Technical Papers

SOCIAL INDICATORS DERIVED FROM VITAL STATISTICS

CONTENTS

Page

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INTRODUCTION.

At its 19th Session in 1976, the Statistical Commission of the United Nations culminated a long history of work on social indicators by approving for publication Social Indicators: Preliminary Guidelines and Illustrative Series (1978). The Guidelines were designed, *inter alia*, "to provide a review of concepts of social indicators that have been advanced in national and international work and their present stage of development,..." and "to furnish a flexible and evolutionary outline...for the formulation and selection of measures pertaining to the fields of social concern and their components...." These "measures," known as social indicators, might "take the form of simple data series or they may be synthetic series obtained by applying a greater or lesser amount of procession to data series. At any particular time, it may not be possible to construct all the indicators that would be desirable and this limitation should be kept in mind. Social indicators form a subset of the data series and constructs actually or potentially available and are thus distinguished from other statistics only by their suitability and relevance for one of the purposes mentioned."

The purpose of this paper is to trace the development of social indicators in the United Nations from the initial work on levels of living in the 1950s to the approval of the Preliminary Guidelines in 1976, and to show that a considerable number of these indicators are derived from vital statistics. The paper seeks to demonstrate that ever since work began on indicators of levels of living vital statistics have been acknowledged as an integral part of social statistics and hence of social indicators. The ultimate objective is to underline the fundamental role that vital statistics must play in social and economic planning and policy making and, to this end, the paper reviews the uses such indicators have been assigned, first in general terms by United Nations' recommendations on civil registration and vital statistics, and second, by United Nations Programmes, Strategies, and Plans of Action for general development purposes and for sectoral development. Comments on the adequacy of indicators derived from vital statistics for these purposes complete the review. In conclusion, the paper stresses the need for every country to work toward achieving a reliable and comprehensive body of vital statistics so that its important role may be fully realized.

No attempt will be made to discuss the scope, concepts and purposes of the full array of social indicators; these matters have been fully treated elsewhere. This paper will be limited to the identification of what, for convenience, may be called "vital statistics indicators" that have been proposed or presented by various United Nations' bodies over the past 25 years, and the uses that these indicators are designed to serve. For simplicity, the vital statistics indicators will be defined in terms of personal characteristics only, ignoring suggestions for geographic classifications. Also, they will be listed and discussed as derived rates, ratios and life expectancies, even though the original sources may have presented them in terms of the underlying statistical series of absolute numbers. For the same reason, no attempt has been made to reflect

recommendations on periodicity or frequency of compilation, nor to discriminate
between indicators said to be useful for more-developed and less-developed
countries.

A. RECOMMENDATIONS AND SUGGESTIONS FOR SELECTION OF INDICATORS DERIVED FROM VITAL STATISTICS

1. COMPONENTS OF LEVELS OF LIVING

Indicators derived from vital statistics have had a long international his-
tory, having found an important place in the first international catalogue of
components of levels of living. This catalogue consisted of a set of indicators
designed for purposes of international comparison of levels of living (1954) as
requested in General Assembly resolution 527 (VI) and Economic and Social Council
resolution 434 B (XIV) of 1952. It was drawn up by a Committee of Experts, con-
vened in 1953 to advise the Secretary General of the United Nations on "the most
satisfactory methods of defining and measuring standards of living and changes
therein in the various countries, having regard to the possibility of interna-
tional comparisons...." The Committee's consideration of this most difficult
and challenging problem, which was regarded, even at that time, to be "central
to the evaluation of the economic and social programmes of the international
organizations and of national governments," resulted in recommendations for some
40 statistical indicators that the Committee considered to be internationally
accepted values of (1) health, including demographic conditions; (2) food and
nutrition; (3) education, including literacy and skills; (4) conditions of work;
(5) employment situation; (6) aggregate consumption and savings, and (7) trans-
portation. Most important for purposes of this paper, three indicators, based
on vital statistics, were included in the health component: these were, (1)
expectation of life at birth, (2) infant mortality rate, and (3) crude death
rate. In the judgment of the Committee, "...the high correlation between these
indicators and other conditions of living, as well as the intrinsic meaning of
the indicators themselves, places them...among the best now available for the
measurement of differences in levels of living and changes therein." Moreover,
the Committee singled out the expectation of life at birth and the infant mortal-
ity rate as two of eight indicators designated as having highest priority.

Not only did the Committee include three vital statistics indicators as
basic statistical indicators of levels of living, it proposed that three addi-
tional indicators based on vital statistics be included among the "next steps"
in the development of data for measuring levels of living: these were (1) ex-
pectation of life at various selected ages, (2) infant mortality rate minus neo-
natal infant mortality, and (3) cause-specific mortality rates. These proposals
for the future as well as the three vital statistics indicators originally
recommended are shown in the Annex.

The Committee of Experts transmitted its Report to the Secretary General in
1953. Its proposals provided a framework for the second Report on the World
Social Situation (1957) and, more important perhaps, the opportunity to experi-
ment with the proposed components and indicators and to check the theory against
its practical applications.

In 1959, the Committee's proposals, together with the progress achieved
since their promulgation, were reviewed by an inter-agency Working Party on
Statistics for Social Programmes, set up in response to ECOSOC resolution 585 B
(XX) of 1955. In the field of vital statistics, the Working Party's report

(1961): not only confirmed the priority status of the infant mortality rate and the expectation of life at birth, both recommended by the Committee of Experts, it upgraded the annual crude death rate to priority status in spite of the well-known dependence of this indicator on the age structure of the population. In the opinion of the Working Party, the widely available crude death rate may be used to reflect the intensity of mortality in a given country, in the absence of more sensitive indicators.

The three priority indicators mentioned above were considered direct or specific indicators of health status. Among the "general" indicators of levels of living, the Working Party recommended the proportional mortality indicator, defined as the proportion of deaths at ages 50 and over to all deaths, because it had "been shown empirically to be highly sensitive to differences in levels of living generally. It has the additional advantage that the primary data are comparatively simple to collect, and the method of construction is straight-forward." Moreover, the Working Party considered that data on the demographic situation should be included as basic background information, and it recommended that, in addition to the three priority indicators, the crude birth rate as well as the rate of natural increase be computed. These indicators are shown in the Annex where it may be observed that, by 1959, vital statistics were the basis for no less than nine (9) indicators recommended for measuring levels of living.

