

## Rapid surveillance of AIDS mortality in South Africa

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### Background:

Despite the fact that about 85% of deaths are registered in South Africa (Dorrington, Moultrie and Timæus, 2004), the cause of deaths statistics cannot be relied upon to provide an accurate picture of AIDS mortality due to misclassification of HIV as a cause of mortality. This plus the fact that release of these data was delayed for a number of years at the start of the HIV/AIDS epidemic lead to the establishment of a “rapid mortality surveillance” project to monitor the basic details of deaths registered in South Africa, making use of the national population register of South Africans.

### Methods:

A database of deaths of people who are on the South African population register has been compiled based on monthly reports from the Department of Home Affairs. Sex was extracted from the unique identity number and age was calculated from the dates of birth and death. An algorithm was developed to identify the deaths caused by unnatural causes based on information recorded in text about the manner of death. The age distribution of the deaths of adult males and females (15 years and older) for the period 2000 – 2008, was compared with the ASSA2003 model (<http://www.actuarialsociety.org.za>), as well as data from Statistics South Africa (the compiler of ICD-10 coded mortality data).

### Results:

To date there have been more than 5.3 million deaths since the start of the project in 1998, 48% of which are female. The numbers of deaths on the Population Register increased through to 2004, after which the growth appears to have stagnated. The increase is particularly marked for young adult ages and differs for men and women (Figure 1 & 2). Comparison with data from Statistics South Africa, show the same age pattern of deaths, suggesting that no significant biases are introduced by rapid surveillance (Figure 3). Comparison with estimates from the ASSA2003 model confirms the pattern by age but indicates lower numbers of deaths being observed than projected by the model in the most recent years (Figure 4). As can be seen from Figure 5 part of the increase in the numbers is due to an increase in completeness of the population register, but not so for ages 25 and older. The trend in natural deaths differs by age group and by sex (Figure 6 & 7). The dotted line shows the estimated trend without treatment effect.

### Discussion:

Monitoring AIDS mortality is a routine matter based on established vital registration systems in developed countries. These systems provide cause of death statistics

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based on certification by medical practitioners, pathologists or coroners. However, in South Africa, vital statistics is not yet able to be used to monitor AIDS mortality directly (Groenewald et al, 2005). The Population Register database provides rapid information regarding the changing age pattern in deaths in South Africa. The clear pattern in the increase of deaths by age and the fact that the increase occurred in the natural causes, provide a useful measure of the state of the HIV/AIDS epidemic. The fact that the increase has levelled off or even reversed in some ages suggests that HAART is having an impact. The impact of AIDS differs by sex, which is consistent with available information about access to the HAART. Although the completeness of death registration requires further assessment, it is clear that a large part of the slowdown in the increase in mortality is consistent with the impact of HAART. The results indicate that further modelling work is needed on the ASSA model to reconcile the roll-out of ART and mortality trends as well as new data on HIV prevalence.

**Conclusions:**

The deaths on the Population Register between 2000 and 2004 show a continuous rise in the number of adult deaths and a rapidly changing age profile and a possible slow down in the rate of increase. These data are clearly helpful in monitoring the impact of AIDS on mortality, but they are unable to provide reliable numbers of AIDS deaths on their own. Essential data are needed for monitoring programmes implemented to reduce the impact of the epidemic. The burden of mortality in South Africa is still extremely high – and preventing the spread of the epidemic is critical.

**References:**

Dorrington RE, Moultrie T, Timœus IM. Estimating mortality using the South African Census 2001 data. Monograph 11. Cape Town: UCT Centre for Actuarial Research. 2004.

<http://www.commerce.uct.ac.za/Research%5FUnits/CARE/Monographs/Monographs/Mono11.pdf> (accessed on 22 October 2007).

Groenewald P, Nannan N, Bourne D, Laubscher R, Bradshaw D. Identifying deaths from AIDS in South Africa. *AIDS*. 2005 Jan 28;19(2):193-201.

