
Pas de pben fixe									
D25. Quand vous travaillez la semaine dernière, étiez-vous :									
Salarié	1								
Employeur (avec salariés)	3								
Indépendant	4								
Aide familial	5								
Autre									

SECTION D : (suite)

					
D26. Quel est le montant de votre salaire/rémunération (avant impôts ou autres déductions) que vous recevez chaque mois de paie (ne pas inclure les revenus non tirés du travail et autres avantages en nature obtenus de votre travail) ?	FRW par mois	FRW par mois	FRW par mois	FRW par mois	FRW par mois
D27. Au cours du mois passé, votre employeur vous a-t-il donné en plus de votre salaire en espèces : a) de la nourriture ?	1 2	1 2	1 2	1 2	1 2
b) des habits ?	1 2	1 2	1 2	1 2	1 2
c) Un logement de service.	1 2	1 2	1 2	1 2	1 2
d) Autres	1 2	1 2	1 2	1 2	1 2
D28. Valeur des revenus en nature : Si OUI à une des questions de D27 : Quel était la valeur totale estimée de ce revenu en nature reçu le mois passé ?	FRW par mois	FRW par mois	FRW par mois	FRW par mois	FRW par mois
D29. En plus de l'occupation principale, avez-vous effectué un autre type de travail la semaine dernière ?	1 → (30) 2 → (31)	1 → (30) 2 → (31)	1 → (30) 2 → (31)	1 → (30) 2 → (31)	1 → (30) 2 → (31)
D30. Si OUI, quel type de travail avez-vous effectué ?					

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	LE No DE LA PAGE	ERS EDF	EGI
			
D31. Combien d'heures, avez-vous travaillé chaque jour la semaine dernière (prenez pour référence le jour où il y a eu le plus de travail en incluant les pauses, les moments de repos mais en incluant les pauses)? a) Nombre d'heures effectivement travaillées dans l'occupation principale : 1er jour 2ème jour 3ème jour 4ème jour 5ème jour 6ème jour 7ème jour			
D32. Auriez-vous préféré travailler plus d'heures que celles travaillées la semaine dernière ? OUI .. 1 NON .. 2			
D33. Combien d'heures en plus auriez-vous souhaité travailler ?			

SECTION D (suite)

D34. Pourquoi n'avez-vous pas travaillé plus d'heures ? (indiquer la raison principale) Raisons personnelles :					
Maladie ou blessure	1				1
Congé, vacances	2				2
Non disponible à cause des études ou de responsabilité familiale.	3				3
Autres raisons personnelles (préciser)	4				4
Raisons liées aux conditions de travail :					
Panne de machine ou d'équipement	5				5
Manque de matériel ou d'outil	6				6
Mauvaise saison, manque de temps	7				7
Pas de travail disponible	8				8
Autres motifs involontaires (à préciser)	9				9
	(→ 49)	(→ 49)	(→ 49)	(→ 49)	(→ 49)

D35. Avez-vous voulu travailler que ce soit dans une exploitation agricole ou tout autre travail la semaine dernière ?

OUI 1	1 → (36)	1 → (36)	1 → (36)	1 → (36)
NON 2	2 → (38)	2 → (38)	2 → (38)	2 → (38)

D36. Avez-vous été à la recherche d'un travail au cours des 2 mois passés ?

OUI ... 1	1 → (39)	1 → (39)	1 → (39)	1 → (39)
NON ... 2	2 → (37)	2 → (37)	2 → (37)	2 → (37)

D37. Pourquoi n'avez-vous pas été à la recherche du travail au cours des 2 mois passés ?

N'était pas disponible pour travailler	1				1 → (38)
Pensait qu'il n'y avait aucun travail disponible.	2				2 → (40)
Attendait une réponse des demandes déposées auparavant.	3				3 → (40)
Se préparait à commencer dans un nouvel emploi	4				4 → (40)
Autres raisons (à spécifier)	5				5 → (40)

D38. Quelle a été votre principale activité la semaine dernière ?

Etudes, formation.	1				1
Travaux ménagers	2				2
Retraité/trop vieux	3				3
Malade, inapte	4				4
Autre (spécifier)	5				5
	(→ 49)	(→ 49)	(→ 49)	(→ 49)	(→ 49)

