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(e) Statistics of time-use

PROGRESS REPORT ON THE DEVELOPMENT OF STATISTICS
OF **TIME-USE**

Report of the Secretary-General

SUMMARY

3 The present document provides summary information on recent national and international developmental work on statistics of time-use, pursuant to the conclusion of the Statistical Commission at the nineteenth session that high priority should be given to further work on that subject. In this progress report, summary technical information is provided on an illustrative selection of eight time-use surveys that have been conducted since 1967. This information covers methods of data collection and organization that have been used, the problems that have been encountered and the present status of work in progress. References are also provided to other recent work, to the extent that information is available to the Secretariat. Uses of time-use statistics that are cited in national bibliographies and the coverage of time-use statistics in international work on the framework for the integration of social and demographic statistics and on the situation of women are also noted. The annex reproduces, for illustrative purposes, the classifications of activities used in time-use surveys in two country studies and in a multinational research project on time-use.

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INTRODUCTION

1. At the nineteenth session, the Commission discussed documents on welfare-oriented measures to supplement the national accounts and balances (E/CN.3/477) and on a strategy for further work on the framework for the integration of social and demographic statistics (E/CN.3/489). In both cases the Commission considered that high priority should be given to further study of concepts and statistics of time-use, including methods of collection and interpretation, and the role of those statistics in the framework for integration. ^{1/} The present report provides summary information on an illustrative selection of time-use surveys that have been conducted since 1965, emphasizing methods of data collection and organization that have been used, problems that have been encountered and the present status of work in progress. Uses of these data cited in national bibliographies and coverage of time-use statistics already sketched in international work on the framework for the integration of social and demographic statistics are also noted.

I. ACTION BY THE COMMISSION

2. The Commission may wish to:

(a) Comment on the scope and uses of time-use statistics in national and international statistical studies, particularly in relation to development of programmes for the integration of social, demographic and related economic statistics;

(b) Draw such surveys to the attention of the Economic and Social Council and the Commission on the Status of Women as a possible source of quantitative information on the status of women and the extent and nature of their participation in development activities, to supplement statistics obtained from censuses, other surveys and other sources;

(c) Consider what the priority requirements are for the development of methods, concepts and techniques for the collection and use of time-use statistics;

(d) Recommend a programme of work at the international level on statistics of time-use.

^{1/} Official Records of the Economic and Social Council, Sixty-second Session, Supplement No. 2 (E/5910), paras. 24 and 81.

II. SCOPE AND USES OF TIME-USE STATISTICS

3. Work on the framework for integration of social and demographic statistics and on welfare-oriented measures to supplement the national accounts and balances has identified time-use statistics (a) as crucial non-monetary data for "analysis of productive household and leisure activities ... and for some instrumental household activities, such as commuting," 2/ and (b) as a common source using a common unit of measure for fundamental descriptive data not otherwise obtainable on human activities in the various fields of social, demographic and related economic statistics. 3/ In the United Nations preliminary guidelines and illustrative series for social indicators, the importance of time-use statistics is noted in the following fields: (a) use and distribution of educational services, (b) earning activities and the inactive, (c) distribution of income, consumption and accumulation, (d) housing and its environment, and (e) leisure and culture, in addition to comprehensive time budgets. 4/

4. Apart from recent international work in connexion with the framework for integration, time-use studies have a relatively long history in social research in the developed market economies, and in data gathering for government planning in the centrally-planned economies. More recently they have become the subject of substantial interest and activity by economists, demographers and others concerned with the developing countries.

5. In the market-economy countries, one line of study, based on general time-use statistics going back many years, has focused on the role of women in the household, while a second has focused on the amount and use of leisure time. An example of the former approach is the research programme on household work that began at Cornell University in the 1920s. A recent publication of the Center for the Family of the American Home Economics Association presents an account of this work. 5/ In the centrally planned economies, work on time-use studies also goes back to the 1920s. This work has been designed particularly to provide planners with statistics for improving the efficiency of labour utilization in all

2/ The Feasibility of Welfare-Oriented Measures to Supplement the National Accounts and Balances: a Technical Report (United Nations publication, Sales No. E.77.XVII.12), para. 208 (b).

3/ Conference of European Statisticians, Working Party on a System of Social and Demographic Statistics, report of the fifth session, held at Geneva, 28 April-2 May 1975, CES/WP.34/18, paras. 42-43; Towards a System of Social and Demographic Statistics (United Nations publication Sales No. E.74.XVII.8), chap. III, sect. B, and chaps. VIII and XV.

4/ Social Indicators: Preliminary Guidelines and Illustrative Series, Statistical Papers, Series M, No. 63 (United Nations publication, to be issued).

