# Childhood mortality trends in rural South Africa: an investigation using demographic surveillance data

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***Background***

Global trends have shown substantial declines in childhood mortality. The decline has been attributed to improvements in a range of factors known to impact on child health such as improvements in nutrition, housing conditions, environmental conditions and development of health services and factors related to socioeconomic conditions.

South Africa is one of the countries in the southern Africa region that has witnessed reversals in the gains made in child mortality since about 1992. Although South Africa experienced major social changes including considerable restructuring of the health system prior to and during this period, much of the increase in childhood mortality has been attributed to mother to child transmission of HIV.

The Africa Centre Demographic Information Surveillance (ACDIS) is situated in KwaZulu Natal, a large province on the eastern seaboard of South Africa has been under ongoing surveillance since 2000. A baseline survey collected retrospective birth history information from women in 2000 was linked to socioeconomic status data as measured in the form of household assets to provide information on the level of childhood mortality and the associated factors. The trend in overall under-five mortality replicated the national picture except the mortality was higher in this rural population. The data showed that substantial declines in childhood mortality during the 1980's were experienced by children aged 1-4 as well as the post-neonatal period. The reversals that began in the early 1990's were most pronounced in the post-neonates, and by the year 2000 the

increases in all child mortality indices had not plateaued. Modeling the child mortality rates showed that while there is variation in mortality associated with household wealth measured by household assets, more of the mortality differential is accounted for by water, sanitation and mother's education. This analysis however was limited by the fact that the data were collected retrospectively.

Since this initial 2000 census, the inhabitants of the ACDIS area have been subject to longitudinal recording of vital events - pregnancy, births, deaths and in/out episodes of migration on a twice yearly basis. Information on the probable cause of death utilizing the verbal autopsy instrument are also collected with the aim of generating cause-specific mortality data in the area which suffers from incomplete cause of death information.

***Aim***

The prospective data from 2000 up until the end of 2003 provide the opportunity to describe the trends in the age pattern of childhood deaths as well as the trends in the cause of death profile and the role of seasonality in under-five mortality in this rural area.

***Methods***

- Life table analysis has been used to explore the level of mortality and the age pattern of death rates from the event history data collected prospectively and is compared with the retrospective estimates from the birth history.
- Cause specific mortality rates are calculated using the verbal autopsy information categorised into broad groups using the Burden of Disease classification.
- Month of child deaths has been used to investigate the impact of seasonality on mortality rates.

***Preliminary Results***

Estimates of annual mortality rates indicated an increased rate followed by a drop**,** but averaged over a four year period there was no change in the under-5 mortality rate (Table

1). It would appear that post-neonatal rates have declined while child mortality (1q4) rates increased.

Table 1: Comparison of child mortality indices from retrospective and prospective data

| **Mortality rate (per 1000 live births)** | **Retrospective 1997-2000** | **Prospective 2000-2003** |
|---|---|---|
| **Neonatal** | 17 | 15 |
| **Post-neonatal** | 59 | 50 |
| $\mathbf{q_0}$ | 75 | 64 |
| $\mathbf{{}_1q_4}$ | 28 | 39 |
| $\mathbf{q_5}$ | 101 | 100 |

During the period 2000-2003, there was little change in the infant mortality rate and the causes of death were predominantly HIV and other infectious diseases and peri-natal conditions (Figure 1). In contrast the mortality of 1 to 4 year old children showed an increase and peaked in 2002. The trend appears to be largely due to HIV. Monthly trend in the number of deaths indicates a strong winter peak of infant deaths and much less seasonality in the 1-4 year old deaths (Figure 2).