						
D39. Comment avez-vous été à la recherche du travail au cours des 2 mois passés ? (a) Être enregistré au Bureau d'Emploi	OUI .. 1 NON .. 2	1 1 2 2	1 1 2 2	1 1 2 2	1 1 2 2	1 1 2 2
(b) Présenter directement sa candidature aux employeurs éventuels par contact, lettre ou par téléphone ?	OUI .. 1 NON .. 2	1 1 2 2	1 1 2 2	1 1 2 2	1 1 2 2	1 1 2 2
(c) demander à un ami ou un parent de vous aider (faire des démarches pour vous même)	OUI .. 1 NON .. 2	1 1 2 2	1 1 2 2	1 1 2 2	1 1 2 2	1 1 2 2
(d) Chercher un terrain, une maison, une machine, un équipement ou de l'argent pour fonder une entreprise propre	OUI .. 1 NON .. 2	1 1 2 2	1 1 2 2	1 1 2 2	1 1 2 2	1 1 2 2
(e) Demander un permis d'exploitation pour son entreprise ?	OUI .. 1 NON .. 2	1 1 2 2	1 1 2 2	1 1 2 2	1 1 2 2	1 1 2 2
(f) Chercher du travail par d'autres voies ? (spécifier)	OUI .. 1 NON .. 2	1 1 2 2	1 1 2 2	1 1 2 2	1 1 2 2	1 1 2 2
D40. Combien de temps avez-vous été à la recherche du travail ou disponible pour travailler ?	Mois	Mois	Mois	Mois	Mois	Mois
D41. Avez-vous précédemment travaillé soit dans votre exploitation agricole, ou ailleurs ? OUI - Dans son exploitation agricole 1 OUI - Ailleurs 2 NON - N'a jamais travaillé avant 3	1 → (49) 2 → (42) 3 → (49)	1 → (49) 2 → (42) 3 → (49)	1 → (49) 2 → (42) 3 → (49)	1 → (49) 2 → (42) 3 → (49)	1 → (49) 2 → (42) 3 → (49)	1 → (49) 2 → (42) 3 → (49)
D42. Dans cet emploi, quel type de travail avez-vous effectué ?	Description du dernier					
D43. Dans cet emploi, étiez-vous :	Salarie 1 Employeur (avec salariés) 2 Indépendant 3 Aide familial 4 Autre 5	1 1 2 2 3 3 4 4 5 5	1 1 2 2 3 3 4 4 5 5	1 1 2 2 3 3 4 4 5 5	1 1 2 2 3 3 4 4 5 5	1 1 2 2 3 3 4 4 5 5

SECTION D (suite)

D44. Combien de temps avez-vous exercé ce travail ? Moins de 6 mois 1 6 mois à moins d'un an 2 1 an à moins de 5 ans 3 5 ans à moins de 10 ans 4 10 ans et plus 5							
D45. Où avez-vous appris principalement ce travail ? A l'école professionnelle, technique 1 A l'université ou autre institution académique 2 <i>à l'école de formation par expérience</i> 3 <i>à l'école de formation par expérience</i> 4 D46. Combien de temps au total cette formation a-t-elle pris ? Moins de 3 mois 1 3 mois à moins d'une année 2 1 an et plus 3							
D47. Quel était le sujet principal abordé dans la formation ?							
D48. Description du dernier employeur, lieu du travail, (a) Nom de l'entrepreneur propriétaire (b) Quel était le type d'activité exercée par l'entreprise ? (c) Était-ce dans : - un secteur public 1 - un secteur privé 2 - un secteur public 3 (d) Votre entreprise utilisait-elle plus de 5 personnes (incluant tous ses établissements situés à travers tout le pays) OUI 1 NON 2 (e) Les bureaux de l'entreprise se trouvent : Dans l'habitation du propriétaire 1 Dans une autre place fixe 2 Pas de place fixe 3							

SECTION D : (suite)

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D49.	Vivez-vous dans ce mdnag depuis au moins 6 mois ?	OUI...1 NON...2	1 → (51) 2 → (50)	1 → (51) 2 → (50)	1 → (51) 2 → (50)	1 → (51) 2 → (50)	1 → (51) 2 → (50)	1 → (51) 2 → (50)	1 → (51) 2 → (50)
D50.	Avez-vous l'intention de rester dans ce mdnag pendant longtemps (au moins 6 mois) ?	OUI...1 NON...2	1 → (51) 2 → (Fin)	1 → (51) 2 → (Fin)	1 → (51) 2 → (Fin)	1 → (51) 2 → (Fin)	1 → (51) 2 → (Fin)	1 → (51) 2 → (Fin)	1 → (51) 2 → (Fin)
D51.	Etes-vous né dans cette commune ?	OUI...1 NON...2	1 → (Fin) 2 → (52)	1 → (Fin) 2 → (52)	1 → (Fin) 2 → (52)	1 → (Fin) 2 → (52)	1 → (Fin) 2 → (52)	1 → (Fin) 2 → (52)	1 → (Fin) 2 → (52)
D52.	Ohabitez-vous avant de venir ici ? a) Préfecture : b) Commune :								
D53.	Cet endroit était-il urbain ou rural ?	Urbain...1 Rural...2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
D54.	Depuis combien d'années êtes-vous venus vous installer dans cette commune ?		ans	ans	ans	ans	ans	ans	ans
D55.	Avez-vous commencé à travailler dds votre arrivée dans cette commune ?	OUI...1 NON...2 PAS ENCORE...3 SANSOBJET...4	1 → (Fin) 2 → (56) 3 → (Fin) 4 → (Fin)	1 → (Fin) 2 → (56) 3 → (Fin) 4 → (Fin)	1 → (Fin) 2 → (56) 3 → (Fin) 4 → (Fin)	1 → (Fin) 2 → (56) 3 → (Fin) 4 → (Fin)	1 → (Fin) 2 → (56) 3 → (Fin) 4 → (Fin)	1 → (Fin) 2 → (56) 3 → (Fin) 4 → (Fin)	1 → (Fin) 2 → (56) 3 → (Fin) 4 → (Fin)
D56.	Combien de mois a séparé votre arrivée et le ddbut de votre travail ?		mois	mois	mois	mois	mois	mois	mois

Poser la question D pour chaque personne suivante de 14 ans ou plus. Aprds avoir complété le questionnaire pour toute personne de 14 ans ou plus, finir l'interview.

