
SAMPLING METHODS IN RECENT FAMILY LIVING STUDIES

Statement of International Labour Office to the Sub-Commission on
Statistical Sampling, Second Session, 30 August 1948, Geneva

1. The subject of sampling methods in family living studies was placed on the agenda of the first session of the Sub-Commission on Statistical Sampling at the request of the International Labour Office. This request was motivated by the fact that in recent family living studies the need for the application of sampling methods has been more and more recognized. The topic of methods of family living studies has been placed on the agenda of the Seventh International Conference of Labour Statisticians to be called in the latter part of 1949. One of the important points to be presented to this Conference will be the necessity for the application of appropriate sampling methods to the selection of families for such studies. The reference of the question to the Sub-Commission on Statistical Sampling seems therefore both appropriate and opportune, in order that in preparing the documentation for the Seventh International Conference of Labour Statisticians, the advice and recommendations of this Sub-Commission may be available as an authoritative statement that will be useful in promoting the wide adoption of improved methods.
2. The report of the first session of the Sub-Commission on Statistical Sampling contains general recommendations on sampling techniques, and on the provision of sampling experts on the staffs of offices of labour statistics or of family living surveys. Specific recommendations concerning special problems of family living studies are set forth in Chapter VI in the report of the first session of the Sub-Commission.
3. The Sub-Commission considered that additional recommendations might usefully be made on the basis of a survey of sampling methods followed in recent family living studies and therefore placed the subject on the agenda of its second session. It was requested that information be compiled on the following points:
 - (1) Methods now in use for selection of respondents, size and kind of sample;
 - (2) Sampling aspects of current methods, including length of survey
/period,

period, frequency of surveys, methods of establishing interviewer error etc.

(3) Study of dispersion and reliability of price quotations;

(4) Methods used in calculating the sampling error of indexes of price, cost of living etc.

(5) Contemplated projects in the field.

4. The methods followed in family living studies published during the decade 1928-1938 are summarized in the International Labour Office "Methods of Family Living Studies", Studies and Reports Series N, No. 23 (English, Geneva 1940; French, Geneva 1941; Spanish, Montreal 1942). Attention may be drawn especially to the discussion in this report of the "Selection of families: problems of sampling", pages 17 to 31 (English edition). Reference may be made also to the appendix tables I and II (pages 125-131) which summarize information on (a) economic classes covered and geographical scope, (b) types of families included or excluded, (c) duration of studies and income limits, and (d) various points of information asked for in the studies.*

5. In order to be able to present as complete a documentation as possible for the use of the Sub-Commission on Statistical Sampling, the International Labour Office circulated a questionnaire in December 1947 to the different governments asking for information on sampling methods used in recent family living studies as well as information on whether family living studies had been undertaken recently or were in contemplation. The results obtained in response to these questionnaires are presented in two Appendices: Appendix I summarizes the information on recent family living studies and Appendix II summarizes information on sampling methods utilized in these reports. In general these statements cover only studies undertaken by national government statistical offices since 1938.

6. So far as sampling is concerned, the materials can be divided into three groups: first, studies in which sampling methods are applied, with an exposition of methods used and an analysis of results; secondly, studies in which sampling methods are stated to have been used and are recognized as appropriate, but with no details or with insufficient information as to specific methods, and thirdly, studies where sampling methods have not been applied. (See Appendix III).

7. Among the points which the Sub-Commission might wish to consider in relation to sampling techniques are:

* A similar analysis of the materials obtained in family living studies undertaken since 1938 (as described in paragraph 5) has not been prepared because the information at hand in many cases is not sufficiently comprehensive and detailed for this purpose.

(1) The use of the account book method, followed in most European studies, as compared with the interview method, followed in most American studies;

(2) Selection of the period or periods covered;

(3) Frequency of family living studies, and methods of testing the need for a new study.

With regard to the choice of method, it should be noted that the account book technique is considered by its advocates as essential for a complete and accurate report of expenditures and income, and that the period of one year is a minimum period for a full survey of conditions of family living. If this method is followed, it results in restricting the study to a comparatively few families who possess the capacity and willingness to carry out such accounts. This leads to a marked bias in the families selected. The interview technique, on the other hand, is not subject to this type of restriction. In practice the application of sampling techniques to the selection of families has been developed especially in relation to the interview method. The question of errors in the data obtained has received increasing attention. (See "Methods of Family Living Studies", Studies and Reports Series N, No. 23, pages 34-37, 43-45.)

With regard to the selection of the period or periods covered by the studies, it should be noted, on the one hand, that when the account book method is used, one full year is generally adopted as the time period, and on the other, that when the interview method is used, for all items except food, estimates are commonly obtained for a full year, but for food consumption and expenditure, one or more periods of one week are often adopted, though in many studies estimates of food expenditures also cover a period of one full year.

With regard to the frequency of family living studies and testing the need for a new study, the recommendation of the Third International Conference of Labour Statisticians (October 1920) was:

"in order to provide adequate information with regard to actual standards of living, enquiries should be conducted at intervals generally of not more than ten years into the income, expenditure and conditions of living of families representative of large homogenous sections of the population."

The Sixth International Conference of Labour Statisticians (August 1947) adopted a resolution on Cost of Living which contained the recommendation:

"The use of small studies of consumer purchases in the intervals between the more comprehensive surveys envisaged in paragraph 3 (3)

/is recommended

is recommended in order to provide the basis for discovering significant changes in consumption patterns to indicate the need for revisions in the weighting diagrams."