5/ Time-Use: a Measure of Household Production of Family Goods and Services, K. E. Walker and M. E. Woods (Washington, D.C., American Home Economics Association, 1976).

parts of society. 6/ In both cases, these data provide a rare source of relatively detailed information over time on the extent of participation by women in all types of productive activity, inside and outside the household. Such data are particularly useful because (a) they cover household activities not usually covered by traditional concepts of labour force and of output, (b) time is a basic unit of measure, and at least conceptually amenable to a greater degree of disaggregation than traditional concepts of participation and non-participation, and (c) they provide more reliable measures of productive activity (in the traditional sense) in the household than traditional labour statistics, for example, artisan work and agricultural labour. 7/

6. In many developed countries there has also been substantial research on time-use in connexion with leisure activities. In several countries the television industry has sponsored the most complete studies of time-use available there, 8/ while many other countries have sponsored extensive national studies of all leisure activities. 9/

7. In recent years there has been a rapidly growing interest in time-use in developing countries. Again, two somewhat different approaches have been emphasized. In one, the primary concern has been with developing improved measures of employment, unemployment and underemployment, in the traditional economic sense. 10/ In this approach, time-use statistics are seen as contributing to the development of more meaningful measures of labour utilization, participation and productivity, particularly in the rural areas of developing countries, but also in the informal or non-wage sector of urban economies.

6/ See S. G. Strumilin, Rabochuu byt b tsufrakh (Living conditions of workers in figures), (Moscow and Leningrad, Statistiko-ekonomicheskie etudy, 1926). See also A. Szalai, "Concepts and practices of time-budget research", in A. Szalai, ed., The Use of Time; Daily Activities of Urban and Suburban Populations in Twelve Countries, Report on the Multinational Comparative Time-Budget Research Project, (The Hague, Mouton, 1972), pp. 6-9; and bibliography of selected time-budget literature of the USSR, pp. 861-867.

7/ See also "The situation of women in the light of contemporary time-budget research", a paper submitted to the World Conference of the International Women's Year, held at Mexico City from 19 June to 2 July 1975 (E/CONF.66/BP/6), for an example of how time-use data can be employed to examine issues related to the role and activities of women in and outside the household.

8/ For example, Denmark, Finland, Japan and the United Kingdom of Great Britain and Northern Ireland.

9/ See, for example, "Temps libre et pratiques culturelles", les Collections de l'INSEE: données sociales 1973, Series M, No. 24 (Paris, 1973).

10/ "Recent experience in labour force sample surveys in developing countries", Results of the regional seminar of the Association of South East Asian Nations, held at Jakarta from 26 July to 3 August 1977 (Geneva, International Labour Office, 1977).

8. The second approach is concerned with the utilization of human resources within the household, particularly of women and children. Time-use statistics are needed in developing countries, as in developed countries, to fill an important gap not covered by traditional economic statistics, for use in a variety of policy studies. A better understanding of the use of time by different persons within the household is also seen as a crucial key to understanding a wide range of difficult development problems, such as fertility, 11/ nutrition and subsistence production. 12/ A wide-ranging workshop on this subject was held in Singapore in 1976, with participants from eight developing countries in Asia. 13/

9. This summary categorization can only give a superficial idea of the wide variety of topics and applications in statistical studies of time-use. The list below shows an illustrative selection of topics covered in 15 countries in all parts of the world. It is clear from this unsystematic election that time-use statistics can provide a rich data base for monitoring and analysing almost any element of social and economic affairs, from several different perspectives, and in both government and private sectors, depending on the orientation and purposes of the investigation. 14/

11/ See, for example, Robert J. Willis, "A new approach to the economic theory of fertility behaviour", Journal of Political Economy, vol. 81, No. 2, part II (March/April 1973).

12/ See, for example, Mead T. Cain, "The economic activities of children in a village in Bangladesh", Population and Development Review, vol. 3, No. 3 (September 1977), pp. 201-227.

13/ Household studies workshop, "Seminar report No. 13" (New York, Agricultural Development Council, New York, 1977).

14/ Many in-depth analyses have been brought together in A. Szalai, op. cit., part II; and F. T. Juster, ed., Studies in the Measurement of Time Allocation (Ann Arbor, Michigan, Institute for Social Research, University of Michigan).

List of time-use surveys; examples of topics studied
and applications 15/

General monitoring

Socio-economic development
Structure and changes in occupations and social classes
Levels and changes in major categories of time-use
Social sense of time (importance attached to time)
Economic value of time and time wasted

Economic activity

Extent of remunerated work (urban, rural and male, female, by age)
Work on own account (urban, rural and male, female, by age)
Second jobs
Work-related time (especially journey to work)
Division of labour by sex

Housework and child care

Levels and trends of activity (male, female, by age)
Division of labour between the household and society
Division of labour within the household (male, female, by age)

Income and consumption

Use of consumer goods
Value of time in various activities

Social and economic services

Use of social services
(a) Education
(b) Health care

15/ This list is based on sources cited in table 1, on "The situation of women in the light of contemporary time-budget research" and on bibliographies provided to the Economic Commission for Europe by national statistical offices.

Use of economic services

- (a) Transportation
- (b) Stores

Discretionary time

- Amount and trends (male, female, by age)
- Variety of discretionary activities (urban, rural)

Social participation

- Leisure and cultural activities
- Access to leisure and cultural activities (urban, rural)
 - (a) Household
 - (b) Other indoors
 - (c) Outdoors
- Volunteer work
- Social contacts and interaction
- Religious activities
- Political activities

Interrelation of time-use with important social and health characteristics

- Fertility
- Age
- Family type
- Marital cohesion
- Nutrition
- Illness

Interrelation of time-use with important economic factors

- Productivity and productivity constraints
- Occupation and economic activity, by type of industry (male, female)
- Economic development and industrialization
- Rural development (agricultural and non-agricultural)
- Impact of technology, by type of industry (including agriculture)

Patterns and regulation of time-use

Daily, weekly and seasonal cycles

Physical planning (urban, rural)

Transport and communications planning

Use of and access to transport

Determination of general life styles

Impact of shift-work

Use and impact of flexible working hours

Time-use in special population groups

Students

Retired persons

Women, working women

Children

Agricultural population

Marginal persons

III. METHODOLOGY

10. Table 1 below provides summary technical and methodological information on time-use surveys in eight countries, including two developing countries. Section A below reviews the current status of this and other recent work. Some technical issues that have required special attention in planning and implementing time-use surveys are discussed in the sections that follow.