CENTRAL STATISTICAL OFFICE
LABOUR FORCE SURVEY (PERSONAL FORM)
(FOR ALL THOSE AGED 10 YEARS AND OVER)

Survey Number	Round Number	Administrative Area					Division		E.A. Number	Segment Number	Sub-Sample	Household Number	Year	Month	Ecological Zone	Record Type						
		1	2	3	4	5	6	7									8	9				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1																					2

Name: Respondent's Name Date of enumeration:
Serial Number Starting time:

A. USUAL ACTIVITY IN LAST 12 MONTHS

1. What was your main activity during most of the last 12 months?
Worked for pay, profit or family gain 1 (Go to 4)
Attended school or higher studies 2
Household duties 3
Permanently unable to work 4 (no more questions on labour force)
Other (Specify) 5

2. Even though you were not working, were you available for work during most of the last 12 months?
Yes 1 2
No 2

3. Did you look for work during most of the last 12 months?
Yes 1 3
No 2

8. CURRENT ACTIVITY LAST WEEK

4. Did you work during the last 7 days for pay, profit or family gain?
Yes 1 (Go to C)
No 2

5. Even though you were not working, did you have a job, business or a holding to which you will return to work?
Yes 1 5
No 2 (Go to 8)

6. Why didn't you work last week?
Sick, injured 1
Holiday, vacation 2
Not enough work to do 3
Equipment, tools broken 4
No raw materials 5
Strike, lockout 6
Other, specify 7

7. Were you being paid despite your absence from work during last 7 days?
Yes 1 (Go to C) 7
No 2 (Go to C)

8. Were you available to work during the last 7 days?
Yes 1 (Go to 17) 8
No 2

9. What did you do during most of the last 7 days?
Household duties 1
Study, training 2 (Go to 24)
Sick, old 4
Other 9

C. EMPLOYED: Worked last 7 days or had job but did not work last 7 days
Record details here of the main job if more than one i.e. the job or business with longest hours of work last week

10. Main or only job (occupation)
What sort of work do you do (Interviewer: Use 2 or more words to describe occupations)
.....
OFFICE USE

Details of business or place of work
11. (a) Name of establishment
.....
OFFICE USE

(b) What kind of establishment is this?
(Interviewer: Use 2 or more words to describe activity of the establishment)
.....
11(b)

(c) Are there 10 or more people working in this establishment? (Include all locations of the establishment in Zimbabwe) Yes 1
No 2
.....
11(c)

(d) Is this establishment located:
In your own or someone's home? 1
In some other fixed place? 2
No fixed place? 3
.....
11(d)

(e) Is this establishment registered? Yes 1
No 2
.....
11(e)

(f) Sector:
Public 1
Private 2
Co-operative 3
Other 4
.....
11(f)

Employment Status

12. In this job, business or farm, do you usually work
(a) in your own land-holding without employees? 1 (Go to 14)
(b) in your own land-holding with employees? 2 (Go to 14)
(c) for family gain? 3 (Go to 14)
(d) for someone else with pay? 4
(e) for someone else without pay? 5 (Go to 14)
(f) in own business without employees? 6 (Go to 14)
(g) in own business with employees? 7 (Go to 14)
(h) as a member of a co-operative? 8 (Go to 14)
(i) other specify? 9 (Go to 14)
.....
12

13. As a paid employee, what wage or salary before tax 6 other deductions do you get from the job that you do? (Exclude income from other sources – business income and the value of goods or housing which you get through work)
Cash per month
Under \$50 01
\$50 and under \$75 02
\$75 and under \$100 03
\$100 and under \$150 04
\$150 and under \$250 05
\$250 and under \$500 06
\$500 and under \$750 07
\$750 and under \$1,000 08
\$1,000 and under \$1,500 09
\$1,500 and over 10
.....
13

Appendix 11

Second job

14 (a) Do you have a second job? Yes 1 No 2 (Go to 15)

(b) In your second job what sort of work do you do? Occupation

(c) What is the name of the establishment? 14(b)

(d) What kind of establishment is this? (Interviewer: Use 2 or more words to describe activity of establishment) 14(c)

(e) Are there 10 or more people working in this establishment? (include all locations of business in Zimbabwe) Yes 1 No 2

