

# SOUTH AFRICAN NATIONAL BURDEN OF DISEASE STUDY ESTIMATES OF PROVINCIAL MORTALITY 2000 NORTH WEST PROVINCE

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Burden of Disease  
Research Unit



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Mortality Estimates  
for  
**NORTH WEST PROVINCE, 2000**

South African National Burden of Disease Study

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# SOUTH AFRICAN NATIONAL BURDEN OF DISEASE STUDY 2000

Timeous and accurate cause of death statistics are an essential component of the information needed 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 government need to respond to the specific needs of their communities.

Efforts to improve cause of death statistics in South Africa have been under way since 1994, and have resulted in better coverage of death registration. However, the system does not yet routinely provide cause of death statistics that can be used by provinces. The Initial Burden of Disease Study that applied the burden of disease approach developed by the WHO and used available information and presenting it in a format that is relevant for planning health and other services (Bradshaw et al., 2003).

This study makes use of more recent data, namely the 12% sample of deaths for 1997-2001. However, due to under-registration of deaths, it was necessary to estimate the total number of deaths and number of AIDS deaths using a demographic and epidemiological model. It was also necessary to make adjustments for mis-classification of underlying causes due to inadequacies in the medical certification of the cause of death as a result of both poor certification by medical doctors and certification by traditional headmen in some rural areas. Full details of the methods used to estimate the number of deaths, the death rates and the years of life lost (YLLs) for each province according to the South African Burden of Disease list are given in the report Estimates of Provincial Mortality by Bradshaw et al. (2004).

# North West provincial profile

## Background

North West is in the central north of South Africa and is completely landlocked, bordering Botswana in the north, Limpopo and Gauteng in the east, Free State in the south, and Northern Cape in the west. The province encloses 116 320 km<sup>2</sup>, constituting 9.5% of the total land area of the country (SSA, 2003). In 2000 the average population density was estimated at 32 persons per square kilometre. During the 1996 Census almost two-thirds of the population (65%) lived in non-urban areas (SSA, 1998). Prior to 1994 the province was territorially divided into six areas that made up the 'national state' of Bophuthatswana, part of the so-called independent 'homelands', and the rest of the province was under the separate provincial administrations of the then Cape Province and the then Transvaal. These territorial divisions are no longer valid, but given the consolidation of various administrations and levels of development, they are significant in terms of examining data distribution patterns (Tait, 1996).

With the largest single platinum production area in the world around Rustenburg and Brits, diamond mining at Bloemhof, Christiana, Koster and Lichtenburg, marble mining in Taung, Rustenburg and Brits, fluorspar exploitation at Zeerust, and gold and uranium mining at Klerksdorp, Orkney and Stilfontein, mining is the dominant sector of the North West economy, contributing 33% to the province's economy and 18% of the total formal employment (GCIS, 2004). Other main sectoral contributions to the province's Gross Geographic Product (GGP) are government services, trade and catering, manufacturing, finance and agriculture (DWAF & Urban-Econ, 2000). The province's GGP at 2001 prices was rated at R72 230 million, and the province contributed 7.3% to the national Gross Domestic Product (GCIS, 2004). A recent macro-economic overview of the province reported that North West is one of the poorer provinces of South Africa, and that it has a relatively small economic base compared to the other provinces (DWAF & Urban-Econ, 2000).

## Population structure

According to the 2000 ASSA estimates, 3 753 128 people lived in North West, constituting 8.3% of South Africa's total population. The province accommodated slightly more women (50.3%) than men (49.7%). One-third of the population were younger than 15 years, 64% were in their 'economically active' years (15-64), and 6% were aged 60 years or older. [Comparison with 2001 Census: total population 3 669 349 (ASSA had 83 779 more); 8.2% of South Africa's total population; 50.4% female; 91.5% Black African, 1.6% Coloured, 0.3% Indian, 6.7% White.]