8. Borderline or special fields, the special problems of sampling in which the Sub-Commission might wish to consider in connection with family living studies, are:

(1) Studies of family living among specific groups of the population:

(a) Families of the "unemployed";

(b) Farm families. In this type of study, attention must be paid to two special problems: (1) determining the income of the farm family, i.e. separating it from farm financial operations (receipts less operating costs or farm profit and loss accounts) and (2) the method of valuation of the food produced on the farm and consumed by the farm family. (The topic of farm family living studies is a separate topic in which FAO as well as ILO would have an interest.)

(2) Food and dietary surveys. These often constitute part of a family living study, but in some cases are a special object of investigation. Apart from broad estimates of food produced and consumed in an entire area by comparing production, import and export figures, diversion of food products to other uses than human consumption, waste etc. in which sampling does not play the same role as in family living studies, food and dietary studies include (1) enquiries directed to estimating the consumption of food by selected families over a period, including a food inventory at the beginning and the end of the period, records of food purchases, estimates of waste etc., (2) weighing food consumed (and food waste) by selected families, and (3) weighing intake of food by individuals in selected families. (See E. J. Bigwood, "Guiding Principles for Studies on the Nutrition of Populations", League of Nations, Health Organization, Technical Commission on Nutrition C.H. 1401, Geneva, 1938.) (In this type of study WHO and FAO might also be interested.)

9. Of the five points listed in paragraph 3 above, the first and second are covered, so far as the material available permits, in Appendix II. As already noted, furthermore, the question of the length of the survey period is in practice closely bound up with the use of the account book method (in Europe) or of the interview technique. As to the actual frequency of surveys, in very few countries is there any established policy (See esp. United States.)

Point 3, the study of dispersion and reliability of price quotations does not relate to family living studies as such, but to cost of living and price techniques. The same is true of point 4. (See paragraph 10.)

For point 5 on contemplated projects in the field see Appendix I. A number of countries are preparing plans for family living studies in the near future. The United States has a continuing programme of family living studies in three cities each year, chosen from among the cities for which price index numbers are computed. Canada plans a new broad family living study for the immediate future. Sweden is engaged in preparing plans for a survey on the "American" plan using interview techniques.

10. Since family living studies are often used as a basis for cost of living index numbers, some discussion of the relation between sampling methods and cost of living index numbers may be appropriate.

In most countries, the procedure of establishing cost of living index numbers on the basis of family living studies consists in (1) establishing a fixed list of goods and services which represent the level of living of the families in the group for which the cost of living index is designed. This is usually done by assuming a family of a given size and composition, for example, husband and wife and two children under fourteen, one a boy of age eight, and the other a girl of age four etc. From the evidence of actual purchases made by families surveyed in the family living study, a budget of goods and services is set up which corresponds to that of the type family. When this procedure is followed, the family type is determined from census data, or other materials, but not with the aid of sampling techniques.

Once the list of goods and services is established, the usual procedure followed in practically all countries is (2) to set up a system of obtaining prices at retail of these goods and services. Prices are obtained from a selected list of retail stores - usually chosen from among those catering to the groups for which the index is designed; individual items are priced, to represent those in the budget list - they may have additional specifications of brand names, or qualities etc. Special attention is paid to the type of retail outlet, e.g. whether independent shop, chain store, department store or suburban branch etc. In some cases, prices are obtained for all cities of a given class, or in other cases, for selected cities only.

On certain of these points, sampling procedures may come in, particularly in the selection of stores, and in some cases in the selection of cities. Usually attention is focused on the comparisons of prices from month to month: e.g. the price of a particular brand is compared with the

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price of the same brand a month earlier, the price in a particular store as compared with the price in the same store a month earlier, so that the sampling problem is not one of a new sample of prices each month, but of a sample of comparisons month to preceding month of the prices of identical items.

The application of sampling techniques to these questions was discussed at the Sixth International Conference of Labour Statisticians in August 1947, who adopted resolutions which touched upon sampling in the following words:

- "6. (1) In order that the basis of the index may be commonly understood and that there should be general confidence in its accuracy, a statement should be published in respect of any index describing the items included, the weighting system used, the method of calculation, and the methods and sources used in the collection of prices, including a brief review of the different types of sources covered, the pricing techniques, the weights assigned to each type, and the sampling methods employed in their selection."
- "10. (1) Studies of price changes in different geographical units should be made to determine the number and identity of the geographical units required to be covered for a satisfactory average index for a given group.
- (2) In particular, it may be possible from such studies to effect economies in the number of returns for a given standard of sampling accuracy."
- "11. (1) In establishing the weighting diagram for a cost of living index for a particular group, individual items priced should be assigned weights corresponding to the consumption expenditures not only on the individual items themselves but also on other articles not priced, in accordance with the principle that the weights for items not priced may be added to the weights for those priced, when the price movements of the latter are representative of the price movements of the former.
- (2) In this manner, all items purchased by the group covered can be represented in the index, although not all are priced."
- "12. (1) Every effort should be made to include a suitable representation of fresh, canned, dried, and frozen fruits and vegetables in the list of goods priced."
- "13. Every effort should be made to include a suitable representation of semi-durable and durable consumer goods in the list of goods priced."

The questionnaire sent out by the International Labour Office in December 1947 included in addition to the questions on sampling in family living studies, an inquiry in regard to sampling as applied to cost of living index numbers. The results are summarized in Appendix III. With respect to the methods followed, cost of living index number calculations in most countries, as thus described, involve only a limited application of sampling techniques.

11. An entirely different approach, closely allied to the techniques of family living studies, is found in the case of the cost of living index for cities in Japan. In view of its close relationship to the sampling methods of family living studies, the Sub-Commission may wish to consider this aspect of cost of living index number techniques as part of the questions referred to it under the general heading of Sampling Techniques of Family Living Studies.