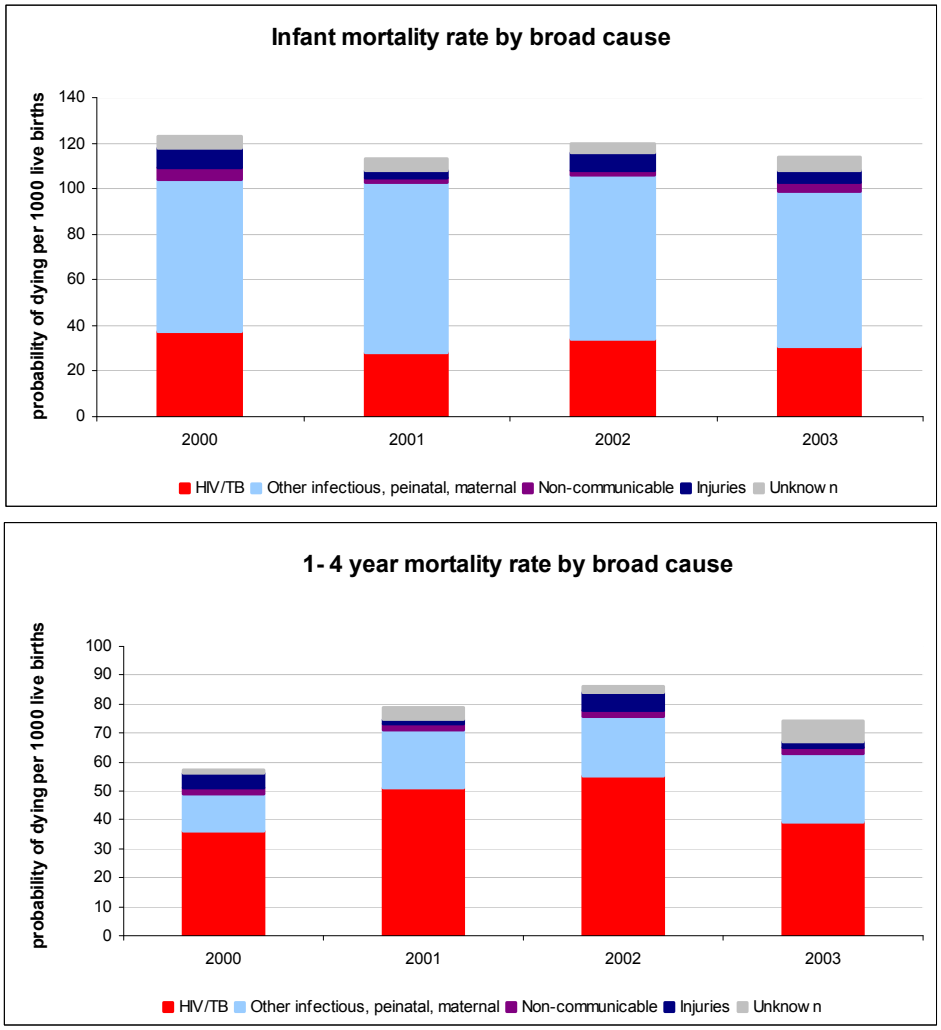


Figure1: Trend in cause specific mortality rates for infants and children 1-4 years old, 2000-2003

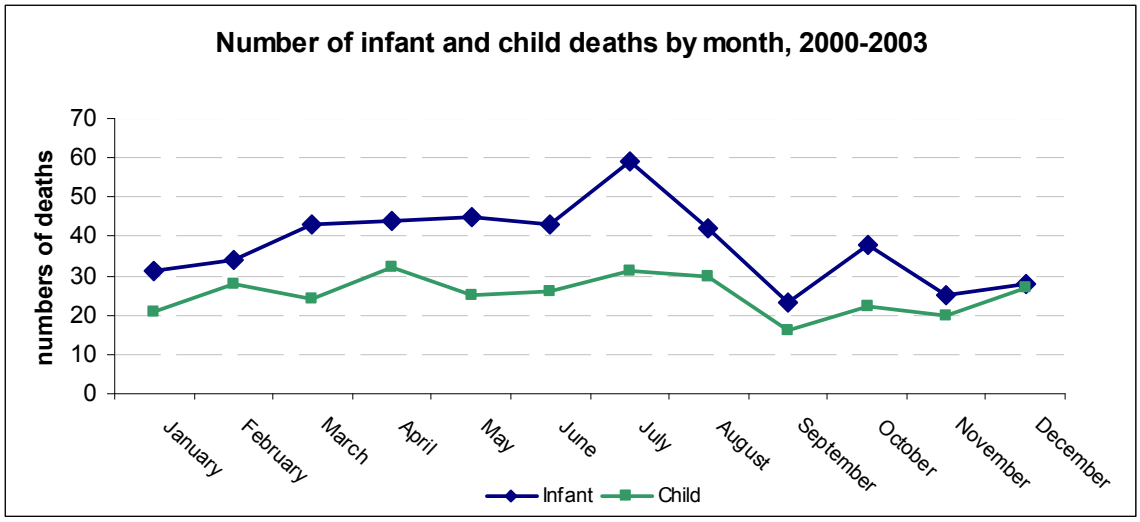


Figure 2: Trend in number of infant and children 1-4 year old by month, 2000-2003