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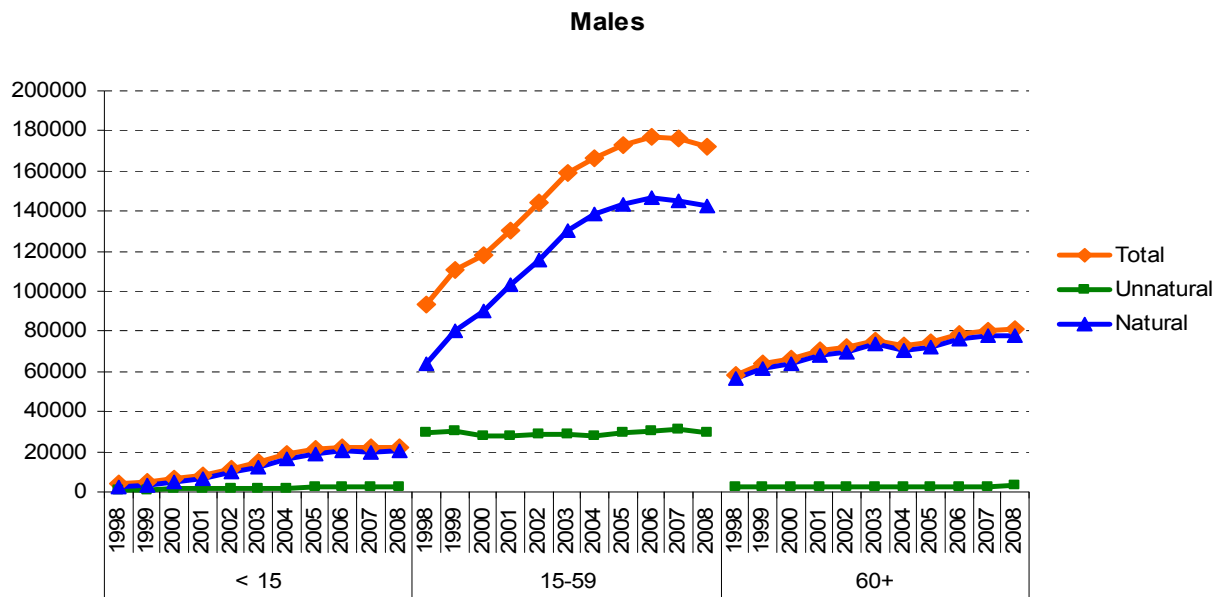


Figure 1 Number of deaths by year for three age groups (<15, 15-59, 60+): Males

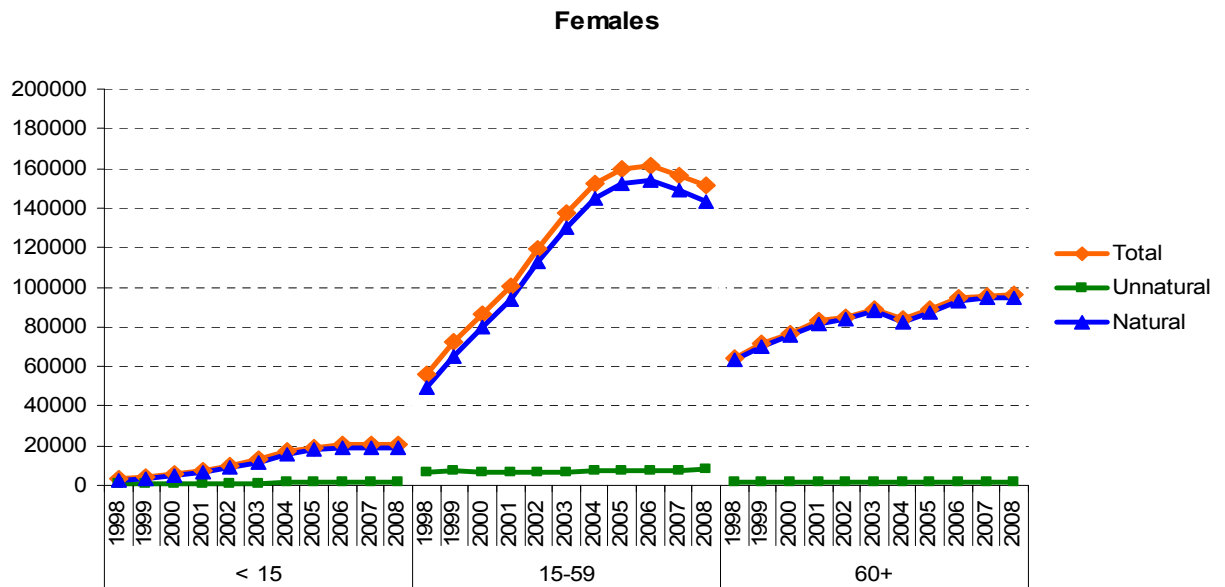


Figure 2 Number of deaths by year for three age groups (<15, 15-59, 60+): Females