The method followed is to obtain from a sample of about 5,000 families living in Tokyo and other cities, the total quantity of goods purchased each month and the total price paid for each commodity: by dividing the total price by the quantity, the price per unit for each commodity is obtained. It should be noted (1) that this is a sample of purchasers, (2) that the prices are those reported by the purchasers, in which the price per unit is derived from quantity purchased in relation to total price paid, (3) that the result is therefore an average of ordinary market and black market transactions in an unknown percentage, (4) that the various retail outlets figure in the total in accordance with their importance in the sample, and (5) no methods of price verification or verification of quantities are applied.

No detailed information is available on the method of selection of the 5,000 families.

It is clear that this method of cost of living price index presents an entirely different picture of the scope of sampling and sampling techniques from that furnished in the usual procedure. In view of the difficulties of verification of prices and quantities in this technique, it would appear doubtful that it would supplant the usual cost of living index number procedure as practised in most countries

APPENDIX I

PROVISIONAL LIST OF RECENT OFFICIAL FAMILY LIVING STUDIES: MADE SINCE 1938 OR SUBSEQUENT TO THOSE INCLUDED IN THE REPORT ON "METHODS OF FAMILY LIVING STUDIES": AND NOTES ON FAMILY LIVING STUDIES IN PREPARATION

Argentina

Family budget studies in May, June and July 1943 based upon a total of 8,135 working class families in Buenos Aires are summarized in "Condiciones de Vida de la Familia Obrera", 1943-1945.

Australia

A study of food consumption, 1937-38. Source: Advisory Council on Nutrition, First Report, together with appendices, No. 161, F 3232, 9 June 1939.

A study of Family Expenditures in Queensland, covering 450 families 1939-40. (Queensland Yearbook 1945, pp. 178-190)

Austria

The Chamber of Labour in Vienna has conducted enquiries since 1946 in a series of selected households, but the Statistical Office considers the results unrepresentative and of little value.

Belgium

No information.

Bolivia

No information.

Brazil

An extensive study of food consumption in Rio de Janeiro was made in 1936-37. Source reference: Joao de Barros Barreto, Josué de Castro, Almir Castro: "Inquérito sobre as condições da alimentação popular no Distrito Federal", in Boletim do Ministério do Trabalho, Indústria e Comércio, Vol. V. No. 53, Jan. 1939, pp. 298-324.

British Guiana

Two surveys were undertaken in 1942, each lasting four weeks. A total of 1418 budgets were accepted. The enquiry covered Georgetown and its suburbs.

A survey of the cost of living of working class families in the coastal areas of the colony with the exception of Georgetown is planned for the near future.

British Honduras

A study of 100 households with incomes not exceeding \$15 per week in Belize covered the period from 16 to 22 August 1942.

British West Indies

Jamaica: Three family living studies have been undertaken since 1938.

The first, in August to November 1939, covered 500 working class families; the second in June 1941 covered a sample of less than 350 households of sugar workers living in a rural economy. In 1944 a family living survey was made covering a sample of 267 sugar workers of all levels of skill.

St. Vincent: In 1942 a family living study covering 250 households was undertaken.

Trinidad: No studies.

Bulgaria

A survey of 402 families was made during the period 1938-39. During 1946, information was obtained for 50 families including those of workers or officials in five cities and some farm families.

Source: Revue de la Statistique générale de la Bulgarie, 1946, Nos III-IV, pages 3 to 47, pages 1 - 67.

Canada

A family living study on the basis of a one-half of one per cent sample is being planned for the near future.

Ceylon

Four rural studies, 1938-39-46-47, covering 311; 278; 2,090 and 5,018 working class families respectively. Urban study: Colombo, 1938; covering 351 working class families.

Chile

A nutrition survey was conducted in 1935 under the auspices of the League of Nations Health Organization: The results were published in Carlo Dragoni and Et. Burnet: "L'alimentation populaire au Chili, première enquête générale de 1935", in Revista chilena de higiene y medicina preventiva, Vol. I, Nos 10-12, October-December 1938, pages 409-611.

An enquiry was made on the cost of living in 193 working class families in three cities, Santiago, Concepción and Antofagasta in 1947. Source: Estadística chilena No. 8 1947, page 313.

China

A study of the "Standard of Living of Western Foreign Salaried Employees in Shanghai," Industrial and Social Division, Shanghai Municipal Council 1942, 1939-41, covered 106 families of various nationalities.

In 1938 a family living study of 213 families of different social classes was made by the Agricultural Economics Department of Nanking University in Chengtu, covering incomes, expenditures and quantities of various commodities consumed during 1937.

In the summer of 1941 a survey was made of the living conditions of labourers in Chungking, covering 190 families. The Report was published as "Earnings of Chungking Labourers and their cost of living" (Economic Statistics, Vol. II, Nos. 5-6, China Farmers' Bank).

Colombia

Since the 1936 study in Bogotá a number of studies have been made as follows: Medellín, 1938 (201 working class families); Antioquia 1939 (300 railway workers' families); Bogotá, 1940 (53 families of public officials). Studies of working class families were made in Bucaramanga, Honda (112), Mariquita (88) Barranquilla (418) and Manizales (270) in 1945.

Costa Rica

No information.

Cuba

No information.

Czechoslovakia

New studies on family living conditions were begun January 1947. The enquiries are to cover for a period of at least one year and if possible for a longer period, about 1,000 households in Bohemia, Moravia and Silesia and 300 in Slovakia. The numbers registered during the first year of the enquiry were 582 in the Czech provinces and about 250 in Slovakia.

Cyprus

No studies.

Denmark

A survey from 1 April 1939 to 29 March 1940 covered 884 families and one from 11 April to 8 May 1942 covered 381 families. All social groups are included except independent heads of concerns. For the second enquiry rural districts were excluded. Source: Statistiske Meddelelser, IV., vol. 122, pages 7 ff, and 103 ff.

Dominican Republic

No information.