2. COMPENDIUM OF SOCIAL STATISTICS

To test the availability of the social indicators recommended by the Committee of Experts and the Working Party on Statistics for Social Programmes, for describing social conditions and social change, the United Nations and the specialized agencies concerned compiled and published a Compendium of Social Statistics, (1963). Among the 62 tables shown in the revised edition (1968a), six were devoted to vital statistics and the 11 indicators shown in these tables were: (1) crude birth rate; (2) crude death rate; (3) infant mortality rate; (4) neonatal mortality rate; (5) post-neonatal mortality rate; (6) expectation of life at birth for males and females; (7) expectation of life at ages 1, 15, and 65 for males and females; (8) proportional mortality ratio; (9) childhood death rate for ages 1-4 years of age by sex, and (10) percent of deaths due to infectious and parasitic diseases. These indicators were shown to be available for a number of countries, thus substantiating the correctness of their selection as social indicators.

When the Compendium was revised again in 1977 (1980a), it contained data on 7 of the vital statistics indicators published in the 1967 edition. Omitted were the neonatal mortality rate; the post-neonatal mortality rate; and the proportional mortality ratio. However, ten additional indicators, derived from vital statistics were included, namely, (1) general (total) fertility rate; (2) infant death rate by selected causes and sex; (3) childhood death rate (1-4 years) for selected causes and sex; (4) total death rate from selected causes by sex; (5) gross reproduction rate; (6) net reproduction rate; (7) deaths 15 years of age and over as percent of all deaths, by sex; (8) maternal mortality rate; (9) modified crude marriage rate, that is, per 1,000 marriageable male or female population, and (10) modified crude divorce rate, that is, 15 years of age and over, per 1,000 married couples. These new indicators may, to some extent, have their origin in the need for vital statistics that can be used to study the problems of women. The inclusion of these indicators in the 1977 Compendium shows that those proposed for computation, as well as a number of more sophisticated indices, are able to be computed by a number of countries.

A number of indicators of demographic and social conditions relating to 1960, published in the Compendium, 1967 became, in February 1969, part of a 1960 data bank created by the United Nations Research Institute for Social Development (UNRISD) to serve its research needs on the contents and measurement of development. Some 92 social and economic indicators shown to be discriminatory were published in a Compilation of Development Indicators (for 1960) (1969); of these, 7 were based on vital statistics, namely, (1) crude birth rate; (2) crude death rate; (3) infant mortality rate; (4) expectation of life at birth; (5) death rate due to infectious and parasitic diseases; (6) gross reproduction rate, and (7) proportional mortality ratio.

From the 92 chosen social and economic indicators, the UNRISD isolated 24 "core indicators" on the basis of intercorrelation, sectoral coverage and other criteria. These 24 were brought to change as a group with development and, in a cross-national statistical sense, may be said roughly to define development. Five of the core indicators were derived from vital statistics, they are (1) crude birth rate; (2) crude death rate; (3) crude rate of natural increase; (4) infant mortality rate, and (5) expectation of life at birth.

3. STATISTICAL SERIES FOR THE USE OF LESS-DEVELOPED COUNTRIES (1959)

Closely related to the work on measurement of levels of living was the decision of the Statistical Commission of the United Nations at its 10th Session in 1958 to authorize the compilation of a "list of statistical series which, when coupled with a description of the need for and sources of each of the series, would be of assistance to less-developed countries in developing an integrated set of basic statistics for use in programmes of economic and social development." The list was not to be considered a minimum or standard set of statistical series but the Report notes that it did "contain the main statistical series which it had proved to be feasible to collect and which furnish the principal measures necessary to assess economic growth and changes in conditions of living...."

The list was classified into 12 categories of statistics, the first of which was "The size and nature of population and its elements of change (e.g., births and deaths)...." These were identified as "basic factors in the economic and social setting for development efforts and enter into determining, on the one hand, the magnitude and character of the demand for goods and services and, on the other hand, the size and quality of the labour resources for producing those goods and services." The vital statistics series included in the list were three in number: the first was the total number of live births occurring during the year, classified by sex. Live births by order of live birth and age of mother was the second recommended series. The third was the total number of deaths occurring during the year, classified by sex, age and cause. It was also suggested that, in addition to the total country, each be made available for urban and rural areas and, if feasible, for major civil divisions.

It will be evident that, depending on the age classification chosen for deaths, and availability of comparable population bases, these three series could provide the base data for compilation of eight of the nine rates and ratios recommended as indicators of levels of living by the above-mentioned Committee of Experts (1954) as well as by the Working Party (1961). In total, these series could provide for the computation of the following 20 indicators, derived from vital statistics: (1) crude natural increase rate; (2) natural increase rate by sex; (3) natural increase rate by age groups; (4) natural

increase rate by age and sex; (5) natural increase rate by sex; (6) crude birth rate; (7) total fertility rate; (8) birth rate by sex; (9) birth rate by age of mother; (10) birth rate by order of birth; (11) birth rate by age of mother and birth order; (12) crude death rate; (13) death rate by age and sex; (14) death rate by cause; (15) death rate by cause, age and sex; (16) percent of deaths due to infectious and parasitic diseases; (17) proportional mortality ratio; (18) expectation of life at birth; (19) expectation of life at selected ages; (20) expectation of life at birth for males and females; (21) expectation of life at birth and selected ages for males and females, and (22) infant mortality rate. These 22 indicators, able to be computed from the 3 basic vital statistics series, are shown in the Annex.

4. UNITED NATIONS DEVELOPMENT DECADES--INDICATORS FOR MONITORING PERFORMANCE

In the chronology of the evolution of statistical indicators to measure development, one might expect the first United Nations Development Decade (1962) to have had an important impact. The implementing General Assembly resolution (1710 (XVI) of 19 December 1961) referred not only to economic development but also to social advancement; social development; the elimination of illiteracy, hunger and disease; improvements in education, and similar measures of social progress. But statistical indicators of social development or targets of development were suggested only in the fields of education, where UNESCO's programme was adopted, and health, which reflected the "Third Programme of Work for a Specified Period," adopted by the Thirteenth World Health Assembly, wherein health was seen in its proper socio-economic context. There were no suggestions for a system of indicators of development that might be used in appraising progress during the decade although "reduction of the infant mortality rate" was cited as an example of a target.

