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**AFRICAN WORKSHOP ON STRATEGIES FOR ACCELERATING THE IMPROVEMENT
OF CIVIL REGISTRATION AND VITAL STATISTICS SYSTEMS
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**USES OF VITAL STATISTICS IN
DEMOGRAPHIC ANALYSIS**

BY

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INTRODUCTION

1. According to the United Nations, the most important vital events which could be utilized to measure population changes and could also be used for administrative and legal purposes are: live births, deaths, marriages and divorces.¹ The focus in this paper on the uses of vital records in African countries would, however, be restricted to two events: births and deaths.

2. In this context, a civil registration and vital statistics system has been defined as, "... the total process of (a) collecting, by registration, enumeration, or indirect estimation, of information on the frequency of occurrence of these events, as well as relevant characteristics of the events themselves, and of the persons concerned, and (b) compiling, analyzing, evaluating, presenting, and disseminating these data in statistical form."²

3. The discussion of the uses of vital records pertaining to live births and deaths will be confined to those generated through continuous, permanent, compulsory recording of their occurrence and characteristics.

4. It has been noted that civil registration and vital statistics systems are maintained principally because of the value of the legal documents that they produced along with the statistical uses of their products. During the past three decades or so, with socio-economic developments that are occurring in all African countries, vital records have assumed great importance because of their actual and potential, legal, administrative and statistical uses.

1. United Nations, Principles and Recommendations for a Vital Statistics System. Statistical Paper Ser. M. No. 19, Revil, sales No. E.73. XVII. 9, New York.

2. Idem

Non-statistical uses of Vital Records³

5. Records from the civil registration and vital statistics system have a number of uses. Before a review of the uses for demographic analysis, a brief discussion of the uses for non-statistical uses follows in this section.

6. One important legal evidence pertaining to individuals which vital records provide is proof of identity. Legally inscribed items on the register of birth relating to the name of the person, his parentage, ancestry and lineage, have long been recognized since the establishment of civil registration systems, as legal proof of identity. Considering the value of this function of birth certificates, the International Covenant on Civil and Political rights adopted by the General Assembly of the United Nations resolution 1386 (XIV) in November 1959, stated that: "The child shall be entitled from his birth to a name and nationality".

7. Another important legal evidence which vital records provide is nationality or citizenship. Nationality and citizenship are contingent on the place of birth. Proof of nationality is required in order to enter or leave one's country of birth, to qualify for voting rights, to obtain a passport, to be employed as a civil servant; to own property.

8. Proof of age or date of birth is required for the establishment of rights to privileges such as being allowed to enter school, or to obtain permission to work in certain occupations and the civil service.

³. Nora P. Powell, The Conventional Vital Registration System, Laboratories for Population Statistics, Scientific Report Series, No. 20 (April 1975).

9. Death records are used to establish evidence relating to claims for inheritance of property, to insurance claims on deceased persons, to the right of surviving spouse to remarry and, in certain countries, to family allowances.

10. The death records could also be used to identify persons who die as a result of infectious and epidemic diseases in order to initiate control measures.

11. The records can be used in criminal investigations in cases where death is suspected to have occurred from causes other than natural ones. They are also used in campaigns geared at accident and crime prevention.

12. The causes of death records are important source records in medical research on the aetiology of patterns and causes of death by age and sex and other socio-economic and cultural characteristics.

Demographic uses of Vital Statistics⁴

13. In African countries, vital statistics from civil registration/vital statistics systems could be used in three ways: (a) for policy making, that is, to form the basis for policy guidance, planning and projections; (b) for administration, that is, to monitor current demographic trends and action programmes; and (c) for research, that is, to support the scientific study of the interrelationship between fertility and mortality trends and socio-economic development.

