Report on cause of death and premature mortality in the Boland-Overberg Region 2004-2005

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Burden of Disease Research Unit

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Copies of the report

Copies of this report can be downloaded from
www.mrc.ac.za/bod.bod.htm

or obtained from Wilna van der Merwe at wvdmerwe@pgwc.gov.za

Executive Summary

This report covers detailed cause of death data for the Boland Overberg region for the period 2004 and 2005. Mortality reports published by Statistics South Africa are not released below a national level. The information in this report has been collected directly from the offices of the Department of Home Affairs and supplemented by information collected from local mortuaries. The cause of death coding has been done by project staff.

Deaths are analysed by age, cause and gender. Premature mortality and age standardized rates are also calculated.. Data for broad cause groups is presented by sub district. Up to date population estimates for the area are also calculated.

Approximately 40% of all premature mortality in the region is due to homicide, tuberculosis, HIV/AIDS and road traffic accidents, all of which are preventable through a comprehensive primary health care approach which emphasizes promotive and preventative strategies, uses intersectoral collaboration effectively and seeks to promote equity.

Table of contents

List of tables

List of figures

Introduction

Timeous and accurate cause of death statistics are essential for planning and monitoring health services and responding to the health needs of the population. Such information is required for the process of prioritisation of not only health services, programmes and research, but also for guiding the priorities in other sectors. In particular, sub-population data are needed to identify and monitor inequalities in health status. While policy is directed from a national perspective, provincial and local governments are required to respond to the specific needs of their communities.

The Boland Overberg Region implemented a system for collecting mortality information from the Department of Home Affairs and local mortuaries in January 2004, using a system similar to that used in Cape Town. A mortality report for 2004 was produced in 2005[1] and is available online from www.mrc.ac.za/bod/bod.htm. This data, for the first time, provided a profile of the causes of death experienced in the health districts of the Boland Overberg Region. Similar to national experience,[2] a substantial impact of HIV/AIDS was observed, as well as a combination of infectious diseases, child mortality, and degenerative chronic diseases. A marked injury burden was also observed in these districts.

National vital statistics data have been reported up to the year 2004.[3] However, these are not available at geographical areas lower than provincial level, making it difficult for local health authorities to plan health services and identify major health problems. The Boland Overberg Region therefore implemented the mortality surveillance system that runs in Cape Town. After a review of the quality of the cause-of-death coding in Cape Town in the year 2000, a shortlist which met the public-health needs was implemented to improve the standardisation of coding between the municipalities.[4] The key findings from the analysis of the cause of death

statistics for Cape Town in 2001 were presented in a previous report,[5] which can be downloaded from www.mrc.ac.za/bod/bod.htm.

Data collected for 2004 and 2005 are presented in this report. As part of the Western Cape provincial project to reduce the burden of disease, efforts continue in making the information more useful for monitoring programmes in the area, as well as identifying new priorities. The report can be downloaded from www.mrc.ac.za/bod/bod.htm.

Methods and data quality

The Boland Overberg Region implemented a system for routinely compiling death statistics in January 2004. Local health authorities collect copies of death certificates from the Department of Home Affairs. The underlying cause of death is coded using a shortlist based on ICD-10[4], captured and processed by the local municipalities. The shortlist is adapted from the Cape Town list, which is based upon the most prevalent diseases in the area, as well as those of public-health importance. The list includes selected combinations of diseases such as HIV and TB, which are difficult to attribute to a single cause. The aim of the shortlist is to simplify the task of coding as well as to enable more detailed analysis of such data.

The mortality data for 2004-2005 were obtained electronically from the Information Management Section of the Boland Overberg Regional Health office in Worcester. The data were cleaned and analysed using Microsoft Excel and Stata. Stillbirths were excluded prior to any analysis. There were four deaths that were recorded, owing to exposure to fire (burning shacks), where the gender of the victims was unknown. These four deaths were then divided arbitrarily and equally among males and females. There were no duplicates and no invalid COD for age. The data are presented for the Boland Overberg Region, which includes the eastern half of the Cape Winelands District (called “Boland” in this report) and the Overberg District municipalities, and for each of the seven sub-districts within the Boland Overberg Region. Drakenstein and Stellenbosch are excluded, since the management of these municipalities has yet to be incorporated within the functions of the Boland Overberg Region.

After cleaning the data, the shortlist cause of death codes were aggregated according to the burden of disease classification.[6] These are categorized into three broad groups:

Group I consists of the pre-transitional causes: communicable diseases, maternal causes, peri-natal conditions, and nutritional deficiencies. (HIV/AIDS is considered part of Group I, but is kept separate in the South African National Burden of Disease analysis, owing to the size of the burden that it contributes in South Africa.)

Group II consists of the non-communicable causes, such as stroke and chronic obstructive pulmonary disease.

Group III consists of the injuries, including both intentional and unintentional.

Since the ill-defined categories of death do not provide information with regard to the underlying causes of death, they have been reallocated to the specified causes, in line with the burden-of-disease methodology for estimation. The deaths with unknown ages were redistributed proportionally by age and sex for each cause of death. The ill-defined cardiovascular deaths (heart failure) were redistributed proportionately by age and sex across rheumatic heart disease, ischaemic heart diseases, hypertensive heart diseases, pulmonary heart diseases and other cardiovascular diseases. The ill-defined respiratory deaths (respiratory failure) were redistributed proportionally by age and sex across chronic obstructive pulmonary disease, asthma and other respiratory diseases. The deaths coded to ill-defined natural causes were redistributed proportionally by age and sex across all pre-transitional and non-communicable causes. The undetermined injury deaths were redistributed proportionally by age and sex across all intentional and unintentional causes.

All cause and cause-specific, age-standardised mortality and premature mortality rates were calculated for the region as a whole and by sub-district. Population estimates for the Boland Overberg Region and sub-districts were obtained from the Provincial Health Information Directorate (Eugene Reynolds, pers. comm.). These estimates are based upon Census 2001 with population projections based upon Stats SA official growth rate until 2005 (see Appendices 1-3). The WHO world-standard population was

used for direct-age standardisation.[7] Confidence intervals for age standardised mortality rates were calculated using a Poisson approximation method, described by Boyle and Parkin.[8]

No adjustments have been made for under-registration of deaths. While most of the deaths are considered to be registered, there are some concerns about the completeness of the data, particularly for Overstrand in 2004 and Theewaterskloof in 2005. When compared with data from the population register, it was noted that - in Overstrand - many of the death certificates for unnatural deaths were missed by the routine surveillance system operating through Home Affairs. We subsequently compared the mortuary register with the surveillance database and collected any missing deaths from the register. We have no further information on the completeness of natural deaths. In 2005 there was a problem getting death certificates photocopied at the Caledon Home Affairs office and a number of death certificates were lost before another system was implemented. This appears to have affected Theewaterskloof particularly, see Table 1 below.

Table 1: Number of deaths by sub-district, Boland Overberg Region 2004 and 2005

Sub-district	2004	2005	% increase
Breede River winelands	675	744	10.2
Breede Valley	1253	1292	3.1
Witzenberg	713	803	12.6
Cape Agulhas	215	238	10.7
Overstrand	370	426	15.1
Swellendam	225	243	8.0
Theewaterskloof	780	557	-28.6
Total	4231	4303	1.7

When compared with the registered Home Affairs deaths at the Worcester and Caledon offices, the completeness is in excess of 100% as shown in Appendix 2. However, it is important to bear in mind that Home Affairs only registered deaths for people with identity numbers, whereas the mortality surveillance system records all deaths.

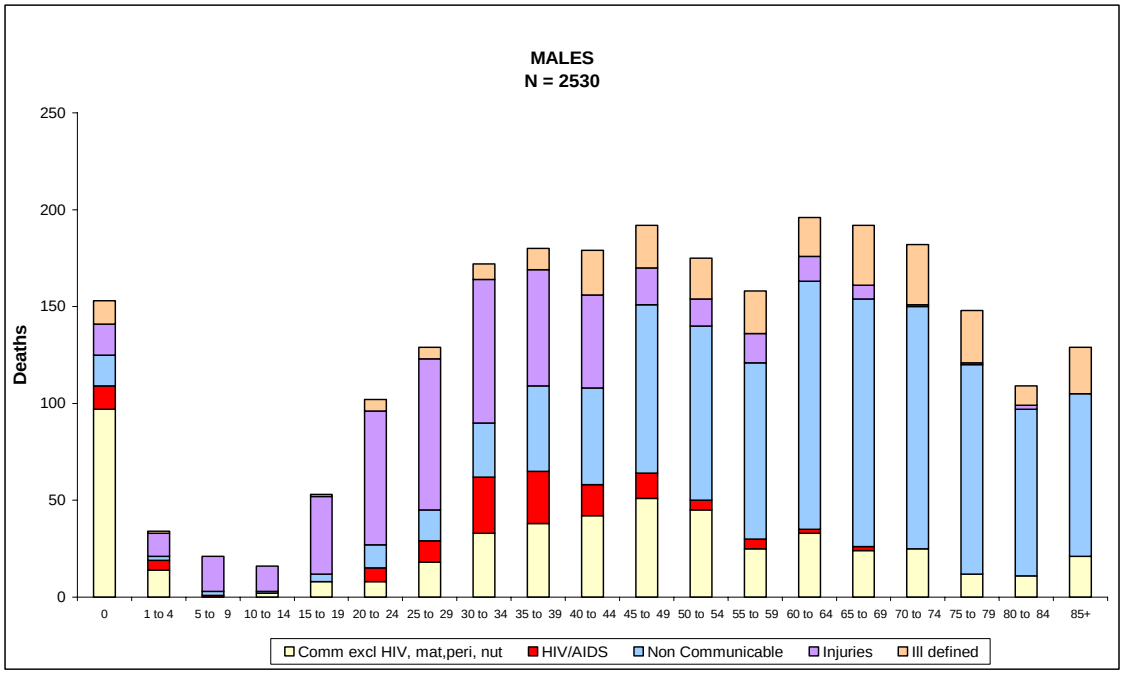
Overview of mortality in Boland Overberg

There were 4303 deaths in 2005 that were analysed. The majority of deaths (47.2%) are due to non-communicable diseases, with pre-transitional diseases accounting for 25.6% and injuries for 15.4%. deaths due to ill-defined causes account for 11.8%.

Boland has a larger proportion of deaths due to pre-transitional causes (28%) than Overberg (21%) and a lower proportion of non-communicable diseases (43.8 vs 53.8%). This is explained by the difference in age structure of the populations between the districts. Boland has a young population typical of a developing country while Overberg has an ageing population more likely to be affected by non-communicable diseases.

The age pattern of deaths for the Boland Overberg is shown in Figure 1. There are large differences between males and females with young adult males experiencing much larger numbers of deaths than females, mainly due to injuries. HIV/AIDS accounts for a large proportion of deaths in young women. Deaths at older ages are mainly due to non-communicable diseases.

The age-standardised rates by broad cause group for males and females for 2004 and 2005 are set out in Table 2 below. Age standardisation is a technique which eliminates differences in observed mortality rates caused by differences in the age structure of the population in different areas, rather than by differences in the force of the underlying mortality. Overall the rates have increased slightly for males, mainly due to an increase in death rates due to Group I and Group II conditions. There has been a marked decrease in death rates due to injuries between 2004 and 2005. Overall, the rates for women have remained fairly consistent.