A. Current status of recent work

11. Of the eight survey programmes covered in table 1 below, six were conducted by national statistical offices and two (France and the United States of America) in the context of the multinational study. ^{16/} In two cases (Bangladesh and Hungary) the time-use survey was a major component of a much larger survey, and in one (Botswana), it was a minor component of a large-scale survey. In the latter case, severe technical problems were encountered in processing and compiling the time-use data, and no results have yet been released.

12. These surveys varied widely in sample coverage, from a single small village in Bangladesh, to a small national sample in the United States, to large national samples in Hungary, Norway and Poland. In Botswana the large field sample covered rural households only (excluding the wealthiest 5 per cent, for whom other data sources were used, which did not, however, cover time-use), but in this case the urban population is less than 15 per cent of the total.

13. The current status and prospects for time-use surveys in the countries shown in table 1 are as follows:

- | | | |
|-----------------------------|--------------|--|
| Bangladesh | (1976-1977): | This small-scale study is continuing. |
| Botswana | (1974-1975): | There are no plans to repeat this survey. Compilation and analysis of the time-use data are being carried out at the University of Michigan. |
| Canada | (1973): | This was a pilot survey. A national survey has not been funded. Plans have now been drawn up for a general social survey, in which a time-use component has been included. |
| France | (1966-1967): | This survey was repeated with a national sample in 1976. The results are now being processed. |
| Hungary | (1963): | There are no current plans to repeat this survey in the near future. |
| Norway | (1971-1972): | This survey will be repeated in 1979-1980. |
| Poland | (1975-1976): | This survey may be repeated at infrequent intervals. |
| United States
of America | (1965-1966): | This survey was repeated in 1975-1976. |

^{16/} A. Szalai, ed., op. cit.

Table 1. Time-use surveys in eight countries

Country and agency	Survey title and date	Population sampled	Sample	Time sample	Non-response %	Collection instrument	Role of interviewers b/	Classifications (number of categories at each level)
<u>Bangladesh</u> Institute of Development Studies	Village fertility survey, household time budgets, 1976-1977	One village	120 parents and their children aged 4 + in slightly fewer than 120 households	One round/7 days, rotating across each household every 15 days; for all waking hours	Negligible with persistent visits	Block format form showing one-hour intervals; actual times inserted	Filled out form after 5 p.m. in household for current day and previous evening	95/52 + supplementary crop classification 5/
<u>Botswana</u> Central Statistics Office	Rural income distribution survey, 1974-1975	Rural households	All members aged 6+ in 1,074 households d/	Each household visited monthly for 12 months; day of the week recorded but not systematically rotated	Negligible	Lined form for listing activities chronologically for one day and noting duration	Filled out questionnaire and pre-coded activities for previous day.	41/19
<u>Canada</u> Statistics Canada	Survey on non-work time (pilot), May 1973	Two towns	1-3 respondents each, aged 17+, in 250 households	One working and one non-working day for each respondent, apportioned over days of the week	Not given	Lined form for listing activities chronologically g/ and noting (a) duration, (b) others participating and (c) location	In 70 households, filled out questionnaire; in remainder assisted respondents in self-enumeration	Not given
<u>France</u> National Institute of Statistics and Economic Studies	Time-use surveys 15 January-15 March 1966, and February-March 1967 f/	Seven small cities and Paris	1 respondent each, age 18-65, in 4,672 households with at least one member in the labour force and no member occupied in agriculture	One day for each respondent, apportioned over days of the week	15 per cent refusals, + 6 per cent not available	Diary for listing primary and secondary activities chronologically, showing (a) duration, (b) others present, (c) location	Distributed diary day before and collected and checked with respondent day after diary day	96/10 for coding; 96/27/5 and 96/15/6/2 also used in tabulations
<u>Hungary</u> Central Statistical Office	Income and social stratification survey, March and August 1963	National	12,156 persons age 18-60 not enrolled in regular day-time education; sampled from a household sample of 15,077	One day per person in March round, across days of week and month; one additional day for members of co-operative farm households in August round	Negligible	Questionnaire for listing primary e/ activities and timing chronologically	Filled out questionnaire covering previous day	24/9/4

Table I (Continued)