Ecuador

No information.

Egypt

No information.

El Salvador

No information.

Finland

Eleven enquiries from November 1941 to 1947 each covering two weeks to a month were in the main limited to food consumption, except that the /enquiry

enquiry in the spring of 1945 and in the autumn of 1947 covered all elements of the budget. The enquiries covered workers' families and those of lower salaried officials in 10 to 11 cities; in the enquiry in the spring of 1945 families of the so-called middle class to the number of 141 were included and the total number of families was 580.

France

Since 1939 there have been three series of enquiries. First: wage earners' families in the Paris region; two enquiries of two weeks each, one in March-April 1946 and the other in November 1946. The principle results have not yet been published. Supplementary enquiries for families of the personnel of the regional offices of the National Institute of Statistics in 15 large provincial cities have been made and a report on them is in preparation. It is planned to extend similar enquiries regularly to the urban and rural areas in the provinces provided the necessary credits can be obtained.

Enquiries made by the National Institute of Demographic Studies have been presented in the review Population. The results of studies of food consumption made by the National Institute of Hygiene in Marseilles have been published in the Bulletin de l'Institut national d'hygiène.

A study of family budgets is in preparation at the National Institute of Statistics in collaboration with the National Institute of Hygiene. This will cover the Paris area as well as Marseilles, Lyons and St. Etienne, and will be limited to families containing not over five persons.

Germany

A family living study covering 128 workers' families and 121 salaried employees' families for one return period 0 and 14 - 10 November 1946 in the British Zone.

Greece

No information.

Guatemala

An enquiry of August 1946 covered 179 families. A summary of results has been presented in the "El mes económico financiero" for 31 July 1947.

Hawaii

A study covering 100 families of wage earners was undertaken in June, 1943.

Honduras

No studies.

Hungary

Since October 1946 a survey of 180 families, eighty-two of which were workers, fifty-four officials, twenty-five salaried employees, nineteen retired persons, includes repeated monthly collections of data. This survey is supplemented by a survey of living conditions for the month August-September 1947, covering 2,733 industrial workers and 623 salaried employees. The data are in process of tabulation and analysis.

Iceland

See Hagtidindi X-XII/1940. Study of forty families in 1940.

India

During 1943-46, surveys conducted along uniform lines have been made covering 27,000 families in twenty-eight cities and towns. The surveys cover in most cases one year, but in some cases six months, in others four months, etc. Among these studies is one in Karachi for the period covering 406 families from August 1944 to April 1945. In addition, a farm family living study covering 1,701 families was conducted at the time of the 1941 census as part of the economic study in Ajmer Merwara. The report of this survey was published under the title "Economic Survey in Rural areas of Ajmer-Merwara".

In this connection mention should be made also of a series of studies under the direction of Professor Mahalanobis, summaries of the results of which are published in an article in the Royal Statistical Journal, 1947 and in the Indian Statistical Journal, Sankhya.

Iran

A family living study covering 617 families in 1934 was conducted under the auspices of the Bank Melli. (See summary in International Labour Review, December 1937.)

Iraq

An enquiry covering family expenditures in 1939 for a sample of sixty-eight families of unskilled workers in Baghdad.

Ireland

A national nutrition survey commenced in April 1946 under the Department of Health is still in progress covering 2,400 families including 1,250 families in towns (including all social grades) and 1,150 farm families including the families of farm labourers.

Italy

A number of small studies were undertaken under private or local government auspices. The Central Statistical Institute is studying a plan of co-ordinating such enquiries into a national scheme.

Lebanon

Mexico

Family living studies were made in 1939 and 1941 covering 3,543 families.

Netherlands

Family budget studies have been made regularly since November 1941 and published quarterly since January 1946. In addition to the enquiry conducted by the Central Bureau of Statistics, other enquiries are undertaken by the municipal statistical offices at Amsterdam, The Hague, Tilburg as well as the Board of Mining Industries at Heerlen. The numbers covered in the studies made by the Central Bureau of Statistics vary in general between 150 and 200. They cover wage earners' families and families of salaried employees in medium sized and small towns, including families with weekly incomes ranging from forty to seventy florins, (thought in 1947 a small number of families whose incomes exceeded seventy florins owing to wage increases were included). In 1946 the wage limits were thirty to sixty florins. Only families who have no wage earning children living with them are included.

For 1948 the regular survey has been extended to include 250 families, and it is supplemented by a special survey into the cost of living of 100 families of agricultural workers.

Netherlands East Indies

Detailed studies of family living on plantations in the Netherlands East Indies were completed just before the war under the direction of Dr. J. M. H. Hart; materials based on them are already available in preliminary form. ("Java-Coolie Budget Inquiry," 1939/40). There were in all twenty-five enquiries on twenty estates, including 1945 families.

Newfoundland

No studies.

New Zealand

A "Study of Standards of Life of New Zealand Dairy Farmers," by W. T. Doig covering 526 households. Also surveys of standards of life of tramway employees and boot and shoe operatives (approximately 285 families); results not yet published. No family living studies are in prospect.

Nicaragua

No information.

Norway

An extensive series of family living studies in different parts of Norway was made in November 1945. Source: Arbeidernes faglige Landsorganisasjon (Okonomiske Kontor) No. 1-11.

/At present

At present the Central Bureau of Statistics is conducting a family living study for the period 1 May 1947 to 1 June 1948. The enquiry started with 819 workers' families in cities and industrial centres and 114 forest and rural labourers families. For February 1948 the number of families covered dropped to 600 (535 and 65 respectively).

Pakistan

Before the partition of the country, an enquiry into family budgets of industrial workers was conducted in 1944-45 in five centres: Lahore (1135 budgets); Sialkot (343); Klewra, Karachi (406) and Narayanganj. (See India.)