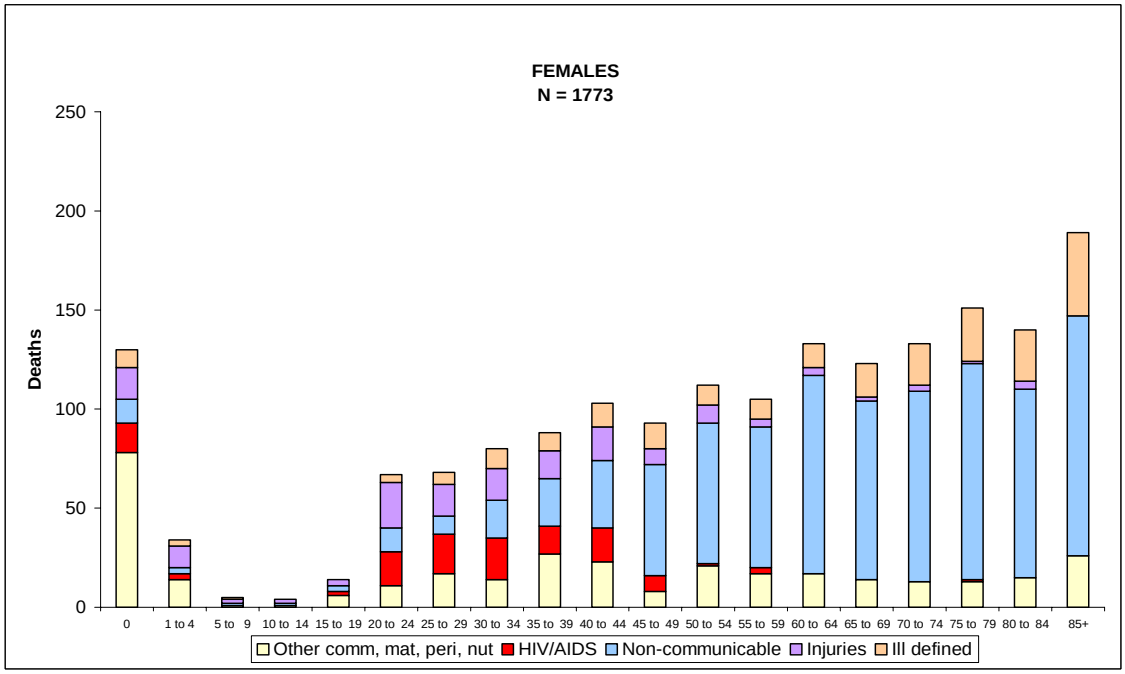


Figure 1: Age distribution of deaths by broad cause group for males and females, Boland Overberg Region 2005

Table 2: Age-standardised mortality rate (per 100 000) by broad cause group and sex, Boland Overberg Region 2004 and 2005

Broad cause groups	Males		Females		Persons	
	2004	2005	2004	2005	2004	2005
Communicable diseases excl HIV, maternal, perinatal, nutritional	235	253	143	150	187	199
HIV	52	55	50	47	51	51
Non communicable	682	712	490	496	578	593
Injuries	211	178	66	56	137	117
All causes	1179	1198	749	749	953	960

The leading causes of premature mortality for 2004 and 2005 are shown in Figure 2. The top four causes of death have remained the same between 2004 and 2005, but the ranking has changed. Tuberculosis has become the leading cause of premature mortality in 2005 after ranking second to homicide in 2004. Homicide now ranks third after HIV/AIDS, with road traffic accidents ranking fourth. These top four conditions account for 40% of the premature mortality in the region. Premature mortality has been estimated using the standard Global Burden of Disease (GBD) approach to calculate years of life lost (YLLs). Age weighting, time discounting of 3% per annum and standard life expectancies based on the West model levels 25 and 26 (considered to a maximum life expectancy) have been used. The younger the age of death, the greater the years of life lost[6].

Males and females have different cause of death profiles, according to Figure 3. Tuberculosis, homicide, HIV/AIDS and road traffic accidents are the leading causes of premature mortality among men. HIV/AIDS is the leading cause among women, followed by tuberculosis, lower respiratory infection, and homicide.

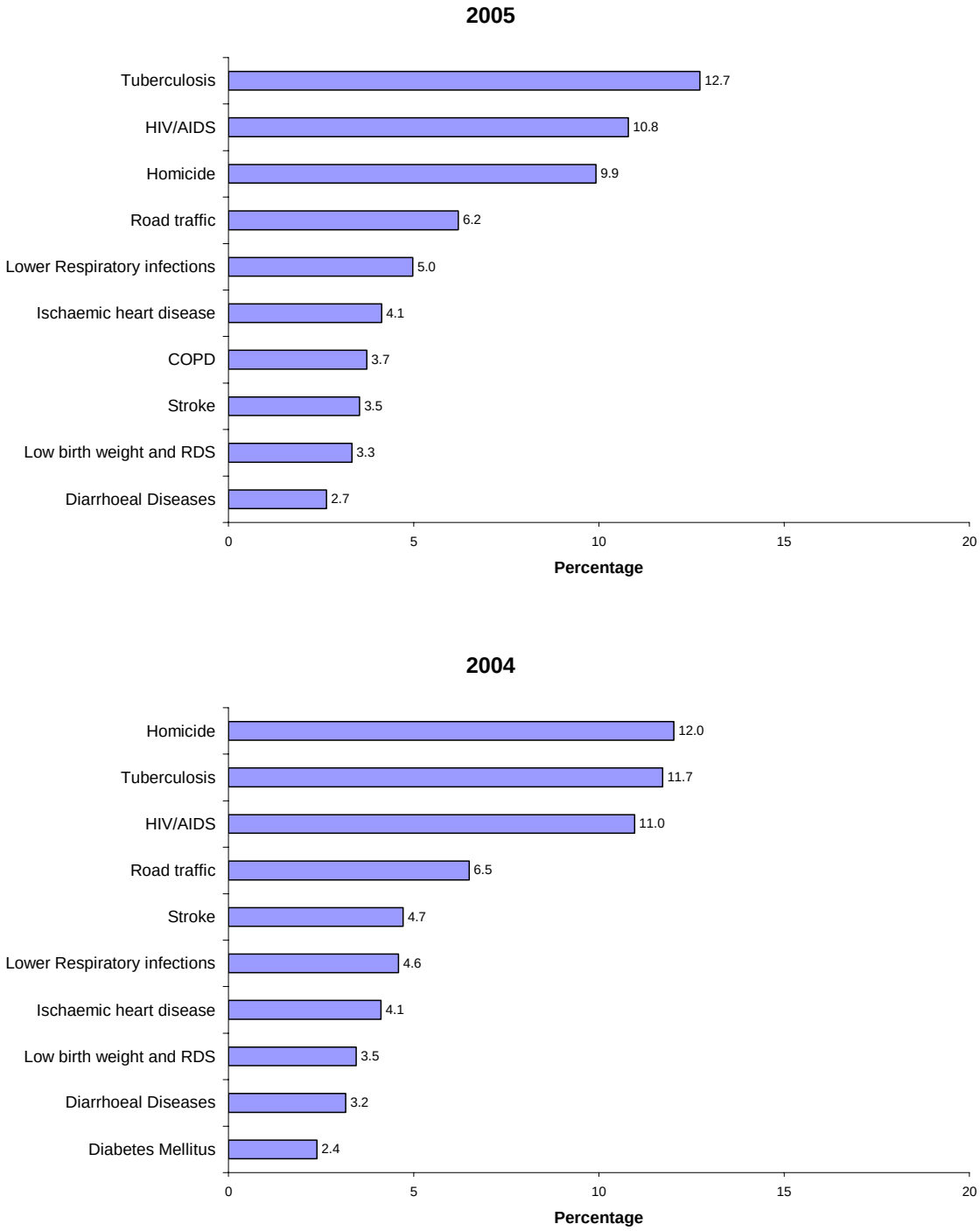


Figure 2: Top ten causes of premature mortality (YLLs), Boland Overberg Region 2004 and 2005

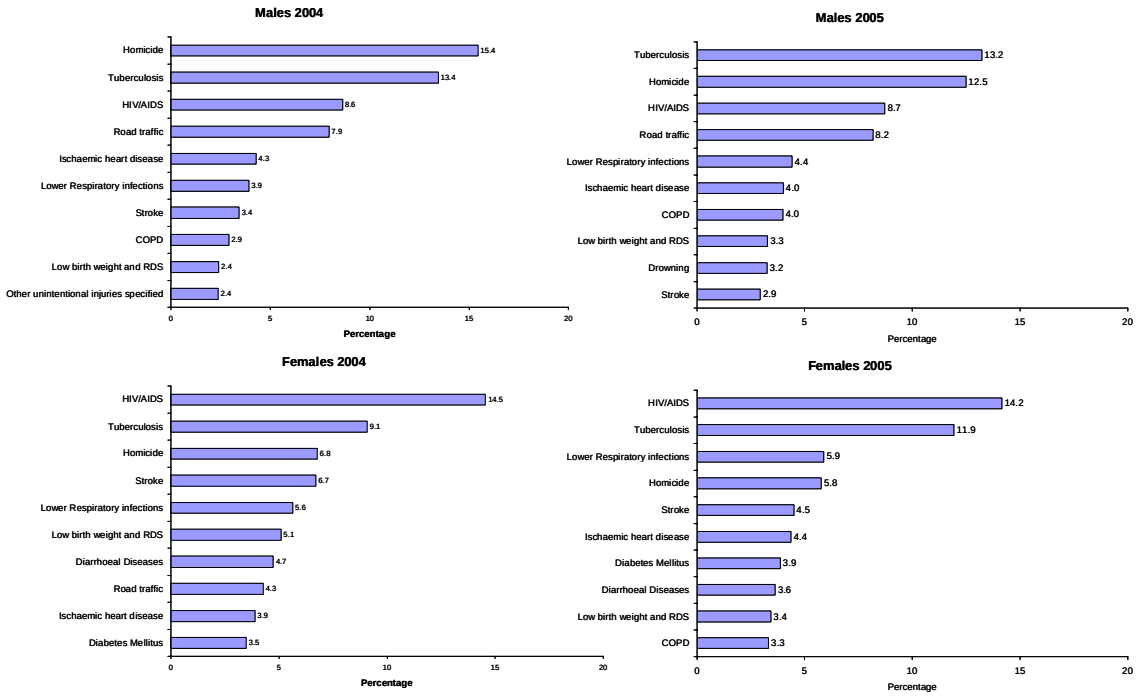


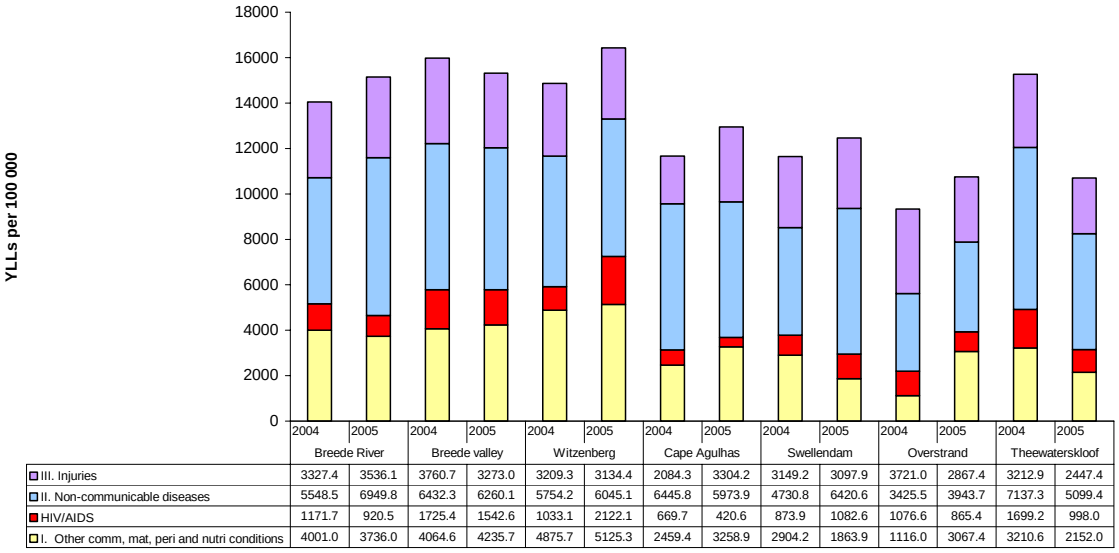
Figure 3: Top ten causes of premature mortality (YLLs) by sex, Boland Overberg Region 2004 and 2005

The top ten causes of premature mortality for each sub-district are shown in Table 3. Tuberculosis is the leading cause of premature mortality in the Breede Valley and Witzenberg, followed by HIV/AIDS, while homicide is the leading cause in the Breede River Winelands, followed by tuberculosis. Tuberculosis is the leading cause of premature mortality in Cape Agulhas and Overstrand, while HIV/AIDs is the leading cause of premature mortality, followed by homicide, in Swellendam and Theewaterskloof.