(f) Is this establishment located in your own or in someone's home? Is there other fixed place? No fixed place? 14(e)

(g) Is this establishment registered? Yes 1 No 2

14(f)

14(g)

14(h)

14(i)

14(j)

14(k)

14(l)

14(m)

14(n)

14(o)

14(p)

14(q)

14(r)

14(s)

14(t)

14(u)

14(v)

14(w)

14(x)

14(y)

14(z)

14(aa)

14(ab)

14(ac)

14(ad)

14(ae)

14(af)

14(ag)

14(ah)

14(ai)

14(aj)

14(ak)

14(al)

14(am)

14(an)

14(ao)

14(ap)

14(aq)

14(ar)

14(as)

14(at)

14(au)

14(av)

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14(cf)

14(cg)

14(ch)

14(ci)

14(cj)

14(ck)

14(cl)

14(cm)

14(cn)

14(co)

14(cp)

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14(gt)

14(gu)

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14(ha)

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14(hm)

14(hn)

14(ho)

14(hp)

14(hq)

14(hr)

14(hs)

14(ht)

14(hu)

14(hv)

14(hw)

14(hx)

14(hy)

14(hz)

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14(jh)

14(ji)

14(jj)

14(jk)

14(jl)

14(jm)

14(jn)

14(jo)

14(jp)

14(jq)

14(jr)

14(js)

14(jt)

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15 How many hours (including overtime but excluding meal breaks and approved time away from work) did you work on each day in the last 7 days?

1st day 2nd day 3rd day 4th day 5th day 6th day 7th day Total

16 (a) Did you like to work more hours during the last 7 days? Yes 1 No 2 (Go to 16(d))

(b) How many more hours would you have preferred to work during the last 7 days? (Number of hours)

(c) Did you look for additional work (to work more hours) during the last 7 days? Yes 1 No 2

(d) Did you look for alternative work during the last 7 days? Yes 1 (Go to 24) No 2

D. UNEMPLOYED (FOR PERSONS WHO ANSWERED YES TO Q.8)

17 Did you look for work during the last 7 days? Yes 1 No 2 (Go to 20)

18 How did you look for work during the last 7 days? (a) Registered at employment agency Yes 1 No 2 (b) Applied to prospective employers Yes 1 No 2

19 What sort of job were you looking for? Occupation

20 Why didn't you look for work during the last 7 days? Thought no work available Awaiting replies from previous enquiries Temporarily sick but would have looked otherwise Other (specify)

21 For how long have you been available to work? less than 1 month 1 month but under 3 months 3 months but under 6 months 6 months but under 1 year 1 year but under 2 years 2 years or more

22 Have you ever worked before? Never worked Only on land-holding Other (specify)

23 What sort of work did you do in this job? (Interviewer: Use 2 or more words to describe occupation)

E SUPPLEMENTARY QUESTIONS

24 Are you part of any decision making body at the village or ward level? Yes 1 No 2

25 Last month, did you participate in any community project on a voluntary basis? Yes 1 (Go to 26) No 2 (Go to 28)

26 Name of Organisation Community Development and Women's Affairs Sports Youth and Culture Other specify

27 What did you do? Nature of activity

28 End Ending Time No. or call backs Checked by: Team Leader

10/20/2014 11:22

Section 5: CURRENT ACTIVITY (All persons 10 years and above)	
S. No.:	Name:
(Tick the correct entry for each question)	
1. Did do any work for pay, profit or family gain during last week, at least for one hour on any day? 1. ☐ YES (Skip to 7) 2. ☐ NO NOTE: Work includes -- a. the production and processing of primary products whether for market, barter or own consumption; b. the production of all other goods and services for the market and, in the case of households producing such goods and services, the corresponding production for own consumption; c. own account construction.	7. ☐ Due to shortage of raw material 8. ☐ Educational and training leave 9. ☐ Maternity or parental leave 10. ☐ Law and order situation 11. ☐ Reduction in economic activity such as: lower production due to less demand; or shortage of irrigation water; or load shedding (gas or electricity) 12.0 Other reason: (Specify) _____
2. Even if did not work last week for some reason, did have a job or enterprise such as a shop, business, farm or service establishment (fixed or mobile)? 1. ☐ YES, a job. (Skip to 4) 2. ☐ YES, an enterprise such as a shop, business, farm or service establishment (fixed or mobile). (Skip to 4) 3. ☐ NO, but plans to take a job within a month. (Skip to 21) 4. ☐ NO.	5. How long has been continuously absent from that job or enterprise such as a shop, business, farm or service establishment (fixed or mobile)? 1. ☐ Less than a month 2. ☐ A month or more
3. Did help to work for family gain in a family business or family farm during last week? 1. ☐ YES (Skip to 7) 2. ☐ NO (Skip to 21)	6. What kind of attachment does have to that job or enterprise? 1. ☐ Own enterprise such as shop, business, farm or service establishment (fixed or mobile). 2. ☐ Payment for days of absence. 3. ☐ Assurance of agreement on return to work. 4. ☐ Other form of attachment such as profit sharing, etc. 5. ☐ No attachment (Skip to 21) 6. ☐ Unknown (Skip to 21)
4. Why did not work last week? 1. ☐ Illness or injury 2. ☐ Strike or lockout 3. ☐ Holiday, vacation or leave of absence 4. ☐ Off-season inactivity 5. ☐ Due to bad weather 6. ☐ Due to mechanical breakdown (Continued in next column)	7. Now I am going to ask several questions about only the main job or enterprise such as shop, business, farm, service establishment (fixed or mobile) if had more than one last week. (Continued on next page)

