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United Nations Expert Group Meeting on  
International Standards for Civil Registration  
and Vital Statistics Systems  
27 – 30 June 2011  
New York

**Use of population censuses and household sample surveys for vital statistics  
in South Africa<sup>1</sup>**

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<sup>1</sup> The text is presented without formal editing.

## **1. Introduction**

1. Population censuses and household sample surveys are the two primary sources of demographic data, particularly in the majority of African countries where civil registration systems are not functioning well. Population censuses are undertaken every ten years in most countries whereas household sample surveys may be taken at regular intervals, sporadically or once-off, depending on the needs of each country. Other sources of demographic data include population registers and movement or migration control systems and other administrative records.
2. Data from civil registration systems remain the best source of vital statistics. However, majority of the countries in Africa do not have well-functioning civil registration systems, and as such, are unable to produce vital statistics from these systems. Population censuses and household sample surveys have thus been used in these countries to provide vital statistics.
3. Vital statistics in South Africa are mainly derived from population censuses and household sample surveys. This paper will address the uses of these sources for vital statistics in the country, how they meet the core vital statistics requirements and how they can be used to complement register-based statistics. The paper will focus on information from the 1990s based on information on vital statistics collected by Statistics South Africa (Stats SA). Stats SA is mandated by the South African government to collect, produce and disseminate official and other statistics, including conducting population censuses.

### **Population Censuses**

4. South Africa has a long history of census undertaking, dating back to the 18th century, although “the modern census began in 1911”<sup>2</sup>. The most recent censuses in the country were undertaken in 1996 and 2001. These two censuses are regarded as “the only all-inclusive censuses that Statistics South Africa has thus far conducted under the new democratic dispensation”<sup>3</sup>. Plans are underway to carry the next population census in October 2011. Table 1 shows the information on vital statistics collected during the 1996 and 2001 population censuses as well as questions that will be asked during the upcoming 2011 census.

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<sup>2</sup> Khalfani, A.K., T. Zuberi, S. Bah and P.J. Lehohla. 2005. *Population Statistics* in Zuberi, T, A. Sibanda and E. Udjo (eds.). The Demography of South Africa, M.E. Sharpe, Inc., New York

<sup>3</sup> Statistics South Africa. 2007. Community Survey, 2007 (Revised Version), Statistical Release P0301, Statistics South Africa, Pretoria.

**Table 1: Changes in the collection of vital statistics information in the South African population censuses, 1996-2011**

Vital event	Census year		
	1996	2001	2011
Births	Total number of children ever born	Total number of children ever born	Total number of children ever born
	Number of children surviving	Number of children surviving	Number of children surviving
	Date of birth of first child		Number of children living elsewhere
	Births in the past 12 months		Number of children dead
		Date of birth of last-born child	Age at first birth
Deaths	Survival status of mother	Survival status of mother	Survival status of mother
	Survival status of father	Survival status of father	Survival status of father
		Survival status of last-born child	Survival status of last-born child
		Deaths in the past 12 months	Deaths in the past 12 months
		Deceased died from accident or violence	Deaths due to natural or non-natural cause
		Month and year of death	Month and year of death
		Deceased died while pregnant or within 6 weeks after delivery (females of reproductive age)	Deceased died (i) while pregnant; (ii) during birth; (iii) within 6 weeks of delivery (females of reproductive age)
			Date of death of last-born child
Marriages	Present marital status <sup>4</sup>	Present marital status	Present marital status
Divorces	Present marital status	Present marital status	Present marital status

<sup>4</sup> Divorced and separated category combined in the questionnaire

5. The following observations are made:
- The number of questions pertaining to vital statistics increased from one census to the other, coupled with improvements in asking information on certain questions (e.g. asking the maternal mortality questions in three questions in 2011 as opposed to one question in 2001);
  - The total number of children ever born and surviving as well as the survival status of the parents were asked in all three censuses;
  - Inclusion of the cause of death question in 2001 and 2011;
  - Similar questions were asked differently, e.g. date of birth of first child in 1996 and age at first birth in 2011; and
  - Responses for present marital status in 1996 combined divorced and separated as one category while those from 2001 and 2011 provided them as two separate categories.

### **Household sample surveys**

6. Stats SA undertakes a number of sample surveys in economic, social and population statistics. Between 1994 and 1999, Stats SA undertook the October Household Survey (OHS) which was an annual national household survey covering a range of development indicators including health and vital statistics.