The age-standardised premature mortality rate (YLL per 100 000 population) by cause group and HIV/AIDS are shown in Figure 4 by sub-district, for the years 2004 and 2005. Premature mortality is highest in Witzenberg, Breede Valley and Breede River. Of concern is the rapid increase in premature mortality rates in Witzenberg between 2004 and 2005, mainly due to increased mortality due to HIV/AIDS and TB. The increase in premature mortality in Overstrand and the drop in Theewaterskloof in 2005 is probably due to incomplete data rather than a real change in mortality.

Table 3: Top ten causes of premature mortality (YLLs) for Boland Overberg and by sub-districts, 2005

Rank	CAPE WINELANDS EAST	Breede River	Breede Valley	Witzenberg	OVERBERG	Cape Agulhas	Overstrand	Swellendam	Theewaterskloof	BOLAND OVERBERG
1	Tuberculosis (14.1%)	Homicide (10.2%)	Tuberculosis (14.9%)	Tuberculosis (16.3%)	Tuberculosis (10.2%)	Tuberculosis (14.7%)	Tuberculosis (11.34%)	HIV/AIDS (9.5%)	HIV/AIDS (11.1%)	Tuberculosis (12.7%)
2	HIV/AIDS (11.8%)	Tuberculosis (8.9%)	HIV/AIDS (11.5%)	HIV/AIDS (15.4%)	Homicide (9.3%)	Homicide (9.3%)	HIV/AIDS (8.09%)	Homicide (8.3%)	Homicide (10.9%)	HIV/AIDS (10.8%)
3	Homicide (10.2%)	HIV/AIDS (6.9%)	Homicide (9.8%)	Homicide (10.8%)	HIV/AIDS (8.8%)	Road Traffic (6.4%)	Homicide (7.5%)	Tuberculosis (7.7%)	Tuberculosis (9.5%)	Homicide (9.9%)
4	Road traffic (5.9%)	Pneumonia (6.2%)	Road traffic (6.9%)	Road traffic (5.0%)	Road traffic (6.9%)	Ischaemic heart disease (4.9%)	Pneumonia (6.8%)	Ischaemic heart disease (7.3%)	Road traffic (7.6%)	Road traffic (6.2%)
5	Pneumonia (5.03%)	Road traffic (4.9%)	Pneumonia (4.7%)	Pneumonia (4.6%)	Ischaemic heart disease (4.9%)	Stroke (4.8%)	Road traffic (6.3%)	Stroke (6.6%)	Pneumonia (4.4%)	Pneumonia (4.9%)
6	COPD (3.8%)	Ischaemic heart disease (4.8%)	COPD (4.2%)	Ischaemic heart disease (3.9%)	Pneumonia (4.8%)	Suicide (4.2%)	Fires (4.9%)	Drowning (5.9%)	Ischaemic heart disease (4.2%)	Ischaemic heart disease (4.1%)
7	Ischaemic heart disease (3.7%)	Low birth weight & RDS (4.4%)	Stroke (3.9%)	Low birth weight (3.9%)	Stroke (4.1%)	Pneumonia (3.5%)	Ischaemic heart disease (4.9%)	Road Traffic (5.8%)	COPD (3.8%)	COPD (3.7%)
8	Low birth weight & RDS (3.7%)	Diarrhoea (3.7%)	Ischaemic heart disease (3.4%)	Diarrhoea (3.6%)	COPD (3.0%)	HIV/AIDS (3.1%)	Low birth weight & RDS (3.6%)	Diabetes mellitus (3.6%)	Stroke (3.6%)	Stroke (3.5%)
9	Stroke (3.3%)	COPD (3.5%)	Low birth weight & RDS (3.2%)	COPD (3.2%)	Drowning (2.9%)	Low birth weight & RDS (2.8%)	Suicide (3.2%)	Pneumonia (3.2%)	Drowning (3.0%)	Low birth weight & RDS (3.2%)
10	Diarrhoea (3.2%)	Lung cancer (3.5%)	Diabetes mellitus (2..8%)	Stroke (2.5%)	Suicide (2.9%)	Cot death (2.8%)	Stroke (3.2%)	Hypertensive disease (3.2%)	Low birth weight & RDS (2.7%)	Diarrhoea (2.7%)



	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005
	Breede River		Breede valley		Witzenberg		Cape Agulhas		Swellendam		Overstrand		Theewaterskloof	
III. Injuries	3327.4	3536.1	3760.7	3273.0	3209.3	3134.4	2084.3	3304.2	3149.2	3097.9	3721.0	2867.4	3212.9	2447.4
II. Non-communicable diseases	5548.5	6949.8	6432.3	6260.1	5754.2	6045.1	6445.8	5973.9	4730.8	6420.6	3425.5	3943.7	7137.3	5099.4
HIV/AIDS	1171.7	920.5	1725.4	1542.6	1033.1	2122.1	669.7	420.6	873.9	1082.6	1076.6	865.4	1699.2	998.0
I. Other comm, mat, peri and nutri conditions	4001.0	3736.0	4064.6	4235.7	4875.7	5125.3	2459.4	3258.9	2904.2	1863.9	1116.0	3067.4	3210.6	2152.0

Figure 4: YLLs per 100 000 by broad cause group and HIV/AIDS for Boland Overberg Region and by sub-districts, 2004 and 2005

Age-standardised death rates by sub-district for the three broad cause groups and HIV, for 2004 and 2005, are shown in Figure 5. In contrast to all other sub-districts, there is a significant rise in mortality due to HIV between 2004 and 2005 in Witzenberg which is likely to be a real increase. The significant drop in death rates noted for all causes, except injuries, in Theewaterskloof, however, are likely to be due to missing data. Data collection at mortuaries was close to complete for both years so, unless unnatural deaths from Theewaterskloof were sent to mortuaries other than Worcester and Hermanus, this is likely to be a real decrease.

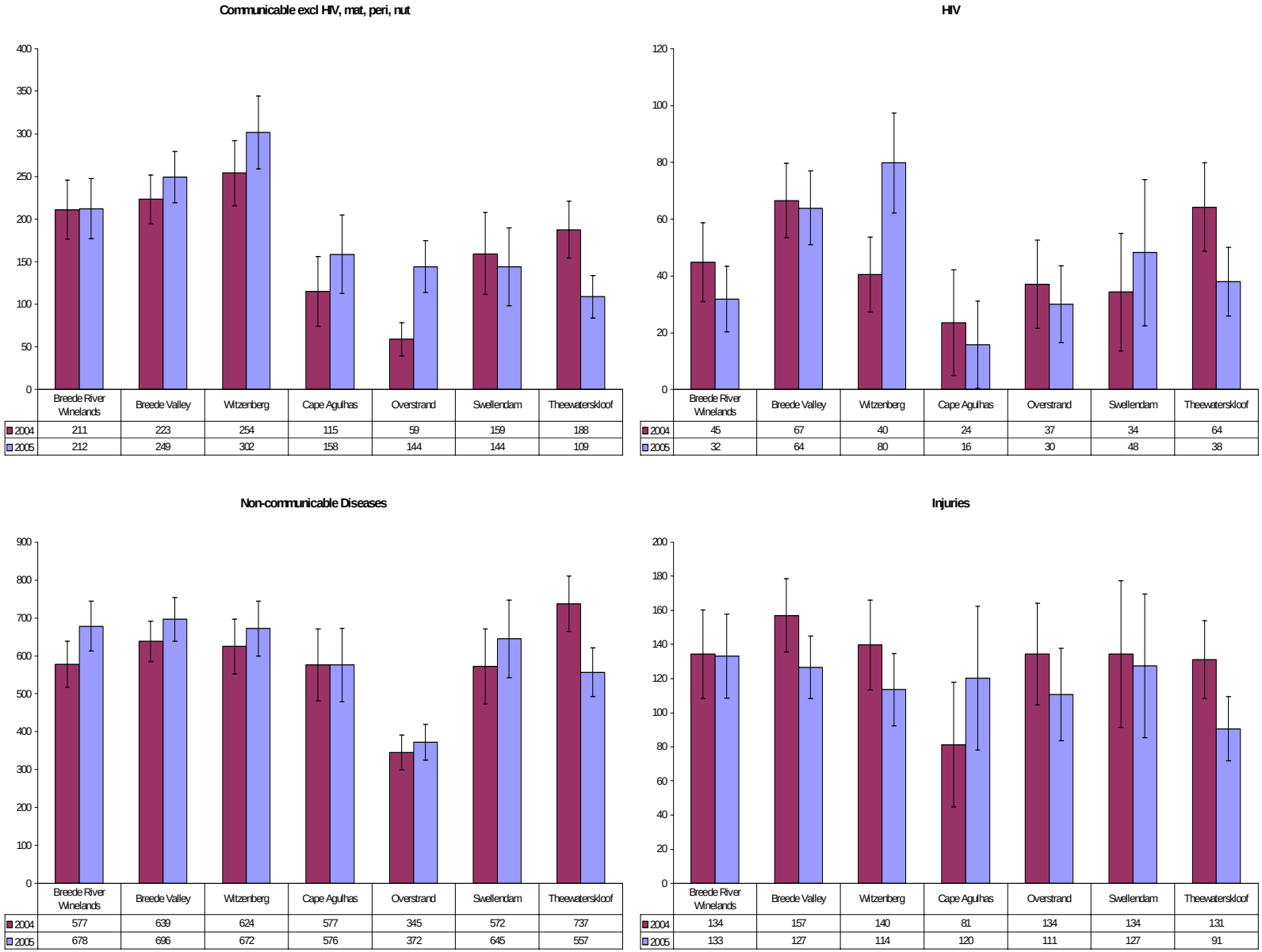


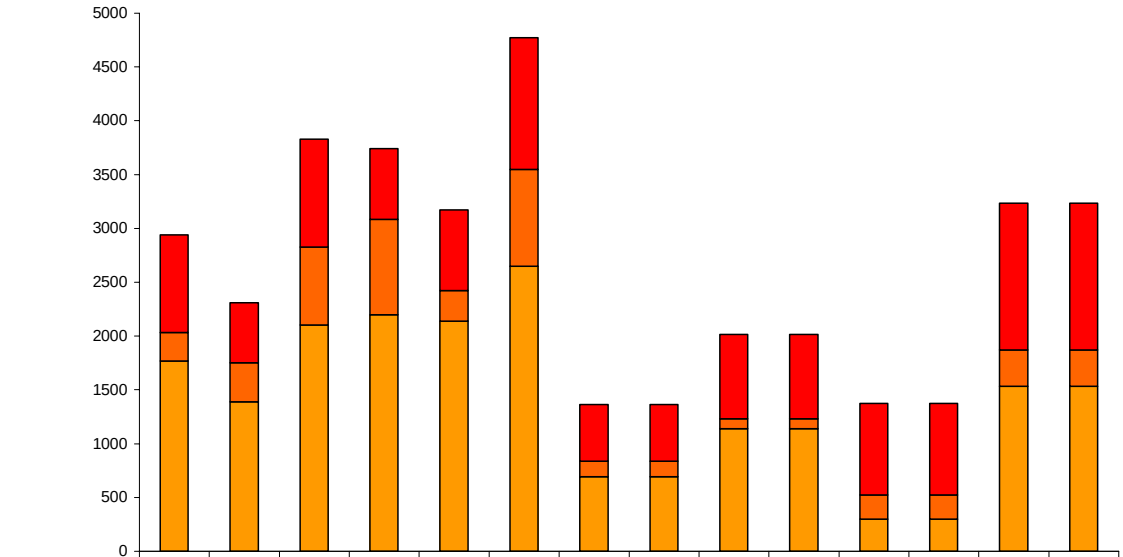
Figure 5: Age-standardised death rates for broad cause groups and HIV/AIDS by district, Boland Overberg Region 2004 and 2005

Important conditions

HIV and TB

Tuberculosis is the leading cause of death in the Boland Overberg Region. Because of the increased susceptibility of HIV-positive people to tuberculosis disease and mortality, it is even more important that the HIV/AIDS epidemic is controlled in this area, which has very high tuberculosis incidence rates. Tuberculosis cure rates are particularly poor in Witzenberg (63%), where HIV/AIDS prevalence has reached levels similar to those in the Eastern Cape in some populations. This is probably an important reason for the high levels of tuberculosis and HIV/AIDS premature mortality experienced in this sub-district (see Figure 5). There has been a significant increase in age-standardised mortality rates due to HIV/AIDS in Witzenberg between 2004 and 2005: from 40 per 100 000 (95% CI: 27; 53) to 80 per 100 000 (95% CI: 62; 98). (See Figure 5.) The mortality rate due to tuberculosis increased over this period from 101 per 100 000 to 147 per 100 000, but this difference was not significant. It is possible that the TB and HIV premature mortality rates for Theewaterskloof in 2005 are falsely low, in view of the missing data mentioned above. In accordance with ICD 10 guidelines[9], HIV/AIDS was selected as the underlying causes when both tuberculosis and HIV/AIDS appeared on the death certificate.

