Deciding whether the excess deaths (over and above what would have been expected on the basis of 1985 mortality rates) are due to HIV/AIDS is obviously difficult in the absence of accurate information as to the cause of death. A number of alternative explanations have been proposed for these patterns of death[31].We examine each of these in some detail below to show that none offer a plausible alternative. Following this we cite additional evidence in support of our interpretation.

Alternative explanation

Several alternative explanations for the observed pattern of mortality change have been suggested.

(a) The 1990 death statistics are not geographically comparable with those of 1999/2000 and the addition of more rural African deaths could account for the change in the patterns of observed mortality.

The adjustment we have made for under-reporting in the 1990 data covers both under-reporting within the former RSA and the missing TBVC homeland data. As can be seen in Figures 14.1 and 14.2, while the adjustment affects the overall number of deaths, it does not significantly alter the age pattern of adult deaths in 1990, and hence the missing rural African deaths could not account for the observed change in pattern of mortality.

Figure 14.1: Age distribution of total male deaths (5 years and older), reported and corrected for under-reporting for 1990

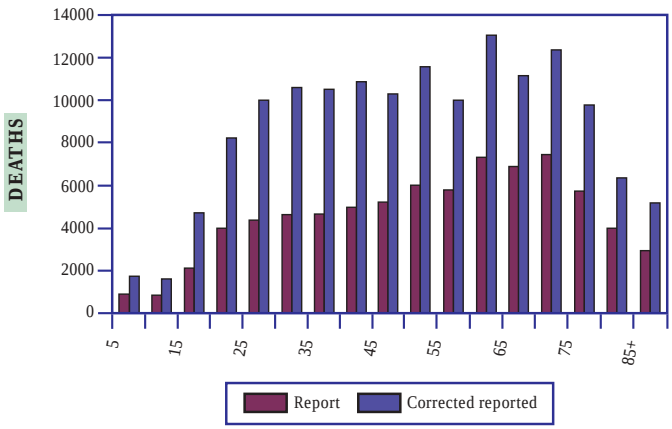
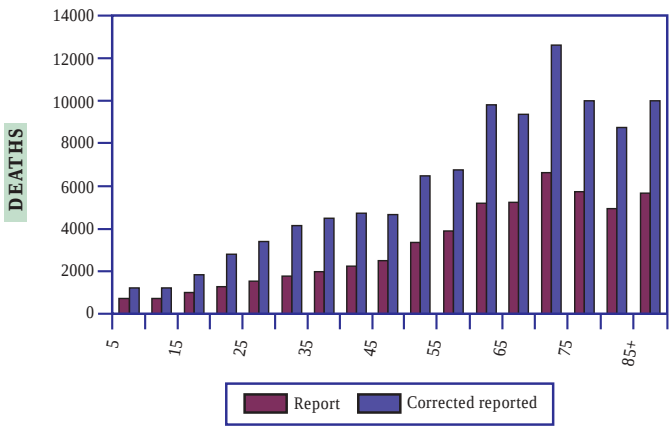