Country and agency	Survey title and date	Population sampled	Sample	Time sample	Non-response g/	Collection instrument	Role of interviewers b/	Classifications (number of categories at each level)
Norway Central Bureau of Statistics	Time-budget survey, 1971-1972	National	5,215 persons age 15-74 from national register of persons not living in institutions	Two-three days per person, apportioned across one year	25 per cent not available on specified day, + 12 per cent refusal	Diary for recording primary activities in 15-minute intervals	Distributed and collected diaries	91/20/6
Poland Central Statistical Office	Time-budget survey, 1975-1976	National	All adults in 9,984 households (about 20,000 persons)	One day per person apportioned across four months (one in each season of the year)	Negligible	Diary for recording primary activity in 15-minute intervals	Reviewed diaries with respondents	47/7
United States of America Survey Research Center	Multinational comparative time-budget research project, 1965-1966	Cities of 50,000+	2,032 persons age 18-65 in households with at least one member active in non-agricultural labour force (788 of sample in one city)	One or two days per person, apportioned across November-December and March-April	13 per cent refusals and unavailability	Diary for listing primary and secondary activities chronologically, showing (a) duration, (b) others present, (c) location	Distributed diary day before and collected and checked with respondent after diary day	96/27 (+ one memorandum total); + 55 supplementary clip-uses for detailed studies

Sources: For Bangladesh, Mead T. Cain, "Household time budgets" in Bangladesh Institute of Development Studies, Village Fertility Study Methodology Report No. 1 (February 1977); for Botswana, Central Statistics Office, The Rural Income Distribution Survey in Botswana 1974/75 (Gaborone, Government Printer, 1976); for Canada, Statistics Canada, Special Surveys Co-ordination Division, "Time-use studies: a position paper on work in progress" (Ottawa, 1974); for France, C. Goguel, "Recherche comparative internationale sur les budgets-temps", in Institut national de la statistique et des études économiques, Etudes et conjoncture, No. 9 (Paris, Presses universitaires de France, 1966), pp. 107-188 and Y. Lemel, "Urban populations: use of time" (in French, with English summary), Collections de l'INSEE, Series M, No. 33 (March 1974); for Hungary, Central Statistical Office, "The twenty-four hours of the day" (an analysis of 12,000 time-budgets - English version) (Budapest, 1965); for Norway, Central Bureau of Statistics, The Time-Budget Survey 1971-72 (Oslo, 1975), vol. I (in Norwegian, with English notes, titles and headings); for Poland, Central Statistical Office, "Time budget of the population of Poland" (Warsaw, 1978) (in Polish, with English translation of summary, contents and activity classification); for the United States of America, J. P. Robinson and P. E. Converse, "Social change reflected in the use of time", in A. Campbell and P. E. Converse, eds., The Human Meaning of Social Change (New York, Russell Sage Foundation, 1972); for the multinational project, A. Szalai, ed., The Use of Time: Daily Activities of Urban and Suburban Populations in Twelve Countries, Report on the Multinational Comparative Time-Budget Research Project (The Hague, Mouton, 1972).

g/ "Negligible" indicates less than 5 per cent for all causes.

b/ In all cases the interviewer also filled out questionnaires with background and supplementary information on the respondent and the household.

c/ A three-level classification, calling for much more supplementary detail, was used in the first several rounds and then substantially modified on the basis of experience.

d/ Households with income tax records in government files (5 per cent of the total) were not covered in the field survey; 12 per cent of the population, in areas of low population density, were covered only by a very small sample.

e/ Activities lasting less than 10 minutes not recorded, but no minimum for travel.

f/ Part of the multinational project (see sources).

g/ For simultaneous activities of equal importance, time was split between the two.

14. Additional information has been supplied by national statistical offices to the Economic Commission for Europe on current work. Information relating to other official national surveys is given below.

(a) Bulgaria: the Central Statistical Office conducted national time-use surveys in 1970-1971 and 1976-1977.

(b) Czechoslovakia: the Federal Statistical Office conducted a survey on the use of leisure in 1960 and 1967. This survey will be repeated in 1979.

(c) Netherlands: the Central Bureau of Statistics plans to carry out a pilot time-budget survey in 1978.

(d) Sweden: the National Central Bureau of Statistics proposed to carry out a national survey of time-use in 1976-1977, but this programme has not been funded.

(e) Union of Soviet Socialist Republics: the Central Statistical Board conducted a national survey of time-use in 1977.

15. In addition to these studies, the national broadcasting companies of Finland and Japan conduct comprehensive national time-use surveys on a regular basis (every two years since 1967 in Finland and every five years since 1960 in Japan).

16. Relatively little information is available on time-use surveys in developing countries. Most projects on which information is available are relatively small-scale and are being conducted by research institutions. Some examples, in addition to those in table 1, are given below.

(a) Brazil: the Rural Poverty Study of 960 households is collecting extensive data on time allocation of each household member in three interviews per household over two agricultural years (Purdue University, United States of America, and several Brazilian institutions).

(b) India: a study of 240 households in six villages near Hyderabad is collecting time-use data on all family members above six years of age through daily observation and one interview per household (ICRISAT Institute, Hyderabad).

(c) Indonesia: a study of 25 households in one village of south-central Java is collecting time-use data on all household members through observation (60 days per household per year) and interview (Agricultural Development Council, United States of America, and Indonesia).

(d) Philippines: the Laguna Nutrition Project is collecting time-use data for all family members in 580 households through intensive interview and observation for one 24-hour period each (Agricultural Development Council and Laguna College, Philippines).

(e) Studies of a similar nature are being conducted in Guatemala, Malaysia, Peru and Sierra Leone, but no additional information is currently available on them.