The age-specific HIV and TB deaths rates for males and females are shown in Figures 6 and 7 below. While the HIV peak for women decreased between 2004 and 2005, it has increased slightly for men in the same period.



	2004.0	2005.0	2004.0	2005.0	2004.0	2005.0	2004.0	2005.0	2004.0	2005.0	2004.0	2005.0	2004.0	2005.0
	Breede River		Breede Valley		Witzenberg		Cape Agulhas		Swellendam		Overstrand		Theewaterskloof	
HIV/AIDS excl TB	905.5	560.3	1002.6	657.2	749.1	1221.8	527.1	527.1	784.6	784.6	853.1	853.1	1361.4	1361.4
HIV/AIDS + TB	266.3	360.2	722.8	885.4	283.9	900.3	142.6	142.6	89.4	89.4	223.5	223.5	337.8	337.8
Tuberculosis	1767.1	1389.6	2104.4	2197.2	2137.6	2648.9	694.0	694.0	1140.0	1140.0	298.8	298.8	1534.0	1534.0

Figure 6: Age-standardised premature mortality (YLL) rates for TB, HIV+TB and HIV by district, Boland Overberg Region 2004 and 2005

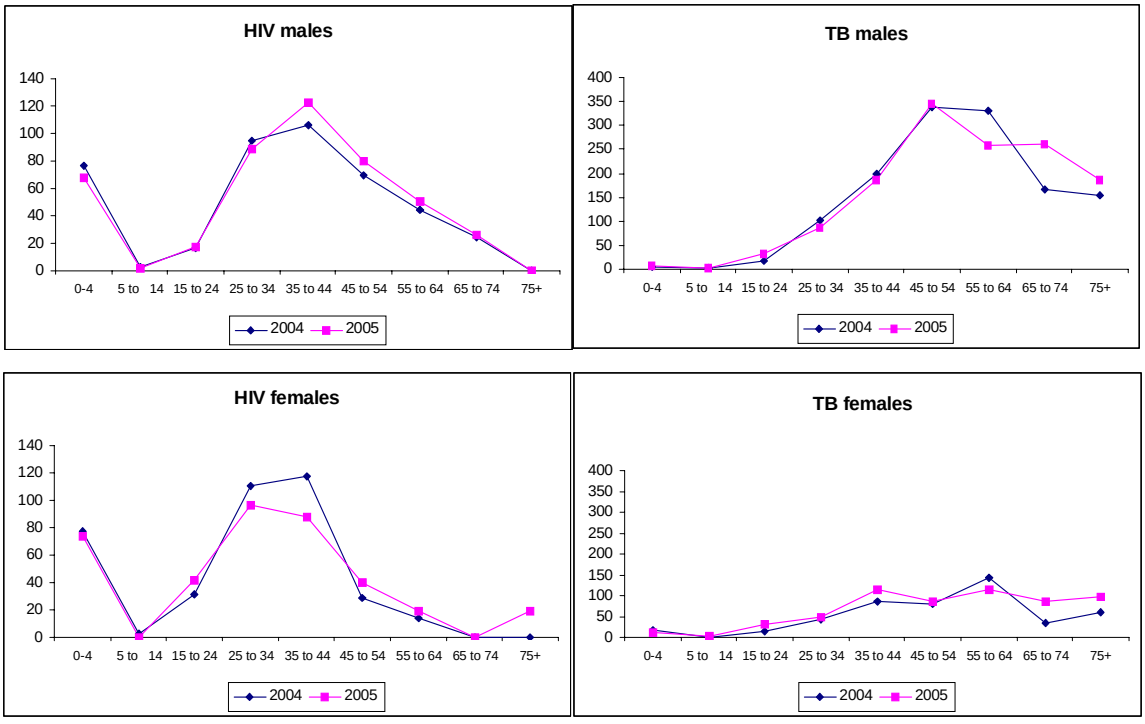
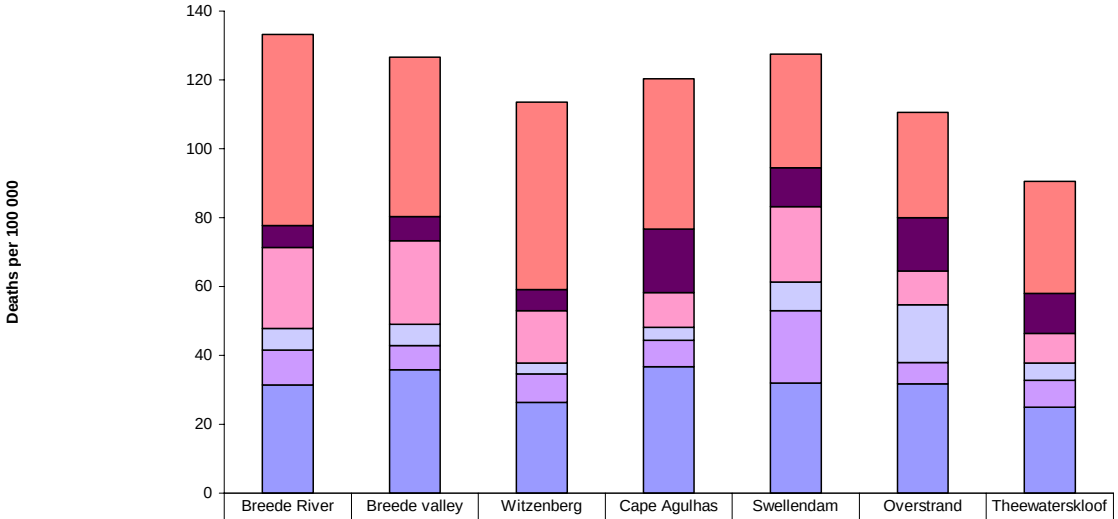


Figure 7: Age-specific death rates for HIV and TB by sex, Boland Overberg Region 2004 and 2005

Injuries

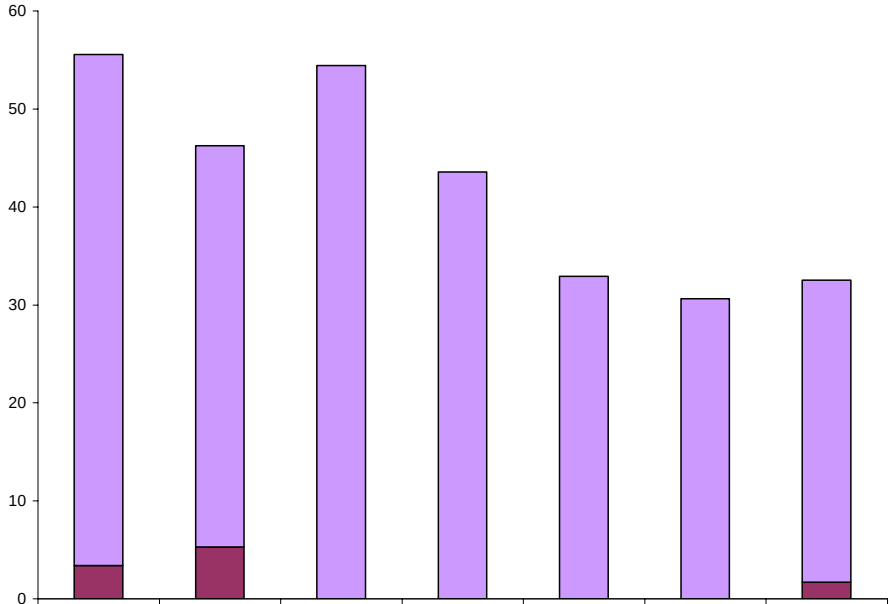
Injuries account for about 15 % of deaths in the Boland Overberg with homicide and road traffic injuries ranking among the top four leading causes of death. Overall, injury age-standardised mortality rates decreased from 137.1 per 100 000 (95% CI: 127 – 147) to 117.0 per 100 000 (95% CI: 112 – 126) in the Boland Overberg Region between 2004 and 2005. This decrease just reached statistical significance. There are slight variations in the age-standardized death rates for injuries among sub-districts, with Breede River having the highest rates and Theewaterskloof the lowest (see Figure 8). Although these differences are not significant, they are based on small numbers and should therefore be interpreted with caution, particularly for Cape Agulhas and Swellendam.



	Breede River	Breede valley	Witzenberg	Cape Agulhas	Swellendam	Overstrand	Theewaterskloof
Homicide	55.57	46.26	54.42	43.59	32.91	30.63	32.52
Suicide and self-inflicted	6.30	7.10	6.19	18.43	11.34	15.40	11.66
Other unintent	23.50	24.28	15.09	10.10	21.92	9.82	8.59
Fires	6.30	6.10	3.27	3.75	8.29	16.81	5.00
Drowning	10.11	7.06	8.17	7.67	20.99	6.19	7.83
Road traffic	31.45	35.83	26.41	36.76	31.99	31.73	24.96

Figure 8: Age standardised death rates due to injuries by district, Boland Overberg Region 2005

The age-standardised rates for homicide dropped from 56 per 100 000 to 44 per 100 000 between 2004 and 2005, mainly due to a large drop in homicide rates among males (89 to 69 per 100 000). The rates for females fell slightly from 24 per 100 000 to 19 per 100 000. The homicide rates for males are similar to those in Cape Town (91 per 100 000), but the rates for females are double those in Cape Town (12.2 per 100 000)[10]. Age-standardised homicide rates are highest in Breede River and Witzenberg, and lowest in Theewaterskloof (see Figure 9). A low proportion of homicides in the Boland Overberg involve the use of a firearm, which is in sharp contrast with Cape Town, where about 40% of homicides involve the use of a firearm.



	Breede River	Breede valley	Witzenberg	Cape Agulhas	Swellendam	Overstrand	Theewaters
Homicide and violence without firearm	52.16	40.95	54.42	43.59	32.91	30.63	30.84
Homicide and violence with firearm	3.42	5.31	0.00	0.00	0.00	0.00	1.68

Figure 9: Age-standardised death rates due to homicide by district, Boland Overberg Region 2005

Homicide dropped in the ranking from the first to the third leading cause of death in the Boland Overberg Region during this period. The age-specific death rates for homicide by gender, between 2004 and 2005 are shown in Figure 10. There is a marked gender differential, with males

having rates three times as high as females. Nevertheless, there has been a marked decrease in the homicide rates among males between 15 and 24 years, and between those between 45 and 64 years. In females, the decrease is noted in the 35 to 44-year age group.