Appendix 12

8. What was main occupation, e.g. what was the nature of work that did? 	12. In addition to the main occupation, did also work in any subsidiary occupation last week? 1. ☐ YES 2. ☐ NO																											
9. What was the nature of work done by the enterprise such as shop, business, farm, service establishment (fixed or mobile), office/institution where worked? 	Section 6: UNDEREMPLOYMENT																											
10. What was employment status? (Read all the options to the respondent.) 1. ☐ Regular paid employee with fixed wage? 2. ☐ Casual paid employee 3. ☐ Paid worker by piece rate or service performed 4. ☐ Paid non-family apprentice 5. ☐ Employer 6. ☐ Own account worker -- non-agriculture 7. ☐ Owner cultivator 8. ☐ Share cropper 9. ☐ Contract cultivator 10. ☐ Unpaid family worker 11. ☐ Other, such as a member of a producer's cooperative, etc.	13. How many hours did work each day during the last week at his/her main occupation and any subsidiary occupation? <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 20%; text-align: center;">Hours worked</th> <th style="width: 20%; text-align: center;">Total</th> </tr> </thead> <tbody> <tr> <td>In case did not work on any particular day code:</td> <td style="text-align: center;">Saturday: ..</td> <td style="text-align: center;"> </td> </tr> <tr> <td>(13.1) A - If had a job or enterprise on that day;</td> <td style="text-align: center;">Sunday:.....</td> <td style="text-align: center;"> 13.1</td> </tr> <tr> <td>(13.2) B - If had no job or enterprise on that particular day but available for work;</td> <td style="text-align: center;">Monday:.....</td> <td style="text-align: center;"> 13.2</td> </tr> <tr> <td>(13.3) C - If had no job or enterprise on that particular day and not available for work</td> <td style="text-align: center;">Tuesday:.....</td> <td style="text-align: center;"> </td> </tr> <tr> <td></td> <td style="text-align: center;">Wednesday:.....</td> <td style="text-align: center;"> </td> </tr> <tr> <td></td> <td style="text-align: center;">Thursday: ..</td> <td style="text-align: center;"> 13.3</td> </tr> <tr> <td></td> <td style="text-align: center;">Friday:</td> <td style="text-align: center;"> </td> </tr> <tr> <td></td> <td style="text-align: center;">TOTAL:</td> <td style="text-align: center;"> </td> </tr> </tbody> </table> IF TOTAL IS 42 HOURS OR MORE SKIP TO 15		Hours worked	Total	In case did not work on any particular day code:	Saturday: ..		(13.1) A - If had a job or enterprise on that day;	Sunday:.....	13.1	(13.2) B - If had no job or enterprise on that particular day but available for work;	Monday:.....	13.2	(13.3) C - If had no job or enterprise on that particular day and not available for work	Tuesday:.....			Wednesday:.....			Thursday: ..	13.3		Friday:			TOTAL:	
	Hours worked	Total																										
In case did not work on any particular day code:	Saturday: ..																											
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(13.3) C - If had no job or enterprise on that particular day and not available for work	Tuesday:.....																											
	Wednesday:.....																											
	Thursday: ..	13.3																										
	Friday:																											
	TOTAL:																											
11. Where did carry out the work? (Read all the options to the respondent.) 1. ☐ At his/her own dwelling 2. ☐ At family or friends dwelling 3. ☐ At the employer's house 4. ☐ On the street 5. ☐ On country side land 6. ☐ In a small shop, business, office or industry 7. ☐ In a big institution, business or industry 8. ☐ Other: _____ (Specify)	14. Why did work less than 42 hours? 1. ☐ Normally works the same number of hours 2. ☐ Illness or injury 3. ☐ Holiday, Ramzan, leave of absence 4. ☐ Strike 5. ☐ Mechanical or electrical breakdown 6. ☐ Shortage of raw materials or fuel 7. ☐ Lockout, lay-off 8. ☐ Bad weather, off season 9. ☐ Voluntary or personal reasons, e. g. religious or social activities or attended political gathering, etc. 10. ☐ Other involuntary reasons (law & order situation, sick household member, etc.)																											