B. Methodological issues

1. Collection instrument

17. In most cases where the sample population is literate, a time-use diary showing hourly, quarter-hourly or even shorter intervals is distributed to respondents in advance and collected shortly after the day to be recorded. In every case an interviewer reviews the diary in more or less detail when it is picked up, often filling in substantial additional information. In nearly all such cases activity reporting is in the respondents' own words. It has generally been found that "prompting" with activity lists or recall of activities by type of activity rather than chronologically introduces serious biases. A recall period of more than 24 hours also reduces seriously the detail of data collected, though in the case of holidays and weekends a 48-hour delay is sometimes unavoidable. In the case of illiterate respondents, recording is usually entirely by interview, sometimes supplemented by direct observation. One detail in which national practices seem to differ considerably is in the recording of duration in the questionnaire. In some cases a minimum duration of 10 or 15 minutes is specified, and activity times must be rounded off accordingly. In others there is no minimum and actual times are recorded. It is not known to what extent this actually affects the quality of information recorded or comparability among surveys.

18. Interviews covering one full day of activities usually require at least one hour, including the collection of supplementary information on social, demographic and economic characteristics of the respondent and the household. Information is rarely collected on more than one or two days per respondent. As in any household survey programme, the qualifications and experience of the interviewers, the quality of their supervision and training and the care with which the questionnaire is adapted to local conditions are vital in ensuring the quality of the data collected.

2. Sample population

19. In developed country surveys the sample population is usually limited to persons of working age and the sampled households may be limited to those with at least one employed member. The multinational project was limited to populations in urban areas, usually in one or two small cities only. Several national surveys have now been conducted and various well-known techniques from other surveys are employed to reduce to a minimum logistical problems in sampling rural areas.

20. In developing countries, a major concern of time-use surveys relates to participation of women and children in household and economic activities. Hence time-use data are collected in these cases for all women and children as well as adults in the labour force. In the examples cited in this document, the minimum age is set variously at four to seven years.

3. Time sample and non-response

21. The experience of non-response in time-use surveys does not seem to differ appreciably from that encountered in other household surveys i.e. in the order of 10-15 per cent refusing to co-operate in developed countries. On the other hand, a particular problem may arise in this connexion depending on the design of the sample of days to be covered.

22. It is of course vital in a time-use survey to have a representative sample of days, as activity patterns vary substantially according to the day of the week, month, season and year. Countries use many different techniques to design their sample of days. For example, some space their interviews out over an entire year, others over one-month or two-month periods, perhaps in two different seasons. In most cases, the interviewer is given a quota for each day of the week to be covered, but has discretion in the allocation of days to interviews. However, in the Norwegian survey, each assigned diary and interview had to cover an assigned day. Hence if the designated respondent was not available on the prescribed day, the interview was automatically counted as a non-response. This resulted in a relatively high rate of non-response due to the unavailability of 25 per cent of the designated respondents.

4. Classification

23. Design of a suitable classification of activities is one of the most difficult tasks in planning a time-use survey. Too much detail may make the data base unmanageable. Insufficient detail may vitiate the usefulness of the survey for various specialized uses. Classifications as detailed as 250 items have been used. The multinational study settled on a basic classification of 96 activities in 10 behavioural areas. The Norwegian survey used a similar basic classification and, after considerable experiment, the Bangladesh study arrived at a classification of 93 activities, though of course particularly oriented to an agricultural, rural environment. Botswana, Hungary and Poland used much less detailed classifications.

24. Once a basic classification is established for coding purposes, it is necessary to establish condensed versions for most analyses and tabulations. While condensed country classifications are frequently concerned with the same general types of activity (work, leisure, housework, travel, etc.), actual practices at a detailed level differ considerably. After considerable experimentation, the multinational study developed a reduced classification of 37 categories with nine subtotals and two memoranda subtotals. It is used in most but not all tabulations of the study. The multinational classification, as well as the Bangladesh and Polish classifications, are reproduced in the annex below. Inspection of these classifications readily shows the difficulty of establishing and applying fixed and agreed criteria for a hierarchical classification.

25. One approach that has been adopted in several studies, in order to maintain basic comparability with the multinational study results, is to "add on" classifications for particular specialized uses. One may be interested in the activities of special population groups, such as the elderly, children and youth,

the handicapped, persons primarily engaged in housework, persons in rural and/or remote areas, etc. ^{17/} Additional classifications may be used to supplement but not replace the basic classification. In any case it is clear that the question of classifications for coding and tabulation needs to be very carefully studied before a time-use survey is implemented.

5. Data analysis

26. Time-use studies present unusual challenges in the processing and analysis stages because of the volume and complexity of the data collected. Although the analytical possibilities of time-use data are practically inexhaustible, a problem of "where to begin" in the preparation of tabulations and other output may arise unless a clear set of analytical priorities is established. In a typical household survey data base, one is faced with the task of analysing some number of variable characteristics of persons or households (rarely more than 100 characteristics and usually much less). In time-use data, participation in activities is characterized by duration, frequency, sequence, time of day, week, month, season and year, and in many surveys, location, others participating and simultaneous activities, in addition to the usual array of socio-economic background characteristics. These complexities and some data processing techniques developed to deal with them, are described in the basic report of the multinational project. ^{18/} None the less, only a minute selection of tabulations from the project can be presented in that report.

