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**USES OF VITAL STATISTICS IN
POPULATION POLICY MAKING
AND EVALUATION 1/**

Note by the ESCAP Secretariat^{2/}

1/ -For reference purposes. The paper was presented in the 1993 workshop in Beijing, China.

2/ -The paper has been issued without formal editing

USES OF VITAL STATISTICS IN POPULATION POLICY MAKING AND EVALUATION

Introduction

1. Demographic data play an important role in the formulation of policies and programmes on population, environment and various other aspects of socio-economic development, in the monitoring of progress made and in evaluating the impact of programmes. Basically there are three major sources of demographic data - population censuses, vital registration and household sample surveys. No one source of data alone can be expected to meet all the statistical requirements of policy makers, rather in fact many statistics and indicators are produced from combinations of registration, census and survey data. The computation of current population estimates, life expectancy, net reproduction rates and marriage rates usually require information from more than one of these data sources. Similarly, analytical studies require the combined use of these data sources for a better understanding of interrelationships of demographic, social, economic, environmental and other parameters. The civil registration records also offer opportunities to conduct linkage studies, such as with household surveys, offering exciting possibilities for research.

2. In developing countries, the need for formulating population policies was felt mainly in the early 1960s, when it was widely recognized that the rapid growth of population had grave consequences for national socio-economic development and for the well-being of the people. However, since the concerns of population policy have close relationships with those of general socio-economic development policies, it is also acknowledged that population issues must be integrated into development plans and programmes. While this concept is yet to be clearly understood and applied in its full spirit in the realm of policy and programmes, the need for integrating data from different sources should not be overlooked. The challenge can only be met by creating more imaginative and flexible interfaces between users and producers. The frequent and potential users of data should be fully made aware of the strengths and the weaknesses of the various sources of demographic data. The potential utility of vital statistics for policy purposes is least recognized in developing countries, perhaps because of the prevalence of inadequate registration of vital events which has given prominence to estimates obtained through indirect and other methods.

Population Policies

3. Population policies are formulated to influence either directly or indirectly the demographic character of the national population - such as rate of growth, age structure, mortality and morbidity, fertility, international migration, urbanization and spacial distribution and the status of women. While chief policy concern in developing countries continues to be stabilization of population growth within the shortest period possible, other factors have also become important, including Acquired Immunodeficiency syndrome (AIDS), and aging. Nevertheless, the main underlying aim of population policies is to raise the quality of life of the people.

4. According to the World Population Plan of Action, adopted at the International Conference on Population held at Mexico City in 1984, population policies should be incorporated into those policies that promote development. The International Development Strategy for the Fourth United Nations Decade also requires concerted action in all major socio-economic fields, including population, to achieve the goals of human development. Now there is also a greater recognition of the strong linkages that exist between population trends, socio-economic development and the environment.

Table 1
Fertility, Mortality and Morbidity Targets, as set during 1978-1985, in Selected Countries of Asia

Country	Fertility targets	Mortality and morbidity targets
Bangladesh	Decrease TFR to 2.34 children per women by the year 2000	CDR = 13 per 1000; IMR = 100 per 1000 live births; child mortality rate = 12 per 1000; MMR = 4 per 1000 live births; and e_0 = 54 years in 1989/90
India	CBR not more than 21 by 2000; average family size of 2.3 children	Targets for year 2000: IMR < 60 per 1000 live births; CDR = 9 per 1000; MMR < 2 per 1000 live births; pre-school child mortality = 10 per 1000 in age group
Indonesia	CBR to be reduced to 23 per 1000 in 1990	CDR = 10 per 1000 in 1990; IMR = 35 per 1000 live births in 1990
Malaysia	CBR = 26 per 1000 by 1985	Reduce CDR to approximately 6 per 1000 by 1985; mortality rates from tuberculosis should be lower than 10 per 1000 population per year.
Nepal	TFR = 2.5 children per women by 2000; replacement fertility by 2000	Decrease CDR to 17 per 1000; IMR to 130 per 1000 live births (1980-1985); e_0 = 46-48 years.
Pakistan	Reduce CBR to 36.2 per 1000 by 1988; TFR from 5.9 to 5.4 children per women from 1983-1988	Reduce CDR from 12 to 10 per 1000; IMR from 100 to 60 per 1000 live births; e_0 from 54-55 to a little over 60 years between 1983 and 1988.
Philippines	Net reproduction rate = 1 by 2000	CDR = 6.23 per 1000; IMR = 37.8 per 1000 live births; MMR = 0.5 per 1000 live births; cardiovascular disease mortality = 55.1 per 100,000 population
Republic of Korea	TFR = 2.1 in 1988	MMR = 3.2 per 1000 live births and IMR = 23 per 1000 live births in 1986