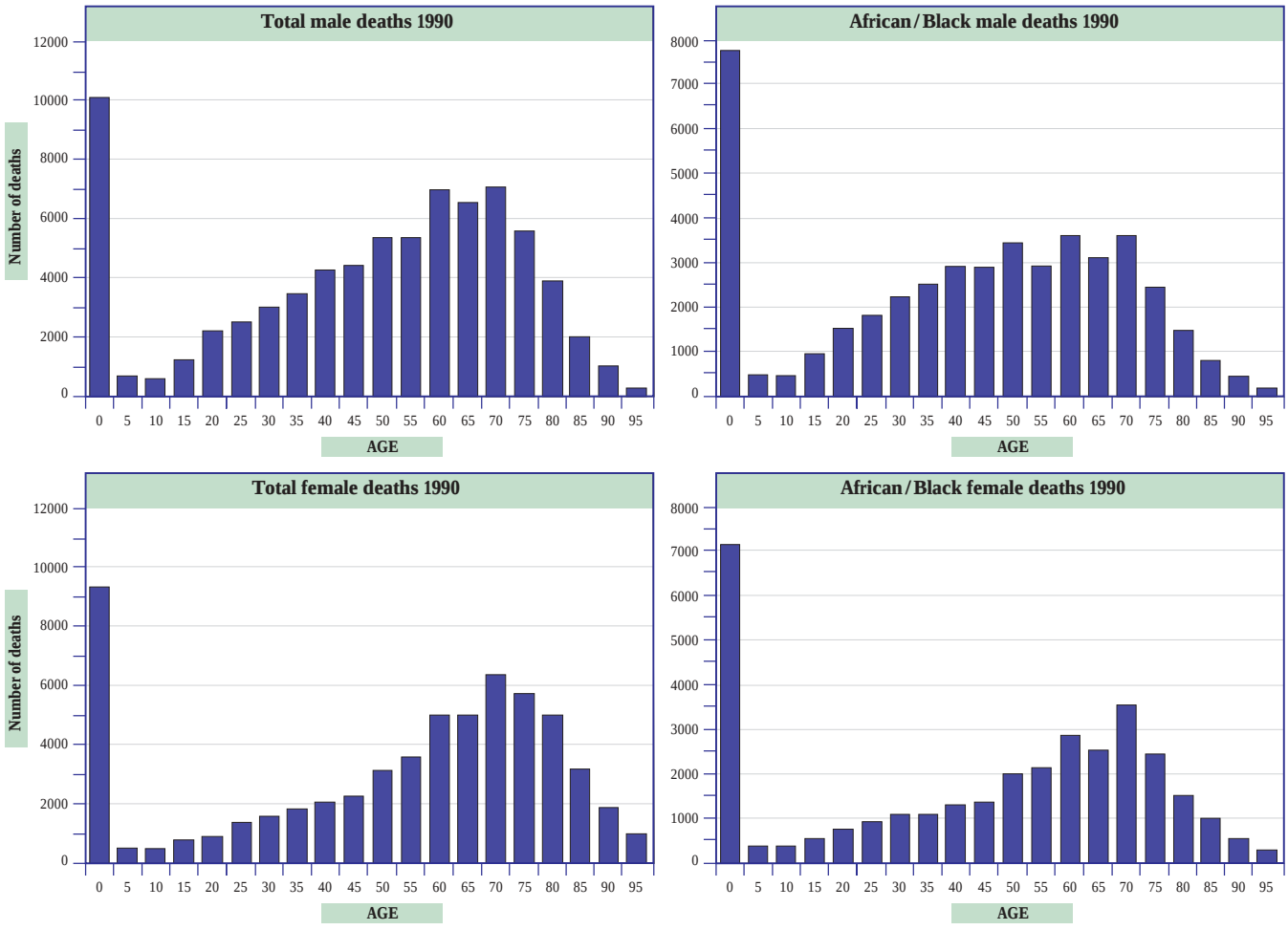
Figure 14.2: Age distribution of total female deaths (5 years and older), reported and corrected for under-reporting for 1990



(b) *The age distribution of deaths among Africans and those among non-Africans are different. The age distribution of the African population is younger than that of the other population groups and deaths of Africans therefore occur at younger ages than those of the other population groups. Since the 1990 data under-represented Africans, this could account for the difference between the patterns in 1999/00 and 1990.*

It is true that, on the whole, deaths in Africans tend to occur at younger ages than those of the other population groups. This is as a result of Africans' shorter life expectancy and the age structure of the population. However, the age distribution of the deaths of Africans in 1990 shows the mode for the adult deaths is still in old age for both men and women. Thus the under-representation of Africans cannot account for the differences observed in 1999/2000, particularly in the case of females, where the age distribution of adult deaths has become bi-modal and the peak for the younger adults is higher than the peak for the older women. In the case of men, the mode of the adult deaths has shifted from the older ages to the younger ages. Furthermore, the age distribution of the people living in the homelands is biased towards the very young and the very old, making it unlikely that inclusion of them in the statistics could explain the relative increase among young adults. Figure 15 shows the age distributions for the deaths reported in 1990 and the African deaths reported in 1990. Comparing these with the deaths recorded on the register in 1999/2000 it is clear that the 1999/00 profile is indeed a drastically new profile.