The charting of economic and social development and the monitoring of progress toward objectives took on more importance when the General Assembly proclaimed the Second United Nations Development Decade, starting in 1971, and simultaneously adopted the International Development Strategy (1970), known also as the "Action Programme" for the 1970s. This Strategy, unlike that for the 1960s, made biennial review and appraisal of progress in both the objectives and the policies of the comprehensive and integrated programme for national and international action a matter of overriding importance to the United Nations bodies. The General Assembly specifically requested that an inter-agency report, "outlining the details of a system of over-all appraisal of the progress in implementing the International Development Strategy," based on the views of governments as well as the discussions in the General Assembly and the Economic and Social Council, be prepared for the Council's consideration in 1971. The resulting report, entitled "A System of Over-all Review and Appraisal of the Objectives and Policies of the International Development Strategy" (1971a) contained a list of "Indicators for Monitoring Performance in Respect of the Various Elements of the International Development Strategy," geared to the quantitative targets suggested in the Strategy. Indicators derived from vital statistics were included as follows: (1) crude birth rate; (2) crude death rate; (3) infant mortality rate; (4) death rate by cause, and (5) expectation of life at birth.

On 3 May 1971, the Economic and Social Council adopted Resolution 1566 (L) which was concerned with the methods of achieving the goals of the Decade, specifically with the establishment of an integrated system for the collection of data, data processing, and dissemination of international statistics, with

special regard to the requirements of reviewing and appraising economic and social progress, particularly in the context of the policy measures and objectives of the Second United Nations Development Decade.

In response to this Resolution, the Statistical Commission drew up a list of "Indicators for Monitoring Performance in Respect of the International Development Strategy". The point of departure for working out these indicators was the list of "Indicators for Monitoring Performance..." included by the Economic and Social Council in its System....(1971a) mentioned above. These were clarified, elaborated and expanded in certain cases and, though made relevant to individual countries, they applied also to groups of countries when aggregated. The result was "a preliminary draft of the guidance that might be furnished in respect of the indicators that should be compiled nationally and internationally in order to follow developments during the Second Development Decade." (1972) Among the social indicators derived from vital statistics suggested for the above purpose were (1) crude birth rate; (2) crude death rate; (3) age and sex specific death rate; (4) infant mortality rate, and (5) expectation of life at birth and at certain other ages. These are shown in the Annex to this paper.

5. SOCIAL INDICATORS: PRELIMINARY GUIDELINES AND ILLUSTRATIVE SERIES

The Preliminary Guidelines (1978), approved by the Statistical Commission at its 19th Session in 1976, was the culmination of the work that has been outlined above. It has utilized the various fragmentary efforts and is now recognized as a reference for work on social indicators in national statistical offices. It provides a review of concepts of social indicators which have been advanced and discussed in detail both by governments and independent experts, regional commissions, interested specialized agencies and other bodies. It indicates the way in which social indicators may be selected and defined within a framework for the integration of social and demographic statistics. As emphasized in the Commission's Report (1977), the Guidelines are not to be conceived as recommendations but as a useful inventory which interested producers and users of statistics might consult in identifying and defining indicators useful for any number of different purposes. The Commission also stated that the illustrative series, classifications and indicators shown in the Guidelines represented a substantial updating of previous material on the basis of wide consultations and the revised Report should, therefore, be considered as superseding the material presented in earlier publications.

Insofar as personal characteristics are concerned, indicators derived from vital statistics in the Preliminary Guidelines are similar to those included in the previous proposals as shown above and in the Annex. However, they introduced geographic characteristics which, for simplicity, have been omitted in this paper.

The vital statistics indicators set forth in the "Illustrative Series and Classifications for Selecting Social Indicators" (Annex II of the Guidelines) and in the "Illustrative Examples of Social Indicators for Different Types of Countries," (Annex IV of the Guidelines) comprise the most comprehensive list yet suggested. Included in it are indicators for developed and developing countries because the examples are designed to provide the widest possible range of indicators from which countries can select those that they consider are feasible of computation. The "Illustrative Examples and Series" include (1) crude birth rate; (2) birth rate by age of mother; (3) birth by national or ethnic origin; (4) birth rate by socio-economic groups; (5) gross reproduction rate; (6) net

reproduction rate; (7) percent of births attended by a physician; (8) percent of births attended by a physician, by national or ethnic origin; (9) crude death rate; (10) death rate by age and sex; (11) death rate by causes of death; (12) death rate by national or ethnic origin; (13) death rate by socio-economic groups; (14) death rate of married persons by duration of marriage; (15) death rate of married persons by duration of marriage and age of decedent; (16) child-hood death rate; (17) childhood death rate by sex and selected causes; (18) in-fant mortality rate; (19) neonatal mortality rate; (20) post-neonatal mortality rate; (21) maternal mortality rate; (22) percent of labour force who die, by sex; (23) percent of labour force who die by age and sex; (24) percent of labour force who die, by occupation; (25) expectation of life, at birth, by sex; (26) expectation of life at birth, selected ages and sex; (27) expectation of life at selected ages and socio-economic groups; (28) expectation of life at selected ages and national or ethnic origin; (29) first marriage rate; (30) first mar-riage rate by age and sex; (31) first marriage rate by national or ethnic groups; (32) average age at first marriage for males and females; (33) crude divorce rate; (34) divorce rate of married couples, 15 years and over; (35) divorce rate by average duration of marriage, and (36) divorce rate by average duration of marriage and age of partners.

With the _Preliminary Guidelines_, therefore, the subject of social indicators, at least those derived from vital statistics, has reached a stage where the pro-posals span almost the entire vital statistics field. Taking into consideration indicators proposed in Annex II and Annex IV, one is left with a minimum of 36 vital statistics rates and ratios from which countries can choose. This minimum does not take cognizance of the additional indices that would result if the pro-posals for geographic characterization were to be taken into account. It there-fore fails to point out that if the proposed geographic characteristics were adopted by a country, the data required would almost certainly have to be pro-duced by a civil registration system since demographic surveys by virtue of their dependence on sampling cannot easily produce data for local areas. They can, with wide margins of error, produce data for urban/rural residence, but they are often unable to produce data for major and minor civil divisions, ex-cept, perhaps, with great expense. The essential role of the civil registration/vital statistics system is clearly demonstrated.