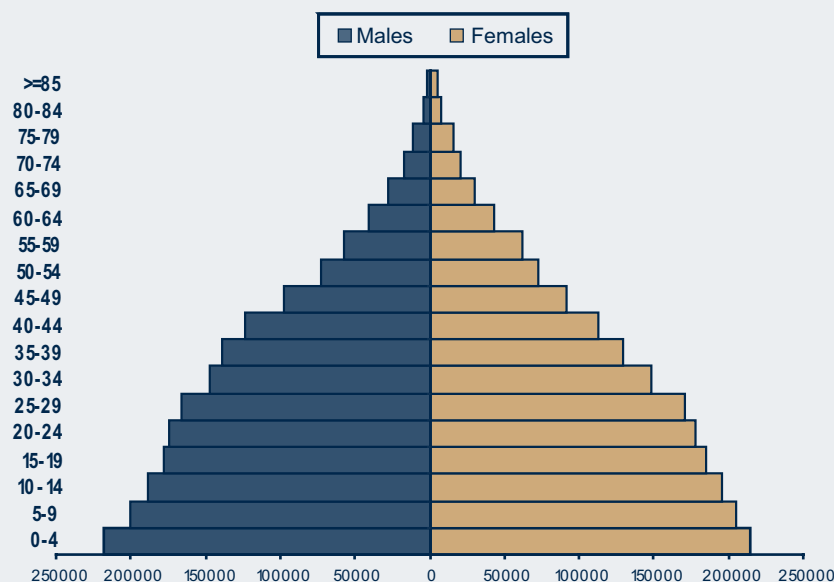


Figure NW1: Age structure of the North West population, 2000

## Living conditions

According to the 2001 Census, 20% of the population aged 20 years or older had no formal school education, and 44% of those in the age group 15-64 were unemployed (SSA, 2003). Over half of the population (57%) lived below the national poverty line in 2002 (UNDP, 2004). Nearly 69% of all households in North West lived in formal dwellings, and 22% and 5% respectively in informal and traditional structures. On average 3.7 persons shared a household. The majority of households (86%) had access to piped water, either in the dwelling, on site, or from a communal tap. One in ten households did not have access to a toilet facility, while less than four in ten, 37%, had a refuse removal service once a week or more. In 45% of households electricity was used as the main source of energy for cooking, wood in 18%, and paraffin in 32%. Almost 70% of the households had a radio, 54% a television, 50% a refrigerator, 14% a telephone and 28% a cell phone (SSA, 2003).

## Mortality profile

North West's mortality profiles are based on 25 246 male (55.9%) and 19 931 female (44.1%) deaths estimated for the year 2000, totalling 45 177 deaths. Figure NW2 shows causes of death for the broad Groups I, II, III and AIDS. Group I and II deaths were very similar for men and women, while the proportions of deaths due to HIV/AIDS were 27% in males and 34% in females. A considerable difference was seen in the proportions of deaths due to injuries, with three times more such deaths in men.