^{17/} A. S. Harvey, W. S. Macdonald and A. Dua, "Sub-populations and activity classifications: a working paper" (Halifax, Canada, Regional and Urban Studies Centre, Dalhousie University, March 1977).

^{18/} A. Szalai, ed., op. cit.

27. One may grasp the analytical richness and complexity of time-use studies by noting that in the multinational project six possible different measures (rates or ratios) of occurrence and duration of activities are specified as follows: 19/

Denominator of measure	Numerator of measure		
	Total duration of time spent on activity	Total number of occurrences of activity	Total number of persons doing activity
Total number of persons in tabulation	<u>Duration</u> all persons	<u>Occurrences</u> all persons	<u>Doers</u> all persons
Total number of persons doing activity	<u>Duration</u> doers	<u>Occurrences</u> doers	Not applicable
Total number of occurrences of activity	<u>Duration</u> occurrences	Not applicable	Not applicable

28. No doubt the continuing rapid advance of the state of the art in the computer processing of complex bodies of data will substantially influence the uses that can be made of time-use data, and in particular the availability of ad hoc, special-purpose tabulations on demand for users. On the other hand, this advanced technology is not readily available in many countries, so that the data collection programme must be designed with careful attention to the limitations of available computer capability.

6. Illustrative findings

29. The wide range of applications for time-use data is discussed in chapter II above, with examples listed in paragraph 9. It is of course out of the question to summarize here the major findings of the studies that have been mentioned but a few from the multinational study may give an idea of their general coverage. In table 2 below, the average time spent in various types of activities across 12 of the multinational survey sites is shown, along with means and standard deviations for the 12 sites.

19/ Ibid., p. 100.

30. These data (which are averages for both men and women in urban households with at least one economically active member) show a fairly considerable variation among countries in totals for work time, housework and free time. The coefficients of variation for these, in percentages, are 16, 16 and 13, respectively. The coefficients of variation show an even greater variation in the totals for child-care, radio and television (as primary activities), and travel (for all purposes), namely, 30, 28 and 21 per cent, respectively. These data also demonstrate the considerable time devoted to household and child-care, which on average is 67 per cent of the time for work as normally defined in terms of the labour force.

Table 2. Selected data on primary activities at 12 sites of the multinational project

Activity	Mean (minutes per day)	Standard deviation	Sites more than one standard deviation above the mean	Sites more than one standard deviation below the mean	Hours per week		Coefficient of variation (percentage)
					Mean	Standard deviation	
Employment and travel to job	310	50.4	Kazanlik, Bulgaria 404 Győr, Hungary 374 Pskov, USSR 371	Federal Republic of Germany 250 Lima-Callao, Peru 251	36.2	5.9	16
Housework	158.3	25.4	Hoyerswerda, German Democratic Republic 206	Kazanlik, Bulgaria 100 Pskov, USSR 131	18.5	3.0	16
Child-care	28.3	8.6	France 40 Hoyerswerda, German Democratic Republic 45	Belgium 17 Kazanlik, Bulgaria 17	3.3	1.0	30
Radio and television	66.8	19.0	Belgium 93 United States of America 96	Kazanlik, Bulgaria 35	7.8	2.2	28
Total free time	262.1	34.4	Kragujevac, Yugoslavia 311 Lima-Callao, Peru 309 United States of America 304	Győr, Hungary 200	30.6	4.0	13
Total travel	70.8	15.1	Kazanlik, Bulgaria 89 Lima-Callao, Peru 90 Pskov, USSR 88	Federal Republic of Germany 39	8.3	1.8	21

Source and Notes on following page

(Source and notes to table 2)

Source: Adapted from A. Szalai, ed., The Use of Time: Daily Activities of Urban and Suburban Populations in Twelve Countries, Report on the Multinational Comparative Time - Budget Research Project (The Hague, Mouton, 1972).

Notes: Figures are in minutes per day unless otherwise specified. Not all activity categories are included here and some that are shown overlap. The 12 sites surveyed in 1965-1966 and covered in these calculations and the participating institutions are:

Belgium, national urban sample; Sociological Institute, Free University of Brussels.

Bulgaria, Kazanlik; Scientific Research Group, Trade Union Council, Sofia.

Czechoslovakia, Olomouc; Sociological Laboratory, Polytechnical Institute, Prague.

France, six cities; National Institute of Statistics and Economic Studies, Paris.

German Democratic Republic, Hoyerswerda; Research Group on Living Standards, Institute of Economics, Berlin-Karlshorst.

Germany, Federal Republic, 100 electoral districts; Institute for Comparative Research, University of Cologne.

Hungary, Győr; Sociological Research Group, Academy of Sciences, Budapest.

Peru, Lima-Callao; Political and Social Science Institute, Catholic University of Louvain (Belgium).

Poland, Torun; Institute of Philosophy and Sociology, Academy of Sciences, and Institute of Labour, Warsaw.

USSR, Pskov; Institute of Economics, Academy of Sciences, Siberian Section, Novosibirsk.

United States of America, 44 cities; Survey Research Center, University of Michigan, Ann Arbor.

Yugoslavia, Kragujevac; Institute of Sociology, Belgrade, and Institute of Philosophy and Sociology, University of Ljubljana.