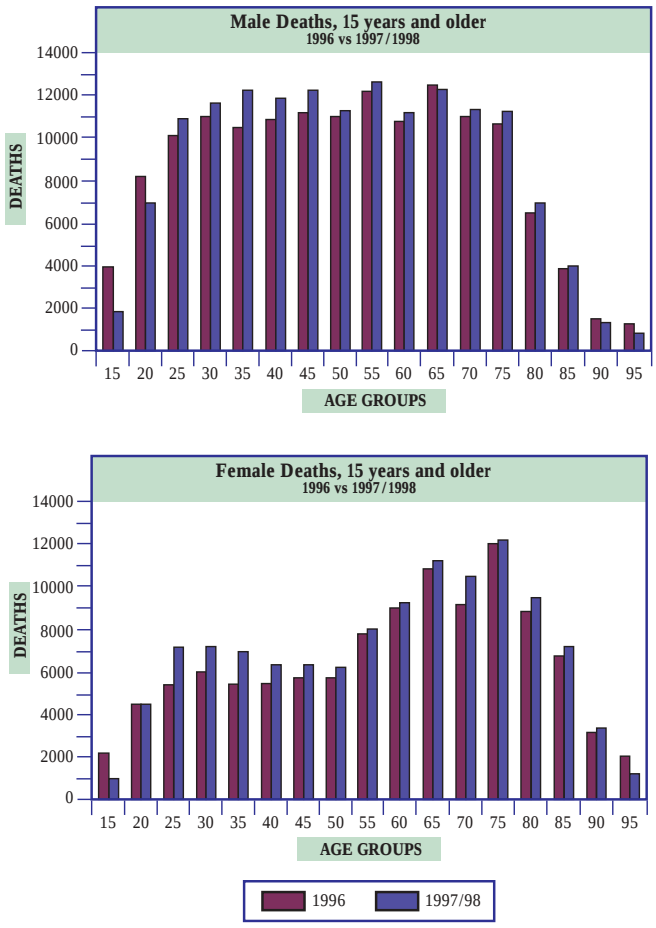
Figure 15: Age distribution of total reported and African/Black reported deaths 1990



(c) *The latest data are derived from a different source from that of the earlier data and this may cause a bias.*

The break between the Stats SA and DHA data series occurs between 1996 and 1997/98. There is currently no period of overlap between the data sources which would enable a definitive comparison between the two. However, the data for 1996 from Stats SA and the data for 1997/98 from DHA (Figure 16) exhibit a very consistent age pattern for both men and women. The DHA data contain fewer deaths in the two younger age groups, which can be ascribed to the large numbers of young persons who have not yet obtained an ID document. This has been taken into account in the estimates of the rates.

Figure 16: Comparison of 1996 Stats SA deaths and Home Affairs 1997/98 deaths



(d) *The change in mortality is caused by political violence.*

Figures compiled by the SA institute of Race Relations[32], from contemporary newspaper reports and monitors (not from official mortality data) illustrate the rise and fall of deaths from political violence in South Africa (including the TBVC states) during the period covered by this report (Table 7). The number of deaths from political violence had declined to the level of a decade earlier by the time that AIDS deaths begin to emerge.

Table 7: Deaths from political violence in South Africa (including TBVC states) [32]

1985	879
1986	1298
1987	661
1988	1149
1989	1403
1990	3699
1991	2706
1992	3347
1993	3794
1994	2476
1995	1044
1996	683
1997	470

Discussion

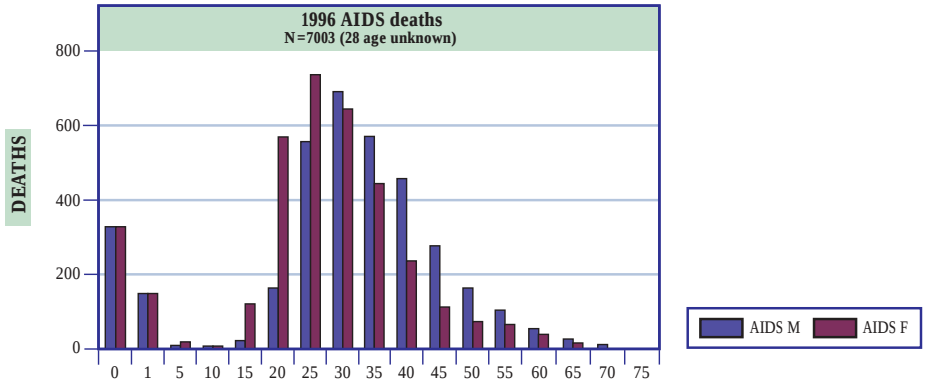
Additional supporting evidence

Additional evidence supporting the hypothesis of increased AIDS deaths among the young adults can also be found in the following:

(i) *Age distribution of reported AIDS deaths*

The age distributions of the AIDS deaths recorded by Stats SA in 1996[12] are presented in Figure 17. While there is clear under-reporting of AIDS deaths, the age distributions are in agreement with the ASSA600 model, with female deaths peaking at 25-29 years and males peaking at 30-35 years.

Figure 17: Age distribution of reported AIDS deaths, South Africa 1996 [12]



(ii) *The confidential enquiry into maternal deaths*

The 1999 confidential enquiry into maternal deaths of the Department of Health[33] states:

"The impact of the AIDS epidemic is clearly demonstrated, AIDS being the commonest cause of maternal death at all levels of care in South Africa".

The report further states that only 35.5% of maternal deaths had previously undergone HIV testing, but 68% of these were positive. Although it is unlikely that this was a randomly chosen sample, such high prevalence is a strong indication of an association between HIV and maternal deaths.

