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PROGRESS REPORT: A SYSTEM OF SOCIAL AND
DEMOGRAPHIC STATISTICS

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1. This paper furnishes a summary of the stage reached in the work on international guidelines on a System of Social and Demographic Statistics and of the plans for further work. The summary of the work that has already been performed is mainly based on document ST/STAT.68, "Towards a System of Social and Demographic Statistics (Preliminary Version)"^{1/}, which deals with the results of the research, papers and consultations with national and international authorities on the system completed by the end of 1972. The outline of plans for further work is mainly derived from documents E/CN.3/440, Report of the Seventeenth Session of the Statistical Commission, 13-24 November 1972 and ST/STAT.69, "Report of Expert Group on a System of Social and Demographic Statistics on its Second Session"^{2/}. In order to indicate the stage reached in the international work that needs to be done on a System of Social and Demographic Statistics, the proposed objectives, character and content of the system are also outlined.

2. The summary discussion of the goals of, stage reached in, and plans for, the work on international guidelines on a System of Social and Demographic Statistics in this paper is organized in the following manner. First, the purposes and scope of the system are dealt with. Next, the general character, framework and analytical techniques of the system are discussed. Third, the series of basic and analytical data, including social indicators and the classifications of its various sub-systems are outlined. Finally, the sources and methods of gathering and compiling the data of the sub-systems and the ways of building and applying the system are sketched.

I. PURPOSES AND SCOPE

3. Work started, nationally and internationally, on systems of social and demographic statistics mainly because of major deficiencies in the available data of developed and developing countries on the conditions of living of the population and on the social policies, programmes and services designed to improve these conditions. There are substantial gaps in the basic and summary data that are available for purposes of monitoring and assessing the socio-economic conditions of various groups of the population, the results of social policies and programmes, and the performance of social services. These statistics are also insufficiently co-ordinated and cohesive for these purposes or for joint use in formulating social and economic plans and policies. The independent development and collection and compilation of statistics on the growth, demographic characteristics, employment, education, leisure-time activities, health, housing, income and consumption, etc. of the population and on the related

^{1/} United Nations Secretariat, 24 July 1973. This document is now available in English only; a copy of the English version has been sent to all national statistical offices.

^{2/} Official Records of the Economic and Social Council, Forty-fourth Session, Supplement No. 2.

social programmes and institutions results in the lack of co-ordination and coherence between these bodies of data. And, because many of the available series of social statistics were primarily devised for use in administering institutions rendering such services as education, medical care or recreation, the data are limited in value for use in dealing with conditions of living. These deficiencies in the available social and demographic statistics have become evident as Governments have become more concerned about the social consequences of economic growth and about improving the quality of life and as they have undertaken coordinated social and economic planning and policy making. The multiple uses of a system of social and demographic statistics for these purposes are detailed in document ST/STAT.68, in particular in chapters II on the major concerns to which the statistics of the system are addressed, VII on models of human stocks and flows and X through XX on the sub-systems of data.

4. The general purposes of a system of social and demographic statistics that are mentioned above call for the inclusion of data on a wide range of topics. In addition to the traditional subjects of social statistics, such as employment, education, health, housing, income and consumption, and public order and safety, religion, the use of time and leisure, social stratification and mobility, human rights and freedom, social cohesion and unrest, culture, and the man-made environment are aspects of living conditions. However, a number of these concerns are very difficult, or perhaps impossible, subjects to quantify meaningfully and data on the man-made environment is to be dealt with as part of a body of statistics on the environment. It has therefore been on the whole agreed that the international guidelines on a system of social and demographic statistics should deal with the following topics: size and demographic characteristics of the population, earning activities and employment services, learning activities and educational services, health and health services, housing, leisure activities and the use of time, the distribution of income, consumption and accumulation, social security and welfare services, public order and safety, and social mobility. These subjects have already been covered in the draft international guidelines; however, the proposals on time budgets and social mobility, in particular, are to be extended and elaborated in the next stage of the work on a system. In the case of aspects of living conditions such as health and housing, where the physical environment is an important factor, data on the connected circumstances of the environment are to be included in the system. This must wait until significant progress has been made in the work on statistics of the environment. Views still differ on whether the subject of religion should be covered in the international guidelines.