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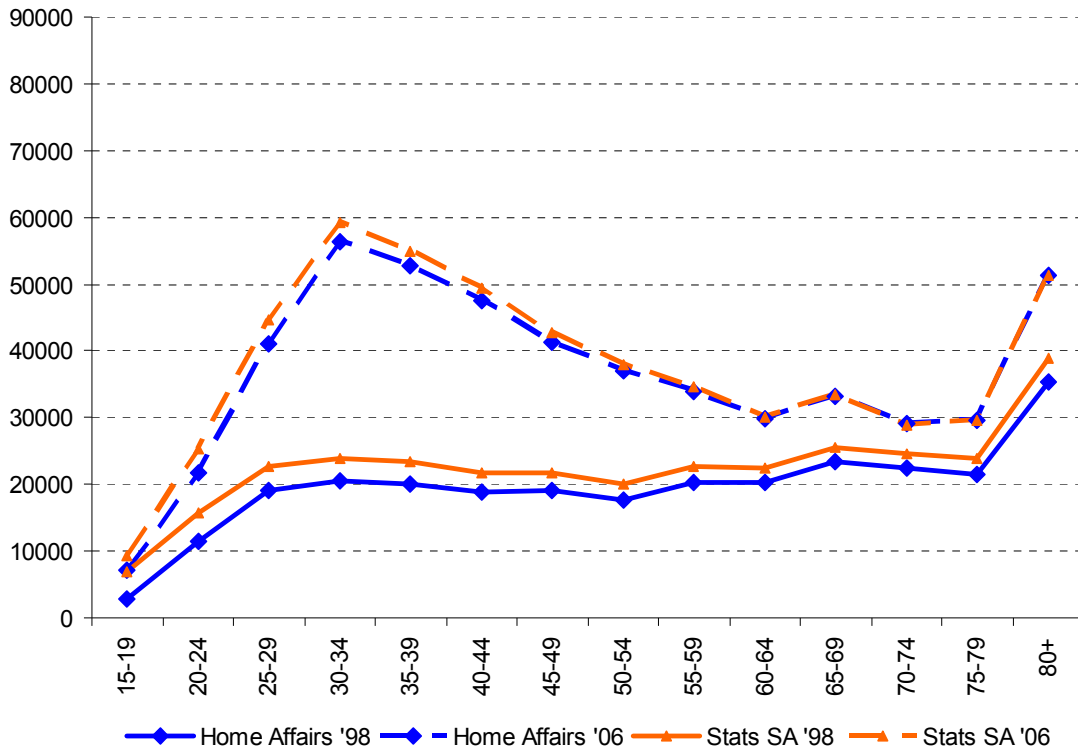


Figure 3 Comparison with data from Statistics South Africa, 1998 and 2006, combined males and females, 15 years and older

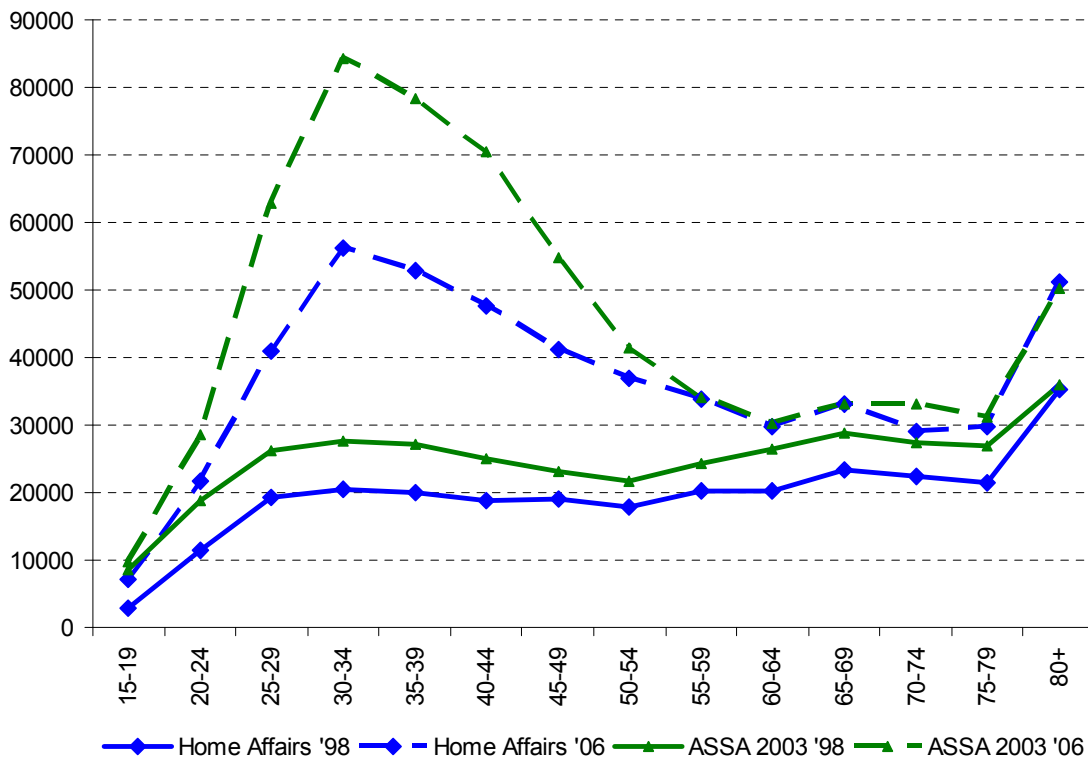


Figure 4 Comparison with data from ASSA 2003 model, 1998 and 2006, combined males and females, 15 years and older