IV. POSSIBLE FUTURE INTERNATIONAL ACTIVITIES

31. Future international work in the United Nations system can complement and encourage national work in this field. At the present stage of development and application of statistics of time-use this international work might best take the form of technical reports and studies on topics such as the following, in co-operation with the regional commissions and interested specialized agencies:

(a) A comprehensive study of methods used in national studies, including problems of sampling, interviewing, classification and data processing;

(b) A detailed study, based on appropriate case studies, of statistical findings and applications of statistics of time-use, for example, in economic ~~and~~ output and productivity analyses, labour force studies, participation of women in development and activities of women in general, social and labour force consequences of patterns of human settlement, studies of leisure and culture etc.

Annex

ILLUSTRATIVE CLASSIFICATIONS OF ACTIVITIES FROM THREE SURVEY PROGRAMMES

A. Bangladesh: revised detailed activity codes

1. Collecting fodder and feed for animals
2. Animal husbandry
 - 2A Tend cattle
 - 2B Tend goat
 - 2C Tend chickens, ducks, geese
 - 2D Other animal care
3. Paddy cultivation
 - 3A Clear land
 - 3B Plough or level
 - 3C Sow, transplant
 - 3D Weed
 - 3E Other pre-harvest
 - 3F Harvest and carry
 - 3G Carry only
 - 3H Thresh
 - 3I Dry or stack straw
 - 3J Seed processing, storing
 - 3K Other harvest and post-harvest activity
4. Jute production
 - 4A Clear land
 - 4B Plough or level
 - 4C Sow
 - 4D Weed
 - 4E Harvest and bundle
 - 4F Carry to bari
 - 4G Strip
 - 4H Wash
 - 4I Dry
 - 4J Other associated activities
5. Other crop production N.B. Specify crop, for A-G
 - 5A Clear land
 - 5B Plough or level
 - 5C Hoe
 - 5D Weed
 - 5E Pick or harvest
 - 5F Carry to bari
 - 5G Other associated activities
 - 5H Activities associated with tree cultivation
 - 5I Activities associated with homestead (bari)
plant or vine production

6. Unspecified cultivation activities
7. Marketing of farm produce
8. Fishing
9. Handicraft production
10. Preparation of food for sale
11. Trading
12. Business
13. Self-employed skilled service
14. Agricultural wage work N.B. Specify crop
 - 14A Sowing, planting
 - 14B Weeding
 - 14C Harvesting/picking
 - 14D Post-harvest processing (include husking, parboil, drying, etc. strip and wash jute)
 - 14E Other activity
15. Non-agricultural wage work
 - 15A Casual, temporary labour (e.g. daily)
 - 15B Permanent (any work for which regular weekly or monthly salary is given); for both include travel time
16. Construction, repair of own home and property (not already listed in 1-15)
 - 16A Constructing new hut, structure
 - 16B Repair of hut, structure
 - 16C Other repair, construction
17. Other directly productive activities
 - 17A Hunting
 - 17B Gathering vegetables, wild fruit, other food
 - 17C Begging
 - 17D Other
18. Looking for wage work
 - 18A Looking for agricultural work
 - 18B Looking for non-agricultural work
 - 18C Looking for work (unspecified)
19. Exchange, communal, free work
 - 19A Exchange work
 - 19B Communal work (e.g. Brahmaputra digging, but not from jute mill or via other type of employer)

20. House work
 - 20A Carry water
 - 20B Wash or clean house, clothes, dishes, others
 - 20C Collect firewood, tinder, other fuel (include making dung sticks)
 - 20D Other household tasks: include serve meals, prepare houka, run errands, carrying, fetching, light lamp etc.
21. Shopping (household)
22. Food preparation
 - 22A Cook
 - 22B Wash food, cut, peel, skin etc.
 - 22C Grind spices, dal
 - 22D Other food preparation
23. Rice processing
 - 23A Parboil
 - 23B Husking
 - 23C Cleaning, winnowing rice or paddy
 - 23D Drying rice or paddy
 - 23E Other
24. Child care
 - 24A Look after own children (include breast feed)
 - 24B Look after other children (younger brothers and sisters, other's children)
25. Care of sick and elderly
26. Personal maintenance (other than rest and sleep)
 - 26A Bath/toilet
 - 26B Eat
27. Rest/Idle
 - 27A Rest/play/gossip/smoke/read for pleasure etc.
 - 27B Sleep during the day
28. Religious activity
 - 28A Pray (home or mosque)
 - 28B Read Koran
 - 28C Madrassa
 - 28D Other religious activity (e.g. Eid)
29. School and study
 - 29A Attend school or tutor (include travel time)
 - 29B Study (other school-related activity)
30. Formal social activity
31. Informal social visit
32. Sick

B. Poland: classification of activities and jobs as applied
in the surveys carried out by the Central Statistical
Office in 1975/76

Code number of activity	Type of activity
PHYSIOLOGICAL NEEDS	
1	Sleep
2	Personal hygiene (clothes changing, washing, shaving)
3	Meals at home
4	Meals out
PROFESSIONAL WORK	
5	Main work done against compensation - not connected with agricultural holding
6	Secondary work done against compensation
7	Field works (in a garden)
8	Looking after livestock
9	Household work in one's own agricultural holding
10	Other activities connected with work done against compensation (production work)
COMMUTING	
11	Commuting to and from professional work
12	Any commuting not connected with professional work
HOUSEHOLD ACTIVITIES	
13	Shopping for the household and personal needs
14	Shopping for the needs of an agricultural holding
15	The use of services for the needs of an agricultural holding
16	The use of services for the needs of a household

/...