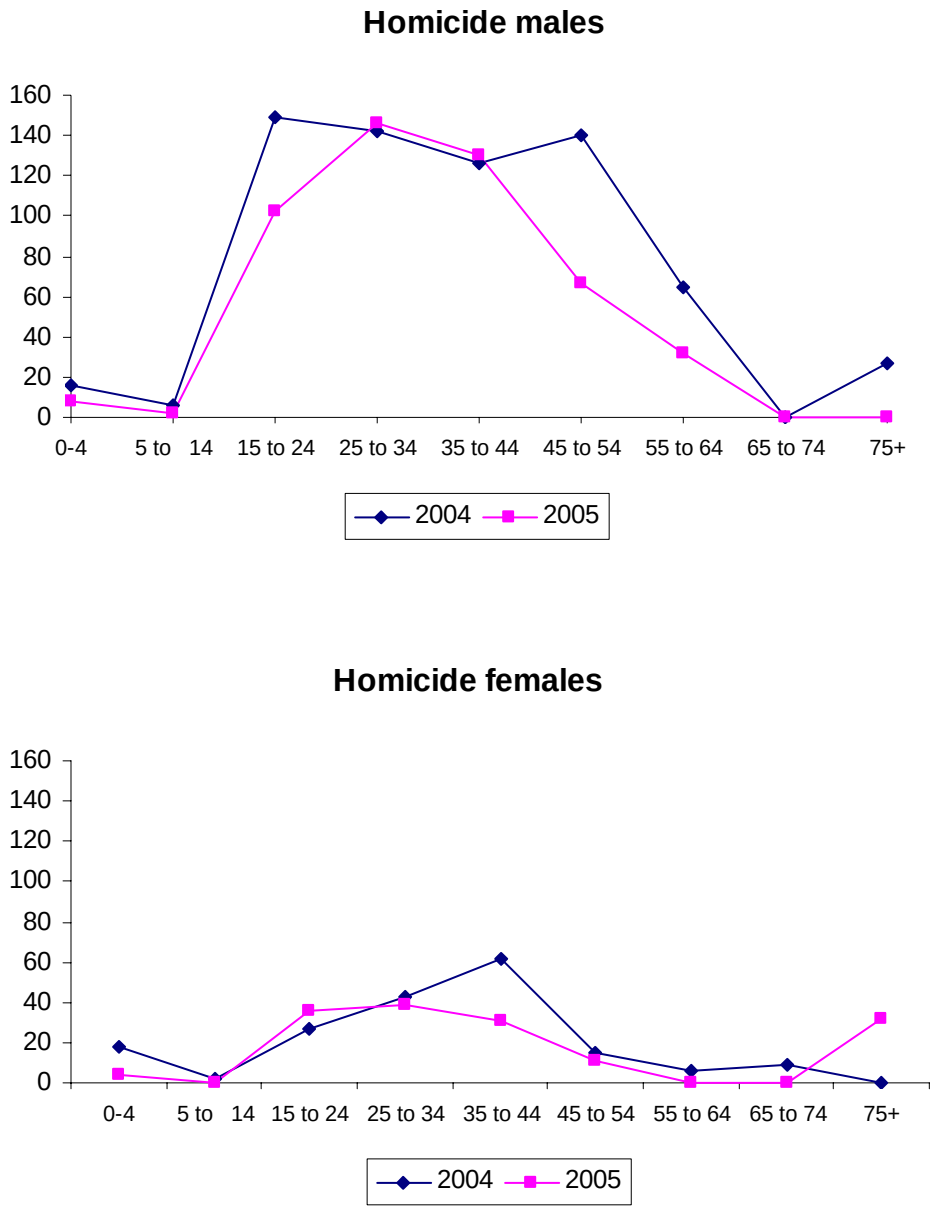


Figure 10: Age specific homicide death rates by sex, Boland Overberg Region 2004 and 2005

The age-standardised death rates due to road traffic accidents decreased slightly from 33.4 to 31.4 per 100 000, in the Boland Overberg between 2004 and 2005. There are slight variations in age standardised death rates due to road traffic accidents between sub-districts (see Figure 12). These rates, however, are based upon small numbers and should be treated with caution. Road traffic accidents rank fourth in the leading causes of death.

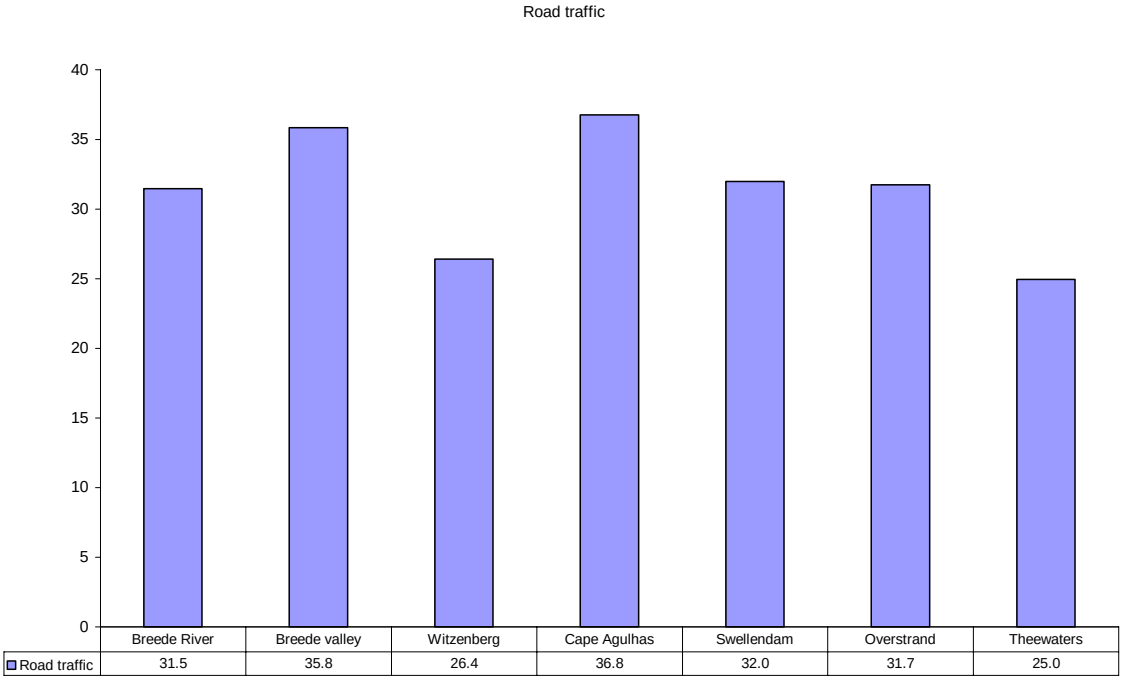


Figure 11: Age-standardised death rates due to road traffic accidents by sub-district, Boland Overberg Region 2005

The age-specific road-traffic death rates by gender are set out in Figure 12 below. Again the rates for males are more than double those for females.

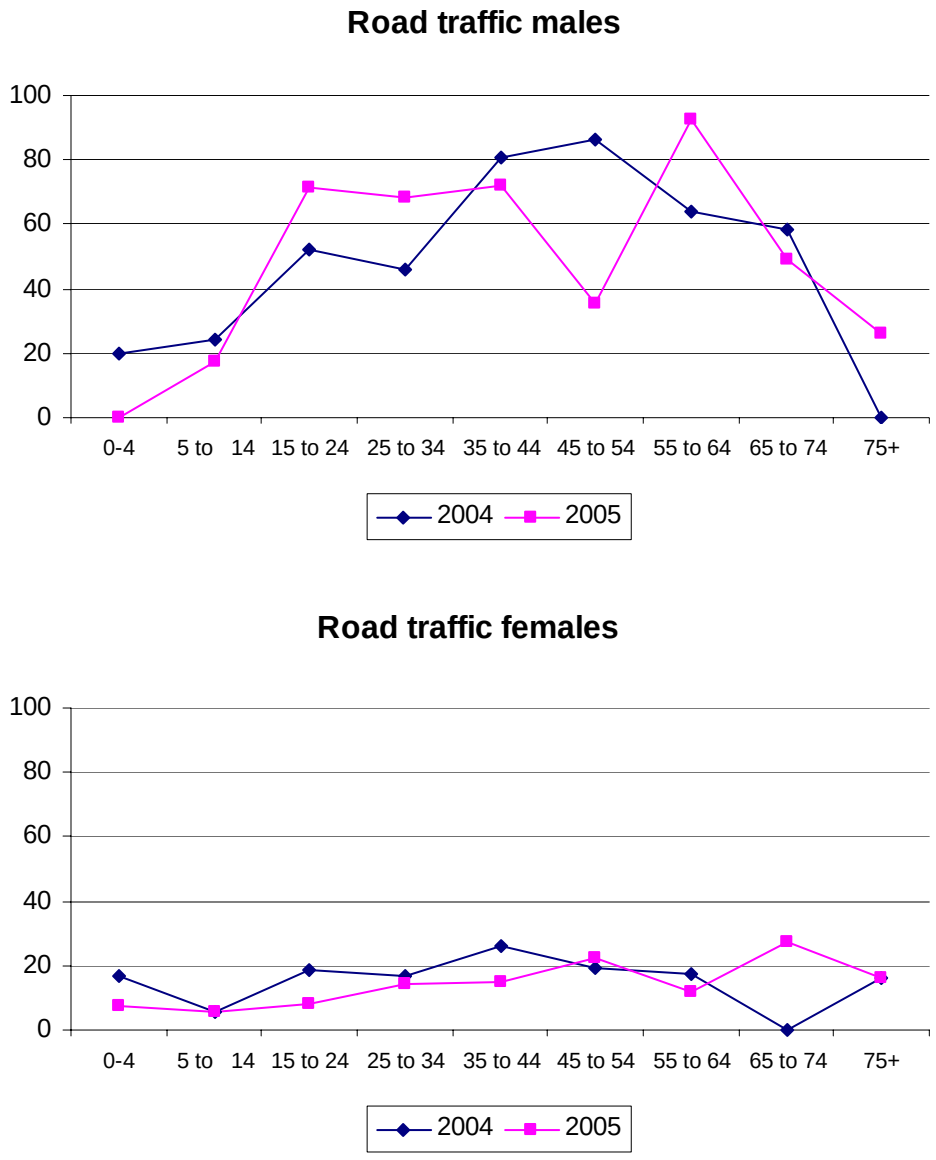
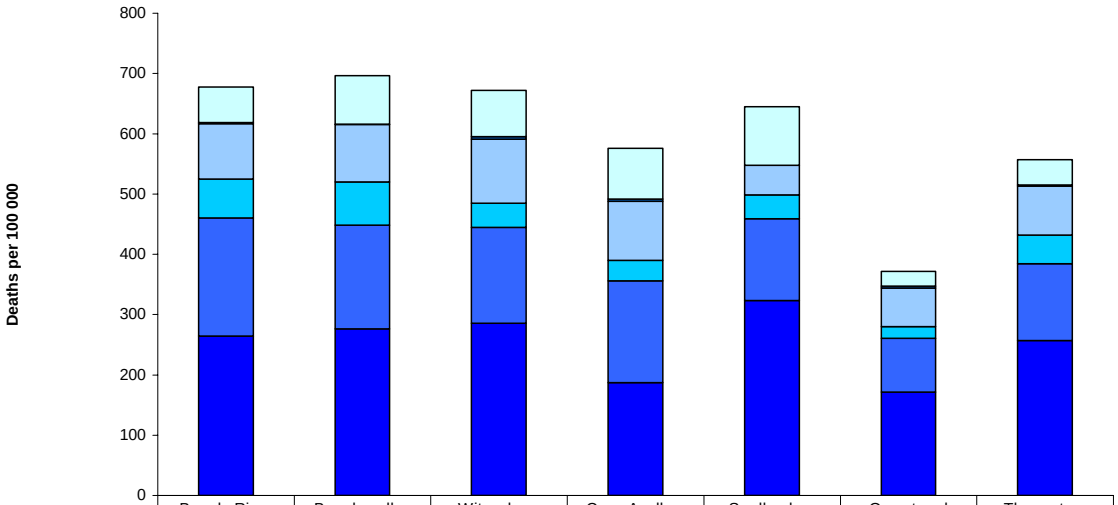


Figure 12: Age specific road traffic accident death rates by sex, Boland Overberg Region 2004 and 2005

Non-communicable diseases

Non-communicable diseases account for a large proportion (55%) of deaths in the Boland Overberg Region, with cardiovascular conditions accounting for the majority of these. The age-standardised death rates for non-communicable diseases by sub-district for 2005 are shown in Figure 13. These are based upon small numbers, however, and should therefore be interpreted with caution. It is not clear why the rates for Overstrand are so much lower than the other sub-districts. We suspect that data is missing for Theewaterskloof, so these rates should also be interpreted with caution. Overall, the rates for non-communicable diseases are similar to those found in Cape Town. Yet, while cardiovascular and cancer mortality rates are similar, diabetes mortality rates are lower than in Cape Town, and mortality due to respiratory conditions is higher.



	Breede River	Breede valley	Witzenberg	Cape Agulhas	Swellendam	Overstrand	Theewaters
Other	59.4	80.1	77.1	84.7	97.2	24.3	41.8
Congenital	1.3	1.2	3.8	3.7	0.0	3.5	1.9
Respiratory	91.7	95.0	106.2	97.4	48.7	63.8	81.2
Diabetes	64.7	71.8	40.3	34.3	39.9	19.5	48.0
Neoplasms	196.1	171.7	158.9	169.0	135.4	89.5	127.1
Cardiovascular	264.5	276.5	285.7	186.9	323.4	171.1	256.9

Figure 13: Age-standardised cause of death rates for non-communicable diseases by district, Boland Overberg Region 2005

Women's health

Non-communicable diseases account for about half of the premature mortality in adult women (15+ years) with stroke, IHD and diabetes accounting for about 6% each, as shown in Figure 14 below. HIV/AIDS is the largest single cause of premature mortality among adult women, accounting for 15% of deaths in this group; followed by tuberculosis, which accounts for 14%. Injuries account for 14% of premature mortality in this group.