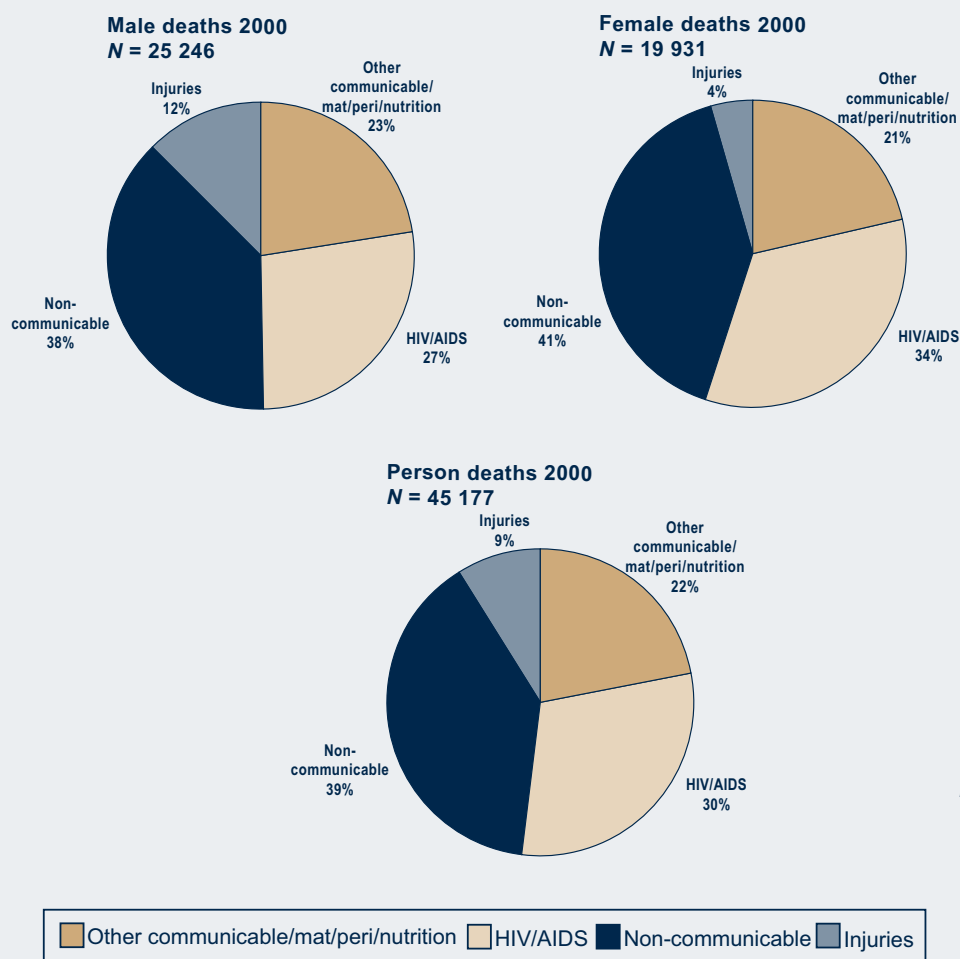


Figure NW2: Estimated deaths by Groups, North West 2000

The age-specific cause of death profiles are presented in Figure NW3. The numbers of deaths are presented by five-year age intervals for the three broad Groups and HIV/AIDS. Due to particular disease and mortality profiles in children during the first year of life, the under-5-year age group was divided into infants less than 1 year old and children of 1-4 years old. Over half of the deaths in infants were due to Group I diseases, and another third to HIV/AIDS. Over four in ten deaths in children under 5 years old were due to HIV/AIDS. HIV/AIDS deaths were also exceptionally high in young adult men and women. HIV/AIDS deaths were also exceptionally high in young adult men and women. Deaths resulting from injuries were very high in young men, while non-communicable diseases dominated in adults of 60 years or older.