Palestine

Study of living standards and nutrition among the Jewish urban population of Palestine covering 913 families in three cities for general economic expenditures and 242 families for food consumption, January to March 1946. The income limits were £P 1.500 and £P 20 per month, representing mainly the middle class element but in part also the low income groups.

Panama

Family living study of 17 families (6 in 1942 and 11 in 1945) of workers and salaried employees.

Paraguay

No study of family living.

Peru

A study of workers' family budgets in Lima was made in 1940 based upon eighty-one families.

Philippines

Surveys of wage earners' families in Manila were made in December 1946 (300 families) and in August 1945 (225 families). For a summary of results see Bulletin of Philippine Statistics, December 1945, pages 135-169.

Poland

In 1946 the Polish Statistical Office resumed its enquiries into family budgets by a study covering thirty families of workers and employees in Warsaw. In November 1947 an enquiry was undertaken covering 525 workers' families in seventy establishments. Source: Gospodarka Planowa, page 824.

Portugal

The enquiry in 1938 covered 2,561 urban families in Lisbon without limitation as to social class or income; only families with three to six members were included.

Plans for a larger survey in the near future have not yet been completed.

Puerto Rico

A study in 1940 and 1941 covered 2,000 families. The results are published in the Monthly Labour Review, March 1943, page 245.

Rumania

No information.

Singapore

A pilot family budget survey is recommended for 1948 to determine practicability of a full scale survey.

Spain

No information.

Sweden

From 1940 to 1947, a number of small studies for urban and rural communities were undertaken. With the exception of two urban studies, all were restricted to food only. Those two studies were the largest of all; one in November 1941, included 1,568 households, the other in November 1943, consisted of 1,053 households (pensioners only).

Switzerland

A final report on the surveys of 1936-37 covering all parts of Switzerland has been issued. A second small survey for 1937-1938 has also been issued.

In addition a survey of family budgets in the wage earning population for 1945 has been issued (274 families). See "La Vie économique, 1946, pages 340, 366, 415, 451; and 1947, page 103".

Syria

No information.

Turkey

The results of a family living study in Istanbul (100 families) and Ankara (thirty families, 1938) were published in Konjonctur, series A, Vol. I, No. 12, December 1940, pages 9 to 16, "Resultat d'ensemble définitif des enquêtes des budgets de familles effectuées par le service de conjoncture auprès des familles ouvrières, fonctionnaires subalternes et petits employés".

A recent family living study (1946/7) has been completed but the results are not yet available. Included were three cities (Istanbul, Ankara, Smyrna); thirty-forty families in each city, duration six months.

Union of South Africa

No enquiries have been made since 1936, nor is any enquiry planned.

United Kingdom

No official enquiry into family living has been made in Great Britain since 1938 and none is at present contemplated.

United States

Recent studies of family living in the United States include:

(1) An extensive survey of family spending and saving in war time, 1941, 1942 first quarter. (2) A survey of expenditures and savings of city families in 1944. Seven surveys of individual cities were made in 1945 and 1946 covering between 200 and 300 families and single consumers in each city. The data for each survey will be published shortly.

According to present plans the Bureau of Labour Statistics will conduct each year surveys of consumer price checks in three to six of the cities for which consumer price indices are prepared.

In 1947 the three cities surveyed were: Washington D.C.; Richmond, Virginia; and Manchester, New Hampshire.

Uruguay

No information.

Venezuela

A survey of family expenditures in Caracas was made in 1939 covering two months, January and February, that in January covering 204 families, and that in February 141 families. A second survey was made in June and July 1945 covering 2,867 families.

Yugoslavia

No information.

APPENDIX II *

SHORT NOTES ON SAMPLING METHODS USED IN FAMILY LIVING STUDIES
IN A NUMBER OF COUNTRIES SINCE 1938

General particulars regarding family living studies have been given in Appendix I. In this part, only the sampling procedures used since 1938 in some countries are described in brief. The particulars obtained from different countries are not equally detailed and therefore the countries have been grouped into three classes according to the information available. The countries for which no information regarding sampling procedures is available, have been excluded altogether from this Appendix.

The first group includes Canada, India, Ireland, United States of America and the West Indies, all of whom based their studies on random sampling. No official study in family living conditions was undertaken in the United Kingdom in 1938 or thereafter.

The countries of the second group mentioned that their method of selection was random sampling but enough details for a full description were not given. These are British Guiana, Hawaii, New Zealand, Porto Rico, and Sweden.

The third group comprises those countries in which the sample families were not selected entirely by random methods. The families were either volunteers obtained through the press and radio or were selected by such agencies as trade unions, public associations etc. In some cases, a proportion of the families was selected by random choice. Countries in this group are Czechoslovakia, Denmark, Finland, France, Guatemala, Hungary, Netherlands, Norway and Switzerland. The sample families in most of these countries were requested to keep detailed accounts of incomes and expenditures over a long period (a number of weeks, several months or a year) and hence, for expediency, the participating families were mostly volunteers.

Group I

1. Canada, 1938

(a) General description. The survey was an enquiry into family incomes and expenditures for the twelve months ending 30 September 1948. In addition, particulars of food purchases for one complete week in October-November 1938, a second week in February 1939 and a third

* Prepared by Mr. Sen of the United Nations Statistical Office.

in June 1939, were also collected. The main enquiry was started in the latter part of 1938 but the duration of the field work was not mentioned in the report. The enquiry was confined to urban wage-earner families of twelve of the cities of Canada distributed among different provinces. The families were restricted to certain sizes and income levels. Altogether 6,252 sample families were investigated.