5. The international guidelines on a System of Social and Demographic Statistics are primarily intended to assist Governments in planning and gradually evolving an adequate co-ordinated and coherent body of data for use in dealing with their important social concerns and in planning and furthering social development. In other words, the guidelines define statistical goals for this purpose which it will take a number of years for countries to reach. The guidelines that have thus far been drafted and discussed are considered to be appropriate to the circumstances of countries well advanced in social and economic development and in

statistical activities. They are too ambitious to furnish suitable goals for social and demographic statistics in the foreseeable future in the case of developing countries, where statistical systems, resources and experience are too inadequate. Some of the concepts and series of the international guidelines may also need to be modified in order to meet the concerns and socio-economic structure and arrangements of developing countries. A major next step in the international work on a System of Social and Demographic Statistics is to formulate guidelines in respect of a system that is suited to the needs and circumstances of developing countries. It should be feasible to adopt the guidelines on the full System of Social and Demographic Statistics for this purpose.

II. GENERAL CHARACTER, FRAMEWORK AND ANALYTICAL TECHNIQUES OF THE SYSTEM

6. The work on the general characteristics, frameworks and analytical techniques of the proposed System of Social and Demographic Statistics is at an advanced stage; these aspects of the international guidelines have already been formulated and detailed.

7. The proposed system consists of sub-systems on each of the covered bodies of data listed in paragraph 4 above. The sub-systems may be classified, as in diagram 3.1 of document ST/STAT.68, into (i) socio-demographic data, for example, on the size, characteristics and vital events of the population, on earning activities, on learning activities, on health, on housing, on leisure-time activities, on delinquency and on social mobility, (ii) data on the corresponding social services, for example, the employment services, the educational services, the health services, the leisure-time services, the public order and safety services, (iii) time-budget data and (iv) statistics on the distribution of income, consumption and accumulation.

8. For purposes of joint use in dealing with particular social concerns, the statistics on an aspect of living conditions and on the catering social service are co-ordinated and integrated, one with the other, for example, learning activities and the educational services. The accounts on each of the social services are also tied in with the corresponding accounts of the Systems of National Accounts and Material Balances. In the case of earning activities and housing, additional links are forged with the production and capital accounts, respectively, of the national accounts and balances. The statistics on time budgets and on the distribution of income, consumption and accumulation span, and are therefore co-ordinated and connected with, most of the sub-systems of socio-demographic data; the income, consumption, etc. distribution statistics are also tied in with the household accounts of the systems of national accounts and balances. The socio-demographic sub-systems are furthermore linked with one another. The data on the size and demographic characteristics of the population underpins each social statistics sub-system; the sub-systems on learning activities, earning activities and the inactive are integrated through the shifts in the status of individuals during their life-time. The data on such aspects of living conditions as health and earning activities are linked through cause and effect relationships.

9. The means for forging the connections between the various sub-systems are incorporated in the framework of the proposed system. A powerful means of connecting sub-systems are interlocking matrices which depict the additions to, and subtraction from, the population and the successive shifts of individuals from the inactive initially, to learning activities, to earning activities and to the inactive finally. The use of this device is limited by the requirements for connections between sub-systems that are sequential in character. Another way of establishing intimate ties between sub-systems is to interact their characteristic classifications, that is to cross-classify the data of the sub-systems by the characteristic classifications of each of them. This technique is used in the draft guidelines in order to connect (i) series of data on a facet of living conditions, on the one hand, and on its catering social service, consumption expenditure or time spent, on the other, and (ii) statistics on two aspects of living conditions which may be expected to have a cause and effect relationship, for example, occupational injuries of individuals and the employment activity in which they are engaged. A third method of linking the data of different sub-systems is to use identical classifications in the case of each series. This permits the assembly of data on the various aspects of conditions of living for the same group (cohort) of individuals. A number of classifications of the demographic characteristics of individuals and households - for example, age and sex, socio-economic status, area of residence in the case of individuals; size and composition, socio-economic status, area of residence in the case of households - are used for this purpose in the draft guidelines. In order to use any of the means of tying together sub-systems that are outlined above, the definitions of the boundaries and the statistics of each of the sub-systems must be consistent and co-ordinated. It is thought that additional means of linking the various sub-systems may be found in further work on this question.