7. The OHS was replaced with the General Household Survey (GHS) which has been undertaken by Stats SA annually since 2002. The aim of the GHS is to collect data to determine the level of development in the country and the performance of programmes and projects on a regular basis.

8. The third main survey on population statistics at Stats SA is the Community Survey undertaken in 2007, serving as an intercensal survey. The CS is the largest survey that has ever been carried out by Stats SA and collected data on population size, composition and distribution; migration, fertility and mortality; disability and social grants; school attendance and educational attainment; labour force; and income.

9. Table 2 shows the information on vital statistics collected from the three main surveys undertaken by Stats SA from 1994. Clearly the collection of vital statistics differed for the three surveys. However, the CS collected information that was more detailed on vital statistics and very similar to the Census 2011 questions. Basically no information was collected on vital statistics from the annual GHS.

**Table 2: Collection of vital statistics information in the Stats SA household surveys, 1994-2010**

Vital event	Type of survey		
	October Household Survey (1994-1999)	General Household Survey (2002-2010)	Community Survey (2007)
Birth	Children ever born Survival status of child Birth registration status	Pregnant past 12 months Status of pregnancy	Total number of children ever born  Number of children surviving Number of children living elsewhere Number of children dead
Death	Age of child at death Deaths in the past 12 months Death registration status Cause of death (natural, accident, violence) Survival status of parents		Survival status of last born child Survival status of mother Survival status of father Deaths past 12 months Month and year of death Cause of death (unnatural, natural) Deceased died while pregnant or within 6 weeks after delivery
Marriages	Marital status <sup>5</sup>	Present marital status	Present marital status
Divorces	Marital status	Present marital status	Present marital status

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<sup>5</sup> Divorced and separated category combined in the questionnaire

10. Other government departments, academic and research institutions have also undertaken household based surveys that collected information on vital events. For example, the Department of Health undertook the 1998<sup>6</sup> and 2003<sup>7</sup> Demographic and Health Surveys which collected a range of questions on vital statistics.

## **2. Use of population censuses and household sample surveys for vital statistics**

11. As indicated in Section 1, Stats SA has collected information on vital statistics from population censuses and household sample surveys in South Africa. The information has been used for vital statistics as follows:

- i. Census data serve as denominators in the calculation of vital rates and ratios for vital statistics investigated during the census. That is, information is available on different measures of mortality and fertility from the census data, for example, crude death and birth rates.
- ii. The census data has been used as a base population from which population projections are made. Mid-year population estimates by age, sex, province and population group are produced annually by Stats SA using census data as the base population for the projections. The projections can be used as denominators for vital rates and ratios from vital statistics obtained from other sources such as the civil registration system. For example, crude birth and death rates were calculated based on data on births and deaths from the civil registration system, using the projected population size as the denominator. There are initiatives to provide mid-year estimates at district council level. A discussion document has been prepared in this regard to seek inputs from other experts on the way forward.
- iii. The numbers of births and deaths, including the number of deaths due to AIDS were also estimated based on the census data as well as secondary data from the Department of Health on the HIV prevalence data collected annually from pregnant women attending public antenatal clinics<sup>8</sup>.
- iv. Census and survey data have been used to evaluate the completeness of information on deaths and births from the civil registration system:
  - a. Census data on mortality were used to evaluate the completeness of deaths data from the civil registration system. Using the mid-year population

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<sup>6</sup> Department of Health, Medical Research Council, OrcMacro. 2002. South Africa Demographic and Health Survey 1998. Pretoria: Department of Health.

<sup>7</sup> Department of Health, Medical Research Council, OrcMacro. 2007. South Africa Demographic and Health Survey 2003. Pretoria: Department of Health.

<sup>8</sup> Statistics South Africa. 2011. Mid-year population estimates, 2010, Statistical Release P0302. Statistics South Africa, Pretoria.

- estimates and applying Preston and Hill<sup>9</sup> method, it was estimated that death registration in South Africa in 2008 was 81%.
- b. Community Survey data on fertility were used to evaluate the completeness of births data from the national population register. Birth registration for 2009 was estimated as 91% complete. The Community Survey was used as a base population to project the number of births in 2009 from which the completeness of birth registration was estimated.
  - v. The Census and Community Survey data on mortality (infant, child and maternal mortality) have been used to monitor the development indicators in the country including the Millennium Development Goals.
  - vi. Using indirect demographic techniques, the Community Survey data were also used to estimate the levels of fertility at national, provincial and district council levels<sup>10</sup>.