(iii) *Data from Durban cemeteries*

The numbers of burials in Durban cemeteries has increased dramatically in recent years (Table 8). According to the Director of cemeteries and crematoria for the Durban North and South Central area, in the early 1990s most of the people buried were victims of violence, but since 1996 the trend has changed with most of those being buried being young people who died from a short natural illness[34].

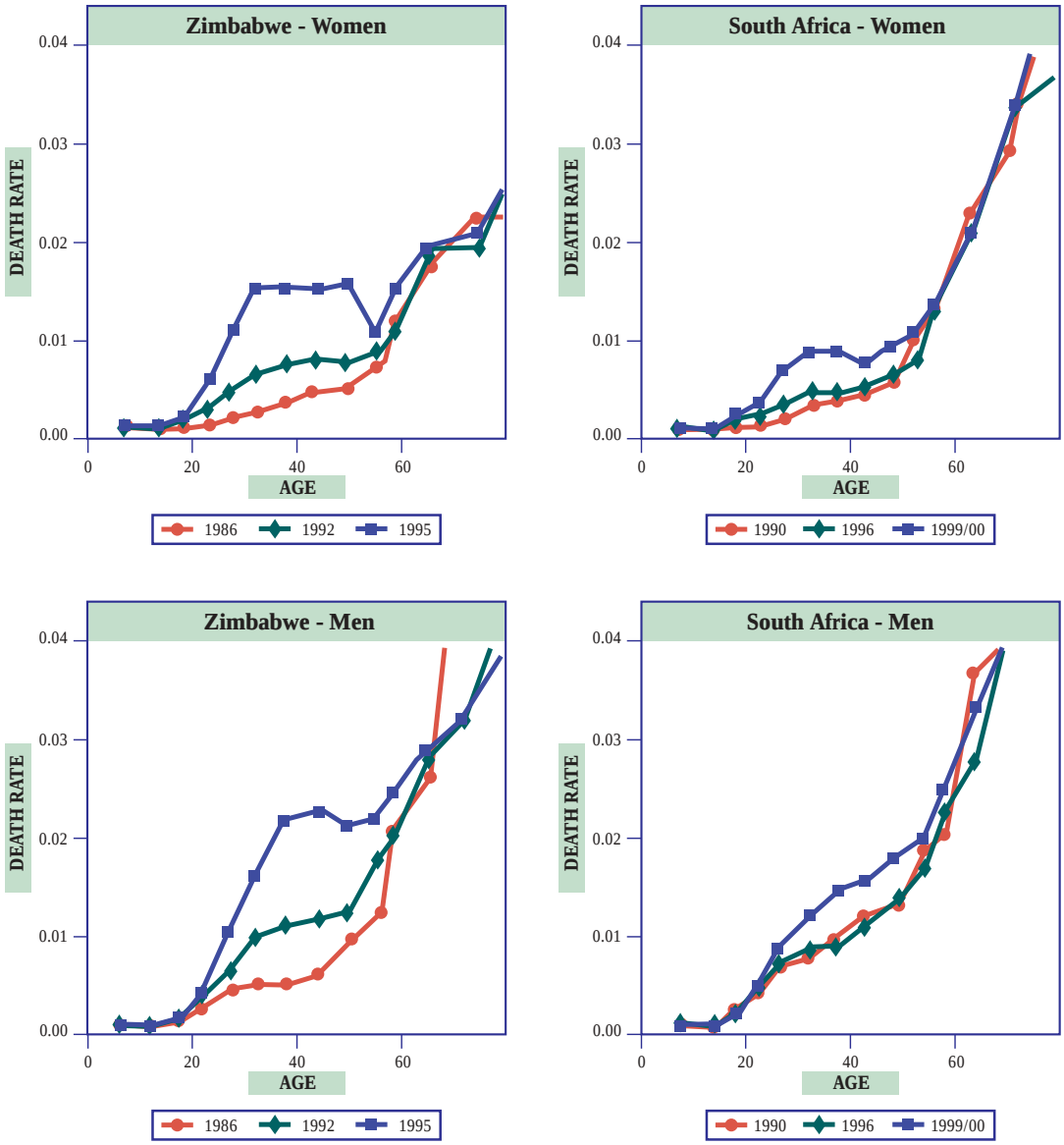
Table 8: Burials in Durban cemeteries and crematoria

1996/7	5678
1997/8	6476
1998/9	11427
1999/0	13323

(iv) *Comparison with mortality in Zimbabwe*[35]