10. A number of ways of analysing the basic series of data of the System of Social and Demographic Statistics are proposed in the international guidelines.

11. One of the simpler techniques of statistical analysis of the basic data of the sub-systems is to compile social indicators. Social indicators are simple or synthetic summaries of series of basic statistics which are designed to be used by government policy makers and administrators to monitor and assess aspects of living conditions and the performance of the correlated social services and programmes, which are the subjects of social concern. Simple indicators involve elementary aggregation of the basic data, for example the compilation of age-specific birth rates or of expectancies of life at various ages. Synthetic indicators involve much more complex aggregation or other processing of the basic data based on decomposition of the circumstances to be measured into the underlying components or factors and their weights. Examples of synthetic indicators are the gross domestic product in the case of economic conditions and an index number of the general state of health in the case of an aspect of the living conditions of the population. When the components and weights are not obvious, statistical techniques for verifying the factors suggested by theory and for measuring their weights

are multi-variant correlation or factor analysis or even public opinion surveys. Series of social indicators, for the most part simple summaries of basic data, have already been proposed in the case of each of the sub-systems. Research and consultations with national statistical authorities, interested international bodies and an expert group on the concepts, character and construction of social indicators and on the listing and definition of the indicators in the case of each sub-system, constitute a major phase of the next step in the work on a System of Social and Demographic Statistics. Attention will be devoted to the needs and circumstances of both developing and developed countries in this project. It is planned to present a paper on the subject to the next session, in late 1974, of the Statistical Commission.

12. Another approach to the statistical analysis of the basic data of the system is multi-variant correlation or factor analysis, which has already been mentioned above. These techniques furnish valuable means for exploring and measuring such relationships as between the various elements of levels of living, between them and demographic conditions, and between aspects of levels of living and the activities and resources of the catering social services. In order to use the techniques effectively and efficiently, it is necessary to formulate hypothesis, based on a theory, about these relationships. Unfortunately, the available conceptual and theoretical foundations for this purpose are weak and still at an early stage of development. In fact, building the proposed body of data of the system should be of assistance in developing the theoretical foundations and vice versa.

13. A third group of techniques of statistical analysis of the basic data of the system is the construction of input-output and linear and other programming models. These models are dealt with at some length in Chapter VII of document ST-STAT.68.

14. For use in input-output models, it must of course be feasible to compile the series of basic data on the state, and changes in it, (called stocks and flows, respectively, in document ST/STAT.68) of a given condition of living in the form of a matrix. For this purpose the changes in state should lend themselves to organization in a sequential pattern. The input-output models may be used for such purposes as estimated the expectations of given groups of a population, or averages of these expectations for the population as a whole, of reaching a given state, for example life, educational, income expectancies, future supplies of trained individuals for given occupations, for example primary school, secondary school or university teachers, doctors or scientists, and in correlation with cost data on social services, forecasting the costs of programmes designed to bring groups of the population to given states, for example of training primary-school teachers or skilled workers or furnishing compulsory education to the secondary school level. The models are generally based on transitional coefficients, that is the proportion of persons who progress from one state to another, though they may be based on admission coefficients, that is the proportion of persons entering given states, and where needed, the costs per person in each

state. The transitional or admission coefficients and on the costs per person in given states of course refer to the past and may be adjusted for anticipated alternations.