Demographic targets

5. As the adoption of a planned approach of addressing population problems became widespread in developing countries, the process of setting of quantitative demographic goals also improved. Initially, developing countries mainly focussed on setting family planning programme targets, mainly in terms of contraceptive acceptance. However, later on targets began to focus on demographic parameters. A review of those targets would serve as a useful reminder of the requirements of basic statistics and indicators needed for policy statements and monitoring at a very broad level. Table 1 provides some information on fertility, mortality and morbidity targets in selected Asian countries. It is obvious that, to monitor the progress made in achieving these targets, time series data are required. For such purposes a civil registration system is the most suitable source if it is functioning properly. No doubt, in many cases the base population to compute rates would come from the census data, but even there the intercensal estimates would suffer unless reliable vital statistics are available. This again points to the need for improving civil registration systems.

6. On surface the targets illustrated in table 1 are simple demographic indicators, although in some instances they require detailed data on cause of death. Even the achievement of simply stated targets would involve assigning a high priority to population and development and the promotion of programmes such as family planning. In fact, interventions beyond family planning are required for achieving the targets of fertility decline, which may include raising the minimum legal age at marriage and encouraging education among females. In the measurement of human development, life expectancy is used as an indicator of healthy life. Thus for such important reasons it is necessary that these demographic indicators are derived from sound data sources.

7. While these indicators are usually available both for developed and developing countries, the quality and reliability of estimates varies. For example, where civil registration is complete, the computation of life expectancy is based on life tables derived from the actual age - and - sex - specific mortality experience of the country. However, in most developing countries indirect techniques and model life tables are utilized, and thus additional dimensions of variation are introduced to the data, i.e. due to underlying assumptions.

8. The illustrative targets shown in table 1 refer to national level aspirations. However, for a policy to be effective, it must set and accomplish targets for regions, provinces, and even communities. In that regard, vital statistics obtained from civil registration have clear advantages over survey data as they permit time series estimation of fertility and mortality at national as well as sub-national level. In addition, civil registration provides further insights into trends, such as of infant mortality where data can be tabulated by infant's age in days, weeks and months.

Uses of Vital Statistics in Population Policy Formulation

9. In addition to setting targets of population and monitoring the progress made in achieving them, vital statistics also play an important role in identifying probable strategies for realizing those goals. A better understanding of the relevance and usefulness of the approaches and strategies comes from research and demographic studies, such as those involving estimation of population, population projections, differential fertility and mortality analysis, and the study of nuptiality.

10. Population estimation. Estimated annual population by age and sex is not only required for use as denominator for computing age-specific fertility and mortality rates, but also for other aspects of development planning - such as employment and housing, transportation, education, and for the computation of per capita gross national product. When reliable vital statistics are available, and international migration is measurable, yearly estimates of population may be obtained from a simple equation utilizing census data. Also, since the coverage of both population census and the civil registration system is such that they provide data at sub-national, and even community level, reasonable estimates may be obtained for localities and communities. These data are now in very high demand by the private sector, while town planners and local administrations have always been seeking data at that level.

11. Population projections. The formulation of an effective plan of social and economic development requires projections of a wide variety of factors for the planned period. Population projections play a pivotal role and become the foundation for other projections, including that of economically active population and the labour force. The size, structural characteristics, and regional distribution of the population thus obtained become the basis of various social and economic policies and programmes. For example, they are useful for determining the requirements for school facilities, and transport, water, electricity and other public utilities. All these public projects require large capital outlays, which clearly demands that the projections be of certain acceptable quality otherwise public might face difficulties due to insufficient facilities or the government resources would be wasted if the demand is overestimated. In a declining fertility situation the latter scenario is highly likely unless reliable vital statistics are available. Many developing countries are unable to produce good population projections by age and sex at the subnational level because of the absence of an adequate vital registration system.