⁴. Committee on Population and Demography, Collecting Data for the Estimation of Fertility and Mortality (Washington D.C., 1981), Report No. 6, Powell, op.cit.; and UN, op.cit.

a) Policy making and projections

14. Data from civil registration/vital statistics systems could be used to update bench mark demographic statistics pertaining to a region or a country on a continuous basis. During intercensal intervals, five or ten years, data on the number of births and deaths recorded could be utilized, within the framework of the balancing equation, with adjustment made for net migrations. The same data source facilitates classifications of the population by sex and age.

15. Apart from providing population estimates, the data from civil registration/vital statistics systems could be used as inputs in the preparations of demographic projections. Based on past trends of natality and mortality along with assumptions of future trends, future prospects of population size, distribution and characteristics could be derived.

16. Population estimates and projections (national, subnational and sectoral) play important roles in the integration of population factors in socio-economic development plans and programmes, as well as for making provision for e.g., food, health, employment, education and housing sectors.

17. In addition, statistics on the size, distribution and characteristics of the population are necessary to provide social and demographic profiles of regions and countries.

b) Administrative/Monitoring uses

18. The demographic profiles of African countries is characterized by high population growth rates as a result of high fertility and high but falling mortality rates. Against this background, the Dakar/Ngor Declaration suggested demographic targets mainly based on fertility and mortality (see box 1). The periodic monitoring of

BOX 1

African governments should (a) integrate population policies and programmes in development strategies, focussing on strengthening social sectors with a view to influencing human development and work towards the solution of population problems by setting quantified national objectives for the reduction of population growth with a view to bringing down the regional natural growth rate from 3.0 to 2.5 percent by the year 2000 and 2 percent by the year 2010.

Source: Dakar/Ngor Declaration on Population, Family and Sustainable Development, Third African Population Conference, Dakar, Senegal, December 1992 (Addis Ababa: UN-ECA, 1993)

fertility and mortality trends is, therefore, an important exercise for African countries in assessing progress towards the Dakar/Ngor targets along with national requirements. To this end, data on births and deaths on a continuous basis could form an important data input in the monitoring of population trends.

19. As well, data from civil registration/vital statistics systems could be used in making decisions on the establishment of demographic related projects and programmes (eg. on family planning services). Estimates of the levels and trends of fertility and mortality and other demographic indicators could be used in making the decisions to establish such projects as well as for monitoring the impact of interventionist strategies aimed at moderating trends.

20. Birth registrations are necessary for the efficient functioning of some public health programmes such as after-birth care for mothers, immunization and vaccination programmes.

Studies of the Interrelationship between Demographic Trends and Development Planning

21. Studies on the complex interrelationship between demographic trends and socio-economic development could also draw upon data from civil registration/vital statistics systems. A classification of research areas on this topic has been suggested.⁵

- a) The social, cultural and economic determinants of population variables in different developmental and political settings at the micro and macro level;
- b) The demographic and social process, occurring within the family cycle, through time and space and alternative modes of development;
- c) Methods for the development of systems of social, demographic and related economic statistics in which various data sets are interlinked with a view to improving insight into the relationship of variables;
- d) The construction of economic-demographic models to investigate the direct and indirect effects of population policies and the interdependence between patterns of population change and patterns of development.

22. The Programme of Action of the Cairo International Conference in Population and Development emphasized this topic. It stated that: "At the international, regional and local levels, population issues should be integrated into the formulation, implementation, monitoring and evaluation of all policies relating to sustainable development. Development strategies must realistically reflect both the short, medium and long-term implications of, and consequences

⁵. Powell, op. cit.

for, population dynamics as well as patterns of production and consumption".

23. Research covering subject areas delineated by the Dakar/Ngor Declaration such as population, sustained economic growth and sustainable development, fertility and family planning, mortality, morbidity and AIDS, and women in development could also utilize data from civil registration and vital statistics systems.

Comparative Advantages of Data Collection Systems for providing Vital Statistics Information⁶

24. Civil registration/vital statistics systems cannot satisfy all national and international, demographic uses of vital statistics described above. Two other demographic data collection systems - population censuses and sample surveys - are alternative sources of this information. Moreover, data from the three systems could be employed to cross check accuracy and completeness of coverage of each other. That, African countries should collectively employ all three systems for their requirements of vital statistics since they complement each other, is amply demonstrated by the short review that follows which reviews the advantages and disadvantages of the three system.