15. Was available for additional work? ☐ 1. ☐ YES 2. ☐ NO	Section 8: UNEMPLOYMENT
16. Did seek any alternative work last week? ☐ 1. ☐ YES 2. ☐ NO	21. Was <u>available</u> for work during the last week? ☐ (Read the options and mark the <u>appropriate one</u>.) 1. ☐ Within this household only 2. ☐ Within this village/town/city only 3. ☐ Anywhere in this District 4. ☐ Anywhere in this Province 5. ☐ Anywhere in Pakistan 6. ☐ Not available (Skip to 32)
Section 7: FOR PAID EMPLOYEES ONLY For persons who were given codes 1- 4 in Q. 10 For persons having codes 5- 11 in Q. 10, this interview is completed; go on to the next person.	
17. At main work, what is the periodicity of payment? ☐ 1. ☐ Fortnightly (Skip to 19) 2. ☐ Monthly (Skip to 19) 3. ☐ Daily 4. ☐ Weekly 5. ☐ Other periodicity: _____ (Specify) 6. ☐ Piece rate basis for service performed 7. ☐ Other: _____ (Specify)	22. What type of work would be <u>available</u> for? ☐ (Read all the options to the respondent and mark the preferred one.) 1. ☐ Full-time paid employment with government 2. ☐ Full-time paid employment with private business/industry 3. ☐ Part-time paid employment 4. ☐ Self employment given the necessary resources & facilities 5. ☐ Other type of employment such as work on commission, contract employment, daily wages, etc.
18. How much money did earn from the main work last week? ☐ ☐ Cash Rs. _____ (Skip to 20) ☐ Kind (give market value) in Rs. _____ (Skip to 20)	23. When was the <u>last time</u> that was <u>seeking</u> work? ☐ 1. ☐ During the last week 2. ☐ 2 to 4 weeks ago 3. ☐ 1 to 2 months ago 4. ☐ 2 to 6 months ago 5. ☐ 6 to 12 months ago 6. ☐ More than 1 year ago (Skip to 26) 7. ☐ Never has sought work (Skip to 26)
19. How much money did earn from the main work last month? ☐ ☐ Cash Rs. _____ ☐ Kind (give market value) in Rs. _____	24. How long has been <u>seeking</u> work? ☐ 1. ☐ less than a month 2. ☐ 1 to 2 months 3. ☐ 2 to 6 months 4. ☐ 6 months to 1 year 5. ☐ more than 1 year
20. How many rupees did receive last year in bonuses? ☐ (Whether annually, quarterly or adhoc basis; calculate for the year) ☐ None ☐ Rs. _____	
This interview completed; go to the next person	

25. What steps has taken during the last year in search of work? (Read all options and mark <u>all mentioned</u> by the respondent) 1. ☐ Applied to prospective employer 2. ☐ Checked at worksites, farms, factories, markets, etc. 3. ☐ Applied for permit or license to set up own enterprise such as a shop, business, farm, or service establishment (fixed or mobile) 4. ☐ Looked for land, building, machinery or equipment for setting up own enterprise such as shop, business, farm, service establishment (fixed or mobile). 5. ☐ Sought assistance of friends or relatives 6. ☐ Placed or answered advertisements 7. ☐ Registered with an employment agency 8. ☐ Arranging for financial resources 9. ☐ Other: _____ (Specify) 10. ☐ No specific steps 11. ☐ Unknown	29. Has ever worked in the past? ☐ 1. ☐ Yes, less than 12 months ago (Go to 30) 2. ☐ Yes, more than 12 months ago (Go to 30) 3. ☐ Never → This interview is completed; go to the next person
26. What type of occupation is interested to work in and how much salary per month would expect? 26.1 Occupation: _____ ☐ 26.2 Rs. per month: _____ ☐	30. What was occupation, in other words, what was the nature of work previously did? ☐
27. Would be willing to ☐ only work for a wage or salary on locally prevailing terms consistent with qualifications and experience or ☐ take any job on any terms or conditions?	31. What was the nature of work done by the enterprise such as shop, business, farm, service establishment (fixed or mobile), office/institution where previously worked? ☐ This interview is completed; go to the next person.
28. What is district of domicile? ☐ 1. ☐ Same as this household 2. ☐ Other: _____ (District Name)	32. Why was not available for work? ☐ (Read all the options to the respondent) 1. ☐ Illness 2. ☐ Will take a job within a month 3. ☐ Temporarily laid off 4. ☐ Apprentice and not willing to work 5. ☐ Student and not willing to work 6. ☐ Housekeeping and not willing to work 7. ☐ Retired and not willing to work 8. ☐ Agricultural landlord/property owner and not willing to work 9. ☐ Too young to work 10. ☐ Too old to work 11. ☐ Unable to work/handicapped 12. ☐ Other reason: _____ (Specify)
If male, this interview is completed; go to next person If female and codes 6 or 12 are ticked, go on to Section 9; otherwise terminate interview and go to next person.	