12. Population projections require various components of population change - two most important being fertility and mortality. When adequate vital statistics are not available, the levels and trends of fertility and mortality must be estimated. However, in the presence of good civil registration system, more robust projections may be obtained by utilizing vital statistics including data on nuptiality and divorce, which provide a better understanding of the likely trends in family formation.

13. Fertility studies: Crude birth rate and total fertility rate, when classified by smaller geographic areas, provide interesting pattern which may be of interest to policy-makers. Similarly, the classification of birth statistics by the characteristics of the mother, such as occupation, ethnicity and age may provide useful information with important policy implications. For instance the recent availability of ultrasound techniques for determining the sex of the fetus may be of policy concern if distortions are detected in the sex distribution of births; complete vital registration system might permit further analysis. Similarly, gestational age and weight at birth, where collected on birth records may be of interest from the health planning point of view.

14. Mortality studies. References have already been made to the importance of deaths statistics obtained from civil registration, particularly for the construction of life tables and the computation of life expectancy. In addition to that information, vital registration systems can potentially provide useful data on sex differentials in mortality, where careful studies are needed of the emerging patterns of causes of death by gender. In the absence of morbidity data, such information constitutes as important inputs to health and social policies. The widening sex difference in life expectancy in developing countries also has implications for the growth in the number of female-headed households. Maternal mortality is another important issue of policy concern in some of the developing countries, especially in South Asia where the maternal mortality per 100,000 live births averaged around 650 in the 1980s.

15. Recent spread in AIDS has brought into focus the demographic, social and economic consequences of that disease. To understand the demographic impact of AIDS through the modelling approach, a variety of data are demanded by researchers, such as on population size, growth, age and structure, as well as demographic components of mortality, fertility and nuptiality. The presence of complete vital registration would also help in understanding the perinatal transmission of AIDS, depending on the reliability of cause of death statistics.

16. Cause of death. The availability of mortality data for small political subdivisions has helped in delineating health problems and formulation of relevant policies. The subnational data on cause of death has enabled health planners to focus on specific morbidity conditions of different communities, and even ethnic groups. Road accidents, violence and suicides continue to be important causes of death among young adults in some countries. However, the assessment of the gravity of the situation would be pure speculation unless figures are available from a vital registration system.

17. Other aspects. For planning public housing, information on birth, death and marriage rates is useful. Private sector uses vital statistics to project demand for consumer goods in various parts of the country. For example, high birth rate in one particular state or province indicates high demand for diapers, baby food, baby clothes, etc.

Evaluation

18. In addition to monitoring of the progress made in achieving the goals of a policy, specific evaluation is required of the action programmes. Since the major focus of population policies has been rapid population growth arising from high fertility and low mortality, most population programmes essentially consisted of family planning programmes. In this section the discussion relates to the evaluation of family planning programmes.

19. For evaluating any programme, attention must be paid to inputs and the outcomes which manifest achievements. The evaluation of the inputs, i.e. utilization of resources, distribution of supplies and the like is important as a feedback for improving the programme performance. However, the evaluation of the impact of the programme require indicators of the output. In the case of family planning programmes it is the trend in fertility measured by an appropriate variable, such as total fertility rate. Thus vital statistics play an important role in understanding the impact of family planning programmes.

20. However, simple time series of a fertility indicator is not enough since part of changes in fertility can be attributable to factors other than the family planning programme. For that reason, various approaches have been developed for assessing the impact of family planning programmes. These includes, among others, standardization approach, component projection approach and multivariate areal analysis. The application of these methods is facilitated by the availability of vital registration data, which constitute as important factors among the many which are required for the analysis. For example, the standardization approach requires information on crude birth rate, age-specific marital fertility rates, age distribution of married women, as well as on several other variables. The multivariate areal analysis would have a sound foundation if reliable data on fertility and other demographic and socio-economic are able for communities and localities. No doubt the evaluation exercises require more information than vital statistics, but the latter constitute as the core of analysis for which the use of estimated data based on questionable assumptions would not be conducive to an effective evaluation.