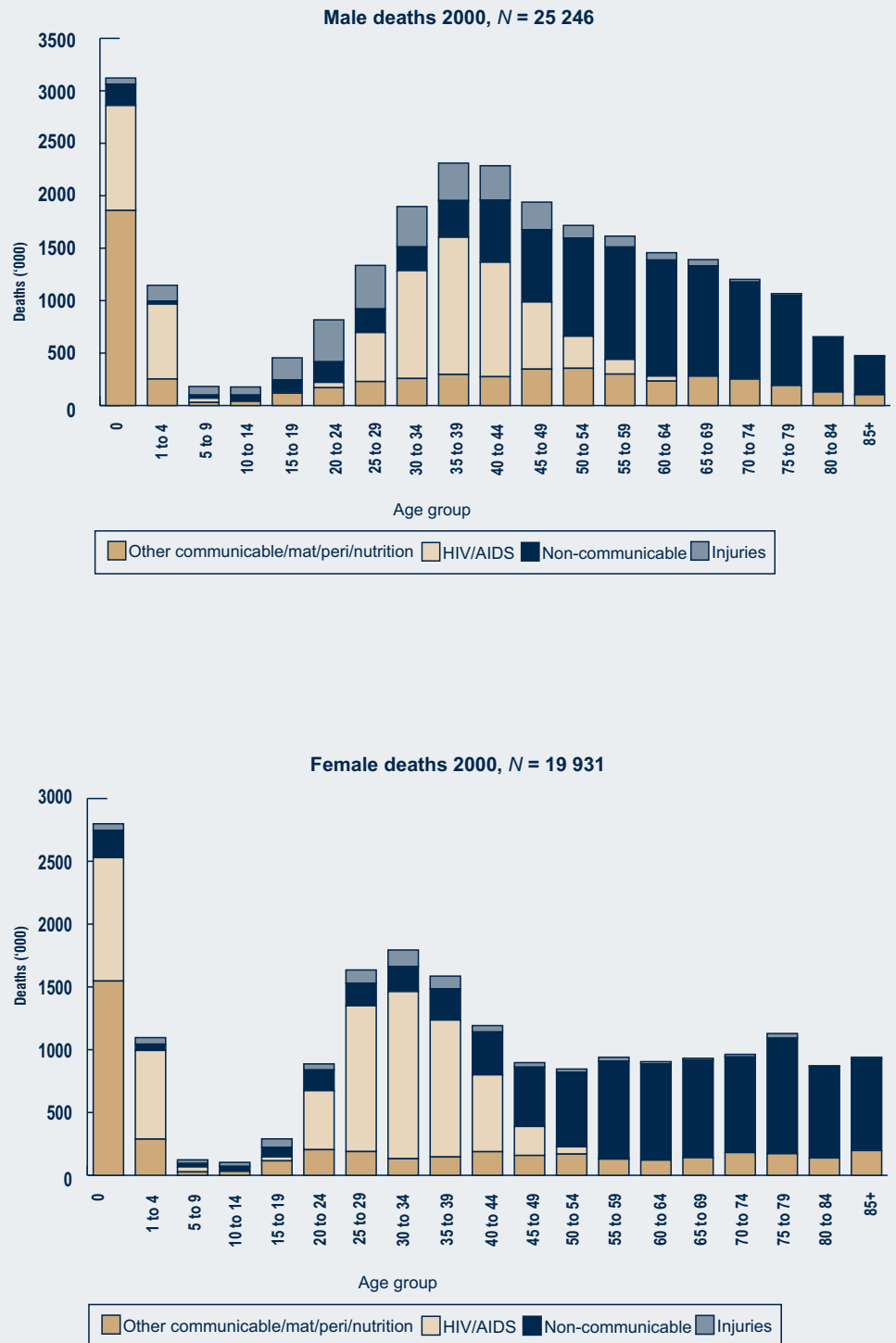


Figure NW3: Age distribution of deaths by broad Groups, North West 2000

Figure NW4 shows North West's cause of death profile for categories ranked in descending order by the total number of persons. In both men and women HIV/AIDS was the leading cause of death (30%), followed by cardiovascular disease (19%), infectious and parasitic diseases excluding HIV/AIDS (11%), respiratory infections (6%), malignant neoplasms (6%) and respiratory disease (5%). Differences were observed between men and women, with HIV/AIDS, cardiovascular disease, respiratory infections and diabetes accounting for more female than male deaths. In contrast, among the leading ten categories, other infectious and parasitic diseases, injuries, malignant neoplasms, respiratory disease, perinatal conditions and diseases of the digestive system predominated in males.

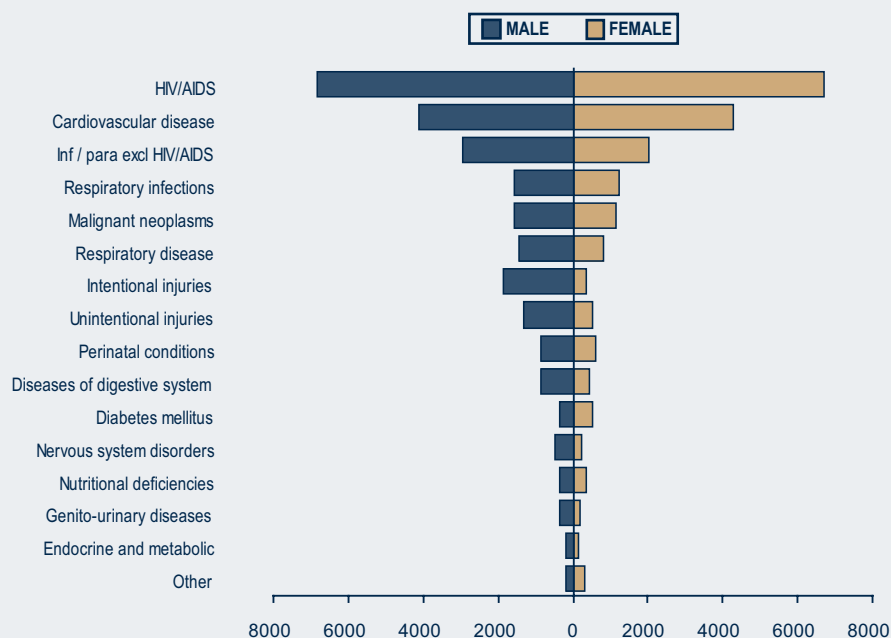


Figure NW4: Causes of death according to categories for males and females, North West 2000

"Other" causes include congenital abnormalities, benign neoplasms, maternal conditions, musculo-skeletal diseases, mental disorders, skin diseases, oral conditions and conditions of the sense organs.

The twenty leading single causes of death in the total North West population are shown in Figure NW5(a) overleaf, illustrating that HIV/AIDS was the largest single cause of death, accounting for 30% of all deaths during 2000. HIV/AIDS caused about five times more deaths than lower respiratory infections (6%), the next largest single cause. Stroke, ischaemic heart disease, tuberculosis and hypertensive heart disease were next in the ranking, each accounting for between 5% and 6% of deaths. From Figure NW5(b) it is clear that women had higher numbers of deaths due to stroke, hypertensive heart disease, diarrhoeal disease and diabetes mellitus than men, while men had higher numbers of deaths due to the remaining leading causes of death.