Appendix 12

Section 9: Women 10 years and above with codes 6 or 12 in question 32					
WORK ACTIVITY (First, ask all the questions listed below and tick YES for each activity that the person was engaged in during the last week and NO for each activity that the person did not engage in: second, for each YES answer, go back and ask the number of hours worked during the last week.)	For each YES, how many hours did work last week?				
			Total hours	Of this total, how many hours for -	
				own family?	other people for cash or payment in kind?
	(1)	(2)			(4)
33. During the last week did help or work in .					
1. agricultural operations, such as transplanting rice, picking cotton, collection of vegetables & fruit, harvesting crops, weeding fields?	☐	☐			
2. processing food, such as milling, grinding, drying seeds, maize or rice husking?	☐	☐			
3. livestock operations, such as meat, feeding and milking animals, churning milk, grassing, collection of cowdung and preparing dung cakes?	☐	☐			
4. poultry raising, such as feeding poultry birds, collection & packing of eggs, giving injections or medicine to birds and preparation of feeds?	☐	☐			
5. construction work, such as mud plaster of roofs and walls of house and godown, construction and repair of boundary walls, rooms, etc.?	☐	☐			
6. collection of firewood or cotton sticks for use as firewood for household consumption?	☐	☐			
7. bringing water from outside to the house?	☐	☐			
8. making clothes, sewing pieces of cloth or leather, knitting, embroidery, mat and rope making, spinning and weaving?	☐	☐			
9. shopping and marketing?	☐	☐			
10. washing, mending or pressing clothes?	☐	☐			
11. caring for children or health care of ill persons?	☐	☐			
12. helping children do homework or other educating activities?	☐	☐			
13. cleaning and arranging the house?	☐	☐			
14. other activities which produce goods or services at home which are generally available in the market?	☐	☐			
Specify:	☐	☐			
This interview is completed; go to the next person.					

01 (a) Name of the individual																					
(b) Serial number (as given in col.1 of section 1)																					
USUAL ACTIVITY (LAST 12 MONTHS)																					
02 Is (s)he employed or available for employment (economically active)?		yes		no		1		2		1		2		1		2		1		2	
03 Has (s)he ever been economically active during the last 12 months (employed or		yes				1				1				1				1		2	
or unemployed?.....		1		2		1		2		1		2		1		2		1		2	
06 Was (s)he mainly engaged in		1		2		3		1		2		3		1		2		3		1	
otherwise inactive?.....		1		2		3		1		2		3		1		2		3		1	
07 Nature of main occupation:		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
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		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
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		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
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		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
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		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2		3		1		2		3		1	
		1		2		3		1		2											

		CURRENT ACTIVITY (LAST CALENDAR WEEK)																			
Did (s)he do any work for pay profit or family gain during the last calendar week?		yes		no		1 → go to Q. 16		1 → go to Q. 16		1 → go to Q. 16		1 → go to Q. 16		1 → go to Q. 16		1 → go to Q. 16		1 → go to Q. 16		1 → go to Q. 16	
		1 2		1 2		1 2		1 2		1 2		1 2		1 2		1 2		1 2		1 2	
Did (s)he have a job or enterprise at which (s)he did not work last calendar week? Yes, a job		1		2		1 → go to Q. 14		1 → go to Q. 14		1 → go to Q. 14		1 → go to Q. 14		1 → go to Q. 14		1 → go to Q. 14		1 → go to Q. 14		1 → go to Q. 14	
Yes, an enterprise		1		2		1 → go to Q. 14		1 → go to Q. 14		1 → go to Q. 14		1 → go to Q. 14		1 → go to Q. 14		1 → go to Q. 14		1 → go to Q. 14		1 → go to Q. 14	
No, ...		3				1 2 3		1 2 3		1 2 3		1 2 3		1 2 3		1 2 3		1 2 3		1 2 3	
Was (s)he available for work during the last calendar week?		yes		no		1 → go to Q. 23		1 → go to Q. 23		1 → go to Q. 23		1 → go to Q. 23		1 → go to Q. 23		1 → go to Q. 23		1 → go to Q. 23		1 → go to Q. 23	
		1 2		1 2		1 2		1 2		1 2		1 2		1 2		1 2		1 2		1 2	
Reason for non-availability:		1		2		3		4		5		6		7		8		9		END 2.1	
Studies		1		2		3		4		5		6		7		8		9		END 2.1	
Household work		1		2		3		4		5		6		7		8		9		END 2.1	
Retirement, old age		1		2		3		4		5		6		7		8		9		END 2.1	
Infirmary, disability		1		2		3		4		5		6		7		8		9		END 2.1	
Too young		1		2		3		4		5		6		7		8		9		END 2.1	
Other reasons (specify)		1		2		3		4		5		6		7		8		9		END 2.1	
Why did (s)he not work during the last calendar week?		1		2		3		4		5		6		7		8		9		END 2.1	
Illness or injury		1		2		3		4		5		6		7		8		9		END 2.1	
Strike or lock out		1		2		3		4		5		6		7		8		9		END 2.1	
Holiday, vacation or other leave of absence		1		2		3		4		5		6		7		8		9		END 2.1	
Reduction in economic activity		1		2		3		4		5		6		7		8		9		END 2.1	
Off-season inactivity		1		2		3		4		5		6		7		8		9		END 2.1	
Bad weather		1		2		3		4		5		6		7		8		9		END 2.1	
Mechanical or electrical break-down		1		2		3		4		5		6		7		8		9		END 2.1	
Shortage of raw materials or fuels		1		2		3		4		5		6		7		8		9		END 2.1	
Other reasons (specify)		1		2		3		4		5		6		7		8		9		END 2.1	