25. Table 1 summarizes the main advantages and disadvantages of the three systems.

a) Civil registration/vital statistics system

26. The civil registration/vital statistics system involves, as has been mentioned above, the legal registration, statistical recording and reporting of the occurrence of, and the collection, compilation, analysis, presentation and distribution of statistics

⁶. Committee on Population and Demographic, op. cit.

pertaining to vital events (eg. births and deaths). The registration method consists of the continuous, permanent, compulsory recording of the occurrence and characteristics of vital events in accordance with the legal requirements in each country.

27. The main advantages and disadvantages of a fully working CR/VS system include:

- a) It generates current vital states; and
- b) Data can be tabulated for many local geographic areas.

The main disadvantages are:

- a) a very demanding data collection system to establish and operate, since it should detect the occurrence of vital events at whatever time and place they take place; and
- b) can collect only a limited amount of background variable about households and/or persons whose vital events are being investigated.

Table 1: Sustainability of Various Techniques for Detecting Births and Deaths, classified by Data Collection Method

TECHNIQUES	DATA COLLECTION METHOD		
	Population census	Civil registration	Sample survey
a) Contemporary recording of each event	No	Yes	No ^a
b) Retrospective questions about each event	Yes, but very limited ^b	Generally not applicable ^c	Yes
c) Questions about cumulative number of events	Yes, but limited ^d	Yes, in the case of fertility (parity)	Yes
d) Aggregate population data classified by age and sex	Yes	Generally not applicable ^e	Yes
e) Household change technique	No	Not applicable	Yes

- ^a Some variations of a sample survey may include a continuous recording operation in sample areas or monthly or more frequent interviewing that approaches notions of contemporaneous recording. However, most sample surveys do not use this technique.
- ^b Suitable only for a question relating to events in the last 12 months or the date of the most recent event. Totally unsuited for a full birth history. (Sometimes indirect estimation techniques can be applied to census data to construct better estimates.)
- ^c Although by definition CR/VS systems involve the contemporaneous recording of each event, limited information on past fertility can be ascertained, for example, from a question on birth order.
- ^d Often not feasible to use the recommended full battery of six questions (i.e., living in household, living elsewhere, born alive but now dead, each separately for males and females).
- ^e Although CR/VS systems do not collect aggregate population data, it is possible to use CR/VS data to tabulate births by age of mother, deaths by age and sex, etc.

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Table 2: Some Advanges and Limitations of Civil Registration Systems, Population Censuses and Sample Surveys

Data Collection Method	Advantages	Limitations
Civil Registration System	<ol style="list-style-type: none"> 1. Data can be tabulated for many local geographic areas. 2. Detailed cross-classifications often not subject to sampling error. (See foot-note a in Table 1) 3. If properly functioning, provides contemporaneous reporting for substantially all events regardless of household status. 4. Institutional continuity. 5. Well-suited for providing both long-term and short-term time series. 	<ol style="list-style-type: none"> 1. Need for separate estimates of population at risk. 2. Limited range and depth possible in the collection of data on classifying variables. 3. Relatively inflexible to changes in content and procedures. 4. Very difficult to administer and supervise (because extensive in both time and space). 5. Difficult to establish occurrence of events when births and deaths (or knowledge of them) are not associated with individuals who can serve as informants (for example, health workers or religious personnel).