15. While the input-output models are designed to assess the outcome of present tendencies, programming models are intended to calculate a desired outcome, for example to maximize the supply of secondary-school teachers, and to indicate the steps required to bring about this outcome, subject to certain constraints, for example the number of persons completing secondary education and the facilities which can be furnished for college education. Input-output or correlation analysis may be used to define the outcome which is to be maximized and to show the steps required for this purpose. Included in these models are equations which define the constraints. These equations may consist of definitional identities and/or may be derived through regression (correlation) analysis. The most appropriate programming model may be linear, non-linear or dynamic, depending on the characteristics of the subject dealt with and the available data.

16. Other ways in which the basic data may be used is in output budgeting that is programme project budget, and in cost-benefit analysis. The accounts of the proposed system on the social services, when detailed, lend themselves to output budgeting as costs (inputs) and outputs are to be classified according to the major objectives and the activities that contribute to these objectives. Because the output of government services is not sold on the market, the measurement of outputs independent of inputs, raises complex and difficult problems of concept and practice. Work has been undertaken on these problems but it will take much more time to reach satisfactory solutions. Further work is also required on the accounts in respect of the costs, transfers and sources of finance of the social services.

17. The basic data of the proposed system on the costs of social services is also valuable for purposes of cost-benefit analysis. However, the concepts of outputs used in the system will, in many instances, not yield suitable measures of the direct, let alone indirect, benefits of furnishing the social services. There are major conceptual and practical problems of measuring the benefits of the social services because factors other than the catering social services may be important in bringing about changes in the state of the individuals served as well as because the benefits are not priced in the market. Concerted work on these problems is not planned in the near future.

III. THE CONTENT OF THE SUB-SYSTEMS

18. The guidelines on each of the sub-systems are to consist of (i) a discussion of the social concerns and other purposes which the sub-systems should serve, (ii) definition of the boundaries of the sub-systems, (iii) the series of basic statistics, classifications and series of analytical data, including social indicators, to be included, (iv) the definitions of the series of basic statistics, of the characteristic classifications of

the sub-system and of the analytical data and (v) perhaps tabulations of the data of the sub-system. All of these elements of the sub-systems except the definitions listed in (iv) and the tabulations listed in (v) above, have been delineated. Further work on the sub-systems during the next three years or so will concentrate on the needed refinement and elaboration in the definition of the boundaries of the sub-systems and in their basic statistics, classifications and analytical series and on the definition of the series of data and characteristic classifications of the sub-systems. Certain aspects of sub-systems require substantial elaboration and improvement, for example the subjects of time budgets, social stratification, deprivation and mobility, life sequences and the social service accounts.

19. The basic and analytical data of each sub-system consist of consistent, co-ordinated and linked series of data on states (stocks) and gross changes in states (gross flows) in respect of the various facets of a particular condition of living and of the correlated social services or programmes. Net changes in states are of course indicated by trends (differences) in the data on states. For example, the sub-system on earning activities and the employment services contains data on stocks and gross flows, in some instances, concerning the number and characteristics of the economically active and their employment, unemployment and under-employment, employment conditions and compensation, and industrial injuries and illnesses and concerning the employment services and their use and activities (outputs), costs (inputs), facilities and personnel, and sources of finance. Many more series are proposed on stocks than on gross flows in that and other sub-systems because the former data are much more easily gathered than the latter. In general, the statistics of each sub-system are organized in the following manner: the number, proportion of the population and relevant characteristics of the individuals or households to whom the sub-system relates; the experience of these individuals or households in respect of the aspects of the living conditions covered in the sub-system; the use and activities of the catering social service; its facilities and resources; and the outputs and costs (inputs) of the social service and its sources of finance. In cases where it is not feasible to measure a state or flow directly, indirect or proxy measures are used. For example, because the gathering of data on general states of health is impracticable in view of great difficulties and costs, it is proposed that data should be gathered on states of illness and other disabilities. Or, it is suggested that it may be necessary to gather data on inputs as a proxy for outputs in the case of certain social services.