## Persons 2000, N = 45 177

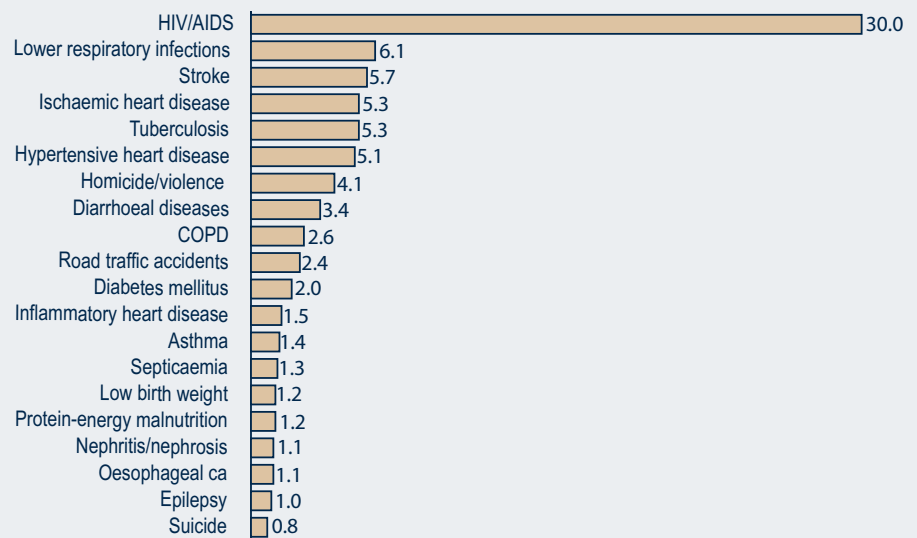


Figure NW5(a): Twenty leading single causes of death (%), North West 2000

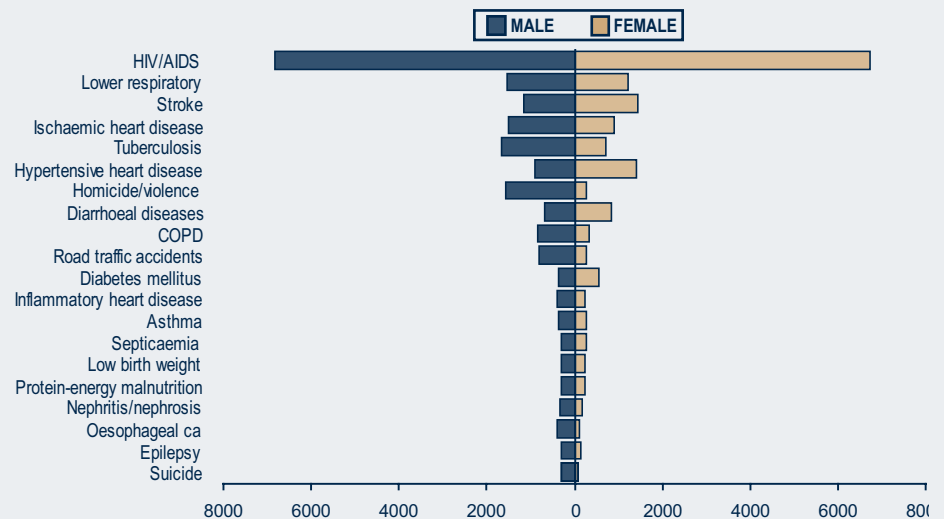


Figure NW5(b): Twenty leading single causes of death by sex, North West 2000

## Premature mortality

The years of life lost (YLLs) measure does not merely consider the number of deaths, but also takes into account the age at which the deaths occurred. YLLs were calculated using the age weighting parameter, discounting and the standard life expectancy that were used in the Global Burden of Disease Study. Table NW 1 shows that HIV/AIDS played a major role in premature mortality, which can partly be explained by the large numbers of deaths due to AIDS, and partly by the large proportion of AIDS deaths that occurred in young adults and children under the age of 5 years. The proportions attributable to other causes were much smaller, lower respiratory infections, homicide/violence and tuberculosis each being responsible for 5-6% of premature loss of life in persons. Premature mortality manifested differently in men and women, with differences in the numbers and proportions of YLLs per cause of death. HIV/AIDS, for example, accounted for just under half of all YLLs in women, and about one-third in men. While homicide/violence and road traffic accidents ranked second and fifth in men, these causes ranked tenth and eleventh respectively in women, with men experiencing a four times greater premature loss of life due to these injuries ( $\pm 63\ 000$  YLLs) than women ( $\pm 15\ 000$  YLLs).



Table NW1: Leading 20 single causes of the premature mortality burden (YLLs) by sex, North West 2000