<p>Population Census</p>	<ol style="list-style-type: none"> 1. Data can be tabulated for many local geographic areas. 2. Detailed cross-tabulations are not subject to sampling errors for complete-count items (except when arriving at inferences - see footnote a in Table 1) and are subject to relatively low sampling errors for sample items. 3. Simultaneously obtains information related to enumerated events and population at risk. 4. useful for time series covering long periods of time. 	<ol style="list-style-type: none"> 1. Infrequent. 2. Limited range and depth possible in the collection data on fertility and mortality as well as on classifying variables. 3. Information on "flow" variables (for example, income, births, deaths) and data from proxy respondents are subject to increased levels of response error. 4. Persons not at their usual place of residence are subject to high non-response rates (a lesser problem in de facto censuses). 5. Comparatively difficult to control conditions of observation (because it is extensive in space). 6. Costly and massive in scale, so relatively inflexible.
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<p>Sample Surveys</p>	<ol style="list-style-type: none"> 1. Simultaneously obtains information related to enumerated events and population at risk (with the exception of surveys conducted as parts of dual-record systems). 2. Topical flexibility (that is, the depth and range of topics investigated can be altered relatively easily). 3. Conditions of observation are subject to control in a well-designed and administered survey because of the limited geographic scope of collection operations (that is, because a sample is employed). 4. Relatively easy to initiate given availability of a survey-taking infrastructure. 5. Can be useful for time-series analysis, given comparability in data collected. 	<ol style="list-style-type: none"> 1. Inability to produce estimates for local areas. 2. Detailed cross-classifications are subject to large sampling errors. 3. Information on "flow" variables (for example, income, births, deaths) and data from proxy respondents are subject to increased levels of response error. 4. Coverage for the nonhousehold population is very poor and it varies markedly for those who are not members of a primary family (for example, members of secondary families, secondary individuals and distant relatives of the house-hold head). 5. Comparisons over time of estimates based on different ad hoc surveys are subject to many uncertainties. 6. Requires close supervision of field work.
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Population Censuses

28. A population census has been defined as the total process of collecting, compiling, evaluating, analysing and publishing or otherwise disseminating demographic, economic and social data pertaining to all persons in a country or in a well-delimited part of the country at a specified time. Basically, a census attempts to provide three types of information, namely: (a) how many persons within a defined geographical unit? (b) the numbers in particular categories (eg. children, men, women; school-age, working-age, etc), and (c) the rate of growth of the population.

29. The advantages and disadvantages of a population census as a demographic data collection system are enumerated below.

Advantages

- i) Census data provide the opportunity for tabulation for various geographic units big or small.
- ii) Provides information which can be used to estimate both enumerated events and population at risk.
- iii) Census data can be used to form time series data base that are ten-year apart.

Disadvantages

- i) Census operation is infrequent, usually ten years apart, thus need for intercensal information.
- ii) The exercise is usually costly, given the massive size of the operation.
- iii) Not usually possible to collect information on particular items in detail.

Demographic Sample Surveys

30. Information is collected by this method from a subset of the population regarded as made up of individuals, households or areas. Two major types:

- i) The single round retrospective survey (SRRS).
- ii) The multi-round interview survey (MR).

31. In SRRS, each respondent is interviewed only once. Since demographic and economic parameters are usually measured for periods as long as a year, retrospective questions are included in SRRS, using a reference period of 12 or 24 months.

32. On the other hand, the multi-round survey involves at least two rounds of interviews, separated by a given time period. During the initial interview, just as in SRRS, the composition and other characteristics of the household are recorded, with changes noted in subsequent visits. The SRRS is susceptible to errors of omission and dating because of the use of retrospective questions with long recall periods. This disadvantages of the SRRS is minimised by the use of a shorter recall period in multi-round surveys. The advantages and disadvantages of demographic sample surveys as instruments for collecting demographic data are given below.

Advantages

- i) It provides the opportunity to collect information on a specific subject in greater detail and flexible time frequency, given the small-scale of the operation, than is possible in a census.
- ii) Quality control is possible, because of the limited geographic scope of collection operations.
- iii) Relatively easier to plan and implement compared with a census operation.

Disadvantages

- i) Inefficient in producing information on smaller geographic areas.

ii) **Cross-classifications may be subject to large sampling errors.**

iii) **To produce good result, field operation requires to be closely supervised.**