Code number of activity	Type of activity
17	The use of services for personal needs
18	The use of medical services
19	Dealing with offices and institutions
HOUSEWORK	
20	Preparing meals - breakfasts, dinners, suppers
21	Washing up dishes, house cleaning
22	Washing, ironing
23	Sewing, darning, knitting
24	Looking after children and elder persons
25	Preparation of fuel and heating
26	Repairs, preservation of equipment
27	Other household works
EDUCATIONAL ACTIVITIES	
28	Classes at schools, courses
29	Additional training at home, classes
FREE TIME ACTIVITIES	
30	Welfare work
31	Reading books and newspapers
32	Reading books
33	Watching TV
34	Listening to the radio
35	Listening to music, records, tapes
36	Active participation in cultural activities
37	Theatre performances
38	Cinema projections
39	Social meeting, visits, games and play
40	Walking, watching entertainment shows

Code number of activity	Type of activity
41	Sports activities
42	Hobbies
43	Religious practices and other religious activities
44	Conversations with family members
45	Conversations with other persons
46	Other free time activities
47	Passive rest

C. Multinational project

Correspondence between the original 96 activity categories and the reduced 37 activity categories

Reduced 37 categories, with subtotals	Original 96 categories
1. Main job	00 Regular work 01 Work at home 02 Overtime 03 Travel for job 04 Waiting, delays
2. Second job	05 Second job
3. At work, other	07 At work, other 08 Work breaks
4. Travel to job	09 Travel to job
<u>Total work</u>	00-05, 07-09
5. Cooking	10 Prepare food
6. Home chores	11 Meal cleanup 12 Clean house 13 Outdoor chores
7. Laundry	14 Laundry, ironing 15 Clothes upkeep
8. Marketing	30 Marketing
<u>Total housework</u>	10-15, 30
9. Garden, animal care	17 Gardening, animal care
10. Errands, shopping	31 Shopping 34 Administrative service 35 Repair service 36 Waiting in line 37 Other service
11. Other house	16 Other upkeep 18 Heat, water 19 Other duties 42 Care to adults
<u>Other household obligations</u>	16-19, 31, 34-37, 42
12. Child care	20 Baby care 21 Child care 26 Child health
13. Other child	22 Help on homework 23 Talk to children 24 Indoor playing 25 Outdoor playing 27 Other, babysit
<u>Total child care</u>	20-27

Reduced 37 categories, with subtotals	Original 96 categories
14. Personal care	32 Personal care 33 Medical care 40 Personal hygiene 41 Personal medical 48 Private, other
15. Eating	06 Meals at work 43 Meals, snacks 44 Restaurant meals
16. Sleep	45 Night sleep 46 Daytime sleep
<u>Total personal needs</u>	06, 32-33, 40-41, 43-46, 48
17. Personal travel	29 Travel with child 39 Travel, service 49 Travel, personal
18. Leisure travel	59 Travel, study 69 Travel, organization 79 Travel, social 89 Travel, pastime 99 Travel, leisure
<u>Total non-work travel</u>	29, 39, 49, 59, 69, 79, 89, 99
19. Study	50 Attend school 51 Other classes 52 Special lecture 53 Political courses 54 Homework 55 Read to learn 56 Other study
20. Religion	64 Religious organizations 65 Religious practice
21. Organization	60 Union, politics 61 Work as officer 62 Other participation 63 Civic activities 66 Factory council 67 Misc. organization 68 Other organization
<u>Study and participation</u>	50-56, 60-68
22. Radio	90 Radio
23. TV (home)	91 TV (when at home)
24. TV (away)	91 TV (when away from home)
25. Read paper	95 Read paper
26. Read magazine	94 Read magazine
27. Read books	93 Read book
28. Movies	72 Movies
<u>Total mass media</u>	72, 90-91, 93-95

Reduced 37 categories, with subtotals	Original 96 categories
29. Social (home)	75 Visiting with friends)
	76 Party, meals) (when at home)
	87 Parlor games)
30. Social (away)	75 Visiting with friends)
	76 Party, meals) (when away from
	77 Cafe, pubs) home)
	78 Other social)
	87 Parlor games)
31. Conversation	96 Conversation
32. Active sports	80 Active sports
33. Outdoors	81 Fishing, hiking
	82 Taking a walk
34. Entertainment	70 Sports events
	71 Mass culture
35. Cultural events	73 Theatre
	74 Museums
36. Resting	47 Resting
	98 Relax, think
37. Other leisure	83 Hobbies
	84 Ladies' hobbies
	85 Art work
	86 Making music
	88 Other pastime
	92 Play records
	97 Letters, private
<u>Total leisure</u>	47, 70-71, 73-78, 80-88, 92, 96-98
ADDITIONAL SUBTOTALS:	
<u>Total free time</u>	47, 50-56, 59, 60-69, 70-79, 80-89,
(Categories 18-37)	90-99
<u>Total travel</u>	03, 09, 29, 39, 49, 59, 69, 79, 89, 99

Source: See text table 1 for sources for Bangladesh, Poland and the multinational project.