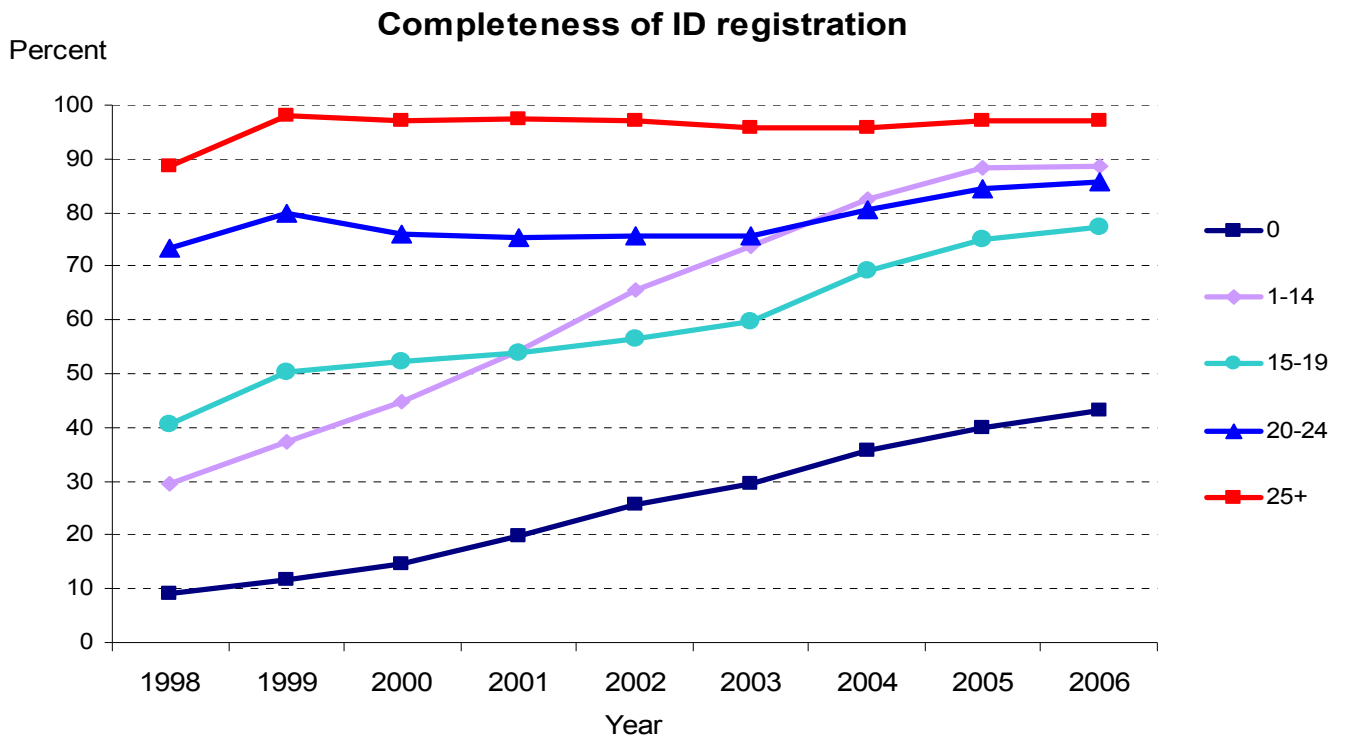


Figure 5 Completeness of the population register by age over time

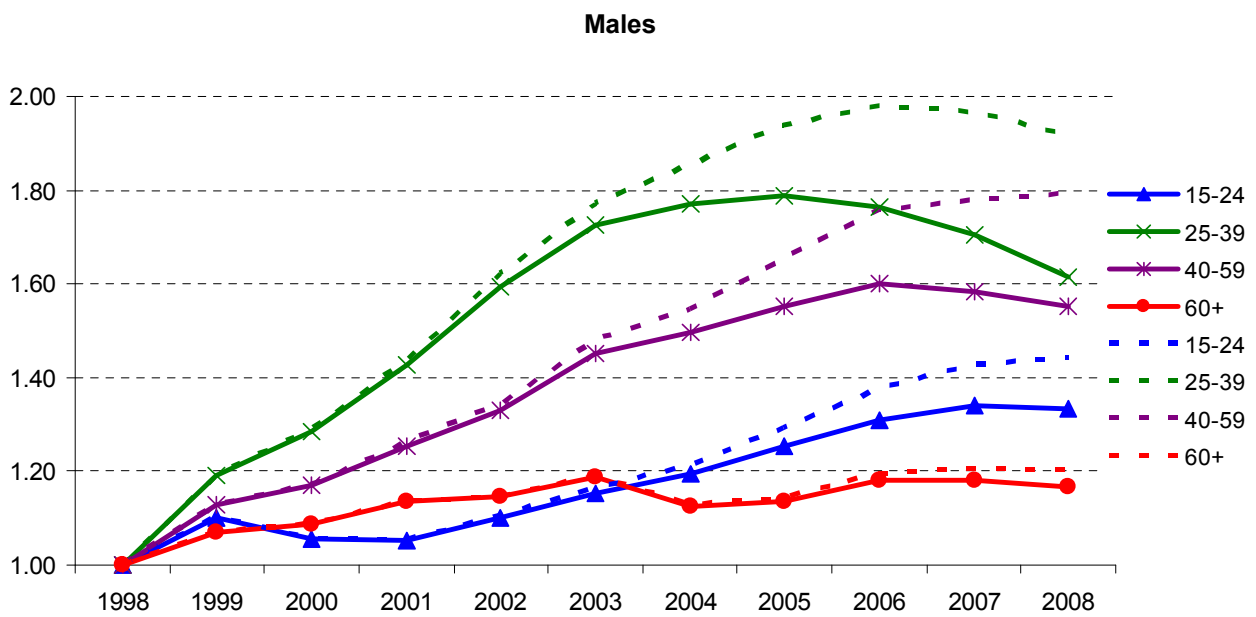


Figure 6 Ratio of number of deaths to those in 1998: Males