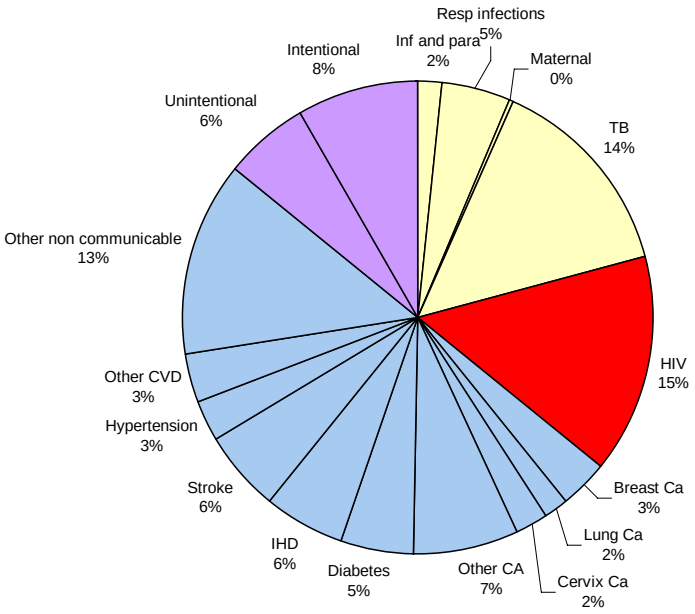


Figure 14: Premature mortality cause profile for women 15+ years, Boland Overberg Region 2005

Men's health

Premature mortality in men is almost double that of women and is dominated by injuries, as shown in Figure 15 below. Homicide is the second largest cause of premature mortality in this group, accounting for 15% of YLLs, while road traffic accounts for nine percent. Tuberculosis is the single largest cause of premature mortality in this group, accounting for 16% of YLLs. COPD and IHD each account for 5% of premature mortality in this group.

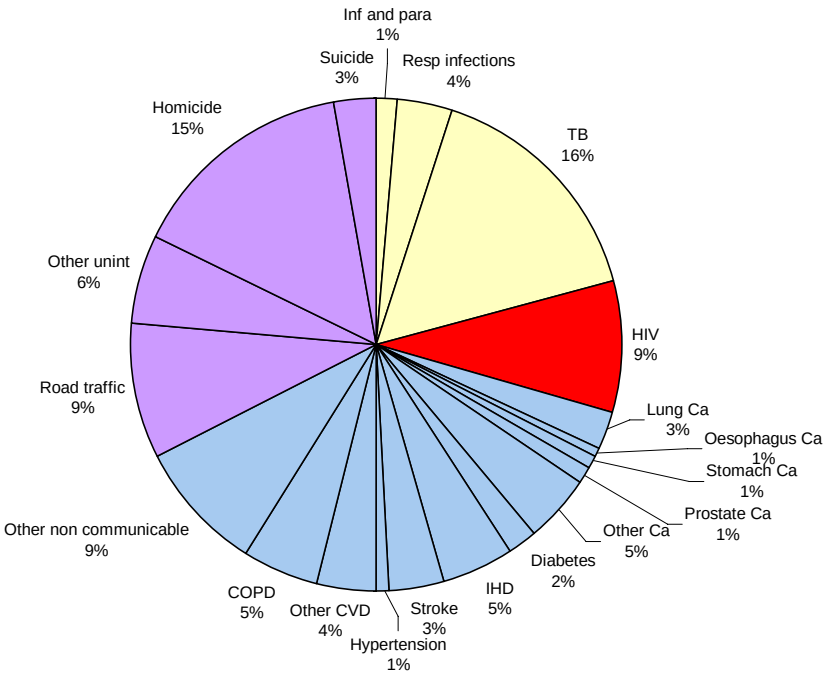


Figure 15: Premature mortality cause profile for men 15+ years, Boland Overberg Region 2005

Child health

Infant mortality in the Boland Overberg Region has remained fairly constant at around 30 infant deaths per 1000 live births since 1997, with the possibility of a slight downward trend, as shown in Figure 16 below.

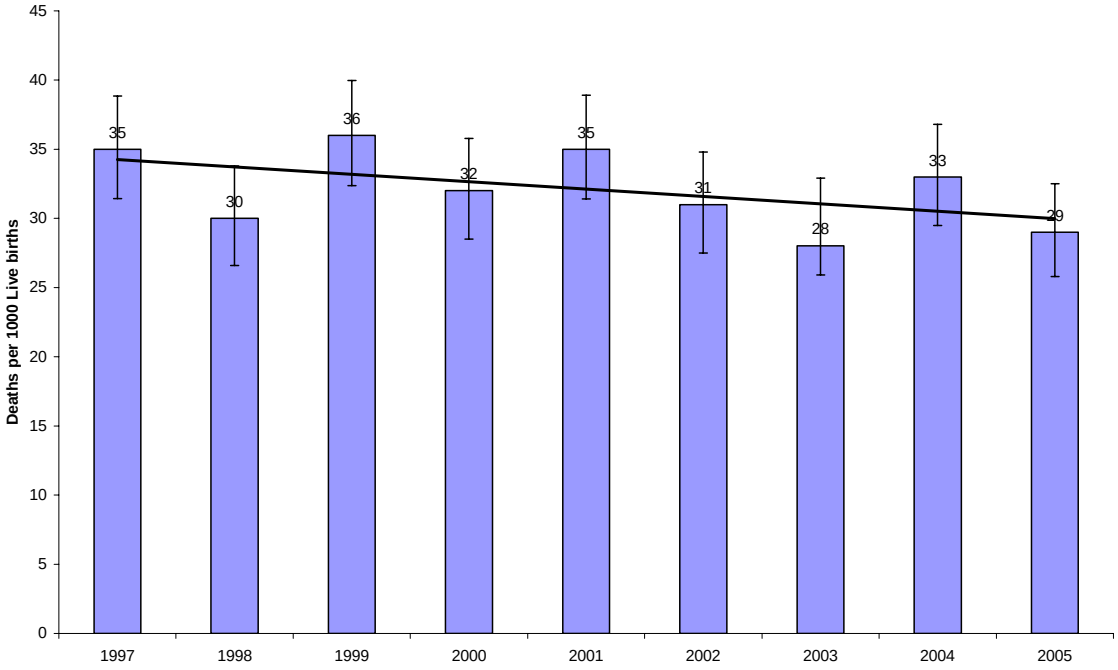
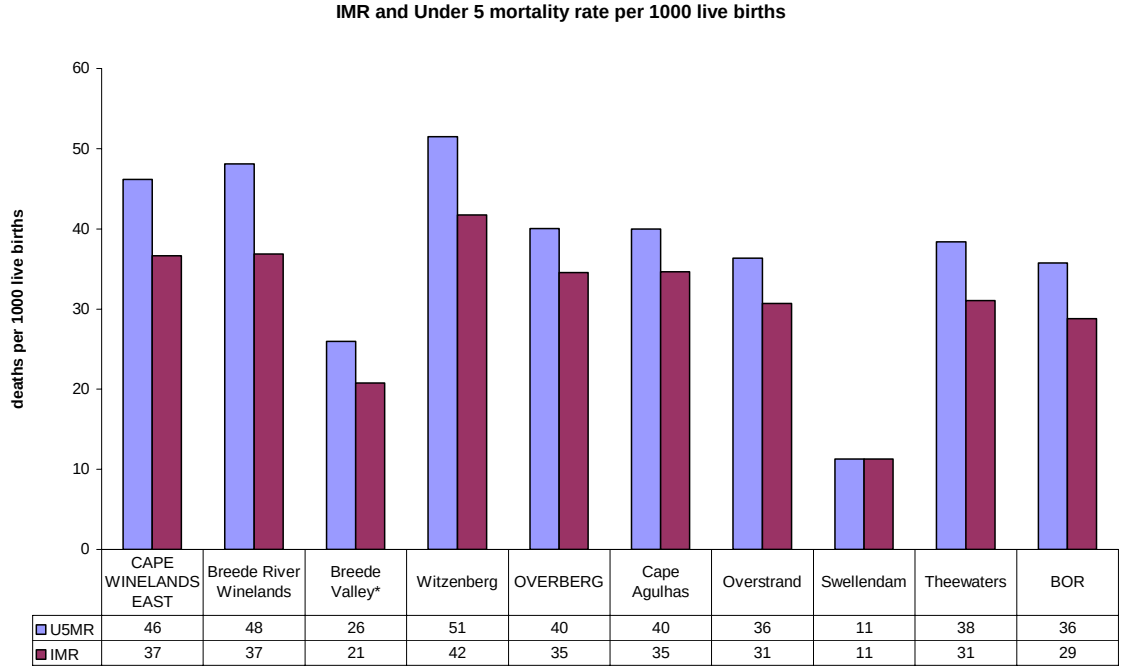


Figure 16: Infant mortality rate per 1000 live births, Boland Overberg Region 1997 - 2005

The infant and child mortality rates, however, do vary by sub-district, with the highest rates found in Witzenberg in 2005, and the lowest in Breede Valley and Swellendam (although caution must be exercised, given the very low numbers). This is shown in Figure 17 below.



	CAPE WINELANDS EAST	Breede River Winelands	Breede Valley*	Witzenberg	OVERBERG	Cape Agulhas	Overstrand	Swellendam	Theewaters	BOR
U5MR	46	48	26	51	40	40	36	11	38	36
IMR	37	37	21	42	35	35	31	11	31	29

Figure 17: IMR and Under-5 mortality rate per 1000 live births by sub-district, Boland Overberg Region 2005

The leading causes of death among the various age groups are set out in Table 4 below. The majority of these deaths occurred among post neonatal infants (1 – 11 months).

Table 4: Age distribution of deaths 19 years and under

Age group	Number of deaths	% of child deaths
Early neonatal (0 – 7 days)	167	17.2
Late neonatal (8 – 30 days)	69	7.1
Post neonatal infant (1 – 11 months)	368	37.8
1 – 4 years	159	16.3
5 – 9 years	55	5.7
10 – 14 years	49	5.0
15 – 19 years	106	10.9

The leading cause of early neonatal deaths is prematurity, accounting for 43.1% of deaths in babies aged 0 to 7 days, as shown in Figure 18 below. Other perinatal conditions account for 18.6% of deaths in this group, followed by congenital abnormalities, which account for 8.4% of deaths. Ill-defined deaths account for 6.6% of deaths in this group. This profile is similar to that found in Cape Town.

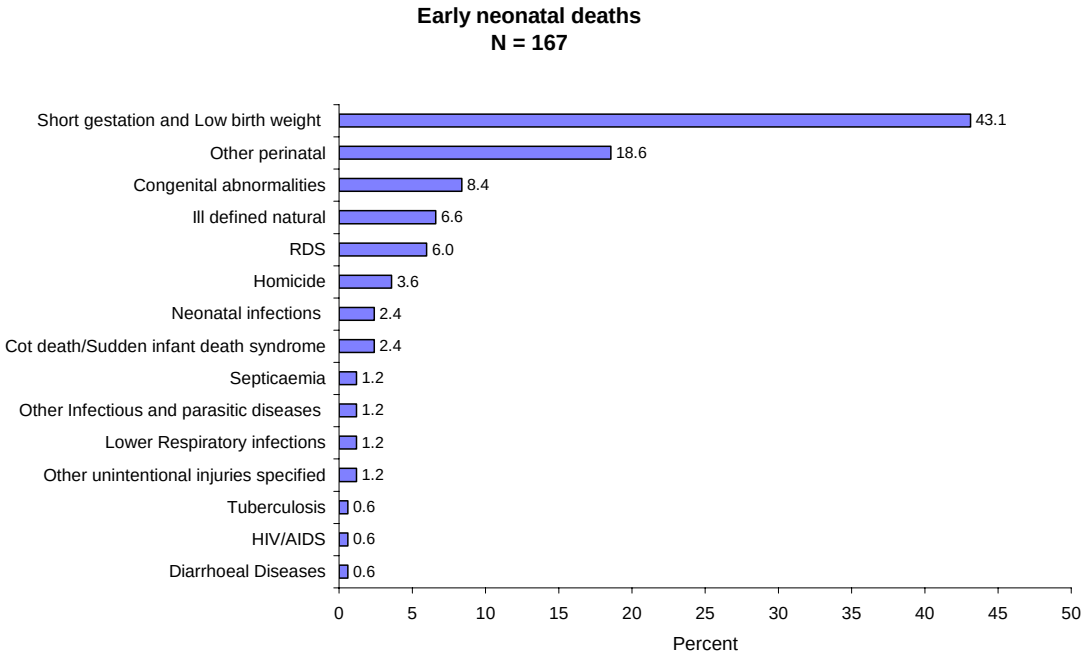


Figure 18: Leading causes of early neonatal deaths, Boland Overberg Region 2004 and 2005

Prematurity and low birthweight are the leading causes of death in the late neonatal age group (8-30 days), accounting for 33.3% of deaths, as shown in Figure 19 below. This is followed by ill-defined natural deaths (10.1%), cot death (7.2%), other unintentional injuries specified (7.2%), and HIV (5.8%). In Cape Town, the leading cause of death in this age group was found to be those which were ill defined and naturally occurring.