Males				Females				Persons			
Rank	Cause of death	YLLs	%	Rank	Cause of death	YLLs	%	Rank	Cause of death	YLLs	%
1	HIV/AIDS	180135	34.3	1	HIV/AIDS	197124	46.2	1	HIV/AIDS	377258	39.6
2	Homicide/violence	42231	8.0	2	Lower respiratory infections	24667	5.8	2	Lower respiratory infections	53083	5.6
3	Tuberculosis	32553	6.2	3	Diarrhoeal diseases	21364	5.0	3	Homicide/violence	49790	5.2
4	Lower respiratory infections	28416	5.4	4	Tuberculosis	16320	3.8	4	Tuberculosis	48873	5.1
5	Road traffic accidents	21026	4.0	5	Stroke	14371	3.4	5	Diarrhoeal diseases	41110	4.3
6	Diarrhoeal diseases	19747	3.8	6	Hypertensive heart disease	11875	2.8	6	Road traffic accidents	28443	3.0
7	Ischaemic heart disease	17073	3.3	7	Ischaemic heart disease	9231	2.2	7	Stroke	27315	2.9
8	Stroke	12943	2.5	8	Low birth weight	8103	1.9	8	Ischaemic heart disease	26304	2.8
9	Low birth weight	10309	2.0	9	Protein-energy malnutrition	7892	1.9	9	Hypertensive heart disease	20815	2.2
10	COPD	9915	1.9	10	Homicide/violence	7558	1.8	10	Low birth weight	18412	1.9
11	Hypertensive heart disease	8940	1.7	11	Road traffic accidents	7417	1.7	11	Protein-energy malnutrition	16696	1.8
12	Protein-energy malnutrition	8804	1.7	12	Septicaemia	6089	1.4	12	COPD	14374	1.5
13	Epilepsy	7061	1.3	13	Diabetes mellitus	5768	1.4	13	Septicaemia	12150	1.3
14	Suicide	7042	1.3	14	COPD	4459	1.0	14	Epilepsy	10433	1.1
15	Septicaemia	6060	1.2	15	Cervix ca	4323	1.0	15	Diabetes mellitus	10118	1.1
16	Inflammatory heart disease	5848	1.1	16	Asthma	4048	1.0	16	Asthma	9368	1.0
17	Asthma	5320	1.0	17	Epilepsy	3372	0.8	17	Suicide	9066	1.0
18	Nephritis/nephrosis	5259	1.0	18	Breast ca	3347	0.8	18	Inflammatory heart disease	8860	0.9
19	Oesophageal ca	4848	0.9	19	Inflammatory heart disease	3011	0.7	19	Nephritis/nephrosis	7857	0.8
20	Fires	4673	0.9	20	Bacterial meningitis	2752	0.6	20	Fires	7389	0.8
	<b>All causes</b>	<b>525 973</b>			<b>All causes</b>	<b>426 801</b>			<b>All causes</b>	<b>952 774</b>	

## Leading single causes of death among children (<15 years)

The ten leading causes of death in children 0-4 years old, and in those 5-14 years old, are shown by sex in Figure NW6. HIV/AIDS deaths in under 5 year olds were exceptionally high, followed by two more infectious causes, a perinatal condition and a nutritional deficiency. The leading five causes in children under 1 year reflect the same pattern (not displayed here), with one in four infants dying from HIV/AIDS, followed by other Group I causes. In girls 5-14 years old, HIV/AIDS remains the largest cause of death, while in boys of this age group, road traffic accidents accounted for the largest cause of death. Particularly in boys, but also in girls 5-14 years old, injuries take up a prominent presence in the leading ten causes of death as drowning, homicide/violence and fires are added to road traffic accidents. The presence of epilepsy and tuberculosis, both manageable conditions, is observed.