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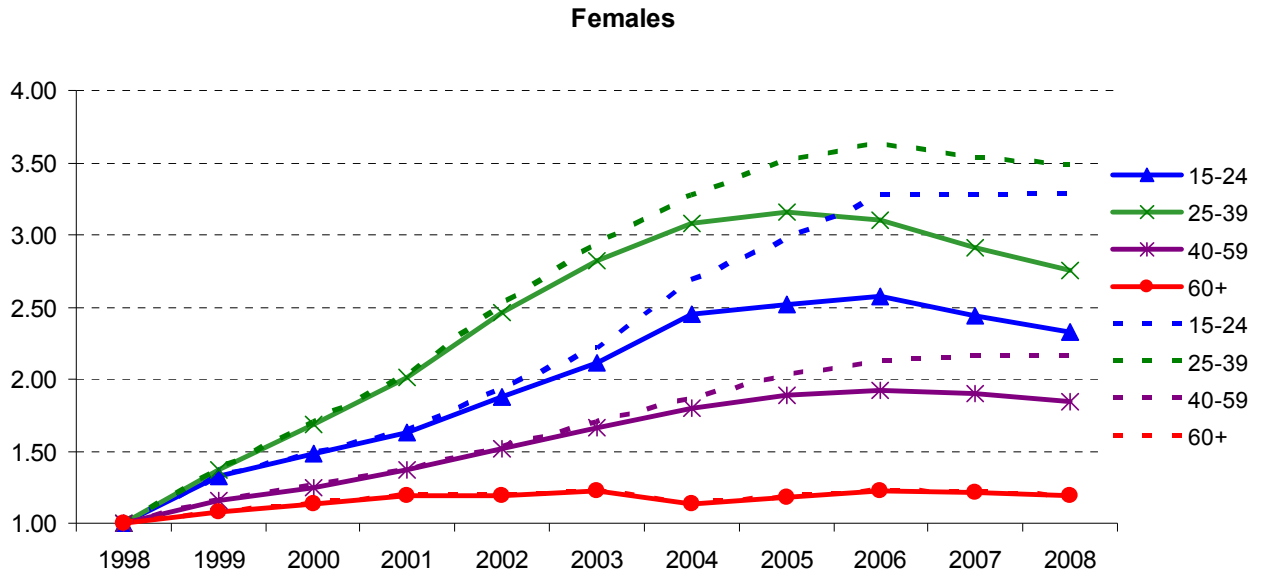


Figure 7 Ratio of number of deaths to those in 1998: Females

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