B. USES OF INDICATORS DERIVED FROM VITAL STATISTICS

1. GENERAL

In approving the publication of the _Preliminary Guidelines and Illustrative Series for Social Indicators_ (1978), the Statistical Commission considered var-ious purposes which social indicators might serve in planning, policy making, research, general monitoring of social conditions and changes, levels of living and living conditions, and so forth. Members agreed that "it was neither feasi-ble nor desirable in international guidelines to designate any one of those alone as preeminently important." The Report of the Commission (1977) empha-sized that "the purposes for which indicators might be compiled, in any given case, and their actual specification and selection, should be left to national and international bodies and researchers to decide in terms of their particular interests and possibilities of data compilation."

These remarks, of course, refer to comprehensive statistical series cover-ing the full array of topics usually considered as social statistics. In the more limited area of vital statistics, a rather extensive literature exists on

the uses of certain data as well as their derivative rates and ratios. For ex-
ample, each of the tabulations in the United Nations Principles and Recommenda-
tions for a Vital Statistics System (1973a) is accompanied by a statement on its
possible uses. In addition, the United Nations Demographic Yearbook (1949-)
regularly describes the uses of the data contained in each table presented. The
United Nations Handbook of Vital Statistics Methods (1955) contains a rather full
accounting of the national and international uses of vital statistics rates and
ratios. It describes the role of vital statistics in carrying out demographic
research and analysis at the national level, including population estimation,
population projection, and analytical studies of the levels and trends of vital
statistics, designed to elucidate their influence on various social, political
and economic problems. In this connection, it points out that vital statistics
have a role in the planning and administration, both public and private, of
health services, housing policy, educational services, social security systems,
food requirements and so forth. It also notes that commercial interests make
use of vital statistics in market analysis, particularly of the needs of mothers
and infants, and their influence on business planning.

According to the Preliminary Guidelines (1978); social indicators, including
those derived from vital statistics, may be used (1) to detect incipient social
problems, as well as to monitor recognized ones; (2) to establish scales in terms
of which targets for better levels of living can be set, and (3) to highlight
certain interrelationships among the various dimensions of well-being and some
of the underlying circumstances that may affect the status of, and trends in,
well-being.

In the Guidelines, the uses of vital statistics indicators are described as
being concerned with measuring changes in (1) population; (2) family formation
and stability, and (3) the state of health of the population.

(a) Population

In discussing "Population", the Guidelines point out that "5.6 The size
and composition of the population according to sex, age, national or ethic origin
and socio-economic groups and rates of net change are essential to understanding
population trends in themselves as well as their impact in terms of socio-
economic conditions and problems, the demand for and use of social services and
rates and types of participation in social and economic activities. The illus-
trated series on births, deaths and net international migration portray the
trends in the components of changes in national population. Tabulation of these
series according to the selected classifications shown is designed to identify
some of the important groups of the population whose rates of change in size
and associated welfare conditions, problems and needs are likely to differ, and
thus reveal important distributional characteristics.

"5.7 The birth and international migration rates of a population often
receive attention since fertility and net international migration are the ele-
ments of over-all population change that may be the subject of varying govern-
ment policies and programmes. Crude birth rates are not well suited for this
purpose, since they are affected by such factors as variations in the age and
sex composition of the population. Therefore, a classification according to age
of mother is shown."

(b) Family formation and stability

The discussion of family formation and stability in the Guidelines

includes the following: "5.9 Family formation and structure are fundamental factors underlying the living conditions of...the non-institutional population.... Information on family formation and dissolution is important in making estimates of future demands for goods and services in many fields. The series, classifications and indicators shown for this field of social concern in Annexes II and IV can furnish information on the number and types of families (for example, whether one male or female parent only is present), on size of families and on family formation and dissolution. Since these circumstances and their impact on conditions of welfare may, in a number of countries, vary between urban and rural communities or among ethnic groups, these classifications are also useful here."

(c) State of health of the population

The Guidelines discuss the uses of social indicators for analysis of the state of health of the population in the following words: "5.42 Because of the conceptual and practical difficulties of the direct measurement of good health, indirect series and indicators for this purpose are shown in Annexes II and IV. These measures deal with number and rates of death, which are over-all measures of the effects of poor health, and the prevalence and severity of selected communicable disease.

"5.43 Death rates classified according to cause, age and sex point to the important states and circumstances of poor health that lead to deaths, and to vulnerable groups. Attention may also be focused on rates of neo-natal, post-neo-natal and maternal deaths; these rates tend to be high relative to other death rates and are therefore the subject of major concern. Expectations of years of life at selected ages furnish useful comprehensive measures of mortality"

2. MONITORING PROGRESS TOWARD ACHIEVING GOALS

(a) First United Nations Development Decade

As indicated earlier in this paper, social indicators may be used to detect incipient social problems; to formulate policies and programmes; to establish scales in terms of which targets can be set; and to monitor or evaluate success or failure in achieving these target levels. At the national level, monitoring is perhaps the most important. As noted above, the first United Nations Development Decade (for the 1960s) made few suggestions for individual social indicators that might be used to monitor achievement in connection with the goals of the Decade. No indicators of population change were suggested, probably because population as such had not yet been recognized as an integral part of development planning. The only reference to a social indicator derived from vital statistics occurred in connection with "Health Targets for Development" (1962). Here, it was stated that "The third component of a possible programme of public health development is the establishment as baselines of certain indices of the current health situation of countries so that progress toward certain health goals can be measured." It goes on to suggest that "Target figures for the decade should be set in, for example, the following fields: (a) Infant mortality. The present level should be ascertained and efforts made to lower it. Success attained in achieving a more favorable age composition of the more rapidly growing population groups will lead to greater social well-being. (b) Communicable diseases. The incidence of diseases such as malaria, smallpox, and other prevalent communicable diseases should be ascertained and efforts made to eradicate them, or at least to reduce their incidence to the point where they cease to be public health problems." It is assumed that the second target would

be measured by death rates by cause, inasmuch as morbidity statistics are less developed than mortality statistics in developing countries.