(b) Sampling unit and procedure. The sampling unit was a family with the terms "family" and "household" being used inter-changeably. Besides husband, wife, and children, lodgers and domestics sleeping in the home were counted as part of the family. The sampling was done in two steps. At first, census sub-districts were selected at random and information concerning composition of household, racial origin, tenure and earnings, was collected from all the households in these sub-districts. Then the families satisfying certain descriptions in regard to size and income level were sorted out and from these 6,252 families were drawn at random for further investigation.

(c) Data collection and organization. Ninety field agents collected the data by interviewing the householders. The field staff was composed mainly of graduates in household science and of social service workers. They were directed by city supervisors who in turn were supervised by the staff of the Dominion Bureau of Statistics. In regard to the supplementary investigation of food purchases for three weeks, the home-makers were instructed to enter purchases day by day as they were made. The investigators visited the houses several times during the periods.

(d) Reliability. No special study as to how far the samples correctly represented the defined universe appears to have been made. No study to ascertain the degree of interviewer error was made. Co-efficients of variation of expenditure on food, shelter, clothing, recreation and savings, were calculated for Montreal-French families and for Winnipeg-British families, and for the first group the co-efficients ranged from 36.1 per cent for food to 79.0 per cent for recreation. For the second group they ranged from 36.5 per cent for food to 83.0 per cent for savings.

2. India, 1943-46

(a) General description. Twenty-eight separate family budget enquiries spread over different industrial centres were organized during the period 1943-46 under the cost-of-living index scheme of the Government of India. The periods of field work for different
/investigations

investigations varied and were between nine to nineteen months, but in the majority of cases the periods were about twelve months. There seems to be no fixed period to which the family budget data referred. Incomes and expenditures for certain weeks preceding the interviews were collected. Enquiries were confined to industrial workers, mine workers and, in certain cases, to wage-earners in cottage industries. The sizes of the samples for different enquiries varied - from 123 to 5,000. Taking all the twenty-eight enquiries together, over 27,000 budgets were collected.

(b) Sampling unit and procedure. Budgets of families as well as of individuals living alone were collected. A family for the purposes of the enquiry was defined as a household having an independent common kitchen and living under the same roof.

The method of selection of samples had three variations. In some cases where it was found that a good proportion of workers was living in tenements in compact areas, the tenements were listed and the n^{th} numbers were selected as samples. In cases where the workers were not living in clearly defined compact areas, the samples were drawn from payrolls supplied by the industrial establishments usually employing twenty persons or over. Where neither of these ways seemed suitable the samples (n^{th} numbers) were drawn from ration registers maintained by the employers. In larger centres, obviously the samples could not be drawn from each and every industrial establishment or compact tenement area. In such cases it was not clearly indicated on what considerations the tenements or establishments were selected for the next stage of sampling.

(c) Data collection and organization. The investigators for each province were recruited locally. The particulars regarding their qualifications were not given. The investigators were directly supervised by an officer usually taken on loan from the provincial government's labour or industries department on a full-time or part-time basis.

(d) Reliability. No study was made to show how far the samples represented the defined universe correctly. No study to ascertain the interviewer error was made. Sampling errors of the estimates were not calculated.

3. Ireland, 1946

(a) General description. A national nutrition survey was commenced in 1946 under the direction of the Department of Health and was still in progress in February 1948. The particulars regarding income and

expenditures on food and other items such as fuel, light and rent, were being collected. The survey covered all income groups in urban areas, and farming families and families of farm labourers in rural areas; 1,250 families in urban areas and 1,150 in rural areas were selected as samples.

(b) Sampling unit and procedure. A family was the sampling unit. A more precise definition is not available.

For the towns, the families were selected at random from the records of the Register of Population, 1943, and the Census of Population, 1946. "The number of families selected were chosen at such intervals in the list as would give the best random dispersion." Sixty-one towns were represented and the number of families selected was roughly equal to one family to every thousand persons in the population of these towns. In Dublin, out of thirty-three wards, two wards of slum dwellers, one ward where the dwellers were mainly artisans and one where the dwellers were mainly of the middle classes, were selected. 500 families were then selected at random from the lists of dwellers of these four wards. In the final analysis of the results, the weights are intended to be adjusted to make the survey results conform with the occupational distribution for Dublin as a whole.

In rural areas, the farming families were selected from the latest Agricultural Statistics records. The sampling was done in two stages. In the first, one or more District Electoral Divisions were selected from each county according to its size. The basis of this selection has not been clearly explained. In the second stage, ten families were selected from each Electoral Division at random but with the qualification that their sizes of holdings would conform with the distribution of total holdings of the Division. The farm labouring families were selected on the basis of two per Electoral Division and were randomly selected by the investigators themselves.

(c) Data collection and organization. The data were presumably collected by investigators interviewing the householders although this has not been clearly indicated. No particulars have been obtained concerning the machinery of the investigation nor of the number of investigators.

(d) Reliability. The survey was still in progress in February 1948 and hence the results were not ready.

4. U.S.A., 1942 and 1944

(a) General description. A survey of family spending and saving in wartime was organized in 1942. The particulars referred to incomes, expenditures and savings during the twelve months of 1941 and during the first three months of 1942. The survey was planned to cover all income levels of urban and rural populations of the whole country. The total size of the sample was 3,060 which included 1,300 families and single persons in towns (i.e. localities with population of 2,500 or more), 1,000 in rural non-farm areas and 760 on farms.

(b) Sampling unit and procedure. The sampling units were the family as well as the single consumer. The family was defined as a group of persons dependent on a common or pooled income for the major items of expenses and usually living in the same household. The single consumer was a person living as an independent spending unit either in a separate household or as a roomer in a private home, lodging house or hotel.