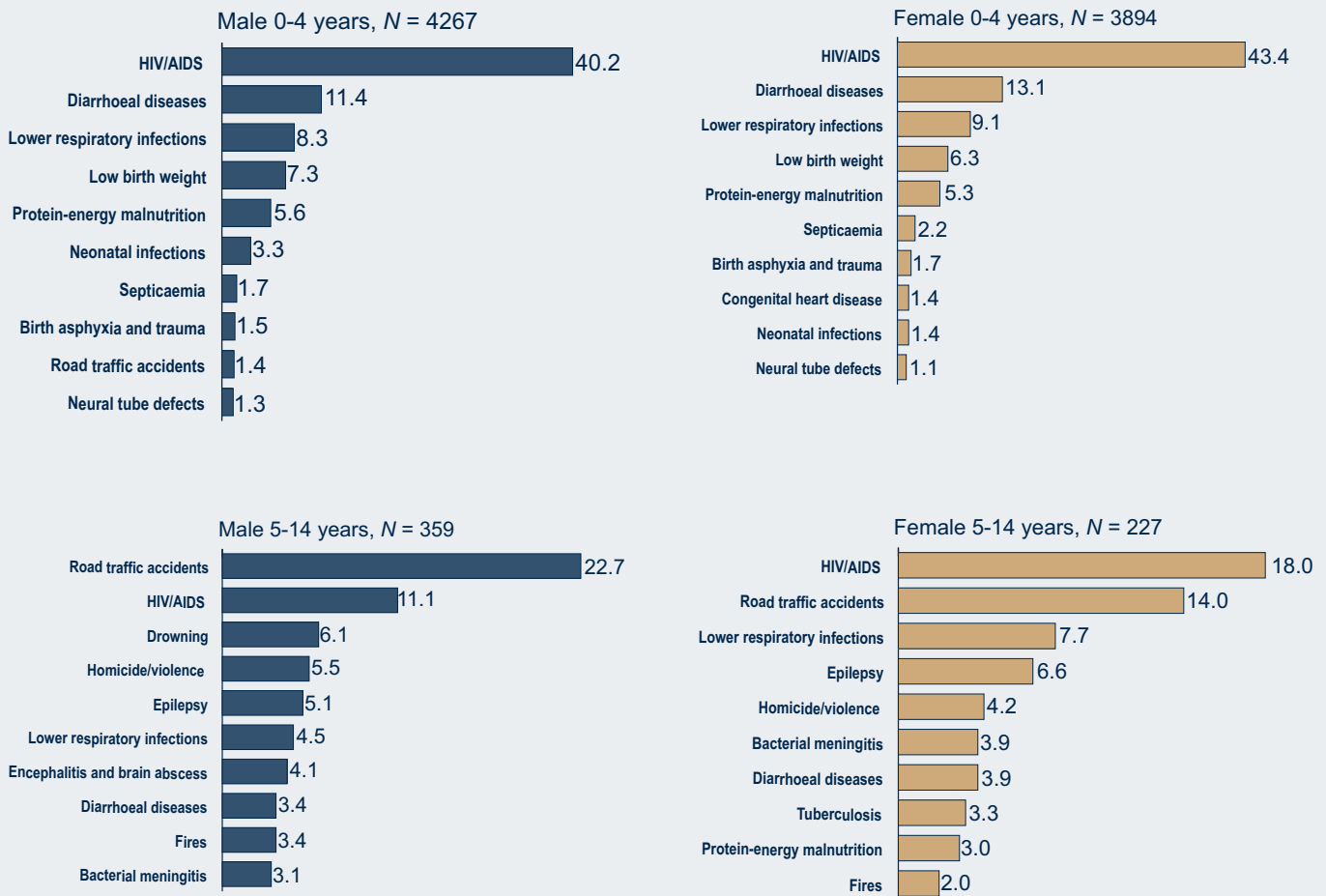


Figure NW6: Ten leading single causes of death (%) among children (<15 years) by sex, North West 2000