12. Essentially, in the absence of complete registration of births and deaths from the civil registration system, censuses and household sample surveys have been used in South Africa to provide information on fertility and mortality. Over time, information has been provided at national, provincial and district levels which has been very useful for planning and monitoring at sub-national levels. However, due to the limitations of data from these sources, indirect estimation techniques had to be applied.

### **3. How censuses and household sample surveys meet the core vital statistics requirement**

13. The core vital statistics requirements include the collection, compilation, processing, analysis, evaluation and dissemination of statistics on live births, deaths, infant deaths, marriages and divorces; guided by the principles of universal coverage, continuity, confidentiality and regular dissemination.

14. Population censuses in South Africa had complete coverage of all population groups from 1996, with limitations as with population censuses undertaken in other countries. The information from the censuses, which included information on vital statistics has been compiled, processed, analysed, evaluated and disseminate widely. Confidentiality is maintained at all stages of data collection, processing and dissemination. The results are disseminated widely using different types of media (e.g. printed reports, web and compact discs). However, not all core vital statistics requirements are met by the South African census:

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<sup>9</sup> Preston, S. and K. Hill. 1980. "Estimating completeness of death registration", *Population Studies*, 34 (2): 349-366.

<sup>10</sup> Statistics South Africa. 2010. Estimation of fertility from the 2007 Community Survey of South Africa. Report No. 03-00-04. Statistics South Africa, Pretoria.

- Vital statistics produced are limited to births and deaths.
- Information on marriages and divorces is collected based on the present marital status of the respondent at the time of the census. Since information on the date of marriage or divorce is not collected, we are not able to know when these events occurred and when they were registered, as such cannot determine the number married or divorced in the country per year.
- In the past, divorces were combined with separations in one category thus making it impossible to get the number divorced or separated individually.
- Information from the census is not continuous – enumeration took place in 1996 and 2001 and the next one will take place in 2011. Therefore, seasonal, monthly, quarterly or annual information on vital statistics is not available.

15. The household surveys are also affected by the above mentioned limitations. While the October Household Surveys were conducted annually and collected some information on vital statistics, this information is not collected in the General Household Survey. There has been no complete consistency in the collection of vital statistics over time such that comparison of fertility and mortality rates is not necessarily consistent.

16. Detailed profile of cause of death information is not available from the population censuses or household sample surveys.

#### **4. How censuses and household sample surveys complement register-based statistics**

17. Register-based vital statistics in South Africa include data from the national population register and health services records. Annually, Stats SA publishes statistical releases on Recorded Live Births, Marriages and Divorces, and Mortality and Cause of Death. The births and marriages data are obtained from the national population register; mortality and causes of death from the civil registration system; and divorces from forms completed upon issuance of divorce decree at the Department of Justice and Constitutional Development.

18. Census and household sample surveys information has been used to complement register-based statistics for the calculation of birth rates and for the estimation of completeness of birth registration. Crude marriage and divorce rates have also been calculated using census data or projections as denominators.

19. Information on deaths from the national population register is usually used in the publication on mortality and causes of death to check the completeness of deaths from the civil registration system. Data from the population register only include information on South African citizens whose births have been registered as well as non-citizens with permanent residence permits. As such, the number of deaths from this source should

always be lower than the number of deaths from civil registration system which includes all registered deaths that occurred in South Africa as well as those of South Africans who die abroad. The number of deaths over time from both sources is compared.

20. Vital statistics information from health services records is not published by Stats SA but has been used for evaluation and interrogation of data from the national population register. The number of births recorded in public hospitals as well as immunization statistics have been used to evaluate the completeness of births from the population register.

## **5. Conclusion**

21. Population censuses and the Community Survey have been the main sources of data for vital statistics in South Africa. They have also been used to complement statistics derived from the civil registration system and the population register, mainly for estimating the completeness of death and birth registration, respectively. However, these two sources do not completely meet the core vital statistics requirements. Consideration is being made in South Africa to start utilizing information from the civil registration system to provide official vital statistics.