	Weeks	Weeks	Weeks	Weeks	Weeks
15. (a) How long has (s)he been continuously absent from work?					
(b) What kind of attachment does (s)he have to his/her job or enterprise?					
Own enterprise	1	1	1	1	1
Payment for duration of absence	2	2	2	2	2
Assurance or agreement on return to work ...	3	3	3	3	3
Other forms of attachment, if any (specify)	4	4	4	4	4
(b) Occupation					
	1	1	1	1	1
	2	2	2	2	2
	3	3	3	3	3
	4	4	4	4	4
	5	5	5	5	5
unpaid family worker ..	*	*	*	*	*
17. Nature of secondary occupation, if any					
(a) Industry					
	1	1	1	1	1
	2	2	2	2	2
	3	3	3	3	3
	4	4	4	4	4
	5	5	5	5	5

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Appendix 13

18. Number of hours actually worked during the last calendar week (a) On the main occupation (b) On all occupations (including main)	hours hours	hours hours	hours hours	hours hours	hours hours	hours hours	hours hours
19. Number of hours per week (a) Normally expected to work on main occupation (b) Usually worked on all occupations	hours hours	hours hours	hours hours	hours hours	hours hours	hours hours	hours hours
20. Is 18 (a), greater than or equal to 19 (a)? Is 18 (b), greater than or equal to 19 (b)?	If the answer is 'Yes' to both go to Q.22	If the answer is 'Yes' to both go to Q.22	If the answer is 'Yes' to both go to Q.22	If the answer is 'Yes' to both go to Q.22	If the answer is 'Yes' to both go to Q.22	If the answer is 'Yes' to both go to Q.22	If the answer is 'Yes' to both go to Q.22
21. Reasons for working less: ILLNESS OR INJURY HOLIDAY, leave of absence STRIKE Not available for full-time work for other voluntary reasons MECHANICAL OR ELECTRICAL break-down Shortage of raw materials or fuel Lock-out, lay off Bad weather, off season Full time work not available for other involuntary reasons VOLUNTARY INVOLUNTARY	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9
1. According to the terms of his or her employment, if any, if none according to the legal stipulation for similar occupations, if any, if no such stipulation, according to the normal practice for similar occupations: if no such convention, take an arbitrary norm of 35 hours.							

22. (a) Was (s)he available for additional work during the last calendar week? Yes No (b) Has (s)he been looking for alternative work? Yes No	1 2 1 2	1 2 1 2	1 2 1 2	1 2 1 2	1 2 1 2	1 2 1 2
23. What type of work would (s)he be available for? Full-time paid employment Part-time paid employment Self-employment Any type of employment	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
24. What stops has (s)he taken during the last 12 months in search of paid or self-employment? Registered with public or private employment agencies Applied to prospective employers Checked at farms, estates, factories, markets, work sites etc. Placed or answered advertisements Sought assistance of friends or relatives Looked for land, building, machinery, equipment or finance for setting up OWN enterprise Applied for permit or license to set up own enterprise Other steps (specify) No specific stop taken	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9
25. How long has (s)he been seeking employment? (Since (s)he became unemployed for those unemployed)	Months go to Q.27(a)	Months go to Q.27(a)	Months go to Q.27(a)	Months go to Q.27(a)	Months go to Q.27(a)	Months go to Q.27(a)

16. Why has (s)he not been seeking employment? Discouraged due to the inability to get a job Believes no suitable work available Engaged in household duties Engaged in studies Engaged in other non-economic activities Other reasons (specify)	1 2 3 4 5 9	1 2 3 4 5 9	1 2 3 4 5 9	1 2 3 4 5 9	1 2 3 4 5 9	1 2 3 4 5 9
17. (a) Employed persons go to Q.28 Has (s)he ever worked in the past? Yes, less than 12 months ago Yes, more than 12 months ago Waver (b) Has (s)he ever refused employment during the	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3
	1 2	1 2	1 2	1 2	1 2	1 2
	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7

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30. Why has (s)he not been looking for alternative work? Satisfied with the present employment Engaged in household duties Engaged in studies Engaged in other non-economic activities Other (specify).....	1	2	3	4	9															
	1	2	3	4	9															
	1	2	3	4	9															
	1	2	3	4	9															
	1	2	3	4	9															
	1	2	3	4	9															
31. Labour-time disposition (last calendar week): b. Number of days not worked, but had a job or enterprise c. Number of days not worked, neither job nor enterprise, but available for work d. Number of days not available for work TOTAL																				

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