For urban areas, the sampling was done in three stages. In the first, sixty-two cities were selected scattered throughout the country with proper representation to (1) each city-size group, (2) proximity to a metropolis (for cities under 5,000), (3) each region and State, (4) low-, medium-, and high-rent cities, (5) cities of differing racial composition. In the second stage, the blocks in these cities containing dwelling units were selected at random with proper representation to each stratum of average rental values. Where rental values for the blocks were not available, the selection was as scattered as possible. Complete lists of families and single persons living in these selected blocks were then prepared and in the third stage the sample units were selected from these lists. In cities over 50,000 one consumer unit was selected at random from each block listing. For cities under 50,000, listings of the sample blocks were put together to make a continuous list and from this list for a city every n^{th} family was selected starting from a random initial number.

For rural areas, the selection of village samples was done in three stages. In the first, forty-five counties were selected at random with due representation to (1) rural population, 1940, (2) average value of farm, 1940, (3) principal type of farming, (4) State, (5) in Southern States, the percentage of Negroes in rural population. In the second stage, all the villages in the county were

classified into three to nine population groups and one village was drawn at random for each group. In the third stage the sample dwellings were selected by random numbers from complete listings or maps of all households in the villages, the numbers being proportional to populations of the villages.

The selection of the open-country sample was done in two stages. In the first stage the forty-five counties already selected, were used. In the second stage, these counties were divided into a number of areas, the number depending on the quota of dwelling units to be surveyed. A square mile was then selected at random within the area and the three or four dwellings nearest to the centre of the square selected as samples. The ratio between the farm and non-farm dwellings was from the beginning kept equal to the ratio found in the group of counties represented.

(c) Data collection and organization. Investigators collected data by interviewing the householders. Interviewing was done by part-time agents living in the area, an arrangement by which persons of superior ability and training, generally married women, could be employed. Completed schedules were sent directly to Washington from where direction was given by mail, and this was supplemented by visits from regional supervisors. The number of investigators has not been given.

(d) Reliability. A study as to how far the samples represented the total population correctly was made in detail and was published in the second part of the report (Bulletin No.822, U.S. Department of Labor). It was found that particulars in regard to families in upper income groups were inaccurate. A comparison with the figures of the U.S. Department of Commerce showed that aggregates of incomes of various categories were somewhat under-estimated. The results of the Consumer Purchases Study organized in 1935-36 with a sample size of 300,000 families also revealed under-estimations in incomes. The data, however, proved satisfactory when the incomes of the upper class families were adjusted on the basis of income tax statistics. It has been pointed out in this report that given the same type of adjustments, the results of the 1942 survey also seemed satisfactory. In further analysis of other aspects, this report suggested that it was not so much the size of the sample as the distribution of samples amongst the different areas that seemed to be the reason for inaccuracy.

/The sampling

The sampling errors of the estimates were not calculated nor was a study made of the interviewer error.

1944 Survey. The survey of prices paid by consumers in 1944 was organized in the autumn of that year and was based on a sample of about 1,700 families and single persons living in urban areas only. The sampling procedures in this survey were more or less similar to those adopted in the 1942 survey, together with a modification in the allocation of the samples in different areas.

5. West Indies, Jamaica, 1944

(a) General description. The survey was undertaken to collect information about the workers employed in the twenty-six sugar estates in Jamaica, specially in regard to (1) the composition and characteristics of the dependents, (2) employment status and history, (3) housing and cultivation, (4) cottage industries and other statistics such as debts and liabilities. The field operations lasted for two weeks roughly commencing from 27 November 1944. The size of the sample was over 5,000 out of a total of 23,700 field workers.

(b) Sampling unit and procedure. The sampling unit was a family. As the proportion of samples to the total workers was roughly one-fourth, every fourth name starting from an arbitrary point in the pay-sheet for a typical crop week was selected as the sample for investigation.

(c) Data collection and organization. The information was collected by investigators by interviewing the workers. The investigators were mostly clerks employed in the Labour Department or in the Census Office and were over 100 in number. They were supervised by regional supervisors.

(d) Reliability. No study was made to ascertain the extent to which the samples correctly represented the universe. Neither sampling errors nor interviewer errors were calculated.

Group II

As has already been mentioned, these five countries, namely, British Guiana, Hawaii, New Zealand, Porto Rico and Sweden, mentioned only that random sampling methods were used for the family living studies and the details were not given. Information in regard to the size of samples and the type of families covered has already been given in Appendix I.

A few words relating to the Swedish survey will, however, be interesting. Until recently, the family living studies in Sweden, like many other countries in Europe, were done by requiring the families to keep accounts

day-by-day over long periods, in most cases, a year. A change has now been made and for the first time, in March 1948, a survey on income and outlay for 1947 and food expenditure for one week preceding the visit, was done by interview method. Two hundred fifty families were selected from eight urban areas and investigators collected the data by interviewing the householders. Another survey having a wider coverage is being planned, to be conducted on the same principles.

Group III

The countries under this group are: Czechoslovakia, Denmark, Finland, France, Guatemala, Hungary, Netherlands, Norway, Switzerland. Except Guatemala whose method of collection has not been clearly indicated, the sample families in all the other countries were required to keep day to day accounts over a long period. Because of the tediousness involved in keeping the daily accounts, these countries relied upon volunteer families rather than upon families selected by a random method. Appeals were sent through press, radio, trade unions, offices and public associations and when the replies were received an attempt was made to select the families in such a way as to obtain as satisfactory a representation of the social groups under study as possible. Some families went off after a time, making the problem of representation still more difficult.

Sometimes the families were paid. For instance, in a survey started in January 1947 in Czechoslovakia, each family was paid 100 crowns for quarterly accounts. 1,000 families were selected in this survey covering industrial workers, civil servants and people working on their own. The samples were selected through lists of children in the schools, payrolls of industrial establishments and lists of artisans and professional people.