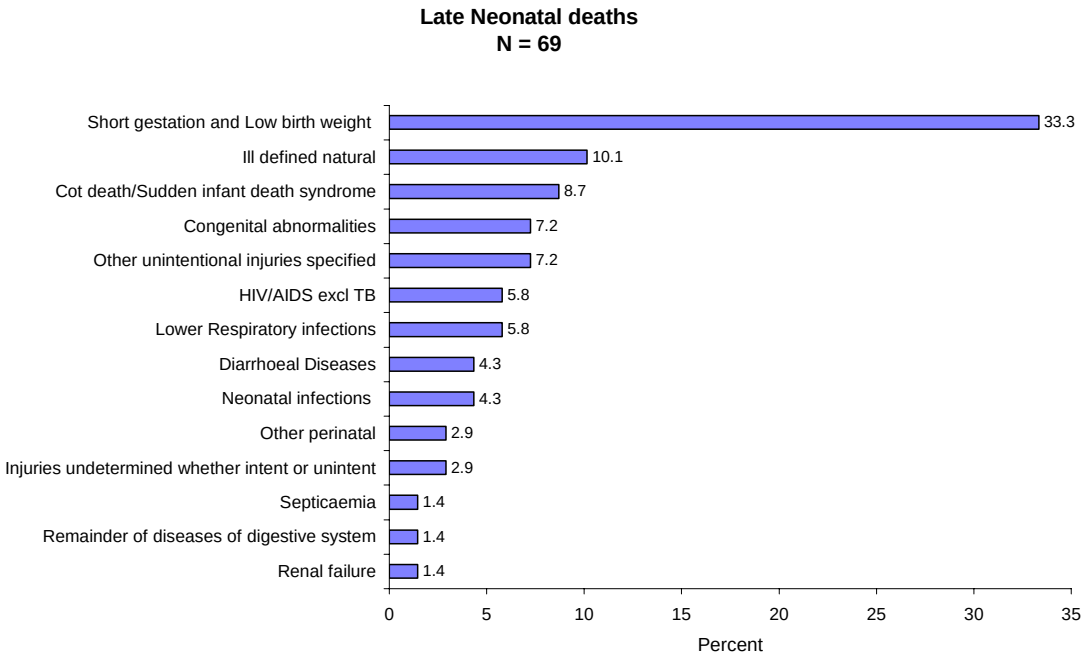


Figure 19: Leading causes of late neonatal deaths, Boland Overberg Region 2004 and 2005

In the post neonatal infant cohort (1–11 months) diarrhoea was seen as the leading cause of death, accounting for 19.6% of deaths, as shown in Figure 20. This was followed by ill-defined natural causes (16.0%), lower respiratory infections (14.7), and HIV/AIDS (11.1%). In Cape Town, ill-defined deaths were the leading cause in this age group and diarrhoea ranks third.

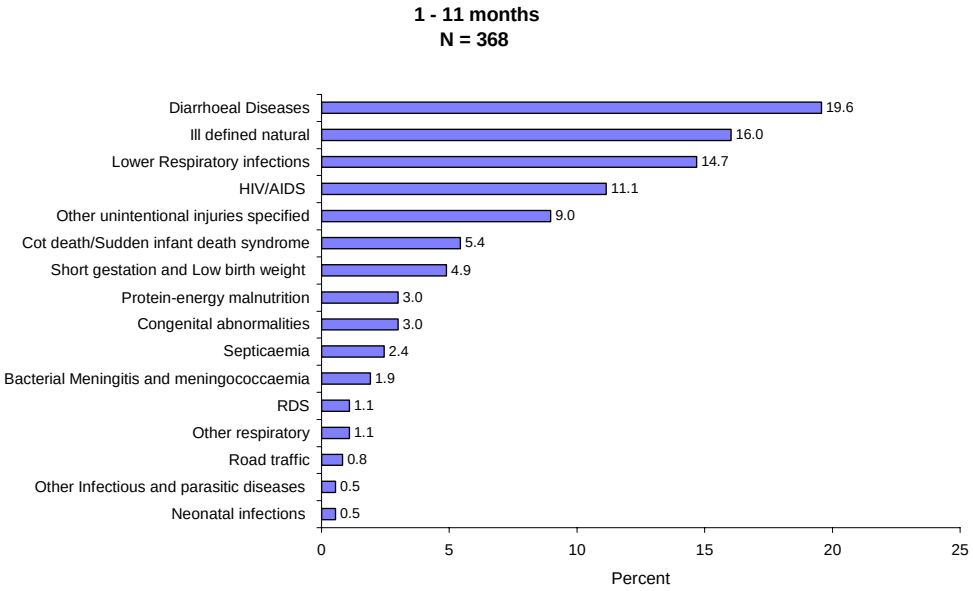


Figure 20: Leading causes of post neonatal infants, Boland Overberg Region 2004 and 2005

HIV/AIDS was the leading cause of death among 1-4 year olds (15.1%), followed by drowning (14.5%), diarrhoea (11.9%), protein energy malnutrition (10.7%), ill-defined natural causes (8.2%), and lower respiratory infections (7.5%), as shown in Figure 21 below. Drowning is more prominent among boys than girls, while road-traffic injuries rank 7th in this age group. In Cape Town, HIV/AIDS was also the leading cause, but road-traffic injuries featured more prominently in ranking second.

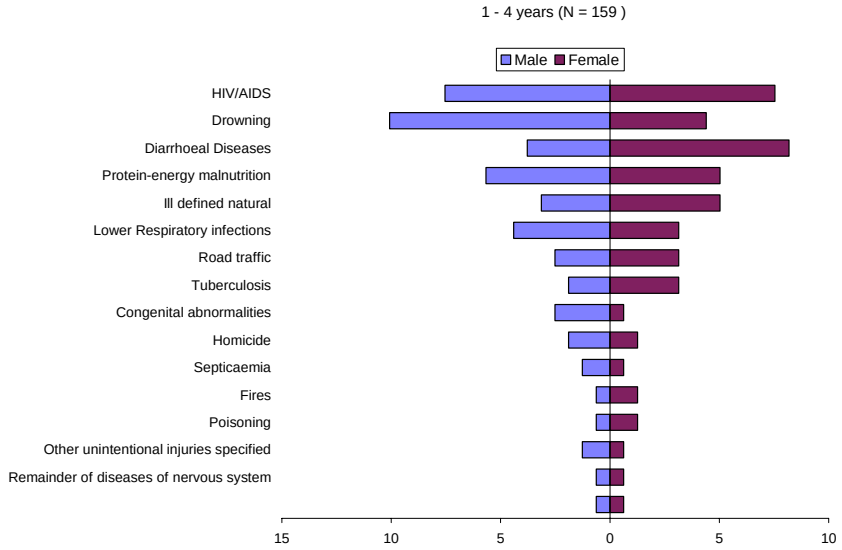


Figure 21: Leading causes of deaths in children 1 – 4 years, Boland Overberg Region 2004 and 2005

Road-traffic injuries were the leading cause of death among 5- to 9-year-olds, accounting for 30.9% of deaths, followed by drowning (23.6%), other unintentional injuries specified (7.3%), and HIV/AIDS (5.5%), as shown in Figure 22 below. Ill-defined deaths accounted for 5.5%, while homicide accounted for 1.8% of deaths in this age group. Deaths among males predominated. The leading cause was the same in Cape Town, but HIV/AIDS and lower respiratory infections ranked second and third, respectively, as opposed to accidental injuries in the Boland Overberg Region.

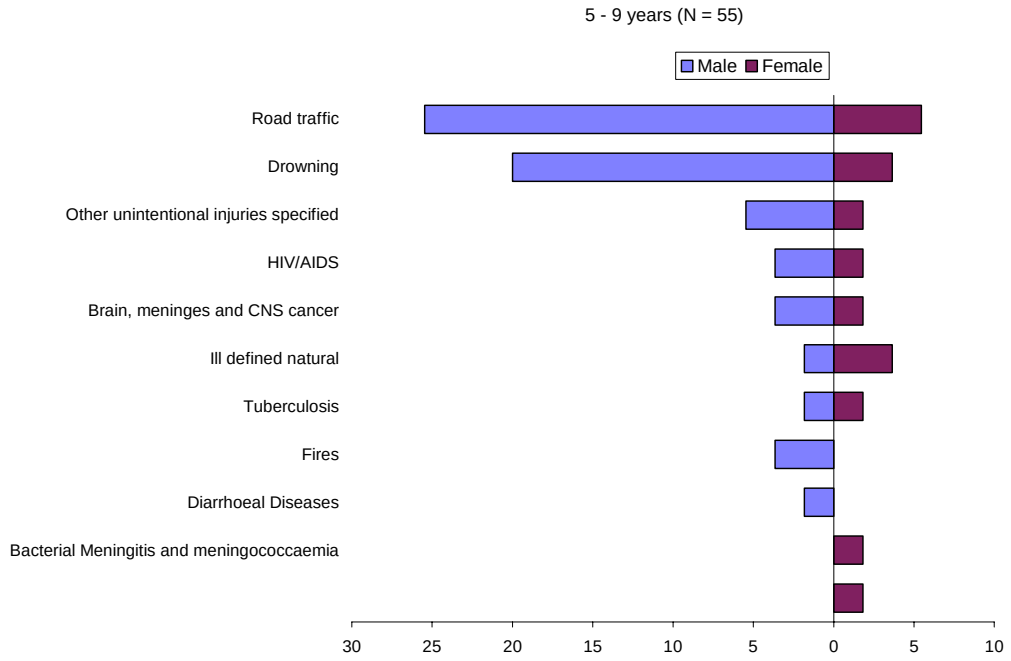


Figure 22: Leading causes of deaths in children 5-9 years, Boland Overberg Region 2004 and 2005

A similar pattern was seen in the 10- to 14-year age group, with road traffic accidents (24.5%) appearing as the leading cause of death, followed by drowning (16.3), and homicide (8.2%), and shown in Figure 23 below. Ill-defined natural deaths account for only 2% of deaths in this group. The profile in Cape Town is similar, except that homicide ranks second and drowning is lower in the ranking than in the Boland Overberg Region.