(b) Second United Nations Development Decade

The Second United Nations Development Decade, on the other hand, was accompanied by the International Development Strategy (1970), the Action Programme of the General Assembly for the Decade. As noted above, periodic review and appraisal of the objectives of the Decade were given a very important place, and it would be expected that each of the indicators recommended for monitoring performance would be routinely used. The Strategy itself does not contain any specific target indicators derived from vital statistics.

One indicator that could be derived from vital statistics was mentioned implicitly in para. 15 of the Strategy where it was stated that "The target for growth in average income per head is calculated on the basis of an average annual increase of 2.5 percent in the population of developing countries...."

In para. 18 (c), the need for indicators based on vital statistics is implicit in connection with the formulation, in each developing country, of "... a coherent health programme for the prevention and treatment of diseases and for raising general levels of health...." In addition, the Strategy noted (in para. 65) that "Those developing countries which consider that their rate of population growth hampers their development will adopt measures which they deem necessary in accordance with their concept of development." Such targets would require a country to have continuous information on its rate of natural increase, a statistical indicator widely recommended and one dependent on knowledge of the crude birth rate and the crude death rate. In connection with establishing at least a minimum programme of health facilities, the Strategy points out, as did the First United Nations Development Decade, that "A concerted international effort will be made to mount a world-wide campaign to eradicate by the end of the Decade, from as many countries as possible, one or more diseases that still seriously afflict people in many lands." Such a campaign would, of necessity, be based on knowledge of deaths by cause, because morbidity statistics in developing countries are almost nonexistent. But, despite these implicit targets, such goals as lowering the infant mortality rate or, indeed, general mortality, are missing from the Second Development Decade Strategy (1970).

(c) Third United Nations Development Decade

The International Development Strategy for the Third United Nations Development Decade (1981a) was adopted by General Assembly Resolution A/RES/35/56 on 5 December 1980. The Strategy consists of four parts: I. Preamble; II. Goals and Objectives; III. Policy Measures, and IV. Review and Appraisal of the Implementation of the new International Development Strategy.

Under "Goals and Objectives," the Strategy points out that "The international community recognizes the need for countries to continue to strengthen their implementation of the recommendations of the World Population Plan of Action" emphasizing, therefore, that "The reduction of mortality rates will be a major objective. In the poorest countries, infant mortality should be reduced to less than 120 per 1,000 live births. Life expectancy in all countries should reach 60 years, as a minimum, and infant mortality rates should reach 50 per 1,000 live births, as a maximum, by the year 2,000."

10

The process of review and appraisal forms an integral and very important part of the third International Development Strategy. According to the Resolution, "the process will consist of systematic scrutiny, within the context made towards achieving the goals and objectives of the Strategy and the identification and appraisal of the factors which account for shortfalls that may be encountered." For carrying out these appraisals, indicators derived from vital statistics would be essential.

(d) International Bills of Human Rights

Perhaps the most far-reaching international instrument that sets specific goals or targets for achievement and that uses indicators derived from vital statistics for evaluating performance, is the International Covenant on Economic, Social and Cultural Rights (1973b) that came into force in 1976. This Covenant, in Article 12(2), calls upon States Parties to the Covenant to provide "for reduction of the stillbirth rate and of infant mortality..." as an element in achieving implementation of the "Right to Health." The first step in achieving the full realization of this Right must be the determination of the current levels of the stillbirth rate and the infant mortality rate as indicators of health status. Only with knowledge of such baseline indicators can a country develop a programme for the reduction of the rates. And, only with continuous evaluation of the levels and trends of the rates can the country gauge its progress in achieving the goal of the reduction.

(e) World Population Plan of Action

Most important in the setting of goals that could be monitored by social indicators derived from vital statistics was the World Population Plan of Action (1975), adopted by the 135 Governments that participated in the World Population Conference, convened by the United Nations in 1974. The Plan must be considered as a very important component of the system of international strategies, and as an instrument of the international community for the promotion of economic development, quality of life, humane rights and fundamental freedoms.

Recommendations for Action made by the Conference fall into three principal sectors, namely, "Population goals and policies," "Socio-economic policies," and "Promotion of knowledge and policies." Indicators derived from vital statistics play a role in the first and third of these. Their uses for monitoring population goals are set forth in paras. 18, 22, 23 and 24:

"18. Countries which aim at achieving moderate or low population growth should try to achieve it through a low level of birth and death rates. Countries wishing to increase their rate of population growth should, when mortality is high, concentrate efforts on the reduction of mortality, and where appropriate, encourage an increase in fertility and encourage immigration,

"22. It is a goal of this Plan of Action to reduce mortality levels, particularly infant and maternal mortality levels, to the maximum extent possible in all regions of the world and to reduce national and subnational differentials therein. The attainment of an average expectation of life of 62 years by 1985 and 74 years by the year 2000 for the world as a whole would require by the end of the century an increase of 11 years for Latin America, 17 years for Asia, and 28 years for Africa.

"23. Countries with the highest mortality levels should aim by 1985 to have an expectation of life at birth of a least 50 years and an infant mortality rate of less than 120 per thousand live births...

"24. It is recommended that national and international efforts to reduce general morbidity and mortality levels be accompanied by particularly vigorous efforts to achieve the following goal:

(a) Reduction of foetal, infant and early childhood mortality and related maternal morbidity and mortality."

Recognizing the variety of national goals with regard to fertility, the World Population Plan of Action does not recommend any world family-size norm. But, it does point out that "the projections...in para. 22 concerning increased expectation of life are consistent with declines in the birth-rate of the developing countries as a whole from the present level of 38 per thousand to 30 per thousand by 1985; in these projections, birth-rates in the developed countries remain in the region of 15 per thousand...."

The Plan goes on to note that "Countries which desire to reduce their birth-rates are invited to give particular consideration to the reduction of fertility at the extremes of female reproductive ages because of the salutary effects this may have on infant and maternal welfare."