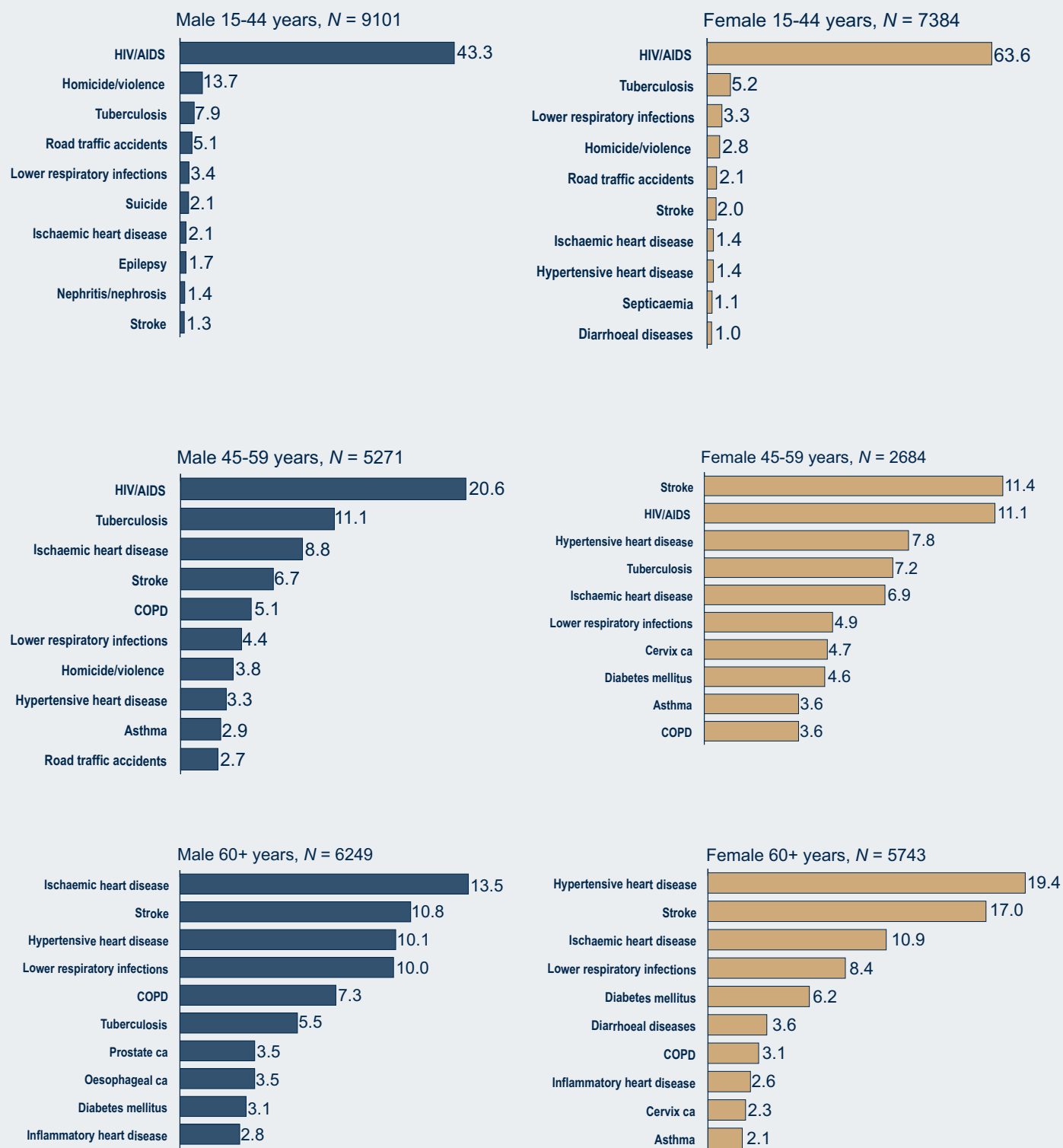
## Leading causes of death among adults

Figure NW7 presents the 10 leading single causes of death in men and women in the age groups 15-44 years, 45-59 years and those 60 years or older. In young adults 15-44 years old, HIV/AIDS was by far the leading cause of death, responsible for catastrophic proportions in young women (64%). In both men and women, homicide/violence, tuberculosis, road traffic accidents and lower respiratory infections accounted for the subsequent four causes of death, though these causes differed by sex in their ranking.

In the age group 45-59 years, HIV/AIDS was responsible for the largest cause of death in men and the second largest in women. Stroke accounted for a negligibly higher proportion than HIV/AIDS in women. The proportion of HIV/AIDS deaths in men was about double the proportion in women. While HIV/AIDS held a dominating position in the leading 10 causes in this age group, diseases of lifestyle were responsible for five of the leading 10 causes in men, and for seven in women, accounting for over a quarter of male deaths, and over 40% of female deaths.

In the age group 60 years or older, most of the ten leading causes of death were from non-communicable conditions, with lower respiratory infections, tuberculosis and diarrhoeal disease the only communicable diseases among the leading causes. In both older men and older women, ischaemic heart disease, stroke and hypertensive heart disease were the leading single causes of death, with differing ranking and proportions by sex. Another cardiac condition, inflammatory heart disease, was present among the leading causes in older persons. Diabetes, being the fifth largest cause in women, and malignant neoplasms accounted for the remaining positions in the top ten causes among older persons.

Figure NW7: Ten leading single causes of death (%) among adults by sex, North West 2000



## Contrast with national profile

The Initial National Burden of Disease Study highlighted the substantial impact of HIV/AIDS as a cause of death in South Africa by the year 2000, and the major health transition that is under way. As countries become more developed the disease profile changes, from one of infectious diseases, high child mortality and malnutrition, to a predominance of degenerative, chronic diseases. However, developing countries often experience a double burden, resulting from the simultaneous occurrence of these disease spectrums. During the early 1990s the health transition in South Africa was characterised by a very high injury burden on top of the double burden, resulting in a 'triple burden' (Bradshaw et al., 2002). In more recent years the impact of HIV/AIDS has created a quadruple burden of disease in South Africa. This study shows that all provinces are experiencing this quadruple burden of disease to varying degrees and signifies an important milestone in generating burden of disease information at provincial level by providing mortality estimates for the provinces. This requires a broad range of interventions, including improved access to health care, promotion of a healthy lifestyle and ensuring that basic needs such as water and sanitation are met. Social cohesion needs to be fostered to ensure safe and caring communities

The cause of death profile for North West is similar to the country's national profile. In the broad Groups, injuries in North West (9%) constituted a smaller proportion than nationally (12%), while non-communicable diseases constituted a larger proportion in North West (39%) than nationally (37%).

Tuberculosis and lower respiratory infections accounted for higher mortality rates in this province than nationally. In contrast, lower respiratory infections ranked second in North West, but sixth nationally. This province experienced higher cardiovascular disease mortality rates as a result of high rates for stroke and hypertensive heart disease. Cancer mortality was slightly lower than the national average overall, but prostate, cervical, and breast cancer rates were markedly higher in this province. Epilepsy, which is a manageable condition, ranked as the nineteenth largest cause of death in the North West population. Injury mortality rates were slightly lower in this province, and homicide/violence, which ranked second nationally, ranked seventh in North West.

Similar to the pattern in the total population, lower respiratory infections in children under 1 and under 5 years of age ranked higher in North West than nationally. In both these child populations neural tube defects also ranked higher in North West than nationally.

These estimates are extrapolations from a variety of data sources, all with limitations. There is an urgent need to further improve the cause of death data system to provide timely and reliable statistics. While the data systems are being improved, provincial and local level planners are urged to make use of the findings of this study to modify the emphasis of national policies to meet the health needs of their communities. It should be noted that the spread of the HIV epidemic during the 1990s was very rapid and that the mortality profile is changing rapidly. This should be taken into account when making use of these estimates for planning, and highlights the urgency of implementing the treatment programme approved by Cabinet in September 2003 as quickly as possible as well as strengthening efforts to reduce the spread of HIV/AIDS.

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