20. Various measures are used to integrate or link together and co-ordinate the data of each of the sub-systems. In the case of certain aspects of some of the sub-systems on socio-demographic data and in the case of the sub-system on the distribution of income and consumption, where the pattern of changes in states is sequential, it is advantageous and feasible to integrate data on stocks and flows, preferably gross, into the form of matrices. Examples of this in the case of socio-demographic data are the size of, and changes in, the population according to industrial attachment and sex or according to occupation, age and sex and pupils according to level of education or age. In the case of the other, as well as the aforementioned,

aspects of social and demographic conditions and of the social services, accounts serve to integrate data on stocks and flows. The series of data of each sub-system are also tied together through the use of common classifications. The consistent and co-ordinated definition of the data of each sub-system is basic to the formulation of systematic and coherent sub-systems of data.

21. The international guidelines concerning each sub-system propose that its series of data should be tabulated according to three types of classifications - the characteristic classifications of the sub-system, the relevant characteristic classifications of other sub-systems and the common classifications of the system. The characteristic classifications of a sub-system are designed to meet the basic overall requirements for its data. The classifications of other sub-systems are used to tie the series of a sub-system with the data of other sub-systems when it is considered that a cause and effect or functional relationship exists. The series in question are either cross-classified according to a characteristic classification of its sub-system and that of another sub-system or classified according to the characteristic classification of another sub-system, depending on the character of the relationship that is thought to exist. The common classifications of the system relate to demographic characteristics of the population, areas of location of the population and social services, and purposes, kind of activity and institutional arrangements of the social services. The common classifications of demographic characteristics link the socio-demographic, distribution and time-budget data of the system; the classifications of area of location ties together all the data of the system; the third set of classifications relate the social services to one another. The common classifications furnish means of bringing together the various series of the system on respect of a given group of the population or given class of social services.

IV. DEVELOPMENT AND COLLECTION OF DATA

22. The portion of the international guidelines on a System of Social and Demographic Statistics which is least formulated is that on the sources and methods of gathering and compiling the data of the system and on ways of, and priorities in, building a system. Considerable work needs to be carried out on guidelines concerning techniques of gathering, assembling, storing, estimating and tabulating the social and demographic statistics of the system and the way in which countries might proceed to introduce and build the system. Studies of the usefulness and feasibility of, and means of implementing, the draft international guidelines at the national level are to be carried out during the next phase of the work on a System of Social and Demographic Statistics. It is proposed to invite selected countries to volunteer to carry out pilot inquiries into (i) the practicability and means of gathering and compiling the series of basic and analytical statistics proposed in the draft guidelines and (ii) the usefulness and application of these data in government policy making and planning.

23. The draft guidelines do deal with the major sources of the basic data of the system on stocks and flows. Censuses of population, compulsory registers, administrative returns and records, sample field inquiries and registers of comprehensive data on individuals, are discussed. Censuses of population are commonly used and valuable sources of integrated, infrequent stock data on the demographic characteristics of the population, on their educational attainments and activities, on their employment and unemployment, on the inactive and sometimes on chronic disabilities. Compulsory registration has, in certain circumstances, proved to be a useful way of compiling data on stocks and gross flows in the case of the size and selected characteristics of the population. Administrative returns and records could be valuable sources of data on stocks and flows in the case of learning activities, delinquency, selected aspects of health and the social service accounts. It is generally essential to conduct sample field inquiries for purposes of gathering many of the series of statistics proposed in the international guidelines, in particular data on gross flows. Data on gross flows, that is longitudinal statistics, may be gathered by matching figures for the same individual or households, or the same groups (cohorts) of them, that are gathered in successive sample surveys, or by the inclusion of retrospective queries in the inquiries. In the latter case care must be taken to minimize recall errors. For the former purpose and in order to spread the collection of the desired series of data among a number of survey rounds and still ensure the gathering of integrated data, it is desirable to conduct a multi-purpose programme of integrated field inquiries. Individualized record systems, which may not be feasible in the case of many countries, ensure the integration of all the relevant data of the system around the covered individuals.