It is evident that the goals of the World Population Plan of Action set forth above, being statistical in nature, would demand statistical indicators for monitoring progress. At a minimum, these would appear to include (1) crude birth rate; (2) crude death rate; (3) infant mortality rate; (4) maternal mortality rate; (5) expectation of life at birth; (6) foetal death rate; (7) early childhood mortality rate; (8) death rate by age and sex, and (9) birth rate by age of mother and sex. With the sole exception of the foetal death rate, all of these have been recommended or suggested by international governing bodies for computation by national offices.

(f) World Plan of Action for the Implementation of the Objectives of the International Women's Year (1976)

This is another World Plan in a sectoral area that sets forth targets for achievement over the period 1976-1985, and thereby suggests the need for statistical indicators for measuring progress. Adopted by the World Conference of the International Women's Year, and endorsed by the General Assembly of the United Nations at its 30th Session in mid-December 1975, the Plan represents a global consensus of what should be done to improve the conditions of women.

One goal of particular interest in the use of social indicators derived from vital statistics to monitor performance is the recommendation that "Programmes should be formulated for the reduction of infant, child and maternal mortality...." Obviously, the monitoring of the success of such programmes must depend on statistical indicators of the levels and trends of the infant mortality rate, the maternal mortality rate and the childhood mortality rate; all three are among the recommended vital statistics indicators.

In considering "The Family in Modern Society," the Plan proposes that "Legislation relating to marriage should be in conformity with international

standards. In particular...a minimum age for marriage should be fixed by law....
Official registration of marriage should be made compulsory." A measure for mon-
itoring progress in this area could be the crude marriage rate and the age-speci-
fic marriage rates.

Under "Population", the Plan endorses the recommendations of the World
Population Plan of Action (1975), especially those relating to the status of
women, and notes that a number of crucial demographic variables are closely inter-
related with the full participation of women in national life; these include
"age at marriage, age at birth of first child, the length of interval between
births, age at termination of child-bearing, and total number of children born."
The Plan goes on to point out that when all these elements are added to the
health hazzards of child-bearing, in many nations, it is clear that demographic
factors are a major aspect of the social and economic environment affecting the
status of women.

To be useful, each of the factors listed above must be perceived as a
social indicator derived from vital statistics. Possible statistical series to
produce such rates are (1) marriages by age of bride and groom; (2) births by
age of mother and birth order, and (3) births by birth interval. Two of these
are among the vital statistics indicators recommended or suggested, as shown in
the Annex.

(g)   Programme of Action for the Second Half of the United Nations
      Decade for Women; Equality, Development and Peace (1980b)

Although the Programme recommends "a comprehensive and critical biennial
review and appraisal of progress achieved in implementing the provisions of the
World Plan of Action and of the Programme for the Second Half of the Decade," it
does not explicitly cite any targets to be used in this exercise. The only
reference to targets utilizing vital statistics indicators occurs in priority
areas for action in "Health" where it is noted that "Family Planning should be
facilitated as one means of reducing maternal and infant mortality where high
risk factors prevail, such as high parity, too frequent pregnancies, pregnancies
at the extremes of the reproductive age, and the frequency and dangers of
secretly performed abortions." This, in effect, is a reiteration of one of the
goals of the World Population Plan of Action and of the World Plan of Action for
the Implementation of the Objectives of the International Women's Year.

C. AVAILABILITY OF RELIABLE VITAL STATISTICS INDICATORS AND RECOMMENDED ACTION

Since the very beginning of the international work on developing a set of
statistical indicators for measuring progress in economic and social development,
there has been wide recognition of the fact that reliable data to support such
indicators were not widely available especially in developing countries.

For example, the 1954 Report on International Definition and Measurement of
Standards and Levels of Living stated that "Certainly in no country in the world
today are statistics collected and compiled in an entirely satisfactory manner
for purposes of measuring the level of living or changes therein. Even in the
more-developed countries the statistics currently compiled have in the main not
been designed for the express purpose of measuring levels of living and are gen-
erally not as well adapted as they might be for international studies. The pro-
blem is, of course, much more acute in the less-developed areas. In many such
areas only rudimentary statistical systems are to be found and a satisfactory

statistical output cannot be expected until competent statistical personnel are trained and adequate provision made in budget and other facilities for statistical work." The Committee included in its report Table A showing availability of statistics referring to "priority indicators," by continents. Life expectancy at birth was one of these as was the infant mortality rate. The table revealed that life expectancy data were available for only 52 countries out of 176 and, for 23 of these, data were incomplete or obsolete. Infant mortality rates were available somewhat more widely, that is, in 87 countries but of these, data for 49 were incomplete or obsolete. The lack of adequate data for these and other indicators induced the Committee to lay great stress on the need to improve statistical services, recognizing that "the development of adequate statistical facilities necessarily takes a number of years and is in some measure dependent upon general economic and social development."

As far back as 1961, the inter-agency Working Party on Statistics for Social Programmes (1961) noted that, despite the long use of the infant mortality rate, the crude annual death rate and the expectation of life at birth as measures of general levels of health, "the use of these indicators is...limited by lack of reliable data for many countries and territories of the world." The Report went on to state that "The next round of censuses which will make available data on age structure of population should increase the number of countries for which it will be possible to make estimates of expectation of life." But it pointed out that "the real difficulty is that data involving fertility and mortality rates cannot be more reliable than the registration of births and deaths from which the data are derived. Since the completeness of registration is in turn related to the general level of social and economic development of the country concerned, the problem of obtaining reliable data for the less developed countries is a very real one."

In the area of population, the World Programme for the Improvement of Vital Statistics (1968b), adopted by the Economic and Social Council of the United Nations in Resolution 1307 (XLIV) of 31 May 1968, put special emphasis on the inadequacy of statistics of births and deaths for planning purposes.

The target of the Programme was "to push forward the development of reliable civil registers of vital events...." To achieve this goal, it was recommended that "States Members of the United Nations endeavour to establish a system of vital records and statistics, or to improve the existing system, to the level where it will yield, in particular, reliable statistics of births and deaths, adequate, *inter alia*, to meet the needs of economic and social development planning...."

The first United Nations Development Decade: Proposals for Action (1962) recognized that "The lack of basic economic and social statistics and surveys in many of the developing countries is a well-known obstacle to progress since it deprives the Governments of an adequate quantitative basis for their development plans...." With respect to demographic statistics, the report went on to say that "Development planning is also hampered in the majority of developing countries by the lack of an adequate foundation of basic demographic research."