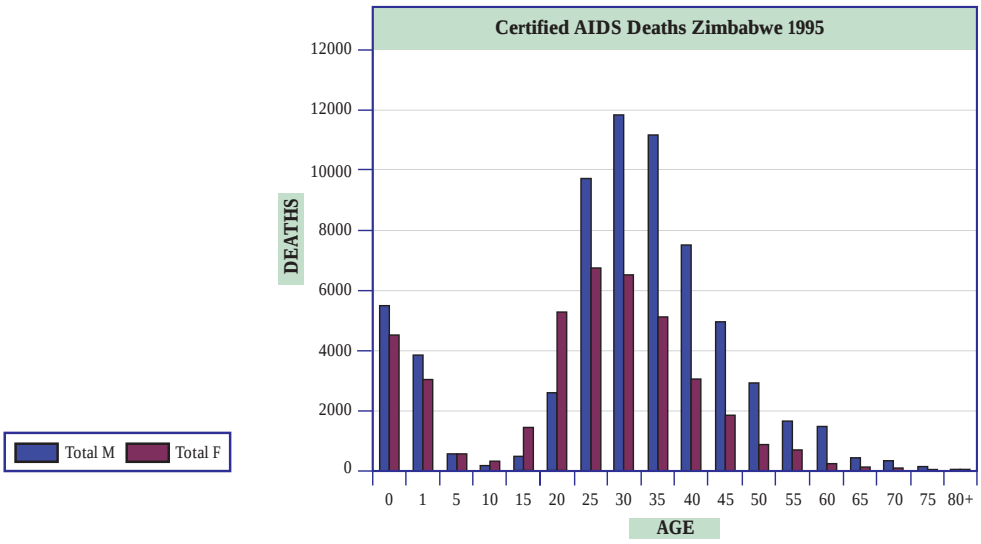
From Figure 18 we can see that the pattern of mortality rates in South Africa is consistent with those in Zimbabwe some eight years earlier.

Figure 18: Comparison of corrected mortality rates, Zimbabwe 1986 to 1995 and South Africa 1990 to 2000[36,17]



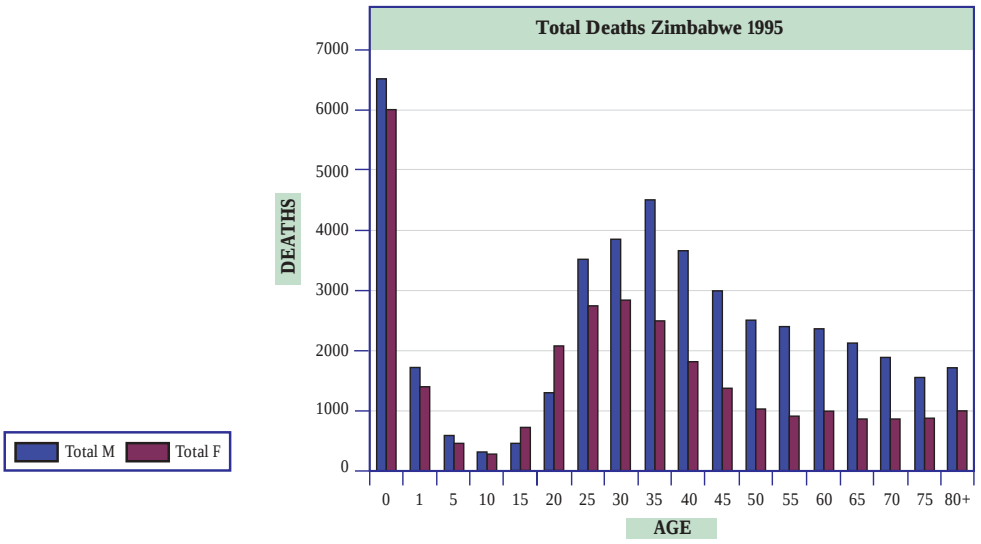
From Figure 19 we see that the pattern of certified AIDS deaths in Zimbabwe is entirely consistent with the excess deaths being projected in South Africa by the model, with the peak in the 25-29 year age group for females and five years later for males, and with a longer 'tail' for males (although male deaths exceed female deaths).

Figure 19: Age distribution of certified AIDS deaths, Zimbabwe 1995[35]



Although the certified AIDS deaths undoubtedly under-record AIDS mortality in Zimbabwe, the pattern of the total deaths there (Figure 20) is consistent with that from the ASSA model for South Africa some eight years further on. This is consistent with Figure 18.

Figure 20: Age distribution of total deaths, Zimbabwe 1995[35]



Considering these different sources of information, it seems highly probable that about 40% of the adult South African 1999/00 mortality in the 15-49 age group is due to HIV/AIDS.