Sometimes the selection of families was done in a number of different ways. For instance, in the two surveys organized in Paris, one in March-April 1946 and the other in November 1946, the families were selected in the following ways: (1) names of families were selected at random from social insurance lists, (2) families were chosen by investigators amongst their acquaintances, (3) families were chosen amongst those examined by the "Institut national des Etudes Démographiques" after eliminating non-salaried, (4) families were chosen by "L'Union des Syndicats Ouvriers de la Région Parisienne" amongst its members, (5) families were chosen by "l'Union nationale des Associations familiales" amongst its members, (6) families of the staff of the "Institut national de la Statistique et des Etudes Economiques."

Any detailed study as to how far these samples were representative

APPENDIX III

SAMPLING METHODS APPLIED TO COST-OF-LIVING INDEX NUMBERS

In response to the questionnaire on sampling methods applied to cost-of-living index numbers sent out by the International Labour Organization in December 1947, replies have been received from some forty-two countries or political units for which cost-of-living index numbers are available. Sampling methods in the strict sense are applied in extremely few countries. For some twenty-five countries comments were made indicating that efforts were made to select "representative" cities, outlets, or goods to be priced, prices (or rents), without specifying clearly what particular method (if any) was utilized to obtain the result sought. For the rest, either no sampling methods were applied or no information on the subject was given.

The analysis of the materials will be discussed under five headings, selection of cities, selection of retail outlets, selection of goods for pricing, rents, and calculation of errors. The discussion will take up first the United States for which the data are most complete and then summarize the information for other countries.

United States

1. Selection of cities. Fifty-six cities were chosen as representative of the urban population for purposes of food price data. Data on items other than food were obtained from a smaller list of cities.
2. Selection of retail outlets.

In the case of food, random sampling is used to select retail outlets in each of the fifty-six cities. Separate samples are made for independent food stores and chains.

The size of the sample of independent retail food stores is taken as the square root of the total number of such stores in the city. A complete listing of such stores according to geographical areas, is divided into types of stores and into classes arranged according to sales volume. The sampling is then selected at random subject to these controls, but adjustments may be made to reduce travelling time between stores (but not to affect the representativeness of the sample).

With regard to chain stores, each important chain was included in the sample. (In the case of chain stores, the prices were obtained from the head office.)

Average prices are computed separately for the chains and for the independents: these are combined according to the relative importance of

each for obtaining an average price for the city. An average price for the fifty-six cities is obtained by weighting the average for each city by a factor representing the population of the metropolitan area and that of other cities in the same region and size class.

In regard to other retail outlets (other than food), care is taken to select a representative sample of establishments patronized by moderate income families, in which the various types of outlets are represented in proportion to their estimated importance.

3. Selection of goods for pricing.

The items selected are based on the family living survey of 1934-36; some seventy percent of all expenditures of moderate income families are represented in the items priced.

4. Rents

Rents were obtained from a sample of consumers chosen at random from selected blocks; the blocks themselves were chosen at random subject to control as to geographical location, rental value, and racial composition. (See Rent Manual, L.S. 47-3167, 15 April 1947).

5. Errors due to sampling errors have been calculated but have not been published.

Extensive special studies have been made of specific sources of error in connection with the criticism of the cost-of-living index: these studies have been published. The points covered include, for example, the question of the possible bias in results due to the particular selection of retail outlets, the particular methods of pricing, and other points.*

Other Countries

1. Selection of cities

In many countries, the cost-of-living index is calculated for the chief city only. In some countries the index is calculated for each of a number of cities, or for a group of cities: these are usually the largest cities, e.g. United Kingdom (200), South Africa (9). In a few countries, special attention is paid to the selection of cities to represent the urban population of the country, for example, Canada (64 places for the national index for food; separate indexes for 8 cities).

The problems of sampling on this point involve the question of obtaining the most useful result with minimum expense: to include enough cities to make the result representative and to give characteristic

* See Report of the President's Committee on the Cost of Living, pages 117-124.

series for those areas which have characteristic price movements, but not to multiply series beyond the point where the additional information is not worth its cost.

2. Selection of retail outlets

On this point various methods are followed, though few are to be described as involving random sampling. Attention is paid rather to selecting a "representative" sample, in which the chief criteria for selection are stores "patronized by working class families", those with "largest sales volume", the "most important", "from different parts of the city", "as many as possible so as to get the cheapest prices". The choice of stores is left in some cases to "local authorities", or "local boards", in others to the "agents", in others the choice is made by the statistical office.

The number of outlets in each city is sometimes specified: e.g., 85 per city (Netherlands), 10 representative retailers in each capital town and 5 in each other town (Australia), etc.

3. Little information is available on the question of coverage or selection of the items priced. In general, the items selected for pricing are usually those suggested by the family living study. In one or two countries (Canada) special studies of price movements are made in order that the items priced may be most representative of price movements of a group of items.

4. Rents

In regard to rents, where they are based on consumer returns, a random sample of consumers may be utilized. Czechoslovakia reports that the movement of rents between more extensive investigations is based on a sample. In Canada, rents are to be based on a "scientifically selected" one percent sample - the collection of these rents has been commenced, but the results are not yet incorporated in the cost-of-living index. In Hawaii, British Guiana, and Ceylon rents are based on a sample of families selected from a larger survey (no details as to method). In the case of South Africa, rents are derived from a complete rent census taken each year.

5. Calculation of errors

The only reference to this point made in the replies to the questionnaire (apart from that in the United States) is a special investigation of the error in cost-of-living index numbers for Finland and Sweden in 1937: Leo Törnquist, "Levnadskostnadsindexerna i Finland och Sverige deras tillförlitlighet och jämförbarhet" in *Ekonomiska Samfundets Tidskrift*, New Series, No. 37, pages 59-93.