The acknowledged inadequacy of statistical data led to the inclusion in the General Assembly Resolution 1710 (XVI) that proclaimed the first United Nations Development Decade reference to "The need to review facilities for the collection, collation, analysis and dissemination of statistical and other information required for charting economic and social development and for providing constant measurement of progress toward the objectives of the Decade."

14

In setting forth the "Requirements for Over-all Appraisal" of the objectives and policies of the second United Nations Development Decade (1971a), the Secretary General of the United Nations made perhaps the most detailed and specific indictment of statistics available for monitoring performance. He noted that "An examination of data availabilities...suggests that there are three distinct types of deficiencies: the first is the complete absence of data where the phenomenon in question is just not measured. The second is the tardiness of the data, where the lapse of time between the phenomenon, its measurement and the availability of the relevant statistics is so great that their relevance and usability for purposes of policy formulation are severely reduced. Finally, the third is the poor quality of data - whether because of ambiguous definitions, inaccurate collection and recording, inadequate coverage or excessive resort to estimation, the resulting statistics lack authenticity. In all these cases, there is a need to strengthen the national statistical services in ways that will impose the least possible increase in real cost (in money as well as the skilled and scarce manpower)."

The International Development Strategy for the Third United Nations Development Decade (1981) made reference to the possible inadequacy of data for purposes of review and appraisal of the implementation of the strategy in the following words: "Where necessary, the evaluation capacity, comprising also the statistical capability of the countries concerned should be strengthened."

It was the various sectoral World Plans that recognized more specifically the deficiencies in available demographic data. One of the most important statements in this regard was made in the World Plan of Action for the Application of Science and Technology for Development (1971b) approved by the United Nations Advisory Committee on that subject at its 14th Session in 1971 as its principal contribution to the Programme of Action for the Second United Nations Development Decade. In discussing "Basic Population Statistics," the Plan pointed out that "In most developing countries, the shortage and limited reliability of demographic and related statistics is a major handicap in dealing with the many aspects of development planning including population action programmes.... Although considerable progress has been made in recent years, most developing countries still lack a reliable vital registration system and therefore lack important data required for economic and social planning." The Plan cited as its goal that first set forth in the 1968 World Programme for the Improvement of Vital Statistics (1968b), namely, "to establish in every country by the end of the Decade a system of vital records and statistics or to improve the existing system to the level where they will yield reliable data on births, deaths, marriages, etc."

The World Population Plan of Action (1975) similarly emphasized that "statistical data on the population collected by means of censuses, surveys and vital statistics registers, are essential for the planning of investigations and the provision of a basis for the formulation, evaluation and application of population and development policies." It went on to urge that, "in line with the objectives of the World Programme for the Improvement of Vital Statistics (1968b), countries are encouraged to establish or improve their vital registration system, as a long-term objective, and to enact laws relevant to the improvement of vital registration." Under "Research", the Plan proposed that "development of social indicators, reflecting the quality of life as well as the interrelations between socio-economic and demographic phenomena, should be encouraged."

In its first review and appraisal of the progress made towards implementation of the <u>World Population Plan of Action</u>, the Economic and Social Council, in a resolution entitled "Strengthening of Action Concerned with the Fulfillment of the World Population Plan of Action" (1979) made recommendations concerning priority areas for action. Among these was a reminder to Governments of the "urgent need to develop and improve vital registration systems and demographic statistics in order to obtain accurate and timely information on the evolution of fertility, mortality and migration...."

The <u>World Plan of Action for the Implementation of the Objectives of the International Women's Year</u> (1976) gives high priority to data collection and analysis and states categorically that "adequate data and information are essential in formulating policies and evaluating progress...." It goes on to recommend that "A scientific and reliable data base should be established and suitable economic and social indicators urgently developed which are sensitive to the particular situation and needs of women as an integral part of national and international programmes of statistics."

Finally, the <u>Programme of Action for the Second Half of the United Nations Decade for Women</u> (1980b), which is based on a review of progress made during the first half of the Decade and the obstacles encountered in implementing the <u>World Plan of Action</u> (1976), endorsed the principles and objectives of the 1975 Conference, and proclaimed several "priority areas for action." In the health field, the Conference emphasized the need to "develop simple economic, social and cultural indicators in order to obtain better data on trends in morbidity and mortality among women...."

D. CONCLUSIONS

The purpose of this paper was to trace the development of social indicators in the United Nations, to prove that indicators derived from vital statistics constitute a reasonably large segment of the full array of social indicators, to suggest the uses such indicators might have, and to consider their adequacy for these purposes.

It has been demonstrated that vital statistics indicators are an integral and relatively large part of the full array of social indicators. Indeed, the most recent <u>Guidelines</u> on social indicators approved by the United Nations in 1976 show that, out of a total of 149 indicators, fully 36 are derived from vital statistics. This is a remarkable increase since 1954 when the Committee of Experts proposed vital statistics indicators (including 3 "next steps") among a total of 40. Since this simple beginning in 1954, some eight additional sets of statistical indicators have been promulgated for measuring degrees of economic and social development. The vital statistics indicators included in all nine sets are (1) the crude death rate, (2) the infant mortality rate, and (3) expectation of life at birth. The crude birth rate was included in eight sources. The remaining indicators had frequencies of inclusion of 4 or less, with 21 appearing only in the <u>Preliminary Guidelines</u>, the most recent work in this area.

Vital statistics as well as other social statistics are administrative by-products of carrying out some of the routine work of governments. Many types of social statistics are thus routinely compiled but not enough attention has been paid to the essential role such statistics can play in measuring accurately changes that are taking place in certain areas of social concern. Work on

development of a system of social indicators has occurred in response to this deficiency.

To highlight the role that social indicators derived from vital statistics can play in measuring changes that are taking place, the goals and targets of the United Nations Development Strategies have been set forth, beginning with those for the 1960s and ending with those for the 1980s. In addition, the goals of several Plans of Action in sectoral areas have been cited as evidence of the need for countries to develop and maintain civil registration systems to produce vital statistics indicators, indicators that are accurate enough and sensitive enough to serve as monitors of change.