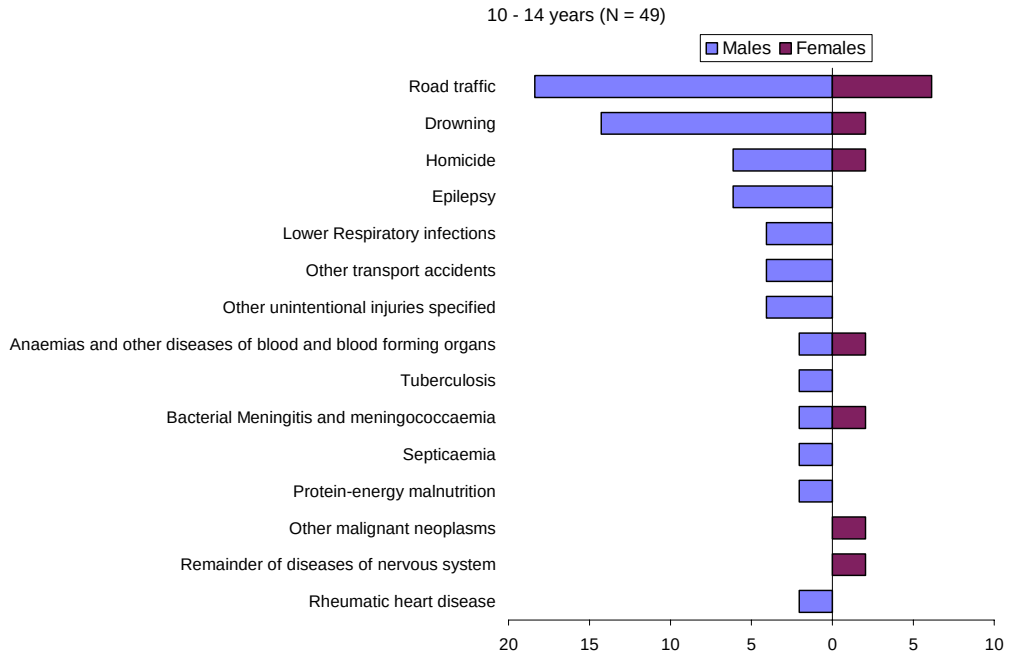


Figure 23: Leading causes of deaths in children 10-14 years, Boland Overberg Region 2004 and 2005

As in Cape Town, mortality among 15- to 19-year-olds in the Boland Overberg Region is dominated by homicide (34%) and road traffic injuries (18.9%), as shown in Figure 24. There is a marked gender differential with males accounting for almost 70% of the deaths in this age group.

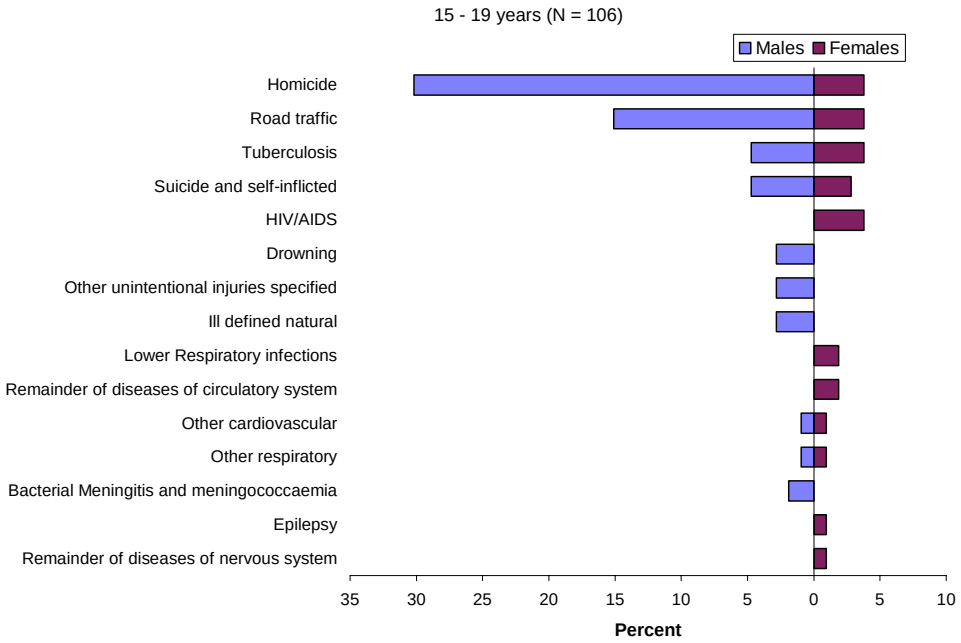


Figure 24: Leading causes of deaths in children 15 - 19 years, Boland Overberg 2004 and 2005

Discussion

The mortality surveillance system in the Boland Overberg Region has been maintained and continues to provide statistics that can be used to guide public-health programmes in the region. The year-on-year variations in mortality in the region need to be interpreted cautiously, especially at sub-district level, where the numbers of deaths are often small. However, the Boland Overberg Region's death data from 2005 strongly confirm the patterns seen in 2004.

- Tuberculosis is the leading cause of mortality in the region with mortality rates much higher than those experienced in Cape Town (86 per 100 000 vs 50 per 100 000 in 2004).

- HIV/AIDS mortality rates have continued to increase, but are lower than those in Cape Town (50 per 100 000 vs 80 per 100 000). The increase in mortality in Witzenberg, due to a significant increase in HIV/AIDS mortality and a marked increase in mortality due to tuberculosis, is cause for concern.

- Homicide mortality rates decreased between 2004 and 2005, particularly among males. The profile of homicide is quite different from that found in Cape Town: the use of firearms is very limited in the Boland Overberg Region and homicide rates among females are almost double those experienced in Cape Town.

- Overall, mortality rates due to non-communicable diseases in Boland Overberg Region are slightly lower than those in Cape Town (577 vs 626 per 100 000). There are differences in the profile,

however, with mortality rates due to cardiovascular conditions and cancers being similar, while mortality due to respiratory conditions is higher in the Boland Overberg Region than in Cape Town, and diabetes mortality rates are lower.

- Infant mortality has remained fairly constant in the Boland Overberg Region since 1997, with the suggestion of a downward trend. However, there is a marked variation among sub-districts, with Witzenberg having the highest rates. Infant mortality rates in the Boland Overberg Region (about 31 per 1000 LB) are higher than those in Cape Town (24 per 1000 LB). Prematurity and low birth-weight are the leading causes of neonatal deaths. Ill-defined deaths rank second and account for a high proportion of deaths in late neonatal and post-neonatal infants.

- Diarrhoea deaths are more prominent among young children in the Boland Overberg Region than in Cape Town, while injuries are prominent in older children. Of great concern is the large proportion of preventable deaths due to homicide and road-traffic injuries among 15 – 19 year olds, particularly among males.

As with any routine surveillance system, it is important to assess the completeness and quality of the data before drawing any conclusions. We have identified certain limitations of this data, incomplete data collection in the Overberg, for example, and have drawn attention to these where appropriate in the report. The proportion of causes of death that are ill-defined has remained at about 12 percent. No attempt has been made to validate the accuracy of the certified cause of death. When comparing this data with national data it is important to know that coding practices differ and this may give rise to slightly different results.

Recommendations

The local mortality surveillance system is the source of mortality information for the region. Nevertheless, in order to ensure sustainability, an improvement in the quality of the data collected, and the optimal use of the results, integration with other systems - such as those of Home Affairs, the mortuaries, the South African Police Services, and the Departments of Transport and Education - must be improved. Interventions must be planned, implemented, monitored and evaluated across all sectors. Demographic estimates for the region need to be revised and updated if needed.

Approximately 40% of all premature mortality is due to homicide, tuberculosis, HIV/AIDS and road traffic accidents, all of which are preventable through a comprehensive primary health-care approach, which emphasises health promotion and preventative strategies; uses intersectoral collaboration effectively; and seeks to promote equity.

- Tuberculosis control must be prioritised within the regional Health Department, particularly in Witzenberg. Since effective tuberculosis control requires intersectoral interventions aimed at reducing poverty and improving living conditions, the national Departments of Housing, Agriculture, and Social Security and Poverty Alleviation all have an important role to play.

- At the same time, the HIV/AIDS Programme needs to be strengthened, particularly in Witzenberg.

- Intersectoral strategies are urgently required to prevent violence, homicide, and road-traffic accidents. As one of the leading causes of premature mortality in the Boland Overberg region, homicide should be prioritised as a health need. The pattern of the

distribution of homicides should inform the allocation of resources to crime-prevention programmes. The underlying socio-economic instability of the high-incidence areas can only be addressed by a committed intersectoral approach. The problem of homicide highlights the need for a commitment to close working partnerships among a range of provincial and local authority departments, including Safety and Security, Sports and Recreation, Education, and Housing.

- Primary care for the management of non-communicable diseases should be strengthened and healthy lifestyles promoted in order to reduce the substantial burden of non-communicable diseases.

- Antenatal and perinatal care need to be strengthened.

Appendices

Appendix 1: Population estimates for individuals in the Boland Overberg Region*, 2004 – 2005

Age group	Breede Valley	Breede River Winelands	Witzenberg	Cape Agulhas	Overstrand	Swellendam	Theewaterskloof
0	3148	1921	2009	487	1119	551	2016
1-4	12401	7133	7634	1873	3849	2326	7440
5-9	15422	9037	9303	2662	4409	3014	9191
10-14	15538	8878	9385	2775	4213	2917	8846
15-19	16226	7890	8996	2509	4598	2631	9062
20-24	13310	6668	8593	1778	5261	2183	8933
25-29	13528	7232	9467	1958	5514	2529	10021
30-34	13130	7420	8951	2241	4829	2479	9461
35-39	12108	6640	7694	2207	4153	2429	8551
40-44	10546	5672	6306	2055	3497	2040	6995
45-49	8287	4380	4929	1595	2912	1570	5201
50-54	6383	3520	3837	1300	2819	1315	4174
55-59	4564	2733	2717	1165	2860	1021	2906
60-64	3642	2398	2112	1117	2941	892	2337
65-69	2749	1802	1472	897	2405	740	1644
70-74	1984	1385	1086	643	1778	558	1069
75-79	1120	914	644	385	1072	320	676
80-84	762	513	373	250	651	197	383
85+	445	294	260	149	384	120	272
Total	155293	86429	95767	28046	59265	29832	99178

* Excluding Stellenbosch and Drakenstein

Appendix 2: Population estimates for males in the Boland Overberg Region by sub-district, 2005

Age group	Breede Valley	Breede River Winelands	Witzenberg	Cape Agulhas	Overstrand	Swellendam	Theewaterskloof
0	954	1537	1024	256	577	288	1046
1-4	3586	6150	3888	950	1922	1165	3736
5-9	4491	7748	4716	1352	2169	1561	4633
10-14	4463	7744	4706	1370	2124	1457	4456
15-19	3778	8226	4388	1220	2238	1302	4399
20-24	3156	6646	4360	856	2613	1115	4705
25-29	3426	6681	4765	955	2869	1263	5439
30-34	3524	6439	4382	1076	2395	1218	5182
35-39	3207	5874	3844	1035	2092	1231	4645
40-44	2640	5025	3086	974	1774	999	3733
45-49	2126	3935	2420	802	1420	782	2649
50-54	1731	3057	1973	622	1368	645	2171
55-59	1307	2211	1355	561	1225	495	1523
60-64	1140	1651	1045	521	1406	427	1203
65-69	809	1176	721	401	1160	357	811
70-74	628	867	463	318	827	274	478
75-79	396	400	260	154	495	142	282
80-84	190	262	125	83	262	75	166
85+	105	137	85	42	135	42	76
Total	41655	75763	47606	13548	29071	14841	51334

Appendix 3: Population estimates for females in the Boland Overberg region by sub-district, 2005

Age group	Breede Valley	Breede River Winelands	Witzenberg	Cape Agulhas	Overstrand	Swellendam	Theeswaterskloof
0	967	1612	985	231	542	263	970
1-4	3546	6251	3746	923	1926	1161	3704
5-9	4545	7675	4587	1310	2240	1453	4558
10-14	4415	7794	4679	1405	2090	1460	4390
15-19	4112	8000	4607	1289	2360	1329	4663
20-24	3512	6664	4233	922	2648	1068	4227
25-29	3806	6847	4702	1003	2646	1266	4583
30-34	3897	6691	4569	1165	2434	1261	4279
35-39	3433	6234	3851	1172	2061	1197	3906
40-44	3032	5521	3220	1081	1723	1041	3262
45-49	2254	4352	2508	793	1492	788	2552
50-54	1790	3326	1863	678	1450	669	2002
55-59	1426	2353	1362	604	1635	526	1383
60-64	1257	1990	1067	596	1535	465	1134
65-69	994	1573	751	496	1244	383	834
70-74	757	1117	623	326	951	284	591
75-79	518	720	384	232	577	178	394
80-84	323	501	248	168	390	122	217
85+	189	308	175	107	250	78	195
Total	44773	79530	48161	14499	30194	14992	47844

Appendix 4: Comparison of the numbers of deaths in the Boland Overberg region with different sources

Year	Registered by Home Affairs	BO death surveillance	% of Home Affairs
2004	4241	4162	101.9%
2005	4303	4176	103.0%

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