These same Development Strategies and Programmes of Action that give evidence of the uses of indicators derived from vital statistics also recognize the inadequacies of much national data for monitoring progress and appraising achievement in reaching the goals set forth. Recognition of the serious handicaps that deficient data can be to development planning and evaluation runs through almost all Strategies and Plans of Action and these have been set forth in the paper.

Most systems that exist in developing countries do not produce reliable vital statistics, capable of monitoring progress. It is hoped that the emphasis now being placed on the full array of social indicators and the integration of social and demographic statistics, especially for developing countries, may serve as an additional stimulous to countries to increase emphasis on establishing or improving systems for registration of vital events and the compilation of reliable vital statistics from these records.

It is abundantly clear that some priorities must be established if an improvement programme of vital records and statistics in a developing country is to be given tangible shape. The priorities extended to vital statistics by virtue of their inclusion in an international system of social statistics indicators should be of great assistance to countries in effecting improvements in their conventional vital statistics systems.

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Social indicators derived from vital statistics, by source
(Indicators are those included in United Nations publications and documents)

Vital Statistics Indicators	Source [1]								
	Compendium, 1977	Social Indicators	E/CN.3/423	E/5040	UNRISD/69/C.31	Compendium, 1967	ST/STAT/SER.31	E/CN.3.270/Rev. 1	E/CN.3/179
NATURAL INCREASE:									
Natural increase rate (crude)	-	-	-	-	-	-	-	x	-
____by age groups	-	-	-	-	-	-	x	-	-
____by age and sex.	-	-	x	-	-	-	x	-	-
____by sex.	-	-	-	-	-	-	x	-	-
NATALITY:									
Birth rate (crude)	x	x	x	x	x	x	x	x	-
____by age of mother.	-	x	-	-	-	-	x	-	-
____by birth order.	-	-	-	-	-	-	x	-	-
____by age of mother and birth order.	-	-	-	-	-	-	x	-	-
____by national or ethnic origin. . .	-	x	-	-	-	-	-	-	-
____by socio-economic groups.	-	x	-	-	-	-	-	-	-
____by sex.	-	-	-	-	-	-	x	-	-
Fertility rate (total)	x	-	-	-	-	-	x	-	-
Gross reproduction rate.	x	x	-	-	x	-	-	-	-
Net reproduction rate.	x	x	-	-	-	-	-	-	-
Percent of births attended by physician	-	x	-	-	-	-	-	-	-
Percent of births attended by physician by national or ethnic origin	-	x	-	-	-	-	-	-	-
MORTALITY:									
Death rate (crude)	x	x	x	x	x	x	x	x	x
____by age and sex.	-	x	x	-	-	-	x	-	-
____by age, sex and cause	-	-	-	-	-	-	x	-	-
____by causes of death.	-	x	-	x	-	-	x	-	x
____by selected causes and sex.	x	-	-	-	-	-	-	-	-
____by national or ethnic origin. . .	-	x	-	-	-	-	-	-	-

Vital Statistics Indicators	Compendium, 1977	Social Indicators	E/CN.3/423	E/5040	UNRISD/69/C.31	Compendium, 1967	ST/STAT/SER.31	E/CN.3/270/Rev. 1	E/CN.3/179
_____ by socio-economic group	-	x	-	-	-	-	-	-	-
_____ by sex	x	-	-	-	-	-	-	-	-
_____ of married persons by duration of marriage	-	x	-	-	-	-	-	-	-
_____ by duration of marriage and age of decedent	-	x	-	-	-	-	-	-	-
_____ due to infectious and parasitic diseases	-	-	-	-	x	-	-	-	-
Childhood (1-4 years) death rate	-	x	-	-	-	-	-	-	-
_____ by sex	x	-	-	-	-	x	-	-	-
_____ by sex and selected causes	x	x	-	-	-	-	-	-	-
Infant mortality rate	x	x	x	x	x	x	x	x	x
_____ by selected causes of death and sex	x	-	-	-	-	-	-	-	-
Neonatal mortality rate	-	x	-	-	-	x	-	-	-
Post neonatal mortality rate	-	x	-	-	-	x	-	-	x
Maternal mortality rate	x	x	-	-	-	-	x	-	-
Percent of deaths due to infectious and parasitic diseases	-	-	-	-	-	x	x	-	-
Percent of deaths aged 50 years and over	-	-	-	-	x	x	x	x	-
Percent of deaths aged 15 years and over by sex	x	-	-	-	-	-	-	-	-
Percent of labour force who die, by age and sex	-	x	-	-	-	-	-	-	-
Percent of labour force who die, by sex	-	x	-	-	-	-	-	-	-
Percent of labour force who die, by occupation	-	x	-	-	-	-	-	-	-
EXPECTATION OF LIFE:									
Expectation of life at birth	-	-	-	x	x	-	x	x	x
_____ at birth and selected ages	-	-	x	-	-	-	x	-	x
_____ at birth, selected ages and sex	x	x	-	-	-	x	x	-	-

Vital Statistics Indicators	Compendium, 1977	Social Indicators	E/CN.3/423	E/5040	UNRISD/69/C.31	Compendium, 1967	ST/STAT/SER.31	E/CN.3/270/Rev. 1	E/CN.3/179
_____at birth, by sex.	x	x	–	–	–	x	x	–	–
_____at selected ages and national or ethnic origin	–	x	–	–	–	–	–	–	–
_____at selected ages and socio-economic group.	–	x	–	–	–	–	–	–	–
NUPTIALITY:									
Average annual marriage rate in marriageable population by sex.	x	–	–	–	–	–	–	–	–
_____by age of bride and groom	–	x	–	–	–	–	–	–	–
_____by national or ethnic origin.	–	x	–	–	–	–	–	–	–
Average age of bride and groom at first marriage	–	x	–	–	–	–	–	–	–
DIVORCE:									
Divorce rate (crude)	–	x	–	–	–	–	–	–	–
_____of married couples, 15 years and over.	x	x	–	–	–	–	–	–	–
_____by average duration of marriage . . .	–	x	–	–	–	–	–	–	–
_____by average duration of marriage and age of partners	–	x	–	–	–	–	–	–	–

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